

Considerations for Feeding and Swallowing with Infants, Toddlers, and Young Children who have Down Syndrome

MLWDawson, MS CCC-SLP
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MLWDawson

- + Non-Financial Disclosure:

- + Michelle L. W. Dawson, MS CCC-SLP is President Elect for SCSHA (2017-2018) and Convention Chair for the 2018 SCSHA Convention

- + Financial Disclosure:

- + Michelle L.W. Dawson, MS CCC-SLP is Member-Manager of HeartWood Speech Therapy, LLC. HWST did not pay her for this course development. Michelle L.W. Dawson did receive a financial compensation from GSHA for presenting at the GSHA 2017 Convention. Michelle L.W. Dawson receive royalties from the sale of other courses with Video Continuing Education, LLC and Vyne Education, LLC, but did not receive compensation from them to be here today.

Program Outline

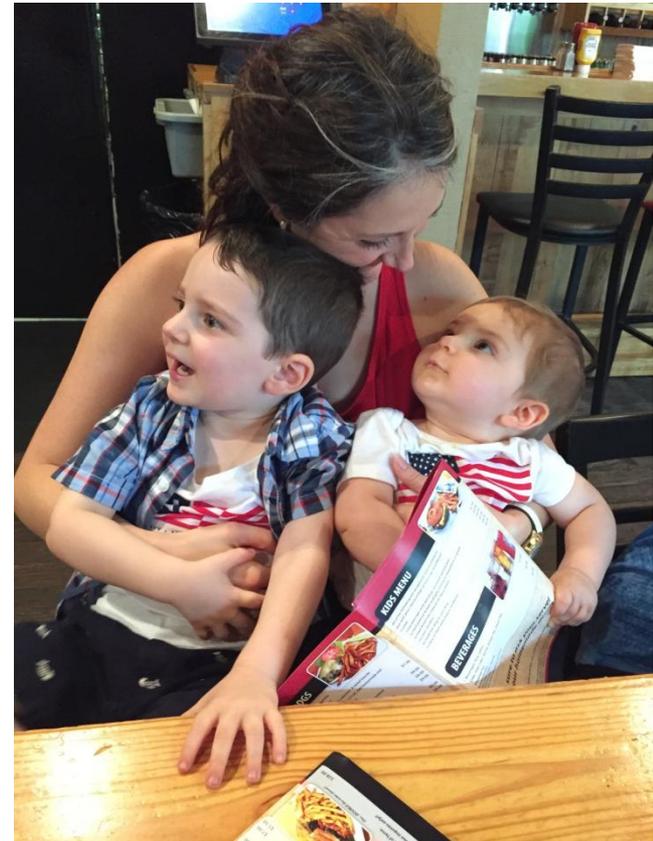
- + Speaker Disclosure/Introduction
- + Typical Reflex Development
- + Anatomical/Structural Considerations
- + Concomitant Diagnoses/Disorders
- + Feeding Tubes (Briefly)
- + When and How Do I Refer?
- + Treatment Tools
- + Piecing it Together
- + Conclusion

Introductions



Introductions

- + Old Dominion University
BS Speech Language Pathology
- + James Madison University
MS Communicative Sciences and Disorders
- + Public Schools, In-Pt and Out-Pt Hospital, Early Intervention, Private Practice
- + SCSHA President Elect-Elect 2016-2017
- + SCSHA VP Governmental Affairs 2015-2017
- + SCSHA Convention Co-Chair 2016 and 2017
- + SCSHA President Elect 2017-2018
- + SCSHA Convention Chair 2018
- + Currently in ASHA's LDP 2016-2017 SLP Cohort
- + Currently pursuing my BCS-S



Introverts Unite!!!

+ (803) 603-9280

TEXT ME



Tell Me About You?

+ Parents?

- + Infants
- + Toddlers
- + Young Children
- + Older Children/Adults

+ Students?

- + Undergrad
- + Grad

+ Practitioners?

- + SLPs?
- + SLPAs?
- + Did I miss ANYONE?

+ Practice Setting?

- + EI?
- + Private Practice?
- + NICU?
- + Schools?
- + Academia?

Why are you here?

- + “Patients deserve treatments supported by the best possible data. Belief and disbelief should be tempered until they can be combined with **knowledge**. Practice, however, is a passionate business. What might replace belief? One answer is **curiosity**. **Curiosity** is a powerful force, but unlike belief it propels more cautious, watchful treatment. Progress is not assumed and failure or other inadequacy is recognized early. Failure is not ignored or explained away. The responses of every patient seen in the clinic can **inform**.”

