I’m Hungry! Neonatal Cues Indicating Readiness to be fed and strategies to support oral feeding progression

Sharon Sables-Baus, PhD, RN, MPA, PCNS-BC, CPPS
Associate Professor
University of Colorado, College of Nursing & School of Medicine, Department of Pediatrics
Research Nurse Scientist,
Children’s Hospital Colorado
Aurora, Colorado 80045

Neonatology 2016
Atlanta, GA
April 21-22, 2016
Emory Regional Perinatal Center
Division of Neonatal-Perinatal Medicine, Department of Pediatrics
Dr. Sables-Baus has documented that she has no financial relationships to disclose or Conflicts of Interest (COIs) to resolve.
Abstract

1. Interdisciplinary (medicine, nursing, lactation, therapy and parents) integration to support infant-directed oral feeding for critically ill infants – specifically, use of Nurse Integrated Rounds

2. Strategies and/or techniques that can be applied individually or collectively to foster the goal of safe and pleasurable oral feeding – consistent framework for assessing oral feeding readiness and feeding progression. Continuity of the feeding approach encourages infant to build skill with each feeding

3. Family as the consistent presence in oral feeding trajectory
Objectives

• List 3 strategies that can be instituted in your NICU that enable an interdisciplinary team of professionals to work together to support oral feeding development
Decussate Areas

I. Use of Human Milk
II. Role of the Nurse
III. Evolving science on human gut microbiome
IV. Environment Factors: Developmental Care
I. Use of Human Milk

• Trophic Feeding with colostrum and human milk - Mothers must begin pumping within 6–12 hours of delivery and to pump 8 – 12 times per day, ensuring that they empty the breast each time.


• Breastfeeding – begin skin-to-skin holding as soon as possible; non-nutritive sucking at “empty” breast; lactation nurse
II. The Role of the Nurse

Feeding fragile infants is a skilled nursing task
III. Human Gut Microbiome

The Infant Microbiome: Implications for Infant Health and Neurocognitive Development

Yang, Irene; Corwin, Elizabeth J.; Brennen, Patricia A.; Jordan, Sheila; Murphy, Jordan R.; Dunlop, Anne

Abstract

Background: Beginning at birth, the microbes in the gut perform essential duties related to the digestion and metabolism of food, the development and activation of the immune system, and the production of neurotransmitters that affect behavior and cognitive function.

Objectives: The objectives of this review are to (a) provide a brief overview of the microbiome and the "microbiome-gut-brain axis", (b) discuss factors known to affect the composition of the infant microbiome: mode of delivery, antibiotic exposure, and infant-feeding patterns; and (c) present research priorities for nursing science and clinical implications for infant health and neurocognitive development.

Discussion: The gut microbiome influences immunological, endocrine, and neural pathways and plays an important role in infant development. Several factors influence colonization of the infant gut microbiome. Different microbial colonization patterns are associated with vaginal versus surgical birth, exposure to antibiotics, and infant-feeding patterns. Because of extensive physiological influence, infant microbial colonization patterns have the potential to impact physical and neurocognitive development and life course disease risk. Understanding these influences will inform newborn care and parental education.
IV. Environmental Factors: Developmental Care

Protect sleep

Alleviate/Manage pain – assess using an evidence-based tool, pharmacologic and non-pharmacologic techniques

Alleviate/Manage stress

Family-centered

Healing environment
Two Important Documents

Infant-Directed Oral Feeding for Premature and Critically Ill Hospitalized Infants: Guideline for Practice

- Copyright © 2013 National Association of Neonatal Nurses. All rights reserved under U.S. and international copyright laws. Will be updated in 2018.
- www.nann.org

Working group reports: evaluation of the evidence to support practice guidelines for nutritional care of preterm infants—the Pre-B Project

Nutrition Guidelines

Abstract

The "Evaluation of the Evidence to Support Practice Guidelines for the Nutritional Care of Preterm Infants: The Pre-B Project" is the first phase in a process to present the current state of knowledge and to support the development of evidence-informed guidance for the nutritional care of preterm and high-risk newborn infants. The future systematic reviews that will ultimately provide the underpinning for guideline development will be conducted by the Academy of Nutrition and Dietetics' Evidence Analysis Library (EAL). To accomplish the objectives of this first phase, the Pre-B Project organizers established 4 working groups (WGs) to address the following themes: 1) nutrient specifications for preterm infants, 2) clinical and practical issues in enteral feeding of preterm infants, 3) gastrointestinal and surgical issues, and 4) current standards of infant feeding. Each WG was asked to 1) develop a series of topics relevant to their respective themes, 2) identify questions for which there is sufficient evidence to support a systematic review process conducted by the EAL, and 3) develop a research agenda to address priority gaps in our understanding of the role of nutrition in health and development of preterm/neonatal intensive care unit infants. This article is a summary of the reports from the 4 Pre-B WGs.

Keywords: enteral nutrition, growth, nutrient requirements, parenteral nutrition, preterm birth
Update NANN from 2013 to 2016 – Search Strategy

• Evidence was collected via searches of Medline, PubMed, CINAHL, and Cochrane Neonatal Group.

