MANAGING COMPLEX FEEDING DISORDERS IN THE ICN

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Objectives

- Review the anatomy and physiology of swallowing
- Identify the current evidence based research on infant driven feeding readiness
- Identify optimal feeding interventions
NICU Feeding Team

- Multidisciplinary approach
  - Physicians
  - Nurse Practitioners
  - Nurses
  - Lactation Nurses
  - Occupational Therapists
  - Speech and Language Pathologists
  - Respiratory Therapist

Feeding Goals

- Support oral development
- Support a positive oral feeding experience
- Educate families in helping their babies develop feeding skills
  - Support breast feeding
  - Support early development
  - Optimize growth and development
  - Provide family centered care
  - Prepare for successful discharge home
  - Creating lifelong feeders
Goal “Pleasurable Feeding” from Neonate to Toddler to Early Childhood

Goal: Pleasurable Feeding
Feeding is a Complex Task

- **Multiple systems involved**
  - Respiratory
  - Neurological
  - Sensory
  - Gastro intestinal

Neurological System

- 50 pairs of muscles involved in swallowing
- CN involvement (5, 7, 9, 10, 11, 12)
ANATOMY AND PHYSIOLOGY OF INFANT FEEDING AND SWALLOWING

Newborn Anatomy

THE MOUTH AND PHARYNX OF THE NEWBORN (sagittal section)

- Tongue fills the oral cavity
Newborn Anatomy
THE MOUTH AND PHARYNX OF THE NEWBORN
(sagittal section)

- Fat /sucking pads

- Velum and epiglottis approximate

- Larynx rides high in neck, so against the epiglottis

- Mandible is small
Newborn Anatomy

- Eustachian tubes lie horizontally in infant
- Assume a more vertical angle in the older child/adult.

Anatomical Differences of Newborn and Older Child

- At birth, positional stability is provided by the close proximity of various structures and the subcutaneous fat (“chubby cheeks”)

- As infant matures, greater postural stability

- As structures move apart, they are supported by increased connective tissue, cartilage, and increased specialized muscle control.
Infant vs. Toddler Lateral View

- Changes in the anatomical relationships of the pharyngeal and laryngeal structures

Physiology of Swallowing

**Deglutition**
- Plays a role in regulation of amniotic fluid balance
- Amniotic fluid coats the lungs and GI tract
- Occurs approximately 16 to 17 weeks of gestation
- Swallowing amniotic fluid
- Motor learning happens at 17 weeks
Physiology of Swallow Cont.

- Initially fetus swallows 2 to 7 milliliters of amniotic fluid/day
- Increasing to 13-16 milliliters at 20 weeks of gestational age
- Term +450 milliliters/day out of approximately 850 milliliters of amniotic fluid

- Polycythaemia, a condition occurring during pregnancy characterized by too much amniotic fluid, can be observed when there are anatomical defects that affect swallowing (e.g. esophageal atresia, brainstem lesions)

Primitive Oral Reflexes

- Fall into two categories:
  - Protective
  - Adaptive

- Primitive oral reflexes is speculated to provide synergy of movement for feeding.
- These synergies of movement can be impacted by any breakdown in the primitive oral reflexes (POR).
**Gag Reflex: Protective**

- **Gag (36 weeks to throughout life)**
  - In neonates, stimulus to the anterior 1/3\textsuperscript{rd} of the tongue should elicit a gag
  - As they mature, stimulus moves to the posterior 1/4\textsuperscript{th} of the tongue
  - In the infant and toddler, the gag plays an important role in protecting the pharyngeal airway from too large of a bolus.
  - The gag does NOT protect the laryngeal airway with aspiration. The COUGH plays the critical role in protecting the laryngeal airway in aspiration.

**Cough Reflex: Protective**

- **Cough**
  - Two mechanisms trigger reflexive cough
    1. Foreign material entering the upper airway stimulates the laryngeal receptors.
    2. Stimulation of the bronchial receptors by excessive secretions triggers a cough.
Cough Reflex: Protective

- A protective laryngeal cough is a prerequisite for safe infant feeding.
- Excessive coughing suggests that some dysfunction in the suck/swallow/breathe triad is allowing for aspiration to occur.
- Coughing on occasion is normal during infant feeding. Important to observe the infant’s physiological response to the cough…how quickly they recover, how frequently the coughing occurs.

