Bedside Dysphagia Evaluation

Patient _____ Date _____

Facility _____ SLP _____

▶ Oral-Motor Evaluation ❑ CNA

1. Structure Note any abnormalities _____

edentulous yes / no dentures yes / no wears dentures when eating yes / no dentures in during eval yes / no

2. Awareness/Control of Secretions _____ drooling _____ excess secretions in mouth _____ wet breath sounds

3. Assessing Jaw, Lips and Tongue

Jaw Control CNA + / –

Labial Function CNA
- lip spread /i/ + / –
- lip closure at rest
  - symmetry + / –
  - droop R L
- sentence (*Please put the paper by the back door.*) + / –
- lip round /u/ + / –
- lip smacking + / –
- lip closure on /p∧p∧p∧/ + / –

Lingual Function CNA
- protrusion + / –
- lick lips + / –
- lateralization to buccal cavity R + / – L + / –
- elevation of back + / –
- repetitive elevation of back + / –
- final lingual shaping (*Say something nice to Susan on Sunday.*) + / –
- retraction + / –
- lateralization to corners R + / – L + / –
- elevation of tip + / –
- repetitive elevation of tip + / –

4. Velar Function CNA
prolonged /a/: symmetry during elevation + / –
Resonance: _____ normal _____ hypernasal _____ hyponasal

5. Reflexes/Responses CNA
swallow response + / – gag reflex + / – palatal reflex + / –

▶ Laryngeal Examination ❑ CNA

Tracheostomy Tube _____ yes / no
cuffed yes / no
finger occluded PM valve other _____

Vocal Quality	normal	hoarse	breathy	wet
Voluntary Cough	strong	weak	absent	
Throat Clearing	strong	weak	absent	
Pitch Range	# of notes _____			
Volume Control	noticeable change in loudness + / –		ability to control loudness + / –	
Phonation Time	# seconds prolonged /a/ _____			
Valving for Speech	# syllables/breath group _____			

▶ Respiratory Status ❑ CNA

Patient swallows during inhalation / exhalation. Patient can hold breath for _____ seconds.

▶ Cognition/Communication ❑ CNA

Orientation	day _____	date _____	year _____	place _____
Follows One-Step Directions	+ / –	with cues	without cues	
Follows Two-Step Directions	+ / –	with cues	without cues	
Expressive Language	gestures/points	uses single words	uses phrases	
Intelligibility	unintelligible	dysarthria	apraxia	confused speech

Short-Term Memory
Can patient retell techniques? yes / no _____

Hearing Acuity _____
wears hearing aid(s) yes / no right _____ left _____
hearing aid(s) in for eval yes / no

▶ Comments _____

Patient _____ Facility _____

SLP _____ Date _____ Time _____ Procedure _____

▶ Swallowing

Key			
+	skill is adequate	**S**	straw
–	skill is inadequate	**SP**	spoon
N/A	not applicable for that texture	**C**	cup
		CO	cut-out cup

Compensatory Techniques	
CD	chin down
HR	head rotation
BS	bolus size
EP	external pressure

		Texture →					
Ability to prepare bolus							
labial closure	+ / –						
lingual elevation	+ / –						
lingual lateralization	+ / –						
mastication	+ / –						
Ability to manipulate bolus							
lingual function	+ / –						
oral transit time	+ / –						
Ability to maintain bolus							
back of tongue control	+ / –						
labial closure	+ / –						
cheeks	+ / –						
lingual lateralization	+ / –						
clears oral cavity in one swallow	+ / –						
# swallows per bolus							
Oropharyngeal Phase							
initiate reflex in ____ seconds	+ / –						
Laryngeal Characteristics							
vocal quality	+ / describe						
cough/throat clearing	+ / –						
elevation of larynx	+ / –						

Comments _____

▶ Oral Phase Short-Term Goals/Treatment Objectives

(Circle patient goals to be addressed.) These goals are for ____ days/weeks. For related treatment objectives, see SLP Treatment Plan.

1.	(AL/jc) Improve jaw closure to reduce anterior loss to keep food/liquid in the mouth while eating.	
2.	(AL/lc) Improve lip closure to reduce anterior loss to keep food/liquid in the mouth while eating.	
3.	(AL/os) Improve oral sensation to reduce anterior loss to keep food in the mouth while eating.	
4.	(BF/os) Increase oral sensation to improve the ability to put food/liquid into a cohesive bolus to reduce the risk of food residue falling into the airway.	
5.	(BF/tm) Increase tongue movement to improve the ability to put food/liquid into a cohesive bolus to reduce the risk of food residue falling into the airway.	
6.	(BF/tc) Increase tone in cheek(s) to improve the ability to put food/liquid into a cohesive bolus to reduce the risk of food residue falling into the airway.	
7.	(BP/tm) Increase tongue movement to improve the ability to move a bolus to the back of the mouth in a coordinated fashion to reduce the risk of it falling into the airway.	
8.	(BP/oc) Increase oral coordination to improve the ability to move a bolus to the back of the mouth in a coordinated fashion to reduce the risk of it falling into the airway.	
9.	(BP/os) Increase oral sensation to improve the ability to move a bolus to the back of the mouth in a coordinated fashion to reduce the risk of it falling into the airway.	
10.	(BP/ag) Increase awareness of food/liquid and utensils in the mouth to improve the ability to move a bolus to the back of the mouth in a coordinated fashion to reduce the risk of it falling into the airway.	

Bedside Dysphagia Evaluation Sample

Patient Fred Date 4-30-07

Facility Central Hospital SLP _____

▶ Oral-Motor Evaluation ❑ CNA

1. Structure Note any abnormalities _____

edentulous (yes)/ no dentures (yes)/ no wears dentures when eating (yes)/ no dentures in during eval (yes)/ no

2. Awareness/Control of Secretions _____ drooling _____ excess secretions in mouth ___✓___ wet breath sounds

3. Assessing Jaw, Lips and Tongue

Jaw Control CNA (+)/ –

Labial Function CNA
- lip spread /i/ (+)/ –
- lip closure at rest
  - symmetry + /(–)
  - droop (R) L
- sentence (*Please put the paper by the back door.*) + /(–)
- lip round /u/ + /(–)
- lip smacking CNA + / –
- lip closure on /pʌpʌpʌ/ CNA + / –

Lingual Function CNA
- protrusion (+)/ –
- lick lips (+)/ –
- lateralization to buccal cavity R(+)/ – L(+)/ –
- elevation of back (+)/ –
- repetitive elevation of back + /(–) (A)
- final lingual shaping (*Say something nice to Susan on Sunday.*) + /(–) (AC)
- retraction (+)/ –
- lateralization to corners R(+)/ – L(+)/ –
- elevation of tip + /(–) (SP)
- repetitive elevation of tip + /(–) (SP)

4. Velar Function CNA
- prolonged /a/: symmetry during elevation (+)/ –
- Resonance: ___✓___ normal _____ hypernasal _____ hyponasal

5. Reflexes/Responses CNA
- swallow response (+)/ – gag reflex + /(–) palatal reflex (+)/ –

▶ Laryngeal Examination ❑ CNA

Tracheostomy Tube _____ yes /(no)
- cuffed yes / no
- finger occluded PM valve other _____

Vocal Quality normal hoarse breathy (wet)
Voluntary Cough (strong) weak absent
Throat Clearing (strong) weak absent
Pitch Range # of notes 3
Volume Control noticeable change in loudness (+)/ – ability to control loudness (+)/ –
Phonation Time # seconds prolonged /a/ 6
Valving for Speech # syllables/breath group DNA

▶ Respiratory Status ❑ CNA

Patient swallows during inhalation /(exhalation). Patient can hold breath for 4 seconds.

▶ Cognition/Communication ❑ CNA

Orientation	day ✓	date ✓	year ✓	place ✓
Follows One-Step Directions	(+)/ –	with cues	without cues	
Follows Two-Step Directions	+ /(–)	with cues	without cues	
Expressive Language	(gestures/points)	(uses single words)	uses phrases	
Intelligibility	unintelligible	(dysarthria)	apraxia	confused speech

Short-Term Memory
- Can patient retell techniques? yes /(no) but he's alert

Hearing Acuity appears adequate
- wears hearing aid(s) yes /(no) right _____ left _____
- hearing aid(s) in for eval yes / no

▶ Comments _____

Patient Fred Facility _____

SLP _____ Date _____ Time _____ Procedure _____

▶ Swallowing

Key				Compensatory Techniques	
+	skill is adequate	**S**	straw	**CD**	chin down
–	skill is inadequate	**SP**	spoon	**HR**	head rotation
N/A	not applicable for that texture	**C**	cup	**BS**	bolus size
		CO	cut-out cup	**EP**	external pressure

		Texture → liquids	pureed	eggs	honey		
Ability to prepare bolus							
labial closure	+ / –	–	–	–	–		
lingual elevation	+ / –	+	+	+	+		
lingual lateralization	+ / –	N/A	+	+	+		
mastication	+ / –	N/A	N/A	–	N/A		
Ability to manipulate bolus							
lingual function	+ / –	+	+	–	+		
oral transit time	+ / –	+	+	–	+		
Ability to maintain bolus							
back of tongue control	+ / –	– CO+	+	+	+		
labial closure	+ / –	–	–	–	–		
cheeks	+ / –	– EP+	– EP+	– EP+	– EP+		
lingual lateralization	+ / –	N/A	+	+	+		
clears oral cavity in one swallow	+ / –	–	–	–	–		
# swallows per bolus		2	2	2-3	2		
Oropharyngeal Phase							
initiate reflex in ____ seconds	+ / –						
Laryngeal Characteristics							
vocal quality	+ / describe	wet	wet	wet	wet		
cough/throat clearing	+ / –	+	+	–	+		
elevation of larynx	+ / –	+	+	–	+		

Comments _____

▶ Oral Phase Short-Term Goals/Treatment Objectives

(Circle patient goals to be addressed.) These goals are for __2__ days (weeks)
For related treatment objectives, see SLP Treatment Plan.

1. (AL/jc)	Improve jaw closure to reduce anterior loss to keep food/liquid in the mouth while eating.	
(2. (AL/lc))	Improve lip closure to reduce anterior loss to keep food/liquid in the mouth while eating.	Tx Obj 1, 2, 4, 6
3. (AL/os)	Improve oral sensation to reduce anterior loss to keep food in the mouth while eating.	
4. (BF/os)	Increase oral sensation to improve the ability to put food/liquid into a cohesive bolus to reduce the risk of food residue falling into the airway.	
5. (BF/tm)	Increase tongue movement to improve the ability to put food/liquid into a cohesive bolus to reduce the risk of food residue falling into the airway.	
(6. (BF/tc))	Increase tone in cheek(s) to improve the ability to put food/liquid into a cohesive bolus to reduce the risk of food residue falling into the airway.	Tx Obj 1, 2, 3, 6, 9
7. (BP/tm)	Increase tongue movement to improve the ability to move a bolus to the back of the mouth in a coordinated fashion to reduce the risk of it falling into the airway.	
(8. (BP/oc))	Increase oral coordination to improve the ability to move a bolus to the back of the mouth in a coordinated fashion to reduce the risk of it falling into the airway.	Tx Obj 2, 3
9. (BP/os)	Increase oral sensation to improve the ability to move a bolus to the back of the mouth in a coordinated fashion to reduce the risk of it falling into the airway.	
10. (BP/ag)	Increase awareness of food/liquid and utensils in the mouth to improve the ability to move a bolus to the back of the mouth in a coordinated fashion to reduce the risk of it falling into the airway.	

Bedside Dysphagia Evaluation — Skilled Nursing Facilities Summary Sheet

Date _____
Patient _____ Birth Date _____ Age _____
Physician _____ Room # _____
Medical Diagnosis _____
Medical History _____
_____
Pertinent Medications _____
Current Method of Nutrition: ❑ PO _____ diet ❑ NPO NG/PEG/TPN
Precautions _____
History/Duration of Swallowing Problems/Recent Change _____
_____
Swallowing Function Prior to Onset/Recent Change _____
_____
Previous Evaluation/Treatment _____
_____

Evaluation Findings/Summary _____
_____
Positive Expectation to Begin Service _____
_____
Need for Skilled Service _____
_____

Dysphagia Diagnosis _____
_____

Recommendations

_____ NPO — consider alternative feeding: _____
_____ NPO until instrumental exam
_____ trial therapeutic feeding only (no meal trays)
_____ tube feedings will be held a minimum of two hours before each meal
_____ PO: _____
liquids: _____ spoon / cup / straw
meds: _____
_____ supplemental tube feedings
_____ SLP to treat _____ meals/day OT to treat _____ meals/day
_____ no therapeutic feeding by SLP indicated _____ no treatment at meals by OT
_____ instrumental exam ❑ MBS ❑ FEES®
_____ Speech/Language eval
_____ OT eval
_____ ENT consult re: _____
_____ re-eval pending: _____
_____ positioning/feeding precautions as posted
_____ chin-down _____ upright 90º _____ liquid wash
_____ head rotation R/L _____ multiple swallows
_____ reflux precautions
_____ Dietitian to interview patient/family to determine food preferences
_____ calorie count
_____ review chart for spiked temps
_____ feed with trach cuff up / down
Passy-Muir Valve on / off
_____ suction per trach after each meal
_____ other: _____

*Recommendations marked with * are pending results of an instrumental exam revealing if patient is safe to eat.

Recommendations, *continued*

_____ Treatment by SLP (See Treatment Plan.)
_____ functional maintenance
_____ Treatment by OT (See Treatment Plan.)
_____ rehab dining

Frequency of service _____ Duration of service _____

Discharge Plan _____

_____

Long-Term Goals

(Circle goals to be addressed.) These goals are set for a one-month time period.

1. Patient will safely consume _____ diet with _____ liquids without complications such as aspiration pneumonia.
2. Patient will be able to eat foods and liquids with more normal consistency.
3. Patient will be able to complete a meal in less than _____ minutes.
4. Patient will maintain nutrition/hydration via alternative methods.
5. Patient's quality of life will be enhanced through eating and drinking small amounts of food and liquid.
6. Patient's caregivers and family will demonstrate understanding of compensatory techniques to feed patient safely.

Oral Phase Short-Term Goals/Treatment Objectives

(Circle patient goals to be addressed.) These goals are for ____ days/weeks. For related treatment objectives, see SLP Treatment Plan.

1. (AL/jc) Improve jaw closure to reduce anterior loss to keep food/liquid in the mouth while eating.	
2. (AL/lc) Improve lip closure to reduce anterior loss to keep food/liquid in the mouth while eating.	
3. (AL/os) Improve oral sensation to reduce anterior loss to keep food in the mouth while eating.	
4. (BF/os) Increase oral sensation to improve the ability to put food/liquid into a cohesive bolus to reduce the risk of food residue falling into the airway.	
5. (BF/tm) Increase tongue movement to improve the ability to put food/liquid into a cohesive bolus to reduce the risk of food residue falling into the airway.	
6. (BF/tc) Increase tone in cheek(s) to improve the ability to put food/liquid into a cohesive bolus to reduce the risk of food residue falling into the airway.	
7. (BP/tm) Increase tongue movement to improve the ability to move a bolus to the back of the mouth in a coordinated fashion to reduce the risk of it falling into the airway.	
8. (BP/oc) Increase oral coordination to improve the ability to move a bolus to the back of the mouth in a coordinated fashion to reduce the risk of it falling into the airway.	
9. (BP/os) Increase oral sensation to improve the ability to move a bolus to the back of the mouth in a coordinated fashion to reduce the risk of it falling into the airway.	
10. (BP/ag) Increase awareness of food/liquid and utensils in the mouth to improve the ability to move a bolus to the back of the mouth in a coordinated fashion to reduce the risk of it falling into the airway.	

_____ _____ _____
Speech-Language Pathologist License # Date

I certify that this patient requires therapy services, is under a plan of care established or reviewed every _____ days by me, and requires the specified treatment on a continuing basis with the following changes: _____.

Physician Notice: (Circle one.) I do / do not find it necessary to see this patient within the next _____ days.

_____ _____
Physician Date

Bedside Dysphagia Evaluation — Skilled Nursing Facilities Summary Sheet Sample

Date _____
Patient Ethel Birth Date 1-8-23 Age 84
Physician _____ Room # _____
Medical Diagnosis Alzheimer's
Medical History Diabetes, CHF
referred by Dr. Davis for oral dysphagia and weight loss
Pertinent Medications Aricept
Current Method of Nutrition: ☑ PO reg diet ❑ NPO NG/PEG/TPN
Precautions _____
History/Duration of Swallowing Problems/Recent Change lost 15 pounds over last 6 months on regular diet at home

Swallowing Function Prior to Onset/Recent Change prior to last 6 months, she ate without difficulty

Previous Evaluation/Treatment n/a

Evaluation Findings/Summary Difficulty forming bolus with masticated foods. Holds food in oral cavity up to 15 seconds. With increased pressure and pureed foods, she swallows after 8 seconds. Coughs with thin liquids.
Positive Expectation to Begin Service Patient is cooperative with caregivers. Patient is alert and pleasant and likes to eat.
Need for Skilled Service If patient's diet and food presentation aren't modified, she is at risk for aspiration and continued weight loss.

Dysphagia Diagnosis moderate oral dysphagia, suspected pharyngeal dysphagia

Recommendations

_____ NPO — consider alternative feeding: _____
_____ NPO until instrumental exam
_____ trial therapeutic feeding only (no meal trays)
_____ tube feedings will be held a minimum of two hours before each meal
✓ PO: pureed
liquids: honey thick (spoon)/(cup)/ straw
meds: crushed and mixed
_____ supplemental tube feedings
_____ SLP to treat _____ meals/day OT to treat _____ meals/day
_____ no therapeutic feeding by SLP indicated _____ no treatment at meals by OT
✓ instrumental exam ☑ MBS ❑ FEES®
_____ Speech/Language eval
_____ OT eval
_____ ENT consult re: _____
_____ re-eval pending: _____
✓ positioning/feeding precautions as posted
_____ chin-down ✓ upright 90° _____ liquid wash
_____ head rotation R/L _____ multiple swallows
_____ reflux precautions
_____ Dietitian to interview patient/family to determine food preferences
✓ calorie count
_____ review chart for spiked temps
_____ feed with trach cuff up / down
Passy-Muir Valve on / off
_____ suction per trach after each meal
✓ other: added tactile stim to mouth

*Recommendations marked with * are pending results of an instrumental exam revealing if patient is safe to eat.

Recommendations, *continued*

_____ Treatment by SLP (See Treatment Plan.)
__✓__ functional maintenance

_____ Treatment by OT (See Treatment Plan.)
__✓__ rehab dining

Frequency of service 90 mins/wk Duration of service 2 weeks

Discharge Plan when MBS completed and staff trained on techniques to feed patient safely

Long-Term Goals

(Circle goals to be addressed.) These goals are set for a one-month time period.

(1.) Patient will safely consume pureed diet with honey liquids without complications such as aspiration pneumonia.
2. Patient will be able to eat foods and liquids with more normal consistency.
3. Patient will be able to complete a meal in less than _____ minutes.
4. Patient will maintain nutrition/hydration via alternative methods.
5. Patient's quality of life will be enhanced through eating and drinking small amounts of food and liquid.
(6.) Patient's caregivers and family will demonstrate understanding of compensatory techniques to feed patient safely.

Oral Phase Short-Term Goals/Treatment Objectives

(Circle patient goals to be addressed.) These goals are for ____ days/weeks. For related treatment objectives, see SLP Treatment Plan.

1. (AL/jc) Improve jaw closure to reduce anterior loss to keep food/liquid in the mouth while eating.	
2. (AL/lc) Improve lip closure to reduce anterior loss to keep food/liquid in the mouth while eating.	
3. (AL/os) Improve oral sensation to reduce anterior loss to keep food in the mouth while eating.	
(4.) (BF/os) Increase oral sensation to improve the ability to put food/liquid into a cohesive bolus to reduce the risk of food residue falling into the airway.	Tx Obj 6, 8, 10
5. (BF/tm) Increase tongue movement to improve the ability to put food/liquid into a cohesive bolus to reduce the risk of food residue falling into the airway.	
6. (BF/tc) Increase tone in cheek(s) to improve the ability to put food/liquid into a cohesive bolus to reduce the risk of food residue falling into the airway.	
7. (BP/tm) Increase tongue movement to improve the ability to move a bolus to the back of the mouth in a coordinated fashion to reduce the risk of it falling into the airway.	
8. (BP/oc) Increase oral coordination to improve the ability to move a bolus to the back of the mouth in a coordinated fashion to reduce the risk of it falling into the airway.	
9. (BP/os) Increase oral sensation to improve the ability to move a bolus to the back of the mouth in a coordinated fashion to reduce the risk of it falling into the airway.	
(10.) (BP/ag) Increase awareness of food/liquid and utensils in the mouth to improve the ability to move a bolus to the back of the mouth in a coordinated fashion to reduce the risk of it falling into the airway.	Tx Obj 1, 2, 3

_____ _____ _____
Speech-Language Pathologist License # Date

I certify that this patient requires therapy services, is under a plan of care established or reviewed every _____ days by me, and requires the specified treatment on a continuing basis with the following changes: _____.

Physician Notice: (Circle one.) I do / do not find it necessary to see this patient within the next _____ days.

_____ _____
Physician Date

Bedside Dysphagia Evaluation — Speech-Language Pathology Summary Sheet

Date _____ Patient _____
Admit Date _____ Physician _____
Admit Diagnosis _____
Medical History _____
Pertinent Medications _____
Current Method of Nutrition: ❑ PO _____ diet ❑ NPO NG/PEG/TPN
History/Duration of Swallowing Problems _____
Respiratory Status: ❑ O_2 nasal/face mask/trach collar ❑ Intubated from _____ to _____
❑ Trach placed on _____ Trach type _____ ❑ Ventilatory support: ___ hours
❑ Eval done with patient on/off vent ❑ Cuff inflated/deflated ❑ Passy-Muir Valve on/off

Dysphagia Diagnosis _____

Long-Term/Functional Goals (Circle goals to be addressed.)

These goals are set for a _____ time period.

1. Patient will safely consume _____ diet with _____ liquids without complications such as aspiration pneumonia.
2. Patient will be able to eat foods and liquids with more normal consistency.
3. Patient will be able to complete a meal in less than _____ minutes.
4. Patient will maintain nutrition/hydration via alternative methods.
5. Patient's quality of life will be enhanced through eating and drinking small amounts of food and liquid.

Recommendations

_____ NPO — consider alternative feeding: _____
_____ NPO until instrumental exam
_____ trial therapeutic feeding only (no meal trays)
_____ tube feedings will be held a minimum of two hours before each meal
_____ PO: _____
liquids: _____ spoon / cup / straw
meds: _____
_____ supplemental tube feedings
_____ SLP to treat _____ meals/day
_____ no therapeutic feeding by SLP indicated
_____ instrumental exam ❑ MBS ❑ FEES®
_____ Speech/Language eval
_____ OT eval
_____ ENT consult re: _____
_____ re-eval pending: _____
_____ positioning/feeding precautions as posted
_____ chin-down _____ upright 90º _____ liquid wash
_____ head rotation R/L _____ multiple swallows
_____ reflux precautions
_____ Dietitian to interview patient/family to determine food preferences
_____ calorie count
_____ review chart for spiked temps
_____ feed with trach cuff up / down
Passy-Muir Valve on / off
_____ suction per trach after each meal
_____ other: _____
_____ Treatment by SLP (See Treatment Plan)

*Recommendations marked with * are pending results of an instrumental exam revealing if patient is safe to eat.

Patient/Family Teaching Goals

Was patient/family teaching completed? ❑ yes ❑ no
(See *Teaching Sheet for PO Feeding*.)

_____
Speech-Language Pathologist

Bedside Dysphagia Evaluation — Speech-Language Pathology Summary Sheet Sample

Date 4-30-07 Patient Fred
Admit Date 4-29-07 Physician _____
Admit Diagnosis (L) CVA
Medical History ASCVD, HTN, IDDM
Pertinent Medications N/A
Current Method of Nutrition: ❑ PO _____ diet ☑ NPO (NG)/PEG/TPN given ice chips
History/Duration of Swallowing Problems since admit with CVA; referred by M.D. for "choking"
Respiratory Status: ☑ O_2 (nasal)/face mask/trach collar ❑ Intubated from _____ to _____
❑ Trach placed on _____ Trach type _____ ❑ Ventilatory support: ___ hours
❑ Eval done with patient on/off vent ❑ Cuff inflated/deflated ❑ Passy-Muir Valve on/off

Dysphagia Diagnosis

oral dysphagia, suspected pharyngeal dysphagia

Long-Term/Functional Goals (Circle goals to be addressed.)

These goals are set for a one month time period.

(1.) Patient will safely consume pureed diet with honey thick liquids without complications such as aspiration pneumonia.
2. Patient will be able to eat foods and liquids with more normal consistency.
3. Patient will be able to complete a meal in less than _____ minutes.
4. Patient will maintain nutrition/hydration via alternative methods.
5. Patient's quality of life will be enhanced through eating and drinking small amounts of food and liquid.

Recommendations

_____ NPO — consider alternative feeding: _____
__✓__ NPO until instrumental exam
_____ trial therapeutic feeding only (no meal trays)
__✓__ tube feedings will be held a minimum of two hours before each meal
*✓ PO: pureed
liquids: honey thick (spoon) / cup / straw
meds: crush and mix
_____ supplemental tube feedings
__✓__ SLP to treat 2 meals/day
_____ no therapeutic feeding by SLP indicated
__✓__ instrumental exam ❑ MBS ❑ FEES®
__✓__ Speech/Language eval
_____ OT eval
_____ ENT consult re: _____
_____ re-eval pending: _____
__✓__ positioning/feeding precautions as posted
__✓__ chin-down __✓__ upright 90º _____ liquid wash
_____ head rotation R/L __✓__ multiple swallows
_____ reflux precautions
_____ Dietitian to interview patient/family to determine food preferences
_____ calorie count
_____ review chart for spiked temps
_____ feed with trach cuff up / down
Passy-Muir Valve on / off
_____ suction per trach after each meal
_____ other: _____
__✓__ Treatment by SLP (See Treatment Plan)

*Recommendations marked with * are pending results of an instrumental exam revealing if patient is safe to eat.

Patient/Family Teaching Goals

Was patient/family teaching completed? ☑ yes ❑ no
(See *Teaching Fact Sheet for PO Feeding*.)

_____
Speech-Language Pathologist

Case Samples

The following nine case samples will help you refine your skills in making recommendations and determining short- and long-term goals and treatment objectives based on findings from instrumental studies. The cases are presented in summary form. Long-term goals and short-term goals are established for each patient. Cursory information from the instrumental study is in the first column. The symptom is listed and the physiological cause of that symptom is indicated in italics. At the end of the findings, information about the effects of treatment strategies tried during the instrumental study are listed. The middle column contains recommendations based on the findings from the instrumental study. If treatment for that finding is indicated, the corresponding short-term goals tried during the instrumental study are listed. The third column suggests possible treatment objectives for the problem(s) identified in the findings. The treatment objectives are based on the physiological cause of each symptom and the codes indicate the short-term goal to which that objective is related.

For example, a significant finding for Case 1 shows that the patient could form a bolus with any food presented. The recommendation is that he can have any and all textures he feels he can handle. No specific treatment will be needed, so no short-term goal is listed. However, another finding showed that thin liquids trickled over the back of the tongue prematurely. The recommendation is for the patient to use chin-on-chest position for thin liquids. Because this requires treatment, a short-term goal is listed. Treatment objectives were selected from those designed to address aspiration before the swallow due to reduced tongue control (AB/tc).

A treatment objective can address more than one short-term goal. When you list an objective on your treatment plan, you can use the code that applies to the main reason you chose that objective or you can list both codes. For example, in Case 6, the patient has significant vallecular and pyriform sinus residue. The compensatory treatment objective that "Patient will remain seated upright at 90° without cues for 30 minutes after any PO intake" was chosen to reduce risk of food falling from valleculae and pyriforms into the airway. Therefore, it could be coded as AA/v/tb-3 (related to the short-term goal to reduce risk of aspiration after the swallow from the valleculae due to decreased tongue base strength) and AA/p/le-5 (related to the short-term goal to reduce risk of aspiration after the swallow from the pyriforms due to reduced laryngeal elevation). It could even be coded AA/V/ppw-3 (related to the short-term goal to reduce the risk of aspiration after the swallow from the valleculae due to reduced movement of the pharyngeal walls) if you felt that was the main reason for the vallecular residue.

Cases 8 and 9 involve patients considered inappropriate for therapy. These case samples show how the recommendations are based on selected findings.

Case 1

History	Acute cerebrovascular accident, primary brainstem hemorrhage secondary to hypertension
Long-Term Goal 1	Patient will safely consume regular diet with liquids without complications such as aspiration pneumonia.
Short-Term Goal 11 (AB/tc)	Patient will improve back of tongue control to keep food from falling over the back of the tongue and into the airway.
Short-Term Goal 15 (AA/p/le)	Patient will increase laryngeal elevation to reduce residue in the pyriform sinus(es) and reduce risk of the residue falling into the airway after the swallow.
Short-Term Goal 16 (AA/p/hcm)	Patient will increase anterior movement of the hyolaryngeal complex to reduce residue in the pyriform sinuses and reduce the risk of the residue falling into the airway after the swallow.
Short-Term Goal 18 (AA/lv/at)	Patient will improve arytenoid tipping/closure at entrance to airway to reduce penetration into the upper laryngeal vestibule to reduce the risk of the penetrated material being aspirated after the swallow.
Short-Term Goal 20 (AA/v/tb)	Patient will increase base of tongue movement to reduce vallecular residue (unilateral or bilateral) to reduce the risk of the residue being aspirated after the swallow.
Short-Term Goal 21 (AA/v/ppw)	Patient will increase movement of the posterior pharyngeal wall to reduce vallecular residue to reduce the risk of the residue being aspirated after the swallow.

Selected Finding: Symptoms and Physiology (physiology shown in italics below)	**Recommendations and Short-Term Goals Based on Findings**	**Treatment Objectives**
Oral Phase Patient is somewhat slow to masticate the cookie, but is able to form a good bolus.	Any and all textures patient feels able to handle	
Oropharyngeal Phase If the patient isn't in a chin-down position, thin liquids trickle over the back of the tongue prematurely *due to decreased strength and control of back of tongue*.	Chin-on-chest position for all swallows (Short-Term Goal 11 – AB/tc-1) (Note: Sometimes it is easier for a patient to remember to use chin-down on all swallows than for only selected textures. This patient is aspirating only thin liquids, but later shows penetration of paste that could be eliminated with chin-down position. Therefore, this patient should probably use chin-down for all consistencies.)	AB/tc-1 Patient will use chin-down position for all consistencies without cues on 10 of 10 trials. (c) AB/tc-4 Patient will exert pressure with back of tongue up against tongue depressor on 9 of 10 trials. (Helpful cue: Ask patient to try to say /k/.) (f) AB/tc-5 Patient will produce a forceful /k/ at the end of words on 9 of 10 trials. (f)

Selected Finding: Symptoms and Physiology (physiology shown in italics below)	**Recommendations and Short-Term Goals Based on Findings**	**Treatment Objectives**
Pharyngeal Phase Bolus size 5cc with chin in neutral, aspirated small amount before the swallow without any reaction to this aspiration, confirming reduced back of tongue control		
Significant vallecular residue after swallow indicating *reduced pressure from base of tongue and posterior pharyngeal wall*. Does not aspirate residue and clears some with multiple swallows, but amount of residue makes patient at risk to aspirate.	Base of tongue exercises (Short-Term Goal 20 – AA/v/tb) and posterior pharyngeal wall exercises (Short-Term Goal 21 – AA/v/ppw) for better bolus propulsion through the hypopharynx to reduce vallecular residue	AA/v/tb-4 Patient will use multiple swallows with cues on 8 of 10 trials. (c) AA/v/tb-7 Patient will use effortful swallow with cues on 8 of 10 trials. (c, f) AA/v/tb-9 Patient will demonstrate tongue base retraction on 8 of 10 trials. (f) AA/v/ppw-8 Patient will swallow saliva using tongue hold on 8 of 10 trials. (f)
Significant pyriform residue after the swallow due to *decreased laryngeal elevation and reduced anterior movement of hyolaryngeal complex*. At risk to aspirate.	Laryngeal elevation exercises to eliminate pyriform sinus residue (Short-Term Goal 15 – AA/p/le)	AA/p/le-6 Patient will use Mendelsohn maneuver for pudding consistencies with cues on 7 of 10 trials. (c, f) AA/p/le-8 Patient will produce /i/ in continuous fashion, including falsetto, on 10 of 10 trials. (f)
	Exercises to increase anterior movement of hyolaryngeal complex to reduce pyriform residue (Short-Term Goal 16 – AA/p/hcm)	AA/p/hcm-7 Patient will perform head lift maneuver for 60 seconds on 2 of 2 trials. (f) AA/p/hcm-8 Patient will perform 30 repetitive head lift maneuvers. (f)

Selected Finding: Symptoms and Physiology (physiology shown in italics below)	**Recommendations and Short-Term Goals Based on Findings**	**Treatment Objectives**
Pharyngeal Phase, *continued* Patient penetrated about 20% of the paste bolus during the swallow due to *limited closure at entrance to larynx*. Patient was able to cough on command and clear all material from the trachea. This penetration was eliminated with chin-down position.	Laryngeal entrance closure exercises to reduce penetration (Short-Term Goal 18 – AA/lv/at) (Note: You must decide whether a patient needs to use a technique some or all of the time as a compensation or in non-meal treatments as a facilitator. It was decided that since the patient could eliminate penetration with chin-down, it could be a simpler procedure to use at meals. The super-supraglottic will be used as a facilitator in treatment.)	AA/lv/at-4 Patient will use super-supraglottic swallow during treatment with cues on 9 of 10 trials. (f)
Effect of Treatment Strategies Attempted When the patient took uncontrolled amounts of thin liquid from a cup with chin-down position, most of the penetration was eliminated and all aspiration was eliminated *as a result of widening the valleculae and improving airway protection*.	As a precaution, give 1 tsp. bolus size because patient continued to have some penetration with uncontrolled amounts.	AB/tc-2 Patient will control bolus size to teaspoon without cues on 10 of 10 trials. (c)
When using a straw, the patient aspirated small amounts before the swallow.	All liquids from cup; no straws	AB/tc-3 Patient will use a cut-out cup for all liquid intake without cues on 10 of 10 trials. (c)
Using a chin-down position with paste significantly reduced the pooling in the valleculae and eliminated the aspiration and penetration. When using a good chin-down position, a liquid wash helped to clear most of the paste successfully and there was no aspiration.	Liquid wash okay with chin-down	AA/v/tb-5 Patient will use thin consistency liquid wash with chin-down position to widen valleculae every several bites with cues on 9 of 10 trials. (c)

Case 2

History	Mild right CVA. History of prior right CVA. Wet vocal quality before, during, and after the initial bedside evaluation. Significant clinical signs of aspiration. Patient was reintubated secondary to increasing respiratory failure for seven days and had been extubated two days at time of this study. Breathy vocal quality, very wet quality after oatmeal, pureed fruit, and juice on bedside evaluation. Patient also coughed after oatmeal and pureed fruit. Patient has an NG tube in place.
Long-Term Goal 1	Patient will safely consume Level III diet with honey-thick liquids without complications such as aspiration pneumonia.
Short-Term Goal 7 (BP/tm)	Patient will increase tongue movement to improve the ability to move a bolus to the back of the mouth in a coordinated fashion to reduce the risk of it falling into the airway.
Short-Term Goal 13 (AD/lc)	Patient will increase closure of the true folds to keep food from falling into the airway during the swallow.
Short-Term Goal 20 (AA/v/tb)	Patient will increase base of tongue movement to reduce vallecular residue (unilateral or bilateral) to reduce the risk of the residue being aspirated after the swallow.

