

In This Section

Potentially Better Practices

#24. Infants should be transitioned from gavage to oral feedings when physiologically capable, not based on arbitrary weight or gestational age criteria. [90](#)

#25. NICU healthcare providers should make use of safe techniques for which some evidence to effectively facilitate transition to full oral feeding. [91](#)

#26. Infants should have regular assessment by skilled providers of oral readiness and feeding performance. [93](#)

#27. Infants whose mother intend to breastfeed should be put to breast before being exposed to the bottle. [95](#)

Tools

#16. Examples of Feeding Readiness [96](#)

#17. Example: Cue Based Feeding Scores and Documentation [97](#)

#18. Steps to transition from tube feeds to oral feeds [98](#)

[References](#) [99](#)

Transition to Oral Feedings

Introduction

Achieving full oral feeding is an important milestone for preterm infants as it is usually a major discharge criterion and one of the most complex tasks a VLBW infant must achieve.¹ Feeding challenges put VLBW infants at significant risk for prolonged hospitalization and readmissions after discharge.¹ Older studies of oral feeding suggesting a gestational age or weight criteria for starting oral feedings were done with bottle-feeding infants. Each infant develops feeding readiness and skills on a different time path, depending on individual morbidities and growth and development patterns, and most can start oral feeding much sooner than previously thought.² Breastfeeding appears less stressful than bottle-feeding based on heart rate, breathing and oxygenation.³ Infants who are to be breastfed, should start with breastfeeding first.⁴ Skilled care providers should assess infants for readiness to feed and feeding performance based on objective scales. Cue-based feeding protocols appear to accelerate the development of mature feeding skills.¹





Infants should be transitioned from gavage to oral feedings when physiologically capable, not based on arbitrary weight or gestational age criteria.

Background, Rationale, and Goals

Infants should be transitioned from gavage to oral feedings when physiologically capable, not based on arbitrary weight or gestational age criteria.^{1,5,6} Infants have been shown capable of breast or bottle-feeding much sooner than previously believed, with some breastfeeding as early as 28 weeks, and achievement of full nutritive breastfeeding at 36 weeks².

An infant is deemed stable for the introduction of the breast or bottle when the infant does not have a persistent physiologic decompensation such as bradycardia or desaturation when handled, the infant is handling his/her own secretions, and shows sucking behavior on a finger, pacifier or the emptied breast. Introducing the infant to breastfeeding before introducing a bottle may facilitate breastfeeding.⁴ There is evidence that early attempts at oral feeding may facilitate more rapid maturation of sucking characteristics.⁷

Recommendations, Guidelines and Algorithms

- Scoring systems for feeding readiness and performance should be used by nursing and feeding specialists [Occupational therapists (OT), Speech and language pathologists (SLP), International Board-Certified Lactation Consultants or educators (IBCLC/CLEC)].
- Kangaroo care and non-nutritive breastfeeding policies and procedures should be developed, reviewed and updated at least annually, and easily accessible.

- Policies containing corrected age or weight criteria for initiation of breast- (and/or bottle) feedings should be revised to utilize feeding readiness scales.
- Pacifiers are a tool to help with oral stimulation and mature or maintain the sucking reflex⁸
- Be aware of new, emerging technologies and tools to assess and potentially aid with sucking and swallowing skills of the VLBW infant⁹⁻¹¹.

Quality & Process Improvement

- Review & identify current outdated feeding practices/policies
- Develop and implement a feeding transition protocol

Outcome/Process Measures

- DOL &/or GA oral feeding readiness first scored
- DOL &/or GA full oral feeds reached
- Postnatal and corrected age at first kangaroo care, first non-nutritive breastfeeding, first nutritive breastfeeding, first bottle feeding



POTENTIALLY BETTER PRACTICE #25

NICU healthcare providers should make use of safe techniques for which some evidence exists (skin-to-skin care, non-nutritive breastfeeding, test-weighing, alternate feeding methods, nipple shields) to effectively facilitate transition to full oral feeding.