Postnatal maturation of the cough by stimulating the vocal folds with saline demonstrated:

- < 4 days old: 20% cough, 80% no cough
- 30 days old: 80% coughed with glottal stimulus

- High risk of silent aspiration, particularly less than 1 month old
Rooting Reflex: Adaptive

- **Rooting** (32 weeks, peaks at 40 weeks, disappears by 3 months)
  - Different responses in preemie versus term infant
  - Preemies do not demonstrate a brisk mature rooting response
  - Tactile stimulation to any quadrant around the mouth produces head turning, jaw extending, latching with the tongue for a suckle
  - Responses vary based on state and satiation
  - Rooting is important for an effective latch-on with breast-feeding

Phasic Bite Reflex: Adaptive

- **Phasic Bite** (28 weeks)
  - Stimulate away from midline; vertical jaw excursions that are rhythmical
  - In mature infant jaw excursions continue until stimulus is removed
  - If jaw clenching occurs, this is a TONIC bite response, and is considered abnormal
Transverse Tongue Reflex: Adaptive

- Transverse Tongue (28 weeks to throughout life)
  - Stimulus to the side of the tongue leads to lateral deviation of the tongue in the direction of the stimulus (horizontally).
  - Prerequisite for later chewing skills

Sucking Reflex: Adaptive

- Sucking (24 weeks)
  - Elicited by tactile input to the tongue and/or roof of mouth

- Mechanics of Sucking
  - Suck Reflex
  - Sucking Pressure/strength
  - Sucking Rhythm
  - Sucking Rate
Mechanics of Sucking

- Regulated in the brainstem
- The tongue helps to seal the oral cavity
- Compressing of the nipple, produces positive pressure which expresses fluid
- During sucking the posterior tongue also lowers, increasing the volume of the oral cavity
- With the oral cavity sealed, negative intra-oral pressure, or suction is created to pull fluid into the mouth.

Sucking Pressure

- During infant feeding, fluid moves primarily because of changes in pressure
  1. Positive Pressure/Compression:
  2. Negative Pressure/Suction:
     - Tongue compresses the nipple, positive pressure is created, which expels the liquid.
     - With the oral cavity sealed, the jaw and tongue drops, which pulls fluid into the mouth.
     - To produce suction, the oral cavity must be fully sealed, or tongue and jaw movement will be ineffective in creating suction.
Positive Pressure/Negative Pressure

- State (awake, sleepy, drowsy)
- Hunger
- Type of fluid (thicken vs. breast milk)
- Flow of fluid (nipple or breast)
- Maturity of infant (preemies use compression before suction)
  - 37-38 weeks

Sucking Pressure
Sucking Rhythm

- Both nutritive and non-nutritive sucking occur in regular patterns of bursts and pauses.
- Burst-pause rhythm

<table>
<thead>
<tr>
<th>Non-Nutritive</th>
<th>Nutritive</th>
</tr>
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<tbody>
<tr>
<td>Absence of nutrient flow</td>
<td>Nutrient flow</td>
</tr>
<tr>
<td>2 sucks/sec</td>
<td>1 suck/sec</td>
</tr>
<tr>
<td>Infrequent swallowing</td>
<td>Slower to accommodate swallow</td>
</tr>
<tr>
<td>7:1 or more suck/swallow ratio</td>
<td>Frequent swallowing</td>
</tr>
<tr>
<td>May be used to satisfy an infant’s basic sucking urge or to regulate the infant’s state</td>
<td>1:1 ratio suck/swallow</td>
</tr>
<tr>
<td>Up/down movement jaw movements</td>
<td>2:1 or 3 older baby</td>
</tr>
<tr>
<td></td>
<td>Anterior posterior movement</td>
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</tbody>
</table>
## Sucking

- Expression develops before suction
- Lack of rhythm precedes rhythmicity
- **Rhythm**: coordinated suction and expression appear at **36-42 weeks**
- NNS more stable than NS before full maturity

## Sucking Rate

- Sucking rate represents the length of time it takes the infant to complete one suck
- It is **NOT** the number of sucks occurring in a given time period
- The length of each suck is the same at the beginning and the end of the feeding
- The non-nutritive sucking rate is **FAST**, averaging about 2 sucks/second
- The nutritive sucking rate is **SLOWER**, at 1 suck/second, to allow for the swallow to occur
Swallow

Oral phase > Pharyngeal phase > Esophageal phase

OP: Bolus preparation and manipulation sucking or chewing

PP: Airway protection

EP: Bolus transportation

Independent phases have own sequence of muscle activity; however interdependent

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Swallowing

- **Oral Phase: Functions**
  - Bolus preparation
  - Can be voluntary event
  - Interaction between voluntary and reflexive components
  - Basic underlying rhythm and movements are controlled by central pattern generators in the brainstem
Pharyngeal Phase Swallowing

