Infant Feeding: Clinical considerations for breast and bottle

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Prevalence of Infant Feeding Difficulties

Current research indicates that up to 35% of infant have a feeding problem.
Focus Today

Infant feeding is quite complex.
Today we will focus on:
Structural Causes
Coordination Concerns
Prescriptive bottles/thickeners

Breast Feeding Defined

According to the World Health Organization an infant who is breast feed is one whom is provided breast milk.
Structures and Function: Oral Facial Examination

Non-Nutritive Suck

- Positive pressure = Compression
- Negative pressure = Suction
- Tongue cup or bunched
- A/P Stripping
- Release/pop
- Chomping or suck/compression balance
Craniofacial/Pharyngeal, Laryngeal and Esophageal Anomalies

Maxillary labial frenum/maxillary lip tie

KoItlow infant and newborn maxillary lip-tie diagnostic classifications (based upon insertion location of the frenum to the upper jaw)

- Class I: Minimal visible Attachment
- Class II: Attachment into the area where the free and attached gingival tissue meet.
- Class III: Inserts just in front of anterior papilla
- Class IV: Attachment just into the hard palate or anterior papilla area
Lip Flange Demo

Hazelbaker Assessment for Lingual Frenulum Function
Ankyloglossia

*Katlaw Diagnostic criteria (one) for clinically apparent tongue-ties in infants

**Type I (4L) - total lip involvement

Type II (3L) - Midline area under tongue (creating a hump or cupping of the tongue)

Type III (2L) - Distal to the midline. The tongue may appear normal

Type IV (1L) - Posterior area which may not be obvious and only palpable. Some are submucosally located

Posterior Tongue Tie Release
Nutritive Suck at Breast

Normal Infant VFSS
SSB Assessment and Infant Stress at Bottle and Breast

- Poor rhythmicity/coordination
- Pulling off nipple repeatedly
- Increased WOB, subclavicular substernal subcostal retractions
- Suck/Swallow ratio 1:1, 2:1 normal
- Elevated or furrowed brows
- Tension through lower body
- Tension through upper body
- Protesting
- Coughing, gagging, retching
- Shift in vitals/physiological state
- Response to external pacing
  - suck bursts
  - catch up breaths
- Positioning for postural/tone issues
  - weak side up

Vitals

**Heart Rate**
- **Neonate** 120-180 beats/min
- **Newborn** 130 beats/min
- **3 months** 150 beats/min
- **6 months** 135 beats/min
- **1 year** 125 beats/min

**Oxygen Saturation Levels**
- **Preterm** roughly 84 to 90 percent
- **Full Term** 95 to 100 percent.
Using bottle to promote breast

Positioning
Gape
Flange
SSB
Catch up breathing

Nipple Flow Rates: What are they REALLY and how do they affect our clinical practice?
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- Due to the FDA recommendations stated in late 2012 regarding the use of commercial thickeners (primarily Simply Thick) in infants, NICU feeding therapists were prompted to re-assess our current practice of thickening infant’s liquids for improvement of swallow function based on these recommendations.
- As a result, use of slow flow nipples became popular to decrease flow rate with the hope of improving swallow function.
- “Slow flow” was not consistent especially according to commercial packaging.
- Repeat and expand on the research of Kelly Jackman, MPT on nipple flow rates in 2013 in the Newborn and Infant Nursing Reviews 13 (2013) 31-34.
- Minor adaptations were made to determine if there was consistency of correlation between methods.
- The information gained from the study was used as an evidence based approach to educate therapists, medical staff, nursing, and parents to aide in appropriate nipple selection based on flow rate for safe efficient feeding.
- Compare flow rates with what is commercially available.
Methods and Materials:

• A Symphony Breast pump by Medela, and a Medela disposable personal pumping kit were used.

• Nipples were placed in a pump flange that best fit the nipple (the 24 ml flange for narrow based nipples and the 27 ml flange for wider based nipple).

• Each nipple was manually held in the flange to assure a good seal and appropriate suction. Nipples were held upside down to mimic the “old” way of observing nipple “drip” rates.

• The nipples were manually filled with Similac Expert Care Neosure 22 cal/oz formula at room temperature via a syringe in order to keep the nipple constantly full.

• This was done simultaneously with the Symphony breast pump in its Expression Phase with 150 mm Hg of suction.

• Liquid was collected in Medela breast milk storage bottles.

Methods and Materials: cont.

• Suction was supplied for 60 seconds and liquid was collected in Medela breast milk storage bottles. Nipples were tested in this manner three times each.

• An average milliliter per minute was calculated. If suction was lost or the nipple seal on the flange was broken, the trial was repeated.

• A Similac Standard Disposable (clear ring), Enfamil Slow Flow (green ring), Similac Slow Flow (yellow ring), and Enfamil Standard Flow Soft Disposable (blue ring) were tested in a similar manner.

• Three of each nipple were tested (different lot numbers and expiration dates) for three times each to assess not only the flow rate but the consistency across lots.

• Nipples were labeled 1, 2 and 3 and were each tested three times. The data from each nipple was averaged per trial and then an average was calculated.
Disposable Nipple Flow Rates

Results:

Commercial Nipple Flow Rates
Conclusion:

• Nipples advertised as “slow flow” can range from flow rates of 5.6 ml per minute to 46.3 ml per minute.

• Disposable hospital nipples have more variation in flow rates from each unit than commercial nipples. Flow rates of disposable nipples also have variation with repeated use.

• Flow rates of commercially available nipples were more consistent with multiple trials.

• Further research is warranted in the future to measure pliability of nipples and its affect on flow rate.

• Clinically, both pliability and flow rate of the nipple should be considered when determining an appropriate nipple for an infant.

Application:

• Knowledge of flow rates of disposable hospital nipples can help determine an appropriate “home going” nipple with a similar flow rate.

• Evidence of nipple flow rates is beneficial for parent and staff education on an appropriate feeding system.

• Nipple flow rate information can help the hospital determine what nipples to stock in the medical imaging room where modified barium swallow studies are performed. Having more options for changing the flow rate during a swallow study may decrease the need for a thickening agent.

• Flow rate data has improved parent and staff acceptance of the recommended feeding system.

• Commercial marketing and packaging changes frequently and unexpectedly.
Thickeners

With advances with standardized nipple flow rates and specialized feeding systems thickening agents can often be avoided. Thicker formulas can also be used strategically.

All thickening agents have side effects—none are benign.
Infant Intake Guidelines

Full term infants need 2-3 oz ebm/formula per pound of body weight per day to gain weight. Feedings should be limited to 20-30 minutes. More calories will be burned during the act of eating than consumed after 30 minutes. Babes with fatigue risks limit to 10-15 minute feeds with enteral feeding supplement. Feedings should occur every 3-4 hours.

Daily Intake
Birth-1 month  14-28 oz
1 to 2 months 23—34 oz
2 to 3 months 25-40 oz
3-4 months 27-39 oz
4 to 5 months 29-46 oz
5 to 6 months 33-48 oz

Thank you!


Genna C. Supporting Sucking Skills in Breastfeeding Infants-2nd ed. 2013 Burlington, MA Jones and Bartle Learning


www.Dr.Brown’sBaby.com/medical