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Breastfeeding in the NICU: The SLP's Role in Lactation

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Breastfeeding in the NICU: The SLP's Role in Lactation



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2015

Disclosure Statement



- I have no relevant financial or nonfinancial relationships in the products or services described, reviewed, evaluated or compared during this presentation.

Objectives



- Describe statistics of the current global and national context of breastfeeding
- Identify anatomy and physiology of lactation
- Determine process of establishment of lactation in mothers
- Explain Importance of breastfeeding in neonatal and ill infants
- Define SLP's role in lactation for NICU and special needs population

American Academy of Pediatrics



- Breastfeeding and human milk are the normative standards for infant feeding and nutrition. Given the documented short and long term medical and neurodevelopmental advantages of breastfeeding, infant nutrition should be considered a public health issue, and not a lifestyle choice. (2012 Pediatrics)

American Academy of Pediatrics (AAP) Response



- Formal evaluation of breastfeeding including observation of position, latch, and milk transfer should be undertaken by trained caregivers at least twice daily and fully documented in the record during each day in the hospital after birth
- All breastfeeding (BF) infants should be seen by a pediatrician at 3-5 days of age
- BF infants should have a 2nd visit at 2-3 weeks of age so that the health care provider can monitor weight gain and provide additional support to the mother

Why SLP's Involvement in Lactation?

- SLP is often referred as the “feeding and swallowing expert/specialist” in facilities
- Should be providing feeding services for breast and bottle fed babies with feeding difficulties
- **Swallowing:**
 - Studies show better swallowing and breathing coordination with breast milk (2002 Biology of the Neonate)
 - Less ventilation interruption during breastfeeding (1998 Nursing Research)
 - Allows infant more control of flow correlating with suck/swallow/breathe sequencing (SSB)

SLP's Role

- Why not just let lactation handle breastfeeding?
 - Breastfeeding support should be every care providers concern
 - ★ Should be a team effort to provide the best possible care and opportunities for successful feeding for these infants and their families
 - Often times, lactation is not consulted until well after problems arise with breastfeeding
 - Some facilities do not have lactation counselors or they are understaffed
 - ★ Look for a CLC course on your own: Become a lactation counselor to help support your NICU families

ASHA and Breastfeeding



- “Feeding and swallowing evaluation and intervention, to include prefeeding, assessment and promotion of readiness for oral feeding, evaluation of breast and bottle-feeding ability, and completion of instrumental swallowing evaluations”
- prepared by the Ad Hoc Committee on Speech-Language Pathology Practice in the Neonatal Intensive Care Unit (NICU)

ASHA and Breastfeeding



- “Breast-feeding: There are few standardized assessments available for evaluating potential breast-feeding in the NICU. These assessments include *Systematic Assessment of the Infant at Breast* (SAIB) (Association of Women's Health, Obstetric, and Neonatal Nurses, 1990), and *Preterm Infant Breast-feeding Behavior Scale* (PIBBS) (Nyqvist, Rubertsson, Ewald, & Sjoden, 1996). SLPs collaborate with mothers, nurses, and lactation consultants for differential diagnosis of maternal and infant issues and parent preferences for feeding modalities.

ASHA and Breastfeeding



- The SAIB incorporates specific observations in the categories of alignment, areolar grasp, areolar compression, and audible swallowing. The PIBBS form is formatted as a diary to be kept by the mother. Notation categories include rooting, amount of breast in the infant's mouth, latching, sucking, sucking bursts, swallowing, state, letdown, and time at the breast. Inter-rater reliability between mothers and nurses for this assessment is an area requiring further development.

ASHA and Breastfeeding



- For the full-term infant in the NICU, the *Breastfeeding Evaluation* (Tobin, 1996) may be used as a guide. This tool contains a list of expectations for feeding including infant's position, latch, suck, intake, and weight gain. In addition, maternal flow rate and output are considered."

ASHA and Breastfeeding



- Sometimes difficult to transition infant to breast in NICU because mother is not present for all feedings
- May need to consider supplemental feeding/adaptations when mother not present:
 - Use of cup instead of bottle nipple
 - NG tube supplements
 - ? Consideration of orthodontic nipple
 - ? Use of nipple shield

Breastfeeding and Oral Development



- Proponents (Danner, 1992) argue breast feeding encourages normal physiologic muscular involvement of the mouth and face and benefits speech development.