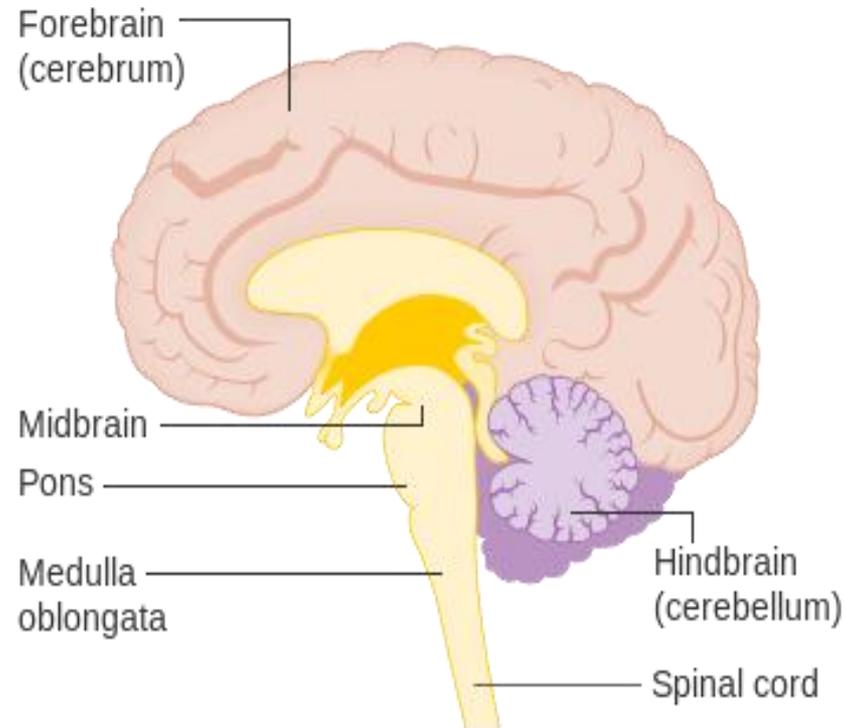
John Rosenbeck, 2016

“Tactile-Thermal Stimulation in the Treatment of Dysphagia: Does it have a Future?”

Typical Reflex Development



Starting Point



Brains of The Operation

+ We assume the Brain

...our Cerebral Cortex...

is the source of our swallowing/eating capabilities...

NOPE

“Many of the current models of feeding assign a primary role to brainstem central pattern generators (CPGs) for regulating coordination among oral muscles for early sucking and chewing”

CPGs

- + CPGs act like a “Bouncer”

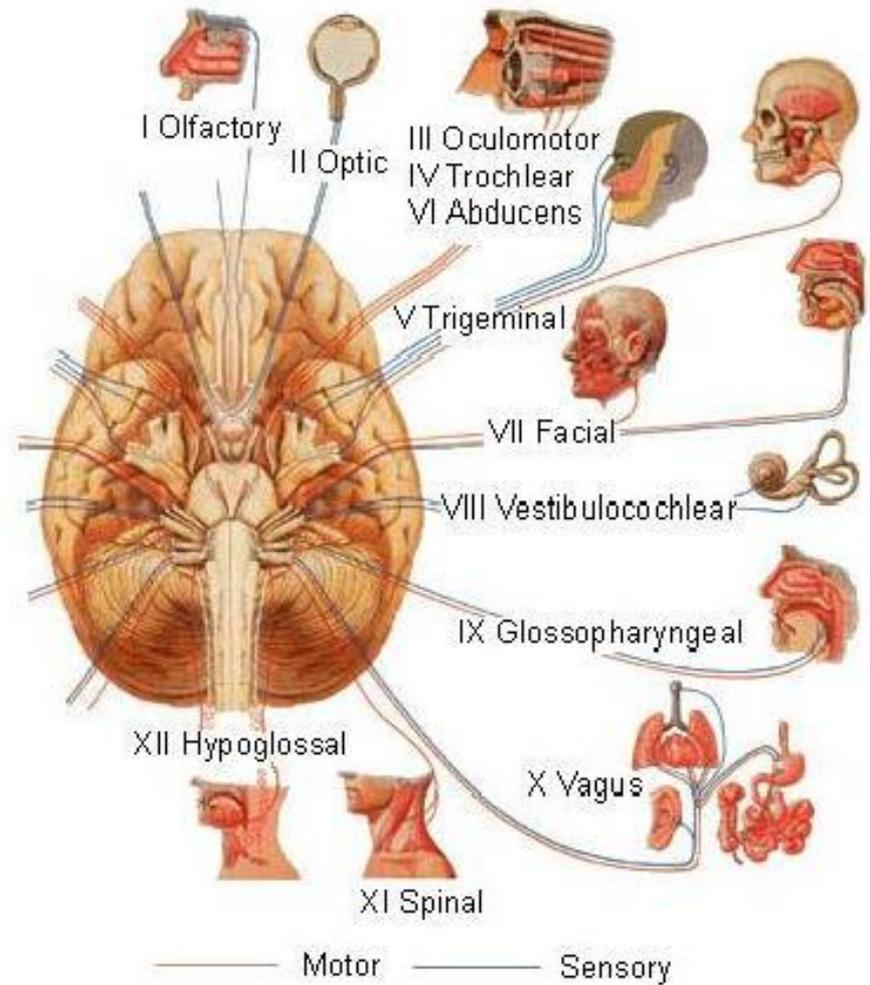
- + Only certain information goes up to the Cerebral Cortex...this info shapes the size of our bites/sips

“The CPG receives inputs from higher centers of the brain, especially from the inferio-lateral region of the sensorimotor cortex and from sensory receptors”

About those CPGs...

