



## Quality Improvement Poster Abstracts

### **1: Beads of Courage & End of treatment bell within the Neonatal Unit**

Miss Danielle Roberts<sup>1</sup>, Miss Erin Lee<sup>1</sup>

<sup>1</sup>University Hospital Of Wales - Neonatal Intensive Care Unit, Heath, Wales

### **2: Central Line Sepsis: A Quality Improvement Project**

Dr Rowena Craig<sup>1</sup>, Dr Simon Pirie<sup>1</sup>, Michelle Grant<sup>1</sup>

<sup>1</sup>Neonatal unit, Gloucester Royal Hospital, Gloucester, England

### **3: Challenges in Reducing Central Line Associated Blood Stream Infections in a tertiary Neonatal Unit- An ongoing QI project**

Dr Asma Yasmeen<sup>1</sup>, Ms Joan McCaffer, Dr Brian Jones, Dr Chris Lilley

<sup>1</sup>Princess Royal Maternity Hospital, United Kingdom

### **4: Implementation of a novel nurse-managed prolonged jaundice clinic improved service efficiency, patient experience, and continuity of care.**

Dr Rosie Anderson<sup>1</sup>, Dr Ruchira Perera<sup>1</sup>, Dr Gopa Sarkar<sup>1</sup>

<sup>1</sup>Stoke Mandeville Hospital, Aylesbury, Buckinghamshire

### **5: Improving hypothermia in preterm infants at admission to a tertiary neonatal unit- a Quality Improvement Project**

Dr Caroline Woolley<sup>1</sup>, Gurpreet Sunsoay<sup>1</sup>, Danika Simkins<sup>1</sup>, Dr Rachel OSullivan<sup>1</sup>, Dr Laura Gilbert<sup>1</sup>, Dr Pinki Surana<sup>1</sup>

<sup>1</sup>Heart Of England Neonatal Unit, Birmingham, England

### **6: Improving the Care of babies at risk of Neonatal Hypoglycaemia.**

Dr Keshava Girish Gowda<sup>1</sup>, Mrs Christina Rattigan, Mrs Karin Jones, Mrs Julie Herring

<sup>1</sup>Great Western Hospital, Wiltshire

### **7: Integrated Transitional Care facility with both midwifery and neonatal input- a QI project**

Dr Rashmi Mehta<sup>1</sup>, Dr Pinki Surana<sup>1</sup>, Dr Amy Walker<sup>1</sup>, Mrs Katy Pettit<sup>1</sup>

<sup>1</sup>University Hospitals Birmingham (Heartlands Hospital), United Kingdom



## **8: Look after yourself and your colleagues – Debrief!**

### **Steps to formalise the debriefing process on the Neonatal Intensive Care Unit**

Dr Elke Reunis<sup>1</sup>, Dr Rashmi Mehta<sup>1</sup>, Dr Harsha Gowda<sup>1</sup>, Dr Imogen Storey<sup>1</sup>

<sup>1</sup>University Hospitals Birmingham NHS Foundation Trust, United Kingdom

## **9: National Commissioning for Quality and Innovation (CQUIN) Programme to improve 2 year Neurodevelopmental Follow up rates in Extreme Preterm Infants (2016 - 2018)**

Dr Vennila Ponnusamy<sup>1</sup>, Mrs Katherine Gumbs<sup>1</sup>

<sup>1</sup>St Peter's Hospital, Ashford and St Peter's NHS Foundation Trust, Chertsey, United Kingdom

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Dr Anoj Oommen<sup>1</sup>, Dr Kamini Yadav<sup>1</sup>, Dr Nitesh Singh<sup>1</sup>, Dr Divya Saxena<sup>1</sup>

<sup>1</sup>Leicester Royal Infirmary (Neonates), Leicester, United Kingdom

## **11: ORAL SUCROSE for heel prick procedure - Are we complying with evidence-based guidelines – AN AUDIT LOOP**

Dr Asma Yasmeen<sup>1</sup>, Dr Allan Jackson

<sup>1</sup>Princess Royal Maternity Hospital, United Kingdom

## **12: Prevention of Significant Hypothermia (POSH) in preterm infants ≤32 weeks gestation.**

Dr Nicola McMullan<sup>1</sup>, Lucy Bradley<sup>1</sup>, Cora Hiatt<sup>1</sup>

<sup>1</sup>University Hospital Coventry, United Kingdom

## **13: Quality Improvement project on Early onset Neonatal Sepsis: Is it possible to achieve "antibiotic administration within an hour of decision making"?**

Dr Keshava Girish Gowda<sup>1</sup>, Dr Karthiga Subramaniam<sup>1</sup>, Dr Harriet Nicholas<sup>1</sup>

<sup>1</sup>Great Western Hospital, Wiltshire



## 1: Beads of Courage & End of treatment bell within the Neonatal Unit

Miss Danielle Roberts<sup>1</sup>, Miss Erin Lee<sup>1</sup>

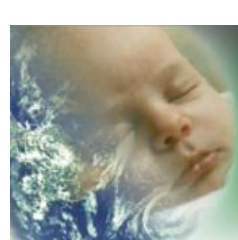
<sup>1</sup>University Hospital Of Wales - Neonatal Intensive Care Unit, Heath, Wales

### **Biography:**

*We are Staff Nurses at the welsh regional neonatal intensive care unit at the University Hospital of Wales. We have a particular interest in quality improvement within family integrated care. As a result of this interest we have recently helped within the launch of Beads of Courage and End of treatment bell within our neonatal unit.*

Beads of Courage initially started in the USA many years ago to help children with serious illnesses mark milestones they have achieved during their treatment. Beads of Courage has supported over 20,000 children across the UK, USA, Japan and New Zealand. In April 2019, The University Hospital of Wales was the first neonatal unit in Wales to implement Beads of Courage, in the hope that the rest of the neonatal network in Wales will follow. The beads not only mark milestones for baby's treatments but also puts their and their family's experiences into words. Each bead - every single one different and colourful, tells a story of a babies individual journey. For example - yellow bead is overnight stay in NICU, pink bead for respiratory support, rainbow bead for breastfeeding support, acorn bead (for parents) symbolises parents strength and courage through this difficult time. Started beads include beads spelling out their name, turtle bead – slow but strong journey, happy birthday bead and a parent heart bead for both Mum and Dad. Before initiating the programme, we researched the programme and read about patient's individual stories and the major benefits of the beads. These benefits include helping to decrease illness related distress for the family. We have witnessed this first hand when parents have struggled to explain to the siblings, using beads of courage we explained their new babies journey so far on the neonatal unit through the beads and their meanings. The beads of courage has benefitted as a reflective tool for parents to explain to their child what happened during their time on the neonatal unit. Beads of Courage is fully funded from our neonatal unit charity SCIPS and so far has received lots of positive feedback from both families and staff.

In March 2019, we were the first neonatal unit in the UK to launch the 'end of treatment bell'. Ringing the bell symbolises the end of the baby's treatment on the neonatal unit and ready to move on to the next chapter of their lives as home with their family. Upon discharge, each family are informed about the end of treatment bell and its symbolic meaning, it is entirely own personal choice to ring the bell and read out the poem written alongside 'ring this bell three times well its toll to clearly say, you helped me grow its time to go so I am on my way. Before having the bell installed, we understood this may be sensitive for other families on the neonatal unit, however upon writing and sending out questionnaires to staff and families, most feedback was positive and loved the idea of having an end of treatment bell. For families, ringing the bell is a moment to celebrate and reflect on their emotional and physical journey, bringing hope to the future.



## 2: Central Line Sepsis: A Quality Improvement Project

**Dr Rowena Craig<sup>1</sup>**, Dr Simon Pirie<sup>1</sup>, Michellee Grant<sup>1</sup>

<sup>1</sup>Neonatal unit, Gloucester Royal Hospital, Gloucester, England

### **Biography:**

*Rowena is an ST5 paediatric trainee, currently at Gloucester Royal Hospital. She has a special interest in neonates.*

### **Introduction and aims:**

In 2017, our unit was identified as an outlier, with an above average number of cases of culture positive late onset neonatal sepsis. A quality improvement project was designed and implemented with the aim of reducing late onset sepsis and positive culture rates. This project has been multidisciplinary with particular focus on developing sound aseptic non-touch technique and utilisation of a care bundle.

### **Method:**

A survey of units within the local region and a literature search identified practices that have been shown to reduce late onset sepsis. In particular this highlighted the benefit of care bundles, defined as a limited number of specified practices implemented simultaneously.

We adapted our regional centre's care bundle and introduced a checklist for practitioners to complete. Particular changes included moving from 0.02% chlorhexidine for peripheral and central catheter insertion to 2% chlorhexidine and 70% isopropyl alcohol (Chloraprep) for babies above 28 weeks gestation and 0.05% chlorhexidine gluconate (Unisept) for those less than 28 weeks. We also ensured that Hibiscrub was used universally for handwashing prior to such procedures.

In addition, an aseptic non touch technique (ANTT) teaching package for staff was introduced and then developed further using the national standard operating procedures.

### **Results:**

The care bundle and education package were implemented in the second half of 2017. An audit then examined positive blood cultures from babies with central lines in situ. Data from quarter one of 2017 (pre-intervention) was compared with data from quarter one of 2018 (post-intervention).

In 2017 twenty five babies were audited and in 2018 thirty four babies were included. The two groups were similar in terms of gestational range. In 2017 a total of 47 blood cultures were sent compared with 60 in 2018. There were ten positive cultures in 2017 (six of which were felt to represent true infection rather than contamination). In 2018, there were three positive cultures, one of which was assessed as an infection. The organisms grown and felt to be significant for infection (as per documentation in the notes, CRP trends and length of antibiotic course given) were *Staphylococcus epidermidis* on four occasions, *Klebsiella* twice and on one occasion *Escherichia coli*.

Four cases of positive cultures were associated with central lines being present. These occurred only in 2017.

Results also showed that the central line insertion checklist was not completed in as many cases in 2018 as compared to 2017. Despite this, there was a reduction in positive cultures and infections.

### **Conclusion:**

This quality improvement project has resulted in a significant reduction in the number of positive blood cultures within our neonatal unit within a year. The interventions are easy to implement and could be applied in any neonatal unit setting.

	2017	2018
Total number of babies	25	34
Extreme preterm (<27)	3 (12%)	6 (17.5%)
Preterm (27w - 31+6w)	13 (52%)	16 (47%)
Late preterm (32w+)	5 (20%)	8 (23.5%)
Term babies	4 (16%)	4 (12%)
Number of UVCs	25	32
Average number of days in situ (range)	2.8 (0-9)	4.5 (0-16)
Number of UACs	12	21
Average number of days in situ (range)	2.3 (0-8)	3.5 (0-15)
Number of long lines	14	14
Average number of days in situ (range)	6.1 (2-10)	5.5 (1-12)
Number of blood cultures sent	47	60
Positive blood cultures	10 (21%)	3 (5%)
Culture representative of infection rather than contaminant	6 (12.8%)	1 (1.7%)

	Gest	Organism	Day of life	UVC	UAC	LL
1	27/40	S epidermidis	7	In situ	In situ	N/a
2	28/40	S capitis	52	Removed day 5	N/a	No
3	28/40	Klebsiella	11	No	No	In situ
4	28/40	Klebsiella	15	No	No	Removed day 11
5	30/40	S epidermidis	11	Removed day 0	N/a	In situ
6	30/40	E Coli	5	Removed day 5	Removed day 0	Inserted day 5
7	26/40	S haemolyticus	18	Removed in STMH	Removed in STMH	Removed day 11



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	2017	2018 (NB 10 sets of notes unavailable)
Proforma used	48/51 (94%)	52/57 (91%)
Checklist used	36/51 (71%)	28/57 (49%)
Documented assistant	32/51 (63%)	21/57 (37%)
Cleaning solution appropriate & documented	33/51 (65%)	41/57 (72%)





## 3: Challenges in Reducing Central Line Associated Blood Stream Infections in a tertiary Neonatal Unit- An ongoing QI project

**Dr Asma Yasmeen<sup>1</sup>**, Ms Joan McCaffer, Dr Brian Jones, Dr Chris Lilley

<sup>1</sup>Princess Royal Maternity Hospital, United Kingdom

### **Biography:**

*After doing my fellowship in Paediatrics, I developed interest in Neonatal Medicine. I was doing my residency for fellowship in Neonatology in Pakistan when got opportunity to come to UK as IPTS Senior trainee in Neonatal Medicine. I have worked in Neonatal medicine mainly and currently working as Specialty Doctor. Also recently got CESR in Neonatal Medicine and looking for consultant jobs in Neonatal Medicine*

### **Background:**

Central line associated blood stream infections (CLABSI) in neonates can lead to poor neurodevelopmental outcomes, increased mortality risk, prolonged NICU stay and thus increased cost of care.