Selected Finding: Symptoms and Physiology (physiology shown in italics below)	**Recommendations and Short-Term Goals Based on Findings**	**Treatment Objectives**
Oral Phase Functional for the juice, honey-thick liquid, and paste; some difficulty with the cookie, partly due to patient not wearing dentures		
Oropharyngeal Phase All consistencies trickle over the back of the tongue *due to mild weakness of back of tongue*.	Sitting up at 90°; take small bites and sips	
There is only a small amount of trickle while most of the bolus remains in the oral cavity. Patient is not aspirating.	Note: Some recommendations are only precautionary since the amount of premature loss is small and not causing any functional problems.	
Difficulty keeping the bolus in a cohesive fashion *due to reduced tongue movement*	Pureed — one regular vegetable to try chewing with dentures with SLP present (Short-Term Goal 7 – BP/tm)	BP/tm-6 Patient will move lemon swab placed between tongue and hard palate from front to back on 10 of 10 trials. (f)

Selected Finding: Symptoms and Physiology (physiology shown in italics below)	**Recommendations and Short-Term Goals Based on Findings**	**Treatment Objectives**
Oropharyngeal Phase, *continued*		BP/tm-7 Patient will sweep tongue from alveolar ridge to junction of hard and soft palate on 9 of 10 trials. (f) BP/tm-11 Patient will eat only pureed and soft, cohesive foods without cues on 10 of 10 trials. (d)
Pharyngeal Phase Shows aspiration of 10% of the bolus during the swallow with an immediate cough reaction with thin liquids	Laryngeal closure exercises (Short-Term Goal 13 – AD/lc). If voice is still breathy in a week to 10 days, ENT consult re: vocal fold closure (Note: Presume at this point that decreased laryngeal closure is secondary to intubation. Primary physician usually prefers to wait 2 weeks after extubation before consulting ENT.)	AD/lc-6 Patient will use supra-glottic swallow for saliva consistencies with cues on 10 of 10 trials. (c, f) AD/lc-7 Patient will demonstrate Valsalva maneuver (breath hold) on 10 of 10 trials. (f)
Aspiration of 10% of the honey bolus during the swallow with no reaction when the aspiration occurred. Aspiration of 10% of the paste bolus during the swallow with no reaction. *All due to reduced laryngeal closure*.		
Shows *reduced base of tongue pressure* that results in significant vallecular residue after the swallow, which then trickles down to the pyriforms	Exercises to increase tongue base strength (Short-Term Goal 20 – AA/v/tb)	AA/v/tb-4 Patient will use multiple swallows without cues on 7 of 10 trials. (c) AA/v/tb-7 Patient will use effortful swallow with cues on 9 of 10 trials. (f) AA/v/tb-9 Patient will demonstrate tongue base retraction on 10 of 10 trials. (f)

Selected Finding: Symptoms and Physiology (physiology shown in italics below)	**Recommendations and Short-Term Goals Based on Findings**	**Treatment Objectives**
A-P View Revealed symmetrical residue in the valleculae but slightly more residue in the left pyriform; *asymmetrical movement of the vocal folds to midline with the left fold perhaps moving less than the right*		
Effect of Treatment Strategies Attempted After the A-P view revealed what appeared to be *reduced movement of the left vocal fold to midline*, patient was tried with head rotation to the left. It appeared the patient swallowed honey and paste in small amounts without aspiration, but aspiration of thin liquids continued with compensatory techniques.	Thick liquids — moderate thick (honey); vegetables should be drained well since patient cannot safely take thin liquids; pills/tablets whole followed by thickened liquid or meds via tube; head turned to left Encourage coughing Other: Hold tube feedings prior to meals to increase appetite. Do an instrumental study before advancing diet since patient often silently aspirates.	AD/lc-4 Patient will use head rotation to left for all swallows with cues on 10 of 10 trials. (c) AD/lc-8 Patient will take only liquids of honey consistency with cues on 10 of 10 trials. (d) AD/lc-9 Patient will avoid foods in liquid base with cues on 10 of 10 trials. (d)

Case 3

History

History of TIAs. Mild-moderate dementia, arteriosclerotic cardiovascular disease. Patient does not feed self. Coughing, especially on liquids.

Long-Term Goal 1

Patient will safely consume Level V diet with thin liquids without complications such as aspiration pneumonia.

Short-Term Goal 13 (AD/lc)

Patient will compensate for decreased closure of the true folds to keep food from falling into the airway during the swallow. (Note: Since treatment for this patient will involve compensating for the deficits and not trying to improve function, the wording of the short-term goal has been modified.)

Selected Finding: Symptoms and Physiology (physiology shown in italics below)	**Recommendations and Short-Term Goals Based on Findings**	**Treatment Objectives**
Oral Phase Within functional limits for all textures	Regular diet	
Oropharyngeal Phase Within functional limits		
Pharyngeal Phase The initial presentations of thin liquids in 3cc and 5cc from a spoon were swallowed without difficulty. The response initiates adequately and there is no penetration or aspiration. However, patient took 10cc bolus from a cup during the swallow with an immediate cough reaction to the aspiration when it occurred. This appears to be due to *reduced ability to achieve laryngeal closure*. Patient was allowed to try 10cc from a straw and showed penetration on 1 trial and aspiration on the next. Patient showed aspiration on 1 of 3 trials when taking controlled amounts from a straw. Nectar-thick liquids were swallowed without penetration or aspiration, even in large amounts.	Thin liquids in small sips from spoon to eliminate penetration (Short-Term Goal 13 – AD/lc) (Note: Patient does not self-feed. If the patient were able to self-feed, the Rolyan Millicup might be a good way to control the bolus size.)	AD/lc-1 Patient will control bolus size to one teaspoon with cues on 10 of 10 trials. (c) AD/lc-3 Patient will use spoon for liquid presentations with cues on 10 of 10 trials. (c)

Selected Finding: Symptoms and Physiology (physiology shown in italics below)	**Recommendations and Short-Term Goals Based on Findings**	**Treatment Objectives**
Anatomy/Physiology Patient exhibits *bilateral movement of the vocal folds to midline, but closure is not complete*.	Laryngeal closure exercises are not recommended because patient can't readily follow directions.	
Effect of Treatment Strategies Attempted Nectar-thick — patient able to take uncontrolled amounts without aspiration or penetration. Chin-down position with uncontrolled thin liquids does not eliminate aspiration.		
Patient is not very reliable at controlling the bolus size. Patient can take uncontrolled amounts of nectar from a cup or straw without penetration or aspiration.	If patient isn't supervised for bolus size, consider keeping on nectar-thick liquids.	AD/lc-8 Patient will take only liquids of nectar consistency without cues on 10 of 10 trials. (d)

Case 4

History	Difficulty tolerating secretions. Exhibited cough and continued wet vocal quality. Strangled on thin liquids presentations. Recent onset cerebrovascular accident; past history of multiple cerebrovascular accidents, but was eating regular diet.
Long-Term Goal 1	Patient will safely consume Diet Level II pudding-thick liquids without complications such as aspiration pneumonia. (Note: Too early to determine if this goal will be appropriate. It may be that only Long-Term Goal 4 will be possible, but we are aiming for Long-Term Goal 1.)
Long-Term Goal 4	Patient will maintain nutrition/hydration via alternative means.
Short-Term Goal 5 (BF/tm)	Patient will increase tongue movement to improve the ability to put food/liquid into a cohesive bolus to reduce the risk of food residue falling into the airway.
Short-Term Goal 6 (BF/tc)	The tone in patient's cheek(s) will increase to improve the ability to put food/liquid into a cohesive bolus to reduce the risk of food residue falling into the airway.
Short-Term Goal 7 (BP/tm)	Patient will increase tongue movement to improve the ability to move a bolus to the back of the mouth in a coordinated fashion to reduce the risk of it falling into the airway.
Short-Term Goal 11 (AB/tc)	Patient will improve back of tongue control to keep food from falling over the back of the tongue and into the airway.
Short-Term Goal 12 (AB/dr)	Patient will decrease delay in initiation of pharyngeal swallow to reduce food falling into the airway before the swallow.
Short-Term Goal 15 (AA/p/le)	Patient will increase laryngeal elevation to reduce residue in the pyriform sinsus(es) and reduce the risk of the residue falling into the airway after the swallow.

Selected Finding: Symptoms and Physiology (physiology shown in italics below)	**Recommendations and Short-Term Goals Based on Findings**	**Treatment Objectives**
Difficulty tolerating secretions	Cue patient to clear wet vocal quality, frequent suctioning, aggressive oral care	BF/tm-9 Patient will click tongue against roof of mouth on 7 of 10 trials. (f)
Oral Phase Decreased ability to adequately form a bolus within the oral cavity on all liquid presentations *due to limited tongue movement and decreased tone in cheeks*	Increase strength and accuracy of tongue movements to better form bolus (Short-Term Goal 5 – BF/tm)	BF/tm-11 Patient will push blade of tongue upward against tongue depressor on 7 of 10 trials. (f) BF/tm-12 Patient will push right and left lateral border of tongue against tongue depressor on 7 of 10 trials. (f)

Selected Finding: Symptoms and Physiology (physiology shown in italics below)	Recommendations and Short-Term Goals Based on Findings	Treatment Objectives
Oral Phase, *continued*	Increase tone in cheeks for better bolus formation (Short-Term Goal 6 – BF/tc)	BF/tc-6 Patient will produce "oo" and then "ee" with exaggerated lip movement on 7 of 10 trials. (f) BF/tc-7 Patient will pucker lips, then move lips from side to side on 7 of 10 trials. (f)
Oropharyngeal Phase Some premature trickle over back of tongue while manipulating bolus secondary to *reduced strength of back of tongue*	Back of tongue exercises (Short-Term Goal 11 – AB/tc)	AB/tc-5 Patient will produce a forceful /k/ at the end of words on 8 of 10 trials. (f)
Piecemeal deglutition requiring two or three attempts to adequately clear the oral cavity. Patient *has reduced tongue strength*.	Lingual exercises to improve bolus propulsion (Short-Term Goal 7 – BP/tm)	BP/tm-6 Patient will move lemon swab placed between tongue and hard palate from front to back on 10 of 10 trials. (f) BP/tm-7 Patient will sweep tongue from alveolar ridge to junction of hard and soft palate on 9 of 10 trials. (f) BP/tm-8 Patient will pop tongue against hard palate on 10 of 10 trials. (f)
Pharyngeal Phase Patient pushes bolus to valleculae and it falls to pyriforms with 3-5 second *delay* before patient swallows. Aspiration of a trace to approximately 25% of every bolus amount before the swallow from valleculae and pyriforms (as soon as patient begins the swallow).	Increase speed of initiation of onset of swallow (Short-Term Goal 12 – AB/dr)	AB/dr-5 (a) Patient will decrease length of time from command to swallow to onset of swallow from 5 seconds to 1 second following thermal-tactile application on 7 of 10 trials. (c, f) AB/dr-5 (b) Patient will decrease length of time from command to swallow to onset of swallow from 5 seconds to 1 second following neurosensory stimulation on 7 of 10 trials. (c, f)

Selected Finding: Symptoms and Physiology (physiology shown in italics below)	**Recommendations and Short-Term Goals Based on Findings**	**Treatment Objectives**
Pharyngeal Phase, *continued* During second swallow, patient aspirated the residue from the pyriform sinuses and coughed in response to the aspiration; residue is present because of *reduced laryngeal elevation*.	Increase laryngeal elevation to reduce amount of pyriform residue (Short-Term Goal 15 – AA/p/le)	AA/p/le-6 Patient will use Mendelsohn maneuver for saliva consistencies without cues on 7 of 10 trials. (f) AA/p/le-7 Patient will use super-supraglottic swallow for saliva consistencies without cues on 7 of 10 trials. (c, f) AA/p/le-8 Patient will produce /i/ in continuous fashion, including falsetto, on 8 of 10 trials. (f) AA/p/le-9 Patient will increase laryngeal elevation via SEMG biofeedback on 10 of 10 trials. (f)
Effect of Treatment Strategies Attempted Chin-down position did not increase airway protection, therefore aspiration of all materials continued. Head rotation to reduce pyriform sinus residue was not helpful. Patient had attempted to perform Mendelsohn at bedside during indirect dysphagia therapy and was unable to coordinate the sequences with dry swallows, so it was not attempted with PO swallows.	NPO; remove water pitcher Repeat instrumental study prior to trying diet since patient is aspirating significant amounts	

Case 5

History	Massive CVA with anoxic brain damage. Patient has aphasia and apraxia. Unable to follow commands. During bedside evaluation, swallowed 90% of trials after oral stimulation. Fed by PEG only since the CVA 2 months prior to this evaluation.
Long-Term Goal 5	Patient's quality of life will be enhanced through eating and drinking small amounts of food and liquid.
Short-Term Goal 2 (AL/lc)	Patient will improve lip closure to reduce anterior loss to keep food/liquid in the mouth while eating.
Short-Term Goal 5 (BF/tm)	Patient will increase tongue movement to improve the ability to put food/liquid into a cohesive bolus to reduce the risk of food falling into the airway.
Short-Term Goal 7 (BP/tm)	Patient will increase tongue movement to improve the ability to move a bolus to the back of the mouth in a coordinated fashion to reduce the risk of it falling into the airway.
Short-Term Goal 12 (AB/dr)	Patient will decrease delay in initiation of pharyngeal swallow to reduce food falling into the airway before the swallow.

Selected Finding: Symptoms and Physiology (physiology shown in italics below)	**Recommendations and Short-Term Goals Based on Findings**	**Treatment Objectives**
Oral Phase At times the patient was asked to hold the spoon and make the presentation since apraxia seems to be a major problem. Patient exhibits *extremely poor lip closure* with most material running out the right side of the mouth.	Lip closure exercises (Short-Term Goal 2 – AL/lc) Note: Patient has speech apraxia, but does not seem to have oral apraxia.	AL/lc-2 Patient will achieve lip closure around object (Lifesaver on string, Popsicle, ice cube) for 6 seconds on 8 of 10 trials. (f) AL/lc-3 Patient will achieve lip closure against resistance provided by clinician placing fingers on upper and lower lips on 10 of 10 trials. (f) AL/lc-4 Patient will pucker lips (as if to blow a kiss) on 8 of 10 trials. (f) AL/lc-7 Patient will hold tongue depressor between closed lips (not teeth) for count of 10 on 7 of 10 trials. (f) AL/lc-8 Patient will grin (retracting corners of lips) as wide as possible without showing teeth on 8 of 10 trials. (f)

Selected Finding: Symptoms and Physiology (physiology shown in italics below)	**Recommendations and Short-Term Goals Based on Findings**	**Treatment Objectives**
Oral Phase, *continued* Patient does not form a bolus with any of the materials presented, but lets them fall into the anterior and right lateral sulcus. Patient has some *tongue weakness*.	Improve coordination of tongue movements (Short-Term Goal 5 – BF/tm)	BF/tm-8 Patient will push up with back of tongue against tongue depressor on 7 of 10 trials. (Helpful cue: Ask patient to try to say /k/.) (f) BF/tm-9 Patient will click tongue against roof of mouth on 7 of 10 trials. (f) BF/tm-10 Patient will push tongue tip out against tongue depressor on 7 of 10 trials. (f) BF/tm-11 Patient will push blade of tongue upward against tongue depressor on 7 of 10 trials. (f)
Oropharyngeal Phase No coordinated anterior to posterior movement with the tongue to move the bolus back. The *tongue weakness* interferes, but *discoordination* is a major problem. The thin liquid bolus finally falls over the back of the tongue in an uncontrolled manner. With the other materials, the patient never propels any significant amount posteriorly.	Improve tongue movement (Short-Term Goal 7 – BP/tm) Note: Short-Term Goal 8 to improve oral coordination involves only compensation and diet treatment objectives. Because this patient is being kept NPO, this goal will have to be deferred.	BP/tm-6 Patient will move lemon swab placed between tongue and hard palate from front to back on 6 of 10 trials. (f)

Selected Finding: Symptoms and Physiology (physiology shown in italics below)	**Recommendations and Short-Term Goals Based on Findings**	**Treatment Objectives**
Pharyngeal Phase Thin liquids — Patient aspirated 50% of thin liquids before the swallow with an immediate cough reaction when the aspiration occurred. Pudding — able to propel only small amount over the back of the tongue. Penetrated a very small amount of food before the swallow. Patient probably aspirated at a later time from residue in upper laryngeal vestibule.	Note: It is difficult to determine if patient actually has a delayed swallow or is simply unprepared for the swallow since the voluntary component is absent. Will treat as if it is a delay. (Short-Term Goal 12 – AB/dr)	AB/dr-5 (a) Patient will decrease length of time from command to swallow to onset of swallow from 5 to 2 seconds following sour bolus (lemon swab) on 9 of 10 trials. (c, f) AB/dr-5 (b) Patient will decrease length of time from command to swallow to onset of swallow from 5 to 2 seconds following neurosensory stimulation on 9 of 10 trials. (c, f)
Effect of Treatment Strategies Attempted An attempt was made to use a towel roll to place the patient in a chin-down position and present more thin liquid. However, in this position, the patient lost all of the bolus anteriorly due to severe lip closure problems.		
Summary Patient has profound oral dysphagia, losing most of each bolus anteriorly and into sulci. When part of a bolus falls over the back of the tongue prematurely, patient aspirates 50% of the bolus during the swallow. It is difficult to determine how much the pharyngeal component is actually involved.	Patient should remain NPO. Attempt oral stimulation and work on bolus formation and manipulation without presenting food to patient. Repeat instrumental study before trying any PO.	

Case 6

History

Essential tremor. Two recent hospitalizations for pneumonia. Previous instrumental study 4 days prior revealed severe pharyngeal dysphagia characterized by aspiration of thin liquids during and after the swallow. Nectar-thick liquids were aspirated after the swallow. Severe risk for aspiration of paste after the swallow because of significant residue caused by reduced laryngeal elevation due to the patient's significantly decreased strength overall.

It was recommended that the patient remain NPO and a PEG tube was to be placed, but physician reported patient seemed much stronger and requested we repeat this study before the tube was placed.

Long-Term Goal 2

Patient will be able to eat foods and liquids with more normal consistency.

Short-Term Goal 11 (AB/tc)

Patient will improve back of tongue control to keep food from falling over the back of the tongue and into the airway.

Short-Term Goal 14 (AD/mc)

Patient will improve the rate of laryngeal elevation/timing of closure to keep food from falling into the airway during the swallow.

Short-Term Goal 15 (AA/p/le)

Patient will increase laryngeal elevation to reduce residue in the pyriform sinus(es) and reduce the risk of the residue falling into the airway after the swallow.

Short-Term Goal 20 (AA/v/tb)

Patient will increase base of the tongue movement to reduce bilateral vallecular residue to reduce the risk of the residue being aspirated after the swallow.

Short-Term Goal 21 (AA/v/ppw)

Patient will increase movement of the posterior pharyngeal wall to reduce vallecular residue to reduce the risk of the residue being aspirated after the swallow.

Selected Finding: Symptoms and Physiology (physiology shown in italics below)	**Recommendations and Short-Term Goals Based on Findings**	**Treatment Objectives**
Oral Phase Weakness and decreased speed in forming a bolus, but patient is able to form a bolus with each material	Mechanical soft – ground	
Oropharyngeal Phase Some premature movement of thin liquid bolus over back of tongue *due to weakness*	Improve back of tongue control (Short-Term Goal 11)	AB/tc-4 Patient will exert pressure with back of tongue up against tongue depressor on 8 of 10 trials. (Helpful cue: Ask patient to try to say /k/.) (f) AB/tc-5 Patient will produce a forceful /k/ at the end of words on 8 of 10 trials. (f)

Selected Finding: Symptoms and Physiology (physiology shown in italics below)	**Recommendations and Short-Term Goals Based on Findings**	**Treatment Objectives**
Pharyngeal Phase Thin liquids — bolus falls over the back of the tongue *(due to weak back of tongue)* to valleculae and pyriforms, but then the response initiates in adequate time. Once the bolus size reaches 10cc, patient begins to aspirate before the swallow as the bolus falls over the back of the tongue and the *initiation of the swallow is mistimed*. Totally asymptomatic with this aspiration. Significant vallecular and pyriform sinus residue after the swallow *related to reduced base of tongue to posterior pharyngeal wall pressure and reduced laryngeal elevation respectively*.	Thin liquids in teaspoon amounts; no thin liquids at meals since patient probably can't handle thin liquids when pyriforms are full of other material; needs to improve timing of initiation of swallow (Short-Term Goal 14 – AD/mc)	AB/tc-2 Patient will control bolus size to thin liquids on teaspoon without cues on 10 of 10 trials. (c) AB/tc-7 Patient will avoid foods in liquid base without cues on 10 of 10 trials. (d) AD/mc-5 Patient will use super-supraglottic swallow for saliva consistencies with cues on 10 of 10 trials. (c, f)
Honey — minimal penetration, but never any aspiration	Moderate thick (honey) liquids with meals	
Vallecular residue and pyriform sinus residue due to *decreased laryngeal elevation and decreased base of tongue to pharyngeal wall pressure*	Laryngeal elevation exercises (Short-Term Goal 15 – AA/p/le)	AA/p/le-6 Patient will use Mendelsohn maneuver for paste consistencies with cues on 8 of 10 trials. (c, f) AA/p/le-8 Patient will produce /i/ in continuous fashion, including falsetto, on 8 of 10 trials. (f)
	Increase base of tongue movement (Short-Term Goal 20 – AA/v/tb)	AA/v/tb-3 (or AA/p/le-5 or AA/v/ppw-3) Patient will remain seated upright at 90° without cues for 30 minutes after any PO intake. (c)

Selected Finding: Symptoms and Physiology (physiology shown in italics below)	Recommendations and Short-Term Goals Based on Findings	Treatment Objectives
Pharyngeal Phase, *continued* Paste — significant valleculae and pyriform sinus residue *due to decreased base of tongue to posterior pharyngeal wall pressure*		AA/v/tb-7 Patient will use effortful swallow with cues on 10 of 10 trials. (c, f) AA/v/tb-9 Patient will demonstrate tongue base retraction on 8 of 10 trials. (f)
	Increase pharyngeal wall movement (Short-Term Goal 21 – AA/v/ppw)	AA/v/ppw-8 Patient will swallow saliva using tongue hold on 8 of 10 trials. (f)
Cookie — no new residue		
Effect of Treatment Strategies Attempted Second swallow spontaneously helped clear a lot of the material out of the pyriforms. Honey-thick liquid wash paired with the second or third swallow helped clear most of the residue. Chin-down position with thin liquids did not eliminate the aspiration.	Alternate honey liquid swallows every several bites; multiple swallows — needs cues to swallow 2-3 times	AA/p/le-1 Patient will alternate honey consistency liquid wash every several bites with cues on 8 of 10 trials. (c) AA/p/le-2 Patient will use multiple swallows for each bite without cues on 10 of 10 trials. (c) AD/mc-7 Patient will take only liquids of honey consistency with cues on 8 of 10 trials. (d)

Case 7

History Etiology unknown at time of evaluation. Migrating neck pain for the past 2 months and occipital headaches. (Later determined to be a brain tumor.)

Long-Term Goal 2 Patient will be able to eat foods and liquids with more normal consistency.

Long-Term Goal 4 Patient will maintain nutrition/hydration via alternative means.

Short-Term Goal 5 (BF/tm) Patient will increase tongue movement to improve the ability to put food/liquid into a cohesive bolus to reduce the risk of food falling into the airway.

Short-Term Goal 7 (BP/tm) Patient will increase tongue movement to improve the ability to move a bolus to the back of the mouth in a coordinated fashion to reduce the risk of it falling into the airway.

Short-Term Goal 12 (AB/dr) Patient will decrease delay in initiation of pharyngeal swallow to reduce food falling into the airway before the swallow.

Selected Finding: Symptoms and Physiology (physiology shown in italics below)	**Recommendations and Short-Term Goals Based on Findings**	**Treatment Objectives**
Oral Phase Unable to manipulate a bolus; little to no tongue movement.	Improve tongue movement for bolus formation (Short-Term Goal 5 – BF/tm)	BF/tm-7 Patient will protrude tongue to try to touch the chin and nose with tongue tip on 6 of 10 trials. (f) BF/tm-8 Patient will push up with back of tongue against tongue depressor on 6 of 10 trials. (Helpful cue: Ask patient to try to say /k/.) (f) BF/tm-10 Patient will push tongue tip out against tongue depressor on 6 of 10 trials. (f)
Oropharyngeal Phase Patient tips head back to help propel the bolus posteriorly; able to propel it over the back of the tongue.	Improve tongue movement for bolus propulsion (Short-Term Goal 7 – BP/tm)	BP/tm-6 Patient will move lemon swab placed between tongue and hard palate from front to back on 6 of 10 trials. (f) BP/tm-8 Patient will pop tongue against hard palate on 5 of 10 trials. (f)

Selected Finding: Symptoms and Physiology (physiology shown in italics below)	**Recommendations and Short-Term Goals Based on Findings**	**Treatment Objectives**
Pharyngeal Phase The initial bolus fell over the back of the tongue to valleculae and pyriform sinuses and remained there for greater than 30 seconds with *no noticeable elicitation of a swallow response*. There was *no notable laryngeal closure or elevation* despite the patient's tongue pumping and apparent repeated efforts to try to elicit a swallow reflex. Very small amounts of the bolus passed through the cricopharyngeus *without any further superior or anterior movement of larynx*.	Patient at severe risk for aspiration and should remain NPO. Part of the problem appears to be severe delay and/or lack of initiation of the swallowing response. Techniques to elicit a swallow should be applied several times a day by speech-language pathology. Train patient and family in techniques. (Short-Term Goal 12 – AB/dr)	AB/dr-5 (a) Patient will decrease length of time from command to swallow to onset of swallow from 30 to 10 seconds following thermal-tactile application on 6 of 10 trials. (c, f) AB/dr-5 (b) Patient will decrease length of time from command to swallow to onset of swallow from 30 to 10 seconds following neurosensory stimulation on 6 of 10 trials. (c, f) AB/dr-5 (c) Patient will decrease length of time from command to swallow to onset of swallow from 30 to 10 seconds following suck-swallow on 6 of 10 trials. (c, f)

Case 8

History Multi-infarct dementia. Recent respiratory arrest. Pureed diet with extra-thick liquids. Patient eats only 25% of each meal. Swallow response is delayed by 6 seconds and often up to 10+ seconds. Wet vocal quality.

Long-Term Goal 4 Patient will maintain nutrition/hydration via alternative means.

Selected Finding: Symptoms and Physiology (physiology shown in italics below)	Recommendations and Short-Term Goals Based on Findings	Treatment Objectives
Oral Phase Significant anterior loss may not be due to poor oral prep skills, but may be due to the fact that the patient is trying to avoid taking this material.		
Oropharyngeal Phase Each bolus falls over the back of the tongue prematurely.		
Pharyngeal Phase Pharyngeal dysphagia with aspiration of thin liquid before, during and after the swallow. Patient has *severely limited laryngeal elevation and closure* during the swallow. Patient aspirates thicker materials after the swallow from severe residue in the pyriforms. Patient *inconsistently able to elicit a swallow response* and then it is very weak at best.	Patient is not safe for any PO intake.	
Effect of Treatment Strategies Attempted Patient cannot elicit a second dry swallow on command. Positional changes did not eliminate the aspiration. Cognitive status precluded the consistent, reliable use of any other techniques.	Patient cannot swallow any texture in any position that would prevent severe aspiration. Patient should be referred for palliative care. Patient might benefit from aggressive oral care and ice-chip protocol. Family and physician should decide what other foods/liquids patient will take, but must understand that patient will continue to aspirate and experience subsequent pulmonary complications, such as aspiration pneumonia.	

Case 9

History

Parkinson's disease, advanced multi-infarct dementia. Bedside evaluation revealed no oral movement, premature spill and drooling. Severe choking episode. Currently on pureed and thickened liquids.

Selected Finding: Symptoms and Physiology (physiology shown in italics below)	Recommendations and Short-Term Goals Based on Findings	Treatment Objectives
Oral Preparatory Phase Patient bunched tongue and did not allow for presentation of thin liquids via spoon, although several attempts were made. Presentation was then made via syringe* to try to bypass the oral phase, but patient still would not allow material to move over the back of the tongue. The material fell to floor of patient's mouth and remained there despite repeated verbal cues to swallow.	Patient a poor candidate for PO. Unable to determine if patient will aspirate because the pharyngeal phase could not be observed. Patient appears to have totally forgotten how to manipulate and swallow a bolus. Patient should be referred for palliative care. Family and physician need to discuss how patient will be made comfortable. No treatment indicated. Dysphagia probably progressive and secondary to the severe dementia.	
Pharyngeal Phase This phase not observed as patient never initiated posterior movement of the bolus.		

* Some patients in skilled nursing facilities are fed by syringe, although this is almost always contraindicated. However, since using syringes is the practice of some facilities, it is helpful to document what happens under fluoroscopy. Also, there is the rare patient who has poor oral skills but has adequate pharyngeal phase and can swallow safely if the material reaches the pharyngeal phase.

Education Materials

The following handouts may be helpful in patient, family, staff, and physician education.

Patient/Family

What Is Being Evaluated on a Bedside Dysphagia Evaluation?
What You'll See During a Fiberoptic Endoscopic Evaluation of Swallowing (FEES®)
What You'll See During a Modified Barium Swallow Study
Phases of Swallow
Questions and Answers About the Modified Barium Swallow
Questions and Answers About Endoscopic Evaluation of Swallowing
Teaching Sheet for PO Feeding
Family Goals for Safe Feeding
Home Oral Care Guidelines for Patients Who Cannot Have Thin Liquids
Swallowing Exercises
    How to Perform the Swallowing Exercises
Lifestyle Modifications for Patients with Gastroesophageal Reflux Disease (GERD)

Staff

Swallowing Screen — Performance-Based Criterion Checklist for Training Nurses
CVA Dysphagia Screening/Order Sheet
Swallowing Guidelines
    Thin liquids okay
    No thin liquids — nectar only
    No thin liquids — honey only
    No thin liquids — pudding only
    NPO
    Taking PO Meds
    Risk of Aspiration
    Silent Aspiration
Reflux Precautions
General In-Service on Dysphagia
Pre- and Post-Test for Staff Education on Dysphagia

Staff/Physician

Why Is an Instrumental Examination of Swallowing Needed?
Answers to Frequently Asked Questions About Dysphagia
The Gag Refex
The Fallacy of the Inflated Cuff
Questions and Answers About Aspiration and Aspiration Pneumonia

What Is Being Evaluated on a Bedside Dysphagia Evaluation?

Patient _____ Date _____

A bedside dysphagia evaluation is performed by a speech-language pathologist (SLP). It assesses a patient's swallowing skills and determines if further in-depth testing is needed. A tray of food with different textures and temperatures is used during the screening. Liquids are presented from a spoon, a cup and a straw.

Both the patient and the patient's family can provide valuable information about changes in the patient's eating habits. For instance, is the patient avoiding certain foods or drinks or complaining that certain things are hard to swallow?

The SLP will do the following:

- Ask questions about the patient's swallowing problems
- Read the patient's medical history
- Assess how well the patient can use his/her lips and tongue, as good lip and tongue movement are needed in order to eat and drink
- Listen to the patient's voice (If the patient's voice is weak and breathy, it may mean that the patient's vocal folds aren't closing tightly. This might indicate that the patient can't close the vocal folds tightly to protect the airway during a swallow.)
- See how well the patient can follow directions (It may be necessary for the patient to learn some techniques to swallow safely.)

If an occupational therapist (OT) is participating in the evaluation, she will assess the following:

- The strength and coordination of the arm and hand the patient will use to eat
- The patient's ability to see the utensils and food on all parts of the tray
- The patient's ability to sit and hold his/her head up, at midline
- The patient's ability to open packages, use utensils and take food to his/her mouth

Using the tray of food, the SLP will determine how well the patient can use his/her lips, cheeks and tongue to take food into his/her mouth, control and manipulate the food, and swallow. The SLP will watch for any signs of aspiration (which means food or liquid is entering the airway). Possible signs include coughing, choking, a wet-sounding voice, throat clearing, swallowing multiple times for a small bite, or limited movement of the larynx in the neck (determined by feeling for movement).

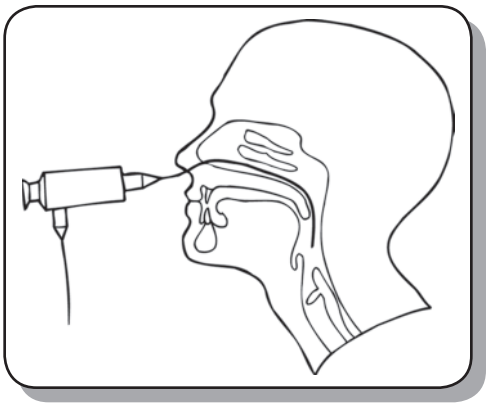
At the end of the bedside evaluation, the SLP and the OT may be able to make recommendations about how the patient should eat (e.g., types of foods and liquids, position, kinds of utensils). Many patients who are aspirating show no signs of a swallowing problem (e.g., coughing). This is called *silent aspiration* and as many as 70% of patients with dysphagia may be silent aspirators. For that reason, the SLP may recommend a more thorough swallowing evaluation. This might involve an X-ray procedure called a *modified barium swallow* (or *videofluoroscopy*) or a procedure performed at bedside with an endoscope. The SLP can explain the difference between the two procedures and why one might be recommended instead of the other.

What You'll See During a Fiberoptic Endoscopic Evaluation of Swallowing (FEES®)

Patient _____ Date _____

The FEES® is performed by the speech-language pathologist (SLP), usually at bedside. A small endoscope is passed into the patient's nose and then down into the throat. A small amount of anesthetic may be placed in the nose to make the patient more comfortable during the procedure. The endoscope is attached to a light source and to a camera so that the study can be recorded. The tip of the endoscope hangs right above the larynx.

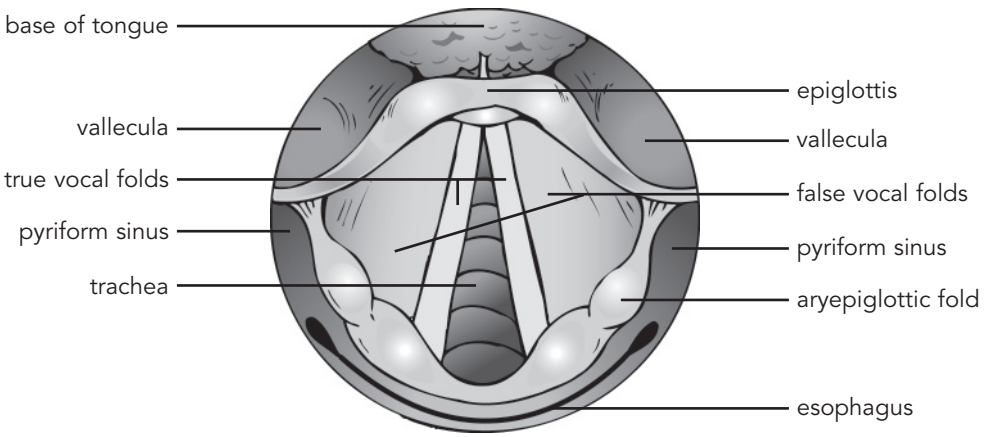
Once the endoscope is in place, the SLP can observe what is happening in the patient's throat before and after the swallow. At the moment of the swallow, the screen will go blank. This is because the larynx is lifting and closing. The camera's view is blocked until after the swallow when the patient releases his/her larynx and breathes.



During the exam, the SLP will do the following:

- Assess how well the soft palate lifts to close off the opening into the nasal cavity
- Observe the base of the tongue moving as the patient says words with "r" and "l"
- Observe the larynx during quiet breathing, when the patient is asked to take a breath and hold it and when the patient makes sounds
- Give the patient small amounts of foods and liquids to observe if any food or liquid is entering the airway

Special compensatory techniques may be tried during the exam, such as having the patient take a thicker liquid or hold his/her breath before swallowing. These techniques will allow the SLP to determine if such techniques can keep the food or liquid from getting into the airway.



What You'll See During a Modified Barium Swallow Study

Patient _____ Date _____

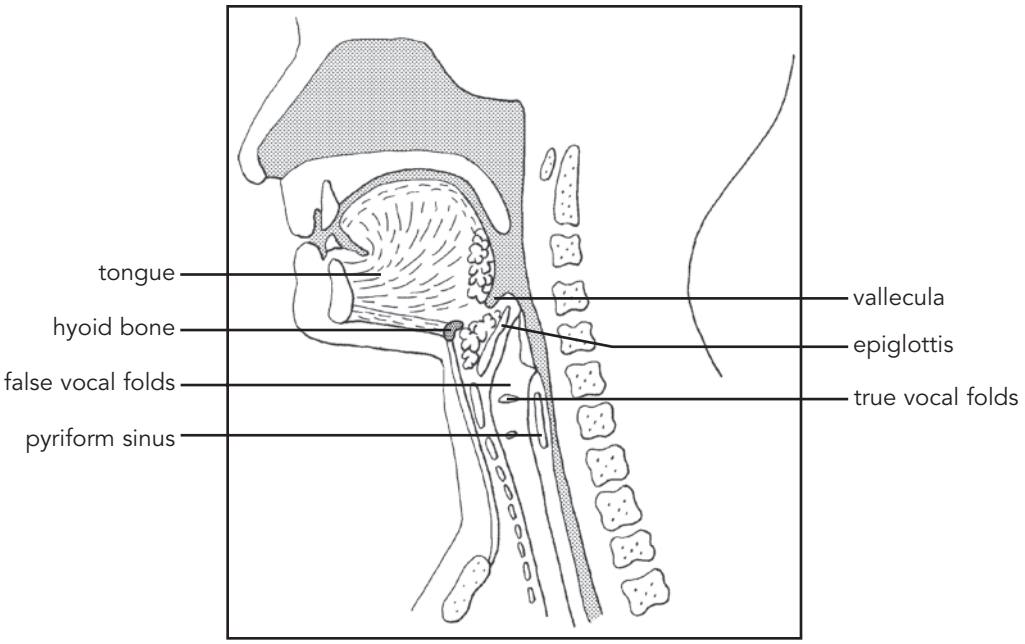
A videofluoroscopic evaluation of swallowing is also called a *modified barium swallow study*.