Breastfeeding Statistics



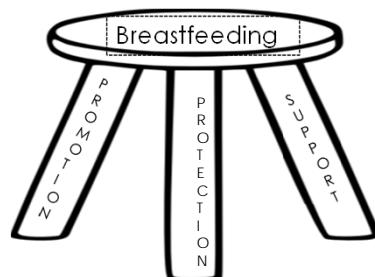
- Reasons for encouraging breastfeeding:
 - Global death of children under 5 years:
 - ★ 8.8 million world wide
 - ★ Infants 0-5 months old who are not breast fed have
 - 7x risk of death from diarrhea
 - 5x risk of death from pneumonia

*compared to infants who are exclusively breastfed

Statistics



- World Health Organization (WHO) and UNICEF have set out three strategies needed for increasing breastfeeding initiation and duration
 1. Promotion
 2. Protection
 3. Support



Cost Effectiveness



- If 90% of American mothers breastfed for six months,

The USA could save 13 billion dollars per year!!

Cost of not breastfeeding:

If 90% of American mothers breastfed for six months, there would be over 900 preventable deaths

Ten Steps to Successful Breastfeeding (WHO/UNICEF)



1. Have a written breastfeeding policy that is routinely communicated to all health care staff
2. Train all health care staff in skills necessary to implement this policy
3. Inform all pregnant women about the benefits and management of breastfeeding
4. Help all mothers initiate breastfeeding within one hour of birth
5. Show mothers how to breastfeed and how to maintain lactation even if they should be separated from their infants.

Ten Steps cont. . .

- 
6. Give newborn infants no food or drink other than breast milk unless medically indicated.
 7. Practice rooming-in: allowing mothers and infants to remain together-24 hours a day (when possible)
 8. Encouraging breastfeeding on demand
 9. Give no artificial nipples or pacifiers (i.e. bottles)
 10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic

What do Ten Steps Affect?

- 
- Study completed with 16 sites using Ten Steps to successful breastfeeding
 - 15 sites continued using usual infant feeding practices
 - Outcomes:
 - Infants born at intervention sites using the Ten Steps were significantly more likely to be breastfed to any degree at 12 months
 - More likely to be exclusively breastfed at 3 and 6 months
 - Less likely to have gastrointestinal infections
 - Less likely to have atopic eczema

• Probit Trial, JAMA 2001 (Kramer et al.)

Evidence-Based Teaching and Practice

- Highest Level of evidence: meta-analysis and systematic reviews (such as the Cochrane Collaboration)
- If something is not researched or studied adequately, you must rely on physiology, especially cell biology
- Things we don't apply as evidence:
 - Knowledge about how other parts of the body work
 - Stories we hear
 - "We've always done it this way"
 - ★ Ask, "Why are we still doing it this way?"

Just a little Humor

- The Breastfeeding Counseling Song:
- When you counsel
 - When you counsel
 - Never Judge
 - Never Judge
 - Praise mother and baby
 - Praise mother and baby
 - Don't Command
 - Do suggest

Why so difficult?

- 
1. Unrealistic expectations
 2. Lack of timely interventions
 - o The fastest drop-off is in the first ten days after discharge (note this is not after birth but after d/c from the hospital)
 3. Misunderstanding about why mothers stop breastfeeding

Healthy People 2020 Goals

- 
- US Health Resources and Services Administration
 - o Goal is to increase the proportion of infants who are breastfed.

Time:

2020 Target:

Ever	81.9%
At 6 Months	60.6%
At 1 year	34.1%
Exclusively through 3 m	46.2%
Exclusively through 6 m	25.5%

Other Goals



- Increase the percentage of employers with worksite lactation programs to 38%
- Reduce the percentage of breastfed infants who receive formula before 2 days of age to 14.2%
- Increase the percentage of live births that occur in facilities that provide recommended care for lactating mothers and their babies to 8.1%

Goals cont...



- How are these goals being tracked?
 - Previously, breastfeeding was tracked using formula company marketing data
 - Now, the CDC is collecting comprehensive feeding statistics
 - Exclusive breastfeeding has shown little increase since 2003 from the CDC data (based on this method of data collection)

So, now we know we should definitely be interested and educated in this subject matter. . .

How are we doing with it
in the US?

Data from C.D.C.

Table 1. National Immunization Survey Reporting on Breastfeeding

Race/Ethnicity	Initiation	6 months	12 months
Hispanic	80.4	45.1	24.0
White, non-Hispanic	74.3	43.2	21.4
Black, non-Hispanic	54.4	26.6	11.7
American Indian/Alaska Native	69.8	37.1	19.4
Asian/Pacific Islander	80.9	52.4	29.7
N=100,930 (average percentage)			

Breastfeeding Anatomy



Out with the old...