### **PDSA Cycles for Quality Improvement:**

Our tertiary neonatal unit started participating in the Scottish Patient Safety Programme (SPSP) in 2014-2015.

In addition, in the last two years the National Neonatal Audit Programme has utilised the Badgernet database to benchmark data on CLABSI rates for neonatal units across the UK.

### **CLABSI:**

A positive growth from blood culture (BC) with a central line (CL) in place 72 hours after birth.

### **CLABSI rates:**

Total number of CLABSI episodes per 1000 central line days.

The unit's CLABSI rate in the first half of 2014 was 25.5/1000 CL days. The CLABSI rate due to *Staphylococcus aureus* in 2015 was 5.6/1000 CL days.

### **Fish bone diagram and Driver Diagram:**

The cause and effect relationships (Figure 1) were studied by the Unit's infection control team to identify targets for improvement (Figure 2) likely to lead to positive change, which were implemented in a step wise manner.

The following were the leading concerns:

1. Contamination of BC samples especially after the changeover of medical staff
2. Poor asepsis during CL insertion
3. Poor hub care

Data were collected from case notes, local record of compliance bundles, online patient record databases and monthly microbiology updates on bacteriology samples.

### **"PDSA CYCLE 2015-2016"**

The aim was to reduce line related sepsis rates in accordance with SPSP aims to <10/1000 CL days.

The changes introduced were as follows:

- A "BC sticker" to act as record and prompt for proper technique
- Training of medical staff in the correct method of sampling for BC during induction
- Revision of Skin disinfection solutions (gestation specific use of either aqueous chlorhexidine (0.5%) or 70% isopropyl alcohol and Chlorhexidine 2%)
- Commencement of CL insertion and maintenance bundle
- An infection control group was convened

## Outcome

CLABSI rates reduced to 22.7/1000 CL days in the latter half of 2015 and 15.8/1000 CL days in 2016.

## "PDSA Cycle 2017-2018"

The changes planned for next PDSA cycle were to ensure;

- Further improvement in BC technique; use of a timer to ensure adequate drying of antiseptic solution
- Alcohol impregnated port protectors for unused ports
- Scrub the hub and wait for 30 seconds before re-attaching infusions
- Increased training on general infection control measures
- Revision of CL insertion stickers to prompt for a pause to allow skin to dry after cleaning with antiseptic solution

## Outcome

CLABSI rates increased in 2017 to 18.8/1000 CL days, then reduced to 11.3/1000 CL days in 2018. Following the introduction of alcohol impregnated port protectors in July 2016, no episode of staphylococcus aureus CLABSI was recorded.

"Graphs 1-3 show pattern of CLABSI rates from 2015-2018."

## Conclusion

There is an improving trend in the run chart with improvement in the trendline in the 2018. Further work on compliance with policies, education and staff motivation required to achieve further improvement and consistent results.

Figure 1: Cause and effect (Fishbone) Diagram for CLABSI

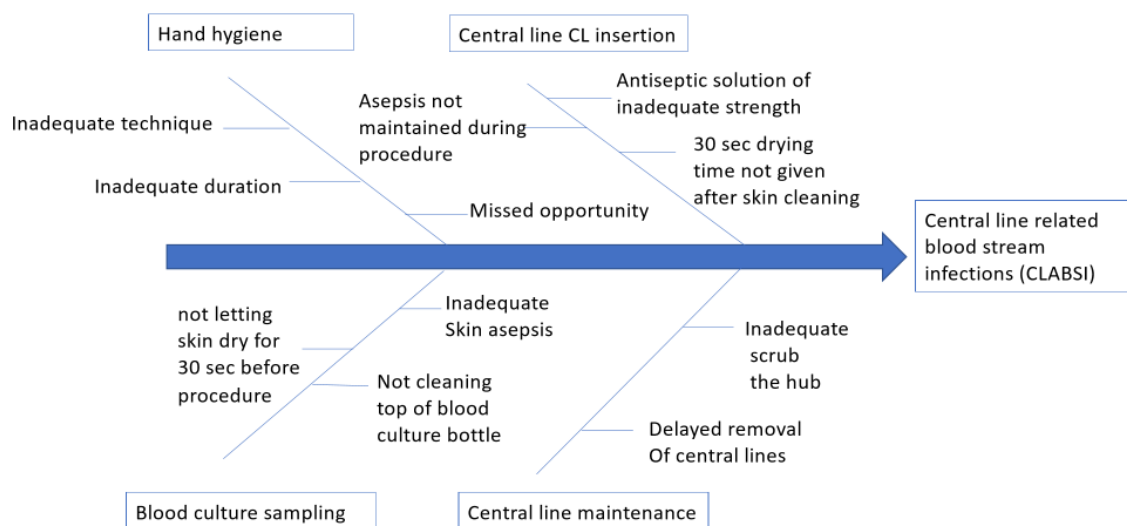
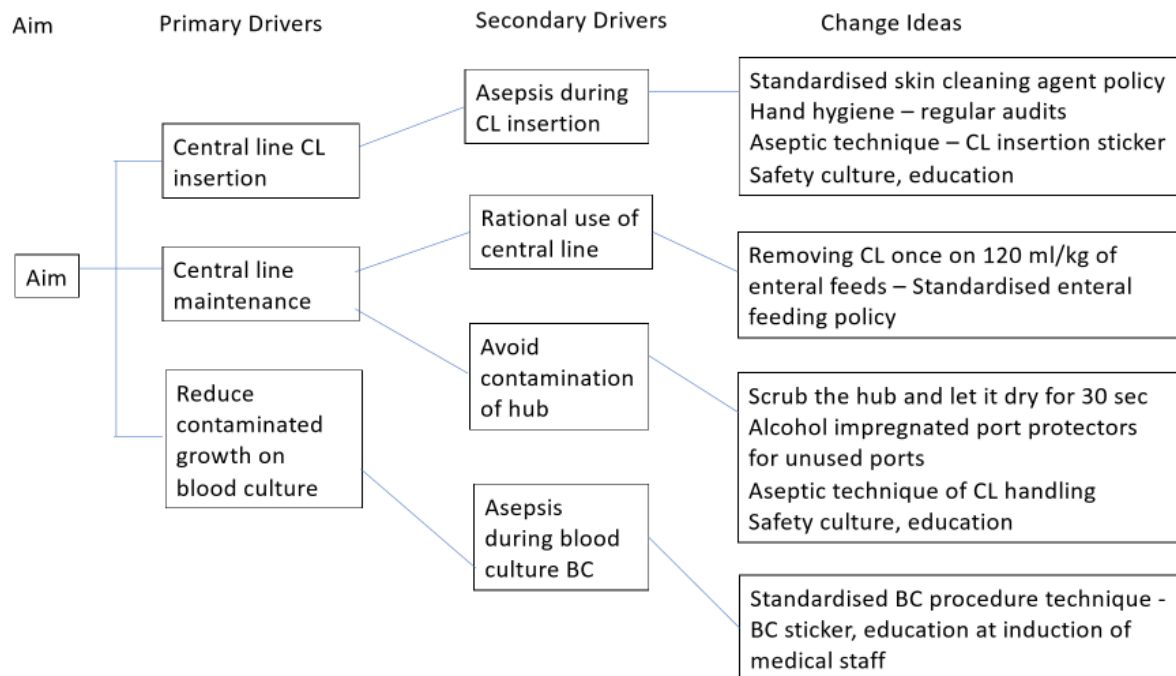
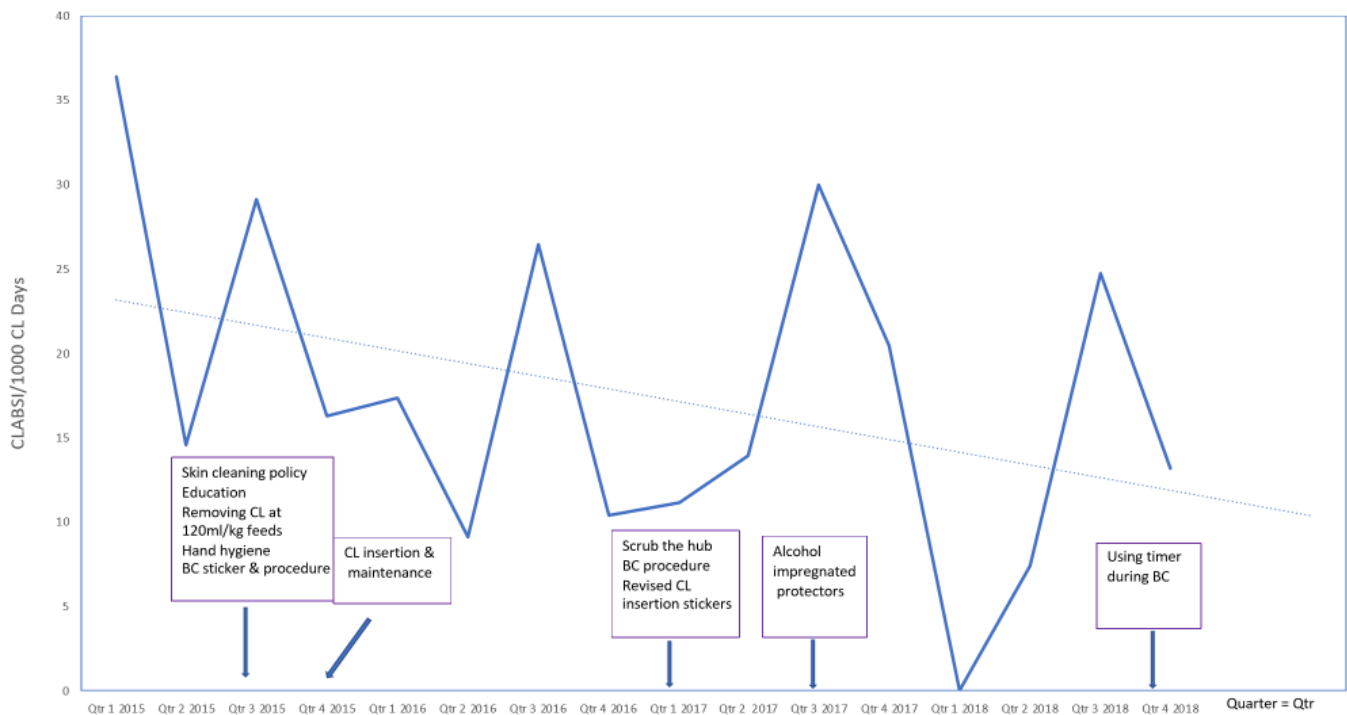




Figure 2: DRIVER DIAGRAM FOR REDUCTION OF CLABSI RATE

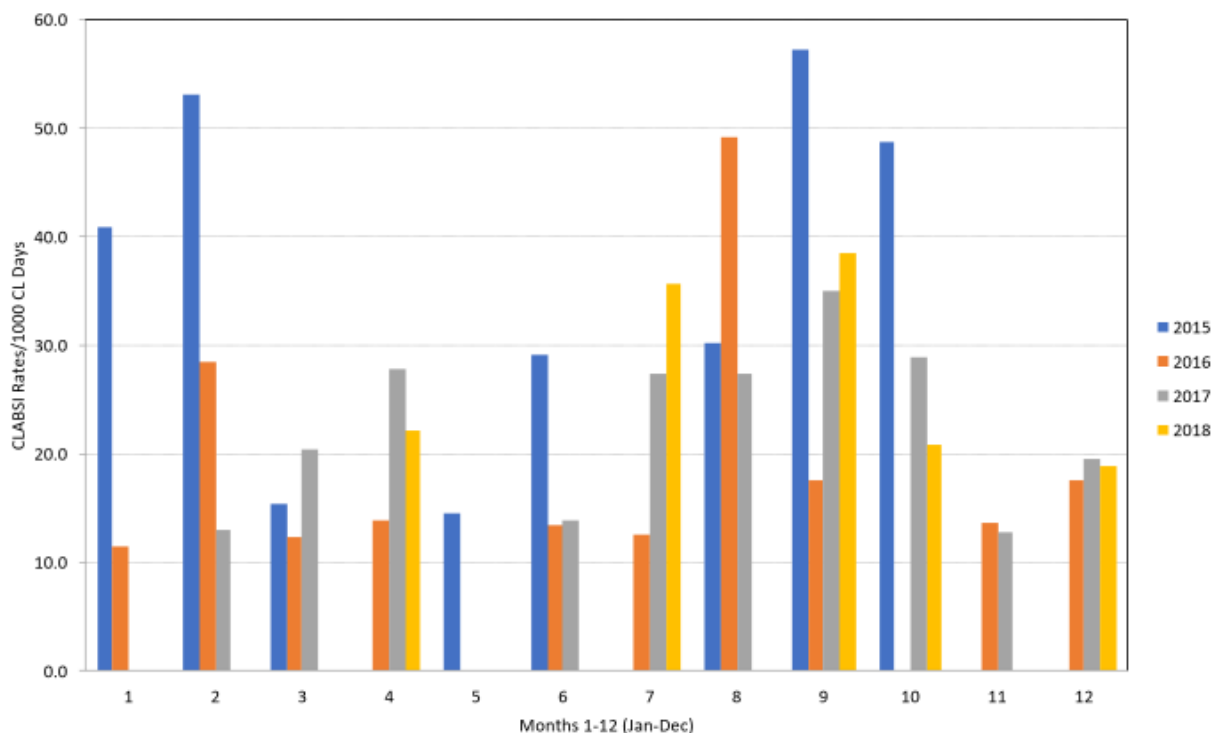


Graph 1: Cumulative Chart of CLABSI/1000 CL days (Quarterly values) with TRENDLINE from 2015-18