- + "...basic, **identifiably distinct motor patterns** are in place for sucking, chewing, and babble early on but that these coordinative infrastructures are comparatively poorly organized"
- + "The coordinative infrastructure for suckling is **not** a prerequisite for the emergence of later feeding behaviors, rather, these related but distinct, motor patterns **emerge in parallel**"

Illustrated Nerves



Reflex Development...

Why is it important to understand Typical Reflex Development?

...

Because most of our medically fragile populations

miss full PO access during these

critical moments

When can PO trials begin?

- + Week 34 is common
- + Prior to this it is difficult to regulate suck/swallow/breath
- + Preemies may lack the buccal suckling pads
 - ~layer of fat in cheeks
 - ~assist with building intraoral pressure

(Bahr, 2010)

<http://dysphagiacafe.com/2015/09/03/newborn-and-early-mouth-throat-development-feeding-swallowing/>

(Law-Morstatt, L., et al, 2003).

(McCarthy, J., 2006)

Rooting Reflex

- + Brush cheek or lips and turn towards source

- + Assist with finding nipple to latch

- + CN V, VII, XI, XII

(Trigeminal, Facial, Spinal Accessory, Hypoglossal)

- + Dissipates around 3-6 months

(Arvedson, J.C & Brodsky, L, 2002
Bahr, 2010
McCarthy, J., 2006
Walker, H.K., 1990)

Suckling Reflex

- + Front-Back Wavelike Motion around finger/nipple by the tongue
 - + Allows infants access to NNS and NS
 - + Easily seen around NUK pacifiers
 - + Dissipates around 6-12 months

5 Stages of Nutritive Sucking

+ Emergence and Maturation of Suckling:

1. Appearance of Expression
2. Expression Acquires Rhythm
3. Appearance of Suction
4. Suction Acquires Rhythm
(Suck/Express alternate)
5. Established Rhythm of Suction/Expression

Tongue Protrusion

- + Built in Safety Mechanism?
- + If present something to front of tongue, it pushes it out...AKA Tongue Thrusting
 - + CN XII (Hypoglossal)
 - + Dissipates around 4-6 months
 - + Red Flag...Alarm Clock for PO trials

Swallowing Reflex

- + Bolus (Breast Milk or Formula) enter oral cavity
- + Triggers when reaches posterior faucial pillar
- + Thankfully...we keep this reflex

Transverse Tongue Reflex

- + Place finger, nipple, spoon on side of tongue
 - + CN XII (Hypoglossal)
- + Tongue lateralizes to reach the object/bolus
 - + Training wheels for lingual sweep
- + Dissipates 9-24 months

Gag Reflex

- + Posterior $\frac{3}{4}$ of Infant's Tongue
- + CN IX and X (Glossopharyngeal, Vagus)
- + Babies learn how to control it around 4-6 months
- + Moves to posterior $\frac{1}{4}$ portion of tongue as we age
- + Gotta Love "Dr. B"

Phasic Bite Reflex

- + Primitive bite reflex dissipates around 9-12/15 months

 - + CN V (Trigeminal)

- + Press on babies gums and little one will bite down

- + Around 4-6 or 5-7 months they begin to control this

 - + Suckle-Bite-Suckle-Bite

(Arvedson J.C & Brodsky, L., 2002
Bahr, D. 2010_

<http://sandiegooccupationaltherapy.com/wp-content/uploads/2012/01/TypicalDevelFeeding.pdf>)

Vertical Chewing

- Up/down chew pattern
 - 9-15 months
- Transitional Chewing...tongue will assist with lateralizing to prep for Rotary Chew

Rotary Jaw/Chew

- + Emerges between 15-18 months
- + Not fully developed until 48 months+
- + “Children as old as 35 months of age did not yet demonstrate an adult-like estimated number of chewing cycles for the most basic and earliest introduced consistency type-puree”



Still Curious?

This was just a brief overview...Do you have additional questions?

I would recommend the following resources...

*"Everything from Bottles and Breathing to Healthy Speech Development: Nobody Ever Told me or my Mother That!" by Diane Bahr, MS CCC-SLP

*Super Duper Handy Handouts

"Oral Motor Developmental Milestones" by Megan-Lynette Richmond, MS CCC-SLP

*"Feeding Infants & Toddlers: Strategies for Safe, Stress-free Mealtimes" by Jessica McCarthy, MS CCC-SLP

*ASHA's Practice Portal!!!