Old Way of Explaining Anatomy

- Lactiferous sinuses: bulges in milk ducts behind the nipple
- Fat is in “layers” through the breast
- 27-30+ pores in the nipple for milk evacuation

New Way of Explaining Anatomy

- Truth: Lactiferous sinuses do not exist
- Fat is unevenly spaced throughout the breast
- Truth: 5-10 pores in nipple for milk expression

Got Milk



- Prolactin: The milk maker
 - All humans have prolactin all the time
 - *Nipple stimulation can increase prolactin even in non-pregnant, non-lactating women. However, in postpartum women, prolactin is more responsive.
 - Prolactin has many functions; milk production is just one of them.
 - Another is a growth promoting hormone

Dr. Carvalho's Research



Frequent Nurses

- 10 times per 24 hours
- 138 minutes/day
- ~14 minutes per nursing
- Gain @ 15 day: 561g

Infrequent Nurses

- 7 times per 24 hours
- 137 minutes/day
- ~20 minutes per nursing
- Gain @ 15 day: 347g

Get them to the Breastaurant (as soon as possible)

More on Hormones



- Oxytocin: Milk mover
 - More than one mechanism can trigger oxytocin release, thus compressing the myoepithelial cells and causing milk to flow
 - AKA: milk ejection reflex (MER) or "let down"
 - Oxytocin triggers include:
 1. Conditioned response
 2. Nipple stretching
 3. Baby hand massage

Milk Composition

- Why is Breast Best?
 - Milk composition is complex
 - Each species of mammal milk is different (species specific)
 - The composition of a mammal species' milk and their feeding frequencies are related
 - Human milk is one of the highest in lactose of all mammalian milks, high in water, low in protein and fat. It is a very dilute mammal milk.

HUMAN milk is
the ideal fuel
for the human
brain.

The most rapidly developing organ in
the human newborn is the brain.

Why Problems with Milk?

- Providing breast milk for 6-12 months is very difficult for mothers who exclusively PUMP
- Providing breast milk even to discharge in the NICU is extremely difficult if there is no direct contact/breast feeding
- When a mother in NICU is able to establish successful ACTUAL breastfeeding during the infant's stay, long-term breastfeeding success is much more likely

Pineda, R. (2011)

Other Causes for Low Supply

- Not pumping often enough
- Not emptying breasts completely
- Use of poor quality pump
- Significant postpartum bleeding
- High blood pressure
- Treatment with magnesium sulfate at birth
- Retained placental fragments
- Lack of breast development during pregnancy and delivery
- History of breast reduction surgery
- Hypothyroidism

Anatomical Concerns



- Absence of breast changes during pregnancy or early days post partum
- No post partum fullness or signs of milk "coming in"
- Unilateral underdeveloped breast may indicate inadequate glandular tissue in one or both breasts
- One implant may indicate discrepant breast size
- ANY breast surgery may impact breastfeeding
- Are nipples flat or inverted?

Kangaroo Care



Skin to Skin

Skin-to-Skin



- Breast milk expression via pump:
 - Pulsing oxytocin release
 - Increased prolactin release
 - Improved milk production
 - Maternal psychological well being:
 - ★ Decreased stress
 - ★ Improved milk ejection reflex response
 - ★ Empowerment as a parent
 - ★ Improved milk production

Skin-to-Skin



- Infant benefits from contact:
 - Comforts and consoles
 - Stabilizes temperature, heart rate, respiratory rate
 - Improved oxygen saturation
 - Improved mother-infant bonding
 - Leads to 65-82% decrease in pain symptoms (Pediatrics, 2000)
 - Increased incidence of quiet sleep (Pediatrics 2006)
 - Allows mother to be exposed to infant's flora
 - ★ Enables mothers to continue to build immunity in the breast milk

Keys to success. . .

- Maternal support
 - Emotional support
 - Physical support
 - Monitor through stages of Lactogenesis
 - Direct breastfeeding assessment
 - Referrals
- Family and partner support
- Establishment of Lactogenesis II
- Breastfeeding Assessment
 - Milk Supply
 - Milk Transfer
- Nurse support in NICU
- Community Support

Stages of Making Human Milk

Synthesis Stage	Triggered BY	Milk
Secretory Differentiation or Lactogenesis I	Placental hormones	Colostrum
Secretory Activation or Lactogenesis II	Complete delivery of placenta, leading to rapid drop in progesterone	Transitional Milk
Lactation, or Lactogenesis III, or Galactopoiesis	*prolactin from frequent nipple stimulation and frequent removal of milk	Mature milk

