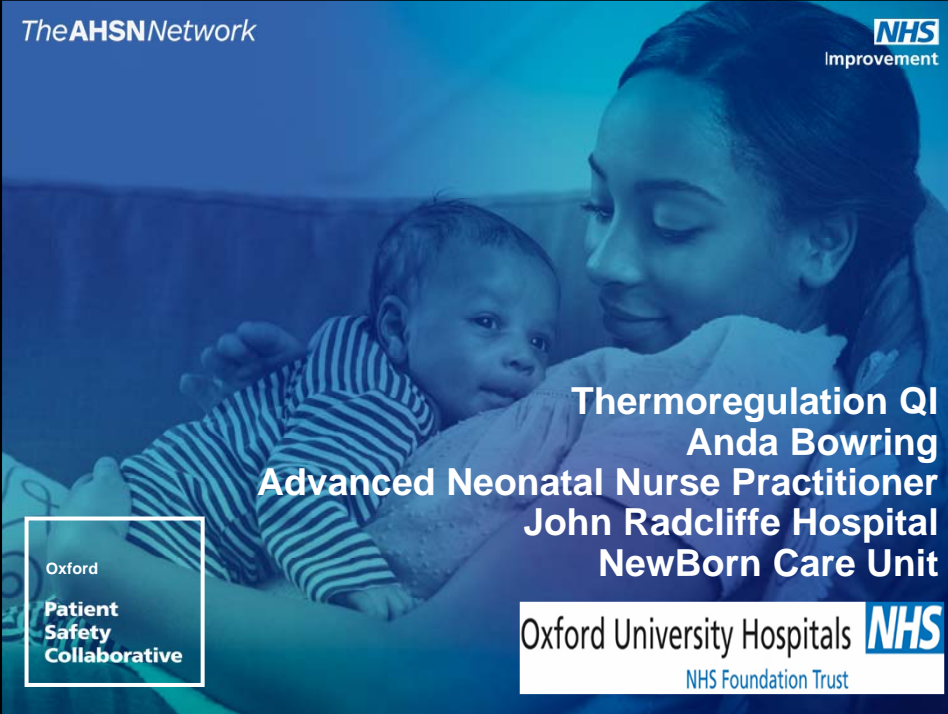


TheAHSNNetwork **NHS** Improvement



Thermoregulation QI
Anda Bowring
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NewBorn Care Unit

Oxford
Patient Safety Collaborative

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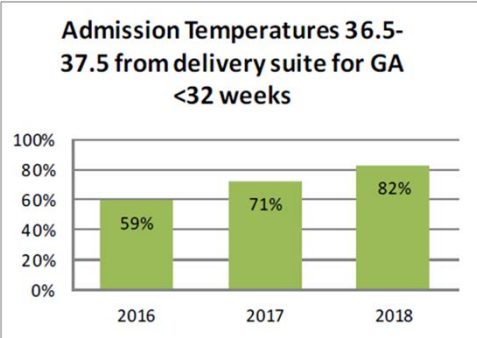
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Rationale:
Improve Early Thermal Care for Preterm Infants

Aim:
By 1st August 2018, 90% of preterm neonates < 32 weeks gestation born in Delivery Suite will have a temperature between 36.5°C – 37.5°C on admission to the Neonatal Intensive Care Unit.

We have been working on this project for two years with great improvements - and our overall performance year to date has improved.


Admission Temperatures 36.5-37.5 from delivery suite for GA <32 weeks



Year	Percentage
2016	59%
2017	71%
2018	82%



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How did we do it?

- Guidelines/Care Bundles
- Plan, Do, Study, Act (PDSA) cycles
- Teamwork
- Education
- Perseverance

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Initial QI Care Bundle 2017

- Data Review (gestation/ weights, hot or cold, admitted from)
- Detailed thermal care guidance for whole journey from birth to neonatal unit
- Servo-controlled Temperature monitoring
- Measure temperature following stabilisation in delivery suite
- Staff Training
- Standardised Case Review Template for temperatures outside range
- Monthly Staff Feedback

Additions to Care Bundle 2018

- QI Team widened to include midwives
- More formal PDSA cycle established

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Guidelines/ Care Bundles

- **February 2016-** Delayed cord clamping and increase use of transwarmers
- **February 2017-** Thermal care during stabilisation and resuscitation with transwarmer use.
- **February 2017-** Thermal care review forms

Delivery Suite Management < 32 weeks gestation

DELAY CORD CLAMPING FOR 60s IF STABLE

Whilst on cord:
Strict temperature control measures.

