Feeding Assessment in the Pediatric Population

Presenter: Maria del C. Garcia-Garcia, M.S.,CCC-SLP

Moderated by:
Amy Hansen, M.A., CCC-SLP, Managing Editor, SpeechPathology.com

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Feeding Assessment in the Pediatric Population

Presented by:
María del C. García, M.S. CCC-SLP

• It has been reported that 25%-45% of typically developing children demonstrate feeding and swallowing problems (Arvedson, 2008; Bernard-Bonnin, 2006; Brackett, Arvedson, & Manno, 2006; Burkiow, Phelps, Schultz, McConnell, & Rudolph, 1998; Lefton-Greif, 2008; Linscheid, 2006; Manikam & Perman, 2000; Rudolph & Link, 2002).

• Prevalence is estimated to be 30%-80% for children with developmental disorders (Arvedson, 2008; Brackett, Arvedson, & Manno, 2006; Lefton-Greif, 2008; Manikam & Perman, 2000).

• Significant feeding problems resulting in severe consequences (e.g., growth failure, susceptibility to chronic illness) have been reported to occur in 3%-10% of children, with a higher prevalence found in children with physical disabilities (26%-90%) and medical illness and prematurity (10%-49%; Manikam & Perman, 2000).

• It is reported that the prevalence of pediatric dysphagia is increasing due to improved survival rates of children born prematurely, with low birth weight, and with complex medical conditions (Arvedson, 2008; Lefton-Greif, 2008).

www.asha.org
Feeding and Swallowing Skills

- Swallowing is a muscular activity which involves different functions from oral, pharyngeal, laryngeal and esophageal structures.
- It requires motor practice, so it can be considered a learned skill.
- The acquisition of these skills is part of a neurological maturation process that involves shifting from reflex responses to volitional movements.

ASHA

- Feeding disorders include problems gathering food and getting ready to suck, chew, or swallow it.
- Swallowing disorders (Dysphagia) can occur during different stages:
  - Oral Stage - includes sucking, chewing and moving food or fluid into the throat.
  - Pharyngeal Phase - involves the beginning of the swallowing, transporting the bolus down the pharynx and closing the respiratory tract.
  - Esophageal Stage - includes relaxing and tightening the sphincters at the top and bottom of the digestive tract to carry the bolus through the esophagus into the stomach.
Areas that may Impact Feeding Skills

- Social and behavioral skills
- Positioning
- Reflexes/ Neurologic Maturation
- Respiratory capacity and coordination
- Motor development
- Oral Motor Development
- Sensory Modulation, Perception and Praxis
- Cognitive development
- GI conditions and Allergies
Motor Development Principles

- Oral stability is dependent upon pectoral girdle stability, which also depends on trunk and pelvic stability.
- Oral-motor skills are developed from straight planes toward lateral planes and finally rotational planes.
  - "Munching": Develops initially and is a movement in a straight plane.
  - As the skill level of the infant increases, we start to see movements in lateral planes for bolus lateralization.
  - Rotational movements emerge when food is blended with the molars and transferred smoothly to the opposite side of the mouth.
- It is expected to observe some regression when a new feeding skill is being acquired.

Postural Control and Positioning
Postural Control: Oral Phase

• Abnormal oral patterns are an attempt to provide stability.
• Retraction of the tongue may be due to improper posture or hyperextension of the neck.
• Lingual retraction may result from an attempt to raise the head and open the mouth.

Postural Control: Pharyngeal Phase

• Hyperextension of the neck affects the alignment of the pharyngeal structures and increases the risk of aspiration.
• Inefficient pectoral mobility and spinal stability may lead to poor coordination between breathing and swallowing.
Postural Control: Esophageal Phase

- GERD can be influenced by body posture.

- Supine position can increase GERD

<table>
<thead>
<tr>
<th>Área Observada</th>
<th>Descripción</th>
<th>Observaciones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of chair used during feeding</td>
<td>Regular Chair, Adapted Chair, Wheelchair</td>
<td></td>
</tr>
<tr>
<td>Head position</td>
<td>Neutral, Hyperflexion, Hyperextension, Flexion, Rotation, External Support</td>
<td></td>
</tr>
<tr>
<td>Upper body positioning</td>
<td>Neutral, Lean Forward, Lean Backward, Reclined, Trunk Rotation, External Support</td>
<td></td>
</tr>
<tr>
<td>Upper extremities support</td>
<td>None, Tray, Assistive Equipment</td>
<td></td>
</tr>
<tr>
<td>Lower extremities support</td>
<td>None, Foot Rest</td>
<td></td>
</tr>
<tr>
<td>Muscle Tone</td>
<td>Adequate, Hypertone, Hypotone</td>
<td></td>
</tr>
<tr>
<td>Utensil use</td>
<td>Independent, Requires assistance: Minimal, Moderate, Maximal</td>
<td></td>
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</tbody>
</table>
Reflexes

• In a primitive stage, most of the oral motor patterns needed for feeding begin as reflex responses.