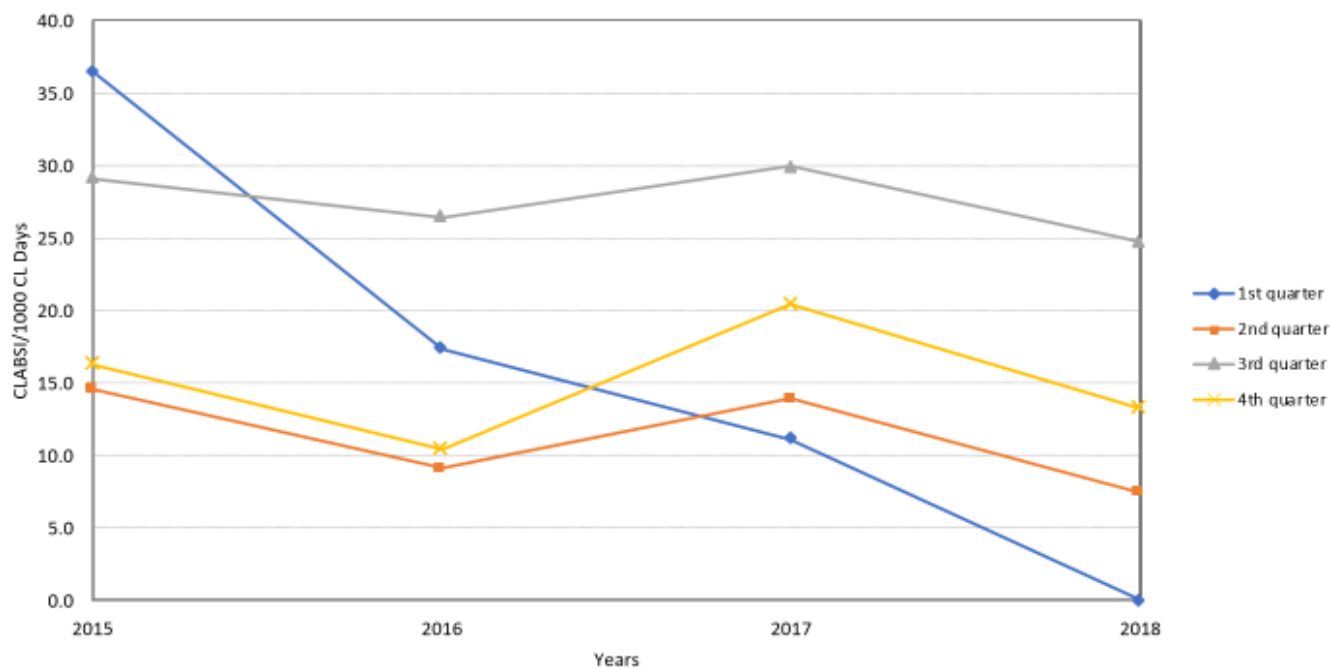




Graph 2: Monthly rates of CLABSI/1000 CL Days from 2015-2018



Graph 3: Quarterly rates of CLABSI/1000 CL days from 2015-2018





## 4: Implementation of a novel nurse-managed prolonged jaundice clinic improved service efficiency, patient experience, and continuity of care.

**Dr Rosie Anderson<sup>1</sup>**, Dr Ruchira Perera<sup>1</sup>, Dr Gopa Sarkar<sup>1</sup>

<sup>1</sup>Stoke Mandeville Hospital, Aylesbury, Buckinghamshire

### **Biography:**

*Oxford Deanery Paediatric ST1*

### **Context**

Health visitors and Midwives refer jaundiced term (>37/40) and pre-term (<37/40) babies at day 14 and 21 of age, respectively, into Stoke Mandeville (SMH) and Wycombe General Hospital (WGH) prolonged jaundice clinics as per NICE recommendations (1). This was a SHO (foundation/GP/Paediatric trainee)-led clinic with Registrar input. Due to rota design, the SHO was different in each clinic, with differing levels of familiarity and paediatric expertise; reducing efficiency, and affecting continuity of care.

### **Intervention**

A novel nurse-managed clinic was set up with 2-3 nurses trained over our 2 sites. No additional funding was required. A user-friendly online assessment and management pro-forma was created in accordance with current recommendations (1,2,3). It has a colour-flag triage assessment of warning symptoms or signs with clear outcome action instructions. Consultants were on-site if there were any queries. If needed, patients could be immediately referred into the Assessment Unit.

### **Methodology**

Retrospective case review of pro-forma and letters of all patients who attended at both sites from September 2017 to April 2018. Data collected on age at attendance, laboratory results, number of visits, diagnosis and final outcome.

### **Results**

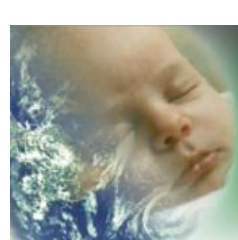
In SMH, 106 babies were seen in the 8 month period. The average age was 24 days old with an average of 1.2 visits. 24 (22.6%) needed 2 visits and 4 (3.8%) needed 3; 14 (13.2%) needing repeat blood tests. 95 (81%) were discharged, 0 had conjugated bilirubin >25µmol/L; 7 (6.6%) had total bilirubin >200µmol and 19 (17.9%) required referral for a problem identified. 10 (9.4%) had positive repeat urine cultures and were admitted for UTI treatment.

In WGH, 64 babies were seen in the 8 month period. The average age was 28 days old with an average 1.3 visits. 17 (26.5%) needed 2 visits, 0 needed 3; 8 (12.5%) needing repeat blood tests. 58 (87%) were discharged, 0 had a conjugated bilirubin >25µmol/L and 14 (21.8%) required referral for a problem identified. 4 (6.3%) had positive repeat urine cultures and were admitted for UTI treatment.

30 minutes was allocated to each baby and 85 hours of junior doctor time was saved.

### **Conclusions**

The development of a user-friendly pro-forma and utilisation of experienced nurses in the existent multi-disciplinary team have allowed prompt and appropriate assessment and treatment of prolonged jaundice in a cost-effective manner. This has improved patient experience, continuity of patient care, junior doctor time (and associated rota gaps) and is the only nurse managed prolonged jaundice clinic in TV-W-Neonatal network (North).



# REaSoN



## Citations

1. -NICE Guidance. (2016). Clinical Guideline CG98 Jaundice in newborn babies under 28 days. NICE Guidance.
2. S Hannam, M. M. (2000). Investigation of prolonged neonatal jaundice. *Acta Paediatrica* 89, 694-7.
3. S Heap, G. H. (2012). National Metabolic Biochemistry Network Best Practice Guidelines, Neonatal & Infant Jaundice in Inherited Metabolic Disorders. The National Metabolic Biochemistry Network.



## 5: Improving hypothermia in preterm infants at admission to a tertiary neonatal unit- a Quality Improvement Project

Dr Caroline Woolley<sup>1</sup>, Gurpreet Sunsoay<sup>1</sup>, Danika Simkins<sup>1</sup>, Dr Rachel OSullivan<sup>1</sup>, Dr Laura Gilbert<sup>1</sup>, Dr Pinki Surana<sup>1</sup>

<sup>1</sup>Heart Of England Neonatal Unit, Birmingham, England

### **Biography:**

ST6 Paediatric Trainee in West Midlands Deanery with a specialist interest in Neonatology.

**Introduction:** Hypothermia in preterm infants is associated with increased morbidity and mortality. The National Neonatal Audit Programme (NNAP) recommends temperature between 36.5-37.5°C at admission to the neonatal unit (NNU) for babies born at <32weeks gestation.

**Reason for change:** Our tertiary NNU was a national outlier for the NNAP measure of appropriate temperature at admission for two consecutive years 2016 and 2017 with only 39% and 52% infants respectively having normothermia; whilst the national average being 65%.

**Aims:** To improve rates of normothermia at admission for infants born <32 weeks.

**Setting:** A busy tertiary NNU

**Mechanism:** A base-line retrospective audit was conducted in Sep'18 on all hypothermic infants born <32 weeks in the financial year 2017-18 to ascertain

- reasons behind hypothermia and
- areas of practice that can be targeted to improve admission temperatures.

The audit identified that 35% of infants were hypothermic. Incomplete documentation of thermal-control measures, variable theatre temperature (21.1-25°C), procedures in delivery-suite (intubations etc.) and transportation on resuscitaire rather than in transport incubator from delivery-suite to NNU, were the main themes linked with hypothermia.

**Measures:** A quality improvement (QI) initiative with multifaceted approach was implemented by a team of nurses and doctors. Staff education was implemented to raise awareness about the importance of normothermia in preterm infants. To aid this, a poster (Fig 1) highlighting good practice was displayed around the NNU and was discussed in departmental meetings. Delivery-suite coordinator was made aware of the need of delivery-suite temperature to be 25°C at preterm deliveries.

**Method:** Following this, a prospective audit was conducted between Dec'18-Feb'19 to evaluate compliance with above measures and improvement, if any. Data was collected using an audit questionnaire.

**Results:** 21 babies included in the audit period had a mean gestation of 28+5weeks (23– 31+3weeks) and birth-weight of 1150g (500g-1790g). All had their temperature measured within the first hour of admission and 62% were normothermic, 5(24%) were hypothermic and 3(14%) were hyperthermic. 18(86%) had their temperature measured in delivery suite. 16(76%) had transport incubator used



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and 15(72%) had transwarmer. Of the 5 hypothermic babies at admission, 3 were hypothermic in delivery-suite. 4 babies were hyperthermic before transfer and of these, 3 remained hyperthermic at admission. All hyperthermic babies had transwarmers. Only 37% of babies born in theatre compared to 75% of babies born in delivery rooms were normothermic at admission. 4 of the 5 hypothermic babies were born in theatre and the mean theatre temperature during these deliveries was 23°C. Out of hour's birth, birth during weekends and time to transfer to NNU did not influence the admission temperatures.

Conclusions: Following the QI, rates of normothermia at admission improved from 52% to 62% however still remains below the national average. QI highlighted importance of establishing normothermia before transfer to facilitate normothermia at admission and hence the importance of actively measuring the temperature at the earliest point during initial stabilisation and making adjustments accordingly. Monitoring theatre temperature closely will also be part of our continuous QI project.

**T**ranswarmer **THINK** 36.5°C – 37.5°C  
**E**nsure theatre/delivery room 25°C  
**M**easure temperature **before** transfer to NNU  
**P**lastic bag for all babies <30weeks  
**E**nsure baby >30 weeks dried with **warmed towels** and wrapped in new **dry towel**  
**R**adiant heater used during resuscitation and to pre-warm resuscitaire/towels  
**A**pply a hat  
**T**ransport incubator to transfer all babies <32wks  
**U**se the **best** temperature in the **first hour**  
**R**ecord everything on Badger  
**E**veryone's responsibility







## 6: Improving the Care of babies at risk of Neonatal Hypoglycaemia.

**Dr Keshava Girish Gowda<sup>1</sup>**, Mrs Christina Rattigan, Mrs Karin Jones, Mrs Julie Herring

<sup>1</sup>Great Western Hospital, Wiltshire

### **Biography:**

*After completing the specialist Paediatric training in Severn Deanery, I have been working as Consultant Paediatrician/Neonatologist at the Great Western Hospital. Our Neonatal Unit is one of the busy LNU with annual admission rate of around 600. I have been the local lead for ATAIN, Patient Safety, Guideline improvement, QI projects and Data improvement.*

This quality improvement project was carried out in partnership with National maternal and neonatal health safety collaborative (MatNeo) under the guidance of NHS Improvement. Recognising the importance of an evidence based guideline on management of neonates at risk of hypoglycaemia, BAPM released a new framework for practice in April 2017. As per this guideline, Infants at risk of hypoglycaemia are identified at birth and placed on an appropriate care pathway, which should include regular feeding assessment and Blood Glucose (BG) monitoring. Our unit pathway had a strong focus on the timing of BG monitoring including post feed with little emphasis on infant feeding assessment. Also there was confusion and inconsistency in practice around various parameters including babies with maternal beta blocker use.