Thermal Care Journey	
	Prior to Cord Clamping
	During Stabilisation/ Resuscitation
	During Skin-to-Skin Care
	During Transport to NNU

THERMAL CARE INTERVENTIONS – BIRTH TO NEONATAL UNIT ADMISSION		
THERMAL CARE DURING DELAYED CORD CLAMPING		
<32 weeks OR <1500g	32-35 weeks OR <2.5kg	36+ weeks OR >2.5kg
Aim for Delivery Room Temp 22-24°C	Aim for Delivery Room Temp 22-24°C	
Avoid draughts & air conditioning	Avoid draughts & air conditioning	
Transwarmer	Dry the baby	
Plastic Bag	Skin-to-skin care	
Dry head and cover with hat	Cover with dry warm towel	
Attach continuous temp probe	Dry head and use hat	Dry head & cover
THERMAL CARE DURING STABILISATION/ RESUSCITATION		
Pre-warm resuscitator (100%)	Pre-warm resuscitator (100%)	
Transfer baby on transwarmer to resuscitator	Turn heater temperature to 30% with baby on resuscitator	
Attach temperature probe to resuscitator	Ensure baby's skin is exposed to the heater & DO NOT cover	
Change temperature to warm control	Measure axillary temperature once stabilised & adjust heat Continue to measure temperature every 5 minutes	



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PDSA's:

1. Hats on resuscitares (1/11/2017)
 - Add 3x size woollen hats to resuscitator checklist
 - Big 4 poster distribution
 - Staff education/ e-mail communication
2. Room thermometers in DS rooms 1-3 (1/12/2017)
 - Some got stolen, not replaced.
 - Planned preterm deliveries should take place in room 1-3, as closest distar NICU
3. Incubator (shuttle) for transfer from DS to NICU (1/01/2018)
 - Too bulky and complex transfer.



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PDSA's:

4. Sterile plastic bags for CS deliveries (1/02/2018)

- Staff happy to use
- Embedded in practice

NeoHelp- Neonatal Heat Loss Prevention Suit



5. Reduced use of transwarmers (1/02/2018)

- Mostly used after 5 minutes

6. Skin probes on resuscitate (1/02/2018)

- Mostly used if nurse is present





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PDSA's:

7. Thermal Care Grab bags between room 1-3 (1/03/2018)

- Unsure of whether these are widely used. It may be down to awareness of the bags and their location in cupboards (i.e. hidden).
- Midwifery staff have allocated MSW that will monitor and restock the equipment.

8. Big 5 poster recirculation (1/07/2018)

- For DS and NNU staff
- Raising awareness with junior doctors



9. Education of new staff members (September 2018)

- New SHO's/Registrar change over- group session re: stabilisation of preterm infant; practical session using Neohelp bag.
- E-mail communication re: thermal care guideline

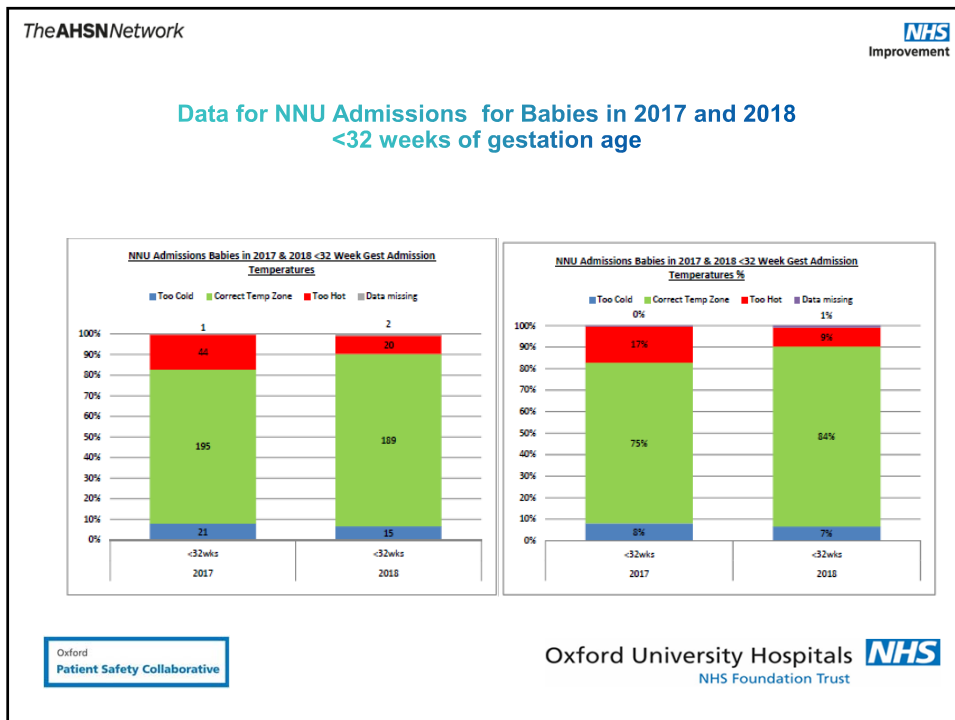
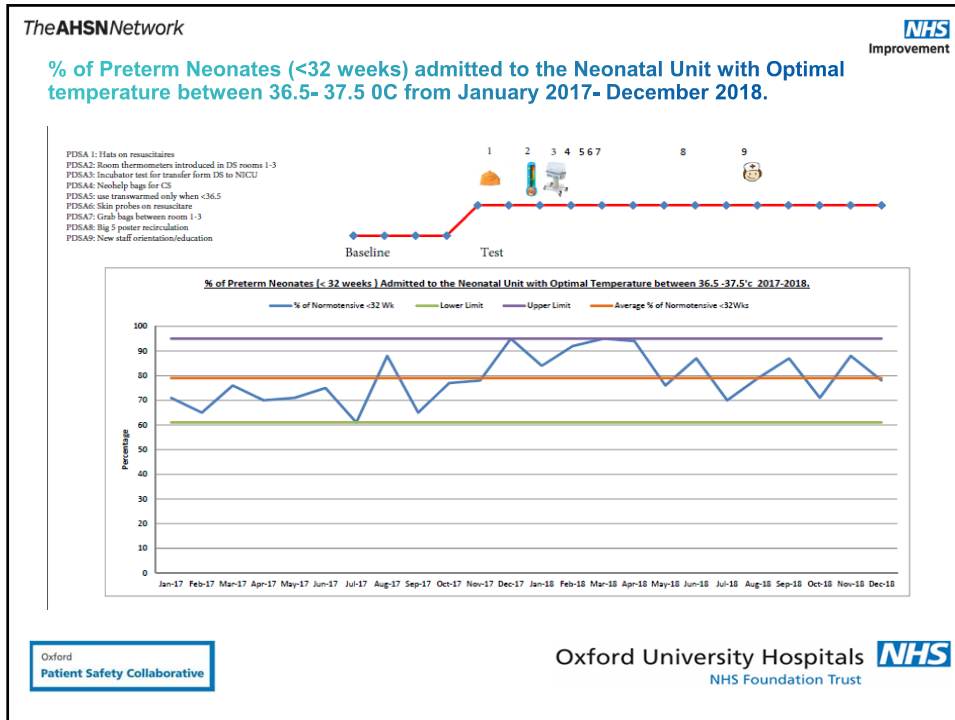
10. Education of new staff members (January 2019)