- Airway protection
- Create bolus propulsion based on of pressure
  - Closure of oral and nasal cavity
- Base of tongue retraction, hyolaryngeal elevation, epiglottis closure = aspiration prevention
- Upper esophageal sphincter opens

Esophageal Phase Swallowing

- Final phase of bolus from mouth to stomach
- Involves relaxation of UES and LES
- Peristalsis: to propel bolus
Swallowing

- [http://www.nature.com/gimo/contents/pt1/images/gimo17-V1.mp4](http://www.nature.com/gimo/contents/pt1/images/gimo17-V1.mp4)

Sucking - Swallowing - Breathing (SSB)

- Sucking and swallowing are not in isolation of breathing
- Sucking swallowing and breathing are a coordinated triad, with the cessation of breathing during the swallow
Respiration

- **Function**
  - Maintain balance between O2 and CO2
  - Meet the infant’s changing metabolic needs
  - Active during feeding, play and sleep
- **Work of Breathing**
  - Feeding = aerobic exercise
  - Assess before, during and after feeding
  - Increase work of breathing has cost for the infant

- **Signs of increased WOB**
  - Nasal flaring
  - Suprasternal retractions
  - Intercostal retractions
  - Head bobbing
Respiration

- Airway Protection
  - **Pharynx has a dual role**
  - Air to lungs
  - Food to stomach
  - **Airway protective responses**
  - Apnea
  - Laryngeal adduction
  - Swallowing
  - Coughing
  - Mucus secretion
  - Bronchoconstriction

Breathing and Feeding Challenges

- Audible airway noises
- Stridor
- Wheezing
- Sound varies depending on location of airway restriction
- Inspiratory stridor: above glottis
- Expiratory stridor: lower trachea
- Poor endurance
- Difficulty coordination of suck/swallow/breathe
- Alterations in sucking pattern
Respiration

- Neonatal Posture/Position
  - Head position
  - Flexion: more prone to collapse
  - Extension: more resistant to collapse
  - Respiratory compromised babies adopt an extended head position
  - Need postural stability as a base for feeding

Sucking-Swallowing-Breathing (SSB)

Babies who have difficulty breathing change their sucking pattern:
- Slower sucking rate
- Shorter sucking bursts
- Less rhythmic sucking pattern
Coordination of Sucking, Swallowing + Breathing

- Respiration is suppressed during swallow

- Timing of swallow with breathing:
  - Variability in 1st few weeks

- Always have exhalation after the swallow

“Video of S/S/B”
### Swallowing (suppression vs. paralysis)

- The muscular contractions involved in swallowing can be suppressed
  - failure to acquire the normal reflex response secondary to cerebral damage
  - immaturity
- Disuse observed in infants who cannot feed for prolonged periods, can suppress the swallowing reflex

### Swallowing Problems

**Aspiration before the swallow**
- Poor bolus formation and retention
- Delayed initiation of swallow reflex

**Aspiration during the swallow**
- Insufficient laryngeal elevation and closure
- Fatigue: swallow integrity changes

**Aspiration after the swallow**
- Residue remains in pharynx: decreased pharyngeal peristalsis, decreased pressure, dysfunction of cricopharyngeus muscle, weakness
Swallowing problems

- Aspiration can occur in any of the 3 phases
  - Poor timing of swallow response
  - Decreased bolus clearance

Aspiration may be silent
- No external signs
- No coughing
- No desaturations

Modified Barium Swallow Study

- Normal Swallow
  [http://www.nature.com/gimo/contents/pt1/images/gimo17-V1.mp4](http://www.nature.com/gimo/contents/pt1/images/gimo17-V1.mp4)

Severe pharyngeal dysphagia
- [http://www.nature.com/gimo/contents/pt1/images/gimo17-V2.mp4](http://www.nature.com/gimo/contents/pt1/images/gimo17-V2.mp4)
- Delayed Aspiration
PREMATURE INFANT FEEDING

A SUCCESSFUL FEEDER IS MORE IMPORTANT THAN A SUCCESSFUL FEEDING

40% preemies attend feeding clinics
(Burklow et al, 98)
Synactive Framework for Successful Feeding