- Terms and Definitions
 - Birth to 6 Eval
 - 6 Months+ Eval

DS and Pediatric Dysphagia



Anatomical/Structural Considerations



A Thought to Ponder



Hypotonia

- + Low Muscle Tone
 - + Floppiness
 - + Root Cause?
- + Hypotonia vs. Apraxia?

(Kumin, L., 2006)<http://talk-ds.org/2013/06/03/apraxia-and-children-with-down-syndrome>

Craniofacial Considerations

- + Hypotonia
- + Hypertrophy of Adenoids and Tonsils (Lingual/Palatine)
- + Macroglossia
- + Narrow/Short/High Palate
- + Midface Hypoplasia
- + Reduced Saliva
- + Periodontal Disease
- + Bruxism
- + Laryngomalacia
- + Tracheomalacia
- + ...so about that Grand Canyon...

(Cooper-Brown, L., et al, 2008)
(Dinwiddie, R., 2004)

What does that sound like?



Pulmonary Considerations

- + Hypertrophy of Adenoids and Tonsil Tissues
 - + Respiration vs. Deglutition
 - + Obligatory Mouth Breather?
 - + Obstructive Sleep Apnea

(Dinwiddie, R., 2003)
<https://shar.es/1eOxY>

Gastrointestinal Considerations

+ CONSTIPATION

???

- Hypotonia
- Hypothyroidism
- Delayed GI Motility (Esophagus to Large Intestines)
 - Delayed Gastric Emptying
 - Hirschsprung's Disease
 - Celiac Disease

All This impedes the recognition and development of **HUNGER CUES**

(Cooper-Brown, L., et al 2008)
<https://shar.es1legKQ>

Cardiac Considerations

- + Most Common Cardiac Conditions:
 - Atrioventricular Septal Defect
 - Patent Ductus Arteriosus
 - Tetralogy of Fallot

???

These Closing Issues cause the heart to work harder to supply oxygenated blood to the body

(Cooper-Brown, L., et al 2008

<https://www.cdc.gov/ncbddd/heartdefects/avsd.html>

http://www.heart.org/HEARTORG/Conditions/CongenitalHeartDefects/AboutCongenitalHeartDefects/Tetralogy-of-Fallot_UCM_307038_Article.jsp#mainContent

<http://www.mayoclinic.org/diseases-conditions/patent-ductus-arteriosus/basics/definition/con-20028530>

<https://share.es/1leDV4>)

Cardiac Before and After



Final Thought about DS

Milestone	Range for Children with Down Syndrome	Typical Range
GROSS MOTOR		
Sits Alone	6 – 30 Months	5 – 9 Months
Crawls	8 – 22 Months	6 – 12 Months
Stands	1 – 3.25 Years	8 – 17 Months
Walks Alone	1 – 4 Years	9 – 18 Months
LANGUAGE		
First Word	1 – 4 Years	1 – 3 Years
Two-Word Phrases	2 – 7.5 Years	15 – 32 Months
SOCIAL/SELF-HELP		
Responsive Smile	1.5 – 5 Months	1 – 3 Months
Finger Feeds	10 – 24 Months	7 – 14 Months
Drinks From Cup Unassisted	12 – 32 Months	9 – 17 Months
Uses Spoon	13 – 39 Months	12 – 20 Months
Bowel Control	2 – 7 Years	16 – 42 Months
Dresses Self Unassisted	3.5 – 8.5 Years	3.25 – 5 Years

Tour it AGAIN...

- Grand Canyon at work via the intersection of hypotonia, craniofacial structures, pulmonary, GI, and now have swallow fatigue due to cardiac issues...
 - So burning a lot of calories...
 - discuss with MD before increasing volume



Concomitant Disorders/Diagnoses

GERD

- + Gastroesophageal Reflux Disease
- + Stomach contents (acid) flow back into esophagus
 - + 1-5% prevalence rate
- + s/s vomiting, crying, PO avoidance
- + Damages the esophagus +
- + Aspiration risk factor

<http://www.mayoclinic.org/diseases-conditions/gerd/basics/definition/con-20025201>
<http://www.ndss.org/Resources/Health-Care/Associated-Conditions/Gastrointestinal-Tract--Down-Syndrome/>

GERD and Medically Fragile

“...children with neurodevelopmental disabilities, including cerebral palsy, Down syndrome, and other heritable syndromes associated with developmental delay, have an increased prevalence of gastroesophageal reflux. When these disorders are associated with motor abnormalities (particularly spastic quadriplegia), medical gastroesophageal reflux management is often particularly difficult, and suck and/or swallow dysfunction is often present. Infants with neurologic dysfunction who manifest swallowing problems at age 4-6 months may have a very high likelihood of developing a long-term feeding disorder”

(Schwartz, S. & Hebra, A., 2016).

