FOLLOW THE SWALLOW:
ASSESSMENT AND MANAGEMENT OF DEFICITS IN THE STROKE PATIENT

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INCIDENCE OF DYSPHAGIA

• INIncidence is high
• Up to 55% of stroke patients exhibit swallowing deficits
• Is an independent predictor of mortality
• Carries a severifold increased risk of aspiration pneumonia
• Increases dehydration and malnutrition
• Significantly affects quality of life
DYSPHAGIA INVOLVES MORE THAN COUGHING ON DRINKS OR FOOD

• DIFFICULTY CHEWING
• LIQUID OR FOOD LEAKING FROM THE MOUTH
• RESIDUE OF FOOD OR LIQUID IN THE MOUTH OR PHARYNX
• DIFFICULTY SWALLOWING PILLS
• SENSATION OF FOOD STICKING IN THE THROAT
• PAIN WITH SWALLOWING
NORMAL SWALLOW FUNCTION REQUIRES APPROPRIATE FUNCTION OF:

- BRAIN STEM
- BASAL GANGLIA
- THALAMUS
- LIMBIC SYSTEM
- CEREBELLUM
- MOTOR AND SENSORY CORTICES
CRANIAL NERVES INVOLVED WITH SWALLOW FUNCTION

V TRIGEMINAL NERVE
• INNERVATES MUSCLE INVOLVED IN SWALLOWING
• ASSISTS IN ELEVATING THE LARYNX
• PROVIDES FEEDBACK FROM ANTERIOR 2/3 OF TONGUE, FACE, MOUTH, MANDIBLE

VII FACIAL NERVE
• CONTRACTS LIP MUSCLES
IX GLOSSOPHARYNGEAL

• INNERVATES SALIVARY GLAND
• INNERVATES UPPER PHARYNGEAL CONSTRUCTOR MUSCLES
• INNERVATES MUSCLE S TO ELEVATE THE LARYNX AND PULL IT FORWARD
• PROVIDES SENSATION FROM POSTERIOR 1/3 OF TONGUE, VELUM, AND UPPER PHARYNX
VAGUS NERVE

- RAISES THE SOFT PALATE
- INNERVATES PHARYNGEAL CONSTRUCTORS
- INNERVATES MUSCLES OF THE LARYNX
- INNERVATES THE OPENING TO THE ESOPHAGUS
- CONTROLS MUSCLES INVOLVED IN ESOPHAGEAL STAGE AND RESPIRATION
XII HYPOGLOSSAL

• INNERVATES MUSCLES OF THE TONGUE

• INNERVATES STRAP MUSCLES OF THE NECK
SWALLOW REQUIRES 3 SEQUENTIAL PHASES

• ORAL
• PHARYNGEAL
• ESOPHAGEAL
ORAL STAGE

- Liquid or food is taken into the mouth
- Bolus formed by movements of tongue and chewing
- Soft palate moves upward and back to close the nasal cavity
- Tongue assists to move the bolus backward
- Buccal (cheek) muscles help to maintain bolus placement toward the tongue
- Lips provide a seal to prevent leakage
- Bolus is propelled back to base of the tongue to trigger the swallow
PHARYNGEAL PHASE

REQUIRES MULTIPLE COORDINATED AND ALMOST SIMULTANEOUS EVENTS

• AS THE TONGUE MOVES THE BOLUS POSTERIORLY AND THE SOFT PALATE ACHIEVES CLOSURE OF THE NASAL CAVITY

• THE TONGUE BASE MOVE STRONGLY BACK TO AID IN THE MOVEMENT OF THE BOLUS

• THE LARYNX MOVES UPWARD AND ANTERIORLY ALLOWING THE EPIGLOTTIS TO MOVE DOWNWARD CLOSING OFF THE AIRWAY

• VOCAL CORDS ACHIEVE FULL CLOSURE TO ASSIST IN PROTECTING THE AIRWAY
• THE UPPER ESOPHAGEAL SPHINCTER OPENS
• THE BOLUS TRAVELS INTO THE ESOPHAGUS