- Every experience matters
- Infants vulnerable to sensory overload
- Demonstrate overload via physiologic, motor, state and attentional behaviors/cues
- Caregiver helps infant maintain self regulation through modifying environment and caregiving/feeding

Feeding Readiness

- Continuous Assessment of
  - State control and behavior
  - Stress cues

- Motor Stress Signs
  - Flaccidity
  - Hyperextensions
  - Finger splaying
  - Leg extensions
Feeding Readiness

- **Physiological Stress**
  - Respiratory changes
  - Color changes
  - Gagging
  - Straining
  - Hiccups

- **State Stress Cues**
  - Irritability
  - Tuning out
  - Frenzy
  - Lack of alert state
    
  Als, 1986
Developmentally Supportive Feeding

• **Signs of Stability During Feeding**
  • Smooth regular respirations
  • Hands midline to the body, good postural control
  • Organized, calm and pink
  • Focused clear alertness
  • Good coordination of suck-swallow-breath

Stability during feeding
Developmentally Supportive Feeding

- **Signs of Stress during feeding**
  - Change in state of alertness
  - Change in color
  - Change in breathing
  - Change in postural control
  - Change in swallowing

Infant Stressed
Feeding Readiness

- Regulation of feeding is a learned skill
- Developmental variation
  - Development of sucking pressure
  - Arrhythmic compression/no suction: 32-34 wk
  - Rhythmic compression/no suction: 34-36 wk
  - Coordinated + rhythmic compression
    +suction: 34-40 wk

  Lau et al, Dysphagia 2001

Feeding Readiness

- Coordination of suck/swallow/breath
  - Follows a predictable sequence
  - Related to post conceptual age and not experience
  - Swallowing rhythm stabilizes 1st at expense of breathing
  - Often not mature at birth
  - Increasing adjusted age corresponds to more rhythmical sucking rate + suck/swallow rhythm

  Gewolb, 2001
Motor Control

- Feeding position can impact feeding skill
- Observe motor response that may indicate stress
- Tongue position/movement
  - Central groove
  - Rhythmic movement
  - Small excursion
  - Compression and suction

Feeding Readiness

- Based on progression of skill development
- Skills versus gestational age
- Individualized developmentally-supportive feeding practice
  - Increased weight gain
  - Full nipple feedings sooner
  - Decreased days on respiratory support
  - Less severe IVH and CLD

Als, 1986
Feeding Readiness

• **Pre- oral feeding**
  • Promote culture of breastfeeding
  • Focus on NNS while tube feeding: breast + pacifier
  • Weight gain is by tube feeding
  • Skin to skin
  • Sensory oral motor stimulation:
    • peri oral and intra oral accelerates transition to oral feeding

Lau, 2011

Pre Oral feeding

![Image of a newborn baby being held by an adult with a pacifier in their hand.](image-url)
Feeding Readiness

- Series for development of feeding skills
- Pre-oral Feeding: sensory oral motor stimulation
- Kangaroo care
- Introduction of oral feeding (breast/bottle)
- Skill building
- Infant led
- Quality versus quantity of feedings

Feeding Readiness

- **Introduction of oral feeding**
  - Typically begins at 32-34 weeks
  - **Quality is key**
  - May see a standard protocol to advance feeds
    - i.e. successful at one full feed, advance to 2 feeds etc.
  - Factors that may delay progression
    - Oral motor skills
    - State Control
    - Physiologic
Feeding Readiness

- Look for early feeding cues: root, suck, body squirm
- Used NNS as sign of readiness
- Late feeding cues: crying
- Readiness can be determined during routine care giving

McCain, 2003

Feeding Readiness

- **Skill building**
  - Optimize baby’s ability for full oral feeding
  - Attention to feeding schedule
  - Quality feeding versus quantity
  - Balance advancement of oral feeding with reducing TF
### Feeding Readiness Scale

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Alert or fussy prior to care. Rooting and or hands to mouth behavior. Good tone</td>
</tr>
<tr>
<td>2</td>
<td>Alert once handled. Some rooting or takes pacifier. Adequate tone</td>
</tr>
<tr>
<td>3</td>
<td>Briefly alert with care. No hunger behaviors (i.e., Rooting, sucking) Adequate tone</td>
</tr>
<tr>
<td>4</td>
<td>Sleeping throughout care. No hunger cues, No change in tone</td>
</tr>
<tr>
<td>5</td>
<td>Significant HR, RR, O2 or WOB outside of baseline</td>
</tr>
</tbody>
</table>