GERD Symptoms

- Vomiting
- “Burpsies”
- Choking
- Gagging
- Apnea
- Posturing
- Irritability
- Bad/Foul Breath
- Changes in voice (hoarse)
- Weight Gain Issues
- Feeding Issues
- Poor Sleep
- Respiratory Issues:
 - Wheezing/stridor
 - Recurrent pneumonitis

Autism Spectrum Disorders

- + Dual Diagnosis Prevalence varies between 5-7%
 - + Small *n* studies as high as 12-16%
- + Higher prevalence than general population
 - + c/b developmental regression
 - + c/b food refusals/aversions
- + c/b severely limited communication
 - + c/b “classic” ASD behaviors

GI and ASD

Most Common

- + Gastritis
- + Esophagitis
- + Inflammatory Bowel Disease
- + Chronic Constipation
- + Chronic Diarrhea
- + Abdominal pain w/ and w/o diarrhea
- + Encopresis
- + GERD
- + Up to 70% have inflammation of upper GI system

Also Consider

- + Celiac Disease
 - + Crohn's Disease
 - + Colitis
 - + Abnormalities of enteric nervous system
 - + Esophageal Achalasia
- How are they to communicate all of these feelings?
- How can these lead to dysphagia?

GI and ASD

“Gastrointestinal disorders can present as nongastrointestinal problems...disturbed sleep and nighttime awakening for 52% of children with ASDs who had gastrointestinal symptoms”

(Buie, et al, 2010)

Seizures/Infantile Spasms

- + Seizures more prevalent than the General Population
 - + Infantile Spasms or West Syndrome most common
 - + IS is a “Catastrophic Seizure Disorder”
 - + Prevalence of 1-3% up to 13% for IS
 - + Significant developmental regression
 - + Pharmacological Treatment Implications
 - + Ketogenic Diet Considerations

(Arya, R., et al 2011)
(Heyn, S. 2008).

<http://www.globaldownsyndrome.org/sie-center-for-down-syndrome-takes-on-infantile-spasms/>

Front Line Pharmacological Treatments for IS

Medicine

- + Adrenocorticotrophic Hormone “ACTH” *
- + Prednisone
- + Sabril**

(Carl, L. L. & Johnson, P.R. 2006)
(Pelllock, et al, 2010)

Impact on Swallowing

- + Rage/Aggression
- + Lethargy
- + Decreased appetite
- + Constipation
- + Drooling
- + Slurred Speech
- + Difficulty Breathing
- + Metabolic Changes



Feeding Tubes

Ever so briefly...

Why Feeding Tubes?

“Enteral tube feeding allows patients with a functional gastrointestinal (GI tract) to receive vital nutrients, calories, and medications” and “can be used to provide symptom relief”

(Stayner et al, 2012)

Who is a candidate?

- + Alternatives to PO (per os) are warranted for our pediatric populations for a variety of reasons:
 - + Prematurity
 - + Craniofacial abnormalities (Cleft)
 - + Metabolic disorders
 - + Neurologic disorders
 - + Neuromuscular disorders
 - + Failure to Thrive
 - + Diseases that require increased energy

...some of our patients with DS meet these guidelines

Patient.info/doctor/peg-feeding-tubes-indications-and-management

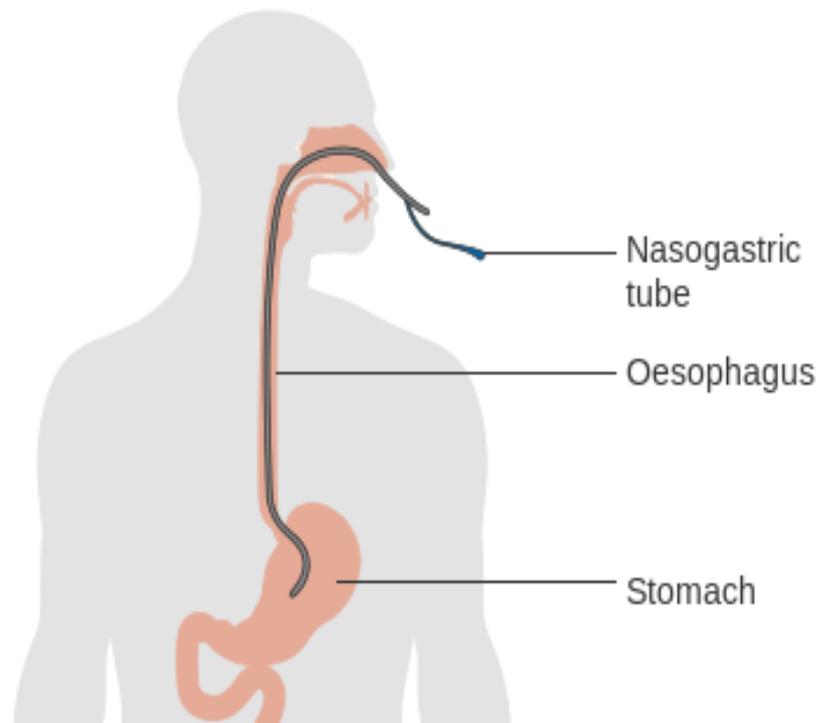
Their locations...