We decided to implement BAPM neonatal hypoglycaemia guideline with some modification. This venture required courage and commitment as it was not an easy task to do. This was because it involved too many changes. However, by collaborating with MatNeo team, we learnt by using a structured framework which helped to implement individual tasks into achievable measures. This was reflected on a Driver Diagrams which enabled us to test our measures as PDSA cycle. We would like to share our experience of working with the national MatNeo Collaborative team and, improvement we have achieved on this journey. Our three key findings are as follows:

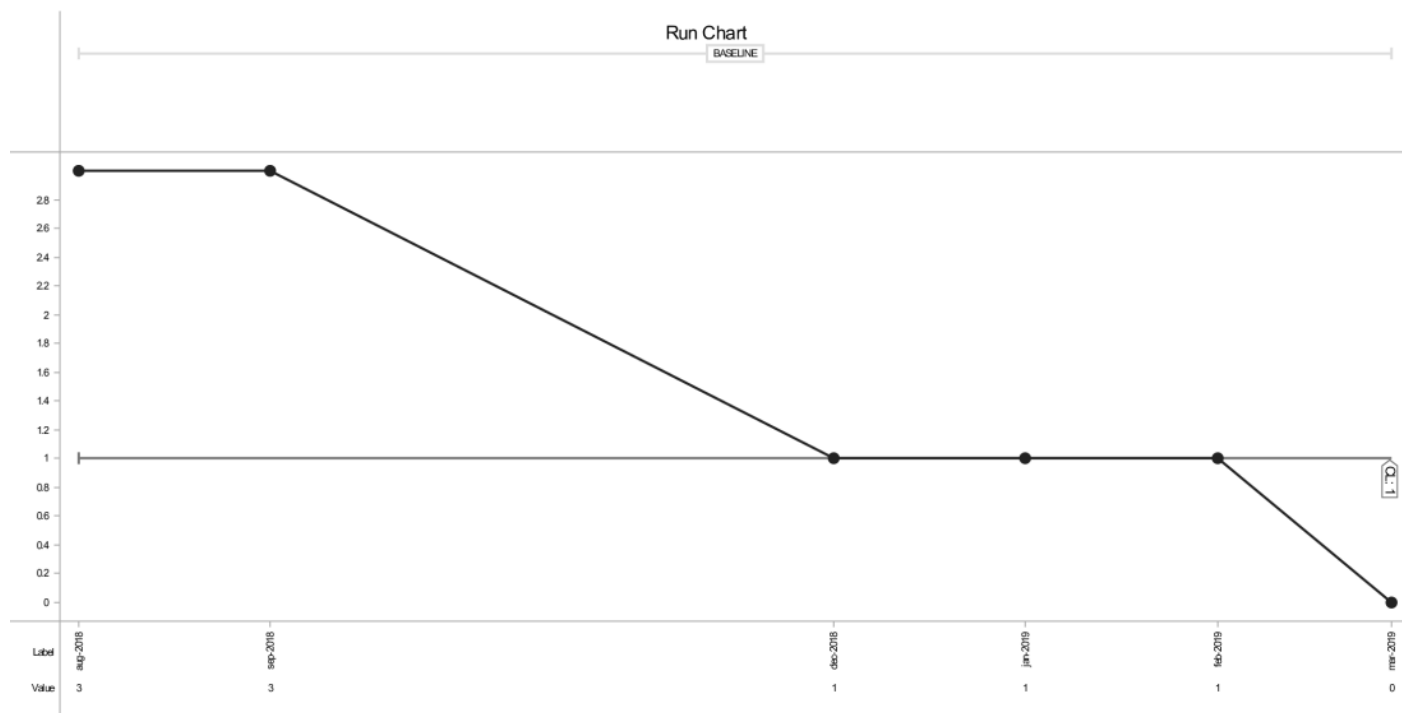
1. we have reduced number of heel prick test per baby from average 4.8 to 2.5. It is well known the long term consequences of pain in neonates as evidenced in the medical journals (1) .
2. we have reduced neonatal admission of babies from 35 weeks gestation by more than 1/3rd. This means, now more babies are staying with mother and thereby reducing maternal separation anxiety (2).
3. We have not seen re-admission of any of these babies after discharge from hospital, thereby saving cost to the NHS.

Finally, by taking part in the national QI project we learnt the importance of implementing measures on staff culture change, without which it is hard to bring any desired changes.

We succeeded in accomplishing our QI theme: "Happy babies → Happy mums → Happy staff"

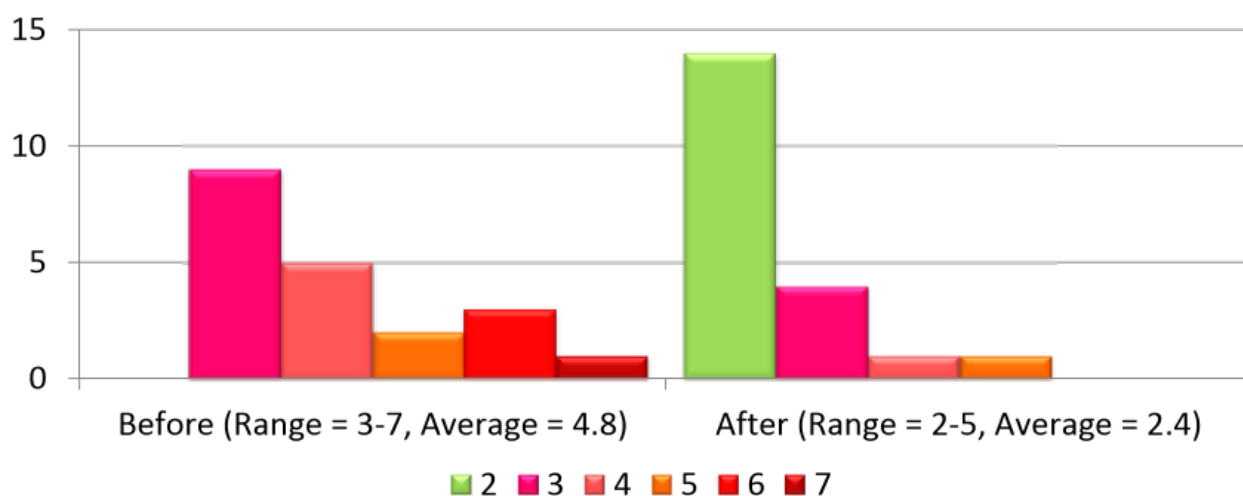
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2. The experiences of parents with infants in Neonatal Intensive Care Unit: Haydeh Heidari, Marzieh Hasanpour, and Marjan Fooladi : Iran J Nurs Midwifery Res. 2013 May-Jun; 18(3): 208–213.



## Outcome measure 1

Number of Heel tests per baby





## 7: Integrated Transitional Care facility with both midwifery and neonatal input- a QI project

Dr Rashmi Mehta<sup>1</sup>, Dr Pinki Surana<sup>1</sup>, Dr Amy Walker<sup>1</sup>, Mrs Katy Pettit<sup>1</sup>

<sup>1</sup>University Hospitals Birmingham (Heartlands Hospital), United Kingdom

### **Biography:**

Rashmi Mehta is ST6 in Paediatrics with intention of specialising in Neonatal medicine. She is in her final year of Masters in Neonatal Medicine. Her interests are debriefing, simulation, family integrated care and research.

Pinki Surana and Amy Walker are neonatal consultants and actively involved in the ATAIN project in the Trust.

Katy Pettit is the lead for The Neonatal Outreach Team and also the manager of the newly designed Transitional Care.

### **Background and Reason for Change:**

A 7 bedded Transitional Care (TC) facility had been operational since Jul'15 in our hospital. It was staffed by neonatal nurses and as a result only admitted babies whose mothers were discharged leading to separation of babies and mothers who remained admitted due to medical needs. This was evident in an audit in 2018 which revealed that 390 babies used TC between Jan-Dec'17 occupying 1239 cot-days (48% occupancy). The low occupancy was due to neonatal nursing shortfall resulting in TC closure for a third of the year (126 days), however lack of TC provision for mothers with medical needs also contributed to this.

### **Aims:**

To have a more integrated TC facility with input from both midwifery and neonatal team to avoid mother-baby separation (both term and late preterm), enhance team working and better collaboration between obstetrics and neonates.

### **Setting:**

A busy tertiary neonatal unit with large maternity department with over 6500 deliveries per annum.

### **Mechanism:**

After series of meetings with midwives, managers and neonatal team, a new TC was designed in Oct'18. It had a 4 bedded area- TC-A Bay: for babies and mothers who are discharged- staffed by neonatal nurse and 3 bedded area- TC-B Bay: for babies and mothers who remain admitted- staffed by midwife (supported by a neonatal nurse with nasogastric-tube feeding if needed). A TC operational policy was ratified jointly by the neonatal and midwifery team.

### **Methods:**

Data was collected over 6 months from Oct'19 -Mar'18 following implementation of new TC facility to assess its effectiveness and to identify difficulties, if any. A mixed qualitative and quantitative study was also conducted in Feb'19.

### **Results:**

193 babies were admitted over 6 months utilising 711 cot-days with overall occupancy of 56%.

163 (84%) babies were admitted in A Bay compared to 30 (16%) in B Bay. The TC was closed for only one eighth of a year (22 days).

39 (20%) were born late preterm (34<sup>0</sup>-35<sup>6</sup> weeks)

89 (46%) babies were admitted for establishing feeds whilst still being fed by nasogastric-tube feeds (commonest reason for admission), followed by 60 (16%) for jaundice. Other reasons for admission were to build the confidence of the parents of very preterm infants prior to discharge home, babies with complex medical conditions, those needing feeding support and intravenous antibiotics.

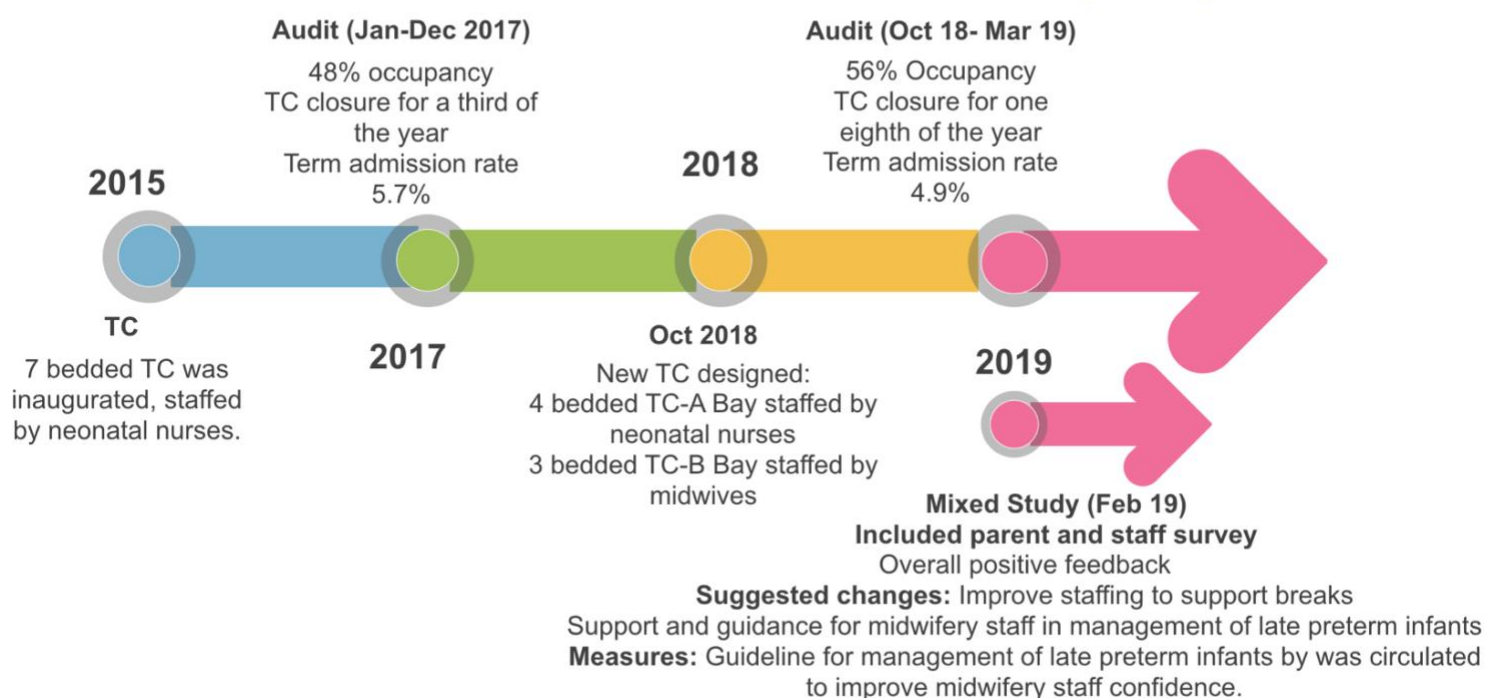
The term admission rate declined from 5.7% in 2017 to 4.9% between Oct'18-Mar'19.