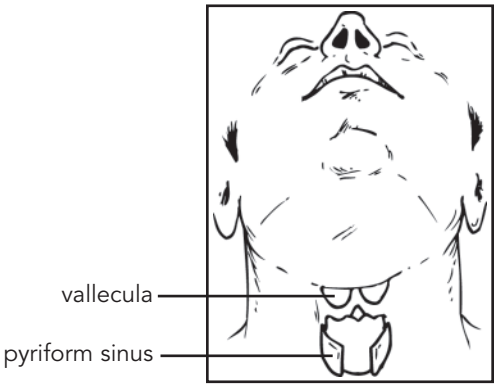
The speech-language pathologist and radiologist will observe the patient's swallowing ability to see if any food or liquid enters the airway instead of going down the esophagus. They will also observe to see if there is any residue — material left in the valleculae and the pyriform sinuses after the swallow. If material is left in these areas, there is a chance it can later fall into the airway.

The patient may be asked to try different techniques, such as changes in position or food texture. For example, the patient may be asked to tuck his chin to see if that improves airway protection. In the esophageal phase, the patient may be screened sitting up or lying down on the table on his side and/or back, which allows us to observe how the food moves through the esophagus and into the stomach and whether or not the patient has a hernia or gastroesophageal reflux.

The patient may also be observed from the front to determine the following:

- Movement of the vocal folds to see if they are closing tightly to protect the airway
- If the barium material moves through the area symmetrically
- If the residue in the valleculae and pyriform sinuses is symmetrical

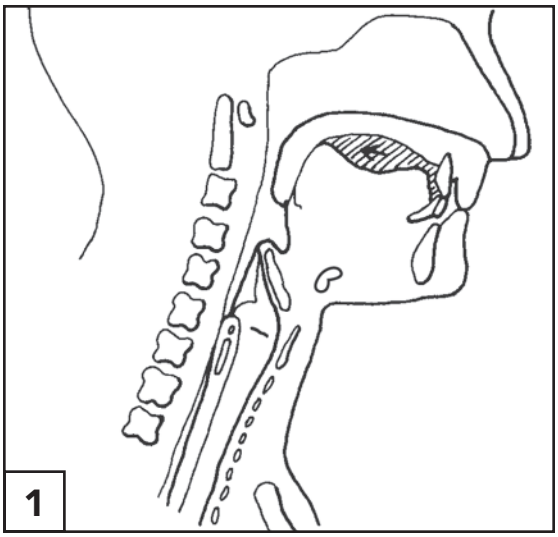


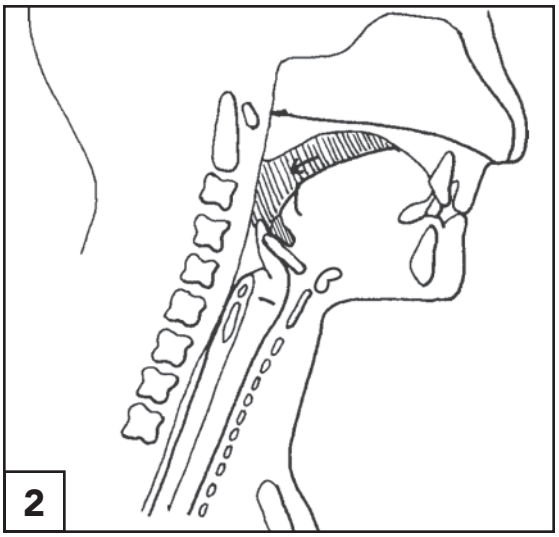


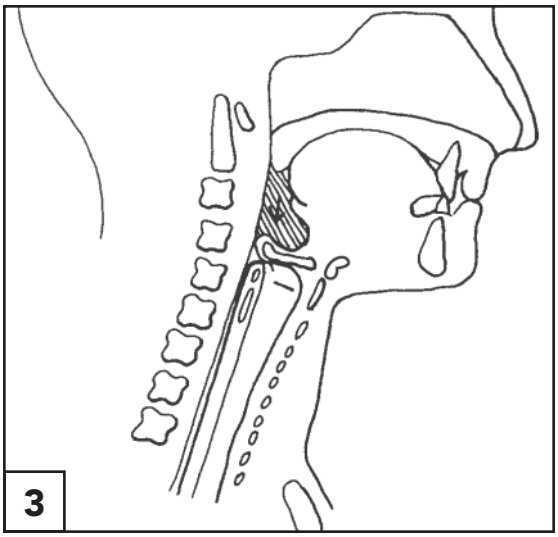
Phases of Swallow

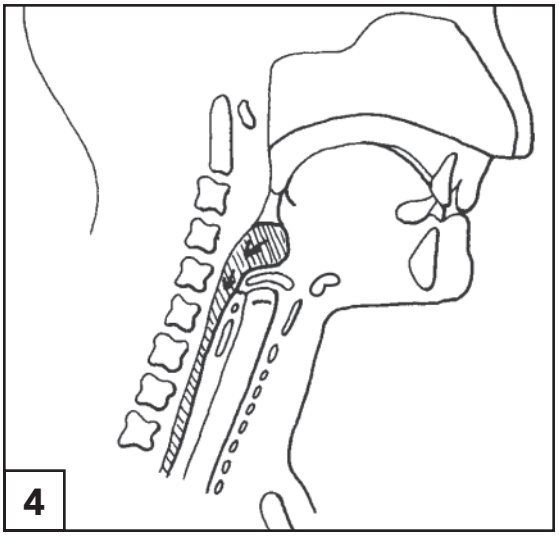
1. Oral
2. Oropharyngeal
3. Pharyngeal
4. Pharyngoesophageal
5. Esophageal

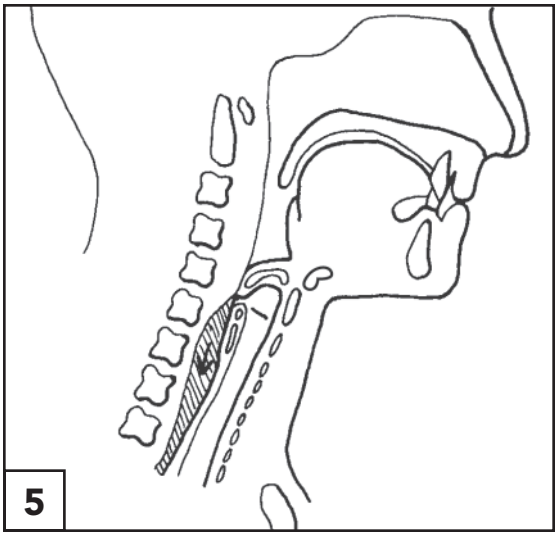
Note: The bolus is shaded in each picture.











Questions and Answers About the Modified Barium Swallow Study

Patient _____

Your appointment is on _____ at _____ a.m. / p.m.

Your physician has referred you for a modified barium swallow study, a special X-ray of your swallowing skills. This study is performed in the Radiology/X-ray Department at _____.

Can I eat before I come?

Yes. You do not have to have an empty stomach for this test.

How long will the study take?

Once you are in the X-ray suite, the study should take no longer than 30 minutes, including discussing the results. We will make every effort to keep your waiting time to a minimum.

What does the study involve?

You'll be given small amounts of liquid to drink, a pudding-like texture to eat, and a cookie to chew and swallow while video X-rays are taken. If there are particular foods that cause you difficulty, like dry foods or pills, you may be asked to try to swallow them.

While you are seated, both a side view and a front view will likely be done. If you have problems with heartburn, you may also be asked to lie down and drink more liquid so that your esophagus can be assessed.

When will I know the results?

The speech-language pathologist or radiologist will talk with you immediately after the study to tell you what was seen and make recommendations. Your physician and speech-language pathologist, if you are already being treated by one, will be called and each will receive a detailed written report.

Can my family observe?

Yes. We are happy to have one member of your family accompany you and observe the study.

Who can I call if I have other questions?

Contact the Speech-Language Pathology Department at _____. We will be happy to answer any questions.

Questions and Answers About Endoscopic Evaluation of Swallowing

Patient _____

Your appointment is on _____ at _____ a.m. / p.m.

Your physician has referred you for an endoscopic evaluation of swallowing, a specialized test involving the use of a small endoscope. The study is performed in the Speech-Language Pathology Department.

Can I eat before I come?

Yes. You can eat the kind of food and drink the kind of liquids you are currently taking.

How long will the study take?

The study should take between 30-45 minutes, including a discussion of the results.

What does the study involve?

A small endoscope (narrow tube with a fiberoptic light inside and a camera attached) is placed into your nose. The tip of the scope is advanced to a point at the back of your throat. The speech-language pathologist (SLP) will then have you eat and drink while you both watch what is happening on a monitor.

Does it hurt?

Most people describe the study as slightly uncomfortable as the scope passes through the nose. Once the scope is past that point, the discomfort is minimal. You can tell the SLP if you breathe more freely out of one side of your nose than the other, and the scope can be passed on the more open side.

When will I know the results?

The SLP will talk with you throughout the study, pointing out what is being observed. Your physician, and your SLP if you are already being treated by one, will be called and given a detailed written report.

Can my family observe?

Yes. We are happy to have one member of your family accompany you and observe the study.

Who can I call if I have other questions?

Contact the Speech-Language Pathology Department at _____.
We will be happy to answer any questions.

Teaching Sheet for PO Feeding

Note: These items correspond directly with the *Family Goals for Safe Feeding* handout also on this CD.

1. Suggested techniques for positioning a patient for safe feeding may include the following:
- Sitting up as straight as possible at 90º
- Placing a pillow or towel roll behind the back and neck
- Tucking the chin
- Turning the head to one side

2. Signs and symptoms of difficulty with the oral phase of swallowing:
- Pocketing of food
- Drooling
- Weak lip closure

3. Signs and symptoms of aspiration:
- Coughing
- Choking
- Throat clearing
- Wet gurgling voice after swallowing
- Leakage of food or saliva around tracheostomy or mouth

Patients having silent aspiration DO NOT cough or choke and may appear to swallow safely.

4. Compensatory techniques to assist in safe feeding (detailed information about appropriate techniques can be obtained from the speech-language pathologist) may include the following:

To compensate for oral problems:
- Lip support
- External pressure to cheek
- Reminding patient to sweep mouth with tongue

To compensate for decreased lifting of the larynx:
- Mendelsohn maneuver

To compensate for decreased closure of the larynx:
- Super-supraglottic swallow
- Periodic cough/throat clear

To compensate for residue:
- Effortful swallow
- Alternate sips of (thickened) liquids every few bites
- Swallowing twice for each bite/sip

To compensate for delayed swallow:
- Thermal-tactile stimulation
- Alternating bites of cold food

5. If thickened liquids are ordered, all liquids should be made the same consistency by using _____. Follow the directions on the package. Thicken to _____ consistency.

6. The proper technique for administering medications will be posted on the Swallowing Guidelines sheet. Observe the patient while swallowing medications. Then check inside the mouth for pocketing or inability to swallow.

7. Oral care should be given after each meal. A lip moisturizer is suggested for dry lips. If the patient is on thickened liquids, make sure he/she doesn't swallow plain water during oral care.

Family Goals for Safe Feeding

_____ **1.** Family demonstrates the ability to safely position the patient.

- ❒ Positioning the patient as upright as possible, ideally at 90º
- ❒ Placing a pillow behind the back and neck if needed
- ❒ Using other positioning changes recommended by the speech-language pathologist:

  _____

_____ **2.** Family is able to state signs and symptoms of difficulty with the oral phase of swallowing.

_____ **3.** Family is able to state signs and symptoms of aspiration.

_____ **4.** Family demonstrates the ability to help the patient use specific compensatory techniques for meals that have been taught to him/her.

To compensate for oral problems:

- ❒ Lip support
- ❒ External pressure to cheek
- ❒ Reminding patient to sweep mouth with tongue

To compensate for decreased lifting of the larynx:

- ❒ Mendelsohn maneuver

To compensate for decreased closure of the larynx:

- ❒ Super-supraglottic swallow
- ❒ Periodic cough/throat clear

To compensate for residue:

- ❒ Effortful swallow
- ❒ Alternate sips of (thickened) liquids every few bites
- ❒ Swallowing twice for each bite/sip

To compensate for delayed swallow:

- ❒ Thermal-tactile stimulation
- ❒ Alternating bites of cold food

_____ **5.** Family demonstrates the ability to thicken liquids to appropriate consistency.

_____ **6.** Family demonstrates the ability to administer medications.

_____ **7.** Family is able to perform oral care. (See *Home Oral Care Guidelines for Patients Who Cannot Have Thin Liquids*.)

Home Oral Care Guidelines for Patients Who Cannot Have Thin Liquids

Preparation

1. Wash your hands.

2. Explain to your family member that you will clean his/her mouth with toothpaste and mouthwash and then apply a moistener to his/her lips.

3. Use a toothpaste with only a few additives (e.g., whitening, tartar control).

Technique

1. Using a soft, pediatric-sized toothbrush, brush the patient's teeth, gums and tongue with toothpaste.

2. If the patient has no teeth, brush the gums and tongue gently.

3. Using a swab and suction, as needed, rinse the toothpaste from the patient's mouth with an alcohol-free mouthwash.

   - Biotène Mouthwash (Laclede, Inc., Rancho Dominguez, CA)
   - Crest® Pro-Health™ Rinse (Procter & Gamble Co., Cincinnati, OH)

4. If the patient has dentures, brush them well. Soak overnight in effervescent denture tablets.

5. With a gloved finger, apply a water-soluble moistener (not Vaseline®) to the patient's lips.

   - Blistex® (Blistex®, Inc., Oakbrook, IL)
   - ChapStick® (Wyeth® Consumer Healthcare, Madison, NJ)

Recommendations

1. Perform this oral care/cleaning four times a day.

2. Help your family member sit up as straight as possible while cleaning his/her mouth.

Developed at Central Baptist Hospital, Lexington KY – Jamie Pulliza, M.A., CCC-SLP

Swallowing Exercises

Patient _____ Date _____

You need to work on specific exercises to strengthen certain muscles and improve coordination of your swallowing. The exercises you need to perform are checked on the list below. Step-by-step directions on how to perform the exercises are also provided. (See *How to Perform the Swallowing Exercises*.)

I have indicated whether or not you should do the exercise with or without any food/liquid in your mouth. If you should practice with saliva only, **saliva** is circled. If you are to perform the exercise with a swallow of food or liquid, then **food** is circled and I have written which food or liquid you can use.

Perform _____ repetitions of each exercise. Perform the exercises _____ times a day.

1. ❒ Improve lip closure
- ❒ Purse your lips and protrude them as far forward as possible and hold.
- ❒ Pull your lips back into a wide smile and hold.
- ❒ Smack your lips together forcefully.

2. ❒ Improve tongue movement
- ❒ Forward-backward movement
- ❒ Side-to-side movement
- ❒ Lifting of back of tongue

3. ❒ Improve lifting of the larynx
- ❒ Mendelsohn maneuver
  saliva/food: _____
- ❒ Falsetto

4. ❒ Improve closure of the larynx
- ❒ Supraglottic swallow
  saliva/food: _____
- ❒ Super-supraglottic swallow
  saliva/food: _____
- ❒ Breath hold/Valsalva maneuver
- ❒ Push-pull with phonation
- ❒ Head rotation with phonation

5. ❒ Improve base of tongue movement and strength
- ❒ Tongue base retraction
- ❒ Super-supraglottic swallow
  saliva/food: _____
- ❒ Pretend to gargle.
- ❒ Pretend to yawn.
- ❒ Effortful swallow
  saliva/food: _____

6. ❒ Improve movement of back wall of throat
- ❒ Tongue hold (Masako)
- ❒ Pretend to gargle.
- ❒ Pretend to yawn.

7. ❒ Improve timing, initiation and overall coordination of swallow
- ❒ Thermal-tactile stimulation
  saliva/food: _____
- ❒ Three-second prep
  saliva/food: _____
- ❒ Suck-swallow
- ❒ Sour bolus
- ❒ Cold bolus
  - ❒ Food: _____
  - ❒ Liquid: _____
- ❒ Neurosensory stimulation
- ❒ Super-supraglottic swallow
  saliva/food: _____
- ❒ Mendelsohn maneuver
  saliva/food: _____

8. ❒ Improve forward movement of the larynx
- ❒ Head lift (Shaker)

How to Perform the Swallowing Exercises

Patient _____ Date _____

1. Lip Closure

These exercises will help you keep food from falling out of the front of your mouth, take food off of a spoon, or suck from a straw.

- ❒ Purse your lips and protrude them as far forward as possible and hold.
- ❒ Pull your lips back into a wide smile and hold.
- ❒ Smack your lips together forcefully.

2. Tongue Movement

These exercises will help you move the food around in your mouth and keep it from falling over the back of your tongue too soon.

- ❒ Forward-backward movement
  - ❒ Stick your tongue out of your mouth as far as possible and hold. Try to keep your tongue in the middle while you do this.
  - ❒ Pull your tongue back as far as you can in your mouth and hold it as if you are trying to scratch the back wall of your throat with the back of your tongue.
  - ❒ Lift the tip of your tongue to the roof of your mouth. Move the tip back as far as you can, keeping the tip on the roof of your mouth.
- ❒ Side-to-side movement
  - ❒ Put the tip of your tongue in your right cheek as far back as you can and hold it. Repeat with the tip of your tongue in your left cheek.
  - ❒ Smile. Put the tip of your tongue in the corner of your lips on the right, then move it to the left.
- ❒ Lifting of back of tongue

  Repeat these words ending with "k." Make a hard, forceful "k" each time you say a word.

walk	talk	work	pack	pike	peek
back	bake	bike	book	hike	jack
lake	look	like	lick	lark	make
mark	nick	pick	sick	shake	take
wake	black	truck	rake	rack	hawk

3. Lifting of the Larynx

- ❒ Mendelsohn maneuver saliva/food: _____

  This technique is designed to keep the larynx, or voice box, at its highest point. It is used if you have food sticking in your throat that might fall into your airway.

- ❒ Falsetto

4. Closure of the Larynx

❒ Supraglottic swallow saliva/food: _____

This technique is designed to close the airway at the level of the vocal folds. This is useful if food is getting into your airway during the swallow.

1. Take a breath.
2. Let a little out.
3. Hold your breath tightly in your throat.
4. Swallow while holding your breath.
5. Cough.
6. Swallow again.

❒ Super-supraglottic swallow saliva/food: _____

This technique is similar to the supraglottic swallow. It is designed to achieve closure of the airway not only at the vocal folds, but above the vocal folds too. It is useful if food or liquid is getting into the airway before or during the swallow. It can also help improve the timing of the swallow so that the larynx starts moving without a delay and the base of the tongue moves appropriately.

1. Take a breath.
2. Let a little out.
3. Hold your breath in your throat as tightly as possible.
4. Swallow, squeezing as hard as you can.
5. Cough.
6. Swallow again.

❒ Breath hold/Valsalva maneuver

This technique is designed to improve closure at the vocal folds, which is helpful if food or liquid is getting into the airway during the swallow.

1. Take a breath.
2. Bear down and hold your breath. You should not hold your breath with your lips, but in your throat, as though you are trying to lift something very heavy.
3. Hold for _____ seconds and then let go.

❒ Push-pull with phonation

This technique gets the vocal folds closing together more tightly. This is helpful if food or liquid is getting into the airway during the swallow.

1. Place your hand(s) under your chair and pull as if you were trying to lift your chair up with you in it. (You can also do this by standing up and pushing against the wall as if you were trying to move the wall.)
2. Hold your breath tightly.
3. Let go of your breath (still pulling) and say "ahh."

❒ Head rotation with phonation

Head rotation brings the weaker vocal fold closer to the strong vocal fold. This is helpful if you have weakness on one side of the throat that lets food or liquid get into your airway. Your head should be turned to look over one shoulder, not tipped.

1. Turn your head to the left/right.
2. Hold your breath tightly.
3. Let go of your breath and say "ahh."

5. Base of Tongue Movement and Strength

❒ Tongue base retraction

This helps strengthen the base of the tongue. This part of the tongue is not visible when looking into your mouth as it is actually the "front wall" of your throat. If the base of your tongue is weak, it lets food residue build up in your throat. This residue could then fall into your airway.

1. Pull the back of your tongue as far back as you can in your mouth. Pretend you are trying to scratch the back wall of your throat with the back of your tongue.
2. Hold the tongue in this position for several seconds. (Note: Do not lift the tip of your tongue. This exercise is for the very back of your tongue, not for the tip.)

❒ Super-supraglottic swallow saliva/food: _____

This technique is similar to the supraglottic swallow. It is designed to achieve closure of the airway not only at the vocal folds, but above the vocal folds too. It is useful if food or liquid is getting into the airway before or during the swallow. It can also help improve the timing of the swallow so that the larynx starts moving without a delay and the base of the tongue moves appropriately.

1. Take a breath.
2. Let a little out.
3. Hold your breath in your throat as tightly as possible.
4. Swallow, squeezing as hard as you can.
5. Cough.
6. Swallow again.

❒ Pretend to gargle.

This technique is designed to increase movement of the back wall of the throat and the base of the tongue. It is helpful if you have food residue sticking high in your throat.

1. Look up toward the ceiling.
2. Pretend you have liquid in your mouth.
3. Pretend to gargle.
4. Freeze and hold your tongue in that pulled-back position.

❒ Pretend to yawn.

This technique is designed to increase movement of the back wall of the throat and the base of the tongue. This helps reduce the amount of food residue in the upper throat.

1. Open your mouth wide.
2. Start to yawn. You will feel all the muscles open wide in your throat and mouth.
3. Freeze and hold that position.

❒ Effortful swallow saliva/food: _____

The effortful swallow is designed to get more movement of the base of the tongue and to help push the food down so there is not as much left in pockets in your throat.

1. Squeeze all of your mouth and throat muscles as hard as possible (as if trying to swallow a Ping-Pong ball).
2. Swallow.

6. Movement of Back Wall of Throat

❒ Tongue hold (Masako)

This technique is designed to help the back wall of the throat move forward to meet the base of the tongue. This action helps reduce the amount of food residue high in the throat.

1. Protrude your tongue slightly from your mouth.
2. Hold it gently with your teeth.
3. Swallow while keeping your tongue protruded.

❒ Pretend to gargle.

This is designed to increase movement of the back wall of the throat and the base of the tongue. It is helpful if you have food residue sticking high in your throat.

1. Look up toward the ceiling.
2. Pretend you have liquid in your mouth.
3. Pretend to gargle.
4. Freeze and hold your tongue in that pulled-back position.

❒ Pretend to yawn.

This technique is designed to increase movement of the back wall of the throat and the base of the tongue. This action helps reduce the amount of food residue in the upper throat.

1. Open your mouth wide.
2. Start to yawn. You will feel all the muscles open wide in your throat and mouth.
3. Freeze and hold that position.

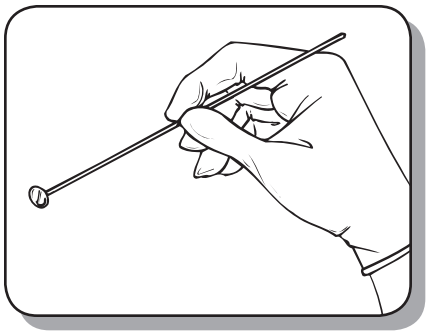
7. Timing, Initiation and Overall Coordination of Swallow

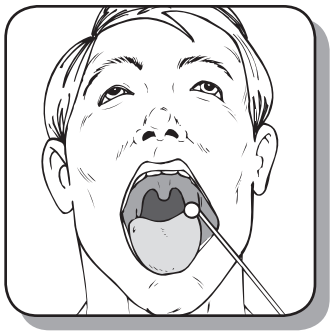
If your swallowing response doesn't start as soon as food enters your throat, the delay can allow the food or liquid to fall into your airway.

❒ Thermal-tactile stimulation saliva/food: _____

This technique is performed using a size 00 laryngeal mirror.

1. Hold the mirror like a pencil so you can easily rotate it in your hand.
2. Dip it in ice.
3. Rub it up and down five times on one of the anterior faucial arches.
4. Dip the mirror back into the ice quickly.
5. Rotate it so the flat head of the mirror is facing the other direction.
6. Rub it on the other faucial arch.
7. Swallow. (Note: If you are to use food, put the food in your mouth after Step 6.)





❒ Three-second prep saliva/food: _____

1. Think about getting ready to swallow while someone counts to three or you count to three in your head.
2. When you get to three, swallow.

❒ Suck-swallow

1. Using exaggerated movements of the tongue and jaw, pretend you are noisily sucking a really thick milk shake through a very thin straw.
2. Suck for several seconds and then swallow.

❒ Sour bolus

Foods that are very sour may help the swallow reflex start sooner.

❒ Lemon swab (use if you are not allowed to have thin liquids)

1. Suck on a lemon swab for several seconds.
2. Swallow.

❒ Mixture of ½ ReaLemon® and ½ cold water (use if you are allowed to have thin liquids)

1. Take a small amount (about ¼ teaspoon) of lemony water into your mouth.
2. Swallow.

❒ Cold bolus

Alternate bites or sips of very cold food/liquid. (Note: Your speech-language patholgist may also ask that you eat only cold foods.)

❒ Neurosensory stimulation

1. Fill a finger of a latex glove with water or crushed ice.
2. Tie it off.
3. Freeze it if you used water.
4. Suck on it.
5. Swallow.

❒ Super-supraglottic swallow saliva/food: _____

This technique is similar to the supraglottic swallow but is designed to achieve closure of the airway not only at the vocal folds, but above the vocal folds too. It can also help improve the timing of the swallow so that the larynx starts moving without a delay and the base of the tongue moves appropriately.

1. Take a breath.
2. Let a little out.
3. Hold your breath in your throat as tightly as possible.
4. Swallow, squeezing as hard as you can.
5. Cough.
6. Swallow again.

❒ Mendelsohn maneuver saliva/food: _____

This technique is designed to keep the larynx, or voice box, at its highest point. It is used if you have food sticking in your throat that might fall into your airway.

Place your fingers lightly on your neck to feel how the larynx/voice box lifts as you swallow. You will notice that at the very peak of the swallow, the larynx is lifted to its highest point in the neck. When the swallow is finished, the larynx falls down again.

1. Swallow with your fingers lightly on your larynx. This technique lets you feel your larynx move, but you are not holding the larynx with your fingers.
2. When you feel your larynx get to its highest point, hold it up by pushing your tongue hard against the roof of your mouth and keeping it there. (The base of the tongue is attached to the hyoid bone, which is attached to the larynx. That is why pushing the tongue up keeps the larynx up.)
3. Keep the larynx lifted for _____ seconds.

8. Forward Movement of the Larynx

❒ Head lift (Shaker)

In order to reduce the amount of food residue in the pockets in the throat, called *pyriform sinuses*, the larynx has to lift up and move forward in the neck. This helps a muscle at the top of the esophagus open so that food can enter the esophagus and travel to the stomach. If you have problems with your neck (e.g., arthritis), you may not be able to do this exercise.

There are two parts to this exercise, sustained and repetitive.

Sustained

1. Lie flat on your back with no pillow under your head.
2. Keep your shoulders flat on the floor/bed.
3. Lift your head to look at your toes.
4. Hold that position for 60 seconds.
5. Release.
6. Repeat twice.

Repetitive

1. Lie flat on your back with no pillow under your head.
2. Keep your shoulders flat on the floor/bed.
3. Lift your head to look at your toes.
4. Repeat 30 times (almost like sit-ups for the neck).
5. Rest a minute.
6. Repeat twice (total of 90 sit-ups).

Lifestyle Modifications for Patients with Gastroesophageal Reflux Disease (GERD)

Discuss these recommendations with your physician. The following changes provide relief to some patients who suffer from reflux, or what is commonly called *heartburn*. Ask your physician about any medications you're taking that could reduce pressure in the sphincter above the stomach, as this could contribute to your symptoms.

1. Always eat in a relaxed setting.
2. Eat small meals throughout the day rather than one large meal.
3. Try separating solids and liquids. Don't drink during your meals.
4. Always include some protein foods in each meal, such as lean meat, poultry, cottage cheese, or low-fat cheese.
5. Keep the fat content low.
6. Some people report that certain foods irritate reflux. You may want to avoid the following items:
   - Caffeine (found in coffee, tea, cola)
   - Mint
   - Alcohol
   - Chocolate or cocoa (contains caffeine)
   - Chili powder and other spices
   - Cured and spiced meats (sausages, hot dogs)
   - Pepper
   - Citrus juices (orange, lemon)
   - Pickled items
   - Acidic foods (tomato)
7. Don't eat right before you lie down to rest or go to sleep at night. You may recline slightly in a chair. Allow one to two hours after eating before lying down flat. (Note: This also applies to drinking a glass of water before bed or taking pills before bed.)
8. Elevate the head of your bed six inches. This is best done with blocks under the legs at the head of the bed. It's not effective to add extra pillows.

Other Things You Can Change

1. If you are overweight, lose weight. Pressure on the abdomen increases reflux.
2. Avoid tight clothing. Tight clothing also puts pressure on the sphincter.
3. Stoop. Don't bend over. Bending over allows stomach acid to flow up.
4. Avoid lifting heavy objects. Lifting heavy things puts pressure on the sphincter between the stomach and the esophagus.
5. Stop smoking. Tobacco and smoking reduce pressure in the sphincter and prolong acid exposure because of decreased saliva.

Swallowing Screen — Performance-Based Criterion Checklist for Training Nurses

	Met	Not Met
Before the Screening		
1. Notes that all patients with 'stroke' diagnosis (ischemic including TIA, hemorrhagic) must have a swallow screen prior to oral intake	❒	❒
2. Notes that oral intake includes oral medication	❒	❒
3. Follows the "CVA Dysphagia Screening Tool" when initiating the dysphagia screening	❒	❒
4. Positions patient appropriately before beginning screening	❒	❒
5. Provides patient with any assistive devices (e.g., dentures, hearing aids)	❒	❒
6. Obtains answers to history question regarding previous swallowing problems	❒	❒
7. Determines if patient is alert and able to participate	❒	❒
During the Interaction with the Patient		
1. Observes and evaluates the patient for related factors	❒	❒
a. Strong, clear voice (no dysphonia)	❒	❒
b. Manages own secretions (no need for suctioning/not drooling)	❒	❒
c. Understandable speech (no dysarthria)	❒	❒
d. Normal voluntary cough	❒	❒
2. States signs patient is having difficulty swallowing	❒	❒
a. Voice change after swallow	❒	❒
b. Coughing, choking or throat clearing after swallow	❒	❒
c. Pocketing of food in check (leftover food in mouth)	❒	❒
d. Loses food out front of mouth	❒	❒
Completing the Form After the Screening		
1. States the follow-up process for patients who fail the screening	❒	❒
a. Educating the patient and family about results and need for strict NPO	❒	❒
b. Writing order for dysphagia evaluation by Speech-Language Pathology	❒	❒
c. Calling physician for medication instructions via non-oral route	❒	❒
2. States the follow-up process for patients who pass the screening	❒	❒
a. Educating patient and family about the results	❒	❒
b. Instructing in standard precautions (e.g., sit upright, eat slowly)	❒	❒
3. Completes swallow screen tool and places in MD Progress notes section of chart	❒	❒

Developed at Central Baptist Hospital, Lexington KY – Nancy Swigert, M.A., CCC-SLP

Patient Identification Sticker

CVA Dysphagia Screening/Order Sheet

Date _____ Time _____ Nurse _____

▶ **Patient has been NPO until this screening:** ❒ **Yes** ❒ **No**

- **Complete prior to any oral intake, including oral meds.**
- **Sit patient upright at 90° with head in neutral position.**
- **Ensure patient is wearing all assistive devices (dentures, hearing aids, glasses, etc.).**

History **free** of previous problems with swallowing.	**Yes** ❒ ▼ **No** ❒ ▶	**No = AT RISK** • Refer to SLP for dysphagia assessment. • Call MD for medication instructions via non-oral route.
Alert and able to participate?	**Yes** ❒ ▼ **No** ❒ ▶	**No = AT RISK** • Keep NPO. • Needs alternative feeding source. • Refer to SLP for dysphagia assessment as soon as alert. • Call MD for medication instructions via non-oral route.
Patient has: • Strong, clear voice (no dysphonia) • Manages own secretions (no need for suctioning/not drooling) • Understandable speech (i.e., no dysarthria) • Normal voluntary cough	**Yes** ❒ ❒ ❒ ▼ **No** ❒ ▶ ❒ ▶ ❒ ▶ ❒ ▶	**No = AT RISK** • Keep NPO. • Refer to SLP for dysphagia assessment. • Call MD for medication instructions via non-oral route.
Patient can swallow without difficulty: (*See below.) • ½ teaspoon of water • Small sips of water (with a cup) • ½ teaspoon of pudding • Bite of graham cracker	**Yes** ❒ ❒ ❒ ❒ ▼ **No** ❒ ▶ ❒ ▶ ❒ ▶ ❒ ▶	**No = AT RISK** • Keep NPO. • Refer to SLP for dysphagia assessment. • Call MD for medication instructions via non-oral route.
Yes = Order diet per physician. **Standard precautions are suggested (upright for PO, small bites and sips, slow rate).**		

*Signs patient is having difficulty swallowing:
- Voice change after swallow
- Coughing or throat clearing after swallow
- Pocketing of food in cheeck (leftover food in mouth)
- Loses food out front of mouth

ORDERS

❒ Diet per physician if passed screening

_____

_____

❒ Remain strict NPO if failed screening
Dysphagia evaluation by Speech-Language Pathology

Nurse's Signature: _____

Doctor's Co-Signature: _____

Developed at Central Baptist Hospital, Lexington KY –
Nancy Swigert, M.A., CCC-SLP

Swallowing Guidelines

Thin Liquids Okay

Patient _____ Room _____ Date _____

This patient has been evaluated by the speech-language pathologist and the following guidelines are necessary to promote safe intake of foods and liquids.

Sit upright at 90º.

Stay upright for at least 30 minutes after taking anything by mouth.

Put chin on chest for swallowing. An extra pillow behind the head is a good reminder.

Diet _____

Liquids Thin liquids are okay. Patient can have ice chips, water, juice, coffee, etc. Use a:

straw cup spoon cut-out cup

Medicine _____

Additional Recommendations

_____

_____

_____

Swallowing Guidelines

No Thin Liquids — Nectar Only

Patient _____ Room _____ Date _____

This patient has been evaluated by the speech-language pathologist and the following guidelines are necessary to promote safe intake of foods and liquids.

Sit upright at 90º.

Stay upright for at least 30 minutes after taking anything by mouth.

Put chin on chest for swallowing. An extra pillow behind the head is a good reminder.

Diet _____

Liquids NO THIN LIQUIDS. NO ICE CHIPS.

All liquids must be thickened to nectar consistency. Use thickener per directions on product. Stir well or shake to eliminate lumps. Use a:

straw cup spoon cut-out cup

Medicine _____

Additional Recommendations

_____

_____

_____

Swallowing Guidelines

No Thin Liquids — Honey Only

Patient _____ Room _____ Date _____

This patient has been evaluated by the speech-language pathologist and the following guidelines are necessary to promote safe intake of foods and liquids.

Sit upright at 90º.

Stay upright for at least 30 minutes after taking anything by mouth.

Put chin on chest for swallowing. An extra pillow behind the head is a good reminder.

Diet _____

Liquids: NO THIN LIQUIDS. NO ICE CHIPS.

All liquids must be thickened to honey consistency. Use thickener per directions on product. Stir well or shake to eliminate lumps. Use a:

cup spoon cut-out cup

Medicine _____

Additional Recommendations

_____

_____

_____

Swallowing Guidelines

No Thin Liquids — Pudding Only

Patient _____ Room _____ Date _____

This patient has been evaluated by the speech-language pathologist and the following guidelines are necessary to promote safe intake of foods and liquids.

Sit upright at 90º.

Stay upright for at least 30 minutes after taking anything by mouth.

Put chin on chest for swallowing. An extra pillow behind the head is a good reminder.

Diet _____

Liquids: NO THIN LIQUIDS. NO ICE CHIPS.

All liquids must be thickened to pudding consistency. Use thickener per directions on product. Stir well or shake to eliminate lumps. Use a spoon.

Medicine _____

Additional Recommendations

_____

_____

_____

Swallowing Guidelines
NPO

Patient _____ Room _____ Date _____

NPO

This patient has been evaluated by the Dysphagia Team/ speech-language pathologist (SLP) and is not safe to take anything by mouth.

Patient should **NOT** have:
- Water
- Ice chips
- Anything else by mouth

Please call the SLP if you have any questions.

Swallowing Guidelines
Taking PO Meds

Patient _____ Room _____ Date _____

Patient must sit upright at 90° when taking PO medications.

Swallowing Guidelines
Risk of Aspiration

Patient _____ Room _____ Date _____

Patient is at risk for aspiration.

If patient chokes, clears throat or has a wet voice, STOP FEEDING and talk to a nurse, who will contact the speech-language pathologist.

Swallowing Guidelines
Silent Aspiration

Patient _____ Room _____ Date _____

PATIENT IS A SILENT ASPIRATOR.