Lactogenesis II



- Onset of copious milk production
- Progesterone withdrawal physiological trigger
- Adequate plasma levels of prolactin necessary
- Adequate levels of cortisol and glucocorticoids required
- Insulin (metabolic balance allowing flux of nutrition to mammary glands)
- Early removal of colostrum from the breast:
 - Sodium and chloride levels fall
 - Lactose concentrations increase
 - Secretory immunoglobulin A and lactoferrin increase dramatically
 - Oligosaccharide concentrations high

Delays in Lactogenesis II



- Poorly controlled diabetes
 - Correlates with high serum glucose levels
- Stress
 - Correlates with high cortisol levels
 - Can temporarily affect oxytocin levels
- Inadequate milk removal
 - High milk sodium levels reported prior to lactation failure in mothers whose infants were not latching well and removing milk adequately

Why is this so important for preemies? (and all babies)

- **AAP's statement on infant health benefits:**
- Higher IQ and school performance through adolescence
- Reduced risk for chronic disease (obesity, heart disease type 1 and 2, diabetes, and hypertension)
- Reduced risk for Sudden Infant Death Syndrome (SIDS)
- Reduced risk for infant morbidity and mortality
- Optimal nutrition for infant
- Strong bonding with mother

- Safe, fresh milk
- Reduced risk for acute otitis media, gastroenteritis, severe lower respiratory infections and asthma
- Protection against allergies and intolerances
- Promotion of correct development of jaw and teeth

World Health Organization

- WHO recommends that low birth weight (LBW) infants should be fed mother's own milk. This includes very low birth weight infants (VLBW). If these infants cannot be fed mother's own milk, they should be fed donor human milk.
- http://www.who.int/elenas/titles/supplementary_feeding/en/

Hierarchy of Feeding for Infants

- 1. Direct breastfeeding from infant's mother
 - 2. Receiving expressed breast milk from infant's mother (via bottle or gavage)
 - 3. Donor human milk
 - 4. Formula
- Paradigm shift:
 - If humans are designed for human milk, then that SHOULD BE the standard for our goal setting
 - Think as professionals: Are we looking at human milk and nursing as "the norm" and bottle feeding as an adaptive strategy?

Gold Standard?

- Why should breastfeeding be the gold standard for infants?
 - Look at feeding chronology
 - Eating begins reflexively
 - Reflexive behaviors develop into learned behaviors
 - These reflexes that infants come equipped with were designed for nursing:
 - Positioning: elevated side-lying
 - Pacing and flow rate-infant controlled
 - Safety-infant control
 - Connection, comfort and cues - interdependent

Important for Premies

- The bioavailability of nutrients (such as iron) in human milk is higher than in other foods
- Preterm Milk appears to have a different composition for the first 30 days after delivery.
 - In general, it appears to be higher in protein, fat, and electrolytes than mature milk.
- Infants fed breast milk have faster brainstem maturation compared with infants fed premie formulas (especially for those born between 28-32 weeks)

Benefits of Breastmilk Feeding in the NICU

- Reduces the risk of Necrotizing Enterocolitis
- Reduces the risk of Nosocomial Infections
- Reduces incidence of Chronic Lung Disease
- Very low birth weight infants are less likely to exhibit oxygen desaturation to less than 90% during breastfeeding
- Improves eye and brain development, particularly for preterm infants
- Reduces incidence of respiratory illness: RSV
- Improved neurodevelopmental outcomes

CALLEN, J (2005)

Breastfeeding for GI Protection

- Less diarrhea is the most readily acknowledged advantage of breastfeeding
 - Low iron in the stomach so organisms can't grow and multiply
 - Bifidus factor promotes growth of friendly bacteria that maintain low pH and crowd out pathogenic organisms
 - Antimicrobial activity boosters
 - Antibodies, such as Secretory IgA which bind to the microbes in the digestive tract and prevent them from being absorbed in the body
 - ANY breastfeeding is associated with a 64 % reduction in non-specific GI tract infections
 - Absence of the exposure to contaminants (bottle, nipple, water) and formula ingredients
 - The list goes on and on. . . .

pH

Even one bottle of formula can change the pH of the babies stomach for at least 6 weeks ***(making them more susceptible to infections and diarrhea)

Formula Feeding

- High Sugar Exposure
- High GMO Exposure
- Increased Allergy Risk
- Synthetic vitamins
- Increased Risk Fat Deficiency



Breast Feeding

- Enhanced Natural Immunity
- Reduced Allergy Risk
- Bonding
- Weight Normalization (mom)