- Nasal
- Oral
- Gastric
- JeJunum

“Children who are considered at high risk for misplaced or dislodged gastric enteral tubes: neonates, children with neurological impairment, children in an obtunded neurological state, and children who are encephalopathic, have a decreased gag reflex, or are sedated or critically ill”

(Irving, et al, 2014).

Nasal Placement



Complications from Nasal Placement

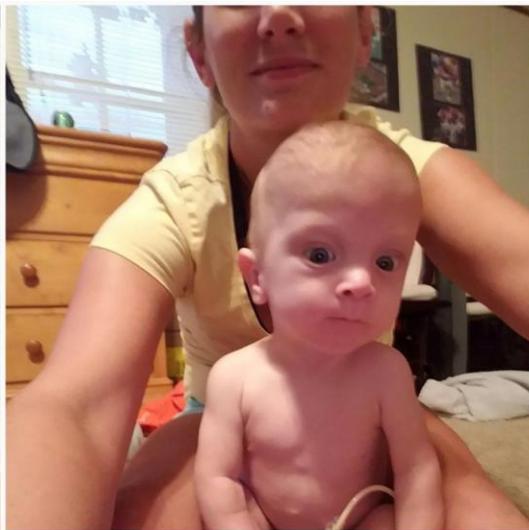
- + "Aspiration by proxy"
(Metheny 2007)
- + Aspiration
- + Perforation of esophagus
- + Perforation of stomach
- + Perforation of
lungs/pneumothorax
- + Granulomas
- + Block/inhibit nasal breathing
- + Reflux esophagitis
- + Pressure ulcers
- + Sinus infections
- + Upper Respiratory Infections
- + Tube blockage
- + Tube displacement

(Blumstein et al, 2014) (ESPHGAN, 2010)

Implications for Pediatric Dysphagia

- + Discomfort or Odynophagia with PO trials due to:
 - + Globus sensation
 - + Oral aversions/defensiveness
 - + Damage to tissues
 - + GERD
- + Diminished hunger cues
- + Development of PO reflexes/skills

Gastric Placement



Complications from Gastric Placement

- + Site/Wound infections/Bleeding
- + Granulomas
- + Fistulas
- + Vomiting/diarrhea
- + Necrosis
- + Perforation of stomach/intestines
- + Dislodged tube
- + Blocked tube
- + Tube leakage
- + Pneumonia
- + GI Pain
- + ***Feeding Tube Dependency***

(Fortunato et al, 2010) , (Ojo, 2015)

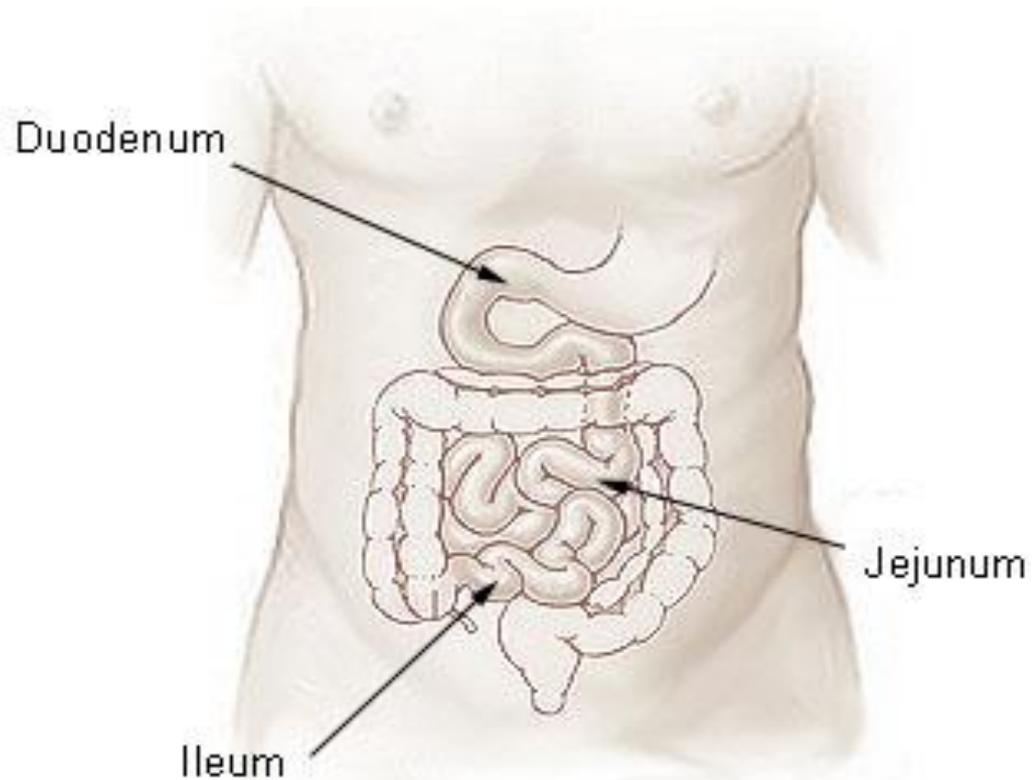
(Wilken et al, 2015)