Patient does not cough or choke when food/liquid enters the airway.

To promote safe feedings, strictly follow swallowing guidelines.

Reflux Precautions

Patient _____ Room _____ Date _____

- **Sleep with head of bed elevated 30°.**
- **Don't lie down for 1-2 hours after eating or drinking.**
- **Eat smaller meals throughout the day.**
- **Avoid coffee, spicy foods, citrus fruits, tomatoes, chocolate, and peppermint.**
- **Avoid late evening snacks.**

General In-Service on Dysphagia

Note: Provide snacks for staff members. Have them chew to see if they can tell when the oral, oropharyngeal and pharyngeal phases of swallowing occur. Most people don't have any awareness of the pharyngo-esophageal or esophageal phases.

Mix up fruit juice to nectar, honey and pudding thicknesses in small medicine cups so the staff can try them. Most staff members are surprised that only the texture of the thickened liquid changes and not the taste.

I. Information about normal swallowing

The phases of swallowing overlap and impairment in one can influence function in another.

- Oral phase to prepare the bolus
- Oropharyngeal phase to move the bolus back and start to swallow
- Pharyngeal phase as soon as the swallowing response is triggered and food moves through the throat
- Pharyngoesophageal phase as the food leaves the pharynx and enters the esophagus
- Esophageal phase as food travels to the stomach

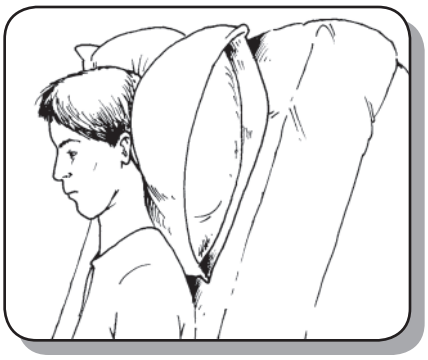
II. Importance of oral care

One of the worst things patients can aspirate is the secretions in their mouths. These secretions contain bacteria.

III. Importance of positioning

Have each person take a small sip of water and swallow it while sitting upright. Then have each person lie flat, take a small sip of water and try to swallow it.

- Discuss how a person uses the back of her tongue to keep a bolus in her mouth until she's ready to swallow.
- Discuss how putting a person in a reclined position may cause a bolus to move too quickly over the back of the tongue.
- Demonstrate a chin-down position and how to achieve this with a towel roll or extra pillow behind the patient's head. Remind staff that this position doesn't help all patients.



IV. Textures of foods

- Explain why thin liquids are often hard for patients to swallow. Remind the attendees of how they felt leaning back with thin liquid in their mouths. Be sure to mention that things like ice cream, sherbet, Jell-O, and ice chips may turn into thin liquids if held in the mouth.
- Have participants try some of the thicker liquids.

Textures of foods, *continued*

- Explain different thicknesses of liquids which the patient can control more easily in the mouth.
- Discuss why pureed foods are easier for patients to handle if they have trouble chewing and forming a bolus.
- Discuss that we make recommendations for foods to be one texture only because it's harder to manipulate something in the mouth with two textures (like milk and cereal).

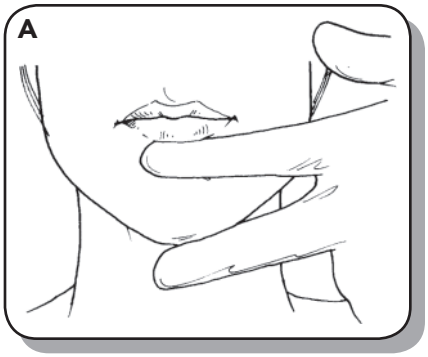
V. Aspiration

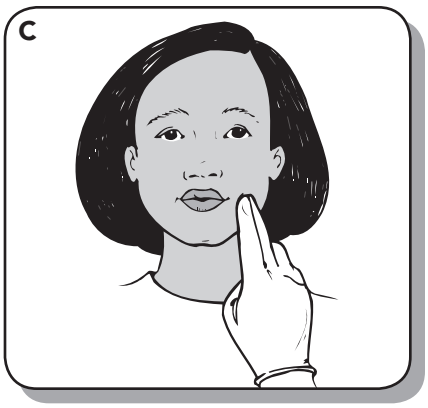
- Describe aspiration. If possible, show a videorecording with an example of aspiration.
- Explain silent aspiration, including the fact that 40-70% of patients with dysphagia are silent aspirators.

VI. Compensatory techniques

After you explain these techniques, have staff members try them on each other.

- Demonstrate the way to provide jaw and lip support. (See picture A.)
- Demonstrate how to monitor for a swallow by placing fingers lightly on the throat. (See picture B.)
- Demonstrate how to give external pressure to the cheek to decrease pocketing. (See picture C.)
- Describe multiple swallows and explain how they help clear oral residue or residue in the valleculae and pyriform sinuses.
- Describe a liquid wash. Some patients can safely use a liquid wash to clear their mouths, but some may aspirate a liquid wash.
- If the staff is interested, you might demonstrate some more specialized techniques, such as the supraglottic swallow and the Mendelsohn maneuver. (See Chapter 7, pages 134 and 136.)





VII. Share all precaution signs with staff members.

(See *Swallowing Guidelines* on this CD.)

Pre- and Post-Test for Staff Education on Dysphagia

Name _____

1. There are five phases of swallowing. True False

2. Tipping a patient's head back will help her swallow. True False

3. If a patient aspirates, she will always cough. True False

4. Patients sometimes get food caught in their cheeks because they can't feel it there. True False

5. Adding thickener to juice changes the taste. True False

6. If a patient is NPO, she can't have water but she can have ice chips. True False

7. One of the most common positions to help prevent aspiration is:
   a. leaning forward
   b. tipping head back
   c. lying on right side
   d. tucking chin down to chest

8. Which of the following are considered thin liquids?
   a. water
   b. mashed potatoes
   c. ice cream
   d. *a* and *c*

9. Which of the following is easiest to form into a ball before swallowing?
   a. water
   b. cereal in milk
   c. pudding
   d. rice

10. *Aspiration* means that food:
   a. is spit out
   b. goes into the lungs
   c. gets caught in the throat
   d. is swallowed

Answers

1. True	6. False
2. False	7. d
3. False	8. d
4. True	9. c
5. False	10. b

Why Is an Instrumental Examination of Swallowing Needed?

Patient _____ Date _____

Can a bedside/clinical evaluation of swallowing tell as much as an instrumental examination?

No. A bedside/clinical evaluation is a thorough assessment of oral phase disorders, such as weak lip closure resulting in anterior loss or reduced tongue control that interferes with the patient's ability to form a bolus. However, for disorders of the pharyngeal phase (e.g., reduced laryngeal closure with aspiration, reduced base of tongue strength with pharyngeal residue), the bedside/clinical exam is incomplete and serves as a screening of the pharyngeal phase.

Dysphagia management follows a medical model that identifies patients at risk through a screening and then completing a more thorough diagnostic evaluation on patients identified as at risk for pharyngeal disorders. The instrumental diagnostic evaluation is crucial in determining which treatment techniques are needed. (Note: As a medical analogy, a cardiac stress test is considered a screening. Another diagnostic procedure, such as cardiac catheterization, would be performed before determining the kind of treatment the patient needs [e.g., medical management, surgery, balloon dilation].)

Similarly, a bedside evaluation might reveal some symptoms of pharyngeal dysphagia, but each symptom could have multiple causes. For example, if a patient coughs during an assessment, aspiration might be strongly suspected. The cough, however, might be due to aspiration during the swallow secondary to poor vocal fold closure, the misming of laryngeal elevation/closure, or even aspiration after the swallow from residue in the pyriform sinuses caused by reduced laryngeal elevation. Each of these physiological causes of the symptom of coughing requires a very different treatment technique.

What are the instrumental procedures used?

The most frequently used procedure is the modified barium swallow study, a videofluoroscopic procedure performed by the radiologist and speech-language pathologist. Lateral and anterior-posterior (A-P) views of the oral and pharyngeal regions are obtained while the patient swallows a variety of textures of foods and liquids impregnated with barium.

A second instrumental procedure is the fiberoptic endoscopic evaluation of swallowing (FEES®). This procedure is performed by the speech-language pathologist, who places the endoscope transnasally for a view of the pharynx while the patient swallows saliva or food and liquid.

Is one instrumental procedure better than another?

The modified barium swallow allows for analysis of the structures and movements of the oral, pharyngeal and esophageal anatomy before, during and after the act of swallowing. It requires that the patient be taken to the radiology suite or mobile unit.

The FEES® allows direct visualization of the upper airway before the swallow and after the swallow. At the moment of the swallow, the view from the scope is obliterated as the larynx closes. After the swallow, the airway can again be visualized to determine if any material has entered the airway. The FEES® can be performed at bedside.

How does an instrumental exam help determine appropriate treatment?

Different compensatory positions and other maneuvers can be tried to observe the effect on swallowing safety. For instance, if a patient is observed to aspirate thin liquids during the swallow, present thicker liquids to see if the slower movement of the bolus allows time for airway closure. The patient might also be asked to use a maneuver called the *super-supraglottic swallow* to establish voluntary closure of the airway. Because there is no exposure to radiation, the scope can be left in for an entire meal to assess for effects of fatigue. It can also be used during treatment as a biofeedback tool.

How well do procedures at the bedside predict who is at risk for aspiration?

Research continues to determine how well clinical evaluations predict which patients will or will not present with pharyngeal dysphagia or which patients will or will not exhibit aspiration on an instrumental study. In certain patient populations, a combination of factors can predict aspiration with only about 70% accuracy. That means if the only evaluation completed is a clinical exam, many patients are at risk for aspiration because it will be wrongly presumed that they are not aspirating when they are. Silent aspiration occurs in 40-70% of patients who aspirate.

What is the cost-benefit ratio of instrumental exams?

The most obvious cost benefit is that patients who are aspirating can be identified and an appropriate management plan determined, thereby reducing the chances of these patients developing aspiration pneumonia. The cost of treating an aspiration pneumonia is approximately $15,000 to $20,000, making the evaluation and treatment of dysphagia very cost effective. In addition, the instrumental exam often reveals that the patient's diet can be upgraded (Martin-Harris, McMahon, & Haynes, 1998), eliminating the extra cost of tube feeding. The instrumental exam also allows for precise identification of the physiologic cause of the symptoms, which allows the speech-language pathologist to select the appropriate treatment techniques. In this way, guesswork is avoided and no time is wasted in therapy on unnecessary or inappropriate techniques.

References

DePippo, K.L., Holas, M.A., & Reding, M.J. (1992). Validation of the 3-oz. water swallow test for aspiration following stroke. *Archives of Neurology, 49*, 1259-1261.

Garon, B.R., Engle, M., & Ormiston, C. (1995). Reliability of the 3-oz. water swallow test utilizing cough reflex as sole indicator of aspiration. *Journal of Neurological Rehabilitation, 9*(3), 139-143.

Kidder, T.M., Langmore, S.E., & Martin, B.J.W. (1994). Indications and techniques of endoscopy in evaluation of cervical dysphagia: Comparison with radiographic techniques. *Dysphagia, 9*(4), 256-261.

Langmore, S.E., & McCulloch, T.M. (1996). Examination of the pharynx and larynx and endoscopic examination of pharyngeal swallowing. In A. Perlman & K. Schultz (Eds.), *Deglutition and its disorders* (pp. 201-226). San Diego: Singular Press.

Logemann, J.A. (1998). *Evaluation and treatment of swallowing disorders* (pp. 54-62, 168-185). Austin, TX: Pro-Ed.

Logemann, J.A., Veis, S., & Colangelo, L. (1999). A screening procedure for oropharyngeal dysphagia. *Dysphagia, 14*(1), 44-51.

Martin-Harris, B., McMahon, S.I., & Haynes, R. (1998). Aspiration and dysphagia: Pathophysiology and outcome. *Phonoscope, 1*(2), 123-132.

Answers to Frequently Asked Questions About Dysphagia

Patient _____ Date _____

Why no ice chips?

Patients are placed on a diet with no thin liquids because they are aspirating thin liquids. Ice chips placed in the patient's mouth turn into liquid and are aspirated. Some facilities allow ice chips after aggressive oral care for certain populations.

What good are thickened liquids?

Thin liquids are the hardest thing to control in the mouth and keep together in a bolus. It is easier to aspirate thin liquids as they travel through the throat past the larynx because they break apart and some of the liquid can fall into the larynx. Thickened liquids are easier to keep together as a cohesive bolus. Thickened liquids also move more slowly through the pharynx, giving the larynx more time to close and protect the airway.

Can some patients who are aspirating have thin liquids?

Some facilities allow patients who aspirate thin liquids to have water between meals as long as aggressive oral care is completed. This was first described as the Frazier Free Water Protocol.

Why can't I tell if a patient is aspirating at bedside?

Studies confirm that up to 40-70% of patients who aspirate are silent aspirators, meaning that food or liquid may enter the airway through the larynx with absolutely no reaction by the patient.

What good are postural changes?

Some postural changes can provide increased airway protection. Others can direct the food down the stronger side of the throat.

How is a modified barium swallow different from a barium swallow?

Barium Swallow	*Modified Barium Swallow*
Patient lying down	Patient sitting up
Patient given whole bottle of liquid	Patient given small, controlled amounts of barium to eat and drink in a variety of textures
Assesses esophagus and stomach	Assesses oral/oropharyngeal and pharyngeal phases of the swallow; may screen esophagus
Diagnostic only	Trial therapy as much as diagnostic

How would I know if my patient is at risk for aspiration?

Any patient who is debilitated secondary to a lengthy illness or disease, has a tracheostomy tube, is bedridden, and/or has been diagnosed with a neurological disorder may be at risk for aspiration.

What are some signs of dysphagia?

Signs of oral phase dysphagia include pocketing of food in the cheeks, losing food or liquid out the front of the mouth, or residue of food long after the patient has finished eating. Signs of pharyngeal dysphagia are coughing or choking during a meal or a wet, gurgly vocal quality. Silent aspirators show no clinical signs of aspiration.

If my patient has a gag reflex, doesn't that mean he/she is swallowing fine?

The gag is a protective reflex that is totally unrelated to swallowing. Studies confirm that many people who swallow normally have no gag reflex. The studies have also found that individuals with intact gag reflexes can have significant pharyngeal dysphagia with aspiration. The presence of a gag reflex does provide some information about sensation in the pharynx. Symmetrical elevation of the soft palate on a gag yields information about the muscles in the pharynx.

Why is oral care so important?

Some patients who are aspirating are also at risk for aspirating their own secretions. Many patients have gram negative bacilli and such secretions are one of the worst things that can be aspirated. Aggressive oral care, particularly in patients who are NPO because of aspiration, is critical.

Why is it important for patients to sit at 90° when eating?

Many patients with dysphagia have decreased back of tongue control. This condition allows food or liquid to fall over the back of the tongue with risk of it entering the airway. Even a slightly reclined position while eating greatly increases the risk of premature loss of food over the back of the tongue.

Why do patients need to sit up for 30 minutes after eating?

Patients may have residue of food left in the valleculae (formed between the base of the tongue and the epiglottis) and/or the pyriform sinuses (formed by the cricopharyngeus muscle at the base of the larynx, very near the entrance to the airway). This residue is usually caused by reduced laryngeal elevation or reduced strength of the base of the tongue as the person swallows. When food remains in the valleculae and pyriform sinuses, patients are at risk for the food falling into the airway. Therefore, it is important that they sit up until they are able to clear this residue.

How do I make a referral if I think my patient has some problems with swallowing?

A referral to speech-language pathology to assess swallowing requires a physician's order. You can contact the physician directly to ask for the order or you can ask the SLP to screen the patient (this is a no-charge service) and contact the physician for you. Most SLPs prefer that the physician write an order such as "Dysphagia evaluation with instrumental study if indicated." This strategy eliminates the need to contact the physician a second time for the order for the modified barium swallow study if one is indicated.

If a patient is NPO, can I give him/her medication(s) by mouth?

No. Patients are made NPO because they are considered at very high risk for aspiration. Therefore, giving them pills by mouth places them at risk for aspirating those pills. Most patients who are made NPO have an alternative feeding source placed (e.g., NG tube).

How can I give patients medication(s) if they can't take thin liquids?

If a patient can still manipulate a whole pill within his/her mouth, you may try placing it in a spoonful of yogurt, applesauce, pudding, or some other slippery material. However, some patients may need to have the pill crushed and mixed with the spoonful of slippery material.

Be sure to check the patient's mouth after you've given him/her the pill to make sure it has been swallowed and not pocketed in the cheek or on the tongue.

The Gag Reflex

Patient _____ Date _____

What does the gag reflex have to do with swallowing?

The short answer is . . . NOTHING. The gag reflex is not elicited during a normal swallow.

Does the gag tell us anything about swallow physiology?

Several researchers have included gag on a list of characteristics used to predict aspiration (e.g., Daniels et al., 1997, 1998), while others (Mann & Hankey, 2001) indicate that palatal asymmetry, which could be observed on a gag or on phonation, is one of the independent predictors of dysphagia. Gag may provide an indication of pharyngeal sensation, but there is no direct correlation between presence or absence of gag and swallowing physiology.

What is a gag reflex?

The gag reflex is a protective response designed to keep foreign material from entering the pharynx and airway.

What happens physically when a person gags?

When a person gags, the mandible lowers, the tongue moves down and then forward, the pharynx constricts, and the velum lifts.

Doesn't the velum lift during swallowing?

Yes. It lifts to keep foods and liquids from entering the nasopharynx. However, one study (Leder, 1996) demonstrated the physiologic differences between the velum lifting during phonation and the lifting of the velum during the gag reflex. There may also be physiologic differences in the lifting of the velum during the gag and swallowing.

Can a patient without a gag reflex swallow safely?

Yes. The Leder (1996) study found that 86% of patients referred for dysphagia evaluations because they did not have a gag reflex were able to eat at least a pureed diet.

Do all normal individuals have a gag reflex?

One study assessed the gag reflex in 140 healthy subjects (half elderly and half young). They found the reflex to be absent in 37% of the subjects (Davies et al.,1995).

References

Daniels, S.K., Brailey, K., Priestly, D.H., Herrington, L.R., Weisberg, L.A., & Foundas, A.L. (1998). Aspiration in patients with acute stroke. *Archives of Physical Medicine and Rehabilitation, 79*, 14-19.

Daniels, S.K., McAdam, C.P., Brailey, K., & Foundas, A.L. (1997). Clinical assessment of swallowing and prediction of dysphagia severity. *American Journal of Speech-Language Pathology, 6*, 17-24.

Davies, A.E., Kidd, D., Stone, S.P., & MacMahon-Lancet, J. (1995). Pharyngeal sensation and gag reflex in healthy subjects. *The Lancet, 345*, 487-488.

Leder, S.B. (1996). Gag reflex and dysphagia. *Head and Neck, 18*(2), 138-141.

Leder, S.B. (1997). Videofluoroscopic evaluation of aspiration with visual examination of the gag reflex and velar movement. *Dysphagia, 12*, 21-23.

Mann, G., & Hankey, G.J. (2001). Initial clinical and demographic predictors of swallowing impairment following acute stroke. *Dysphagia, 16*(3), 208-215.

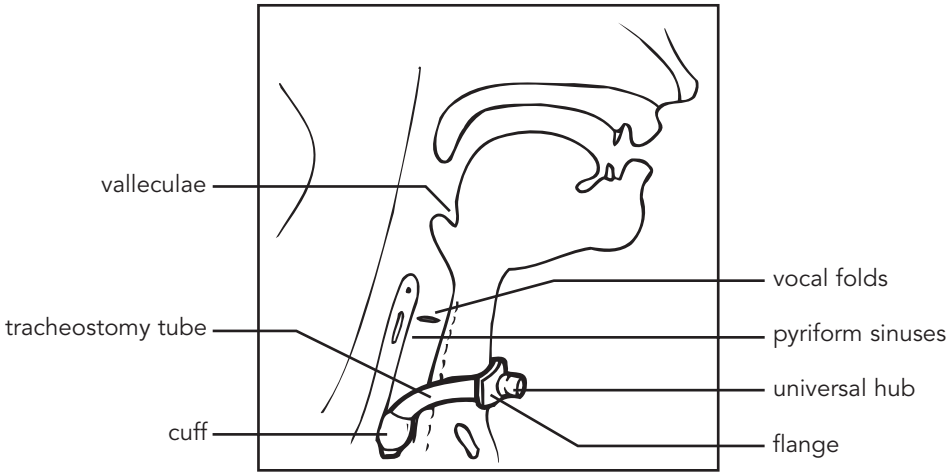
Selley, W.G. (1998). A comment on "Videofluoroscopic evaluation of aspiration with visual examination of the gag reflex and velar movement." *Dysphagia, 13*(4), 228-230.

The Fallacy of the Inflated Cuff

Patient _____ Date _____

It is a misperception that an inflated cuff protects a patient from aspiration. *Aspiration* is defined as food or liquid passing below the vocal folds. Therefore, if food reaches the cuff, the patient has aspirated.

- The tracheostomy tube is placed below the larynx, which means the cuff is well below the larynx too.
- If food reaches the cuff, it has already passed the following natural protective mechanisms:
  - True vocal fold closure
  - False vocal fold closure
  - Arytenoid tipping
  - Laryngeal elevation and forward movement, which results in tipping of the epiglottis
- If food reaches the cuff, it will move further into the trachea around the cuff. The width of the trachea expands slightly with each inhalation, allowing some leakage around the cuff. If the cuff is deflated, any material on top of the cuff will fall into the lungs.
- If food or liquid passes all of the body's natural protective mechanisms to keep food and liquid out of the lungs and reaches the cuff, it is not safe for that patient to eat/drink anything by mouth.



References

Bonanno, P.C. (1971). Swallowing dysfunction after tracheostomy. *Annals of Surgery, 174*, 29-33.

Cameron, J.L., Reynolds, J., & Zuidema, G.D. (1973). Aspiration in patients with tracheostomies. *Surgery, Gynecology, and Obstetrics, 136*, 68-70.

Eibling, D.E., Bacon, G., & Snyderman, C.H. (1992). Surgical management of chronic aspiration. *Advances in Otolaryngology: Head and Neck Surgery, 6*, 93-113.

Muz, J.M., Mathog, R.H., Nelson, R., & Jones, L.A. (1989). Aspiration in patients with head and neck cancer and tracheostomy. *American Journal of Otolaryngology, 10*, 282-286.

Nash, M. (1988). Swallowing problems in the tracheotomized patient. *Otolaryngology Clinics of North America, 21*(4), 701-709.

Questions and Answers About Aspiration and Aspiration Pneumonia

Patient _____ Date _____

Is aspirating food or liquid always the cause of aspiration pneumonia?

Most pneumonia in institutionalized elderly people is believed to be secondary to microaspiration of oral pharyngeal secretions that have been pathologically colonized.

How does aspirating cause pneumonia?

Aspirated materials entering the airway can cause atelectasis (i.e., incomplete expansion or collapse of pulmonary alveoli or of a segment or lobe(s) of a lung) and can alter mucociliary clearing action. Both of these predispose a patient to pneumonia.

Will I know that the patient has aspirated?

You may not. Some patients cough and choke when they aspirate, but up to 40-70% of patients may be silent aspirators. That is, they don't cough or even clear their throats when they aspirate.

Do patients who are tube fed get pneumonia?

Studies of artificially-fed patients in nursing homes have shown that gastrostomy tubes do not help protect against aspiration in those who are known to aspirate. The use of a J-tube reduces the risk of aspiration.

Are all infiltrates secondary to aspiration pneumonia?

No. Infiltrates can occur secondary to pneumonia, atelectasis, pulmonary infection, drug reaction, or even neoplasm.

Is pneumonia easy to diagnose?

No. Pneumonia is often hard to diagnose because the classic symptoms of cough, dyspnea, sputum production, and chest pain are often lacking in the elderly. Fever may or may not be present. If it is, it may be attributed to other causes, such as a urinary tract infection or decubitus ulcers.

Can patients aspirate without developing aspiration pneumonia?

Yes. One study identified shifting and fleeting lung infiltrates in both oral and artificially-fed major aspirators. These radiographic abnormalities lasted only hours or a few days and were sometimes associated with a low-grade fever or upper respiratory illness. The authors suspect these infiltrates represented aspirated materials that filled subsegmental airways and were subsequently cleared.

How long after an occurrence of aspiration before a temperature spike is noted?

There is no definitive answer. It depends on what and how much is aspirated, the overall pulmonary health of the patient, and whether or not the patient is taking antibiotics that might mask an infection. Pneumonia can develop quickly or gradually over several weeks.

Of what benefit is a chest X-ray to the diagnosis of pneumonia?

Chest films are often suboptimal and portable rather than standard, which makes it more difficult to judge. The chest X-ray of a patient with aspiration may not look different from a chest X-ray of a patient with a community-acquired pneumonia.

Pneumonia in the elderly will continue to be visible on chest X-rays, with infiltrates lasting a mean of five weeks.

References

Cogan, R., & Weinryb, J. (1989). Aspiration pneumonia in nursing home patients fed via gastrostomy tube. *American Journal of Gastroenterology, 84*, 1509-1519.

Cogan, R., Weinryb, J., Pomerantz, C., & Senstemacker, P. (1991). Complications of jajunostomy tube feedings in nursing facility patients. *American Journal of Gastroenterology, 86*, 610-613.

Feinberg, M.J., Knebl, J., & Tully, J. (1996). Prandial aspiration in pneumonia in an elderly population followed over 3 years. *Dysphagia, 11*(2), 104-109.

Garb, J.R., Brown, B., & Tuthill, R.W. (1978). Differences in etiology of pneumonia in nursing home and community patients. *Journal of the American Medical Association, 240*, 2169-2172.

Gleckman, R., & Burgman, M.M. (1987). Bacterial pneumonia: Specific diagnosis and treatment of the elderly. *Geriatrics, 42*, 29-41.

Niederman, M.S., & Fine, A.M. (1986). Pneumonia in the elderly. *Geriatric Clinics of North America, 2*, 241-268.

Efficacy References for Treatment Techniques

Compensatory Treatment Techniques

Chin-Down Position

Bulow, M., Olsson, R., & Ekbert, O. (1999). Videomanometric analysis of supraglottic swallow, effortful swallow, and chin tuck in healthy volunteers. *Dysphagia, 14*, 67-72.

Kunduk, M., Robbins, J., Dengel, G., Gill, G., & Heisey, D. (2000, October). *Quantifying vallecular area during chin down posture*. Poster session presented at the Dysphagia Research Society Meeting, Savannah, GA.

Lewin, J.S., Herbert, T.M., Putnam, J.B., & DuBrow, R.A. (2001). Experience with the chin tuck maneuver in postesophagectomy aspirators. *Dysphagia, 16*, 216-219.

Ralsey, A., Logemann, J.A., Kahrilas, P.J., Rademaker, A.W., Pauloski, B.R., & Dodds, W.J. (1993). Prevention of barium aspiration during videofluoroscopic swallowing studies: Value of change in posture. *American Journal of Roentgenology, 74*(12), 1005-1009.

Singh, V., Brockbank, M.J., Frost, R.A., & Tyler, S. (1995, May). Multidisciplinary management of dysphagia: The first 100 cases. *The Journal of Laryngology and Otology, 109*(5), 419-424.

Welch, M.V., Logemann, J.A., Rademaker, A.W., & Kahrilas, P.J. (1993). Changes in pharyngeal dimensions effected by chin tuck. *Archives of Physical Medicine and Rehabilitation, 74*, 178-181.

Head Rotation

Logemann, J.A., & Kahrilas, P.J. (1990). Relearning to swallow after stroke: Application of maneuvers and indirect biofeedback: A case study. *Neurology, 40*, 1136-1138.

Logemann, J., Kahrilas, P., Kobara, M., & Vakil, N. (1989). The benefit of head rotation on pharyngoesophageal dysphagia. *Archives of Physical Medicine and Rehabilitation, 70*, 767-771.

Ralsey, A., Logemann, J.A., Kahrilas, P.J., Rademaker, A.W., Pauloski, B.R., & Dodds, W.J. (1993). Prevention of barium aspiration during videofluoroscopic swallowing studies: Value of change in posture. *American Journal of Roentgenology, 74*(12), 1005-1009.

Silbergleit, A., Waring, W., Sullivan, M., & Maynard, F. (1991). Evaluation, treatment, and follow-up results of post-polio patients with dysphagia. *Otolaryngology-Head and Neck Surgery, 104*(3), 333-338.

Welch, M.V., Logemann, J.A., Rademaker, A.W., & Kahrilas, P.J. (1993). Changes in pharyngeal dimensions effected by chin tuck. *Archives of Physical Medicine and Rehabilitation, 74*, 178-181.

Head Tilt

Singh, V., Brockbank, M.J., Frost, R.A., & Tyler, S. (1995, May). Multidisciplinary management of dysphagia: The first 100 cases. *The Journal of Laryngology and Otology, 109*(5), 419-424.

Sour Bolus

Coleman, P. (2002). Improving oral health care for the frail elderly: A review of widespread problems and best practices. *Geriatric Nursing, 23*(4), 189-199.

Logemann, J.A., Pauloski, B.R., Colangelo, L., Lazarus, C., Fujiu, M., & Kahrilas, P.J. (1995). Effects of a sour bolus on oropharyngeal swallowing measures in patients with neurogenic dysphagia. *Journal of Speech and Hearing Research, 38*(3), 556-563.

Pelletier, C. (2002, October). *Effect of citric acid and citric acid-sucrose mixtures on swallowing in neurogenic oropharyngeal dysphagia*. Paper presented at the Dysphagia Research Society Meeting, Miami, FL.

Pelletier, C.A., & Dhanaraj, G.E. (2006). The effect of taste and palatability on lingual swallowing pressure. *Dysphagia, 21*(2), 121-128.

External Pressure to the Cheek

Singh, V., Brockbank, M.J., Frost, R.A., & Tyler, S. (1995, May). Multidisciplinary management of dysphagia: The first 100 cases. *The Journal of Laryngology and Otology, 109*(5), 419-424.

Food Presentation

Lazarus, C.L., Logemann, J.A., Rademaker, A.W., Kahrilas, P.J., Pajak, T., Lazar, R., et al. (1993). Effects of bolus volume, viscosity, and repeated swallows in nonstroke subjects and stroke patients. *Archives of Physical Medicine and Rehabilitation, 74*(10), 1066-1070.

Perlman, A. (1993). The successful treatment of challenging cases. *Clinics in Communication Disorders, 3*(4), 37-44.

Silbergleit, A., Waring, W., Sullivan, M., & Maynard, F. (1991). Evaluation, treatment, and follow-up results of post-polio patients with dysphagia. *Otolaryngology-Head and Neck Surgery, 104*(3), 333-338.

Singh, V., Brockbank, M.J., Frost, R.A., & Tyler, S. (1995, May). Multidisciplinary management of dysphagia: The first 100 cases. *The Journal of Laryngology and Otology, 109*(5), 419-424.

Multiple Swallow

Silbergleit, A., Waring, W., Sullivan, M., & Maynard, F. (1991). Evaluation, treatment, and follow-up results of post-polio patients with dysphagia. *Otolaryngology-Head and Neck Surgery, 104*(3), 333-338.

Singh, V., Brockbank, M.J., Frost, R.A., & Tyler, S. (1995, May). Multidisciplinary management of dysphagia: The first 100 cases. *The Journal of Laryngology and Otology, 109*(5), 419-424.

Thermal-Tactile Application

Cook, I.J., Dodds, W.J., Dantas, R.O., Massey, B., & Kern, M.K. (1989). Opening mechanism of the human upper esophageal sphincter. *American Journal of Physiology, 257*, 748-759.

Fujiu, M. (1995, February). Thermal-tactile stimulation: A study suggesting underlying neurophysiological mechanisms. *Perspectives on Swallowing and Swallowing Disorders (Dysphagia),* 4-6.

Helfrich-Miller, K., Rector, K., & Straka, J. (1986). Dysphagia: Its treatment in the profoundly retarded patient with cerebral palsy. *Archives of Physical Medicine and Rehabilitation, 67*, 520-525.

Kaatzke-McDonald, M.N., App, M., Post, E., & Davis, P.J. (1996). The effects of cold, touch, and chemical stimulation of the anterior faucial pillar on human swallowing. *Dysphagia, 11*, 198-206.

Kasprisin, A.T., Clumeck, H., & Nino-Murcia, M. (1989). The efficacy of rehabilitative management of dysphagia. *Dysphagia, 4*, 48-52.

Lazzara, G.L., Lazarus, C., & Logemann, J.A. (1986). Impact of thermal stimulation on the triggering of the swallowing reflex. *Dysphagia, 1*, 73-77.

Linden, P., Tippet, D., Johnston, J., Siebens, A., & French, J. (1989). Bolus position at swallow onset in normal adults: Preliminary observations. *Dysphagia, 4*, 146-150.

Rosenbek, J., Robbins, J., Fishback, B., & Levine, R.. (1991). Effects of thermal application on dysphagia after stroke. *Journal of Speech and Hearing Research, 34*, 1257-1268.

Rosenbek, J.C., Robbins, J., Willford, W.O., Kirk, G., Schiltz, A., Sowell, T.W., et al. (1998). Comparing treatment intensities of tactile-thermal application. *Dysphagia, 13*(1), 1-10.

Rosenbek, J.C., Roecker, E.B., Wood, M.L., & Robbins, J.A. (1996). Thermal application reduces the duration of stage transition in dysphagia after stroke. *Dysphagia, 11*, 225-233.

Singh, V., Brockbank, M.J., Frost, R.A., & Tyler, S. (1995, May). Multidisciplinary management of dysphagia: The first 100 cases. *The Journal of Laryngology and Otology, 109*(5), 419-424.

Facilitation/Treatment Techniques

Laryngeal Adduction

Kasprisin, A.T., Clumeck, H., & Nino-Murcia, M. (1989). The efficacy of rehabilitative management of dysphagia. *Dysphagia, 4*, 48-52.

Singh, V., Brockbank, M.J., Frost, R.A., & Tyler, S. (1995, May). Multidisciplinary management of dysphagia: The first 100 cases. *The Journal of Laryngology and Otology, 109*(5), 419-424.

Tongue Hold (Masako)

Fujiu, M., & Logemann, J.A. (1996). Effect of a tongue-holding maneuver on posterior pharyngeal wall movement during deglutition. *American Journal of Speech-Language Pathology, 5*, 23-30.

Fujiu, M., Logemann, J.A., & Pauloski, B.R. (1995). Increased postoperative posterior pharyngeal wall movement in patients with anterior oral cancer: Preliminary findings and possible implications for treatment. *American Journal of Speech-Language Pathology, 4*, 24-30.

Fujiu-Kurachi, M. (2002). Developing the tongue holding maneuver. *Perspectives on Swallowing and Swallowing Disorders (Dysphagia), 11*, 9-11.

Head Lift (Shaker)

Ding, R., Larson, C.R., Logemann, J.A., & Rademaker, A.W. (2002). Surface electromyographic and electroglottographic studies in normal subjects under two swallow conditions: Normal and during the Mendelsohn maneuver. *Dysphagia, 17*, 1-12.

Easterling, C., Grande, B., Kern, M., Sears, K., Shaker, R. (2005, Spring). Attaining and maintaining isometric and isokinetic goals of the Shaker exercise. *Dysphagia, 20*, 133-138.

Easterling, C., Kern, M., Nitschke, T., Grande, B., Daniels, S., Cullen, G.M., et al. (1999). Effect of a novel exercise on swallow function and biomechanics in tube fed cervical dysphagia patients: A preliminary report. *Dysphagia, 14*, 119.

Kern, M., Bardan, E., Arndorder, R., Hofmann, C., Ren, J., & Shaker, R. (1999). Comparison of upper esophageal sphincter opening in healthy asymptomatic young and elderly volunteers. *The Annals of Otology, Rhinology and Laryngology, 108*, 982-999.

Shaker, R., Easterling, C., Kern, M., Nitschke, T., Massey, V., Daniels, S., et al. (2002). Rehabilitation of swallowing by exercise in tube-fed patients with pharyngeal dysphagia secondary to abnormal UES opening. *Gastroenterology, 122*, 1314-1321.

Shaker, R., Kern, M., Bardan, E., Stewart, E.T., & Hoffman, R. (1997). Augmentation of deglutitive upper esophageal sphincter opening in the elderly by exercise. *The American Journal of Physiology, 272*, G1518-G1522.

Suck-Swallow

Logemann, J.A. (1999). Behavioral management for oropharyngeal dysphagia. *Folia Phoniatrica e Logopaedica, 51*(51), 199-212.

Surface Electromyographic Stimulation (SEMG)

Bryant, M. (1991). Biofeedback in the treatment of a selected dysphagic patient. *Dysphagia, 6*, 140-144.

Crary, M.A. (1995). A direct intervention program for chronic neurogenic dysphagia secondary to brainstem stroke. *Dysphagia, 10*, 6-18.