Weight Loss/Gain



- Immediately after birth, most babies lose weight (some from normal diuresis)
- Maximal acceptable weight loss is 10% in full term baby
- By two weeks at the latest the baby should have regained its birth weight
- $\frac{1}{2}$ to 1 ounce daily weight gain in the newborn period is minimum expectancy
- Exclusively breastfed babies gain faster at first, then slower compared to formula fed babies

More Reasons to Breastfeed:



- Hyperinsulinemia:
 - Production of insulin that does not move in to the cells
 - Receptor sites on cells seem to be blocked (by fat?), so the function of insulin to move glucose out of the blood and into the cells can't occur efficiently
 - Excess insulin in the blood is used to make and lay down fat
 - It has been proposed that the higher weight gained in formula-fed infants after three months of age could be explained by relative hyperinsulinemia

Obesity Risks



- Obesity risk may be minimized with increased duration of breastfeeding
 - Exclusive breastfeeding for 6 months significantly decreased the risk of elevated weight gain at 2 years
 - Duration of exclusive breastfeeding was inversely associated with the risk of elevated weight gain
 - Breastfeeding is one component of the CDC's Childhood Obesity Prevention Plan
 - Formula also contains many highly saturated fats

Breastfeeding and Undernourished Babies



- Cooper and colleagues identified a significant increase of malnourishment and hypernatremia in BF infants
- Calls into ? many beliefs:
 - Early discharge
 - Prenatal classes
 - Urinary output was not a reliable means of measure of intake
 - Babies were not identified before 10% weight loss
 - A contented/sleepy baby does not mean a well fed baby

Why is it Good for Mom?

- Improved bone density and decreases risk for hip fracture
- Decreased risk for post partum depression
- Enhances self-esteem in the maternal role
- Time saved preparing and mixing formula
- Money saved from not purchasing formula and increased medical expenses associated with formula feeding
- Strong bonding with infant
- Increased energy expenditure which may lead to faster return to pre-pregnancy weight
- Faster shrinking of the uterus
- Reduced post-partum bleeding and delays in cycles
- Decreased risk for chronic diseases such as type 2 diabetes, breast and ovarian cancers

Breastfeeding for NICU Mothers

- Important to encourage kangaroo care or skin-to skin
- Helping mothers establish supply
- A healthy infant would need to nurse a minimum of 8-12 times in a 24-hour period
- Expect NICU infants to have the same criteria of "feeding" in some way every three hours minimum (whether actually nursing or being provided gavaged expressed milk from mother)
- Mother needs to start pumping as soon after birth as possible, especially if not able to have contact with infant
- Mother needs to pump at least 15-20 minutes each time

Mother's Goals



Always remember, when providing support, to discuss with the mother/family their goals!!

1. What are her ideas about breastfeeding?
2. How does she feel about allowing bottle feeding?
3. Find out what is most important to her and their family.

Bottle vs. Breast



You always hear bottle feeding is very different from breastfeeding. . .

But why?

Bottle vs. Breast Anatomical/Physiological Differences

Breast:

1. Wider mouth opening
2. Tongue rolling or peristaltic motion
3. Muscle activation of mentalis, masseter, temporalis and medial pterygoid
4. Shape of breast nipple is determined by the internal geometry of the infant's mouth

Bottle:

1. Varies, dependent on nipple size and shape
2. Pistoning motion or squeeze-like motion
3. Buccinator and orbicularis oris
4. Artificial nipple has a formed shape that is less able to be manipulated by infant with less pliable materials

Craniofacial Development

- Soft breast nipple tissue flattens and broadens against the palate in response to infants tongue movements
 - This way the palate is allowed to form appropriately
 - May lead to fewer teeth malocclusions due to proper alignment from palate forming correctly
- An artificial nipple can cause the bones of the palate to shape around it over time, leading to teeth malocclusions and a malformed palate

Rules for the "How to"

- We should NOT give mothers rules about how long a feeding should last based on ideas about fore milk and hind milk.
- Within the diurnal rhythm, the fat content of suckled milk increases steeply with the increased rate of milk removal.
- One breast or two breast per feeding is fine
- There is no difference in a baby's net fat intake according to the number of breasts suckled per feeding.
- Some babies do better with just one side per feed

Milk Supply

- How do we assure an adequate milk supply?
 - Appropriate breastfeeding assessment
 - Appropriate pediatric follow-up
 - Universal understanding of how BF works
 - Early initiation of adequate BF (at least 10-12 times a day)
 - Admitting that there is no magic bullet

Breast milk is
produced by
supply/demand.
Nurse Baby
often to increase
Supply!

"A nursing
mom's
insurance
policy"

Got Milk?

