# Pediatric Feeding and Swallowing

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## Overview of Presentation

- SLP role in feeding/swallowing disorders
- Evaluation
- Treatment
- Case studies
- Group activity

## Role of a Speech-Language Pathologist in Feeding Disorders

- Overall role of SLP when evaluating and treating swallowing disorders : therapy may include exercises to strengthen muscles involved in swallowing, learning new techniques for feeding, and determining which foods and liquids are most appropriate for your child and which should be avoided
- Evaluates and treats patients with swallowing difficulties, including direct modifications of physiologic responses and indirect approaches such as diet modification.

## Evaluation: Relevant Medical History

- Chart Review
- Date and time of evaluation
- Patient name and date of birth
- Referring physician and referring concerns
- Patient accompanied by / additional specialists present
- Primary language
- Pertinent medical history : other diagnoses, surgeries, medications, allergies, born full term/prematurely
- Previous feeding evaluations/therapy

## Evaluation: Parent Interview

- Current route of nutrition/ current diet
- Being followed by any medical specialists: DVBP, ENT, neurology, OT, audiology, PT, etc.
- Mealtime picture in home (i.e., chair, family mealtime, does family prepare foods, etc.)
- Cultural considerations
- Caregiver goals & concerns

## Evaluation: Concerns

- Choking/coughing/gagging on solids/liquids present?
- Decreased oral intake ?
- Lack of weight gain?
- Respiratory illness?
- Frequent emesis?
- Picky eating?
- Transitioning from tube to oral feeds?
- Feeding too frequently?
- Hypersensitivity/oral aversion?
- Combination of any difficulties listed above

## Evaluation: Oral Mechanism Examination

- **Fixed structures:** Teeth, Palate (hard/soft), Jaw
- **Secretion management:** Consider extent of and quality of secretions
- **Mucosa:** Consider color, moistness, any overt abnormalities
- **Tongue:** Should assess strength, range of motion and coordination

## Evaluation: Oral Mechanism Examination (cont.)

- **Lips:** Should assess strength, range of motion, and coordination
- **Non-nutritive suck:** Should assess orientation, latch and initiation of non-nutritive suck
- **Respiration:** Should consider at baseline, during feeding, and after feeding

## Evaluation: Positioning & Behavior during feeding

- **Positioning**: Should assess in normal feeding positions as well as with any appropriate modifications during the assessment
- **Behavioral observations**: Should assess their level of attention and cooperation as well as types of refusals; Consider improvements with strategies in evaluation

## Evaluation: Food Presentations/Trials

- **Liquid consistency:** Thin liquid texture, ½ Nectar liquid texture, Nectar liquid, Honey liquid
- **Mode of presentation**
- **Volume presented/consumed**
- **Presenter**

## Evaluation: Food Presentations/Trials

- **Consistency presented:**
    - Puree solids texture (level 4)
    - Minced & Moist texture (level 5, i.e. Ground solid)
    - Soft solid texture (level 6)
    - Regular/hard solid texture (level 7)
    - Transitional texture (i.e. meltable solid)
- **Mode of presentation**
- **Volume presented/consumed**
- **Presenter**

## Evaluation: Feeding/Swallowing Observations

Oral Phase

Pharyngeal Phase

Esophageal Phase

## Evaluation: Strategies/Interventions Trialed

- None
- External pacing provided based on cues
- Slower flow nipple
- Change in position
- Use of flow controlled utensil
- Changes in sensory property of foods
- Controlled bite presentation
- Limiting amount offered

Reduced nipple fill
External pacing provided every X sucks
Faster flow nipple
Single controlled sips
Verbal cues
Visual cues
Tactile cues
Modifications to diet

## Evaluation: Trialing of Nipples

**Signs that you may need to change nipple size :**

- Milk/formula flooding mouth, increased risk of aspiration and penetration, and/or decreased coordination
- Fatigue, collapsed nipples, more sucks per swallow, and/or decreased volume intake

## Evaluation: Nipple Information and Facts

- Softer nipples are easier to compress; firmer nipples require more pressure
- Commercial nipples are usually silicone, which is more durable than latex
  - Combined influence of compression and pliability can cause the same nipple to have different flow rates for different infants
- Length (back half of tongue applies more compression, so longer nipples end up getting more squeeze)
- Shape - orthodontic nipples vs more traditional; wider nipples aren't as easy to be cupped, may engage more of the masseter muscle, which influences the infant's suck
- If you hold the bottle upside down, it will drip faster than if you hold is on an angle, etc.
- Build up of negative pressure creates a vaccuum; more air exchange = faster flow rate; also why tightening cap can affect flow rate

## Evaluation: Bottle Information and Facts

- Enfamil Standard-Flow Soft Nipple (dark blue) : requires a good suck, good for typically developing children
- Enfamil Slow-Flow Soft Nipple (aqua) : premature infants who do not yet have a strong suck
- Enfamil Cross Cut Nipple (yellow): thickened feeds
- NUK orthodontic nipple : good for babies demonstrating a "chomping motion," or those showing weak labial seal
- Dr. Brown's : Reduces gas and emesis; has various flow rates available
  - Preemie flow
  - Level 1 : 0M+
  - Level 2 : 3M+
  - Level 3: 6M+
  - Level 4: 9M+
  - Y- cut: 9M+ : thickened feeds