Parent and staff feedback was overall positive from the survey in Feb'19. The main areas highlighted for change following the survey were: to improve staffing on TC to support breaks and need for guidance and support for midwifery staff in management late preterm infants.

## Discussion:

Having an integrated approach enhanced the efficiency of TC facility by improving occupancy and avoided frequent closures. It boosted team working between obstetrics and neonates. Teething problems were identified following staff and parent survey. A parent leaflet was introduced and guideline for management of late preterm infants was circulated to improve midwifery staff confidence.

## TRANSITIONAL CARE (TC)





## 8: Look after yourself and your colleagues – Debrief!

### Steps to formalise the debriefing process on the Neonatal Intensive Care Unit

Dr Elke Reunis<sup>1</sup>, Dr Rashmi Mehta<sup>1</sup>, Dr Harsha Gowda<sup>1</sup>, Dr Imogen Storey<sup>1</sup>

<sup>1</sup>University Hospitals Birmingham NHS Foundation Trust, United Kingdom

#### **Biography:**

*Dr Mehta is ST6 in Paediatrics with intention of specialising in Neonatal medicine. She is in her final year of Masters in Neonatal Medicine. Her interests are debriefing, simulation, family integrated care and research. She passionately believes in well being of the trainees.*

#### **Background:**

76% of doctors reported encountering difficult cases which have affected them either personally or professionally. Of these, the majority reported receiving little or no formal support following these cases (Harrison R, Lawton R, Stewart K, 2014). Research shows that debriefing aids recovery and promotes resilience (Harrison R, Wu A, 2017). So why are we not routinely debriefing in neonatology? We set out to change this on our Neonatal Intensive Care Unit (NICU).

**Aim:** To create a climate for regular debriefing across the NICU multidisciplinary team.

#### **Methods:**

Kotter's 8-Step Change Model (Kotter, 1996; Fig. 1) was used over a period of 6 months from October 2018 to March 2019 in a tertiary NICU.

#### **Results:**

**Step 1:** Sense of urgency created by trainees' request for debriefs, frequency of challenging neonatal cases, and lack of evidence of debriefs being held regularly from examination of our perinatal mortality reviews.

**Step 2:** A coalition of interested trainees and consultants was formed to lead the debrief change initiative.

**Step 3:** The shared vision that regular debriefs should occur following difficult cases was established, and a strategy was devised to engage the whole department.

**Step 4:** Departmental qualitative survey of nurses, doctors and consultants was conducted to identify individuals' opinion regarding debriefing. The survey results showed us that there was a real hunger for "regular debriefs as part of everyday practice." They reported it "needs to become the norm," and we need to "make it a set thing." With this came the call to action for "more training," to "educate staff to expect debriefs," and to design a "formal debriefing protocol" and "guidelines." Staff identified the need for a culture change whereby there was "recognition of the importance" of debriefing and the request for "the culture of debrief 2-4 hours post-event."



Step 5: We delivered a teaching programme to illustrate the importance of debriefing and a stepwise approach to leading a hot debrief.

Step 6: Debrief book designed to log debriefs happening on the unit.

Step 7: Using staffs' suggestions, we created a tailored guideline for our department and introduced daily team huddles.

Step 8: We transformed our survey results into a motivational video, anonymously sharing the staff quotes with our department. The video was shown regularly to current and new staff to create awareness and highlight we value debriefs and want everyone to ask for and prioritise debriefing.

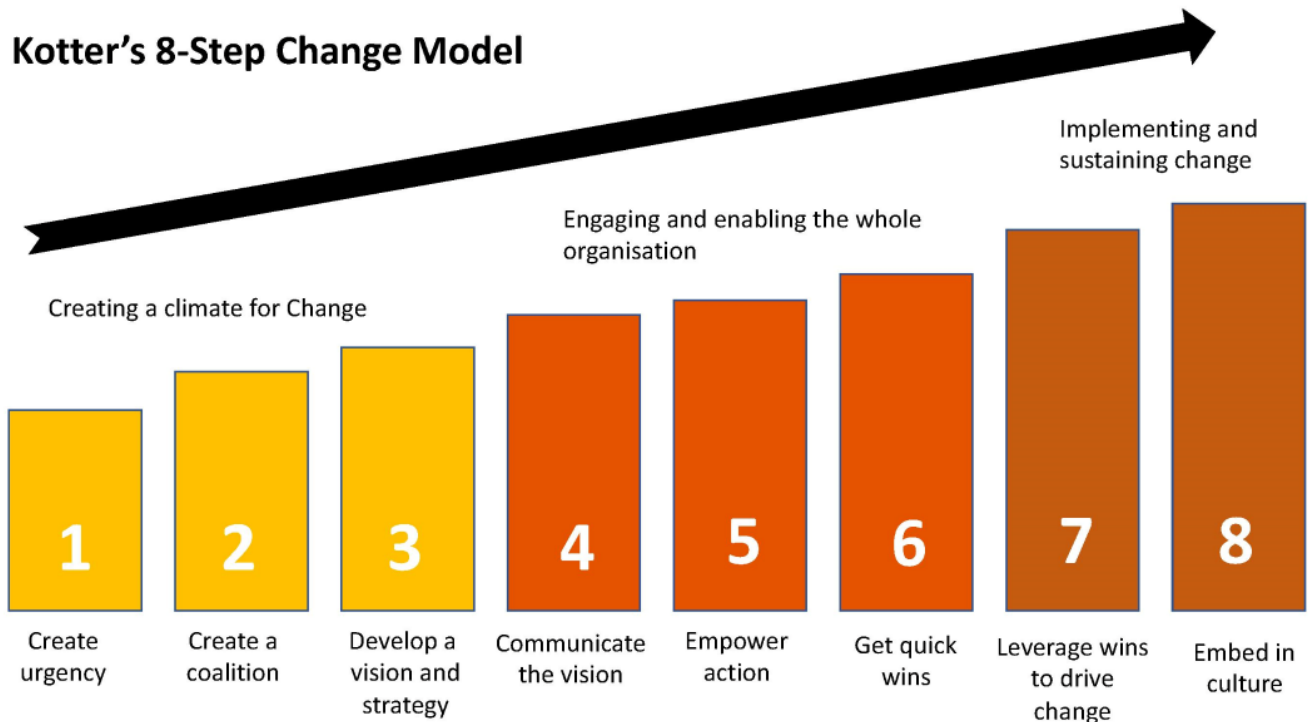
We are further sustaining these changes by auditing debrief frequency, as well as incorporating regular hot debrief training and feedback systems for debrief leaders.

Conclusion:

Debriefing needs to “become the norm.” Our approach communicated this vision, empowered staff to ask for debriefs, and informed our design of a formalised clinical debriefing guidelines.

Regular multidisciplinary team hot and cold debriefs on our NICU have received positive feedback and highlighted clinical and non-clinical events suitable for future simulation practice and training.

## Kotter's 8-Step Change Model







## 9: National Commissioning for Quality and Innovation (CQUIN) Programme to improve 2 year Neurodevelopmental Follow up rates in Extreme Preterm Infants (2016 - 2018)

**Dr Vennila Ponnusamy<sup>1</sup>**, Mrs Katherine Gumbs<sup>1</sup>

<sup>1</sup>St Peter's Hospital, Ashford and St Peter's NHS Foundation Trust, Chertsey, United Kingdom

### **Biography:**

*I am a Consultant Neonatologist in St Peter's hospital and unit lead for transitional care. My special interests are neonatal nutrition and neurodevelopment. In addition to clinical interests, I am also interested in postgraduate teaching through simulation; improving service through a number of quality improvement projects and promoting research. I lead and deliver regular in-house multidisciplinary simulations. In addition to supporting research activities in our unit, I am also doing a part time PhD in Biomarkers of Brain Injury in Newborn in Queen Mary University of London.*

### **Background:**

All preterm babies <30 weeks of gestation are recommended to have a structured neurodevelopmental follow up around 2 years of corrected age. This enables early identification of any effects of prematurity, e.g. visual /hearing /motor impairment and intellectual development, to initiate appropriate management at the earliest opportunity. It also aids neonatal units to optimise outcomes by improving care delivered in the early neonatal period.

Nationally, only 44% of babies had some follow up data entered into BadgerNet in 2010/11. This had only increased marginally to 60% in 2015/2016. Our data showed a baseline rate of 56% in 2015/2016, while the National Neonatal Audit Programme (NNAP) standard was 100%.

### **Aim:**

We aimed to improve the follow up rates of extreme preterm infants through this CQUIN programme for 2016-2018. Our trust provided infrastructure to set up and implement the quality improvement programme. In line with CQUIN and NNAP, all babies born less than 30 weeks GA and alive and discharged from our hospital were offered Bayley Scales of Infant Development-III (BSID – III) assessment between 18 to 30 months of corrected age.

### **Setting:**

Our NICU at St. Peter's Hospital is part of South East Coast Neonatal Network with over 780 total admissions and 2300 intensive care days.

### **Methods:**

Root cause analysis of our services highlighted various factors leading to poor follow-up rates. A QIP was introduced with a number of changes run in simultaneous PDSA cycles. Each method was not independent of each other. Table 1 describes these newer methods against the root causes identified in previous model.

Figure 1 shows the new standardised pathway. Good working relationships developed with professionals performing 2 year follow up in our local neonatal units (LNU) and special care baby units (SCBU) helped us to collect data on babies who had moved out of area regionally. Additionally, this helped to ensure that eligible babies transferred between hospitals prior to discharge home are

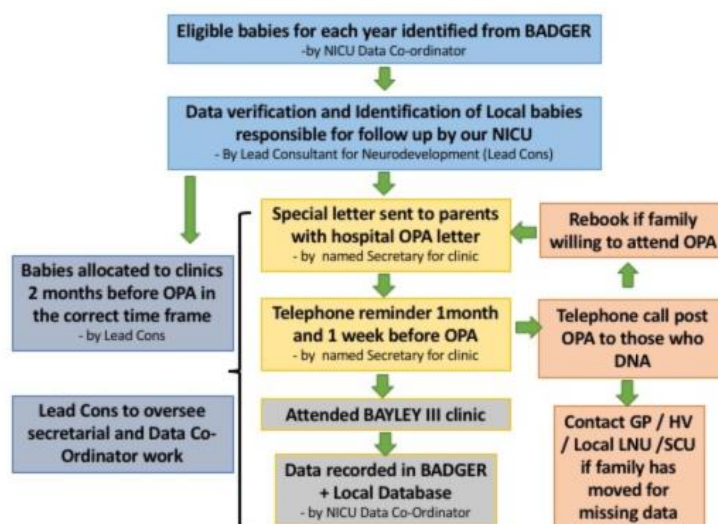
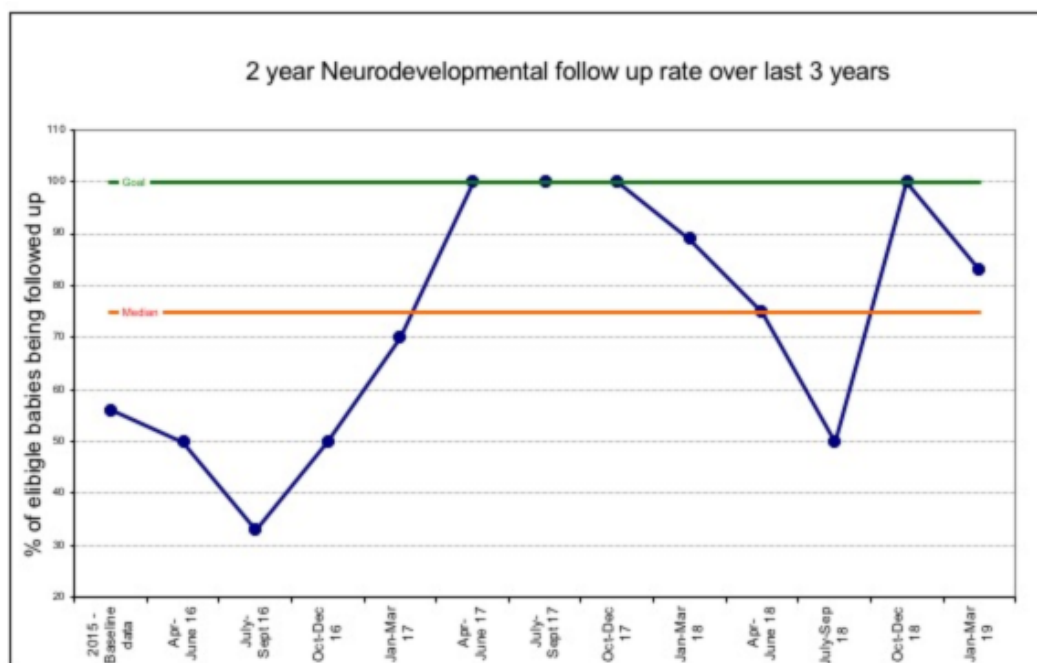
assigned correctly to their responsible units for follow up. Table 2 shows the data quality measures in line with NNAP requirements.