Implications for Pediatric Dysphagia

+ Feeding Tube Dependency

- + Caregiver force feeding
- + Underdevelopment of oral motor skills necessary for consumption of food and liquid
- + Underdevelopment/recognition of hunger cues

Jejunum Placement



Complications from Jejunum Placement

- + Difficulty securing in location, significantly more likely to leak
- + Increased risk for granulomas due to irritation from leakage
- + Increased risk for diarrhea
- + Perforation of small bowel and fistulas

Implications for Pediatric Dysphagia

- + Are they safe for PO trials?
 - + MD script
 - + Allergies?
- + Registered Dietician recommendations
 - + What is the long term plan?
 - + Hunger Cues?
- + Developmentally appropriate?

Aspiration Prevention?

“When gastric motility is significantly impaired, it is generally agreed that transpyloric feedings may afford some degree of protection against aspiration”

(Metheny, 2007)

All These Factors Equate to your patient's FOOD AGE

- + Multifactorial Age that results in their current eating ability...meet them **HERE**
- + Chronological Age
- + Adjusted Age
- + Time Spent with FT
- + Amount of time spent PO
- + ...tada = Food Age





When and How do I Refer?

ASHA Guidelines

- + Principle of Ethics I
 - + B. Individuals shall use every resource, including referral and/or interprofessional collaboration when appropriate, to ensure that quality service is provided.

- + Principle of Ethics II
 - + G. Individuals shall make use of technology and instrumentation consistent with accepted professional guidelines in their areas of practice. When such technology is not available, an appropriate referral may be made.

- + Principle of Ethics IV
 - + A. Individuals shall work collaboratively, when appropriate, with members of one's own profession and/or members of other professions to deliver the highest quality of care.

How Do I Do This?

- + Pick up the phone and call the PCP
- + Pick up the phone and call the Special Needs Coordinating Nurse
- + Fax SLP evaluation
- + Attend an MD apt





What s/s would indicate a referral?

Pulmonologist

- + c/o "not sleeping"
- + c/o "stirring/restless sleep"
- + s/s of bags/dyscoloration under eyes
- + s/s shortness of breath with movement
- + s/s of shortness of breath with PO intake
 - + s/s of inhalation/exhalation stridor
 - + s/s of dyscoloration with activities

Otolaryngologist

- + c/o "not sleeping"
- + c/o snoring when sleeping
- + c/o "excessive spitting-up"
- + s/s of bags/dyscoloration under eyes
- + s/s of open mouth breathing
- + s/s of inhalation/exhalation stridor
- + s/s of dysphonia
- + s/s intermittent low grade fevers
- + s/s of overt aspiration with PO
- + s/s of oral tethering

Gastrointestinal

- + c/o emesis or excessive "spitting-up"
 - + c/o "not hungry"
 - + c/o infrequent bowel movement
- + s/s of pain or discomfort with PO intake, or shortly thereafter
 - + PMH of GI following, d/c, changes in fxn

Allergist

- + Eczema and GERD and URI!!
- + "GI tract in 50-60%, skin in 50-60%, and respiratory systems in 20-30%" (Melkonina & DeiMattia, 2016, p. 10)
 - + c/o and s/s upper airway congestion
- + c/o and s/s of changes in bowel consistency after introduction of new food(s) and/or changes in formula(s)
 - + c/o and s/s of discomfort/pain after introduction of new food(s) and/or changes in formula(s)
 - + Family PMH of Food Allergies

Registered Dietician

- + WORK TOGETHER and RESPECT THIS PROFESSION
 - + c/o several different formula changes
 - + c/o and s/s of FTT or slow weight gain
 - + Concerns for excessive weight gain

Occupational Therapist

- + c/o and s/s of Postural Support for PO Intake
 - + c/o and s/s Fine Motor Delay
 - + c/o and s/s Sensory Aversions
 - + Overlap of Scope of Practice

Physical Therapist

Really? Why?

“Alongside oral motor and nervous system development, swallow maturity in children also depends on success attainment of postural control, muscle strength, and coordination” (Godwin & Rogers, 2016, p. 17).

- + Postural Support for PO Intake
- + Core Strength for PO intake
- + Communicate Concerns for:
 - Mobility impacting GI which impacts hunger cues
 - Positioning for GERD during sleep

“Equipment Guy”

- + Postural Equipment for PO intake
- + Work with the team PT/OT

Customize Your Size ...



So now what?

- + You completed your PMH review and your CSE
- + You have *hopefully* referred for an instrumental examination, (or reviewed results of instrumental)...
- + It's Time for **TREATMENT!!!**



<https://www.flickr.com/photos/jamarmstrong/5121476750>

Treatment Tools



Tips for your tools

- + First thought...are your tools SES friendly?
- + Not all our families can afford high ticket items...
so use what is available in their
Natural Environment!