Feeding Cues

- Early signs of hunger
 - Eye twitching behind lids
 - Tight fists
 - Cycle between REM and deep sleep (~every 27 minutes)
 - REM is opposite for babies than adults (REM is light sleep for babies)

REMEMBER



Clocks have batteries

Babies have brains

=

Are We Ready Yet?



- Assess breastfeeding readiness similarly to bottle feeding; however, keep in mind that infants may be able to attempt breastfeeding slightly earlier than bottle feeding due to state regulation with skin to skin contact
 - Look for:
 - Stability with handling
 - Showing oral interest
 - All infant led
- ***Progression from skin to skin position → actual exposure to the breast → to eventual latching and non-nutritive sucking

Establishing the Latch



- Why is proper latch establishment so important?:
 - Breastfeeding will be unsuccessful and most likely extremely painful without the appropriate latch
 - Without proper latch, the signals the body is designed for will not be properly activated and an adequate milk supply will not be supported
 - If a proper latch is not established, there will not be an adequate transfer of milk from breast
 - ★ Causes infant slow or little weight gain
 - ★ Causes mother's supply to either not be established or to diminish

Latch Continued. . .



- Proper latch:
 - Lips flanged out
 - Angle opening of lips should be 146* or more
 - No clicking or smacking sounds when attempting to suck
 - No dimples in cheeks
 - Initial rapid sucks (to establish let down), then open-pause sucking once let down has occurred
 - Jaw should produce a rocking motion during proper latch, rather than a pistonning motion if latch is not correct
 - Chin and nose should rest close to breast
 - Baby should be lined up: ears, shoulders, and hips
 - ★ When possible (remember to watch for cords, IV, monitors, etc. in NICU infants)

Preparing for Latch



- Infants knees and feet close to body
- Infant tummy to mother tummy if possible
- Start with nose at nipple level
- Tilt head back, angling chin towards breast

Preparing for Latch



- Wait for infant to show signs of rooting
- Only attempt with wide open mouth; avoid half open mouth sliding onto nipple
- Firm gentle push from behind shoulders to guide them forward once in proper placement

Latching On



- Make sure the baby's mouth is opened wide and his or her tongue is down when latching on.
- Make sure to support the breast with hand, positioning thumb on top and fingers at the bottom, keeping thumb and fingers back far enough so that the baby has enough of the nipple and **areola** (the circle of skin around the nipple) to latch onto.
- Gently glide the nipple from the middle of the baby's bottom lip down to his or her chin to help prompt the baby to open his or her mouth.

Latching On



- When the baby opens his or her mouth wide and the tongue comes down, quickly bring the baby to the breast (**not** the breast to the baby). The baby should take as much of the areola into his or her mouth as possible, with more areola showing at the top lip than at the bottom.
- Make sure the baby's nose is almost touching the breast (**not** pressed against it), his or her lips are turned out (or **flanged**), and you see and hear the baby swallowing. (You should be able to tell by seeing movement along the baby's lower jaw and even in the baby's ear and temple.)

Latching On



Proper Latch



Proper Latch



Improper Latch



- Signs that latch is incorrect:
 - **Painful nipples**
 - Shallow latch
 - On and off latch - why is infant not able to maintain latch?
 - Tongue clicking - while trying to latch? While trying to suck?
 - Cheeks: Is there dimpling? Is the cheek nice and round?
 - Absence of ability to maintain suck/swallow - where is the coordination break down?
 - Clenching or biting

Ankyloglossia



Improper Latch



- On and off latch
or loose latch

Shallow Latch

Positions



- Cradle position
- Cross cradle position
- Clutch/football hold

There are more positions that can be used for difficult circumstances*

Cradle Position



- Also known as the Madonna position
- The mother sits in any posture that is comfortable
- The baby lies on his or her side, facing the mother
- The side of the baby's head and body rest on the mother's forearm of the arm next to the breast being used
- Nose at nipple level
- Knees and feet close to body
- Head tilted with chin angled toward body
- Can be adjusted to semi-upright

Cradle Position



The Cross Cradle Position



- Considered especially useful for the mother of a newborn or pre-term infant
- The mother sits in any posture that is comfortable
- The infant lies on his or her side facing the mother
- The side of the infant's body rests on the mother's forearm of the arm of the opposite side of the breast being used
- Palm on upper back, or-
- The hand supports the baby's neck and shoulders in such a way the baby can tilt his or her head