## Results:

As shown in the run chart (Figure 2), there was a steady improvement in the quarterly follow up rates of all eligible babies to achieve a 100% target in 12 months. Despite no change in practice, the rates fell back sub-optimally in some of the quarters. This was due to babies who had moved abroad or to different regions nationally. We were unable to get follow-up data on them despite best efforts. There were no babies who did not attend the clinic.

## Conclusion:

Since this QIP, our overall follow up rate has improved and remained the best of all level 3 NICU's in our network. This has resulted in us being able to interpret our unit's neurodevelopmental outcome data reliably. This QIP has highlighted additional practical issues relating to data collection for babies relocated further from the region. Future improvements to NHS systems and BadgerNet should aim to provide better ways of electronic contact between professionals nationally to collect missing data effectively.





**Table 1: Root causes and actions implemented**

Factors	Sub-optimal practices in previous model identified in root cause analysis	New methods introduced to improve follow up rates
<b>Clinical factors</b>	<ul style="list-style-type: none"> <li>• Performed by single clinician</li> <li>• Inadequate clinician time for clinic (needed for ward cover)</li> <li>• Lack of support or time for better organisation and running of this specialist clinic</li> </ul>	<ul style="list-style-type: none"> <li>• Additional training for 2 consultants, to enable 3 clinicians to run the clinic</li> <li>• Increased clinic frequency to once a month for all 3 consultants to provide 45 clinics a year to meet demand</li> <li>• New structured pathway introduced under the leadership of 1 consultant</li> <li>• Quarterly report produced by Lead Consultant to motivate team and record progress</li> </ul>
<b>Patient factors</b>	<ul style="list-style-type: none"> <li>• Parent's lack of awareness of need for follow up</li> </ul>	<ul style="list-style-type: none"> <li>• Additional appointment letter to explain importance of clinic review</li> <li>• Providing parents with new email for this clinic to contact to change appointment date /time as needed</li> </ul>
<b>Administrative factors</b>	<ul style="list-style-type: none"> <li>• Lack of clinic room availability</li> <li>• High DNA rate</li> <li>• Out of area babies not attending clinics</li> <li>• Poor data entry in BADGER</li> </ul>	<ul style="list-style-type: none"> <li>• Prioritised clinic due to CQUIN</li> <li>• New structured pathway with named Secretary/Consultant to oversee Bayley clinic booking</li> <li>• Reminder phone call prior to clinic</li> <li>• Contact established for local LNU /SCBU to arrange local follow up and collecting data from their local follow up</li> <li>• Training to Consultants and Data administrator to collect and record full data set from appointment</li> </ul>
<b>Financial factors</b>	<ul style="list-style-type: none"> <li>• Lack of equipment (eg – Steps /additional Kit)</li> </ul>	<ul style="list-style-type: none"> <li>• CQUIN funding to assist with equipment cost</li> </ul>



**Table 2: Quarterly Audit Measures for data quality**

Quality of Assessment
BAYLEY III for all *eligible babies
*<30 weeks gestation
*Discharged from our NICU
*Alive at 2 years of age
*Includes those who moved out of area, but within UK
Performed between 18 months to 30 months of corrected age
Data entered in Neonatal BADGERNet
Data entered in Local Database
Additional Data entered in 2 year follow up in Neonatal BadgerNet
Neuromotor
Malformation
Social
Resp/CVS
GI
Renal
Neurology
Auditory
Vision
Communication



## 10: Neo-train Quality Improvement initiative to improve EOSIN (Early onset sepsis in neonates) care as per NICE recommendation

Dr Anoj Oommen<sup>1</sup>, Dr Kamini Yadav<sup>1</sup>, Dr Nitesh Singh<sup>1</sup>, Dr Divya Saxena<sup>1</sup>

<sup>1</sup>Leicester Royal Infirmary (Neonates), Leicester, United Kingdom

### *Biography:*

Currently a paediatric trainee (ST3) at Kettering General Hospital under East Midlands Deanery. Recently Completed a rotation at Leicester Royal Infirmary in Neonates. Primary qualification from India (MBBS,DCH,DNB) and membership to the Royal College of Paediatrics and Child Health (MRCPCH).

*Interests include medical education, simulation training, paediatric intensive care and low resource setting medicine.*

Neo-train Quality Improvement initiative to improve EOSIN (Early onset sepsis in neonates) care as per NICE recommendation

### Background:

Neonatal sepsis is a serious systemic infection and is a leading cause of neonatal morbidity and mortality. Recognizing neonates at risk of sepsis and early identification of sepsis followed by immediate treatment is key to reducing adverse outcomes.

National Institute of Clinical Excellence guidelines on neonatal sepsis recommends administration of antibiotics within 1 hour of suspecting sepsis. Achieving this target can be challenging in a busy NICU. Adult and pediatric services have addressed this by introducing 1-hour sepsis care bundles.

### Aim:

To improve adherence to NICE sepsis standard for administration of antibiotics within 1 hour of suspecting sepsis and following antibiotic stewardship by:

1. Studying workforce pathways and system tools to identify barriers.
2. Using Plan-Do-Check-Act quality improvement initiative to change the focus from the task being individual dependent to a robust system dependent.

### Methodology:

A quality improvement methodology of process mapping and fishbone analysis was used to study workforce pathways and system tools to identify barriers. Four Plan-Do-Study-Act (PDSA) cycles were run in two six monthly blocks between 02/2017 to 07/2017 and 08/2018 to 01/2019.

Cycle 1: Baseline issues and QI strategy defined.

Issues identified: delay in time to treatment, measurement of second CRP, reporting of blood culture within 36 hours.

Action: An environmental restructuring, a Sepsis Screening Pit-stop was implemented. An educational initiative 'Neo Train' was started and posters displayed in clinical areas.

Cycle 2: Significant delay in transport and processing of blood culture were leading to delay in reports.

Action: Persuasion of stakeholders: pottering services and microbiology department to streamline this process to obtain blood culture results within 36 hours.



Cycle 3: Pareto chart based staff survey were used to understand aspects of human behavior. Incomplete documentation identified.

Action: Staff education undertaken. A sepsis booklet was created and implemented.

Cycle 4: Time of 36 hours blood culture reports not available for babies on postnatal ward.

Action: Negotiation with microbiology department to further improve their reporting.

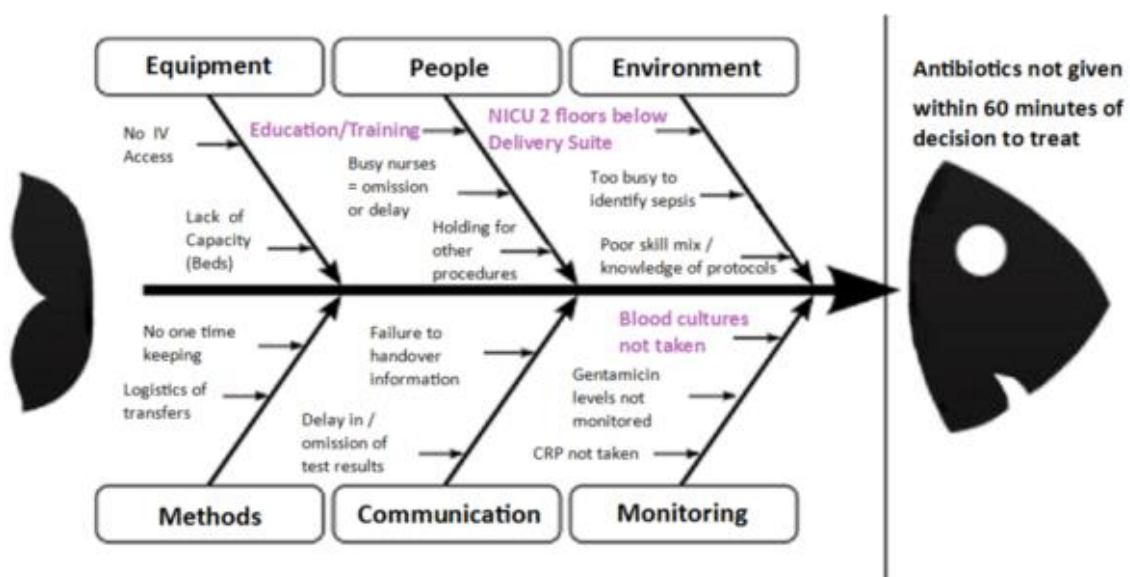
## Results:

1. The outcome improved the average time of antibiotic administration from 120 minutes to 90 minutes.
2. Early reporting of blood culture results of neonates from postnatal ward which helped in early discharge from the ward when cultures were negative
- 3 Improved awareness among staff about the importance of completing sepsis screen within 1hour
- 4 Changes implemented to bring about early delivery of blood culture bottles to the lab.

## Conclusion:

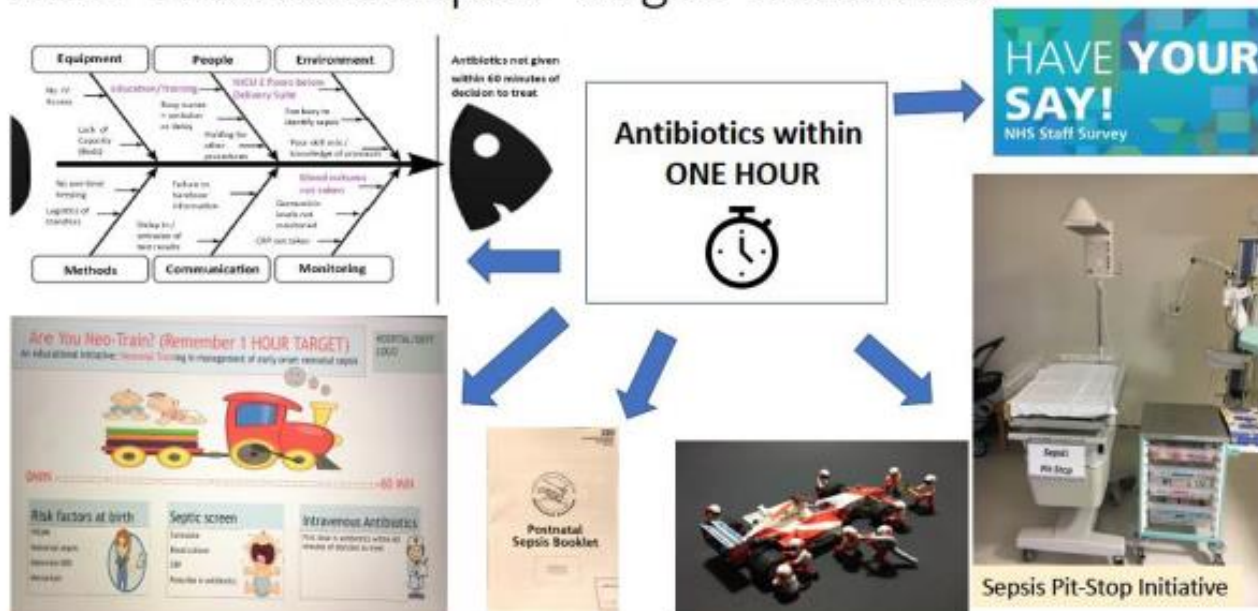
1. A Plan-Do-Check-Act quality improvement initiative for service innovation was used to improve care pathway for babies with risk factors or concerns regarding neonatal sepsis.
2. Value stream mapping helped to identify barriers and potential key areas for improvement.
3. Key feature for the success of the Neo-train Quality Improvement initiative was its use of a multidisciplinary team approach to strategically design and deliver the implementation program.

