Infant Feeding:
Clinical considerations for breast and bottle

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Prevalence of Infant Feeding Difficulties

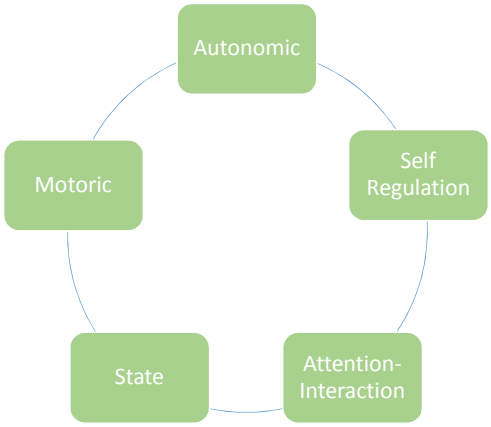
Current research indicates that up to 35% of infant have a feeding problem.

Focus Today

Infant feeding is quite complex.

Today we will focus on:

Structural Causes
Coordination Concerns
Prescriptive bottles/thickeners

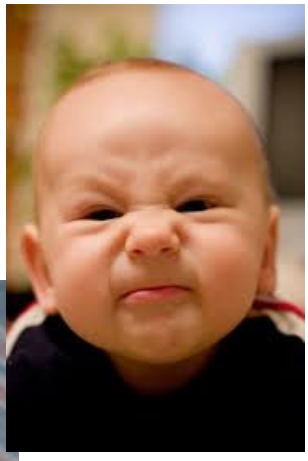


Breast Feeding Defined

According to the World Health Organization an infant who is breast feed is one whom is provided breast milk.

World Health Organization

Structures and Function: Oral Facial Examination



Non-Nutritive Suck

Positive pressure= Compression

Negative pressure= Suction

Tongue cup or bunched

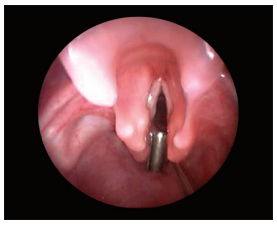
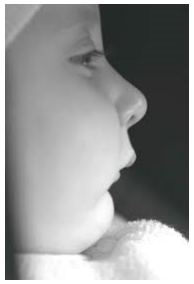
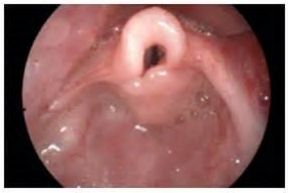
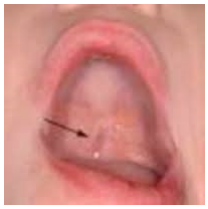
A/P Stripping

Release/pop

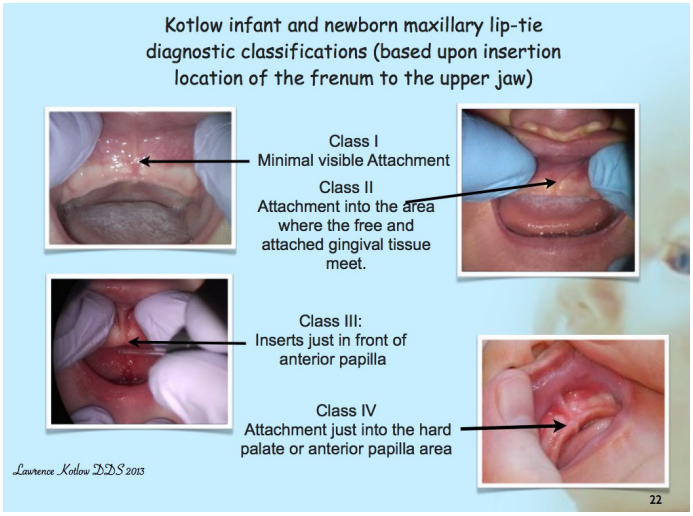
Chomping or suck/compression balance

Craniofacial/Pharyngeal, Laryngeal and Esophageal Anomalies



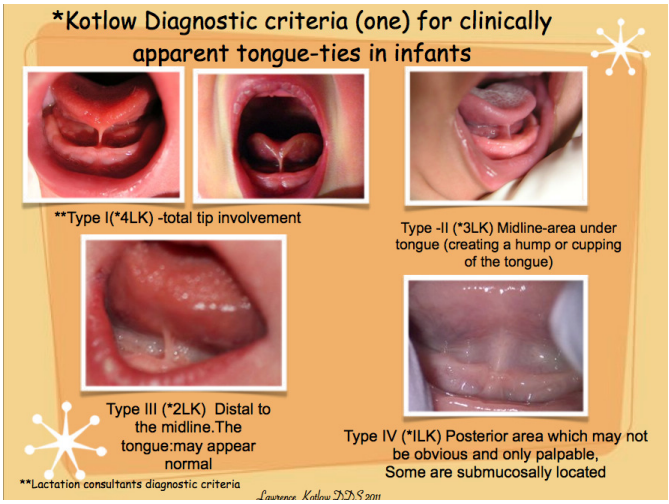

Maxillary labial frenum/maxillary lip tie



Lip Flange Demo

Hazelbaker Assessment for Lingual Frenulum Function

Ankyloglossia



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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Dayton Children's Hospital, Dayton, OH