Crary, M.A. (1997). Surface electromyographic characteristics of swallowing in dysphagia swallowing secondary to brainstem stroke. *Dysphagia, 12*(4), 180-188.

Crary, M.A., Carnaby, G.D., Groher, M.E., & Helseth, E. (2004). Functional benefits of dysphagia therapy using adjunctive SEMG biofeedback. *Dysphagia, 19*, 160-164.

Ding, R., Larson, C.R., Logemann, J.A., & Rademaker, A.W. (2002). Surface electromyographic and electroglottographic studies in normal subjects under two swallow conditions: Normal and during the Mendelsohn maneuver. *Dysphagia, 17*, 1-12.

Gutpa, V., Reddy, N.P., & Canilang, E.P. (1996). Surface EMG measurements at the throat during dry and wet swallowing. *Dysphagia, 11*(3), 180-185.

Huckabee, M.L., & Cannito, M.P. (1999). Outcomes of swallowing rehabilitation in chronic brainstem dysphagia: A retrospective evaluation. *Dysphagia, 14*, 93-109.

Perlman, A.L., & Grayhack, J.P. (1991). Use of the electroglottograph for measurement of temporal aspects of the swallow: Preliminary observations. *Dysphagia, 6*, 88-93.

Pretend to gargle.

Pauloski, B.R., & Logemann, J.A. (2000). Impact of tongue base and posterior pharyngeal wall biomechanics on pharyngeal clearance in irradiated postsurgical oral and oropharyngeal cancer patients. *Head & Neck, 22*, 120-131.

Veis, S., Logemann, J.A., & Rademaker, A.W. (2000). Effects of three techniques on tongue base posterior motion. *Dysphagia, 15*, 142-145.

Pretend to yawn.

Pauloski, B.R., & Logemann, J.A. (2000). Impact of tongue base and posterior pharyngeal wall biomechanics on pharyngeal clearance in irradiated postsurgical oral and oropharyngeal cancer patients. *Head & Neck, 22*, 120-131.

Veis, S., Logemann, J.A., & Rademaker, A.W. (2000). Effects of three techniques on tongue base posterior motion. *Dysphagia, 15*, 142-145.

Oral-Motor Exercises

Helfrich-Miller, K., Rector, K., & Straka, J. (1986). Dysphagia: Its treatment in the profoundly retarded patient with cerebral palsy. *Archives of Physical Medicine and Rehabilitation, 67*, 520-525.

Kasprisin, A.T., Clumeck, H., & Nino-Murcia, M. (1989). The efficacy of rehabilitative management of dysphagia. *Dysphagia, 4*, 48-52.

Logemann, J.A., Pauloski, B.R., Rademaker, A.W., & Colangelo, L. (1997). Speech and swallowing rehabilitation in head and neck cancer patients. *Oncology, 11*(5), 651-659.

Singh, V., Brockbank, M.J., Frost, R.A., & Tyler, S. (1995, May). Multidisciplinary management of dysphagia: The first 100 cases. *The Journal of Laryngology and Otology, 109*(5), 419-424.

Compensatory and Facilitation Techniques

Supraglottic Swallow

Brady, S. (2002, October). *The effects of breath-holding techniques upon vocal fold adduction for safe swallowing*. Poster session presented at the Dysphagia Research Society Meeting, Miami, FL.

Bulow, M., Olsson, R., & Ekbert, O. (1999). Videomanometric analysis of supraglottic swallow, effortful swallow, and chin tuck in healthy volunteers. *Dysphagia, 14*, 67-72.

Chaudhuri, G., Hildner, C.D., Brady, S., Hutchins, B., Aliga, N., & Abadilla, E. (2002). Cardiovascular effects of the supraglottic and super-supraglottic swallowing maneuvers in stroke patients with dysphagia. *Dysphagia, 17*, 1923.

Kahrilas, P.J., Logemann, J.A., & Gibbons, P. (1992). Food intake by maneuver: An extreme compensation for impaired swallowing. *Dysphagia*, *7*, 155-159.

Kasprisin, A.T., Clumeck, H., Nino-Murcia, M. (1989). The efficacy of rehabilitative management of dysphagia. *Dysphagia, 4*, 48-52.

Logemann, J.A., Gibbons, P., Rademaker, A.W., Pauloski, B.R., Kahrilas, P.J., Bacon, M., et al. (1994). Mechanisms of recovery of swallow after supraglottic laryngectomy. *Journal of Speech and Hearing Research, 37*, 965-974.

Logemann, J.A., & Kahrilas, P.J. (1990). Relearning to swallow after stroke: Application of maneuvers and indirect biofeedback: A case study. *Neurology, 40*, 1136-1138.

Silbergleit, A., Waring, W., Sullivan, M., & Maynard, F. (1991). Evaluation, treatment, and follow-up results of post-polio patients with dysphagia. *Otolaryngology-Head and Neck Surgery, 104*(3), 333-338.

Singh, V., Brockbank, M.J., Frost, R.A., & Tyler, S. (1995, May). Multidisciplinary management of dysphagia: The first 100 cases. *The Journal of Laryngology and Otology, 109*(5), 419-424.

Super-Supraglottic Swallow

Brady, S. (2002, October). *The effects of breath-holding techniques upon vocal fold adduction for safe swallowing*. Poster session presented at the Dysphagia Research Society Meeting, Miami, FL.

Bulow, M., Olsson, R., & Ekbert, O. (1999). Videomanometric analysis of supraglottic swallow, effortful swallow, and chin tuck in healthy volunteers. *Dysphagia, 14*, 67-72.

Chaudhuri, G., Hildner, C.D., Brady, S., Hutchins, B., Aliga, N., & Abadilla, E. (2002). Cardiovascular effects of the supraglottic and super-supraglottic swallowing maneuvers in stroke patients with dysphagia. *Dysphagia, 17*, 1923.

Kahrilas, P.J., Logemann, J.A., & Gibbons, P. (1992). Food intake by maneuver: An extreme compensation for impaired swallowing. *Dysphagia*, *7*, 155-159.

Logemann, J.A., Pauloski, B.R., Rademaker, A.W., & Colangelo, L. (1997). Super-supraglottic swallow in irradiated head and neck cancer patients. *Head & Neck, 19*, 535-540.

Martin, B.J.W., Logemann, J.A., Shaker, R., & Dodds, W.J. (1993). Normal laryngeal valving patterns during three breathhold maneuvers: A pilot investigation. *Dysphagia, 8*, 11-20.

Effortful Swallow

Bulow, M., Olsson, R., & Ekbert, O. (1999). Videomanometric analysis of supraglottic swallow, effortful swallow, and chin tuck in healthy volunteers. *Dysphagia, 14*, 67-72.

Garcia, J.M., Hakel, M., & Lazarus, C. (2004). Unexpected consequence of effortful swallowing: Case study report. *Journal of Medical Speech-Language Pathology, 12*(2), 59-66.

Huckabee, M.L., & Steele, C.M. (2006, March). *An analysis of lingual contribution to submental SEMG measures and pharyngeal biomechanics during effortful swallow*. Paper presented at the Dysphagia Research Society Meeting, Scottsdale, AZ.

Kahrilas, P.J., Lin, S., Logemann, J.A., Ergun, G.A., & Facchini, F. (1991). Deglutitive tongue action: Volume accommodation and bolus propulsion. *Gastroenterology, 104*, 152-162.

Kahrilas, P.J., Logemann, J.A., & Gibbons, P. (1992). Food intake by maneuver: An extreme compensation for impaired swallowing. *Dysphagia*, *7*, 155-159.

Kahrilas, P.J., Logemann, J.A., Lin, S., & Ergun, G.A. (1992). Pharyngeal clearance during swallow: A combined manometric and videofluoroscopic study. *Gastroenterology, 103*, 128-136.

Pounderoux, P., & Kahrilas, P.J. (1995). Deglutitive tongue force modulation by volition, volume, and viscosity in humans. *Gastroenterology, 108*, 1418-1426.

Mendelsohn Maneuver

Bartolome, G., & Neumann, S. (1993). Swallowing therapy in patients with neurological disorders causing crichopharyngeal dysfunction. *Dysphagia, 8*, 146-149.

Bryant, M. (1991). Biofeedback in the treatment of a selected dysphagic patient. *Dysphagia, 6*, 140-144.

Kahrilas, P.J., Logemann, J.A., Krugler, C., & Flanagan, E. (1991). Volitional augmentation of upper esophageal sphincter opening during swallowing. *American Journal of Physiology, 260*, 450-456.

Lazarus, C., Logemann, J.A., & Gibbons, P. (1996). Effects of maneuvers on swallowing function in a dysphagic oral cancer patient. *Head & Neck, 15*, 419-424.

Logemann, J.A., & Kahrilas, P.J. (1990). Relearning to swallow after stroke: Application of maneuvers and indirect biofeedback: A case study. *Neurology, 40*, 1136-1138.

Logemann, J.A., Kahrilas, P.J., Cheng, J., Pauloski, B.R., Gibbons, P.J., Rademaker, A.W., et al. (1992). Closure mechanisms of the laryngeal vestibule during swallowing. *American Journal of Physiology, 262*, 338-344.

Perlman, A. (1993). The successful treatment of challenging cases. *Clinics in Communication Disorders, 3*(4), 37-44.

Diet Modification Techniques

Textures of Foods

National Dysphagia Diet Task Force. (2002). National dysphagia diet: Standardization for optimal care. Chicago: American Dietetic Association.

Perlman, A. (1993). The successful treatment of challenging cases. *Clinics in Communication Disorders, 3*(4), 37-44.

Tymchuck, D. (2006). Applying food science to dysphagia. *Perspectives on Swallowing and Swallowing Disorders (Dysphagia), 15*(1), 19-23.

FEES® Report

Patient _____ Date _____

Birth Date _____ Age _____ Patient # _____

Referral Physician _____

Patient's Address _____ Phone _____

History _____

_____

_____

_____

Why Study Is Needed _____

_____

_____

Procedure

The patient was seen for a fiberoptic endoscopic evaluation of swallowing (FEES®) _____. The patient was positioned in a bed / chair for the exam. _____ assisted in positioning the patient and presenting test materials. Anatomy and physiology of the swallowing mechanism were examined. The scope was passed transnasally through the R / L nostril.

Anatomy and Physiology

Velopharyngeal Closure _____

Secretion Management _____

Swallow Frequency _____

Back of Tongue Movement _____

Laryngeal Structure During:

- Respiration _____
- Airway Closure _____
- Phonation _____

Pharyngeal Musculature _____

_____

Swallowing

Ice chips

Pureed foods

Soft-solid foods

Hard, chewy, crunchy foods

Thin liquids

Thick liquids

Effects of Treatment Strategies Attempted

Sensory Testing

Summary and Need for Service

Diagnosis

Positive Expectation to Begin Service _____

_____

_____

Patient/Caregiver Teaching _____

_____

_____

Short-Term Goals

These patient goals reflect disordered physiology related to the pharyngeal phase. For oral phase goals, see *Bedside Dysphagia Evaluation*, page 51 in the book (or page 57 for skilled nursing facilities).

_____ Improve back of tongue control to keep food from falling over the back of the tongue and into the airway.

_____ Decrease delay in initiation of pharyngeal swallow to reduce food falling into the airway during the delay before the swallow.

_____ Increase closure of the true vocal folds to keep food from falling into the airway during the swallow.

_____ Increase laryngeal elevation to reduce residue in the pyriform sinus(es) and reduce risk of the residue falling into the airway after the swallow.

_____ Improve laryngeal elevation to reduce penetration into the upper laryngeal vestibule to reduce the risk of the penetrated material being aspirated after the swallow.

_____ Improve the rate of laryngeal elevation/timing of closure to reduce penetration into the upper laryngeal vestibule to reduce the risk of the penetrated material being aspirated after the swallow.

_____ Increase laryngeal elevation to reduce vallecular residue to reduce the risk of the residue being aspirated after the swallow.

_____ Increase movement of the pharyngeal walls to reduce residue on pharyngeal wall(s) (unilateral or bilateral) to reduce the risk of the residue being aspirated after the swallow.

_____ No skilled treatment is indicated.

Comments _____

_____

_____

Recommendations

Diet

Food Presentation

Food Placement

Positioning

Status

Presentation of Meds

Schedule

Charting/Monitoring

Other

Compensatory Techniques to Use During Meal

Facilitation/Treatment Techniques

Re-evaluation

Speech-Language Pathologist

FEES® Report Sample

Patient Fred Date _____

Birth Date _____ Age 68 Patient # _____

Referral Physician _____

Patient's Address _____ Phone _____

History Fred is a 68-year-old male who is currently an inpatient at this acute care facility. He suffered a left CVA with resulting right hemiparesis, aphasia, dysarthria, and dysphagia. His medical history also includes arteriosclerotic cardiovascular disease, hypertension and diabetes. Patient currently has an NG tube in and is NPO except for ice chips.

Why Study Is Needed The dysphagia team determined he needed an instrumental exam because a bedside evaluation revealed wet vocal quality with all textures presented. He also had intermittent cough throughout the evaluation.

Procedure

The patient was seen for a fiberoptic endoscopic evaluation of swallowing (FEES®) at bedside. The patient was positioned in a (bed) / chair for the exam. Nursing Assistant assisted in positioning the patient and presenting test materials. Anatomy and physiology of the swallowing mechanism were examined. The scope was passed transnasally through the (R) / L nostril.

Anatomy and Physiology

Velopharyngeal Closure appears adequate on production of /i/

Secretion Management some secretions noted in vallecullae and pyriforms, but none in airway. Murray rating 1.

Swallow Frequency appears adequate

Back of Tongue Movement appears to exhibit weak touch of back of tongue to velum

Laryngeal Structure During:

- Respiration no abnormalities noted
- Airway Closure vocal folds close symmetrically for breath hold
- Phonation vocal folds close symmetrically on phonation

Pharyngeal Musculature soft palate elevates and contacts posterior pharyngeal wall; pharyngeal constrictors move on phonation of /i/, but movement seems diminished; laryngeal elevation on phonation seems decreased

Swallowing

Ice chips	elicits swallow and clears secretions
Pureed foods	pudding: no premature trickle observed, no material observed in airway, minimal residue in valleculae, none in pyriforms
Soft-solid foods	solids: no premature loss other than that expected w/masticated material; no residue in valleculae, pyriforms or channels
Hard, chewy, crunchy foods	
Thin liquids	exhibits trickle over back of tongue before initiating swallow; material rests in valleculae (w/larger boluses, it falls to pyriforms), but not aspirated before the swallow; when airway is visible again, there is a trace amount of material in airway; consistent cough
Thick liquids	no premature trickle observed, no material observed in airway, no minimal residue in valleculae, none in pyriforms

Effects of Treatment Strategies Attempted Patient tried in chin-down position to see if this would increase airway protection. After swallowing thin liquids in this position, no material was noted in the airway, though a very small amount remained in the upper laryngeal vestibule when patient was given more than 5cc at once.

Sensory Testing strong cough reaction to scope touching pharyngeal wall

Summary and Need for Service Patient shows some decreased control of the back of his tongue, which lets thin liquids trickle over the back of the tongue. He does not aspirate before the swallow. After the swallow, thin liquids are observed in the upper laryngeal vestibule and/or airway (depending on size of bolus), leading to the conclusion that there is decreased closure at the entrance to the airway (given that folds close tightly on breath hold). The chin-down position eliminates the aspiration, but not penetration if given large boluses. With some of the stickier materials, he has vallecular residue, indicating probable reduced base of tongue strength.

Diagnosis oral and pharyngeal dysphagia with audible trace aspiration of thin liquids

Positive Expectation to Begin Service Patient is alert and cooperative and follows basic one-step commands. He wants to have NG tube removed and eat by mouth.

Patient/Caregiver Teaching Results of the evaluation were discussed in detail w/patient. He appeared to understand that some modifications in his eating would be necessary. His wife appeared to understand the recommendations as well.

Short-Term Goals

These patient goals reflect disordered physiology related to the pharyngeal phase. For oral phase goals, see *Bedside Dysphagia Evaluation*, page 51 in the book (or page 57 for skilled nursing facilities).

✓ Improve back of tongue control to keep food from falling over the back of the tongue and into the airway.

_____ Decrease delay in initiation of pharyngeal swallow to reduce food falling into the airway during the delay before the swallow.

_____ Increase closure of the true vocal folds to keep food from falling into the airway during the swallow.

_____ Increase laryngeal elevation to reduce residue in the pyriform sinus(es) and reduce risk of the residue falling into the airway after the swallow.

✓ Improve laryngeal elevation to reduce penetration into the upper laryngeal vestibule to reduce the risk of the penetrated material being aspirated after the swallow.

_____ Improve the rate of laryngeal elevation/timing of closure to reduce penetration into the upper laryngeal vestibule to reduce the risk of the penetrated material being aspirated after the swallow.

_____ Increase laryngeal elevation to reduce vallecular residue to reduce the risk of the residue being aspirated after the swallow.

✓ Increase movement of the pharyngeal walls to reduce residue on pharyngeal wall(s) (unilateral or bilateral) to reduce the risk of the residue being aspirated after the swallow.

_____ No skilled treatment is indicated.

Comments _____

Recommendations

Diet	thin liquids in 5cc amounts with SLP only and not at meals, mildly thick liquids okay
	at meals, pureed plus one soft vegetable at each meal
Food Presentation	1 tsp. bolus size, cut-out cup for honey-thick liquids
Food Placement	left side of mouth
Positioning	sitting at 90°, stay seated upright 30 minutes after meals, chin tuck for liquids
Status	verbal cues/standby assist
Presentation of Meds	pills should be crushed and mixed w/applesauce
Schedule	lunch treatment by OT
	breakfast and dinner fed by staff/family
	hold tube feedings 3 hours prior to oral feeding
Charting/Monitoring	calorie count (if adequate, remove NG)
Other	
Compensatory Techniques to Use During Meal	compensation for pocketing: sweep w/tongue and external pressure to right cheek
	alternate thickened liquid swallows every several bites
	multiple swallows (offer cues w/masticated foods)
	encourage/stimulate lip closure
Facilitation/Treatment Techniques	effortful swallow
	oral-motor exercises: labial closure, back of tongue and lingual A-P
	tongue retraction and tongue hold; super-supraglottic swallow
Re-evaluation	before advancing to thin liquids

Speech-Language Pathologist

Information to Obtain from Chart Review

Patient _____

Medical History
- ❑ Admit diagnosis
- ❑ Functional problems observed
- ❑ Level of alertness
- ❑ Previous diagnoses and treatment
- ❑ Advance directive
- ❑ Premorbid status

Referral
- ❑ Reason for referral
- ❑ Signed physician's order

Signs and Symptoms of Dysphagia
- ❑ Drooling/Increased secretions
- ❑ Weight loss
- ❑ Coughing/Choking
- ❑ Pocketing
- ❑ Pneumonia
- ❑ Changes in diet
- ❑ Patient complaint
- ❑ Dehydration
- ❑ Reflux

Nutrition/Hydration
- ❑ Current diet
- ❑ Dietary restrictions
- ❑ Alternate method of feeding

Medications
- ❑ Cause mental status change/sedation
- ❑ Antibiotics
- ❑ GERD meds
- ❑ How presented to patient
- ❑ Other meds: _____

Respiratory Status
- ❑ Lung sounds
- ❑ Chest X-rays
- ❑ Oxygen therapy and mode of delivery
- ❑ Recent intubations
- ❑ Ventilator
- ❑ Tracheostomy
  - ❑ Status of cuff
  - ❑ Tracheostomy speaking valve

Nursing Assessment
- ❑ Cognitive assessment
- ❑ Observations of patient
- ❑ Previous living situation
- ❑ Family support/involvement
- ❑ Sensory impairments

Other Evaluations/Procedures
- ❑ GI series
- ❑ Barium swallow
- ❑ Neurological consult
- ❑ Dietary consult
- ❑ Surgery
- ❑ Radiation therapy

Letter to Physician — Sample 1

Date _____

RE: Dysphagia management

Dear Dr. _____:

I understand that you are interested in knowing the cost of a bedside/clinical evaluation for dysphagia as well as the cost of instrumental procedures such as the videofluoroscopic swallowing study (VFSS) (or modified barium swallow [MBS]) and the fiberoptic endoscopic evaluation of swallowing (FEES®). The attached sheet details the cost involved with a bedside/clinical evaluation vs. a VFSS (or MBS) or FEES® as well as the kinds of information that can be gained from each.

In addition, I have included a list of suggested readings that confirm that as many as 40-70% of patients with dysphagia are silent aspirators. The VFSS (or MBS) allows for the detection of aspiration as well as the determination of compensatory technique, position, and/or diet changes that may prevent aspiration and allow a patient to eat safely. The FEES® provides similar information. In addition, these studies can provide other useful information to help with patient management decisions. I am sure you will agree that the cost of an instrumental exam is less than the cost of treatment for aspiration pneumonia.

I welcome the opportunity to discuss this information with you if you have further concerns about the cost of these evaluations. Speech-language pathologists provide a high-quality, cost-effective service that is of great benefit to the patient, family, staff, and physician. Thank you for your interest.

Sincerely,

_____

Speech-Language Pathologist

Suggested Readings

Linden, P., & Siebens, A. (1983). Dysphagia: Predicting laryngeal penetration. *Archives of Physical Medicine and Rehabilitation, 64*, 281-284.

Martin-Harris, B., Logemann, J.A., McMahon, S., Schleicher, M., & Sandidge, J. (2000). Clinical utility of the modified barium swallow. *Dysphagia, 15*, 136-141.

Ott, D.J., Hodge, R.G., Pikna, L.A., Chen, M.Y.M., & Gelfand, D.W. (1996). Modified barium swallow: Clinical and radiographic correlation and relation to feeding recommendations. *Dysphagia, 11*, 187-190.

Smith, C.H., Logemann, J.A., Colangelo, L.A., Rademaker, A.W., & Pauloski, B.R. (1999). Incidence and patient characteristics associated with silent aspiration in the acute care setting. *Dysphagia, 14*(1), 1-7.

Splaingard, M., Hutchins, B., Sulton, L., & Chaudhuri, G. (1988). Aspiration in rehabilitation patients: Videofluoroscopy vs. bedside clinical assessment. *Archives of Physical Medicine and Rehabilitation, 69*, 637-640.

Bedside/Clinical Evaluation

Cost _____

Speech-language pathology's assessment of oral-motor skills provides information about how the patient can form, maintain and manipulate a bolus. The speech-language pathologist (SLP) also assesses basic communication and cognitive skills and makes judgments about laryngeal closure and elevation, essential for airway protection.

Information obtained from a bedside/clinical evaluation:

A bedside/clinical evaluation provides the most information about the types and textures of food a patient can handle in the oral phase of the swallow. It also determines the patient's ability to self-feed.

Videofluoroscopic Swallowing Study (VFSS) (or Modified Barium Swallow [MBS])

Cost _____

A VFSS (or MBS) is performed by the Radiology and Speech-Language Pathology Departments. It is a good way to assess whether or not a patient is aspirating. The main intent of the study is not to rule out or confirm aspiration, but to determine the types and textures of food a patient can handle without aspiration. It also helps determine any position changes or compensatory techniques that might be needed to allow the patient to eat safely as well as determine appropriate treatment techniques. It is much more a trial therapeutic study than a straight diagnostic study.

Decisions typically made from information obtained from a VFSS (or MBS) are:

- Whether or not the patient should eat by mouth
- Which compensatory techniques the patient needs to prevent aspiration
- What treatment techniques are needed
- If the patient is swallowing safely and does not need further instrumental assessment

Fiberoptic Endoscopic Evaluation of Swallowing (FEES®)

Cost _____

The SLP may utilize the FEES® during a bedside/clinical evaluation of the patient. This procedure involves passing the endoscope transnasally so that the tip of the endoscope hangs in the hypopharynx. The SLP can then observe premature movement of the bolus of food over the back of the tongue and possibly into the airway before the swallow. Residue in the pharynx after the swallow can be observed to see if the residue is going to spill into the airway. The actual moment of swallowing is not visible as the scope is obliterated when the glottis closes. Use of this procedure does not preclude the need for a VFSS (or MBS) but does allow the SLP to determine at bedside which patients are candidates for videofluoroscopic assessment.

These decisions are typically made from information obtained utilizing the FEES® at bedside:

- Whether or not the patient should eat by mouth
- If texture changes can eliminate the aspiration
- What treatment techniques are needed
- If the patient is swallowing safely and does not need further instrumental assessment

Letter to Physician — Sample 2

Date _____

Dear Dr. _____:

Thank you for agreeing to meet with us to discuss protocols for a bedside/clinical evaluation, a fiberoptic endoscopic evaluation of swallowing (FEES®), and a videofluoroscopic swallowing study (VFSS) (or modified barium swallow [MBS]). As you know, dysphagia intervention has several goals, including the following:

- To prevent or significantly decrease the risk for aspiration pneumonia. A secondary benefit of this goal is to decrease length of stay and patient complications.
- To return the patient to safe PO feeding status to obtain adequate nutrition and hydration
- For patients who cannot yet return safely to full PO, the goal is to allow the presentation of some foods and liquids by mouth therapeutically to help improve the patient's prognosis for returning to full PO.
- In certain cases in which the prognosis for the patient to return to full PO is poor, dysphagia therapy may be designed to allow the patient to take some food or liquid safely by mouth to improve the quality of life.

A bedside/clinical evaluation yields very important information about the oral phase of the swallow. In addition, it provides important information such as the patient's level of alertness, appropriate positioning for feeding and ability to self-feed.

However, aspiration cannot be confirmed or ruled out with certainty using only a bedside/clinical evaluation, even when the patient is tracheostomized. Several studies have indicated that as many as 40-70% of patients judged to be safe feeders on a bedside/clinical evaluation are actually found to be silent aspirators when an instrumental assessment is performed. (See the suggested readings list at the end of this letter.)

The FEES® is a procedure that involves passing an endoscope transnasally into the hypopharynx. It is utilized at bedside by a speech-language pathologist (SLP) to observe a patient's airway before and after the swallow. The FEES® allows the SLP to determine whether or not a patient can eat safely.

The VFSS (or MBS) is performed in the Radiology Department. It helps determine if a patient is aspirating or at significant risk for aspiration so that the appropriate treatment can be planned. While this study will confirm if a patient is aspirating or at risk for aspiration, the main intent is to determine if there are compensatory or positioning techniques and/or food consistency and texture changes that can be implemented that would allow the patient to eat safely. These determinations cannot be made on the basis of a bedside/clinical evaluation.

Each of the assessments yields different information. When a bedside/clinical evaluation and an instrumental assessment are both performed, a complete picture is obtained about the patient's abilities.

Some physicians do not want their patients to undergo a VFSS (or MBS) because the patient might aspirate. These same patients, however, are often fed on the floor where they are also at risk for aspiration. The difference is that a VFSS (or MBS) is a very controlled procedure. Small amounts of a benign substance (barium sulfate) are presented and if aspiration occurs, it is seen immediately. In contrast, beginning trial feedings on the floor without performing a VFSS (or MBS) can mean that up to 70% of patients might be aspirating. This may not be known until sometime later when the patient develops aspiration pneumonia. (See the article by Ott and Gelfand [1983] in the suggested readings list below for an explanation of the safety of the medium used during the studies.)

We would be happy to have you observe a procedure at any time or to discuss this information in more detail. Thank you for your time.

Sincerely,

_____

Speech-Language Pathology Department

Suggested Readings

Daniels, S.K., Brailey, K., Priestly, D.H., Herrington, L.R., Weisberg, L.A., & Foundas, A.L. (1998). Aspiration in patients with acute stroke. *Archives of Physical Medicine and Rehabilitation, 79*, 14-19.

Gelfand, D.W., & Ott, D.J. (1982). Barium sulfate suspensions: An evaluation of available products. *American Journal of Roentgenology, 138*, 935.

Leder, S.B., Sasaki, C.T., & Burrell, M.I. (1998). Fiberoptic endoscopic evaluation of dysphagia to identify silent aspiration. *Dysphagia, 13*(1), 19-21.

Linden, P., Kuhlemeier, K., & Patterson, C. (1993). The probability of correctly predicting subglottic penetrations and clinical observations. *Dysphagia, 8*, 170-179.

Ott, D.J., & Gelfand, D.W. (1983). Gastrointestinal contrast agents: Indications, uses, and risks. *Journal of the American Medical Association, 249*, 2380.

Ott, D.J., Hodge, R.G., Pikna, L.A., Chen, M.Y.M., & Gelfand, D.W. (1996). Modified barium swallow: Clinical and radiographic correlation and relation to feeding recommendations. *Dysphagia, 11*, 187-190.

Sorin, R., Somers, S., Austin, W., & Bester, S. (1988). The influence of videofluoroscopy on the management of the dysphagic patient. *Dysphagia, 2*, 127-135.

Splaingard, M., Hutchins, B., Sulton, L., & Chaudhuri, G. (1988). Aspiration in rehabilitation patients: Videofluoroscopy vs. bedside clinical assessment. *Archives of Physical Medicine and Rehabilitation, 69*, 637-640.

Modified Barium Swallow Report

Patient _____ Date _____

Birth Date _____ Age _____ Patient # _____

Referral Physician _____

Patient's Address _____ Phone _____

History _____

_____

_____

_____

Why Study Is Needed _____

_____

_____

Procedure

The patient was seen for a modified barium swallow/videofluoroscopic evaluation with radiology and speech-language pathology. _____ consistencies (_____) were presented for analyses of four / five phases of the swallow.

▶ Oral Phase

This phase involves oral movements to prepare the food for swallowing.

Thin liquids _____

Thick liquids _____

Pudding _____

Cookie _____

▶ Oropharyngeal Phase

This phase begins when the tongue initiates posterior movement of the bolus. It typically takes less than one second to complete.

Thin liquids _____

Thick liquids _____

Pudding _____

Cookie _____

▶ Pharyngeal Phase

This phase begins with the triggering of the swallow response. Normally the swallowing response is triggered as the bolus contacts the anterior faucial arches. Normal transit time from anterior faucial arches to cricopharyngeal juncture is one second or less.

Thin liquids _____

Thick liquids _____

Pudding _____

Cookie _____

A-P View _____

▶ Pharyngoesophageal Phase _____

▶ Esophageal Phase _____

Effects of Treatment Strategies Attempted _____

Summary and Need for Service _____

Diagnosis _____

Positive Expectation to Begin Service _____

Patient/Caregiver Teaching _____

_____

Short-Term Goals

These patient goals reflect disordered physiology related to the pharyngeal phase. For oral phase goals, see *Bedside Dysphagia Evaluation*, page 51, in the book (or page 57 for skilled nursing facilities).

_____ Improve back of tongue control to keep food from falling over the back of the tongue and into the airway.

_____ Decrease delay in initiation of pharyngeal swallow to reduce food falling into the airway during the delay before the swallow.

_____ Increase closure of the true vocal folds to keep food from falling into the airway during the swallow.

_____ Improve the rate of laryngeal elevation/timing of closure to keep food from falling into the airway during the swallow.

_____ Increase laryngeal elevation to reduce residue in the pyriform sinus(es) and reduce risk of the residue falling into the airway after the swallow.

_____ Increase anterior movement of the hyolaryngeal complex to reduce residue in the pyriform sinuses and reduce the risk of the residue falling into the airway after the swallow.

_____ Improve laryngeal elevation to reduce penetration into the upper laryngeal vestibule to reduce the risk of the penetrated material being aspirated after the swallow.

_____ Improve arytenoid tipping/closure at entrance to the airway to reduce penetration into the upper laryngeal vestibule to reduce the risk of the penetrated material being aspirated after the swallow.

_____ Improve the rate of laryngeal elevation/timing of closure to reduce penetration into the upper laryngeal vestibule to reduce the risk of the penetrated material being aspirated after the swallow.

_____ Increase base of tongue movement to reduce vallecular residue (unilateral or bilateral) to reduce the risk of the residue being aspirated after the swallow.

_____ Increase movement of the pharyngeal walls to reduce vallecular residue to reduce the risk of the residue being aspirated after the swallow.

_____ Increase laryngeal elevation to reduce vallecular residue to reduce the risk of the residue being aspirated after the swallow.

_____ Increase movement of the pharyngeal walls to reduce residue on pharyngeal wall(s) (unilateral or bilateral) to reduce the risk of the residue being aspirated after the swallow.

_____ Increase movement of the tongue base to reduce bilateral residue on pharyngeal walls to reduce the risk of the residue being aspirated after the swallow.

_____ No skilled treatment is indicated.

Comments _____

Recommendations

❑ **NPO**

❑ **PO Diet Recommendations**

Dysphagia Diet

- ❑ Level I (runny pureed)
- ❑ Level II (thick pureed, pudding liquids)
- ❑ Level III (pureed and some soft; liquids: nectar/honey/pudding)
- ❑ Level IV (soft cohesive; liquids: nectar/honey/pudding)
- ❑ Level V (mech. soft; regular liquids)

Food Presentation

- ❑ bolus size: ½ tsp./1 tsp.
- ❑ cut-out cup
- ❑ cup
- ❑ straw
- ❑ spoon only
- ❑ no straw
- ❑ no syringe

Food Placement

- ❑ left side mouth/visual field
- ❑ right side mouth/visual field
- ❑ Present food from front to increase sensory input.

Positioning

- ❑ sitting up at 90°
- ❑ head turned to _____
- ❑ chin tuck _____
- ❑ Stay seated upright ___ minutes after meals.

Status

- ❑ Patient can self-feed without supervision.
- ❑ verbal cues/standby assistance
- ❑ dependent; to be fed by SLP only/staff/family

Presentation of Meds

- ❑ pills/tablets whole followed by liquids/applesauce/ thick liquid
- ❑ pills/tablets must be crushed and mixed with applesauce
- ❑ no liquid meds
- ❑ meds via tube

Nutrition

- ❑ primary nutrition by tube
- ❑ trial PO during therapy only
- ❑ Hold tube feedings _____ prior to oral feeding.

Charting/Monitoring

- ❑ weekly heights
- ❑ calorie count
- ❑ monitor temperature _____
- ❑ Listen for vocal quality throughout meal.

Other

- ❑ reflux precautions (See attached.)

_____

_____

c = compensatory techniques to use during meal
f = facilitation/treatment techniques

Selected treatment techniques to begin.
Others can be chosen to achieve short-term goals.

Oral Dysphagia

- ❑ labial closure (c, f)
- ❑ lingual elevation exercises (f)
- ❑ lingual lateralization exercises (f)
- ❑ lingual A-P exercises (f)
- ❑ lingual back of tongue exercises (f)
- ❑ compensations for oral residue (c)
  - ❑ Sweep mouth with tongue.
  - ❑ Sweep mouth with finger.
  - ❑ Apply external pressure to R/L cheek.
  - ❑ Rinse mouth/expel after meal.

Decreased Laryngeal Elevation

- ❑ Mendelsohn maneuver/SEMG (c, f)
- ❑ falsetto/laryngeal elevation exercises (f)

Decreased Laryngeal Closure

- ❑ supraglottic (safe) swallow (c, f)
- ❑ super-supraglottic swallow (c, f)
- ❑ laryngeal closure exercises (f)
- ❑ encourage cough (c)

Decreased Base of Tongue Strength/ Posterior Pharyngeal Wall

- ❑ tongue hold (f)
- ❑ tongue base retraction (f)
- ❑ Pretend to gargle. (f)
- ❑ Pretend to yawn. (f)
- ❑ effortful swallow (c, f)

Delayed Swallow

- ❑ thermal-tactile stimulation (c)
- ❑ three-second prep (c, f)
- ❑ neurosensory stimulation (f)
- ❑ slurp swallow (c, f)
- ❑ sour bolus (c, f)
- ❑ cold bolus (c, f)

Decreased Anterior Movement of Hyolaryngeal Complex

- ❑ head lift (f)

Misc. Compensation for Oral/Pharyngeal Dysphagia

- ❑ Alternate (thick) liquid swallow every bite/PRN. (c)
- ❑ Discourage liquid wash between bites. (c)
- ❑ multiple swallows (Patient does/does not need cues.) (c)
- ❑ Empty mouth before next bite. (c)
- ❑ Cue patient to slow down. (c)

Re-evaluation

- ❑ if condition changes
- ❑ before discontinuing any of these recommendations
- ❑ can advance food only at bedside
- ❑ can advance foods and liquids at bedside
- ❑ other _____

_____

Speech-Language Patholgist

Modified Barium Swallow Report — Sample 1

Patient Fred Date _____

Birth Date _____ Age 68 Patient # _____

Referral Physician _____

Patient's Address _____ Phone _____

History Fred is a 68-year-old male who is currently an inpatient at this acute care facility. He suffered a left CVA with resulting right hemiparesis, aphasia, dysarthria, and dysphagia. His medical history also includes arteriosclerotic cardiovascular disease, hypertension and diabetes. Patient currently has an NG tube in and is NPO except for ice chips.

Why Study Is Needed Physician referral for an MBS study based on recommendations from the dysphagia team. Patient was seen at bedside and demonstrated wet vocal quality with all textures presented. He also had an intermittent cough throughout the study.