Tips for your tools?

Why use Natural Environment tools?

Because...

+ IDEA Part C says...

+ DEC says...

+ ASHA says...

IDEA Part C

+ **Early Intervention Services in Natural Environments Code 303.126**

- + Each system must include policies and procedures to ensure, consistent with other provisions in the part, that early interventions services for infants and toddlers with disabilities are provided
 - + A. To the maximum extent appropriate, in natural environments; and
 - + B. In settings other than the natural environment that are most appropriate, as determined by the parent and the IFSP team, only when early intervention services cannot be achieved satisfactorily in a natural environment

+ **Natural Environments Code 303.26**

- + “settings that are natural or typical for a same-aged infant or toddler without a disability, may include the home or community settings, and must be consistent with the provisions of code 303.126 (Early Intervention services in natural environments).

What does DEC Say?

- + **8 Guiding Principles: Leaders, Assessment, Environment, Family, Instruction, Interaction, Teaming and Collaboration, Transition**
- + **E1:** Practitioners provide services and supports in natural and inclusive environments during daily routines and activities to promote the child's access to and participation in learning environments
- + **F1:** Practitioners build trusting and respectful partnerships with the family through interactions that are sensitive and responsive to cultural, linguistic, and socio-economic diversity
- + **F6:** Practitioners engage the family in opportunities that support and strengthen parenting knowledge and skills and parenting competence and confidence in ways that are flexible, individualized, and tailored to the family's preferences
- + **INS5:** Practitioners embed instruction within and across routines, activities, and environments to provide contextually relevant learning opportunities
- + **INT3:** Practitioners promote the child's communication development by observing, interpreting, responding contingently, and providing natural consequences for the child's verbal and non-verbal communication and by using language to label and expand on the child's requests, needs, preferences, or interests

ASHA continued

+ **Position Statement: Roles and Responsibilities of Speech-Language Pathologists in Early Intervention**

+ *Our Roles should be implemented in accordance with these guidelines:*

1. Services are family centered and culturally/linguistically responsive
2. Services are developmentally supportive and promote children's participation in their natural environments
3. Services are comprehensive, coordinated, and team based
4. Services are based on the highest quality of evidence that is available

Ponder This...

- + So, if we are to use the patient's natural environment...
- + And respect the patient's culture and background...
- + Should the SLP provide food/drink for PO trials?*



*Exception being inpatient stay

Postural Supports



Postural Supports



Preparatory Phase Cues

+ Stage 1: Hand to Mouth

- + Hand over hand on spoon, feeder, or bottle
- + Tap spoon to side of bowl to add additional auditory cues



Preparatory Phase Cues



- + Give the Play-by-Play
- + Pick **ONE** verbal cue
"Eat, Eat, Eat"
- + Critical for Cortical Vision Impairment

Infant Techniques

Pacing

- + Transition Sucking
 - 6-10 suck/swallow/respiration with ***disorganized*** breathing during pause/burst
- + Immature Sucking
 - Less than 30 suck/swallow/respiration per burst...with swallow and respiration during that burst
- + Mature Sucking
 - Up to 30 suck/swallow/respiration at a 1:1 rate

Chin & Cheek Support

- + Lateral Cheek Support
 - To stabilize cheeks and produce tighter labial seal
 - Increase alertness for feeding
- + Mandible Support
 - May help establish a more efficient rhythm

(Hwang, Yea-Shwu, et al, 2010)
(Law-Morstatt, L., et al 2003)

Medicine Pacifier



Some Thoughts on Bottles...

+ Flow Rate of Bottles can be impacted by:

- Infant's craniofacial structures
 - Infant's skill set:

Transition, Immature, Mature Suck Patterns

- Pliability of Nipple
- Internal Pressure
- Pressure at Ring

(Law-Morstatt, L. 2003).
(Ross, E. & Fuhurman, L., 2015)

Bottle Suggestions



Standard Bottle - comes in three sizes!

Hard Nosed Sippy Cups



Transition Cup



Sippy Cup Liners



Cup Variations



Net Feeders



Know your Olfactory System!



- + Dad can't get them to latch? Try Momma's sweaty shirt!

Marshall, J. (2011) Infant neurosensory development: Considerations for infant child care. *Early Childhood Education Journal* (39), 175-181.



Piecing it Together

Let's Be Superheroes!



Practice What You Preach!

So I need a couple of Volunteers...

+ Let's Consider:

- Tone and Posture
- Obligatory Mouth Breather
- Delayed Fine Motor Skills
 - Tactile Aversions

Enjoy!

Conclusion





A Super Big Round of Applause!!



Celebrate!

- Celebrate...Where your patient or child is today!
- Celebrate...Quality over Quantity
- Celebrate...Your patient's *Team* and forward moving treatment plan!





Questions

michelle.dawson.slp@gmail.com



References

Please see attached Word Document provided to GSHA