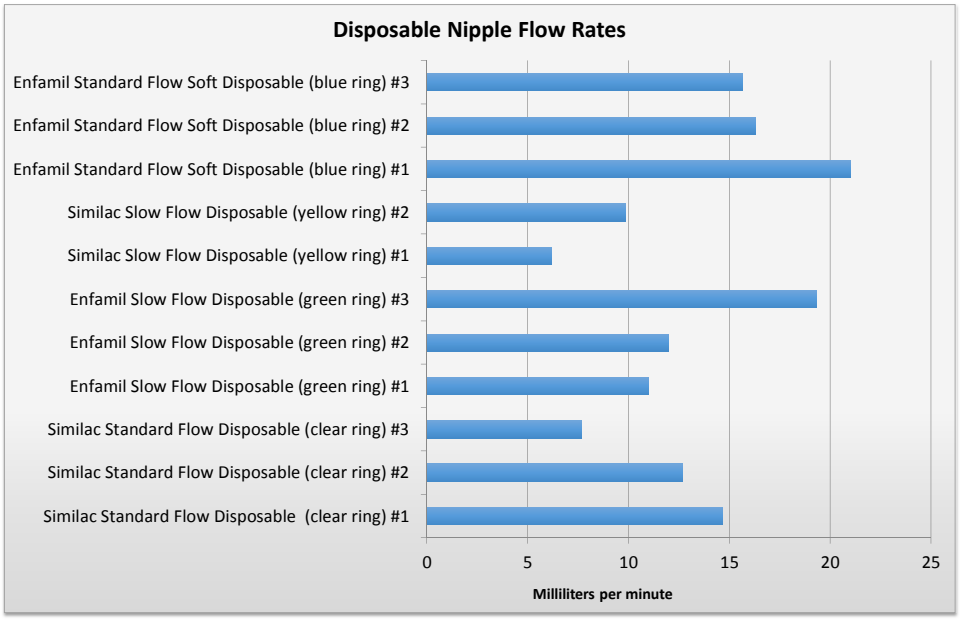
- Due to the FDA recommendations stated in late 2012 regarding the use of commercial thickeners (primarily Simply Thick) in infants; NICU feeding therapists were prompted to re-assess our current practice of thickening infant's liquids for improvement of swallow function based on these recommendations.
- 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:

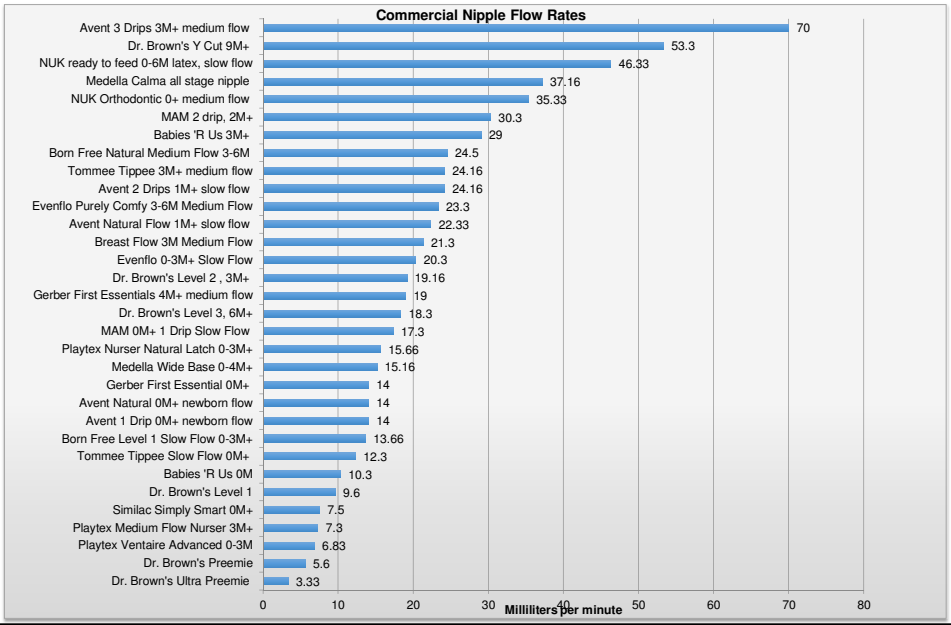
- A Symphony Breast pump by Medela, and a Medela disposable personal pumping kit were used.
- Nipples were placed in a pump flange that best fit the nipple (the 24 ml flange for narrow based nipples and the 27 ml flange for wider based nipple).
- Each nipple was manually held in the flange to assure 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
Enfamil Standard Flow Soft Disposable (blue ring) #3
Enfamil Standard Flow Soft Disposable (blue ring) #2
Enfamil Standard Flow Soft Disposable (blue ring) #1
Similac Slow Flow Disposable (yellow ring) #2
Similac Slow Flow Disposable (yellow ring) #1
Enfamil Slow Flow Disposable (green ring) #3
Enfamil Slow Flow Disposable (green ring) #2
Enfamil Slow Flow Disposable (green ring) #1
Similac Standard Flow Disposable (clear ring) #3
Similac Standard Flow Disposable (clear ring) #2
Similac Standard Flow Disposable (clear ring) #1
0
5
10
15
20
25
Milliliters per minute

