Quality Improvement to Reduce NEC
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Neonatologist

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Declaration of Interests

I am giving this talk as an independent speaker.

I have accepted honoraria from Danone and Nutricia for speaking commitments and for developing educational resources, but I take my intellectual independence very seriously.
Why do quality improvement for NEC?

- One of the unsolved neonatal morbidities
- High mortality and morbidity
- Variation in incidence and mortality
  - Incidence 2-7% overall. 5-22% in <1kg
  - Mortality 21-38%
From Prof. Jason Leith
Clinical Director of
Healthcare Quality and
Strategy, NHS Scotland

Lee SK et al Paediatr
Child Health.
UNDERSTAND THE OUTCOME

Effect ➔ Cause
The basic material
- Premature birth
- Genetics

Early spark
- Intrauterine hypoxia
- Chorioamnionitis

Stoking the fire
- Caesarean section
- Starvation
- Lack of EBM
- Antibiotics
- Ill baby
- Opiates
- Acid suppression
- NICU care

The explosion
- Hypoxia-ischaemia
BENCHMARKING
# Center 1047 and Network Values

## Key Performance Measures - All VLBW Infants

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<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td>Cases</td>
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<tr>
<td>Late Bacterial Infection</td>
<td></td>
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<tr>
<td>Your Center</td>
<td>15</td>
<td>108</td>
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<tr>
<td>Any Location</td>
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<td>108</td>
</tr>
<tr>
<td>Coagulase Negative Staph</td>
<td></td>
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<tr>
<td>Your Center</td>
<td>25</td>
<td>108</td>
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<tr>
<td>Any Location</td>
<td>25</td>
<td>108</td>
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</tbody>
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LEADERSHIP
Possible interventions

**AFERNATAL**
- AN Steroids

**FEEDING**
- Early colostrum
- Mother’s milk in 1st 2 weeks
- Donor milk
- Standardised feeding regimen

**BLOOD TRANSFUSIONS**
- Standardise approach
- Feeding

**TARGET PERIOD OF HIGHEST RISK**
- Avoid sentinel events
- Restrict use of empiric Abs

**GUT FLORA**
- Probiotics
Best practice headings

• Plausibility and likely mode of action
• Size of effect
• Where we are now
• Resource implications
• Possible adverse effects
• Suggested standard
• Recommendation
The Gut Health QI Group

The BabyBellies

- Broad group: NNU staff, PNW, LW, Infant Feeding advisors
- Parent rep recruited
- New perspectives: nurses; trainees; parent
Initiatives - labour ward and postnatal wards

1. Antenatal steroid audit and regular case review
2. Making discussion about breast milk routine in antenatal counselling in threatened preterm labour (Ready, Coming or Not)
3. Easy access to expression kits
4. Small Wonders DVDs and players
AN Steroid use over time
Ready, Coming or Not
A tool to aid Neonatal Unit preparedness

- Ready, Coming or Not Patient Information leaflet given?
  - Y
  - N

- Neonatal Unit tour offered?
  - Y
  - N
  - Tour booking procedure

- Mother been on Neonatal Unit tour?
  - Y
  - N

- Neonatal Management Plan created?
  - Y
  - N

- Small Wonders DVD offered?
  - Y
  - N
  - Link to DVD

- Small Wonders DVD watched?
  - Y
  - N

- Key professionals involved (Antenatal Care) -1

- Key professionals involved (Antenatal Care) -2
  - Antenatal professional breast milk discussion - key points
  - Y
  - N
  - Discussion points

- Antenatal breast milk Pl given?
  - Y
  - N

- Antenatal hand hygiene discussion occurred?
  - Y
  - N
  - Antenatal hand hygiene Pl given?
  - Y
  - N

If other Specialist clinicians involved enter names here
Initiatives – neonatal unit

1. Work towards BFI accreditation including breast feeding training for neonatal staff and midwives
2. Training of Feeding Champions
3. Charting of preterm feeding management
4. Updated guidance following SIFT and reduced use of CVLs and PN
5. Guideline for DEBM
6. Work on Kangaroo Care
7. New breast pumps acquired for home loan by mothers
8. Improved antibiotic stewardship including autostop
Preterm Feeding Chart

Accountability for feed management
Daily record until on full feeds

• Readiness to feed
• Feed advancement regimen
• Current hourly volume, next increment
• Availability of EBM
• Decision to use DEBM
• Reasons for stopping or slowing
• Use of lines and PN
Agency for Healthcare Research and Quality

Three Tips for Facilitating the Quality Improvement Process

WIDE ENGAGEMENT
• Place a priority on encouraging communication, engagement, and participation for all of the stakeholders affected by the QI process.