Cross Cradle Position



Clutch/Football Hold



- The mother sits in any posture that is comfortable
- The infant lies on his or her back, curled between the side of the mother's chest and her arm
- The infant's upper body is supported by the mother's forearm
- The mother's hand supports the infant's neck and shoulders
- The infant's hips are flexed up along the chair back or other surface that the mother is leaning against

Clutch/Football Position



Side-lying Position



- The mother lies on her side
- The infant is placed on his or her side, lying chest to chest with mother
- The mother's arm closest to the mattress or a rolled blanket supports the infant's back

Side-Lying Position



Semi-Reclining Position



- The mother sits in a comfortable chair, or reclines in a bed (hospital bed)
- The mother leans back and the baby lies against her body, usually prone
- Use same latching techniques used in cradle position
- Also known as "laid back" nursing

Semi Reclining Position



Semi Reclining Position



Australian Position



- The mother is “down-under” lying on her back
- The baby is supported on her chest

Saddle Hold Position



- Infant is placed in front of mother’s breast
- Legs can either be straddling mother’s leg, or if infant is still too small, infant bottom can be placed on a pillow to elevate infant to level of mother’s breast
- A newborn or low tone infant will need back/neck support from mother or can be propped up with pillows
- An older infant may be able to sit unsupported

Saddle Hold Position



Infants with Special Needs



- Down Syndrome
- Cleft lip/palate
- Infants of Diabetic Mothers (IDM)

- ****These are just a few of the types of infants that may be encountered in NICU with feeding difficulties

Down Syndrome and Breastfeeding



- May struggle with breastfeeding skills because:
 - Low muscle tone
 - Depressed reflexes - often don't root actively or sometimes not at all
 - Hypotonic perioral muscles, weak suck (possibly enough to decrease mother's milk supply)
 - Skeletal abnormalities of the mouth and skull which decrease volume of the oral cavity
 - Deficiency in smooth muscle movement
 - Fatigues easily

Down Syndrome and Breastfeeding



Recognizing Hypotonia of the Oral Cavity Region in Babies with Down Syndrome:

- Baby sucks badly or not at all from the breast
- Bottle drinking is difficult or impossible
- Baby may not be able to make an adequate vacuum (there could be a gap in the corner of his/her mouth/lips)
- Some babies with hypotonia do not have a sucking reflex, or have a decreased one
- Weight loss will happen if the infant's feeding problem remains undiscovered (Sleepy babies who do not always wake to eat or who spend time at the breast not getting sufficient quantities of milk.)
- The philtrum (area between the upper lip and nose) looks flatter than that of typical strong newborns
- Facial muscles may be less active than typical strong newborns (diminished facial expressions)
- Baby smiles less or not at all

Intervention Strategies for Down Syndrome

- Ensure mother has the greatest possible milk supply with early and frequent feedings and milk expression when not able to feed baby
- Feed baby often, expect smaller/shorter feedings due to infant fatigue factor
- Provide sensory input to the mouth (involve OT when able)
 - Ensure providing oral experience vs. just oral stimulation (want to set infant up with positive reinforcement for oral feeds)
- Position for tone
 - Can also involve PT to help with positioning and muscle tone increase
- Try Dancer technique/saddle position
- Try alternate massage/breast compression

Intervention Strategies for Down Syndrome

- **Over or under-sensitive to stimulation:** This is common for babies who have Down syndrome. Some babies respond better and nurse for longer periods of time in a dark, quiet environment where they can concentrate fully on the task at hand. Other babies respond better to loud, exciting music with a bouncy beat and being patted on the back to help keep them stimulated and awake during a feeding.
- Continue monitoring for signs of discomfort throughout feeding, monitoring for possible signs/symptoms of aspiration and/or reflux

Cleft Lip/Palate and Breastfeeding



- What is the extent of the cleft lip and/or palate?
 - Unilateral? Bilateral?
 - Lip? Lip and palate? Just palate?
- Problems coordinating breathing and feeding
- Signs of respiratory distress
- Circumoral cyanosis during feedings
- May have difficulty with compression and/or suction dependent upon extent of palatal cleft
 - Have difficulty creating seal and vacuum

Intervention Strategies for Cleft Lip



- Collect pre- and post-feeding weights
- With cleft lip only, mother may be able to angle her breast so that the soft tissue fills the space in the lip
- Mother may also use fingers to help "close the space"
- Baby can breastfeed before surgical repair
- Mother can use alternate massage/compression on the breast
- Surgical repair of the lip is often completed around 3 months of age
- Nursing can continue immediately after repair pending surgeon's approval