Results:


Commercial Nipple Flow Rates
Avent 3 Drips 3M+ medium flow 70
Dr. Brown's Y Cut 9M+ 53.3
NUK ready to feed 0-6M latex, slow flow 46.33
Medella Calma all stage nipple 37.16
NUK Orthodontic 0+ medium flow 35.33
MAM 2 drip, 2M+ 30.3
Babies 'R Us 3M+ 29
Born Free Natural Medium Flow 3-6M 24.5
Tommee Tippee 3M+ medium flow 24.16
Avent 2 Drips 1M+ slow flow 24.16
Evenflo Purely Comfy 3-6M Medium Flow 23.3
Avent Natural Flow 1M+ slow flow 22.33
Breast Flow 3M Medium Flow 21.3
Evenflo 0-3M+ Slow Flow 20.3
Dr. Brown's Level 2 , 3M+ 19.16
Gerber First Essentials 4M+ medium flow 19
Dr. Brown's Level 3, 6M+ 18.3
MAM 0M+ 1 Drip Slow Flow 17.3
Playtex Nurser Natural Latch 0-3M+ 15.66
Medella Wide Base 0-4M+ 15.16
Gerber First Essential 0M+ 14
Avent Natural 0M+ newborn flow 14
Avent 1 Drip 0M+ newborn flow 14
Born Free Level 1 Slow Flow 0-3M+ 13.66
Tommee Tippee Slow Flow 0M+ 12.3
Babies 'R Us 0M 10.3
Dr. Brown's Level 1 9.6
Similac Simply Smart 0M+ 7.5
Playtex Medium Flow Nurser 3M+ 7.3
Playtex Ventaire Advanced 0-3M 6.83
Dr. Brown's Preemie 5.6
Dr. Brown's Ultra Preemie 3.33
0
10
20
30
40
50
60
70
80
Milliliters per minute

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 it’s 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.

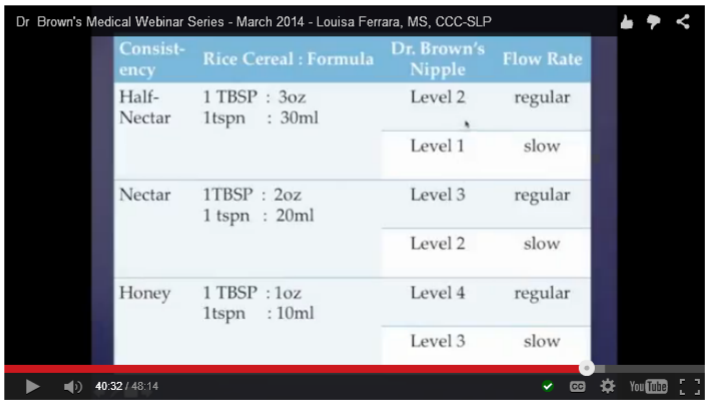
e in breast
eaks down rice

nsbaby.com/medical/webinars Dr. Brown's Medical Educat...

March 19, 2014 - 10:00pm PDT

Apneas, Bradycardias, & Desaturations During Oral Feedings in Growing Preemies: Nature vs. Nuture

Presented by:
Louisa Ferrara, MS, CCC-SLP
Specialist in Pediatric Feeding and Swallowing Disorders
Department of Pediatric Gastroenterology and Nutrition at Winthrop University Hospital in Mineola, NY



Louisa Ferrara, MS, CCC-SLP has her Masters of Science Degree from Adelphi University and will be completing her PhD in December 2014. Louisa has applied for Board Recognition in Swallowing and Swallowing Disorders through the American Speech and Language Association

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!

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www.Dr.Brown'sBaby.com/medical