## Fishbone diagram (following process mapping)

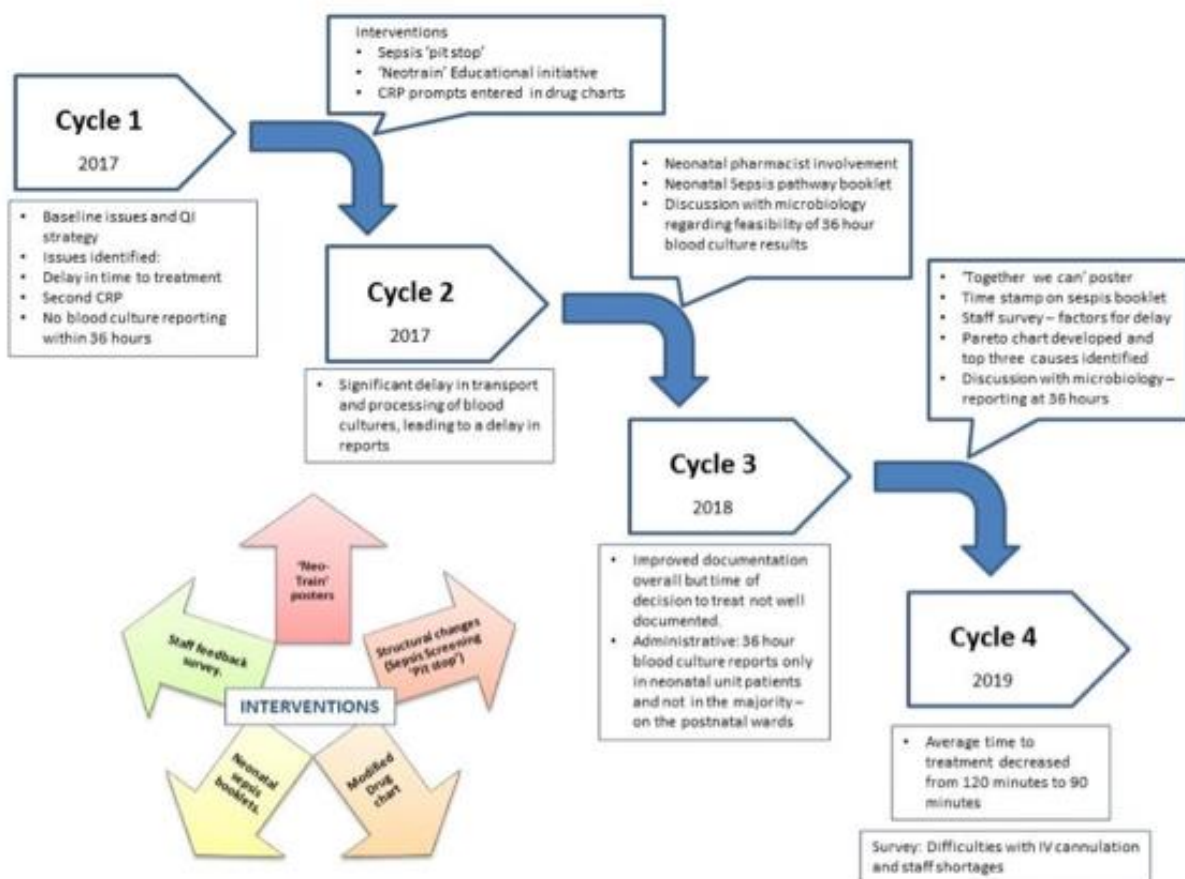




## NICE 'Neonatal sepsis' target- Initiatives



## Plan-Do-Study-Act (PDSA) cycles





## 11: ORAL SUCROSE for heel prick procedure - Are we complying with evidence-based guidelines – AN AUDIT LOOP

**Dr Asma Yasmeen<sup>1</sup>**, Dr Allan Jackson

<sup>1</sup>Princess Royal Maternity Hospital, United Kingdom

### **Biography:**

*After doing my fellowship in Paediatrics, I developed interest in Neonatal Medicine. I was doing my residency for fellowship in Neonatology in Pakistan when got opportunity to come to UK as IPTS Senior trainee in Neonatal Medicine. I have worked in Neonatal medicine mainly and currently working as Specialty Doctor. Also recently got CESR in Neonatal Medicine and looking for consultant jobs in Neonatal Medicine*

### **Background and Standard:**

There is high-quality evidence that sucrose reduces different measures of newborn pain during common minor painful procedures like heel pricks, intramuscular injections and venepuncture. The 2016 Cochrane review and our local West of Scotland Neonatal MCN guidelines advise routine use of oral sucrose before minor painful procedures along with non-nutritive sucking and other comfort measures. Breast milk where available can also be used.

### **Initial Data Collection:**

We used a questionnaire (Figure 1) to collect information on existing knowledge and use of oral sucrose in the Princess Royal Maternity Hospital, Glasgow, a level 3 Neonatal unit, at the beginning of 2018. The questionnaire was used to collect data from medical and nursing staff from the Neonatal unit (NNU), Labour Ward (LW), and two postnatal wards (reported as PNW 1 & 2).

### **Initial Results:**

A total of 54 questionnaires were completed, (LW 16, PNW1 15, PNW2 8, NNU 15). Ninety four percent answered correctly that a heel prick is a painful procedure. Eighty one percent felt that oral sucrose can reduce pain during heel pricks. Most of the heel pricks were being done in the NNU followed by PNWs. Frequency of oral sucrose use was categorised as “never”, “infrequently” (<50% when procedure done), “frequently (>50%)” and “always”. Overall, 33% responses accounted for “always” and “frequently”. In LW, the least number of heel pricks were done (Graph 1), and they had minimal information about sucrose use. NNU showed good compliance with the guidelines and oral sucrose was almost always used by medical and nursing staff as 100% of responses from NNU advised that they use sucrose either “frequently (>50%)” or “always”.

### **Conclusions:**

- While sucrose was routinely used in the Neonatal Unit, improvements were required in staff knowledge and sucrose utilisation in the other areas
- Measures to increase awareness and facilitate its use were required

Measures for Improvement and Education in LW and PNWs - in conjunction with practice development nurse and senior staff, consisting of the following:

- Face to face teaching sessions
- Posters in clinical areas (Figure 2)
- Educational Video with link on desktop <https://www.youtube.com/watch?v=0A2YuE-5K1U>
- Regular reminders on midwifery handover
- In addition, the following practical support was implemented:
  - o Sucrose supply ensured in clinical areas
  - o Routine prescription by doctors encouraged



Re-Audit: Questionnaire shown in Figure 3.

Total 60 responses from all the areas collected. Overall, 66% responses advised using sucrose “always” and “frequently” during heel pricks as compared to 33% in the initial audit, shown in Graph 2. Also 100% of staff considered heel prick a painful procedure and 97% felt that sucrose can act as analgesic (3% unsure). Staff reported reasonable level of knowledge about oral sucrose use, Graph 3.

#### Conclusion:

There was marked improvement in staff knowledge and awareness. The use of sucrose was improved markedly in PNWs.

To support this improvement further, the MCN procedural analgesia guidelines have been revised to be less focused on neonatal unit practice and more encompassing of all areas where neonatal care is delivered.

**Figure 1: Questionnaire (Initial Audit)**

Date \_\_\_\_\_  
Designation. \_\_\_\_\_

Mostly work in:  
Labour Ward ☐  
PNW 68 ☐  
PNW 72 ☐  
NNU ☐

1. How often do you do Heel Pricks?  
More than one per shift ☐  
Once per shift ☐  
Once per week ☐  
Rarely ☐

2. Do you think Heel Prick is a painful procedure?  
Yes ☐  
No ☐

3. What do you use to comfort the infant during heel prick?  
Swaddling ☐  
Pacifier ☐  
Routine Care ☐  
Breast feeding ☐  
Sucrose ☐  
Facilitated Tucking ☐  
A combination ☐ \_\_\_\_\_

4. How often do you use sucrose for Heel Prick on average?  
Never ☐  
Infrequently (<50% of time) ☐  
Frequently (>50% of time) ☐  
Always (100%) ☐

5. Do you think oral sucrose should be prescribed?  
Yes ☐  
No ☐

6. Do you think oral sucrose can help in reduction of pain during Heel Prick?  
Yes ☐  
No ☐



## Figure 2: ORAL SUCROSE FOR HEEL PRICK



A Yasmeen, A Jackson

### Background

- Physiological changes caused by pain may contribute to the development of morbidity in neonates.
- Clinical studies have shown that administration of pain relief by non-pharmacological measures (such as holding, swaddling and breastfeeding) and pharmacological measures (such as sucrose) can reduce these changes in physiological parameters and pain score measurements<sup>1</sup>.
- According to the Cochrane Review, sucrose is effective for reducing pain from procedures like heel prick, venesection and intramuscular injection in both preterm and term infants<sup>2</sup>.
- Administration of sucrose had similar effectiveness as breastfeeding for reducing pain<sup>1</sup>.
- No serious side effects or harms have been reported<sup>2</sup>.

### Use of Sucrose for procedural pain

- The mechanism involved is an orally mediated increase in endogenous opioids.
- If sucrose is given directly into the stomach via a nasogastric tube, there is no analgesic effect.
- There is a 2- minute peak effectiveness following administration which will provide short term pain management.
- The affect may be prolonged by administering 2 or three repeat doses at 2 minute intervals during the procedure.
- The effect of sucrose is enhanced when combined with a concomitant breast feeding, or where this is not possible, non-nutritive sucking using a dummy.
- Sucrose action is temporary and analgesic, it is not a sedative for the irritable infant<sup>3</sup>.
- Comfort measures such as swaddling, tucking and kangaroo care should be incorporated as appropriate<sup>4</sup>.

### Information for parents

There is good quality evidence by different studies that sucrose has calming and pain relieving effects in term and preterm newborns and is safe so recommended for minor invasive procedures<sup>2</sup>.



### Dose of 24% oral sucrose and water solution

Gestation	Dose *
34-36 wks	0.25ml
Term	0.5ml

\*Max 4 doses per procedure, can repeat every 2 min

### Contraindications

- Infants with known fructose or sucrose intolerance, suspected necrotising enterocolitis (NEC), paralysed and sedated
- Parents should be advised that sucrose should not be used as an analgesic at home<sup>3</sup>.

### References:

1. Shah PS, Herbozo C, Aliwalas LL, Shah VS. Breastfeeding or breast milk for procedural pain in neonates. Cochrane Database of Systematic Reviews 2012, Issue 12. Art. No.: CD004950. DOI: 10.1002/14651858.CD004950.pub3
2. Stevens B, Yamada J, Ohlsson A, Haliburton S, Shorkey A. Sucrose for analgesia in newborn infants undergoing painful procedures. Cochrane Database of Systematic Reviews 2016, Issue 7. Art. No.: CD001069. DOI: 10.1002/14651858.CD001069.pub5.
3. West of Scotland Guidelines: Oral sucrose for procedural pain
4. West of Scotland Guidelines: Capillary blood sampling



## Figure 3: Questionnaire (Re-Audit)

Date \_\_\_\_\_

Designation \_\_\_\_\_

Please tick box as appropriate

Mostly work in:

Labour Ward ☐

PNW 68 ☐

PNW 72 ☐

NNU ☐

1. Do you think Heel Prick is a painful procedure?

Yes ☐

No ☐

2. Do you think oral sucrose can help in reduction of pain during Heel Prick?

Yes ☐

No ☐

3. How Often do you use sucrose for Heel Prick on average now?

Never ☐

Infrequently (<50% of time) ☐

Frequently (>50% of time) ☐

Always (100%) ☐

4. How likely are you to use oral sucrose for heel pricks in future?

Never ☐

Infrequently (<50% of time) ☐

Frequently (>50% of time) ☐

Always (100%) ☐

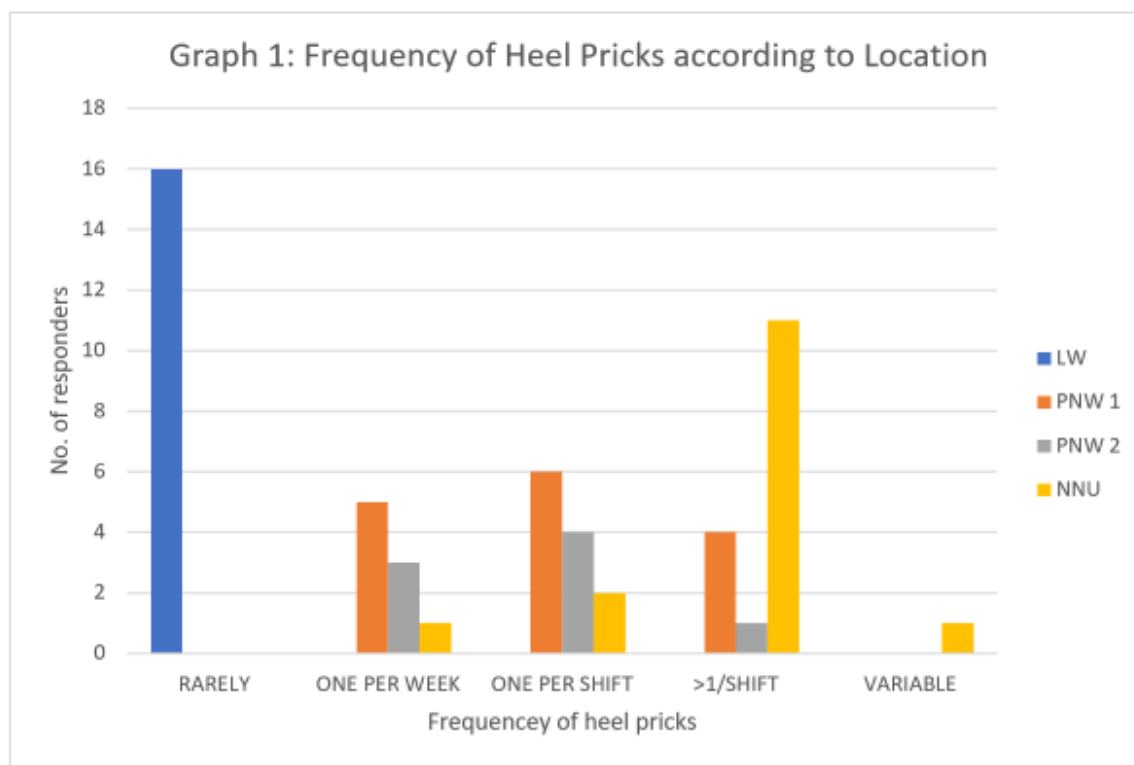
5. On a scale of 1-5 (1 being least informed, 5 being very well informed), how well informed are you about use of oral sucrose?