Background, Rationale, and Goals

Skin-to-skin care has been shown safe and effective in promoting physiologic stability and breastfeeding in preterm infants.¹² It is the first step towards a mother being comfortable holding her preterm infant for feeding.¹³ Kangaroo care (skin-to-skin care), non-nutritive breastfeeding (practicing breastfeeding on an “emptied” breast; also known as “dry” or “recreational” breastfeeding) and early introduction of the breast have been associated with increased breastmilk production and longer breastfeeding post discharge.¹³⁻¹⁷ Test weighing, done by standard protocol is a valid measure of intake at the breast and can be used to determine need for supplementation.^{18,19} Mothers can test weigh accurately^{19,20} and without stress.²¹

Transitioning directly from gavage to breastfeeding is possible, and seems to prolong both exclusive and any breastfeeding,²² but requires the mothers to be continuously present, which may not be possible because of physical limitations of many NICUs and the mothers’ own outside commitments. Transported infants’ mothers may not be available for frequent feeding practice. The increasing use of individual room NICU care, enabling parents to remain with their ill infants, may facilitate earlier and increased direct breastfeeding.

Although research as to efficacy is limited, cup-feeding appears safe for preterm infants²³⁻²⁸ and may facilitate longer breastfeeding post-discharge²⁹ although may necessitate a somewhat longer hospital stay.²⁹ Clinical experience suggests other methods of feeding may

be appropriate for specific infants: e.g. finger-feeding for neurologically impaired, or supplemental nursing systems at the breast for mothers with insufficient milk supply.^{30,31} Nipple shields can be used, when appropriate, to maximize milk transfer at the breast.³² In the absence of good research, every effort should be made to accommodate mothers’ preferences as long as appropriate weight gain is maintained.

Over the last decade, the evidence, implementation, and use of “Infant Driven” or “Cue-Based” feeding practices to transition VLBW infants from tube feeds to oral feeds continues to grow^{1,33,34}. Infant driven feeding methods may also decrease the number of infants sent home with any kind of feeding tube support³⁵.

Background, Rationale, and Goals

- Scoring systems for feeding readiness and performance/quality of feed should be used by nursing (and OT, or SLPs) & should be done when baby starts to show cues, or at least every 3 hours.
- Have at least 1 electronic scale (accurate to 1-2 g) per 20 infants and a protocol available for pre-post breastfeeding test weighing.
- Nipple shields in various sizes should be available for use in the NICU as appropriate by knowledgeable caretakers.
- Policies and procedures, education, and competency verification, should be available for all feeding methods.
- NICU nurses should be empowered to adjust transition feedings as needed.

- Family-centered care should empower mothers to suggest adjustments in feeding plans³⁴.

Quality & Process Improvement

- Protocol availability for test weighing, non-nutritive breastfeeding and kangaroo care.
- Feeding readiness and performance scoring system.
- Consider [Neo-BFHI Evaluation & Certification](#)

Outcome/Process Measures

- Monitor postnatal and corrected age at first kangaroo care, first non-nutritive breastfeeding, first nutritive breastfeeding, first bottle feeding
- Audits on Scoring System
- Frequency
- Compliance with use
- Appropriately scored



POTENTIALLY BETTER PRACTICE #26

Infants should have regular assessment by skilled providers of oral readiness and feeding performance.

Background, Rationale, and Goals

At birth VLBW infants do not have the neurological, cardio-respiratory stability, oral motor readiness, gastrointestinal maturity, and suck, swallow, breath coordination for oral feeding. Prolonged respiratory support, gastrointestinal anomalies, and other factors can further delay introduction of oral feeding and have long-term effects on outcomes.

Recommendations, Guidelines and Algorithms

- Skilled providers in infant feeding are vital to initiate, identify, and support the challenges of oral feeding in VLBW infants. Attention to each infant's individual oral feeding obstacles will optimize safe oral intake and work to overcome the many difficulties premature infants face during their time in the NICU. These advanced feeding evaluation and intervention skills can be acquired through education, specialty training, experience, and certifications:
 - **Occupational Therapists (OT) &/or Speech Language Pathologists (SLP)**, ideally trained in neonatal feeding practices with specific advanced training, such as:
 - [Advanced Practice Certification](#) in Swallowing Assessment, Evaluation, or Intervention (SWC) through the California Board of Occupational Therapy (CBOT).
 - [Certified Neonatal Therapist \(CNT\)](#)
 - **Certified Lactation Professional (IBCLC, CLC, CLE, ALC, ANLC)**
 - Dedicated clinicians with specific initial education, training, experience, and ongoing education in lactation to promote and support mom and baby in their breastfeeding challenges.
 - Integrating breastfeeding dyad strategies, approaches, and specific tools (such as nipple shields, supplemental nursing systems (SNS)) to facilitate direct breastfeeding
 - **Infant-Driven Feeding® Training**
 - Infant-Driven Feeding: Advancing Oral Feeding Practice in the NICU course
 - Online course focused on assessing, evaluating, and understanding specific challenges neonates face in the NICU.
 - Can be completed as an individual, or as part of the unit-wide education provided to staff
 - Can provide continuing education hours for RNs
 - **NOMAS® (Neonatal Oral-Motor Assessment Scale)**
 - Individual 3 day courses, or online learning for nurses, occupational therapists, and speech language pathologists. Can count for continuing education units (CEUs) for OT, SLP, and RNs
 - Institutional certifications available. A licensed NOMAS® course instructor can provide education to the staff in a particular unit.