*Ludwig and Waitzman, 2008*

### Quality of Nippling Scale

- 1. Nipples with a strong coordinated suck throughout feed
- 2. Nipples with a strong coordinated suck initially but then fatigues
- 3. Nipples with consistent suck but has difficulty coordinating swallow, some loss of liquid or difficulty pacing
- 4. Nipples with a weak/inconsistent suck, little to no rhythm, may require some rest breaks
- 5. Unable to coordinate suck-swallow-breathe pattern despite pacing, may result in frequent A/B’s or large amount of liquid loss or increased HR

*Ludwig and Waitzman, 2008*
Caregiver Technique Scale

- A. External pacing
- B. Modified sidelying
- C. Chin support
- D. Cheek support
- E. Oral stimulation

_Ludwig and Waitzman, 2008_

Feeding Readiness

- Infant driven feeding readiness scale
  - Need a score of 1 or 2 to attempt oral feeding
  - Score of 3, 4 or 5: tube feeding
  - Respect infants cues to stop feeding

_Ludwig & Waitzman, 2008_
Flow Rates

- Nipple type
  - Ultra Preemie nipple (33-34)
  - Preemie nipple (34-38)
  - Level 1 Dr. Brown or Slow flow (38....)
  - Level 2 Dr. Brown or standard flow
  - Vented bottles

Bottles and Nipples

Dr. Brown's bottles are premade and level 1 flow nipple
Use Dr. Brown's bottle with the vented system helps to minimize air intake and reflux.

PREemie Nipple
Generally use the preemie nipple with premature babies who are learning to feed (weeks 36-38)

Level 1 Nipple
Use level 1 nipple when baby is at least 37-38 weeks and who needs a "suff slow flow rate." Similar to a 0-3 month flow nipple however who is not strong enough to draw milk from the Gerber Slow Flow Nipple.

*Occupational therapy also has a small stock of ultra-preemie nipples and level 2 and 3 nipples. If the above nipples do not meet the baby's sucking skills contact OT to try a different level.
Flow Rate Consistency
Cleft Palate Bottles

Cleft Palate nipples and bottles

Haberman
3 different flow rates

Dr. Brown
1 size nipple
5 flow rates

Pigeon
2 sizes
1 Flow rate
Bottles/Nipple type

- Choose a nipple based on baby's ability
- Dr. Brown Preemie...
- Slow flow...
- Vented bottle (reduces reflux)
- Specialized cleft palate bottles

Strategies to Promote Feeding Success

- Reduce negative oral experiences
- Maintain a commitment to breastfeeding
- Use non nutritive oral sucking as early as possible with tube feeding
- Use infant driven feeding readiness cues
- Optimize flow rate during feeding
- Develop a culture that values quality v quantity
Preparing for discharge

- Planning for discharge
  - Breastfeeding: maintain milk supply
  - Integrate breast + bottle: # times per day
  - Monitor intake and need for supplementation
  - Use of fortifiers
  - Community support: Lactation Consultant
  - Occupational Therapy/Feeding Therapy
Feeding Challenges

- Neurologically impairments
- Complex medical /high respiratory support
  - ECMO: Risk for Right True Vocal Cord injury due to injection into the carotid
  - Cardiac Surgeries: risk of recurrent laryngeal nerve involvement
- Premature Infants: ELBW
- Nutritional and Gastrointestinal issues
- Prenatal Drug Exposure
- Congenial Anomalies or syndromes

Neurological Impairment Statistics

35-48% of infants with varied etiologies of brain injury increase likelihood of early sucking and swallowing difficulties

Slattery et al, 2012

Neurologically based dysphagia
94% silent aspirators

Respiratory Considerations

- Respiratory Distress Syndrome
- Increased respiration rate
- High energy expenditure for breathing
- High aspiration risk
- Reduced aerobic capacity
- Increased caloric needs
- Reduced caloric reserve
- Slower to reach full oral feeds

Tongue Issues

- **Tongue tip elevation**
  - Compensatory strategy to maintain oral stability
  - Difficult to place nipple/breast

**Bunched tongue**

- Poor central grooving
- Ineffective tongue movement
- Ineffective latch, tongue chomping
Tongue Issues

- **Short Frenulum:**
  - Tongue lacks forward and upward movement
  - Latch to breast difficult

Tongue Issues

- **Retracted Tongue**
  - Poor control between tongue and nipple
  - Decrease central grooving
  - Airway obstruction