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

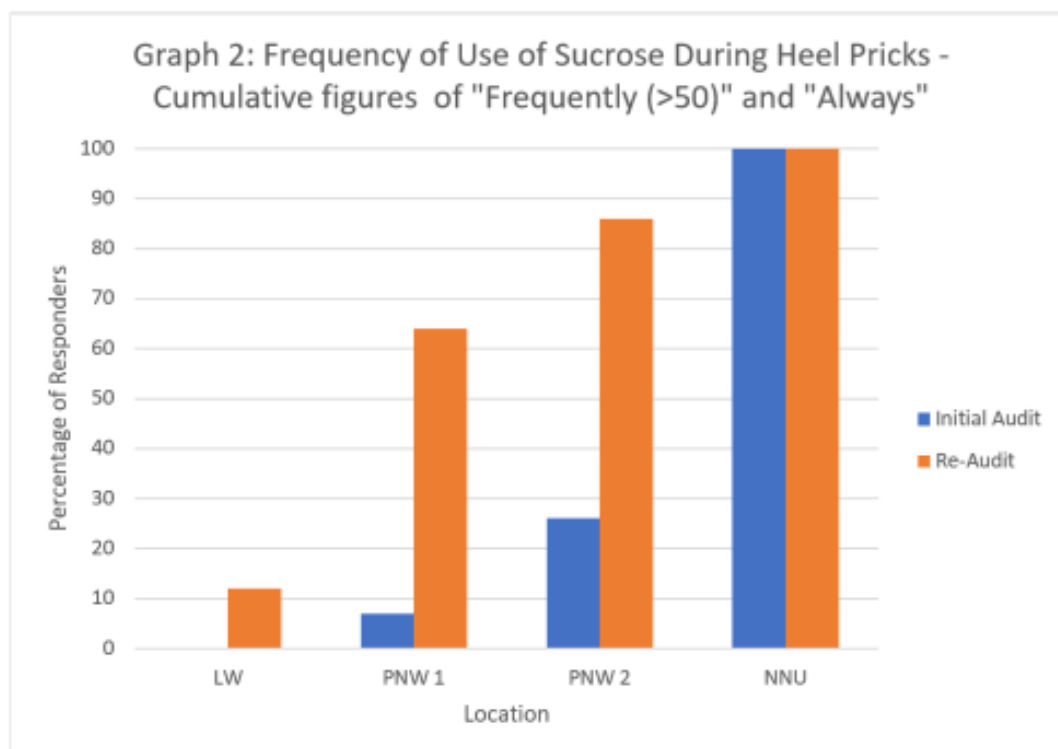
6. Any suggestions/recommendations /feedback!



Graph 1



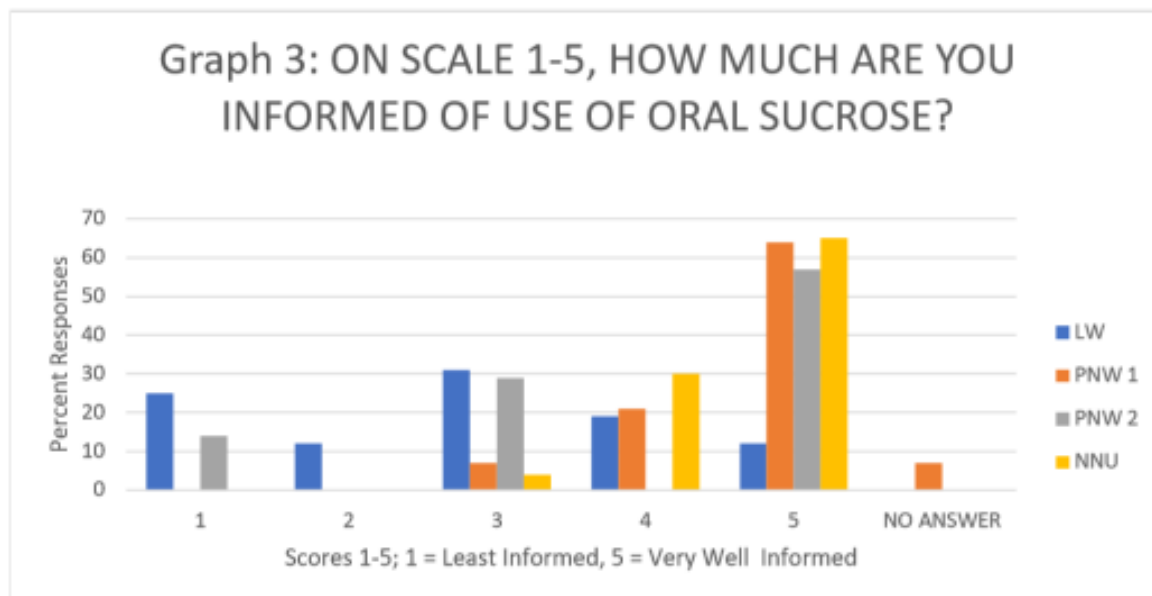
Graph 2







Graph 3





## 12: Prevention of Significant Hypothermia (POSH) in preterm infants $\leq 32$ weeks gestation.

Dr Nicola McMullan<sup>1</sup>, Lucy Bradley<sup>1</sup>, Cora Hiatt<sup>1</sup>

<sup>1</sup>University Hospital Coventry, United Kingdom

### **Biography:**

*West Midlands paediatric trainee with interest in neonatal GRID*

### Background

Effective care during stabilisation is crucial for ensuring good neonatal outcomes of preterm babies. Hypothermia during stabilisation is associated with increased neonatal mortality and morbidity, including an increased risk of necrotising enterocolitis, intraventricular haemorrhage, respiratory distress syndrome and hypoglycaemia. We recorded a high rate of hypothermia on admission in preterm babies  $\leq 32$  weeks gestation on our level three neonatal unit. We aimed to improve admission temperatures in this group through implementation of a thermoregulation bundle.

### Method

This quality improvement project has run since December 2018 with the introduction of a thermoregulation bundle, POSH (prevention of significant hypothermia) in preterm infants. Pre-intervention data was collected retrospectively for the preceding three-month period. Changes were subsequently implemented including the delegation of a team member at resuscitation to manage thermoregulation, with the routine use of polythene bags, hats and nesting. Other guidance included recording temperature on delivery suite prior to transfer to enable appropriate intervention, including the use of exothermic mattresses (if temperature less than 37°C) to be implemented. Delivery room temperatures were monitored, and ventilation covers in theatre placed to reduce draughts. No-entry signs were placed on doors to prevent inappropriate interruptions to the stabilisation room. Neonatal staff were educated through posters, newsletters, and the daily huddle. Data during the implementation process was collected prospectively between December 2018 and April 2019.

### Results

Pre-intervention analysis showed that in the three months prior to implementation 44 babies  $\leq 32$  weeks gestation were delivered. Of these babies, 20.45% had an admission temperature below 36.5°C.

Since introduction of the bundle, between December 2018 and April 2019, 51 babies  $\leq 32$  weeks have been delivered. Birth gestation ranged between 23+5-32+0 weeks (mean 29+6), with a mean birth weight of 1039g (range 490-2160g), and 5 minute Apgar of 8 (range 4-10). 66.67% of babies were born via caesarean section.

Over this period, the incidence of hypothermia has reduced from 20.45% to 3.92%. The lowest admission temperature was 36.3°C. There has been an increase in rates of hyperthermia  $>37.5^\circ\text{C}$  from 11.36% to 21.57% (5.8% above 38°C). Overall 74.5% of babies had a temperature within recommended range of 36.5-37.5°C. This is above the national NNAP (National Neonatal Audit Programme) average of 64% in 2017.

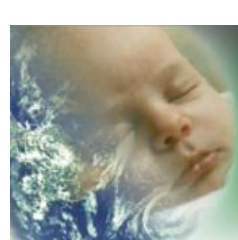


# REaSoN



## Discussion

This thermoregulation bundle has resulted in sustained improvement in admission temperatures of preterm infants since December 2018. Increasing awareness and staff education of appropriate intervention has had a significant positive impact in reducing hypothermia in preterm babies  $\leq 32$  weeks admitted to the neonatal unit. The next step of our project is to address the increase in hyperthermia, particularly over  $38^{\circ}\text{C}$  that has been noted since the bundle was implemented.



## 13: Quality Improvement project on Early onset Neonatal Sepsis: Is it possible to achieve "antibiotic administration within an hour of decision making"?

Dr Keshava Girish Gowda<sup>1</sup>, Dr Karthiga Subramaniam<sup>1</sup>, Dr Harriet Nicholas<sup>1</sup>

<sup>1</sup>Great Western Hospital, Wiltshire

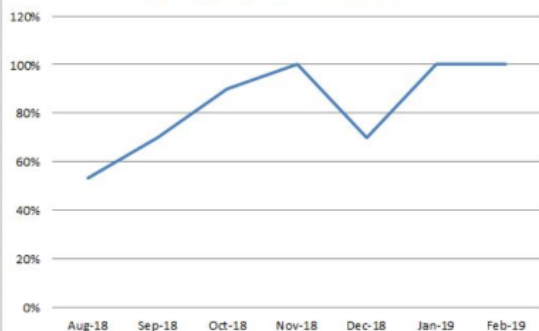
### **Biography:**

*As part of my F2 placement at Great Western Hospital I spent six months in Paediatric department last year. I was keen on leading quality improvement project and the audit presented in May 2018 on Early Onset Neonatal Sepsis made me to take this project as a lead champion. Happy to see the changes we wanted. The additional time and effort towards the project feel worth it. I now secured my GP placement to commence from September 2019.*

Early onset neonatal sepsis is a significant cause of morbidity and mortality in new-borns. As per the literature search, the incidence is estimated to be between 1 to 1.5/100 births in England and accounts for 23.4% neonatal deaths globally. In spite of it being so common it is difficult to recognise early as it has a varied clinical presentation which are at times very subtle initially. By the time, infants show signs of infection, it could be too late to prevent or reverse the outcome. Recognising this NICE has come up with a comprehensive clinical guideline in 2012 aiming at standardising the management of such infants. GWH adopted the guideline in April 2013. Since then we carried out annual auditing process, only to see failing to comply with the standard of administering the antibiotic within one hour of decision making. Audit in 2014 showed 63% of eligible babies receiving antibiotic within an hour. However this number gradually declined to "zero percent" in 2018. This was in deed not an outcome we were expecting. Hence carried out a process mapping to identify where the delay is and that triggered us to bring lot of changes within the system including measure to improve safe and effective delivery of care via staff culture change. In August 2018, we made this as our unit's priority and launched a "quality improvement" project. We set out our goals on a Driver Diagram and measures were identified as a PDSA cycle. As part of staff culture change we involved multidisciplinary team including neonatal nurses, medical doctors and midwifery team. Ideas were implemented as we went along. To mention few, under increase awareness among midwifery team we displayed QI pathway in staff notice boards, email messages sent and also this was on the maternity divisional newsletter. We also used social media as a tool to spread the awareness. We set up a one stop clinical area for IV access and then administering antibiotic. Measures were put in place to strengthen the antibiotic ward rounds. We also recognised the importance of documentation as a key element to achieve desired outcome. We are happy to show the drastic improvement in our documentation to 100%. The percentage of babies receiving antibiotic within an hour has increased from 0% to 70%. We would like to share our journey of improvement with the wider medical faculty and hope these ideas could help those units who are going through the similar struggle.

Month	Percentage with in one hour	Percentage Documentation
Aug-18	21%	53%
Sep-18	20%	70%
Oct-18	50%	90%
Nov-18	30%	100%
Dec-18	30%	70%
Jan-19	70%	100%
Feb-19	60%	100%

Percentage Documentation



Percentage with in one hour