- Ongoing education and support of these highly skilled providers will evolve and progress over time to continue to update and implement evidence-based practices.

Quality & Process Improvement

- Implement Feeding Readiness Scoring System (Refer to [TOOL #16](#) on page 96)
- Pre-test, and post-test bedside caregivers to see if their assessments of oral feeding readiness improves
- Implement feeding performance scoring system
- Number of referrals to OT/SLP for feeding support and evaluations

Outcome/Process Measures

Audits on Scoring Systems

- Frequency of scoring and charting the scores
- Compliance with use
 - Did the scores influence how the baby was fed?
- Appropriate/consistent scores
 - Have 2 skilled practitioners score the infant and see if they get the same result



POTENTIALLY BETTER PRACTICE #27

Infants whose mothers intend to breastfeed should be put to breast before being exposed to the bottle.

Background, Rationale, and Goals

Focusing on VLBW first oral feeding attempt at the breast will not only help with maturing oral feeding skills, but further facilitate breastfeeding, increase mom's milk supply, potentially receiving more of mom's own milk during admission, and improve chances of still taking breastmilk upon initial discharge from the NICU.³⁶⁻³⁸ Bottle feeding has not been shown to lead to sooner discharge³⁹.

There is no reason to “test” a preterm infant on a bottle before offering the breast. Controlled studies confirm that breastfeeding infants have more stable oxygen saturations and body temperature as compared to bottle-feeding infants,^{3,40,41} although less milk is transferred with breastfeeding.^{3,42-45} The mechanism for this improved stability with breastfeeding seems to be less interruption in breathing with breastfeeding. Bottle-fed preterm infants frequently do not breathe during sucking bursts – instead they breath rapidly during pauses in sucking.^{43,45} In contrast, the same preterm infants integrated breathing within sucking bursts, approximating a suck-breathe pattern of 1:1 as they reached 34-35 weeks gestation.

Research has demonstrated that breastfeeding-friendly attitudes and support may “spill over” from the normal newborn care area to the NICU in Baby-Friendly Certified hospitals, increasing the use of human milk and breastfeeding in the NICU.⁴⁶⁻⁴⁸ The Neo-BFHI Certification currently in development will emphasize family-centered and individual care and apply modified “10 Steps” to the NICU environment.⁴⁹

Recommendations, Guidelines and Algorithms

- Kangaroo care and non-nutritive breastfeeding policies and procedures should be developed, reviewed and updated at least annually, and easily accessible.
- Lactation professional support and/or specially lactation support trained bedside RNs should be available.
- Privacy curtains/shields should be available for mothers who request them.
- Have comfortable chairs and adequate materials (pillows, blankets, etc.) for supporting mom and baby available to achieve safe and proper positioning.

Quality & Process Improvement

- Protocol availability for test weighing, non-nutritive breastfeeding and kangaroo care
- Neo-BFHI Evaluation & Certification when available.

Outcome/Process Measures

- DOL baby first goes to breast for non-nutritive feeding
- DOL 1st nutritive breastfeed
- Number of times each day the baby is put to the breast



EXAMPLE: Feeding Readiness

Engagement and Hunger Cues	Stress and Disengagement Cues
Bringing hands to the mouth	Inconsolable crying
Alert and fussing, especially if combined with other feeding cues	Worried or frowning face
Sucking on fingers or pacifier	Yawning
Relaxed facial expression while awake	Gaze averting
“Ohhh” faces	Changing from awake to drowsy or sleepy state
Good tone (exhibits flexed moisture)	Poor tone (hypotonic)
Rooting	Splaying fingers or putting hands in a “stop” position
	Arching or pulling off nipple
	Tachypnea
	Bradycardia
	O ₂ desaturations

Adapted from: Newland L, Lhuillier MW, Petrey B. [Implementation of cue-based feeding in a level III NICU.](#) Neonatal Netw 2013;32:132-7.



