Management of oropharyngeal dysphagia
Course Objectives

• Know the normal anatomy of swallowing
• Know the normal physiology of swallowing
• Enumerate different etiologies of oropharyngeal dysphagia
• Be able to do bedside assessment
• Interpret MBS and FEES procedures
• Write MBS and FEES reports
• Put a short-term and long-term treatment plan
Aim

- Prevent pulmonary aspiration
- Maintain adequate food and fluid intake
- Correct nutritional deficiencies (when present)
Modalities

(A) Behavior readjustment therapy (BRAT):
   i. Postural techniques
   ii. Augmentation of the oral sensory input before or during the swallow (sensory enhancement techniques)
   iii. Augmentation of the motor control of swallowing (exercises to the muscles involved in swallowing)
   iv. Swallowing maneuvers
   v. Modification of the food variables by changing food consistency/viscosity
   vi. Change manner of feeding

(B) Intraoral prosthetics

(C) Medical treatment

(D) Surgical intervention

(E) Alternative routes of alimentation.
BRAT

Postural techniques

• Fast, effective

• Change the dimensions of the pharynx and the direction of food flow
# BRAT

## Postural techniques

<table>
<thead>
<tr>
<th>Disorder observed on fluoroscopy</th>
<th>Posture applied if aspiration occurs</th>
<th>Rationale for posture effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inefficient oral transit (reduced posterior propulsion of bolus by tongue)</td>
<td>Head back</td>
<td>Utilizes gravity to clear oral cavity</td>
</tr>
<tr>
<td>Delay in triggering the pharyngeal swallow (bolus past ramus of mandible but pharyngeal swallow is not triggered)</td>
<td>Chin down</td>
<td>Narrows airway entrance, reducing risk of aspiration; widens valleculae to prevent bolus entering airway in some patients</td>
</tr>
<tr>
<td>Reduced posterior motion of tongue base (residue in valleculae)</td>
<td>Chin down</td>
<td>Pushes tongue base backward toward pharyngeal wall</td>
</tr>
<tr>
<td>Unilateral laryngeal dysfunction (aspiration during the swallow)</td>
<td>Head rotated to damaged side</td>
<td>Places extrinsic pressure on thyroid cartilage, increasing adduction</td>
</tr>
<tr>
<td>Reduced laryngeal closure (aspiration during the swallow)</td>
<td>Chin down Head rotated to damaged side</td>
<td>Puts epiglottis in more protective position; narrows laryngeal entrance; increases vocal fold closure by applying extrinsic pressure</td>
</tr>
<tr>
<td>Unilateral pharyngeal paresis (residue on one side of pharynx)</td>
<td>Head rotated to damaged side</td>
<td>Eliminates damaged side of pharynx from bolus path</td>
</tr>
<tr>
<td>Unilateral oral and pharyngeal weakness on the same side (residue in mouth and pharynx on same)</td>
<td>Head tilt to stronger side</td>
<td>Directs bolus down stronger side by gravity</td>
</tr>
<tr>
<td>Reduced bilateral pharyngeal contraction (residue spread throughout pharynx)</td>
<td>Lying down on one side</td>
<td>Eliminates gravitational effect on pharyngeal residue</td>
</tr>
<tr>
<td>Cricopharyngeal dysfunction (residue in pyriform sinuses)</td>
<td>Head rotated</td>
<td>Pulls cricoid cartilage away from posterior pharyngeal wall, reducing resting pressure in crico-pharyngeal sphincter</td>
</tr>
</tbody>
</table>

Logemann, 1995

7-Apr-15

Swallowing Course/ Management
BRAT
Sensory enhancement techniques

Size 00 laryngeal mirror

Thermal stimulation

Logemann, 1993
BRAT exercises to the muscles included in swallowing

1. Range of motion exercises
2. Resistance exercises for the lips, tongue and jaw
3. Tongue-holding maneuver to improve posterior pharyngeal wall movement during deglutition (Masakow’s exercise)
4. Adduction exercises to improve vocal fold motion
5. Falsetto exercise, i.e., sliding up the scale to the highest vocal range as an exercise for laryngeal elevation
6. Gentle and effortful breath hold as an exercise for closure of the vocal folds or the entry level of the airway
7. Shaker exercise (improve UES opening)
Oral sensory motor exercises