Procedure

The patient was seen for a modified barium swallow/videofluoroscopic evaluation with radiology and speech-language pathology. Four consistencies (thin liquids, nectar-thick, pudding, cookie) were presented for analyses of four / five phases of the swallow.

▶ Oral Phase

This phase involves oral movements to prepare the food for swallowing.

Thin liquids	shows anterior loss
Thick liquids	shows anterior loss, better able to form bolus
Pudding	no anterior loss, able to form fairly adequate bolus
Cookie	residue in lateral sulcus, difficulty getting entire bolus on top of tongue

▶ Oropharyngeal Phase

This phase begins when the tongue initiates posterior movement of the bolus. It typically takes less than one second to complete.

Thin liquids	trickle over back of tongue in a premature fashion to valleculae, no penetration or aspiration before the swallow
Thick liquids	able to propel bolus posteriorly with minimal difficulty
Pudding	able to propel bolus posteriorly with minimal difficulty
Cookie	very piecemeal in his approach to propelling the cookie posteriorly, residue on tongue and in sulcus

▶ Pharyngeal Phase

This phase begins with the triggering of the swallow response. Normally the swallowing response is triggered as the bolus contacts the anterior faucial arches. Normal transit time from anterior faucial arches to cricopharyngeal juncture is one second or less.

Thin liquids	decreased closure at entrance to airway causes penetration into upper laryngeal vestibule during swallow w/boluses, trace aspiration after swallow, consistent cough reaction to aspiration
Thick liquids	swallow response timely, occasional minimal penetration into upper laryngeal vestibule but never aspirated, minimal residue in valleculae and pyriform sinuses
Pudding	no penetration/aspiration, adequate laryngeal elevation, vallecular residue after swallow indicating reduced base of tongue pressure, decreased movement of pharyngeal walls
Cookie	no penetration/aspiration, some vallecular residue

A-P View reveals symmetrical residue in valleculae, appears to reveal adequate movement of vocal folds to midline

▶ Pharyngoesophageal Phase

adequate superior and anterior movement of hyolaryngeal complex

▶ Esophageal Phase

evaluated only w/patient in upright position, does not present w/any complaints related to esophageal phase, shows adequate esophageal motility

Effects of Treatment Strategies Attempted Thin liquids — Patient placed in chin-down position. This position eliminates penetration on 3cc and 5cc boluses. At 10cc, patient has some penetration but no aspiration. Honey and pudding — Patient asked to try an effortful swallow to reduce amount of vallecular residue. It appears to help, but patient can only maintain this for several trials.

Summary and Need for Service Patient presents w/moderately impaired oral phase w/difficulty forming a bolus w/masticated materials. Also shows decreased back of tongue control, which results in thin liquids trickling over back of tongue. This can be decreased somewhat w/chin-down position. Patient penetrated and then aspirated thin liquids. Penetration eliminated w/chin down on smaller boluses and aspiration eliminated. Some penetration w/larger liquid boluses w/chin down. Patient has vallecular residue secondary to reduced base of tongue and pharyngeal wall movement. Patient needs intervention if he is to return to a more normal diet and avoid risk of aspiration.

Diagnosis oral and oropharyngeal dysphagia w/audible trace aspiration of thin liquids

Positive Expectation to Begin Service Patient is alert and cooperative and follows basic one-step commands. He wants to have NG tube removed and eat by mouth.

Patient/Caregiver Teaching Results of eval were discussed in detail w/patient. He appeared to understand that some modifications in his eating are necessary. His wife appeared to understand the recommendations as well.

Short-Term Goals

These patient goals reflect disordered physiology related to the pharyngeal phase. For oral phase goals, see *Bedside Dysphagia Evaluation*, page 51, in the book (or page 57 for skilled nursing facilities).

- ✓ Improve back of tongue control to keep food from falling over the back of the tongue and into the airway.
- _____ Decrease delay in initiation of pharyngeal swallow to reduce food falling into the airway during the delay before the swallow.
- _____ Increase closure of the true vocal folds to keep food from falling into the airway during the swallow.
- _____ Improve the rate of laryngeal elevation/timing of closure to keep food from falling into the airway during the swallow.
- _____ Increase laryngeal elevation to reduce residue in the pyriform sinus(es) and reduce risk of the residue falling into the airway after the swallow.
- _____ Increase anterior movement of the hyolaryngeal complex to reduce residue in the pyriform sinuses and reduce the risk of the residue falling into the airway after the swallow.
- _____ Improve laryngeal elevation to reduce penetration into the upper laryngeal vestibule to reduce the risk of the penetrated material being aspirated after the swallow.
- ✓ Improve arytenoid tipping/closure at entrance to the airway to reduce penetration into the upper laryngeal vestibule to reduce the risk of the penetrated material being aspirated after the swallow.
- _____ Improve the rate of laryngeal elevation/timing of closure to reduce penetration into the upper laryngeal vestibule to reduce the risk of the penetrated material being aspirated after the swallow.
- _____ Increase base of tongue movement to reduce vallecular residue (unilateral or bilateral) to reduce the risk of the residue being aspirated after the swallow.
- _____ Increase movement of the pharyngeal walls to reduce vallecular residue to reduce the risk of the residue being aspirated after the swallow.
- _____ Increase laryngeal elevation to reduce vallecular residue to reduce the risk of the residue being aspirated after the swallow.
- ✓ Increase movement of the pharyngeal walls to reduce residue on pharyngeal wall(s) (unilateral or bilateral) to reduce the risk of the residue being aspirated after the swallow.
- ✓ Increase movement of the tongue base to reduce bilateral residue on pharyngeal walls to reduce the risk of the residue being aspirated after the swallow.
- _____ No skilled treatment is indicated.

Comments _____

Recommendations

❑ **NPO**

☒ **PO Diet Recommendations**

Dysphagia Diet

- ❑ Level I (runny pureed)
- ❑ Level II (thick pureed, pudding liquids)
- ☒ Level III (pureed and some soft; liquids: (nectar)/honey/pudding)
- ❑ Level IV (soft cohesive; liquids: nectar/honey/pudding)
- ❑ Level V (mech. soft; regular liquids)

Food Presentation

- ☒ bolus size: ½ tsp.(1 tsp.)
- ☒ cut-out cup
- ❑ cup
- ❑ straw
- ❑ spoon only
- ❑ no straw
- ☒ no syringe

Food Placement

- ☒ left side mouth/visual field
- ❑ right side mouth/visual field
- ❑ Present food from front to increase sensory input.

Positioning

- ❑ sitting up at 90°
- ❑ head turned to _____
- ☒ chin tuck for liquids
- ☒ Stay seated upright 30 minutes after meals.

Status

- ❑ Patient can self-feed without supervision.
- ☒ verbal cues/standby assistance
- ❑ dependent; to be fed by SLP only/staff/family

Presentation of Meds

- ❑ pills/tablets whole followed by liquids/applesauce/ thick liquid
- ☒ pills/tablets must be crushed and mixed with applesauce
- ❑ no liquid meds
- ❑ meds via tube

Nutrition

- ❑ primary nutrition by tube
- ❑ trial PO during therapy only
- ☒ Hold tube feedings 2 hours prior to oral feeding.

Charting/Monitoring

- ❑ weekly heights
- ☒ calorie count
- ❑ monitor temperature _____
- ❑ Listen for vocal quality throughout meal.

Other

- ❑ reflux precautions (See attached.)

thin liquids 5cc only w/SLP, not at meals

_____

c = compensatory techniques to use during meal
f = facilitation/treatment techniques

Selected treatment techniques to begin.
Others can be chosen to achieve short-term goals.

Oral Dysphagia

- ☒ labial closure (c,f)
- ❑ lingual elevation exercises (f)
- ❑ lingual lateralization exercises (f)
- ❑ lingual A-P exercises (f)
- ☒ lingual back of tongue exercises (f)
- ☒ compensations for oral residue (c)
  - ☒ Sweep mouth with tongue.
  - ☒ Sweep mouth with finger.
  - ☒ Apply external pressure to (R)/L cheek.
  - ❑ Rinse mouth/expel after meal.

Decreased Laryngeal Elevation

- ❑ Mendelsohn maneuver/SEMG (c, f)
- ❑ falsetto/laryngeal elevation exercises (f)

Decreased Laryngeal Closure

- ❑ supraglottic (safe) swallow (c, f)
- ☒ super-supraglottic swallow (c,f)
- ❑ laryngeal closure exercises (f)
- ❑ encourage cough (c)

Decreased Base of Tongue Strength/ Posterior Pharyngeal Wall

- ☒ tongue hold (f)
- ❑ tongue base retraction (f)
- ❑ Pretend to gargle. (f)
- ❑ Pretend to yawn. (f)
- ☒ effortful swallow (c,f)

Delayed Swallow

- ❑ thermal-tactile stimulation (c)
- ❑ three-second prep (c, f)
- ❑ neurosensory stimulation (f)
- ❑ slurp swallow (c, f)
- ❑ sour bolus (c, f)
- ❑ cold bolus (c, f)

Decreased Anterior Movement of Hyolaryngeal Complex

- ❑ head lift (f)

Misc. Compensation for Oral/Pharyngeal Dysphagia

- ☒ Alternate (thick) liquid swallow every bite/PRN. (c)
- ❑ Discourage liquid wash between bites. (c)
- ☒ multiple swallows (Patient does/does not need cues.) (c)
- ❑ Empty mouth before next bite. (c)
- ❑ Cue patient to slow down. (c)

Re-evaluation

- ❑ if condition changes
- ❑ before discontinuing any of these recommendations
- ☒ can advance food only at bedside
- ❑ can advance foods and liquids at bedside
- ❑ other _____

_____

Speech-Language Patholgist

Modified Barium Swallow Report — Sample 2

Patient Ethel Date

Birth Date Age 78 Patient #

Referral Physician

Patient's Address Phone

History Referred for MBS by SLP at Happy Hills SNF where patient is a recent admit. Patient lived at home w/a caregiver but had lost 15 lbs. over past 6 months on a regular diet. Diagnosed w/Alzheimer's, insulin-dependent diabetes mellitus and congestive heart failure. She was reportedly eating less than 1/4 of the food presented to her at home. On admit, SLP eval revealed a delay in oral phase of up to 15 secs., which could be reduced w/extra stimulation in oral cavity. Patient placed on pureed diet and honey-thick liquids.

Why Study Is Needed Patient shows coughing w/thin liquids and is considered at risk for aspiration.

Procedure

The patient was seen for a modified barium swallow/videofluoroscopic evaluation with radiology and speech-language pathology. Four consistencies (thin liquids, honey-thick, pudding, cookie) were presented for analyses of four / (five) phases of the swallow.

▶ Oral Phase

This phase involves oral movements to prepare the food for swallowing.

Thin liquids	holds bolus in oral phase for up to 10-15 secs. despite repeated verbal cues to swallow
Thick liquids	holds bolus in oral phase for up to 10-15 secs. despite repeated verbal cues to swallow
Pudding	holds bolus in oral phase for up to 10-15 secs. despite repeated verbal cues to swallow
Cookie	chews bolus for up to 60 secs., bolus must then be removed from oral cavity

▶ Oropharyngeal Phase

This phase begins when the tongue initiates posterior movement of the bolus. It typically takes less than one second to complete.

Thin liquids	When patient finally initiates posterior movement, this phase is functional.
Thick liquids	When patient finally initiates posterior movement, this phase is functional.
Pudding	When patient finally initiates posterior movement, this phase is functional.
Cookie	not observed

Pharyngeal Phase

This phase begins with the triggering of the swallow response. Normally the swallowing response is triggered as the bolus contacts the anterior faucial arches. Normal transit time from anterior faucial arches to cricopharyngeal juncture is one second or less.

Thin liquids: graduated sizes: 3 and 5cc w/spoon, 10cc w/cup, uncontrolled amounts w/cup and straw; minimal penetration into upper laryngeal vestibule w/large boluses w/straw; coughs w/penetration; no aspiration

Thick liquids: functional (patient in reclined position for thin/thick liquid presentations; aspiration occurred before swallow)

Pudding: functional

Cookie: not observed

A-P View no residue and apparently adequate movements of vocal folds to midline

Pharyngoesophageal Phase

no problems noted

Esophageal Phase

This phase was evaluated in sidelying and supine. Radiology reports the presence of dismotility and gastroesophageal reflux, which could account for some of the patient's coughing.

Effects of Treatment Strategies Attempted Added pressure was provided in the oral cavity via a spoon on the tongue, and it helped improve the patient's ability to move the bolus posteriorly. If the patient still didn't swallow, an empty spoon was touched to her lips. This seemed to initiate posterior movement.

Summary and Need for Service Patient presents w/moderate oral dysphagia typically seen in patients w/Alzheimer's. Holds bolus in oral cavity for up to 15 secs. but can reduce the time when pressure added to the tongue and verbal cues provided. Chews masticated foods for up to 1 min. and never initiates voluntary phase. Foods must then be removed from oral cavity. It was reported that patient is sometimes fed in a reclined position, so presented thin and honey-thick liquids in that position. Patient begins to aspirate boluses before swallow in this position. Patient should only need diet changes, supervision during meals, and a positioning modification of 90° upright, but not skilled service from an SLP. Control bolus sizes w/thin liquids; honey-thick liquids can be taken in uncontrolled amounts.

Diagnosis moderate oral dysphagia, mild pharyngeal dysphagia

Positive Expectation to Begin Service Patient is alert and cooperative and should work well with caregivers who are modifying her diet.

Patient/Caregiver Teaching Study observed by a Nursing Assistant from the facility. Results discussed w/her and w/patient to the extent that patient could understand. Results also discussed by phone w/SLP from the facility.

Short-Term Goals

These patient goals reflect disordered physiology related to the pharyngeal phase. For oral phase goals, see *Bedside Dysphagia Evaluation*, page 51, in the book (or page 57 for skilled nursing facilities).

_____ Improve back of tongue control to keep food from falling over the back of the tongue and into the airway.

_____ Decrease delay in initiation of pharyngeal swallow to reduce food falling into the airway during the delay before the swallow.

_____ Increase closure of the true vocal folds to keep food from falling into the airway during the swallow.

_____ Improve the rate of laryngeal elevation/timing of closure to keep food from falling into the airway during the swallow.

_____ Increase laryngeal elevation to reduce residue in the pyriform sinus(es) and reduce risk of the residue falling into the airway after the swallow.

_____ Increase anterior movement of the hyolaryngeal complex to reduce residue in the pyriform sinuses and reduce the risk of the residue falling into the airway after the swallow.

_____ Improve laryngeal elevation to reduce penetration into the upper laryngeal vestibule to reduce the risk of the penetrated material being aspirated after the swallow.

_____ Improve arytenoid tipping/closure at entrance to the airway to reduce penetration into the upper laryngeal vestibule to reduce the risk of the penetrated material being aspirated after the swallow.

_____ Improve the rate of laryngeal elevation/timing of closure to reduce penetration into the upper laryngeal vestibule to reduce the risk of the penetrated material being aspirated after the swallow.

_____ Increase base of tongue movement to reduce vallecular residue (unilateral or bilateral) to reduce the risk of the residue being aspirated after the swallow.

_____ Increase movement of the pharyngeal walls to reduce vallecular residue to reduce the risk of the residue being aspirated after the swallow.

_____ Increase laryngeal elevation to reduce vallecular residue to reduce the risk of the residue being aspirated after the swallow.

_____ Increase movement of the pharyngeal walls to reduce residue on pharyngeal wall(s) (unilateral or bilateral) to reduce the risk of the residue being aspirated after the swallow.

_____ Increase movement of the tongue base to reduce bilateral residue on pharyngeal walls to reduce the risk of the residue being aspirated after the swallow.

__✓__ No skilled treatment is indicated.

Comments _____

Recommendations

❑ **NPO**

❑ **PO Diet Recommendations**

Dysphagia Diet

- ❑ Level I (runny pureed)
- ☒ Level II (thick pureed, ~~pudding~~ thin liquids)
- ❑ Level III (pureed and some soft; liquids: nectar/honey/pudding)
- ❑ Level IV (soft cohesive; liquids: nectar/honey/pudding)
- ❑ Level V (mech. soft; regular liquids)

Food Presentation

- ☒ bolus size: ½ tsp. (1 tsp.)
- ❑ cut-out cup
- ☒ cup
- ❑ straw
- ❑ spoon only
- ☒ no straw
- ☒ no syringe

Food Placement

- ❑ left side mouth/visual field
- ❑ right side mouth/visual field
- ☒ Present food from front to increase sensory input.

Positioning

- ☒ sitting up at 90°
- ❑ head turned to _____
- ❑ chin tuck _____
- ❑ Stay seated upright ___ minutes after meals.

Status

- ❑ Patient can self-feed without supervision.
- ❑ verbal cues/standby assistance
- ☒ dependent; to be fed by SLP only/staff/family

Presentation of Meds

- ❑ pills/tablets whole followed by liquids/applesauce/ thick liquid
- ☒ pills/tablets must be crushed and mixed with applesauce
- ❑ no liquid meds
- ❑ meds via tube

Nutrition

- ❑ primary nutrition by tube
- ❑ trial PO during therapy only
- ❑ Hold tube feedings _____ prior to oral feeding.

Charting/Monitoring

- ☒ weekly heights
- ❑ calorie count
- ❑ monitor temperature _____
- ❑ Listen for vocal quality throughout meal.

Other

- ❑ reflux precautions (See attached.)

added pressure to tongue or touch lips w/empty spoon to cue swallow; verbal cues to swallow

c = compensatory techniques to use during meal
f = facilitation/treatment techniques

Selected treatment techniques to begin.
Others can be chosen to achieve short-term goals.

Oral Dysphagia

- ❑ labial closure (c, f)
- ❑ lingual elevation exercises (f)
- ❑ lingual lateralization exercises (f)
- ❑ lingual A-P exercises (f)
- ❑ lingual back of tongue exercises (f)
- ❑ compensations for oral residue (c)
  - ❑ Sweep mouth with tongue.
  - ❑ Sweep mouth with finger.
  - ❑ Apply external pressure to R/L cheek.
  - ❑ Rinse mouth/expel after meal.

Decreased Laryngeal Elevation

- ❑ Mendelsohn maneuver/SEMG (c, f)
- ❑ falsetto/laryngeal elevation exercises (f)

Decreased Laryngeal Closure

- ❑ supraglottic (safe) swallow (c, f)
- ❑ super-supraglottic swallow (c, f)
- ❑ laryngeal closure exercises (f)
- ❑ encourage cough (c)

Decreased Base of Tongue Strength/ Posterior Pharyngeal Wall

- ❑ tongue hold (f)
- ❑ tongue base retraction (f)
- ❑ Pretend to gargle. (f)
- ❑ Pretend to yawn. (f)
- ❑ effortful swallow (c, f)

Delayed Swallow

- ❑ thermal-tactile stimulation (c)
- ❑ three-second prep (c, f)
- ❑ neurosensory stimulation (f)
- ❑ slurp swallow (c, f)
- ❑ sour bolus (c, f)
- ❑ cold bolus (c, f)

Decreased Anterior Movement of Hyolaryngeal Complex

- ❑ head lift (f)

Misc. Compensation for Oral/Pharyngeal Dysphagia

- ❑ Alternate (thick) liquid swallow every bite/PRN. (c)
- ❑ Discourage liquid wash between bites. (c)
- ❑ multiple swallows (Patient does/does not need cues.) (c)
- ❑ Empty mouth before next bite. (c)
- ❑ Cue patient to slow down. (c)

Re-evaluation

- ☒ if condition changes
- ❑ before discontinuing any of these recommendations
- ❑ can advance food only at bedside
- ❑ can advance foods and liquids at bedside
- ❑ other _____

_____

Speech-Language Patholgist

Outpatient Instrumental Exam Referral Form

Patient _____ Birth Date _____ Age _____

Address (if patient lives at home) _____

Patient's Phone _____ Physician _____

Physician Address _____

Facility _____

Facility Address _____

Facility Phone _____

Person Making Referral _____ Relationship to Patient _____

Medical History _____

_____

Code Status _____

Tracheostomy type _____ cuffed / uncuffed
fed with cuff up / down If cuff is down, is speaking valve used? yes / no

Medications _____

_____

Presence/History of Pneumonia/Aspiration _____

_____

Present Complaint _____

_____

Esophageal Symptoms _____

Onset of Dysphagia _____

Previous Instrumental Exam or Bedside Evaluation Results _____

_____

Current Diet/Intake _____

_____

Independent Sitting Balance/Transfers _____

_____

Referral Information taken by _____ Date _____

Suctioning Competency Validation Tool

Name _____ Unit _____ SLP _____

Objective: To provide the patient with a clear airway before, during and after swallowing evaluations and treatment, as well as during the use of Passy-Muir Valves

Critical Behaviors	Successfully Met			
	Yes	Date/Initials	On the Job	Simulation
1. Collect necessary equipment to perform suctioning.				
2. Wash hands.				
3. Position the patient appropriately.				
4. Turn on suction equipment; set vacuum regulator to correct negative pressure.				
5. Explain purpose of procedure.				
6. Put on non-sterile gloves.				
7. Remove yaunker from the suction unit.				
8. Open sterile catheter package on clean surface.				
9. Set up sterile solution container on sterile field; fill with sterile water.				
10. Place sterile gloves over non-sterile gloves.				
11. Connect vacuum tubing from suction unit to catheter.				
12. Lubricate catheter by dipping it into sterile water, then grasp air entrainment adapter with one hand.				
13. Hyperoxygenate patient with 100% O_2 for 1 minute. If not on vent, instruct patient to take deep breaths.				
14. Expose the airway.				
15. Hold catheter by connecting tubing; turn catheter until natural curve points in direction of bronchus to be suctioned.				
16. Insert catheter into tracheobronchial tree without application of suction until resistance met.				
17. Instruct patient to cough to allow catheter to pass into trachea.				
18. Apply suction while rotating and withdrawing catheter.				
19. Hyperoxygenate patient before repeating.				
20. Allow patient to rest.				
21. If cuff is inflated, deflate and follow procedures 14-20 again.				
22. Monitor patient's respiratory status.				
23. Perform oral-pharyngeal suctioning following lower airway suctioning.				
24. Discard gloves and suctioning supplies.				
25. Wash hands.				
26. Reassess patient's respiratory system for expected and unexpected outcomes.				
27. Document procedure in patient's record.				

Comments _____

Validation signature documents direct observation of criteria in accordance with hospital policy and procedure.

Initials _____ Signature/Title _____ Initials _____ Signature/Title _____

Initials _____ Signature/Title _____ Initials _____ Signature/Title _____

Swallowing Questionnaire to Provide Additional History

Patient _____ SLP _____

Date _____

1. Do you have any problems with swallowing? ❑ yes ❑ no

If so, when did the problem start? _____

_____

Briefly describe the difficulty. _____

_____

2. Did the start of your swallowing problem relate to other medical problems you have? ❑ yes ❑ no

If so, please describe. _____

_____

3. When you eat or drink, do you have episodes of coughing? ❑ yes ❑ no

When you eat or drink, do you have episodes of choking? ❑ yes ❑ no

4. Do you wear dentures when you eat? ❑ yes ❑ no

5. Does food or drink ever "go down the wrong way"? ❑ yes ❑ no

6. Does your food generally require special preparation before you can eat it? ❑ yes ❑ no

If so, please describe. _____

_____

7. Do you avoid certain foods because they are difficult to swallow? ❑ yes ❑ no

If so, please list examples. _____

8. Do you find food in your mouth after you swallow? ❑ yes ❑ no

9. Do you have difficulty keeping food or drink in your mouth? ❑ yes ❑ no

10. Do liquids ever come back through your nose when you swallow them? ❑ yes ❑ no

11. Do you ever feel that food gets "stuck" in your throat? ❑ yes ❑ no

If so, describe where it feels stuck. _____

12. Do you regularly wake up at night coughing? ❑ yes ❑ no

13. Do you often wake up with a bad / sour taste in your mouth? ❑ yes ❑ no

14. Is your swallowing problem intermittent / constant? (Circle one.)

15. Has your swallowing problem changed over time? ❑ yes ❑ no

If so, please describe. _____

_____

16. Are there any factors that make your swallowing problem worse? ❑ yes ❑ no

If so, please describe. _____

_____

17. Do you have more difficulty swallowing when in any certain position? ❑ yes ❑ no

If so, please describe. _____

_____

18. Have you had pneumonia recently? ❑ yes ❑ no

If so, when? _____

_____

19. Has your voice changed in the past year? ❑ yes ❑ no
If so, check all that apply.

❑ hoarse

❑ whispery/breathy

❑ quieter

❑ need to clear your throat more

❑ other _____

20. Did the changes in your voice start gradually / suddenly? (Circle one.)

21. What was the date of onset of your voice change? _____

22. Has your speech changed in the past year? ❑ yes ❑ no
If so, check all that apply.

❑ slurring

❑ talking through your nose

❑ other _____

23. Did the changes in your speech start gradually / suddenly? (Circle one.)

24. What was the date of onset of your speech change? _____

25. Have you had any previous swallowing or throat problems? ❑ yes ❑ no

If so, please describe. _____

_____

Resources

AliMed, Inc.
297 High St.
Dedham, MA 02026
800-225-2610
Fax: 800-437-2966
http://www.alimed.com
✓ variety of educational materials for SLPs and patients

ASHA
10801 Rockville Pike
Rockville, MD 20852
http://www.asha.org
✓ ASHA NOMS

Bernard Food Industries, Inc.
PO Box 1497
Evanston, IL 60204-1497
800-323-3663
Fax: 800-962-1546
http://www.bernardfoods.com
✓ variety of prepared food products

Bruce Medical Supply
411 Waverly Oaks Rd., Ste. 154
Waltham, MA 02452
800-225-8446
Fax: 781-894-9519
http://www.brucemedical.com
✓ variety of food thickeners
✓ Menu Magic

Hormel Health Labs
3000 Tremont Rd.
Savannah, GA 31405
800-866-7757
http://www.hormelhealthlabs.com
✓ prepared food products

Northern Speech Services & National Rehabilitation Services, Inc.
PO Box 1247
Gaylord, MI 49734
http://www.nss-nrs.com
888-337-3866
Fax: 888-696-9655
✓ variety of educational materials on dysphagia

Novartis Medical Nutrition
Consumer & Product Support
445 State St.
Fremont, MI 49412
800-333-3785
http://www.novartisnutrition.com
✓ variety of food thickeners

Posey Company
5635 Peck Road
Arcadia, CA 91006-0020
800-447-6739
Fax: 800-767-3933
http://www.posey.com
✓ manometer

Precision Foods, Inc.
11457 Olde Cabin Rd., Ste. 100
St. Louis, MO 63141
800-442-5242
http://www.precisionfoods.com
✓ Diafoods Thick-It
✓ modified food products

PRO-ED, Inc.
8700 Shoal Creek Blvd.
Austin, TX 78757-6897
http://www.proedinc.com
800-897-3202
Fax: 800-397-7633
✓ variety of educational materials

Reliant Medical Products
500 Beacon Pkwy. W.
Birmingham, AL 35209
http://www.reliantmp.com
800-757-7579
Fax: 256-586-1899

Smith & Nephew, Inc. — Rehabilitation Division
One Quality Dr.
PO Box 1005
Germantown, WI 53022-8205
800-558-8633
Fax: 800-545-7758
http://www.easy-living.com
✓ Rolyan Millicup

STERIS Corp.
5960 Heisley Rd.,
Mentor, OH 44060-1834
888-8STERIS (878-3747)
✓ modified chairs

Triad Group
19355 Janacek Ct.
Brookfield, WI 53045
800-288-1288
http://www.triad-group.net
✓ lemon glycerine swabs

Vess Chairs, Inc.
9036 W. Schlinger Ave.
West Allis, WI 53214
414-476-2488
Fax: 414-476-3493
✓ Vess chairs

References

Evidence-Based Practice

American Speech-Language-Hearing Association. (2002). *Knowledge and skills needed by speech-language pathologists providing services to individuals with swallowing and/or feeding disorders* [Knowledge and Skills]. Available from http://www.asha.org/policy

American Speech-Language-Hearing Association. (2004). *Evidence-based practice in communication disorders: An introduction* [Technical Report]. Available from http://www.asha.org/policy

American Speech-Language-Hearing Association. (2004). *Speech-language pathologists training and supervising other professionals in the delivery of services to individuals with swallowing and feeding disorders* [Technical Report]. Available from http://www.asha.org/policy

Guyatt, G.H., Haynes, R.B., Jaeschke, R.Z., Cook, D.J., Green, L., Naylor, C.D., Wilson, M.C., & Richardson, W.S., for the Evidence-Based Medicine Working Group. (2000, September). Users' guides to the medical literature: XXV. Evidenced-based medicine: Principles for applying the users' guides to patient care. *JAMA, 284*, 1290-1296.

Sackett, D.L., Rosenberg, W.M.C., Gray, J.A.M., Haynes, R.B., & Richardson, W.S. (1996). Evidence-based medicine: What it is and what it isn't: It's about integrating individual clinical expertise and the best external evidence. *British Medical Journal, 312*, 71-72.

Sackett, D.L., Straus, S.E., Richardson, W.S., Rosenberg, W., & Haynes, R.B. (2000). *Evidence-based medicine: How to practice and teach EBM* (2nd ed.). New York: Churchill Livingstone.

Chapter 1

Altman, K.W., Simpson, C.B., Amin, M.R., Abaza, M., Balkisson, R., & Casiano, R.R. (2002). Cough and paradoxical vocal fold motion. *Orolaryngology Head and Neck Surgery, 127*, 501-511.

Baker, W.L., & Smith, S.L. (1984). Pulmonary aspiration and tube feedings: Nursing implications. *Focus on Critical Care, 11*(2), 25-27.

Buchholz, D.W. (1995). Cricopharyngeal myotomy may be effective treatment for selected patients with neurogenic otopharyngeal dysphagia. *Dysphagia, 10*, 255-258.

Contencin, P., & Narcy, P. (1991). Nasopharyngeal pH monitoring in infants and children with chronic rhinopharyngitis. *International Journal of Pediatric Otorhinolaryngology, 22*, 249-256.

Daniels, S.K., Brailey, K., Priestly, D.H., Herrington, L.R., Weisberg, L.A., & Foundas, A.L. (1998). Aspiration in patients with acute stroke. *Archives of Physical Medicine and Rehabilitation, 79*, 14-19.

Daniels, S.K., & Foundas, A.L. (1999). Association of lesion with risk of aspiration in acute stroke patients. *Journal of Neuroimaging, 9*, 91-98.

Dent, J., Dodds, W.J., Friedman, R.H., Sekiguchi, T., Hogan, W.J., Arndorfer, R.D., & Petrie, D.J. (1980). Mechanism of gastroesophageal reflux in recumbent asymptomatic human subjects. *Journal of Clinical Investigation, 65*, 256-267.

DePaso, W.J. (1991). Aspiration pneumonia. *Clinics in Chest Medicine, 12*(2), 269-284.

DeVita, M.A., & Spierer-Rundback, L. (1990). Swallowing disorders in patients with prolonged orotracheal intubation or tracheostomy tubes. *Critical Care Medicine, 18*(12), 1328-1330.

Easterling, C.S. (2003, June). Getting acquainted with the esophagus. *Perspectives on Swallowing and Swallowing Disorders (Dysphagia), 12*(2), 3-7.

Chapter 1, *continued*

Eisele, D.W., Koch, D.G, Tarazi, A.E., & Jones, B. (1991). Aspiration from delayed radiation fibrosis of the neck. *Dysphagia, 6*(2), 120-122.

Ergun, G.A., & Miskovitz, P.F. (1992). Aging in the esophagus: Common pathologic conditions and their effect upon swallowing in the geriatric population. *Dysphagia, 7*, 58-63.

Feinberg, M. (1997). The effects of medications on swallowing. *Dysphagia: A continuum of care*. Gaithersburg, MD: Aspen Publishers, Inc.

Feussner, H., Kauer, W., & Siewert, J.R. (1993). The place of esophageal manometry in the diagnosis of dysphagia. *Dysphagia, 8*, 98-104.

Fonda, D., Schwarz, J., & Clinnick, S. (1995). Parkinson medication one hour before meals improves symptomatic swallowing: A case study. *Dysphagia, 10*, 165-166.

Freije, J.E., Beatty, T.W., Campbell, B.H., Woodson, B.T., Schultz, C.J., & Toohill, R.J. (1996). Carcinoma of the larynx in patients with gasteoesophageal reflux. *American Journal of Otolaryngology, 17*, 386-390.

Galindo-Ciocon, D. (1993). Tube feeding: Complications among the elderly. *Journal of Gerontological Nursing, 19*, 17-21.

Halstead, L.A. (1999). Role of gastroesophageal reflux in pediatric upper airway disorders. *Otolaryngology Head and Neck Surgery, 120(2)*, 208-214.

Horner, J., Massy, W., & Brazer, S.R. (1990). Aspiration in bilateral stroke patients. *Neurology, 40*, 1686-1688.

Johanson, J.F. (2000). Epidemiology of esophageal and supraesophageal reflux injuries. *American Journal of Medicine, 108*(4A), 99S-103S.

Kim, H., Chung, C.S., Lee, K.H., & Robbins, J. (2000). Aspiration subsequent to a pure medullary infarction: Lesion sites, clinical variables, and outcome. *Archives of Neurology, 57*, 478-483.

Lazarus, C., Murphy, J., & Culpepper, L. (1990). Aspiration associated with long-term gastric versus jejunal feeding: A critical analysis of the literature. *Archives of Physical Medicine and Rehabilitation, 71*, 46-53.

Lazarus, C.L., Logemann, J.A., Pauloski, B.R., Colangelo, L.A., Kahrilas, P.J., Mittal, B.B., et al. (1996). Swallowing disorders in head and neck cancer patients treated with radiotherapy and adjuvant chemotherapy. *Laryngoscope, 106*, 1157-1166.

Little, A.G. (1996). Nissen fundoplication for gastroesophageal reflux disease: How does Nissen fundoplication prevent reflux? *Diseases of the Esophagus*, 247-250.

Logemann, J.A. (1998). *Evaluation and treatment of swallowing disorders*. Austin, TX: Pro-Ed.

Martyn-Nemeth, P., & Fitzgerald, K. (1992). Clinical considerations: Tube feeding in the elderly: *Journal of Gerontological Nursing, 18*(2), 30-36.

Meyer, G.W., Austin, R.M., Brady, C.E., & Castell, D.O. (1986). Muscle anatomy of the human esophagus. *Journal of Clinical Gastroenterology, 8*, 131-134.

Meyer, G.W., Gerhardt, D.C., & Castell, D.O. (1980). Human esophageal response to rapid swallowing: Muscle refractory period or neural inhibition? *American Journal of Physiology, 241*, G129-G136.

Mitchell, C., & Parry-Billings, K. (1992). Gastroesophageal reflux disease. *Nursing Standard, 6*(24), 25-28.

Chapter 1, *continued*

Mold, J.W., Reed, L.E., Davis, A.B., Allen, M.L., Decktor, D.L., & Robinson, M. (1991). Prevalence of gastroesophageal reflux in elderly patients in a primary care setting. *The American Journal of Gastroenterology, 86*(8), 965-970.

Nilsson, H. (1997). Further comments on swallowing in Parkinson's disease. *Dysphagia, 12*, 98-99.

Park, R.H.R., Allison, M.C., Lang, J., Spence, E., Morris, A.J., Danesh, B.J.Z., et al. (1992). Randomised comparison of percutaneous endoscopic gastrostomy and nasogastric tube feeding in patients with persisting neurological dysphagia. *British Medical Journal, 304,* 1406-1409.

Penzel, T., Becker, H.F., Brandenburg, U., Labunski, T., Pankow, W., & Peter, J.H. (1999). Arousal in patients with gastro-esophageal reflux and sleep apnea. *European Respiratory Journal, 14*, 1266-1270.

Robbins, J., & Levine, R. (1993). Swallowing after lateral medullary syndrome plus. *Clinics in Communication Disorders, 3*, 45-55.

Robbins, J., Levine, R.L., Maser, A., Rosenbek, J.C., & Kempster, G.B. (1993). Swallowing after unilateral stroke of the cerebral cortex. *Archives of Physical Medicine and Rehabilitation, 74*(12), 1295-1300.

Schultz, A., Niemtzow, P., Jacobs, S.R., & Naso, F. (1979). Dysphagia associated with cricopharyngeal dysfunction. *Archives of Physical Medicine and Rehabilitation, 60*, 381-384.

Shaker, R. (2003, June). Esophageal dysphagia. *Perspectives on Swallowing and Swallowing Disorders (Dysphagia), 12*(2), 3-7.

Shaker, R., Milbrath, M., Ren, J., Toohill, R., Hogan, W.J., Li, Q., et al. (1995). Esophagopharyngeal distribution of refluxed gastric acid in patients with reflux laryngitis. *Gastroenterology, 109*, 1575-1582.

Smithard, D.G., O'Neill, P.A., Park, C., Morris, J., Wyatt, R., England, R., et al. (1996). Complications and outcome after acute stroke. *Stroke, 27*, 1200-1204.

Spray, F., Zuidema, G., & Cameron, J. (1986). Aspiration pneumonia: Incidence of aspiration with endotracheal tubes. *The American Journal of Surgery, 131*, 701-703.