- New SHO's/Registrar change over- group session re: stabilisation of preterm infant; practical session using Neohelp bag.
- E-mail communication re: thermal care guideline

11. How to use Servo mode temperature-guide (January 2019)

- Distributed to midwifery and neonatal staff
- Thermoregulation guideline will be updated.
- Staff excited to use

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Why has QI methodology helpful?


- It is essential to know what you want to achieve
- How you will measure improvement and to be explicit about the idea to be tested.

- Using PDSA cycle methodology enabled us to test out changes on a small scale
- We were able to build on the learning from these test cycles in a structured way before implementing changes
- This give us the opportunity to see if the proposed change will succeed and also learn from the ideas that do and don't work.
- This way, the process of change is safer and less disruptive for patients and staff
- As you have seen, not all changes worked or were sustainable
- It requires continues monitoring and perseverance

Data collection and review:

- Data was collected by neonatal unit for all infants born <32 weeks

- Infants that were outside normothermia criteria (<36.5 or >37.5)- notes were reviewed to see if any trend can be identified.
 - In some cases an individual was identified and extra teaching was provided.
 - In some cases, hypothermia/ hyperthermia was unavoidable- maternal sepsis or born outside delivery suite, prolonged delivery of head (for some breech deliveries) or unexpected preterm delivery were neonatal team wasn't present from birth.


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Moving forward

- We know that better thermoregulation can be achieved with education and perseverance.
- It is also possible that 90% margin is too high and we are only able to achieve 85%.
- In some cases hypothermia/ hyperthermia might be unavoidable
- Our guideline will be updated and will include the positive and achievable changes that were identified from the project.
- Teaching will be provided for all doctors on their orientation.

Plans for 2019

- Guideline updates to threshold for use of transwarmer
- Guideline for maternal temperature monitoring during skin to skin in theatres
- Servo-control extended to larger preterm infants where appropriate

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Were are we nationally?

Notification of high outlier status for National Neonatal Audit Programme 2017 measures.


- The purpose of the outlier process is to identify and highlight variation, enable local review of the causes of that variation and stimulate quality improvement.

John Radcliffe Hospital has been identified as **excellent** for the audit measure:

- **Does an admitted baby born at less than 32 weeks gestational age have its first measured temperature of 36.5°C to 37.5°C within one hour of birth?**

We are **“exceptional”** for optimal temperature on admission – indicating we are between 2-3 standard deviations from mean.

- **Our aim** for 2018/2019 is to get 3 or more standards deviations above expected performance (known as outstanding).

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NHS
Improvement

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