TOOL #17

EXAMPLE: Cue Based Feeding Scores and Documentation Tips

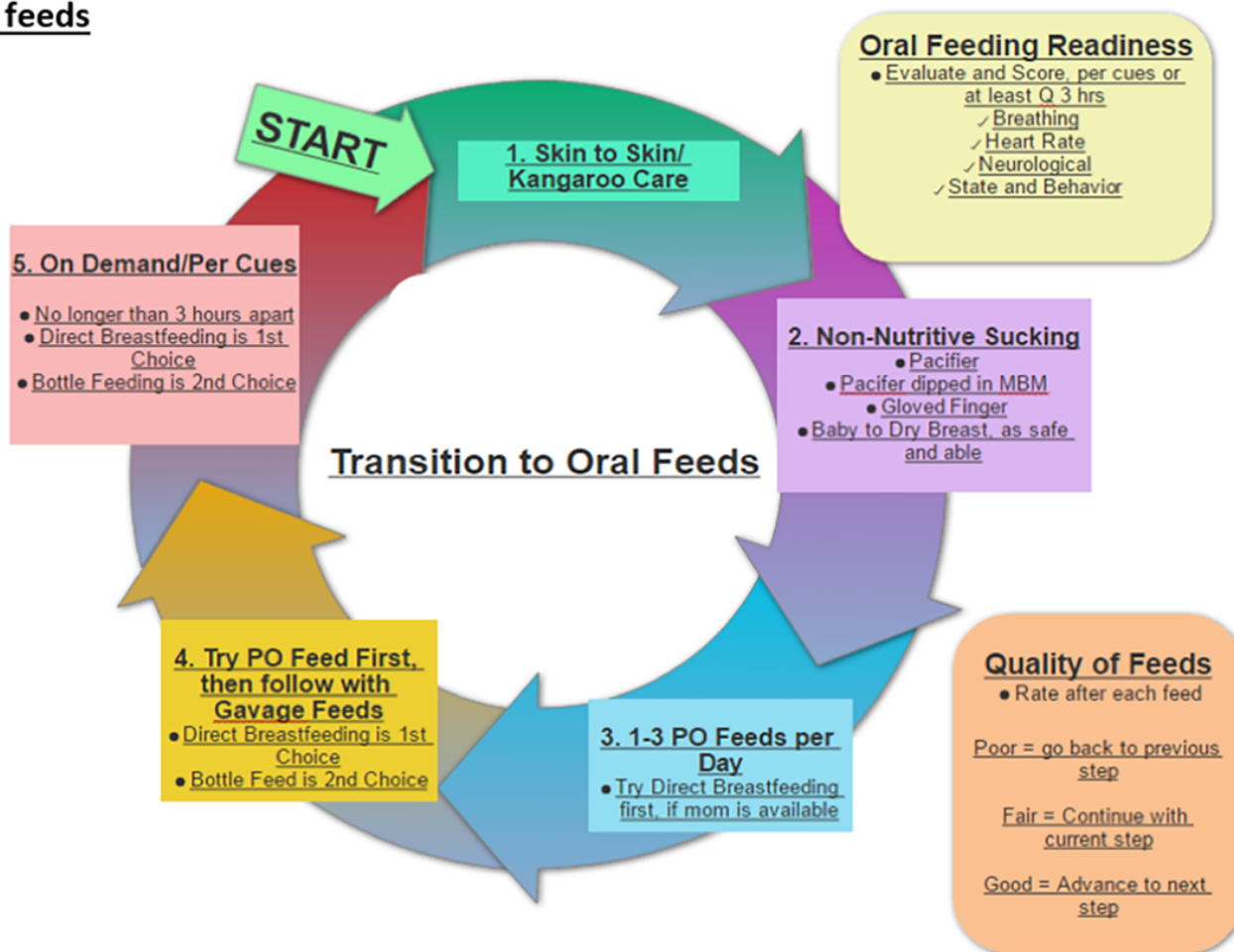
Please reference:

Figure 1 “Infant Feeding Scale” from: Newland L, L’huillier MW, Petrey B. [Implementation of cue-based feeding in a level III NICU](#). Neonatal Netw 2013;32:132-7.



Transitioning from tube feeds to oral feeds

Steps to transition VLBW infants from tube feeds to oral feeds



This chart was adapted from Figure 1, from Little Steps, found in: Lubbe W. Clinicians guide for cue-based transition to oral feeding in preterm infants: An easy-to-use clinical guide. *J Eval Clin Pract.* 2017.

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