Sullivan, P.A., & Guilford, A.M. (1999). *Swallowing intervention in oncology*. San Diego: Singular Publishing Group, Inc.

Triadafilopoulos, G., Hallstone, A., Nelson-Abbot, H., & Bedinger, K. (1992). Oropharyngeal and esophageal interrelationships in patients with nonobstructive dysphagia. *Digestive Diseases and Sciences, 37*(40), 551-557.

Weiner, G.J., Koufman, J.A., Wu, W., Cooper, J.B., Richter, J.E., & Castell, D.O. (1989). Chronic hoarseness secondary to gastroesophageal reflux disease: Documentation with 24-pH ambulatory pH monitoring. *American Journal of Gastroenerology, 84*, 152-1508.

Wetmore, R.F. (1993). Effects of acid on the larynx of the maturing rabbit and their possible significance to the sudden infant death syndrome. *Laryngoscope, 103*(11, Pt. 1), 1242-1254.

Chapter 2

American Medical Association (AMA). (2006). *Physician's current procedural terminology* (4th ed.). Chicago: Author.

American Speech-Language-Hearing Association, Healthcare Financing Division, *1995 Fact Sheet Medicare Developments*.

American Speech-Language-Hearing Association, Healthcare Financing Division, *1995 Fact Sheet New Revised CPT Codes for 1996*.

ASHA Web site: http://www.asha.org

Chapter 2, *continued*

Brady Wagner, L.C. (2005, March). Ethical and legal implications of the Frazier free water protocol. *Perspectives on Swallowing and Swallowing Disorders (Dysphagia), 14*(1), 21-24.

Department of Health and Human Services (NCHS Publication No. (PHS) 80-1260). *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)*. Washington, D.C.

Halstead, L.A. (1999). Role of gastroesophageal reflux in pediatric upper airway disorders. *Otolaryngology Head and Neck Surgery, 120,* 208-214.

Hamilos, D.L. (1995). Gastroesophageal reflux and sinusitis in asthma. *Clinics in Chest Medicine, 16*(4), 683-697.

Henderson, C. (1991). Safe and effective tube feeding of bedridden elderly. *Geriatrics, 46*(8), 56-66.

Hendrix, T. (1993). Art and science of history taking in the patient with difficulty with swallowing. *Dysphagia, 8*, 69-73.

Horner, J., Massy, W., & Brazer, S.R. (1990). Aspiration in bilateral stroke patients. *Neurology, 40*, 1686-1688.

Johanson, J.F. (2000). Epidemiology of esophageal and supraesophageal reflux injuries. *American Journal of Medicine, 108*(4A), 99S-103S.

Kander, M., & White, S. (1994). *Medicare handbook for speech-language pathology and audiology services*. Rockville, MD: American Speech-Language-Hearing Association.

Kayser-Jones, J. (1990). The use of nasogastric feeding tubes in nursing homes: Patient, family and health care perspectives. *The Gerontologist, 30*(4), 469-479.

Kikendall, J.W., Friedman, A.C., & Oyewole, M.A. (1983). Pill-induced esophageal strictures: Case reports and review of the medical literature. *Digestive Diseases and Sciences, 28*(174), 684-685.

Kim, H., Chung, C.S., Lee, K.H., & Robbins, J. (2000). Aspiration subsequent to a pure medullary infarction: Lesion sites, clinical variables, and outcome. *Archives of Neurology, 57*, 478-483.

Konstantinides, N., & Shronts, E. (1983). Tube feeding: Managing the basics. *American Journal of Nursing, 92*, 46-53.

Koufman, J.A. (1991). The otolaryngologic manifestations of gastroesphageal reflux disease (GERD): A clinical investigation of 225 patients using ambulatory 24-hour pH monitoring and an experimental investigation of the role of acid and pepsin in the development of laryngeal injury. *Laryngoscope, 101*(4), Suppl. 53.

Langmore, S. (1991). Managing the complications of aspiration in dysphagic adults. *Seminars in Speech and Language: Swallowing Disorders, 12*(3), 199-207.

McCarty, J., & White, S (2007). *Health plan coding and claims guide*. Rockville, MD: American Speech-Language-Hearing Association.

Panther, K. (2005, March). The Frazier free water protocol. *Perspectives on Swallowing and Swallowing Disorders (Dysphagia), 14*(1), 4-9.

Rees, T., White, S., & Swigert, N.B. (2006, September). Advocating for full valuation of our work. *The ASHA Leader, 22*, 3.

Swigert, N.B. (2004, October). Federal bills would recognize SLPs as medicare providers. *The ASHA Leader, 16*, 1.

Swigert, N.B. (2007, March). Advocacy continues for CPT code changes: Report from the healthcare economics committee. *The ASHA Leader, 12*(3), 3 and 22.

Chapter 3

Agency for Healthcare Research and Quality. (1999, March). *Research on swallowing problems in the elderly highlights potential for preventing pneumonia in stroke patients*. Rockville, MD: Author.

Agency for Healthcare Research and Quality. (1999, November). *An evidence report on the diagnosis and treatment of dysphagia/swallowing disorders in the elderly*. Rockville, MD: Author.

American Speech-Language-Hearing Association. (2000). *Clinical indicators for instrumental assessment of dysphagia* [Guidelines]. Available from http://www.asha.org/policy

ASHA Special Interest Division 13. (2006). Frequently asked questions on swallowing screening: Special emphasis on patients with stroke. *Swallowing and Swallowing Disorders*. Available from http://www.asha.org/NR/rdonlyres/BBDD4A46-EE96-4821-A710-D19D903E389F/0/DysphagiaFAQ.pdf

Cichero, J.A., & Murdoch, B.E. (1998). The physiologic cause of swallowing sounds: Answers from heart sounds and vocal tract accoustics. *Dysphagia, 13*, 39-52.

Cichero, J.A., & Murdoch, B.E. (2002). Detection of swallowing sounds: Methodology revisited. *Dysphagia, 17*, 40-49.

Colodny, N. (2000). Comparison of dysphagics and nondysphagics on pulse oximetry during oral feeding. *Dysphagia, 15*, 68-73.

Daniels, S.K., Brailey, K., Priestly, D.H., Herrington, L.R., Weisberg, L.A., & Foundas, A.L. (1998). Aspiration in patients with acute stroke. *Archives of Physical Medicine and Rehabilitation, 79*, 14-19.

Daniels, S.K., McAdam, C.P., Brailey, K., Foundas, A.L. (1997). Clinical assessment of swallowing and prediction of dysphagia severity. *American Journal of Speech-Language Pathology, 6*, 17-24.

Davies, A.E., Kidd, D., Stone, S.P., & MacMahon-Lancet, J. (1995). Pharyngeal sensation and gag reflex in healthy subjects. *The Lancet, 345*, 487-488.

DeJong, R. (1967). *The Neurologic Examination*. New York: Hoeber Medical Division, Harper & Row.

DePippo, K.L., Holas, M.A., & Reding, M.J. (1992). Validation of the 3-oz. water swallow test for aspiration following stroke. *Archives of Neurology, 49*, 1259-1261.

Emick-Herring, B., & Wood, P. (1990). A team approach to neurologically-based swallowing disorders. *Rehabilitation Nursing, 15*(3), 126-132.

Garon, B.R., Engle, M., & Ormiston, C. (1995). Reliability of the 3-oz. water swallow test utilizing cough reflex as sole indicator of aspiration. *Journal of Neurological Rehabilitation, 9*(3), 139-143.

Gottlieb, D., Kipnis, M., Sister, E., Vardi, Y., & Brill, S. (1996). Validation of the 50ml drinking test for evaluation of post-stroke dysphagia. *Disability and Rehabilitation, 18*(10), 529-532.

Hamlet, S., Penney, D.G., & Formolo, J. (1994). Stethoscope acoustics and cervical auscultation of swallowing. *Dysphagia, 9*, 63-68.

Hamlet, S.L., Nelson, R.J., & Patterson, R.L. (1990). Interpreting the sounds of swallowing: Fluid flow through the cricopharyngeus. *Annals of Otology, Rhinology, and Laryngology*, 749-752.

Hamlet, S.L., Patterson, R.L., Fleming, S.M., & Jones, L.A. (1992). Sounds of swallowing following total laryngectomy. *Dysphagia, 7*, 160-165.

Hiiemae, K.M, & Palmer, J.B. (1999). Food transport and bolus formation during complete feeding sequences on foods of different initial consistency. *Dysphagia, 14*(1), 31-42.

Chapter 3, *continued*

Hunter, P.C., Crameri, J., Austin, S., Woodward, M.C., & Hughes, A.J. (1997). Response of Parkinsonian swallowing dysfunction to dopaminergic stimulation. *Journal of Neurology, Neurosurgery and Psychiatry, 63*(5), 579-583.

Hutchins, B., & Giancarlo, J. (1991). Developing a comprehensive dysphagia program. *Seminars in Speech and Language: Swallowing Disorders, 12*(3), 209-215.

Kennedy, G. (1992). The role of the speech-language therapist in the assessment and management of dysphagia in neurologically-impaired patients. *Post Graduate Medical Journal, 68*, 545-548.

Leder, S.B. (1996). Gag reflex and dysphagia. *Head and Neck, 18*(2), 138-141.

Leder, S.B. (1997). Videofluoroscopic evaluation of aspiration with visual examination of the gag reflex and velar movement. *Dysphagia, 12*, 21-23.

Leder, S.B. (2000). Use of arterial oxygen saturation, heart rate, and blood pressure as indirect objective physiologic markers to predict aspiration. *Dysphagia, 15*, 201-205.

Leder, S.B., & Espinosa, J.F. (2002). Aspiration risk after acute stroke: Comparison of clinical examination and fiberoptic endoscopic evaluation of swallowing. *Dysphagia, 17*, 214-218.

Logemann, J.A. (1998). *Evaluation and treatment of swallowing disorders*. Austin, TX: Pro-Ed.

Logemann, J.A., Rademaker, A.W., Pauloski, B.R., & Kahrilas, P.J. (1994). Effects of postural change on aspiration in head and neck surgical patients. *Otolaryngeal Head and Neck Surgery, 110*, 222-227.

Logemann, J.A., Veis, S., & Colangelo, L. (1999). A screening procedure for oropharyngeal dysphagia. *Dysphagia*, *14*(1), 44-51.

Mann, G. (2002). *MASA: The Mann Assessment of Swallowing Ability*. New York: Delmar Learning.

Mann, G., & Hankey, G.J. (2001). Initial clinical and demographic predictors of swallowing impairment following acute stroke. *Dysphagia, 16*(3), 208-215.

Mann, G., Hankey, G.J., & Cameron, D. (2000). Swallowing disorders following acute stroke: Prevalence and diagnostic accuracy. *Cerebrovascular Diseases, 10*(5), 380-386.

Martens, L., Cameron, T., & Simonsen, M. (1990). Effects of a multidisciplinary management program on neurologically-impaired patients with dysphagia. *Dysphagia, 5*, 147-151.

Martin, B.J.W., Logemann, J.A., Shaker, R., & Dodds, W.J. (1994). Coordination between respiration and swallowing: Respiratory phase relationships and temporal integration. *Journal of Applied Physiology, 26*(2), 714-723.

McCullough, G.H., Wertz, R.T., & Rosenbek, J.C. (2001). Sensitivity and specificity of clinical/bedside examination signs for detecting aspiration in adults subsequent to stroke. *Journal of Communication Disorders, 34*, 55-72.

McCullough, G.H., Wertz, R.T., Rosenbek, J.C., & Dineen, C. (1999). Clinicians' preferences and practices in conducting clinical/bedside and videofluoroscopic examinations of swallowing in an adult, neurogenic population. *American Journal of Speech-Language Pathology, 8*, 149-163.

McCullough, G.H., Wertz, R.T., Rosenbek, J.C., Mills, R.H., Ross, K.B., & Ashford, J.R. (2000). Inter- and intrajudge reliability of a clinical examination of swallowing in adults. *Dysphagia, 15*, 58-67.

McCullough, G.H., Wertz, R.T., Rosenbek, J.C., Mills, R.H., Web, W.G., & Ross, K.B. (2001). Inter- and intrajudge reliability for videofluoroscopic swallowing evaluation measures. *Dysphagia, 16*, 110-118.

Chapter 3, *continued*

Mody, M., & Nagia, J. (1990). A multidisciplinary approach to the development of competency standards and appropriate allocation for patients with dysphagia. *The American Journal of Occupational Therapy, 44*(4)*,* 369-372.

Nathadwarawala, K.M., Nicklin, J., & Wiles, C.M. (1992). A timed test of swallowing capacity for neurological patients. *Journal of Neurology, Neurosurgery and Psychiatry, 55*, 822-825.

Nowak, T.V. (1996). Management of upper gastrointestinal tract dysfunction. *Seminars in Neurology, 16*(3)*,* 281-288.

Poirier, N.C., Bonavina, I., Taillefer, R., Nosadini, A., Peracchia, A., & Duranceau, A. (1997). Cricopharyngeal myotomy for neurogenic oropharyngeal dysphagia. *Journal of Thoracic and Cardiovascular Surgery, 113*(2)*,* 233-240.

Rosenbek, J.C., McCullough, G.H., & Wertz, R.T. (2004). Is the information about a test important? Applying the methods of evidence-based medicine to the clinical examination of swallowing. *Journal of Communication Disorders, 37*, 437-450.

Selley, W., Ellis, M., Flack, F., Bayliss, C., Chir, B., & Pearce, M. (1994). The synchronization of respiration and swallow sounds with videofluoroscopy during swallowing. *Dysphagia, 9*, 162-167.

Selley, W.G. (1998). A comment on "Videofluoroscopic evaluation of aspiration with visual examination of the gag reflex and velar movement." *Dysphagia, 13*(4), 228-230.

Selley, W.G., Flack, F.C., & Brooks, W.A. (1989). Respiratory patterns associated with swallowing, Part II. Neurologically impaired dysphagic patients. *Age and Ageing, 18,* 173-176.

Smith, C.H., Logemann, J.A., Colangelo, L.A., Rademaker, A.W., & Pauloski, B.R. (1999). Incidence and patient characteristics associated with silent aspiration in the acute care setting. *Dysphagia, 14*(1), 1-7.

Smith, D., Hamlet, S., & Jones, L. (1990). Acoustic technique for determining timing of velopharyngeal closure in swallowing. *Dysphagia, 5,* 142-146.

Sorin, R., Somers, S., Austin, W., & Bester, S. (1988). The influence of videofluoroscopy on the management of the dysphagic patient. *Dysphagia, 2,* 127-135.

Splaingard, M., Hutchins, B., Sulton, L., & Chaudhuri, G. (1988). Aspiration in rehabilitation patients: Videofluoroscopy vs. bedside clinical assessment. *Archives of Physical Medicine and Rehabilitation, 69,* 637-640.

Swigert, N.B. (2007). Update on current assessment practices for dysphagia. *Topics in Geriatric Rehabilitation, 23*, 185-196.

Swigert, N.B., Steele, C., & Riquelme, L.F. (2007, March). Dysphagia screening for patients with stroke: Challenges in implementing a joint commission guideline. *The ASHA Leader, 127*, 28-29.

Takahashi, K., Groher, M.E., & Michi, K. (1994). Stethoscope acoustics and cervical auscultation of swallowing. *Dysphagia, 9,* 54-92.

Vice, F., & Bosma, J.F. (1995). *Cervical auscultation of feeding in adults* [Videocassette]. University of Maryland School of Medicine.

Vice, F., Heinz, J., Guiriati, G., Hood, M., & Bosma, J. (1990). Cervical auscultation of suckle feeding in newborn infants. *Developmental Medicine and Child Neurology, 32,* 760-768.

Welch, M.V., Logemann, J.A., Rademaker, A.W., & Kahrilas, P.J. (1993). Changes in pharyngeal dimensions effected by chin tuck. *American Academy of Physical Medicine and Rehabilitation, 74*, 178-181.

Zenner, P.M., Losinski, D.S., & Mills, R.H. (1995). Using cervical auscultation in the clinical dysphagia examination in long-term care. *Dysphagia, 10*(1), 27-31.

Chapter 4

Arsenault, J., & Atwood, J. (1991, August). Development of a competency-based training model for dysphagia management in a medical setting. *Seminars in Speech and Language: Swallowing Disorders, 12*(3), 236-244.

Brady Wagner, L.C. (2005, March). Ethical and legal implications of the Frazier free water protocol. *Perspectives on Swallowing and Swallowing Disorders (Dysphagia), 14*(1), 21-24.

Cogan, R., & Weinryb, J. (1989). Aspiration pneumonia in nursing home patients fed via gastrostomy tube. *American Journal of Gastroenterology, 84*, 1509-1519.

Cogan, R., Weinryb, J., Pomerantz, C., & Senstemacker, P. (1991). Complications of jajunostomy tube feedings in nursing facility patients. *American Journal of Gastroenterology, 86*, 610-613.

Daniels, S.K., Ballo, L.A., Mahoney, M.C., & Foundas, A.L. (2000). Clinical predictors of dysphagia and aspiration risk: Outcome measures in acute stroke patients. *Archives of Physical Medicine and Rehabilitation, 81*, 1030-1033.

Daniels, S.K., Brailey, K., Priestly, D.H., Herrington, L.R., Weisberg, L.A., & Foundas, A.L. (1998). Aspiration in patients with acute stroke. *Archives of Physical Medicine and Rehabilitation, 79*, 14-19.

DePippo, K.L., Holas, M.A., & Reding, M.J. (1992). Validation of the 3-oz. water swallow test for aspiration following stroke. *Archives of Neurology, 49*, 1259-1261.

Donahue, P.A. (1990). When it's hard to swallow: Feeding techniques for dysphagia management. *Journal of Gerontological Nursing, 16*(4), 6-9.

Ekberg, O. (1986). Posture of the head and pharyngeal swallowing. *Acta Radiologica: Diagnosis, 27*(6), 691-696.

Emick-Herring, V., & Wood, P. (1990). A team approach to neurologically-based swallowing disorders. *Rehabilitation Nursing, 15*(3), 126-132.

Feinberg, M.J., Knebl, J., & Tully, J. (1996). Prandial aspiration in pneumonia in an elderly population followed over 3 years. *Dysphagia, 11*(2), 104-109.

Garb, J.R., Brown, B., & Tuthill, R.W. (1978). Differences in etiology of pneumonia in nursing home and community patients. *Journal of the American Medical Association, 240*, 2169-2172.

Garon, B.R., Engle, M., & Ormiston, C. (1995). Reliability of the 3-oz. water swallow test utilizing cough reflex as sole indicator of aspiration. *Journal of Neurological Rehabilitation*, *9*(3), 139-143.

Gelfand, D.W., & Ott, D.J. (1982). Barium sulfate suspensions: An evaluation of available products. *American Journal of Roentgenology, 138*, 935.

Gleckman, R., & Burgman, M.M. (1987). Bacterial pneumonia: Specific diagnosis and treatment of the elderly. *Geriatrics, 42*, 29-41.

Hutchins, B. (1991). *Managing dysphagia: An instrumentational guide for the client and family*. San Antonio: Communication Skill Builders (a division of The Psychological Corporation).

Karnell, M.P., & Langmore, S. (1998). Videoendoscopy in speech and swallowing for the speech-language pathologist. In A.F. Johnson & B.H. Jacobson (Eds.), *Medical speech-language pathology: A practitioner's guide* (pp. 563-584). NYC: Thieme Medical Publishers, Inc.

Kidder, T.M., Langmore, S.E., & Martin, B.J.W. (1994). Indications and techniques of endoscopy in evaluation of cervical dysphagia: Comparison with radiographic techniques. *Dysphagia, 9*(4), 256-261.

Kolodny, V., & Malek, A.M. (1991). Improving feeding skills. *Journal of Gerontological Nursing, 17*(6), 20-24.

Chapter 4, *continued*

Langmore, S., Schatz, K., & Olson, N. (1991). Endoscopic and videofluoroscopic evaluations of swallowing and aspiration. *Annals of Otology, Rhinology, and Laryngology, 100*, 678-681.

Langmore, S.E., & McCulloch, T.M. (1996). Examination of the pharynx and larynx and endoscopic examination of pharyngeal swallowing. In A. Perlman & K. Schultz (Eds.), *Deglutition and its disorders* (pp. 201-226). San Diego: Singular Press, Inc.

Langmore, S.E., Schatz, K., & Olsen, N. (1988). Fiberoptic endoscopic examination of swallowing safety: A new procedure. *Dysphagia, 2*, 216-219.

Lazarus, C.L., Logemann, J.A., Rademaker, A.W., Kahrilas, P.J., Pajak, T., Lazar, R., et al. (1993). Effects of bolus volume, viscosity, and repeated swallows in nonstroke subjects and stroke patients. *Archives of Physical Medicine and Rehabilitation, 74*(10), 1066-1070.

Leder, S.B., Sasaki, C.T., & Burrell, M.I. (1998). Fiberoptic endoscopic evaluation of dysphagia to identify silent aspiration. *Dysphagia, 13*(1), 19-21.

Linden, P., Kuhlemeier, K., & Patterson, C. (1993). The probability of correctly predicting subglottic penetrations and clinical observations. *Dysphagia, 8*, 170-179.

Linden, P., & Siebens, A. (1983). Dysphagia: Predicting laryngeal penetration. *Archives of Physical Medicine and Rehabilitation, 64*, 281-284.

Logemann, J.A. (1989). *Precautions for Feeding Dysphagic Patients* [Videotape]. Gaylord, MI: Northern Speech Services, Inc.

Logemann, J.A. (1998). *Evaluation and treatment of swallowing disorders*. Austin, TX: Pro-Ed.

Logemann, J.A., & Kahrilas, P.J. (1990). Relearning to swallow after stroke: Application of maneuvers and indirect biofeedback: A case study. *Neurology, 40*, 1136-1138.

Logemann, J.A., Pauloski, B.R., Colangelo, L., Lazarus, C., Fujiu, M., & Kahrilas, P.J. (1995). Effects of a sour bolus on oropharyngeal swallowing measures in patients with neurogenic dysphagia. *Journal of Speech and Hearing Research, 38*(3), 556-563.

Logemann, J.A., Veis, S., & Colangelo, L. (1999). A screening procedure for oropharyngeal dysphagia. *Dysphagia*, *14*(1), 44-51.

Martin-Harris, B., Logemann, J.A., McMahon, S., Schleicher, M., & Sandidge, J. (2000). Clinical utility of the modified barium swallow. *Dysphagia, 15*, 136-141.

Martin-Harris, B., McMahon, S.I., & Haynes, R. (1998). Aspiration and dysphagia: Pathophysiology and outcome. *Phonoscope, 1*(2), 123-132.

Neumann, S. (1993). Swallowing therapy with neurologic patients: Results of direct and indirect therapy methods in 66 patients suffering from neurological disorders. *Dysphagia, 8*(2), 150-153.

Niederman, M.S., & Fine, A.M. (1986). Pneumonia in the elderly. *Geriatric Clinics of North America, 2*, 241-268.

Ott, D.J., & Gelfand, D.W. (1983). Gastrointestinal contrast agents: Indications, uses, and risks. *Journal of the American Medical Association, 249,* 2380.

Ott, D.J., Hodge, R.G., Pikna, L.A., Chen, M.Y.M., & Gelfand, D.W. (1996). Modified barium swallow: Clinical and radiographic correlation and relation to feeding recommendations. *Dysphagia, 11,* 187-190.

Panther, K. (2005, March). The Frazier free water protocol. *Perspectives on Swallowing and Swallowing Disorders (Dysphagia), 14*(1), 4-9.

Chapter 4, *continued*

Perlman, A.L. (1996). Application of instrumental procedures to the evaluation and treatment of dysphagia. In B. Sonies (Ed.), *Perspectives on dysphagia treatment and management strategies*. Gaithersburg, MD: Aspen Publishers, Inc.

Ralsey, A., Logemann, J.A., Kahrilas, P.J., Rademaker, A.W., Pauloski, B.R., & Dodds, W.J. (1993). Prevention of barium aspiration during videofluoroscopic swallowing studies: Value of change in posture. *American Journal of Roentgenology, 74*(12), 1005-1009.

Robbins, J., Levine, R.L., Maser, A., Rosenbek, J.C., & Kempster, G.B. (1993). Swallowing after unilateral stroke of the cerebral cortex. *Archives of Physical Medicine and Rehabilitation, 74*(12), 1295-1300.

Rubin-Terrado, M., & Linkenheld, D. (1991). Don't choke on this: A swallowing assessment. *Geriatric Nursing, 12*, 288-291.

Shanahan, T.K., Logemann, J.A., Rademaker, A.W., Pauloski, B.R., & Kahrilas, P.J. (1993). Chin-down posture effect on aspiration in dysphagic patients. *Archives of Physical Medicine and Rehabilitation, 74*(7), 736-739.

Smith, C.H., Logemann, J.A., Colangelo, L.A., Rademaker, A.W., & Pauloski, B.R. (1999). Incidence and patient characteristics associated with silent aspiration in the acute care setting. *Dysphagia, 14*(1), 1-7.

Sorin, R., Somers, S., Austin, W., & Bester, S. (1988). The influence of videofluoroscopy on the management of the dysphagic patient. *Dysphagia, 2*, 127-135.

Splaingard, M., Hutchins, B., Sulton, L., & Chaudhuri, G. (1988). Aspiration in rehabilitation patients: Videofluoroscopy vs. bedside clinical assessment. *Archives of Physical Medicine and Rehabilitation, 69*, 637-640.

Swigert, N.B. (2004, April). Advocacy brings positive outcomes: Getting what you and your patients need. *The ASHA Leader, 16*, 1.

Chapter 5

American Speech-Language-Hearing Association. (2003). Code of ethics (revised). *ASHA Supplement, 23*, 13-15.

Annas, G.J. (1986). Do feeding tubes have more rights than patients? *Hastings Center Report, 16*, 26-28.

Banja, J. (1990). Nutritional discontinuation: Active or passive euthanasia? *Journal of Neuroscience Nursing, 22*(2), 117-120.

Beauchamp, T.L., & Childress, J.F. (1994). *Principles of biomedical ethics* (4th ed.). New York: Oxford University Press.

Brody, H., & Noel, M. (1991). Dietitians' role in decisions to withhold nutrition and hydration. *Journal of the American Dietetic Association, 91*(5), 580-585.

Campbell-Taylor, I., & Fisher, R.H. (1987). The clinical case against tube feedings in palliative care of the elderly. *Journal of the American Geriatrics Society, 35*, 1100-1104.

Davidson, B., VanderLann, R., Hirschfeld, R., Norberg, A., Pitman, E., & Ying, L. (1990). Ethical reasoning associated with the feeding of terminally ill elderly cancer patients: An international perspective. *Cancer Nursing*, *13*(5), 286-292.

Ely, J., Peters, P., Zweig, F., Elder, N., & Schneider, F. (1992). The physician's decision to use tube feedings: The role of the family, the living will, and the Cruzan decision. *Journal of the American Geriatrics Society, 40*, 471-475.

Groher, M.E. (1990). Ethical dilemmas in providing nutrition. *Dysphagia, 5*, 102-109.

Klor, B.M., & Milianti, F.J. (1999). Rehabilitation of neurogenic dysphagia with percutaneous endoscopic gastrostomy. *Dysphagia, 14*(3), 162-164.

Chapter 5, *continued*

Meyers, R., & Grodin, M. (1991). Decision making regarding the initiation of tube feedings in the severely demented elderly: A review. *Journal of the American Geriatrics Society, 39*(5), 526-531.

Mitchell, S.L., Kiely, D.K., & Lipsitz, L.A. (1998). Does artificial enteral nutrition prolong the survival of institutionalized elders with chewing and swallowing problems? *Journal of Gerontology, 53A*(3), M207-M213.

O'Rourke, K. (1986). The AMA statement on tube feeding: An ethical analysis. *America, 155*, 321-331.

Orr, R., Paris, J., & Seigler, M. (1991). Caring for the terminally ill: Resolving conflicting objectives between patient, physician, family, and institution. *Journal of Family Practice, 33*(5), 500-504.

Peck, A., Cohen, C., & Mulvihill, M. (1990). Long-term enteral feeding of aged demented nursing home patients. *Journal of the American Geriatrics Society, 38*, 1195-1198.

Position of the American dietetic association: Issues in feeding the terminally ill adult. (1992). *Journal of the American Dietetic Association, 92*(8)*,* 996-1005.

Sandstead, H. (1990). A point of view: Nutrition and care of terminally ill patients. *American Journal of Clinical Nutrition, 52*, 767-769.

Serradura-Russell, A. (1992). Ethical dilemmas in dysphagia management and the right to a natural death. *Dysphagia, 7*, 102-105.

Steinbrock, R., & Lo, B. (1988). Artificial feeding: Solid ground, not a slippery slope. *New England Journal of Medicine, 318*, 286-290.

Swigert, N.B. (2006, May 23). Cross-training in dysphagia still unacceptable. *The ASHA Leader, 14*, 3.

Vaux, K. (1991). The travail and triumph of Sydney Greenspan. *Journal of Allied Health*, 1-3.

Watts, D., McCaulley, B., & Priefer, B. (1990). Physician-nurse conflict: Lessons from a clinical experience. *Journal of the American Geriatrics Society, 38*, 1151-1152.

Wilson, D. (1992). Ethical concerns in a long-term tube feeding study. *IMAGE: Journal of Nursing Scholarships*, *24*(3), 195-199.

Chapter 6

American Speech-Language-Hearing Association. (1998). *Functional communication measures*. Rockville, MD: Author.

American Speech-Language-Hearing Association. (2004). *Guidelines for speech-language pathologists performing videofluoroscopic swallowing studies* [Guidelines]. Available from http://www.asha.org/policy

American Speech-Language-Hearing Association. (2004). *Preferred practice patterns for the profession of speech-language pathology* [Preferred Practice Patterns]. Available from http://www.asha.org/policy

American Speech-Language-Hearing Association. (2005). *The role of the speech-language pathologist in the performance and interpretation of endoscopic evaluation of swallowing* [Position Statement]. Available from http://www.asha.org/policy

American Speech-Language-Hearing Association. (2005). *The role of the speech-language pathologist in the performance and interpretation of endoscopic evaluation of swallowing* [Technical Report]. Available from http://www.asha.org/policy

Arsenault, J.K., & Atwood, J. (1991). *Development of a competency-based training model for dysphagia management in a medical setting*, 236-245. NYC: Thieme Medical Publishers, Inc.

Chapter 6, *continued*

Aviv, J.E., Kim, T., Sacco, R.L., Kaplan, S., Goodhart, K., Diamond, B., et al. (1998a). FEESST: A new bedside endoscopic test of the motor and sensory components of swallowing. *Annals of Otology, Rhinology, and Laryngology, 107*, 378-387.

Aviv, J.E., Kim, T., Thomson, J.E., Sunshine, S., Kaplan, S., & Close, L.G. (1998b). Fiberoptic endoscopic evaluation of swallowing with sensory testing (FEESST) in healthy controls. *Dysphagia, 13*, 87-92.

Aviv, J.E., Martin, J.H., Sacco, R.L., Zagar, D., Diamond, B., Keen, M.S., et al. (1996). Supraglottic and pharyngeal sensory abnormalities in stroke patients with dysphagia. *Annals of Otology, Rhinology and Laryngology, 105*, 92-97.

Barofsky, I., & Fontaine, K.R. (1998). Do psychogenic dysphagia patients have an eating disorder? *Dysphagia*, *13*(1), 24-28.

Beck, T., & Gaylar, B. (1990). Image quality and radiation levels in videofluoroscopy for swallowing studies: A review. *Dysphagia, 5*, 118-128.

Briani, C., Marcon, M., Ermani, M., Costantini, M., Bottin, R., Iurilli, V., et al. (1998). Radiological evidence of subclinical dysphagia in motor neuron disease. *Journal of Neurology, 245*, 211-216.

Cook, I. (1998). Investigative techniques in the assessment of oral-pharyngeal dysphagia. *Digestive Diseases and Sciences, 16*, 125-133.

Daniels, S.K., Brailey, K., Priestly, D.H., Herrington, L.R., Weisberg, L.A., & Foundas, A.L. (1998). Aspiration in patients with acute stroke. *Archives of Physical Medicine and Rehabilitation, 79*, 14-19.

Dodds, W.J., Steward, E.T., & Logemann, J.A. (1990). Physiology and radiology of the normal oral and pharyngeal phases of swallowing. *American Journal of Roentgenology, 154*, 965-974.

Ertekin, C., Aydogdu, I., Yüceyar, N., Tarlaci, S., Kiylioglu, N., Pehlivan, M., et al. (1998). Electrodiagnostic methods for neurogenic dysphagia. *Electroencephalography and Clinical Neurophysiology, 109*, 331-340.

Feinberg, M. (1993). Radiographic techniques and interpretation of abnormal swallowing in adult and elderly patients. *Dysphagia, 8*, 256-258.

Feinberg, M., & Ekberg, O. (1991). Videofluoroscopy in elderly patients with aspiration: Importance of evaluating both oral and pharyngeal stages of deglutition. *Journal of the American Geriatrics Society, 156*, 293-296.

Feinberg, M.J., Ekberg, O., Segall, L., & Tully, J. (1992). Deglutition in elderly patients with dementia: Findings of videofluorographic evaluation and impact on staging and management. *Radiology, 183*, 811-814.

Garon, B.R., Engle, M., & Ormiston, C. (1996). Silent aspiration: Results of 1,000 videofluoroscopic swallow evaluations. *Journal of Neurological Rehabilitation, 10*, 121-126.

Gates, G.A. (Ed.). (1990). *Dysphagia: The methold of Haskins Kashima in current therapy in otolaryngology: Head and neck surgery.* Philadelphia: B.C. Decker.

Jones, B., & Donner, M. (1988). Examination of the patient with dysphagia. *Radiology, 167*(2), 319-326.

Karnell, M.P., & Langmore, S. (1998). Videoendoscopy in speech and swallowing for the speech-language pathologist. In A.F. Johnson & B.H. Jacobson (Eds.), *Medical speech-language pathology: A practitioner's guide* (pp. 563-584). NYC: Thieme Medical Publishers, Inc.

Kidder, T.M., Langmore, S.E., & Martin, B.J.W. (1994). Indications and techniques of endoscopy in evaluation of cervical dysphagia: Comparison with radiographic techniques. *Dysphagia, 9*(4), 256-261.

Kuhlemeier, K.V., Yates, P., & Palmer, J.B. (1998). Intra- and interrater variation in the evaluation of videofluorographic swallowing studies. *Dysphagia*, *13*(2), 142-147.

Chapter 6, *continued*

Langmore, S., Schatz, K., & Olson, N. (1991). Endoscopic and videofluoroscopic evaluations of swallowing and aspiration. *Annals of Otology, Rhinology, and Laryngology, 100*, 678-681.

Langmore, S.E. (1998). Editorial: Laryngeal sensation: A touchy subject. *Dysphagia, 13*, 87-93.

Langmore, S.E., & McCulloch, T.M. (1996). Examination of the pharynx and larynx and endoscopic examination of pharyngeal swallowing. In A. Perlman & K. Schultz (Eds.), *Deglutition and its disorders* (pp. 201-226). San Diego: Singular Press, Inc.

Leder, S.B. (1998). Serial fiberoptic endoscopic swallowing evaluations in the management of patients with dysphagia. *Archives of Physical Medicine and Rehabilitation, 79*, 1264-1269.

Leder, S.B., Sasaki, C.T., & Burrell, M.I. (1998). Fiberoptic endoscopic evaluation of dysphagia to identify silent aspiration. *Dysphagia, 13*(1), 19-21.

Logemann, J.A. (1983). *Evaluation and treatment of swallowing disorders*. San Diego: College Hill Press.

Logemann, J.A. (1988). *Videofluoroscopic swallowing studies: Evaluation and therapy planning*. Distributed by Continuing Education Programs of America.

Logemann, J.A. (1993). Non-invasive approaches to deglutive aspiration. *Dysphagia, 8*, 331-333.

Logemann, J.A. (1993a). Manual for the videofluoroscopic study of swallowing. *Administrators in Radiology, 3*, 20-23 and 43.

Logemann, J.A. (1993b). *Manual for the videofluorographic study for swallowing* (2nd ed.). Austin, TX: Pro-Ed.

Logemann, J.A., Pauloski, B.R., Rademaker, A., Cook, B., Graner, D., Milianti, F., et al. (1992). Impact of the diagnostic procedure on outcome measures of swallowing rehabilitation in head and neck cancer patients. *Dysphagia, 7*(4), 179-187.

Logemann, J.A., Rademaker, A.W., Pauloski, B.R., & Kahrilas, P.J. (1994). Effects of postural change on aspiration in head and neck surgical patients. *Otolaryngeal Head and Neck Surgery, 110*, 222-227.

Martin-Harris, B., McMahon, S.I., & Haynes, R. (1998). Aspiration and dysphagia: Pathophysiology and outcome. *Phonoscope, 1*(2), 123-132.