FOCUS
• Start your implementation of improvements with small-scale demonstrations
• Keep in mind and remind others that QI is an iterative process.
Proposed Positive and Negative Drivers for Mother’s Milk Provision in Very Preterm Neonates

‘The Maternal Journey from Admission to Discharge from NNU’

**Positive Drivers**

- + antenatal appointments
- + past/social experience
- + educational material (‘Off to a Good Start’)
- + midwife discussions
- + NNU ‘Ready, Coming or Not’
- + skin-to-skin time
- + encouragement of early expressing
- + early kangaroo care
- + lactation support/nurses
- + lactation assessments
- + easily available equipment e.g. colostrum kit
- + on-going lactation support
- + breastfeeding support group
- + community MW
- + health visitors

**Negative Drivers**

- - parental preference
- - limited antenatal education
- - previous negative experience
- - fear/stress
- - uncertainty re: ability
- - length and quality of antenatal feeding discussion
- - time available for counselling
- - separation from baby
- - maternal morbidity
- - lack of equipment or privacy
- - lack of confidence
- - milk ‘not in’
- - limited weight gain
- - external pressures
- - social circumstances
- - other co-morbid conditions e.g. stomas/home oxygen etc.
- - level of community support for feeding

D Cairney (ST1), S Milne (Clinical Fellow), G Menon (Consultant Neonatologist). March 2018.
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Pregnancy → Threatened preterm labour → Admission to LW → Labour/delivery → NNU → Transitional Care → Discharge from NNU

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The Preterm Feeding Journey

This chart shows the journey of the preterm baby and their mother from the time of threatened preterm labour to discharge from NNU. It shows the factors that might aid and hinder access to the mother’s breast milk. We want to find ways of shifting the journey towards the more positive end as possible.

D Cairney (ST1), S Milne (Clinical Fellow), G Menon (Consultant Neonatologist). March 2018.
Average Minutes Per Visitor: Google Vs. Facebook

Data: comScore; Monthly stats for the U.S.
Last data point -- May 2011
Supply of Mother’s Breast milk

Colostrum

• Postulated beneficial effects
• Mouth care

1. Early effective expression
2. Label and store expressed colostrum separately, and feed colostrum in preference when available

*Improving the Use of Human Milk During and After the NICU Stay. Meier P et al Clin Perinatol 2010*
Supply of Mother’s Breast milk

Sustaining MEBM supply
- Benefits of MEBM dose-related
- Critical exposure period – first 14 days

1. Early first expression and frequent expression
2. Empower parents by providing information about breast milk and milk diary
3. Kangaroo care
4. Electric pump and double-pumping throughout; empty breasts
5. Parent peer supporters

Improving the Use of Human Milk During and After the NICU Stay. Meier P et al Clin Perinatol 2010
SERVICE USERS’ PERSPECTIVE
Parent representative

- Parent information
- Nurse-parent feeding interaction tool
- Individualised feeding pathway
Improvement

People exercise an unconscious selection in being influenced. T.S. Eliot

Doubt, the essential preliminary of all improvement and discovery, must accompany the stages of man's onward progress. The faculty of doubting and questioning, without which those of comparison and judgment would be useless, is itself a divine prerogative of the reason. Albert Pike

Allocate space, responsibility and clear expectations for creative thinking, in the same way you would for other business processes. Edward de Bono
Potential for UK national collaboration

- Leadership
- Local facilitation

Lee SK et al. CMAJ. 2009;181(8):469–76.
Resources & Publications
One place for all our frameworks, resources and policies.

Neonatal Service Quality Indicators webinar (2018)
Members' resource

On 29th March 2018, Dr Gopi Menon, BAPM’s President, and Caroline Lee-Davey, Bliss’ Chief Executive, conducted a webinar to further introduce the new Neonatal Service Quality Indicators framework developed by BAPM and Bliss, and answer questions. To view the presentation, follow the link below...

Neonatal Service Quality Indicators: Standards relating to structures and processes supporting quality and patient safety in Neonatal Services (2017)