THE PHARYNGEAL PHASE TAKES APPROXIMATELY ONE SECOND
ESOPHAGEAL PHASE

- BOLUS ENTERS THE ESOPHAGUS
- PERISTALSIS AND GRAVITY MOVE THE BOLUS FURTHER INTO THE ESOPHAGUS UNTIL IT REACHES THE STOMACH

MOVEMENT THROUGH THE ESOPHAGUS TAKES 8-20 SECONDS
ORAL STAGE SYMPTOMS

• LIQUID OR FOOD MAY LEAK FROM THE MOUTH
• B0LUS CANNOT BE ADEQUATELY FORMED AND IT SPREADS/SCATTERS THROUGHOUT THE MOUTH
• RESIDUE IS LEFT IN THE MOUTH - “POCKETING” IN THE LATERAL OR ANTERIOR SULCI
• DIFFICULTY CHEWING SECONDARY TO WEAKNESS OR PARESIS
• DECREASED SENSITIVITY MAKES IT DIFFICULT FOR MOVEMENT OF THE BOLUS
PHARYNGEAL STAGE SYMPTOMS

- Delayed initiation of the swallow results in risk for aspiration
- Nasal regurgitation if liquid or food enters the nasal cavity
- Impaired airway protection (vocal cords do not adequately close)
- Residue in the pharynx after a swallow results in risk for aspiration
- Feeling of something stuck in the throat
MODIFIED BARIUM SWALLOW STUDIES

- NORMAL SWALLOW
- ASPIRATION
- LARYNGEAL PENETRATION
- DELAYED INITIATION
- RESIDUE IN THE PHARYNX
FEES

(FIBEROPTIC ENDOSCOPIC EVALUATION OF SWALLOW)
THE INCIDENCE OF DYSPHAGIA FOLLOWING STROKE IS:

A. 12% - 24%
B. 32% - 49%
C. 50% - 55%
D. 60% - 75%
NURSING’S ROLE IN DYSPHAGIA MANAGEMENT
DYSPHAGIA DEFINITION

ANY IMPAIRMENT IN SWALLOWING EFFICIENCY AND SAFETY INCLUDING:

• DELAYS IN TIMING OF MOVEMENTS
• REDUCED RANGE OF MOVEMENTS
• FRANK ASPIRATION OF LIQUIDS OR FOOD
“GOD HAS SPOKE TO ME AND CALLED ME TO HIS SERVICE.”

FLORENCE NIGHTENGALE
I have always wanted to help people and make an impact, and nursing seemed to be a good fit.

BARBARA LEE, NEURO ICU
I originally wanted to be a Physical Therapist, but there was no program in my community. I had 3 small children, so moving for school was not an option. We had a really good community college RN program & they had a great preschool for little kids. So I picked that. I am very glad I did. Turned out, I liked it and I was real good at the student part; and it turned out to be the work I was born to do.

JULIE WARD
My sister suffered a head injury at the age of 3. The nurses at Doernbecker’s Children's Hospital were amazing during her 3 month stay. I fell in love with the profession at age 14.

MANDY WILLIAMS, NEURO REHAB UNIT
I was interested in the human body/sciences with also a passion for the soul/art of nursing.

BRENDA SPLICHAL, 4NNA NEURO ICU
I remember helping my grandmother when she broke her arm, while I was growing up & how much I enjoyed that. Years later, when my daughter was ready to go to school, & I realized after she had completed a great deal of PT/OT that I had always wanted to be a nurse to help others achieve their goals – so I went back to school.

BETHEL SHUCH, NEURO REHAB
Hospital stays are when a person is the most scared and vulnerable. I like the possibility of bringing a moment of comfort and reassurance during a patient's stay.

ELVA LAFFORTHUN, NEURO REHAB
I wanted to help people get better, during sometimes, a life-altering or devastating time! Give hope when there may be none. I love what I do!