## Evaluation: Recommendations

**When to recommend for feeding therapy with an SLP**:

- Signs of a feeding/swallowing disorder
- Not gaining weight
- Limited foods in diet
- Needs thickening assistance

## Evaluation: Referrals

- Modified barium swallow study
- Gastroenterology
- Nutrition
- Neurology
- Pulmonary
- Occupational therapy
- Otolaryngologist
- Feeding Team
- Intensive feeding program
- Fiberoptic Endoscopic Evaluation of Swallowing (FEES)

## Aspiration / Penetration

- Penetration is defined as "passage of material into the larynx that does not pass below the vocal folds. The amount of material, the depth of penetration, and whether all or a portion is subsequently expelled are potentially critical variables."
- Aspiration is defined as "passage of material below the level of the vocal folds, and the amount, the distance the material passes into the trachea, and whether all or a portion has potential clinical significance

## 8 point Penetration- Aspiration Scale

1. Material does not enter the airway.
2. Material enters the airway, remains above the vocal folds, and is ejected from the airway.
3. Material enters the airway, remains above the vocal folds, and is not ejected from the airway
4. Material enters the airway, contacts the vocal cords, and is ejected from the airway
5. Material enters the airway, contacts the vocal folds, and is not ejected from the airway
6. Material enters the airway, passes below the vocal folds, and is not ejected into the larynx or out of the airway
7. Material enters the airway, passes below the vocal folds, and is not ejected

## Therapy Framework

Considerations:

- Age
- Attention level
- Time needed for thickening/education

- Impairment
- Family schedule
- Other barriers

Examples:

1x/week, 30 mins, 12 visits

1x/every other week, 60 mins, 8 visits

## Developing Goals

**Feeding Goals**

**Reducing mealtime behavior Goals**

**Chewing Goals**

**Swallowing Goals**

**Diet Expansion Goals**

## Developing Goals

**Feeding Goals** :

LTG: Patient will safely obtain optimal levels of oral nutrition via the least restrictive an age appropriate diet.
STG: Patient will consume ¼ cup transitional solid texture within 30 minutes given verbal and visual cues.

LTG: Patient will bite, chew, and safely swallow solid boluses in order to optimize oral intake to meet nutritional goals using identified caregiver feeding strategies
STG: Patient will consume 4oz puree within 30 minutes with timely A/P bolus transport prior to swallow given verbal, visual, and tactile cues.

## Feeding/Swallowing Treatment: Developing Goals

**Chewing Goals :**

STG: Patient will bite through solid boluses when placed on lateral molars in a position for grinding to grind and chew food sufficiently before swallowing with 4 or 5 successes on each side for 3/4 consecutive sessions.

STG: Patient will move food placed between molars on one side to the other side by using lateral tongue action for 3-4 successes over 3/4 consecutive sessions.

## Feeding/Swallowing Treatment: Developing Goals

**Swallowing Goals :**

STG: Patient will demonstrate 10 swallows in 10 minutes using thermal tactile stimulation or sour bolus techniques.

STG: Patient will produce a falsetto /i/ continuously for 10 seconds in order to improve laryngeal elevation

Patient will improve his base of tongue strength by pushing up on a tongue depressor while producing /k/ in 8/10 trials

## Developing Goals

**Reducing Mealtime Behavior Goals/Diet Expansion Goals**

STG: Patient will move through 2 steps of the food hierarchy with non-preferred foods within one session given models and verbal praise within a 30 minute session.

STG: Patient will consume goal amount of puree and transitional solid given positive praise and visual schedule with limited refusals within 30 minutes.

## Feeding/Swallowing Treatment: Picky Eaters

- **Food Hierarchy - Refer to handout**
- **Food Scientist - Refer to handout**
- **Eating around a plate** : **Collect Food List :** Always eaten, Occasionally eaten, Used to eat, Never eaten
    - Use divided plate, follow 1, 2, 3 sequence
    - Use all preferred foods to teach protocol and reduce anxiety
        - Can put 2-3 preferred foods in each section
        - Can put same preferred food in each section
        - Teach rules of even rotation (1 bite from each section of plate)
    - Alternate difficult food and easy foods
        - Difficult food may first be an occasionally eaten food or a food with a slight change to taste, texture or brand
        - Gradually progress to a never eaten food
        - If unable to actually eat food, reward any attempts to move up food heirarchy
    - Begin with reinforcing each bite of new food, progress to reinforcing following full sequence completion
        - Reinforcement when using sectional plate may just be getting to eat the next food in the sequence
    - Use guided compliance protocol
        - HOH assist
        - Gestural Prompt
        - Verbal Cue
        - Independent