• Infant subjects; Outcomes related to prefeeding and feeding strategies; and the support of developmentally appropriate; advancement of oral feeding for premature and critically; ill hospitalized infants

• Years 2013 - 2016

• CINAHL: 204 articles

• PubMed: 307

• Cochrane: 125
Practice Recommendations

- Pre-Feeding
- Responsive versus Scheduled
- Readiness
- Advancement/Progression
Practice Recommendation – Pre-feeding

1. The provision of sensory experiences
2. The smallest size nasogastric tube is used
3. Social Contact – holding, smells, tastes
4. Observation of infant during caregiving
5. Non-nutritive sucking – observing for swallowing of secretions
6. Pacifier selection
Practice Recommendation – Responsive versus Scheduled

✓ An infant giving cues using physiological signals, as well as motor and state systems (neurobehavioral maturation) – Individualized

Practice Recommendation – Readiness

• Formal Instruments - Instruments for assessing readiness to commence suck feeds in preterm infants: effects on time to establish full oral feeding and duration of hospitalization (Crowe, Chang, Wallace; Cochrane Database of Systematic Reviews; 2012; NO: 4; John Wiley & Sons, Ltd; DOI: 10.1002/14651858.CD005586.pub2)

• State of the Science State of the Science - A Contemporary Review of Feeding Readiness in the Preterm Infant; (Briere, McGrath, Cong, Cusson; Journal of perinatal and Neonatal Nursing; Volume 28, Number 1, 51–58)

• Oral feeding readiness assessment tools
Practice Recommendation – Advancement/Progression

• Feeding advancement managed by nurses using a clinical pathway

• Neonates who are fed according to cues can become successful oral feeders and can be safely discharged home regardless of gestational age or diagnosis (A Continuous Quality Improvement Project to Implement Infant-Driven Feeding as a Standard of Practice in the Newborn/Infant Intensive Care Unit: Journal of Obstetric, Gynecologic & Neonatal Nursing, Volume 44, Issue 5, 654 – 664).

• Clinical pathways and feeding advancement protocols
Model for clinical guideline compliance

• Pathman’s awareness-to-adherence model
• Cognitive and behavioral steps physicians take when they comply with national practice clinical guidelines – dated (1996) but steps still seem relevant
Integrated Rounds

• Collaborative, integrated patient rounds have been shown to improve communication


• Interdisciplinary team at the bedside
• Scheduled
• Use of specific format for presentation during rounds
• Parental presence
Nurse Integrated Rounds

• “Rounds that mandated the presence and participation of each patient’s bedside nurse” *(direct care provider)*


• Nurse are given a format for presentation during rounds

• Nurse presents the patient in rounds

• Should describe feeding performance in a way that allows others to understand the infant’s strengths and weaknesses
# Nurse Integrated Rounds

<table>
<thead>
<tr>
<th>I &amp; O</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Role:</td>
<td>Y N</td>
</tr>
<tr>
<td>CT drain output/Description:</td>
<td></td>
</tr>
<tr>
<td>Medialateral:</td>
<td></td>
</tr>
<tr>
<td>Distalateral:</td>
<td></td>
</tr>
<tr>
<td>Additional drain:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Neuro</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nerve Sedation issue:</td>
<td></td>
</tr>
<tr>
<td>Infusions:</td>
<td></td>
</tr>
<tr>
<td>Drip PRN last 24 hours:</td>
<td>Y N</td>
</tr>
<tr>
<td>Switch to g:</td>
<td>Y N</td>
</tr>
<tr>
<td>Wean:</td>
<td></td>
</tr>
<tr>
<td>WAT Score:</td>
<td></td>
</tr>
<tr>
<td>Quiet Day #:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Respiratory</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ready for Extubation:</td>
<td>Y N</td>
</tr>
<tr>
<td>Mode of Ventilation:</td>
<td>Vent HFOV NAVA CPAP BiPAP HPNC NC RA</td>
</tr>
<tr>
<td>Utilizing VAP bundles:</td>
<td>Y N</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vascular Access</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Day #:</td>
<td>Line#1:</td>
</tr>
<tr>
<td>Issue:</td>
<td></td>
</tr>
<tr>
<td>Remove?:</td>
<td>Y N</td>
</tr>
<tr>
<td>Additional access needed:</td>
<td>Y N</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IV</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Infusions:</td>
<td></td>
</tr>
<tr>
<td>Phlebotomy:</td>
<td></td>
</tr>
<tr>
<td>Pain:</td>
<td>Y N</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Feeding Issues</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeding Readiness:</td>
<td>Y N</td>
</tr>
<tr>
<td>Bowel Regimen:</td>
<td>Y N</td>
</tr>
<tr>
<td>Diet:</td>
<td></td>
</tr>
<tr>
<td>Goal oral:</td>
<td>PO/NG oral:</td>
</tr>
<tr>
<td>Weight:</td>
<td>Weight change:</td>
</tr>
<tr>
<td>Skin:</td>
<td></td>
</tr>
<tr>
<td>Wound type issues:</td>
<td></td>
</tr>
<tr>
<td>Infection:</td>
<td>Y N</td>
</tr>
</tbody>
</table>