• Hyper- or Hypoactive reflexes may affect the feeding process.

• Failure to integrate these reflexes may have a negative impact on feeding skills.
Primitive Reflexes that should be observed

- Rooting: Search is activated with the touch of the cheek
- Suck/Swallow: Sucking is stimulated with a touch to the edge or center of the lips

Primitive Reflexes

- ATNR: The turning of the head causes the arm and the leg on one side to extend, while the limbs on the opposite side flex.

- Palmomental Reflex: Elicited by touching the palm of the hand. It causes involuntary contraction of the mentalis muscle.
Protective Reflexes

• Present from birth to adulthood:
  • Gag and Cough Reflexes serve as a protection of the respiratory and digestive system.

P.A.T. / Reflex Evaluation

<table>
<thead>
<tr>
<th>Reflex</th>
<th>Integration Period</th>
<th>Present</th>
<th>Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gag</td>
<td>Protective-Remain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cough</td>
<td>Protective-Remain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suction</td>
<td>2 – 5 months</td>
<td></td>
<td></td>
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<tr>
<td>Bowl Reflex</td>
<td>During Suckling</td>
<td></td>
<td></td>
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<tr>
<td>Rooting</td>
<td>2 – 3 months</td>
<td></td>
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<tr>
<td>Bite</td>
<td>5 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATNR</td>
<td>3 – 4 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STNR</td>
<td>3 – 4 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Babkin</td>
<td>2 – 4 months</td>
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<td></td>
</tr>
<tr>
<td>Palmomeental</td>
<td>2 – 4 months</td>
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</tbody>
</table>
Food Analysis

Assessment of Sensory Characteristics

- Size
- Shape
- Temperature
- Flavor
- Acidity
- Texture
## Example

A child in your caseload eats:
- Crackers
- Chips (Lays, Pringles, etc.)
- Mashed potatoes
- French Fries
- Cheetos
- Lemonade

He has difficulty containing Chips and Export Sodas inside his mouth, but is able to contain mashed potatoes and French Fries without difficulty. He does not accept any other food that is not listed above.

### Food Inventory

<table>
<thead>
<tr>
<th></th>
<th>Liquids</th>
<th>Semi-Solids</th>
<th>Solids</th>
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<tbody>
<tr>
<td>Fine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nectars</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Honey</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Pure</td>
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<td></td>
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<tr>
<td>Mashed</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Ground</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crunchy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soft</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Firm</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Fibrous</td>
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### Food Inventory

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<thead>
<tr>
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<th>Liquids</th>
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<th>Solids</th>
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<tr>
<td></td>
<td>Thin</td>
<td>Nectars</td>
<td>Honey</td>
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<td></td>
<td>Puree</td>
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<td>Mashed</td>
<td>Ground</td>
<td>Crunchy</td>
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<tr>
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<td>Soft</td>
<td>Firm</td>
<td>Fibrous</td>
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</table>

<table>
<thead>
<tr>
<th></th>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>Sour</th>
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</tbody>
</table>

- Lays
- Cheetos
- Ritz Crackers
- French Fries
- Mashed Potatoes
- Lemonade without sugar

### Considerations during the Evaluation Process

- How does the child manage liquids, different textures, secretions?
- Is the child able to coordinate breathing and swallowing adequately?
- Is positioning helping the feeding process or making it more difficult?
- What strategies are being used during the feeding process?
- Is the child independent in the use of utensils and finger feeding?
- What are the sensory characteristics of the child’s diet?
- Is the child able to prepare and contain the bolus?
- Are there any signs of possible aspiration during or after feedings?
History

- Pre-peri-post natal
- Current and past medications
- Surgery
- Neurological assessments and/or genetic diagnostic
- Feeding History
- Sensory History
- Past or present NPO
- History of GI conditions, including reflux when baby
- History of respiratory conditions
- FTT / Weight and height
Feeding Disorders Related to Sensory Issues

• Can be associated with selectivity when eating
• Selectivity in terms to the color, texture, taste and temperature of the food.
• Lack of exposure to certain textures results in immature oral motor skills.
• They can evade or present difficulty handling sensory information in oral mechanism and peripheries.
• Difficulty with the reception of food.
• Reduced proprioception, hypo-reactions, or hyper-reactions to sensory stimuli.