## Feeding/Swallowing Treatment: Sensory Approach

- Try finger painting with pudding or whipped cream. Be sure to have a clean, wet cloth nearby and allow him/her to clean hands as needed.
- String fruit loops, dry pasta, cheerios, etc, using string or pipe cleaners.
- If s/he's gagging at the sight of food, you might want to start with object or picture representation of food items, feed dolls etc.
- Other ideas are to start with food at a distance (say on the kitchen counter while he is in the highchair), then move them to the opposite end of the table from where s/he is sitting and gradually move them closer and closer until they are on his/her tray to look at. Then you can move to smells, touches, licks, etc

## Feeding/Swallowing Treatment: Oral motor exercises and home programming

- Tactile input should be provided with a washcloth (towel or terry cloth bib) or NUK brush to cheeks, chin, and lips. Initially light to moderate pressure should be used, gradually increasing to moderate to firm input. Pressure should be provided from the ears, and outer and inner eyes towards and through the lips as well as from the bottom of the chin upward towards and through the lips. Strokes should be well-graded to provide full muscle elongation.

- Combine tactile pressure with use of vibratory input (i.e., vibrating toy) or temperature input to cheeks and lips to maximize oral stimulation.

- Provide tactile input to the tongue by providing moderate to firm pressure with small forward strokes to the sides of the tongue first. As tolerance increases provide pressure straight down in the middle of the tongue in a tapping motion.

- Provide tactile input to the upper and lower biting surfaces (e.g., molars) with NUK brush or regular toothbrush. Moderate to firm pressure should be provided downward through the biting surfaces of the lower teeth and upward through the biting surfaces of the upper teeth.

## Feeding/Swallowing Treatment : Transitioning from the bottle

**Spoon Feeding** :

- Use a flat, hard, plastic coated spoon, not metal. Start with small amount – 1/8 to ¼ tsp
- Child should open mouth as spoon approaches. Do not force food into child's mouth.
- Put spoon on tongue at about mid-tongue with slight downward pressure. Lips should close around the spoon. Bring spoon out along the tongue, not scraping off roof of mouth.
- If child needs help closing lips, place one finger between lower lip and chin to help guide jaw to close, or press up gently directly under chin bone ( to help stabilize the jaw)
- Do not scrape off chin with every bite, just occasionally scraping interrupts the routine. You can clean off the face at end of meal.

## Feeding/ Swallowing Treatment : Promoting cup drinking

Developmental readiness for introduction of cup :

- At least 6 months
- Sit independently
- Able to grasp with two hands
- Is interested in playing with cup
- Introduce at 6 months but don't expect wean until closer 12 months

First Steps :

- Start with an empty light weight cup to play with and explore (training cups with soft spout are preferred as first cups)
- Model bringing cup to mouth
- Water is a great first liquid to experiment with (sight, sound and feel of it)
- Offer cup during snack time, between feeds
- Begin replacing child's least favorite feed with cup of breastmilk
- Begin to shorten each breast feeding or
- Skip a breast feeding every 5-7 days

## Feeding/ Swallowing Treatment : Promoting chewing

- Transitioning to mature chewing patterns : you want to look at their biting pattern, if they can move food from tongue to chewing surface, if they use a rotary chewing pattern, moves food from one side to the other, moves food posteriorly
- Promoting chewing : introduce lumpy foods gradually, add finely ground crackers into purées, give foods to bite through even if child spits it out, allow time between bites to practice skills, introduce strip foods to back of molar surface alternating side of presentation from left to right, slowly feed strip foods through back molar with repetitive bites, assist with biting by gently tapping under the chin
- Model chewing with open mouth and larger than life motions to show the child what chewing should look like inside your mouth
- To begin biting and chewing harder foods, offer vegetables cooked until slightly soft and cut into strips, then begin to cook them less each time until your child can chew them without cooking them
- Use a mirror modeling appropriate chewing pattern

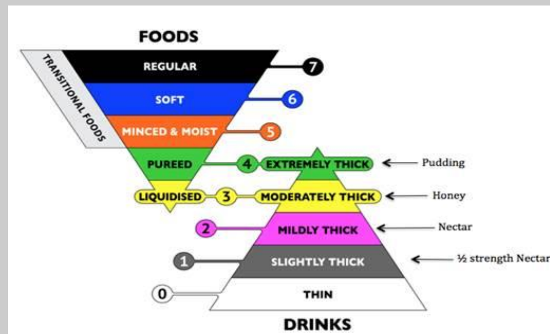
## Case Study

- 7-week-old- 11-month-old female
- Diagnoses : oropharyngeal dysphagia, hypoxic ischemic encephalopathy, muscle hypotonia
- Goals in Treatment :
- Accept 1oz of formula via bottle with no s/sx of airway compromise
- Accept 1oz of stage 2 purees with no s/sx of airway compromise
- Demonstrate readiness for VFSS by consuming 1oz of thins and 1oz of purees
- Tolerate oral motor exercises / stimulation : tolerate lingual stimulation to promote lateralization, tip and midblade elevation

## Group activities

- Testing food textures/ consistencies using IDDSI
- Thickening using syringe test

## IDDSI Diet Levels




## Questions?

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