Interventions Strategies with Cleft Palate



- With unilateral cleft palate, assist mother in angling her breast in the infant's oral cavity in order for the soft tissue of the breast to fill the cleft area (nipple should extend into intact portion of oral cavity)
- This may also help provide a deeper latch
- Discuss with Neonatologist consideration of palatal obturator
- Consideration of nipple shield use to help cover more of the cleft
- Alternate breast massage and compression during nursing

IDM Infants



- These infants tend to be larger babies, so many think they should be more mature
- They are usually floppy babies, lower tone, and neurologically immature
- These infants may need more time to adjust to oral feeding in general
- May benefit from breast feeding over bottle feeding due to ability to control the feeds
- May benefit from smaller, more frequent feeds, as infant may sleep a lot

Supplemental Feeding System



Weighing

- Best way to ensure amount infant is receiving per feed at breast is to complete pre- and post-weights of infant each time at breast

Nipple Shield



Nipple Shield



Bottle Feeding



***Remember, there is no bottle nipple that is most like the breast

- Bottle feeding may alter self-regulation of intake, contributing to later obesity
 - Because the adult is in charge
 - Infants are not allowed to self-pace
 - They become over-eaters
 - An infant at the breast can take as much or as little as they want, and stop at their own pace

Bottles and Breastfeeding



- Be aware of certain nipple shapes
 - Orthodontic nipple
 - Nipples with abrupt change from nipple to base
- Make bottle feeding more like breastfeeding
 - Mimic breastfeeding by letting baby pause and rest periodically while bottle feeding
 - Allow baby to have burst on bottle just like on breast, then take a pause for catch up breathing, simulating a let down
 - Continue allowing burst cycles and rest cycles throughout bottle feed; can leave bottle in the mouth just like a breast would be, just pausing for rests

Bottles/Nipples



- Monitor bottle choices for breastfeeding similar to bottle feeding regarding:
 - Flow: Too fast? Too slow?
 - Nipple length: Is nipple too long? Too short?
 - Look at baby's oral cavity and monitor how baby latches on to breast
 - If you are trying to use a wide based nipple: If baby is not latching deeply enough, create a deeper latch by molding bottle nipple like you would a breast nipple

Cup Feeding?



- Preferred supplementation of WHO/UNICEF
- Inexpensive to implement
- Regardless of method, any supplementation system can have an impact on breastfeeding duration
- May be more protective methods for breastfed babies and babies who are born via C-section

• Healthy Children Project, Inc. 2012

Cup Feeding for Premies?



- Less increase in heart rate
- Better oxygenation
- Ability for baby to pace own feeding
- Premies seen in randomized studies on cup drinking were more likely to be fully breastfed at discharge from NICU
- Would need to be a hospital policy in place for cup feeding in NICU
- Would benefit from more studies

Pacifiers: To Use or Not to Use



- Research indicators that pacifier use may be associated with: Fewer feeds, shorter duration of suckling per 24 hours, shorter duration of exclusive breastfeeding and any breastfeeding
- No such associations were found with thumb sucking
- Pacifier use is negatively associated with BF in a dose dependent way

Premies and Pacifiers



- May have better weight gain while tube fed and earlier hospital discharge
 - Gives oral stimulation while getting their bellies full
- Use did not affect breastfeeding among preemies (whose mothers' milk supplies are usually supported by pumping)

Hold on the H2O



- Water is not needed for either breastfed or formula-fed babies
- Babies fed manufactured formulas don't need extra water
- Even breastfed babies in hot, dry climates don't need extra water
- Babies are driven to feed by thirst (not hunger)
- Water-supplemented breastfed babies are significantly more likely to get formula by 4 and 16 weeks
- Babies can become water intoxicated
 - ***Especially important to remember for our NICU and special needs babies
 - *Changes their labs

A Few Random Tidbits. . .



- Many people/cultures feel that babies in the USA are underfed
- Babies in other countries have 24-7 access to the mother and were able to be d/c home by 34-35 weeks gestation when being breast fed (think about the baby-friendly hospital initiative)
- Milk is more than nutrition:
 - Besides water, lactose, fat and protein, human milk has hundreds of other species-specific bio-active components (these can not be reproduced in formulas)

Other Cultures



- New study from Sweden with breast feeding tips and facts about breastfeeding shows nature intends breastfeeding newborns to be much more than the best nutrition.
- "Breastfeeding is a way to meet and see your baby, and spend some real close time together."
- A woman, in other natural cultures, breastfeeding in Africa, gives the breast without reservation.
- She is not concerned with when the baby was fed last or if her breasts seem full or empty.
- She is not breastfeeding the child first of all to give it breast milk, she is breastfeeding to make the baby happy and content."