Assessment of Oral Motor Structures
Typical Oral-Motor Patterns: Occlusion

- Incisors/Canines: Let you bite food.
- Molars: Essential for chewing.

Dental Structures

- Angle Class I, II, and III Malocclusion
- Open Bite
- Diastema

Crossbite: upper teeth fit inside lower teeth
Dental Anomalies may:

- Affect chewing skills
- Make it difficult to contain the bolus inside the oral cavity.
- Make it difficult to bite

Hard Palate
May cause:

- Difficulty in the management of the bolus.
- Food through nasal cavity.
- Difficulty in creating the necessary seal for suction.

Lips

- Rounding
- Lip Spreading
- Lip seal
### Atypical Patterns: Lips

<table>
<thead>
<tr>
<th>LIPS</th>
<th>Appearance</th>
<th>Symmetry in rest</th>
<th>Symmetry when smiling</th>
<th>Lip closure</th>
<th>Alternate movements (coordination)</th>
<th>Protrusion / Rounding</th>
<th>Spreading</th>
<th>Atypical Patterns</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□ A □ I</td>
<td>□ A □ I</td>
<td>□ A □ I □ NO</td>
<td>□ A □ I NO</td>
<td>□ A □ I □ NO</td>
<td>□ A □ I □ NO</td>
<td>□ A □ I □ NO</td>
<td>□ A □</td>
</tr>
<tr>
<td></td>
<td>□ LEFT</td>
<td>□ Deviation: □ L □ D</td>
<td>□ Deviation: □ L □ D</td>
<td>□ Weakness: □ Mild □ Moderate □ Severe □ Lack of closure</td>
<td>□ None □ Tremor □ Retractions □ Hypotonic □ Incoordinate movements</td>
<td>□ None □ Tremor □ Retractions □ Hypotonic □ Incoordinate movements</td>
<td>□ None □ Tremor □ Retractions □ Hypotonic □ Incoordinate movements</td>
<td></td>
</tr>
</tbody>
</table>
May impact:

- Reception of fluids and food.
- Fluid loss.
- Difficulty retrieving food.
- Difficulty creating lip seal suitable for containing the bolus during chewing.

Tongue

- Suckling
- Elevation
- Lateralization
- Retraction
Atypical Patterns

The Tongue Plays a Major Role in Swallowing
It may lead to:

- Difficulty with bolus lateralization.
- Difficulty collecting food residue outside the oral cavity; difficulty cleaning lips.
- Difficulty collecting residue between molars and cheeks ("Pocketing").
- Difficulty propelling the bolus to the pharynx.
- In infants, it can cause difficulty in creating changes in pressure required for suction.
- Tongue Thrust
Interesting Information

• Children with neuromuscular disorders may use their tongue to gain stability in other areas of their body.
• Fixating the tongue against the hard palate may help some children maintain an open respiratory tract.
• Tension at the base of the tongue may affect the propulsion of the bolus.

Cheeks

Problems may cause:
• Difficulty rearranging the bolus.
• Difficulty transferring the bolus for propulsion.
• Poor motor control of the lips.
• Difficulty with pressure changes.
• Reduced proprioception.
Jaw

- Opening and Closure
- Stability
- Refined movements include gradation
- Phasic Bite
- Munching
- Diagonal and Rotary movement

Atypical Patterns

- Tremor / Clonus
- Retraction
- Tonic Bite
May lead to:

- Difficulty chewing firm and fibrous solids.
- Weakness is associated with poor coordination of tongue, cheeks and lips.
- Oral closure is required to contain food.
- The feeding process tends to take longer because children may experience difficulty grinding food.
Considerations

- Swallows per Bolus
- Apneal Pause during the pharyngeal stage of swallow.
- Laryngeal elevation
Differential Diagnosis

- Sensory related feeding disorder
- Dysphagia:
  - Oral
  - Pharyngeal
  - Esophageal

Access Evaluation Forms

https://www.dropbox.com/sh/9f40k4ll1yg8qdx/fQRLFqsFZW