Murray, J., Langmore, S., Ginsberg, S., & Dostie, A. (1996). The significance of accumulated oropharyngeal secretions and swallowing frequency in predicting aspiration. *Dysphagia, 11*, 99-103.

Nilsson, H., Ekberg, O., Olsson, R., & Hindfelt, B. (1998). Dysphagia in stroke: A prospective study of quantitative aspects of swallowing in dysphagic patients. *Dysphagia, 13*(1), 32-38.

Odderson, I. R., Keaton, J.C., & McKenna, B.S. (1995). Swallow management in patients on an acute stroke pathway: Quality is cost effective. *Archives of Physical Medicine and Rehabilitation, 76*(12), 1130-1133.

Ott, D.J. (1998). Editorial: Observer variation in evaluation of videofluoroscopic swallowing studies: A continuing problem. *Dysphagia, 13*(3), 148-151.

Périé, S., Laccourreye, L., Flahault, A., Hazebroucq, V., Chaussade, S., & St. Guily, J.L. (1998). Role of videoendoscopy in assessment of pharyngeal function in oropharyngeal dysphagia: Comparison with videoendscopy and manometry. *Laryngoscope, 108*, 1712-1716.

Perlman, A., Grayhack, J., & Booth, B. (1992). The relationship of vallecular residue to oral involvement, reduced hyoid elevation, and epiglottic functions. *Journal of Speech and Hearing Research, 35*, 734-741.

Rosenbek, J., Robbins, J.A., Roecker, E., Coyle, J., & Wood, J. (1996). A penetration-aspiration scale. *Dysphagia, 11*, 93-98.

Chapter 6, *continued*

Sonies, B.C. (1991). Instrumental procedures for dysphagia diagnosis. *Seminars in Speech and Language, 12*(3), 185-198.

Sonies, B., & Baum, B. (1988). Evaluation of swallowing pathophysiology. *Otolaryngological Clinics of North America, 21*(4), 637-648.

Spiegel, J.R., Selber, J.C., & Creed, J. (1998). A functional diagnosis of dysphagia using videoendoscopy. *ENT-Ear, Nose & Throat Journal, 77*, 628-632.

Steefel, J.S. (1981). *Dysphagia rehabilitation for neurologically-impaired adults*. Springfield, IL: Charles C. Turner.

Swigert, N.B. (2007). Update on current assessment practices for dysphagia. *Topics in Geriatric Rehabilitation, 23*, 1.

Welch, M.V., Logemann, J.A., Rademaker, A.W., & Kahrilas, P.J. (1993). Changes in pharyngeal dimensions effected by chin tuck. *Archives of Physical Medicine and Rehabilitation, 74*, 178-181.

Yoshida, G., Maglinte, D., Hamaker, R., & Kelvin, S. (1990). Evaluation of swallowing disorders: The modified barium swallow. *Indiana Medicine, 83*(12), 892-895.

Chapter 7 (For specific references on the treatment techniques, see *Efficacy References for Treatment Techniques* also on this CD.)

Bartolome, G., & Neumann, S. (1993). Swallowing therapy in patients with neurological disorders causing crichopharyngeal dysfunction. *Dysphagia, 8*, 146-149.

Breslin, R. (1988). *Food: The essence of life: Creative cooking for the pureed diet*. Branfort, CT: Connecticut Hospice Institute.

Bryant, M. (1991). Biofeedback in the treatment of a selected dysphagic patient. *Dysphagia, 6*, 140-144.

Casprisin, A., Clumeck, H., & Nino-Murcia, M. (1989). The efficacy of rehabilitative management of dysphagia. *Dysphagia, 4*, 48-52.

Chaudhuri, G., Hildner, C.D., Brady, S., Hutchins, B., Aliga, N., & Abadilla, E. (2002). Cardiovascular effects of the supraglottic and super-supraglottic swallowing maneuvers in stroke patients with dysphagia. *Dysphagia, 17*, 1923.

Clark, H.A. (2005). Therapeutic exercise in dysphagia management: Philosophies, practices, and challenges. *Perspectives on Swallowing and Swallowing Disorders (Dysphagia), 14*(2), 24-27.

Coleman, P. (2002). Improving oral health care for the frail elderly: A review of widespread problems and best practices. *Geriatric Nursing, 23*(4), 189-199.

Crary, M.A. (1997). Surface electromyographic characteristics of swallowing in dysphagia swallowing secondary to brainstem stroke. *Dysphagia, 12*(4), 180-188.

Curran, J. (1992). Nutritional considerations. In M.E. Groher (Ed.), *Dysphagia: Diagnosis and management* (2nd ed.). Boston: Butterworth-Heinemann.

Curran, J., & Groher, M. (1990). Development and dissemination of an aspiration risk reduction diet. *Dysphagia, 5*, 6-12.

Garcia, J.M., Hakel, M., & Lazarus, C. (2004). Unexpected consequence of effortful swallowing: Case study report. *Journal of Medical Speech-Language Pathology, 12*(2), 59-66.

Glickstein, J. (1993). *Reimburseable geriatric service delivery*. Aspen, CO: Aspen Publishing.

Groher, M. (Ed.). (1990). Special issue: Managing dysphagia in a chronic care setting, Part I. *Dysphagia, 5*(52), 59-109.

Chapter 7, *continued*

Groher, M. (Ed.). (1992). *Dysphagia: Diagnosis and management* (2nd ed.). Boston: Butterworth-Heinemann.

Huckabee, M.L., & Cannito, M.P. (1999). Outcomes of swallowing rehabilitation in chronic brainstem dysphagia: A retrospective evaluation. *Dysphagia, 14*, 93-109.

Huckabee, M.L., & Steele, C.M. (2006, March). *An analysis of lingual contribution to submental SEMG measures and pharyngeal biomechanics during effortful swallow*. Paper presented at the Dysphagia Research Society Meeting, Scottsdale, AZ.

Kahrilas, P.J., Logemann, J.A., & Gibbons, P. (1992). Food intake by maneuver: An extreme compensation for impaired swallowing. *Dysphagia*, *7*, 155-159.

Kahrilas, P.J., Logemann, J.A., Krugler, C., & Flanagan, E. (1991). Volitional augmentation of upper esophageal sphincter opening during swallowing. *American Journal of Physiology, 260*, 450-456.

Logemann, J.A. (1983). *Evaluation and treatment of swallowing disorders*. San Diego: College Hill Press.

Logemann, J.A. (1998). *Evaluation and treatment of swallowing disorders*. Austin, TX: Pro-Ed.

Lux, I., & Nash, K. (1991). *Continuous quality improvement in the clinical management of dysphagia*. Gaylord, MI: Northern Speech Services, Inc.

Martin, A. (1991). Dietary management of swallowing disorders. *Dysphagia, 6*, 129-134.

Martin, B.J.W., Logemann, J.A., Shaker, R., & Dodds, W.J. (1993). Normal laryngeal valving patterns during three breathhold maneuvers: A pilot investigation. *Dysphagia, 8*, 11-20.

Mayes, C. (1985). Pureed diets: Come alive with the right food processor. *American Health Care Association Journal, 11*, 24-28.

Mirro, J., & Patey, C. (1991). Developing a dysphagia dietary program. *Seminars in Speech and Language: Swallowing Disorders, 12*(3), 218-226.

National Dysphagia Diet Task Force. (2002). *National dysphagia diet: Standardization for optimal care*. Chicago: American Dietetic Association.

Pelletier, C.A., & Dhanaraj, G.E. (2006). The effect of taste and palatability on lingual swallowing pressure. *Dysphagia, 21*(2), 121-128.

Robbins, J., Gangnon, R.E., Theis, S.M., Kays, S.A., Hewitt, A.L., & Hind, J.A. (2005). The effects of lingual exercise on swallowing in older adults. *Journal of the American Geriatric Society, 53*, 1483-1489.

Robbins, J., & Levine, R. (1993). Swallowing after lateral medullary syndrome plus. *Clinics in Communication Disorders, 3*, 45-55.

Shaker, R., Kern, M., Bardan, E., Stewart, E.T., & Hoffman, R. (1997). Augmentation of deglutitive upper esophageal sphincter opening in the elderly by exercise. *The American Journal of Physiology, 272*, G1518-G1522.

Stanek, K., Hensley, C., & VanRyser, C. (1992). Factors affecting use of food and commercial agents to thicken liquids for individuals with swallowing disorders. *Journal of the American Dietetic Association, 92*(4), 488-490.

Swigert, N.B. (1999). Functional outcomes and dysphagia management. In B.S. Cornett (Ed.), *Clinical practice management for speech-language pathologists* (Chapter 4). Gaithersburg, MD: Aspen Publishers, Inc.

Swigert, N.B. (2006, May). Clinical documentation, coding and billing. *Seminars in Speech and Language, 27(*2), 101-118.

Chapter 7, *continued*

The American Dietetic Association. (2002). *National dysphagia diet (NDD)*.

Tymchuck, D. (2006). Applying food science to dysphagia. *Perspectives on Swallowing and Swallowing Disorders (Dysphagia), 15*(1), 19-23.

Chapter 8

Swigert, N.B. (2002, January-March). Documenting what you do is as important as doing it. *The ASHA Leader, 7*(2), 1, 14 and 17.

Swigert, N.B. (2005). New rules in healthcare delivery. In L. Golper & J. Brown (Eds.), *Guide to successful private practice in speech-language pathology* (2nd ed.). Rockville, MD: ASHA.

Swigert, N.B. (2006, May). Clinical documentation, coding and billing. *Seminars in Speech and Language, 27(*2), 101-118.

Swigert, N.B. (2007). Speech-language pathology in private practice. In A.M. Guilford, S.V. Grahan, & J. Scheuerle (Eds.), *The speech-language pathologist: From novice to expert*. Upper Saddle River, NJ: Pearson Merrill Prentice Hall.

Chapter 9

American Speech-Language-Hearing Association. (1997). Multiskilled personnel. *ASHA, 39*(17), 13.

Bonanno, P.C. (1971). Swallowing dysfunction after tracheostomy. *Annals of Surgery, 174*, 29-33.

Bone, D K., Davis, J.L., Zuidema, G.D., & Cameron, J.S. (1974). Aspiration pneumonia. *Annals of Thoracic Surgery, 18*, 30-37.

Brady, S.L., Hildner, C.D., & Hutchins, B.F. (1999). Simultaneous videofluoroscopy swallow study and modified Evans blue dye procedure: An evaluation of blue dye visualization in cases of known aspiration. *Dysphagia, 14*(3), 146-149.

Burgess, G.E., Cooper, J.R., & Marino, R.J. (1979). Laryngeal competence after tracheal extubation. *Anesthesiology, 51*, 73-77.

Cameron, J.L., Reynolds, J., & Zuidema, G.D. (1973). Aspiration in patients with tracheostomies. *Surgery, Gynecology, and Obstetrics, 136*, 68-70.

Colice, G.L. (1992). Resolution of laryngeal injury following translaryngeal intubation. *American Review of Respiratory Disease, 145*, 361-364.

Colice, G.L., Stukel, T.A., & Dain, B. (1989). Laryngeal complications of prolonged intubation. *Chest, 96*(4), 877-884.

Colodny, N. (2000). Comparison of dysphagics and nondysphagics on pulse oximetry during oral feeding. *Dysphagia, 15*, 68-73.

Dettelbach, M.A., Gross, R.D., Mahlmann, J., & Eibling, D.E. (1995). Effect of the Passy-Muir Valve on aspiration in patients with tracheostomy. *Head & Neck, 17*(4), 297-302.

DeVita, M.A., & Spierer-Rundback, L. (1990). Swallowing disorders in patients with prolonged orotracheal intubation or tracheostomy tubes. *Critical Care Medicine, 18*(12), 1328-1330.

Eibling, D.E., Bacon, G., & Snyderman, C.H. (1992). Surgical management of chronic aspiration. *Advances in Otolaryngology: Head and Neck Surgery, 6*, 93-113.

Eibling, D.E., & Diez Gross, R. (1996). Subglottic air pressure: A key component of swallowing efficiency. *Annals of Otology, Rhinology, and Laryngology, 105*, 253-258.

Chapter 9, *continued*

Elpern, E., Scott, M., Petro, L., & Ries, M. (1994). Pulmonary aspiration in mechanically ventilated patients with tracheostomies. *Chest, 105*, 563-566.

Elpern, E.H., Jacobs, E.R, & Bone, R.C. (1987). Clinical studies in respiratory critical care: Incidence of aspiration in tracheally intubated adults. *Heart & Lung, 16*(5), 527-531.

Garon, K.C., & Meyers, A.D. (1999). Editorial: Simultaneous videofluoroscopy swallow study and modified Evans blue dye procedure: An evaluation of blue dye visualization in cases of known aspiration. *Dysphagia, 14*(3), 150-151.

Higgins, D.M., & Maclean, J.C. (1997). Dysphagia in the patient with a tracheostomy: Six cases of inappropriate cuff deflation or removal. *Heart & Lung, 26*(3), 215-220.

Huxley, E.J., Virolax, J., Gray, W.R., & Pierce, A.K. (1978). Pharyngeal aspiration in normal adults and patients with depressed consciousness. *American Journal of Medicine, 64*, 654-658.

Ikari, T., & Sasaki, C.T. (1980). Glottic closure reflex: Control mechanisms. *Annals of Otology, Rhinology, and Laryngology, 89*, 220-224.

de Larminat, V., Montravers, P., Dureuil, B., & Desmonts, J.M. (1995). Alteration in swallowing reflex after extubation in intensive care unit patients. *Critical Care Medicine, 23*(3), 486-490.

Leder, S. (1996). Comment on Thompson-Henry and Braddock: The modified Evan's (sic) blue dye procedure fails to detect aspiration in the tracheotomized patient: Five case reports. *Dysphagia, 11*, 80-81.

Leder, S.B. (1999). Effect of a one-way tracheotomy speaking valve on the incidence of aspiration in previously aspirating patients with tracheotomy. *Dysphagia, 14*(2), 73-78.

Leder, S.B. (2000). Use of arterial oxygen saturation, heart rate, and blood pressure as indirect objective physiologic markers to predict aspiration. *Dysphagia, 15*, 201-205.

Leder, S.B., Cohn, S.M., & Moller, B.A. (1998). Fiberoptic endoscopic documentation of the high incidence of aspiration following extubation in critically ill trauma patients. *Dysphagia, 13*(4), 208-213.

Leder, S.B., Ross, D.A., Burrell, M.I., & Sasaki, C.T.. (1998). Tracheotomy tube occlusion status and aspiration in early post-surgical head and neck cancer patients. *Dysphagia, 13*(3), 167-172.

Leder, S.B., Tarro, J.M., & Burrell, M.I. (1996). Effect of occlusion of a tracheotomy tube on aspiration. *Dysphagia, 11*(4), 254-259.

Mason, M.F. (1993). *Speech pathology for tracheostomized and ventilator dependent patients*. Newport Beach, VA: Voicing.

Murray, K.A., & Brzozowski, L.A. (1998). Swallowing in patients with tracheostomies. *AACN Clinical Issues, 9*(3), 416-426.

Muz, J.M., Mathog, R.H., Nelson, R., & Jones, L.A. (1989). Aspiration in patients with head and neck cancer and tracheostomy. *American Journal of Otolaryngology, 10*, 282-286.

Nash, M. (1988). Swallowing problems in the tracheotomized patient. *Otolaryngology Clinics of North America, 21*(4), 701-709.

Physician's Desk Reference. (1996). Montvale, NJ: Medical Economics Company.

Rogers, B., Msall, M., & Shucard, D. (1993). Hypoxemia during oral feedings in adults with dysphagia and severe neurological disabilities. *Dysphagia, 8*, 43-48.

Sellars, C., Dunnet, C., & Carter, R. (1998). A preliminary comparison of videofluoroscopy of swallow and pulse oximetry in the identification of aspiration in dysphagia patients. *Dysphagia, 13*(2), 82-87.

Chapter 9, *continued*

Shaker, R., Milbrath, M., Ren, J., Campbell, B., Toohill, R., & Hogan, W. (1995). Deglutitive aspiration in patients with tracheostomy: Effect of tracheostomy on the duration of vocal cord closure. *Gastroenterology, 108*(5), 1357-1360.

Spray, S., Zuidema, G., & Cameron, J. (1976). Aspiration pneumonia: Incidence of aspiration with endotracheal tubes. *American Journal of Surgery, 131*, 701-703.

Stauffer, J., Olson, D., & Petty, T. (1981). Complications and consequences of endotracheal intubation and tracheostomy: A prospective study of 150 critically-ill patients. *American Journal of Medicine, 70*, 65-75.

Swigert, N.B. (2002, December). Blue dye in the evaluation of dysphagia. *Perspectives on Swallowing and Swallowing Disorders (Dysphagia), 11*, 4-6.

Swigert, N.B. (2003, March). Blue dye in the evaluation of dysphagia. *The ASHA Leader, 8*, 16-17.

Teramoto, S., Fukuchi, Y., Ouchi, Y. (1996). Oxygen desaturation on swallowing in patients with stroke. What does it mean? *Age and Ageing, 25*, 333-334.

Thompson-Henry, S., & Braddock, B. (1996). The modified Evan's (sic) blue dye procedure fails to detect aspiration in the tracheotomized patient: Five case reports. *Dysphagia, 10*, 78-79.

Tippett, D.C., & Siebens, A.A. (1991). Using ventilators for speaking and swallowing. *Dysphagia, 6*(2), 94-100.

Tippett, D.C., & Siebens, A.A. (1996). Reconsidering the value of the modified Evan's (sic) blue dye test: A comment on Thompson-Henry and Braddock. *Dysphagia, 11*, 78-79.

Tolep, K., Getch, C.L., & Criner, G.J. (1996). Swallowing dysfunction in patients receiving prolonged mechanical ventilation. *Chest, 109*(1), 167-172.

Whited, R.E. (1984). A prospective study of laryngotracheal sequelae in long-term intubation. *Laryngoscope, 94*, 367-377.

Zaidi, N.H., Smith, H.A., King, S.C., Park, C., O'Neill, P.A., & Connolly, M.J. (1995). Oxygen desaturation on swallowing as a potential marker of aspiration in acute stroke. *Age and Ageing, 24*, 267-270.

Chapter 10

American Speech-Language-Hearing Association. (2003). Code of ethics (revised). *ASHA Supplement, 23*, 13-15.

American Speech-Language-Hearing Association. (1998). *National outcomes measuring systems, adult speech-language pathology component*. Available from http//www.asha.org/members/research/NOMS

Bartolome, G., & Neumann, S. (1993). Swallowing therapy in patients with neurological disorders causing cricopharyngeal dysphagia. *Dysphagia, 8*, 146-149.

Bourel-Marchasson, I., Dumas, F., Pinganaud, G., Emeriau, J.P., & Decamps, A. (1997). Audit of percutaneous endoscopic gastrostomy in long-term enternal feeding in a nursing home. *International Journal for Quality in Health Care, 9*(4), 297-302.

Brady Wagner, L.C. (2005, March). Ethical and legal implications of the Frazier free water protocol. *Perspectives on Swallowing and Swallowing Disorders (Dysphagia), 14*(1), 21-24.

Chouninard, J., Lavigne, E., & Villeneuve, C. (1998). Weight loss, dysphagia, and outcome in advanced dementia. *Dysphagia, 13*(3), 151-155.

Chapter 10, *continued*

Cowen, M.E., Simpson, S.L., & Vettese, T.E. (1997). Survival estimates for patients with abnormal swallowing studies. *Journal of General Internal Medicine, 12*(2), 88-94.

Crary, M.A. (1995). A direct intervention program for chronic neurogenic dysphagia secondary to brainstem stroke. *Dysphagia, 10*(1), 6-18.

Croghan, J.E., Burke, E.M., Caplan, S., & Denman, S. (1994). Pilot study of 12-month outcomes of nursing home patients with aspiration on videofluoroscopy. *Dysphagia, 9*(3), 141-146.

Daniels, S.K., McAdam, C.P., Brailey, K., & Foundas, A.L. (1997). Clinical assessment of swallowing and prediction of dysphagia severity. *American Journal of Speech-Language Pathology, 6*, 17-24.

Davalos, A., Ricart, W., Gonzalez-Huix, F., Soler, S., Marrugat, J., Molins, A., et al. (1996). Effect of malnutrition after acute stroke on clinical outcome. *Stroke, 27*(6), 1028-1032.

Dejonckere, P.H., & Hordijk, G.J. (1998). Prognostic factors for swallowing after treatment of head and neck cancer. *Clinical Otolaryngology, 23*, 218-223.

Elmståhl, S., Bülow, M., Ekberg, O., Petersson, M., & Tegner, H. (1999). Treatment of dysphagia improves nutritional conditions in stroke patients. *Dysphagia, 14*(2), 61-66.

Feinberg, M.J., Knebl, J., & Tully, J. (1996). Prandial aspiration and pneumonia in an elderly population followed over 3 years. *Dysphagia, 11*, 104-109.

Finestone, H.M., Greene-Finestone, L.S., Wilson, E.S., & Teasell, R.W. (1996). Prolonged length of stay and reduced functional improvement rate in malnourished stroke rehabilitation patients. *Archives of Physical Medicine and Rehabilitation, 77*, 340-345.

Finucane, T.E., & Bynum, J.P. (1996). Use of tube feeding to prevent aspiration pneumonia. *The Lancet, 348*, 1421-1424.

Fonda, D., Schwarz, J., & Clinnick, S. (1995). Parkinson medication one hour before meals improves symptomatic swallowing: A case study. *Dysphagia, 10*, 165-166.

Frattali, C.M. (1998). *Measuring outcomes in speech-language pathology*. NYC: Thieme Medical Publishers, Inc.

Garon, B.R., Engle, M., & Ormiston, C. (1997). A randomized control study to determine the effects of unlimited oral intake of water in patients with identified aspiration. *Journal of Neurological Rehabilitation, 11*, 139-148.

Gisel, E.G. (1994). Oral-motor skills following sensorimotor intervention in the moderately eating-impaired child with cerebral palsy. *Dysphagia, 9*, 180-192.

Gisel, E.G., & Alphonce, E. (1995). Classification of eating impairments based on eating efficiency in children with cerebral palsy. *Dysphagia, 10*(4), 268-274.

Gisel, E.G., Applegate-Ferrante, T., Benson, J., & Bosma, J.F. (1966). Oral-motor skills following sensorimotor therapy in two groups of moderately dysphagic children with cerebral palsy: Aspiration vs. nonaspiration. *Dysphagia, 11*(1), 59-71.

Groher, M.E. (1998). Ethical dilemmas in providing nutrition. *Dysphagia, 5*, 102-109.

Groher, M.E., & McKaig, T.N. (1995). Dysphagia and dietary levels in skilled nursing facilities. *Journal of American Geriatrics Society, 43*, 528-532.

Gross, C.R., Lindquist, R.D., Woolley, A.C., Granieri, R., Allard, K., & Webster, B. (1992). Clinical indicators of dehydration severity in elderly patients. *Journal of Emergency Medicine, 10*, 267-274.

Chapter 10, *continued*

Gustafsson, B., Tibbling, L.M., & Theorell, T. (1992). Do physicians care about patients with dysphagia? A study on confirming communication. *Family Practice, 9*(2) 203-209.

Hillel, A.E., Miller, R.M., Yorkston, K., McDonald, E., Norris, F.H., & Konikow, N. (1989). Amyotrophic lateral sclerosis severity scale. *Neuroepidemiology, 8*, 142-150.

Holas, M.A., DePippo, K.L., & Reding, M.J. (1994). Aspiration and relative risk of medical complications following stroke. *Archives of Neurology, 51*, 1051-1053.

Horner, J., Buoyer, F.G., Alberts, M.J., & Helms, M.J. (1991). Dysphagia following brainstem stroke: Clinical correlates and outcome. *Archives of Neurology, 48*, 1170-1173.

Horner, J., Massey, E.W., Riski, J.E., Lathrop, M.A., & Chase, K.N. (1988). Aspiration following stroke: Clinical correlates and outcome. *Archives of Neurology, 38*, 1359.

Kaatze-McDonald, M.N., Post, E., & Davis, P.J. (1996). The effects of cold, touch, and chemical stimulation of the anterior faucial pillar on human swallowing. *Dysphagia, 11*, 198-206.

Kasprisin, A.T., Clumeck, H., & Nino-Murcia, M. (1989). The efficacy of rehabilitative management of dysphagia. *Dysphagia, 4*, 48-52.

Kasprisin, A.T., Clumeck, H., & Nino-Murcia, M. (1990). Letters to the editor – Response to Kasprisin et al.: The efficacy of rehabilitative management of dysphagia. *Dysphagia, 6*, 166-168.

Kaw, M., & Sekas, G. (1994). Long-term follow-up of consequences of percutaneous endoscopic gastrostomy (PEG) tubes in nursing home patients. *Digestive Diseases and Sciences, 39*, 738-743.

Keller, H.H. (1993). Malnutrition in institutionalized elderly: How and why? *Journal of the American Geriatrics Society, 41*(11), 1212-1218.

Keller, H.H. (1995). Weight gain impacts morbidity and morality in institutionalized older persons. *Journal of the American Geriatrics Society, 43*(2), 165-169.

Kern, M., Bardan, E., Arndorder, R., Hofmann, C., Ren, J., & Shaker, R. (1999). Comparison of upper esophageal sphincter opening in healthy asymptomatic young and elderly volunteers. *The Annals of Otology, Rhinology and Laryngology, 108*, 982-999.

Langmore, S.E. (1991). Managing the complications of aspiration in dysphagic adults. *Seminars in Speech and Language, 12*(3), 199-207.

Langmore, S.E. (1995). Efficacy of behavioral treatment for oropharyngeal dysphagia. *Dysphagia, 10*, 259-262.

Langmore, S.E., Terpenning, M.S., Schork, A., Chen, Y., Murray, J.T., Lopatin, D., et al. (1998). Predictors of aspiration pneumonia: How important is dysphagia? *Dysphagia, 13*(2), 69-81.

Lavizzo-Mourey, R.J. (1987). Dehydration in the elderly: A short review. *Journal of the National Medical Association, 79*(10), 1933-1938.

Lazarus, C.L. (1996). Editorial: Comments on the effects of cold, touch, and chemical stimulation of the anterior faucial pillar on human swallowing. *Dysphagia, 11*, 207-208.

Lazzara, G.L., Lazarus, C., & Logemann, J.A. (1986). Impact of thermal stimulation on the triggering of the swallowing reflex. *Dysphagia, 1*, 73-77.

Chapter 10, *continued*

List, M.A., Ritter-Sterr, C., & Lanksy, S.B. (1990). A performance status scale for head and neck cancer patients. *Cancer, 66*, 564-569.

Logemann, J.A. (1987). Criteria for studies of treatment for oral-pharyngeal dysphagia. *Dysphagia, 1*, 193-199.

Logemann, J.A., & Gardner, P.M. (2005, August). Help find the evidence–Clinicians wanted. *The ASHA Leader*, 8-9.

Logemann, J.A., Kahrilas, P., Kobara, M., & Vakil, N. (1989). The benefit of head rotation on pharyngoesophageal dysphagia. *Archives of Physical Medicine and Rehabilitation, 70*, 767-771.

Logemann, J.A., Pauloski, B.R., Rademaker, A.W., McConnell, F.M.S., Heiser, M.A., Cardinale, S., Shedd, D., Lewin, J., et al. (1993a). Speech and swallowing function after anterior tongue and floor of mouth resection with distal flap reconstruction. *Journal of Speech and Hearing Research, 36*, 267-276.

Logemann, J.A., Pauloski, B.R., Rademaker, A.W., McConnell, F.M.S., Heiser, M.A., Cardinale. S., Shedd, D., Stein, D., et al. (1993b). Speech and swallow function after tonsil/base of tongue resection with primary closure. *Journal of Speech and Hearing Research, 36*, 918-926.

Logemann, J.A., Veis, S., & Colangelo, L. (1999). A screening procedure for oropharyngeal dysphagia. *Dysphagia*, *14*(1), 44-51.

Mann, G. (2002). *MASA: The Mann Assessment of Swallowing Ability*. New York: Delmar Learning.

Mann, G., & Hankey, G.J. (2001). Initial clinical and demographic predictors of swallowing impairment following acute stroke. *Dysphagia, 16*(3), 208-215.

Mann, G., Hankey, G.J., & Cameron, D. (2000). Swallowing disorders following acute stroke: Prevalence and diagnostic accuracy. *Cerebrovascular Diseases, 10*(5), 380-386.

Martin, B.J.W., Corlew, M.M., Wood, H., Olson, D., Golopol, L.A., Wingo, M., et al. (1994). The association of swallowing dysfunction and aspiration pneumonia. *Dysphagia, 9*, 1-6.

McCullough, G.H. (2006, December). Zen and the art of swallowing maintenance: Best evidence, best practice. *Perspectives on Swallowing and Swallowing Disorders (Dysphagia),* 7-11.

McCullough, G.H., Wertz, R.T., & Rosenbek, J.C. (2001). Sensitivity and specificity of clinical/bedside examination signs for detecting aspiration in adults subsequent to stroke. *Journal of Communication Disorders, 34*, 55-72.

McHorney, C.A., Bricker, D.E., Robbins, J., Kramer, A.E., Rosenbek, J.C., & Chignell, K.A. (2000). The SWAL-QOL outcomes tool for oropharyngeal dysphagia in adults II: Item reduction and preliminary scaling. *Dysphagia, 15*, 115-121.

McHorney, C.A., Martin-Harris, B., Robbins, J., & Rosenbek, J. (2006). Clinical validity of the SWAL-QOL and SWAL-CARE outcome tools with respect to bolus flow measures. *Dysphagia, 21*(3), 1-8.

McHorney, C.A., Robbins, J., Lomax, K., Rosenbek, J.C., Chignell, K., Kramer, A.E., et al. (2002). The SWAL-QOL and SWAL-CARE outcomes tool for oropharyngeal dysphagia in adults III: Documentation of reliability and validity. *Dysphagia, 17*(2), 97-114.

McHorney, C.A., & Rosenbek, J.C. (1998). Functional outcome assessment of adults with oropharyngeal dysphagia. *Seminars in Speech and Language, 19*(3), 235-247.

Miller, R.M., & Langmore, S.E. (1994). Treatment efficacy for adults with oropharyngeal dysphagia. *Archives of Physical Medicine and Rehabilitation, 75*(11), 1256-1262.

Murray, J., Langmore, S.E., Ginsberg, S., & Dostie, A. (1996). The significance of accumulated oropharyngeal secretions and swallowing frequency in predicting aspiration. *Dysphagia, 11*(2), 99-103.

Chapter 10, *continued*

Nelson, K.J., Coulston, A.M., Sucher, K.P., & Tseng, R.Y. (1993). Prevalence of malnutrition in the elderly admitted to long-term care facilities. *Journal of the American Dietetic Association, 93*(4), 459-461.

Neumann, S. (1993). Swallowing therapy with neurologic patients: Results of direct and indirect therapy methods in 66 patients suffering from neurological disorders. *Dysphagia, 8*(2), 150-153.

Neumann, S., Bartolome, G., Buchholz, D., & Prosiegel, M. (1995). Swallowing therapy of neurologic patients: Correlation of outcome with pretreatment variables and therapeutic methods. *Dysphagia, 10*, 1-5.

Odderson, I.R., Keaton, J.C., & McKenna, B.S. (1995). Swallow management in patients on an acute stroke pathway: Quality is cost effective. *Archives of Physical Medicine and Rehabilitation, 76*, 1130-1133.

O'Neil, K.H., Purdy, M., Falk, J., & Gallo, L. (1999). The dysphagia outcome and severity scale. *Dysphagia, 14*(3), 139-145.

Panther, K. (2005, March). The Frazier free water protocol. *Perspectives on Swallowing and Swallowing Disorders (Dysphagia), 14*(1), 4-9.

Peck, A., Cohen, C.E., & Mulvihill, M.N. (1990). Long-term enteral feeding of aged demented nursing home patients. *Journal of American Geriatrics Society, 38*, 1195-1198.

Rademaker, A.W., Logemann, J.A., Pauloski, B.R., Bowman, J.B., Lazarus, C.L., Sisson, G.A., et al. (1993). Recovery of postoperative swallowing in patients undergoing partial laryngectomy. *Head & Neck, 15*, 325-334.

Robbins, J., Hamilton, J.W., & Kempster, G.B. (1992). Oropharyngeal swallowing in normal adults of different ages. *Gastroenterology, 103*, 829.

Rosenbek, J.C. (1995). Efficacy in dysphagia. *Dysphagia, 10*, 263-267.

Rosenbek, J.C., Robbins, J., Fishback, B., & Levine, R.L. (1991). Effects of thermal application on dysphagia after stroke. *Journal of Speech and Hearing Research, 34*, 1257-1268.

Rosenbek, J.C., Robbins, J., Willford, W., Kirk, G., Schittz, A., Sowell, T.W., et al. (1998). Comparing treatment intensities of tactile-thermal application. *Dysphagia, 13*, 1-9.

Rosenbek, J.C., Roecker, E.B., Wood, J.L., & Robbins, J. (1996). Thermal application reduces the duration of stage transition in dysphagia after stroke. *Dysphagia, 11*, 225-233.

Salassa, J.R. (1997). *A functional outcome swallowing scale (FOSS) for staging dysphagia*. Paper presented at the 39th Meeting of the American Society for Head and Neck Surgery, Scottsdale, AZ.

Schmidt, J., Holas, M., Halvorson, K., & Reding, M. (1994). Videofluoroscopy evidence of aspiration predicts pneumonia and death but not dehydration following stroke. *Dysphagia, 9*, 7-11.

Shaker, R., Easterling, C., Kern, M., Nitschke, T., Massey, V., Daniels, S., et al. (2002). Rehabilitation of swallowing by exercise in tube-fed patients with pharyngeal dysphagia secondary to abnormal UES opening. *American Gastroenterological Association, 122*, 1314-1321.

Shaker, R., Kern, M., Bardan, E., Stewart, E.T., & Hoffmann, R. (1997). Augmentation of deglutitive upper esophageal sphincter opening in the elderly by exercise. *The American Journal of Psychology, 272*, G1518-G1522.

Silbergleit, A., Jacobson, B., & Sumlin, T. (2004). *Dysphagia disability index: Development, design, and validation*. Rockville, MD: American Speech-Language-Hearing Association.

Chapter 10, *continued*

Smith-Hammond, C.A., New, K.C., Pietrobon, R., Curtis, D.J., Scharver, C.H., & Turner, D.A. (2004). Prospective analysis of incidence and risk factors of dysphagia in spine surgery patients: Comparison of anterior cervical, posterior cervical, and lumbar procedures. *Spine, 29*(13), 1441-1446.

Smithard, D.G., O'Neill, P.A., Park, C., Morris, J., Wyatt, R., England, R., et al. (1996). Complications and outcome after acute stroke. *Stroke, 27*(7), 1200-1204.

Splaingard, M.L., Hutchins. B., Sulton, L.D., & Chaudhuri, G. (1988). Aspiration in rehabilitation patients: Videofluoroscopy vs. bedside clinical assessment. *Archives of Physical Medicine and Rehabilitation, 69*, 637-641.

Steefel, J.S. (1981). *Dysphagia rehabilitation for neurologically-impaired adults*. Springfield, IL: Charles C. Thomas.

Strand, E.A., Miller, R.M., Yorkston, K.M., & Hillel, A.D. (1996). Management of oral-pharyngeal dysphagia symptoms in amyotrophic lateral sclerosis. *Dysphagia, 11*(2), 129-139.

Swigert, N.B. (1999). Functional outcomes and dysphagia management. In B.S. Cornett (Ed.), *Clinical practice management for speech-language pathologists* (Chapter 4). Gaithersburg, MD: Aspen Publishers, Inc.

Swigert, N.B., & Mullen, R.C. (2006). Use of data in service delivery. In A. Johnson & B. Jacobson (Eds.), *Medical speech-language pathology: A practitioner's guide* (2nd ed.). NYC: Thieme Medical Publishers, Inc.

Teichgraeber, J., Bowman, J., & Goepfert, H. (1985). New test series for the functional evaluation of oral cavity cancer. *Head and Neck Surgery, 8*(1), 9-20.

Uniform Data System for Medical Rehabilitation. (1995). *Functional independence measure (FIM)*. Amherst, NY: Author.

Unosson, M., Ek, A.C., Bjurulf, P., von Schenck, H., Larsson, J. (1994). Feeding dependence and nutritional status after acute stroke. *Stroke, 25*, 366-371.

Welch, M.V., Logemann, J.A., Rademaker, A.W., & Kahrilas, P.J. (1993). Changes in pharyngeal dimensions effected by chin tuck. *Archives of Physical Medicine and Rehabilitation, 74*, 178-181.

Winstein, C.J. (1983). Neurogenic dysphagia: Frequency, progression, and outcome in adults following head injury. *Physical Therapy, 63*, 1992-1997.

Yorkston, K.M., Strand, E., Miller, R., Hillel, A., & Smith, K. (1993). Speech deterioration in amyotrophic lateral sclerosis: Implications for the timing of intervention. *Journal of Medical Speech-Language Pathology, 1*(1), 35-46.