**Tongue Protrusion**
- Difficult to create suction
- Compression greater than suction
Signs and Symptoms of Aspiration

- Desaturations during feeding
- Apneas
- Bradycardic events
- Pulling away from nipple
- Wet vocal quality
- Coughing
- Choking
- Facial color changes
- Poor feeding progression

“WET VOCAL QUALITY”
Instrumental Swallow Study

MBSS is performed if there is a suspicion of aspiration and to help guide feeding treatment and feeding progression

- **Signs of aspiration**
  - Wet vocal quality
  - Wet upper airway sounds (nasal penetration)
  - Desaturations during feeding
  - Bradycardic events during feed
  - Color changes (skin, nose, lips)

Feeding Intervention

- Support pre oral feeding practice
- Oral sensory motor development
- Train caregivers
- Progress to transitional feeding
- Progress to safe nutritive feeding
Non Nutritive Sucking and Tube Feeding

- Benefits of non-nutritive sucking
  - Tube feeding for shorter time
  - Initiate bottle feeding earlier
  - Decreased intestinal transit time
  - More rapid weight gain
  - Reduce energy expenditure in restless activity
  - Decrease behavioral distress
  - Optimizes link between sucking and feeding

- Mason et al., 2005

Develop a Sensory Oral Motor Development Program

- Supports weight gain
- Reduce/minimize distress
- Promotes behavioral organization and transition to nipple feeding
- Promote GI Motility

- Fucile et al., 02,
- Rocha et al., 07
Sensory Oral Motor Program

- Pacifier with tube attached

Early Feeding Approaches

- Role of neuro-maturation in the transition to oral feeding
- Lack of oral feeding in infancy may lead to deficits in cortical development because sensory and motor pathways between the oropharynx and cortex are not well established
- Monitor for signs/symptoms of aspiration
- Introduction to gustatory and transitional feeding

- Mason et al, 2005
Feeding Intervention

- **Positioning**
  - Support Head/shoulders in midline,
  - Flexion of upper extremities and lower extremities
- **Environment**
  - Low stimulation
  - Calming techniques
- **Feeding Time**
  - Duration of feeding
  - Frequency of feeding

Side lying Position
Benefits of Side Lying Position

- Decreases energy expenditure
- Decreases flow rate from oral to pharyngeal phase
- Reduces risk of reflux
- Aides digestions
- Mimics breast feeding

Feeding Intervention

- **Nipple Shape**: Texture and shape

- Temperature of milk
- Rate of flow
- Density of milk
Feeding Intervention

Chin Support

CASE STUDIES
Baby John

- Birth: born at 30 weeks via C/S due to maternal HELLP, poor prenatal care, with daily heroin use

- Diagnosis: prematurity, RDS>intubation, in utero exposure>on morphine, and _______.

- Respiratory: intubation (1-2 days)>CPAP (8 days)>2L HFNC

- OT consulted at 32 weeks, intact oral reflexes, with strong stress cues, difficult to engage>transitional feeds with tube feeds for 1-2 days

- 2-3 weeks later: showing nice feeding state control, interest in feeding, strong NNS and NS; however RR 100-115 before, during, and after feed.

- MBS (1 month old)>nasal penetration, laryngeal penetrations (slow flow) and aspiration (fast flow).

- Liberalized to consume 10mls for practice.

- RR improved over the next month but not consistent>referred for Pulmonology consult

- Results of lung biopsy> Pulmonary Interstitial Glycogenosis> trialed steroids

- MBS (2 months old, 1 month follow) had improved RR but still 80s+
  - Showed improved s/s/b coordination but continued to have aspiration>RR

- D/C- 10mls q3 practice, Gtube, OP feeding therapy
Baby Joe

• Born: Term via SVD, discharged 2 days later, admitted from ED for coughing, choking, and turning blue at home during feeds.

• OT consulted at admission, 5 DOL, made NPO, feeding assessment desated to 80 and turned blue with 2mls.

• Referred for esophagram and MBS to r/o TEF and assess aspiration

• TEF-
  • Aspiration+

• MBS showed nasal penetration, poor bolus management, large and frequent aspiration, and poor timing of swallow, residue, swallow weakness>likely neurological

• Referred for repeat Neurological consult>MRI>

• MRI: “Multiple brain parenchymal abnormalities to include small craniofacial ratio, globally diminished white matter volume with thinning of corpus callosum, diminutive midbrain, and medulla, ex vacuo prominence of lateral ventricles, small and dysmorphic appearing cerebellum, and delayed myelination for age”.
References


