QI strategies to reduce Necrotizing Enterocolitis: Using Feeding Guidelines

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I have nothing to disclose
Objectives

- Discuss the evidence of using a standardized feeding approach (SFA) as a method of reducing NEC
- Identify best-practice elements to include in a feeding “bundle” to promote the reduction of NEC
- Review practical tips to help bring evidence to the bedside
Standardized Feeding Approach (SFA): Pros and Cons
SFA Pros

- Standardization of practice
- Increased use BM
- Quicker time to initiate/advance and achieve full feeds
- Decreased use of PN/Decreased CL days/Decreased associated morbidities
- Improved growth
REDUCTION OR ELIMINATION OF NEC!
## Evidence supporting use of SFA: Decreased NEC!

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<tr>
<td><strong>No inc NEC. Safe for &lt; 1000g (NEC 6% ↓ 3% = 50%)</strong></td>
<td>Hanson, et al (2011)</td>
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<td><strong>Dec NEC overall VLBW (18% to 3% = 83%) &amp; ELBW (35% to 8% = 77%).</strong></td>
<td>McCallie, et al (2011)</td>
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<td><strong>SFA in ELBW- quicker to initiate, to FF 75% faster, no inc in NEC</strong></td>
<td>Donovan, et al (2006)</td>
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<td><strong>SFA for HLHS... ↓ NEC 100%</strong></td>
<td>Braudis (2009)</td>
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Feeding guidelines = Evidenced-based medicine!
Creating a Feeding Bundle
Not an option, a Necessity
Feeding Bundle

- What to feed
- When to initiate
  - MEN
- When/How much to advance
- Defining Intolerance
- Other: Fortification, Probiotics, Umbilical lines, PDA, Remove CL/Stop PN, Transfusions
What to Feed

Human milk for Human Babies!

World breastfeeding week
## Feed Initiation

| Early trophic (<4 days) vs. NPO (4-7 days) Meta-analysis 9 RCT’s: 4 included growth restricted | No difference NEC Morgan, et al (2014) |
| Delayed start (7 days NPO): ↑ time to FF, on PN, with CL | No difference NEC Viswanathan, et al (2015) |
| Introduction of feeds before day 4 | Does not increase risk of NEC SIFT Investigator group (2013) |
| Early (24-48hr) initiation in Growth restricted | No increase in NEC Leaf, et al (2012) |
| Trophic feeds Meta-analysis 10 trials | No difference on NEC Tyson & Kennedy (2009) |
Harm in NPO

• Animal/Adult studies
  – Mucosal atrophy
  – Decrease in trophic hormones
  – Increase in sepsis
  – Increase risk for systemic inflammatory response syndrome
    • Kudsk (2002); Wildhaber, et al (2005)

• Continuous flow of amniotic fluid
  – Interrupted at birth
  – Normally a significant growth in length and mucosal surface area in 3rd trimester
  – “Feeds” needed to continue that stimulation
  – “Do we blunt growth and development in NICU by our feed practices?”
    • Neu (2007)
## Feed Advancement

| Meta-analysis 5 RCT’s- slow (<15-20ml/kg/d) vs. Fast (30-35ml/kg/d) | No affect NEC/Death  
| Volume > 24 ml/kg/d-  
No inc NEC risk | The SIFT group, (2013) |
| Meta-analysis- Rapid vs. Slow advance | No affect NEC  
Kennedy & Tyson (2000) |
Defining OUR Intolerance

- No uniform definition exists
  - Bowel loops, distension, emesis, residuals, color of residuals, abd discoloration, bloody stool
- Clinical significance not determined
- Do they predict disease or just iatrogenic effects of care (CPAP) or normal developmental physiology

(Jadcheria & Kliegman 2002)
What about growth? Can we grow? Can we grow safely?
# Preventing PNGR

|------------------------------------------------------------------------------------------------|-----------------------|
Bringing the Evidence to the Bedside
Overcoming Obstacles/Helpful Hints
WE CANNOT SOLVE OUR PROBLEMS WITH THE SAME THINKING WE USED WHEN WE CREATED THEM

-Albert Einstein
Points to take Home

- SFA = Evidence-based medicine
- SFA = Reduction/Elimination NEC
- SFA = Better practice/Better Outcomes
- SFA = Improved growth/Reduced PNGR
- Success = Build outside YOUR box, Ongoing Monitoring & Feedback, “Police”-Hold Accountable
Bibliography

- Butler TJ, Szekely LJ, Grow JL. A standardized nutrition approach for very low birth weight neonates improves outcomes, reduces cost and is not associated with increased rates of necrotizing enterocolitis, sepsis or mortality. J of Perinatol 2013;33:851-857.


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