“Sensory”
Oral sensory motor exercises

“Motor”
Shaker exercise
# BRAT

## Swallowing Maneuvers

<table>
<thead>
<tr>
<th>Swallow maneuvers</th>
<th>Swallow disorder for which maneuver designed</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supraglottic swallow</td>
<td>Reduced or late vocal fold closure, delayed pharyngeal swallow</td>
<td>Voluntary breath hold usually closes vocal folds before and during swallow; closes true vocal folds before and during pharyngeal delay</td>
</tr>
<tr>
<td>Super-supraglottic swallow</td>
<td>Reduced closure of airway entrance</td>
<td>Effortful breath hold tilts arytenoids forward closing airway entrance before and during swallow; elevates airway earlier than normal</td>
</tr>
<tr>
<td>Effortful swallow</td>
<td>Reduced posterior movement of the tongue base</td>
<td>Effort increases posterior tongue base movement and increases pharyngeal pressure</td>
</tr>
<tr>
<td>Mendelsohn maneuver</td>
<td>Reduced range of laryngeal movement</td>
<td>Laryngeal movement opens the UES, prolonging laryngeal elevation, prolongs UES opening Normalizes timing of pharyngeal swallow events</td>
</tr>
<tr>
<td></td>
<td>Discoordinated swallow</td>
<td></td>
</tr>
</tbody>
</table>

*Logemann, 1995*
## BRAT

**Changing food variables**

**volume/ consistency**

<table>
<thead>
<tr>
<th>Swallowing disorder</th>
<th>Easiest food consistencies</th>
<th>Most difficult food consistencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced range of tongue motion</td>
<td>Thick liquid initially, then thin liquid</td>
<td>Thick foods</td>
</tr>
<tr>
<td>Reduced tongue coordination</td>
<td>Liquid</td>
<td>Thick foods</td>
</tr>
<tr>
<td>Reduced tongue strength</td>
<td>Thin liquid</td>
<td>Thick, heavy foods</td>
</tr>
<tr>
<td>Delayed pharyngeal swallow</td>
<td>Thick liquids and thicker foods</td>
<td>Thin liquids</td>
</tr>
<tr>
<td>Reduced airway closure</td>
<td>Pudding and thick foods</td>
<td>Thin liquids</td>
</tr>
<tr>
<td>Reduced laryngeal movement/cricopharyngeal dysfunction</td>
<td>Thin liquid</td>
<td>Thicker, higher viscosity foods</td>
</tr>
<tr>
<td>Reduced pharyngeal wall contraction</td>
<td>Thin liquid</td>
<td>Thicker, higher viscosity foods</td>
</tr>
<tr>
<td>Reduced tongue base posterior movement</td>
<td>Thin liquid</td>
<td>higher viscosity foods</td>
</tr>
</tbody>
</table>

Logemann, 1995
# National Dysphagia diet

## Food consistencies

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level I</td>
<td><strong>Dysphagia puree:</strong> Pureed and cohesive foods, no mixed textures, everything is &quot;pudding-like.&quot; Nothing that requires chewing is allowed.</td>
</tr>
</tbody>
</table>

| Level II| **Dysphagia mechanically altered:** Foods are moist, soft and cohesive. Meats are ground or minced. Avoid rice, corn, bread, soups and casseroles that contain large chunks, nuts, and chewy, stringy or dry foods. |

| Level III| **Dysphagia advanced:** A near-regular diet with the exception of very hard, sticky or crunchy foods. Foods should be bite-size. Avoid crusty or dry bread, nuts, apples, dry fruit, coconut, raw vegetables and corn. |

| Level IV| **Regular:** All foods are acceptable |

## Liquid Consistencies

<table>
<thead>
<tr>
<th>Consistency</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thin</td>
<td>Includes water, coffee, tea, soda, ices, tomato juice or anything else that will quickly liquefy in the mouth. For those who can drink thin liquids, all beverages are acceptable.</td>
</tr>
</tbody>
</table>

| Nectar-Like       | Liquids that have been thickened to a consistency that coats and drips off a spoon, similar to unset gelatin. |

| Honey-like        | Liquids that have been thickened to honey consistency. The liquid flows off a spoon in a ribbon, just like actual honey. |

| Spoon-thick       | Liquids that have been thickened to a pudding consistency. They remain on the spoon in a soft mass. |

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Characteristics of Food Texture

1. It is a group of physical properties that derive from the structure of the food.
2. It consists of a group of properties, not a single property.
3. It is sensed by touch, usually in the mouth but hands may also be used.
4. It is not related to chemical senses of taste or odor.
5. It can be measured objectively by means of mass, distance, and time.
Eight Textures in Dysphagia Diets

1. **Adhesiveness**: The work required to overcome the attractive force between the surface of a food another surface to which it has contact. (Example: amount of work required to remove peanut butter from the palate).

2. **Cohesiveness**: The degree to which the food deforms. (Example: when a moist bolus of cracker is compressed between tongue and palate).

3. **Firmness**: The force required to compress a semisolid food. (Example: Compressing pudding between the tongue and palate).

4. **Fracturability (“Biteability”)**: The force that causes a solid food to break. (Example: Biting peanut brittle with the incisors).
Eight Textures in Dysphagia Diets

5. **Hardness:** The force required to compress a solid food to attain a certain deformation. (Example: Chewing a hot dog just prior to when it begins to shear).

6. **Springiness:** The degree or rate that a sample returns to its original shape after being compressed. (Example: Marshmallow).

7. **Viscosity:** The rate of flow per unit force. (Example: The rate at which a milkshake or nectar is drawn through a straw).

8. **Yield stress:** The minimum amount of shear stress that must be applied to food before it begins to flow. (Example: Force required to get ketchup to flow from a bottle).
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(B) Intraoral prosthetics

(C) Medical treatment

(D) Surgical intervention (suspension, myotomy, botox, closure, TL!)

(E) Alternative routes of alimentation.
## Alternative routes of alimentation

<table>
<thead>
<tr>
<th>Access site</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>
| **Nasogastric** | • Minimally invasive, easy placement  
• Suitable for short-term use  
• Transitional to bolus feeding  
• Radiographic confirmation not necessary required | • Cosmetic: feeding tube visible unless patient self-inserts each feeding  
• Risk of sinusitis  
• Lack of intact gag reflex may (not necessary) indicate increased aspiration risk  
• Stomach must be uninvolved with primary |
| **Nasoduodenal** | • Minimally invasive, easy placement  
• Suitable for short-term use  
• Reduced risk of pulmonary aspiration  
• Useful in conditions of gastroparesis or impaired stomach emptying  
• Useful if esophageal reflux present | • Requires radiographic confirmation of placement  
• Cosmetic: feeding tube is visible  
• Requires 43” length feeding tube  
• May not remain placed in duodenum due to tube migration  
• Typically, smaller diameter tube than NG, more |
| **Nasojejunal** | • Same as nasoduodenal  
• Placement of tip further down GI tract minimizes dislocation to stomach  
• 60” length tubes available offering even greater placement security | • Same as nasoduodenal, except placement of tip more secure |
# Alternative routes of alimentation (Cont.)

<table>
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<tr>
<th>Access site</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>
| Cervical esophagostomy | • Improved cosmetic appeal as end of tube more easily concealed  
• Ease of feeding over gastrostomy as do not need to undress  
• More suitable for long-term feeding | • Although more suitable for long-term feeding, the lower esophageal sphincter is stented open and same concerns of gastric and esophageal reflux with possible pulmonary aspiration are present as with NG feeding tube |
| Gastrostomy          | • Suitable for long-term feeding  
• Cosmetically more appealing than a nasally place tube  
• Minimizes risk of tube migration and aspiration due to voluntary or accidental dislocation of nasoenteric tube by patient  
• Percutaneous placement available (PEG) | • Potential risk of pulmonary aspiration  
• Lack of intact gag reflex and/or presence of esophageal reflux may indicated increased risk of aspiration  
• Insertion site care needed  
• Potential skin excoriation at stoma site from |
Dysphagia tools

- ORAL LIGHT
- KAPI-CUPS
- PROVALE CUP
- DYSPHAGIA CUP
- MAROON SPOONS
- CHEWY TUBES

7-Apr-15 Swallowing Course/ Management
Under trial

VitalStim®
Community awareness

Talking Pharynx
World Swallowing Day

WSD 2011 KKUH

WSD 2012 KKUH & KAUH

WSD 2013 KAUH

WSD 2013 KKUH
World Swallowing Day
2014

WSD 2014 KAUH

17/12/2014
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Dr/ Mohamed Farahat

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