ROXANNA GONZALEZ, 6 NEURO
Twenty years ago the male: female nurse’s ratio was 1:20. I noticed, most of those beautiful ladies in line at the university where I was enrolled for an engineering course, were taking nursing courses. So instead of enrolling in Engineering, I went to nursing school & got a BSN. I remember having a big argument with my mom ‘cause she expected me to take a “real man” course.

KEN BACSIN, NEURO REHAB
My great-grandmothers and several aunts were all nurses. I also adored my nurse when I got my tonsils out at 3. They all influenced me.

AMBER GABLER, NEURO REHAB
I went to nursing school in 1989. There was a 10:1 female to male ration. Also, I have an internationally recognized certification.

MARK KIRBY, CHARGE NURSE 4/5NNA, (ICU)
Honest answer...is my older sister is a nurse and I always looked up to her. I could always get a job. The other option was to be a teacher for girls graduating when I did. However it is my calling and passion and I would do it all over again!

PATTY WHITE
COLLABORATION WITH THE DYSPHAGIA TEAM

- PHYSICIAN
- NURSING
- DIETICIAN
- RESPIRATORY THERAPIST
- OCCUPATIONAL THERAPIST
- PHYSICAL THERAPIST
- RADIOLOGIST
- GASTROENTEROLOGIST
- SPEECH-LANGUAGE PATHOLOGIST
DYSPHAGIA SCREENING FORM

• Review chart and note any of the 11 characteristics that are present in patient’s history
• Done on all patients before giving a patient food, drink, or oral medications
• Administered by licensed and trained staff
PRIOR TO BEGINNING SCREENING:

- Have oral suction @ bedside and set-up
- Perform oral care so that oral cavity is clean and moist
- No straw or spoons are used during the screening
SCREENING PROCEDURE

✓ 2 Water trials with specified amounts: 15 ML; 90ML

✓ **PATIENT FAIL (EITHER THE 1ST OR 2ND TRIAL)** = A NPO order will appear in the status, and a ST referral will be generated after the screening form is signed by the screener

✓ **PATIENT PASS** = Initiation of a PO order per provider

✓ Stay alert to signs of dysphagia and check aspiration monitors
SIGNS OF DYSPHAGIA AND ASPIRATION MONITORS

• LEAKAGE OF FOOD/LIQUID FROM MOUTH
• ORAL POCKETING OF FOOD
• PROLONGED MASTICATION
• EFFORTFUL SWALLOWING
SIGNS OF DYSPHAGIA AND ASPIRATION MONITORS (Continued)

• THROAT CLEARING
• WET/GURGLY VOICE
• FREQUENT COUGHING/CHOKING
• WORSENING OF LUNG SOUNDS
SIGNS OF DYSPHAGIA AND ASPIRATION
MONITORS (Continued)

• ELEVATED TEMPS
• DECREASING OXYGEN SATURATION LEVELS
• VOMITING ASSOCIATED WITH EATING AND DRINKING
• PROLONGED AND/OR STRESSFUL MEALTIMES
MAXIMIZING OUTCOMES WITH APPROPRIATE MEAL SET-UP AND USE OF SWALLOWING STRATEGIES

• DIET TEXTURE MODIFICATIONS
• POSITIONING
• ADAPTIVE EQUIPMENT
• SWALLOWING STRATEGIES/MANEUVERS
DIETS CORRESPOND TO THE NATIONAL DYSPHAGIA DIET GUIDELINES

• ESTABLISHED IN 2002 BY THE ACADEMY OF NUTRITION AND DIETETICS WHICH IS FORMERLY THE AMERICAN DIETETIC ASSOCIATION

• BEGINNING IN THE SUMMER OF 2015, THERE WERE INITIATIVES PUT IN PLACE TO STANDARDIZE DIETS INTERNATIONALLY IN ALL CULTURES AND WITH ALL AGE GROUPS IN REGARDS TO FOOD TEXTURES AND LIQUID CONSISTENCIES
NATIONAL DYSPHAGIA DIETS
(http://www.swallowingdisorderfoundation.com)

• **REGULAR DIET:** All foods are acceptable. Individuals have the ability to produce saliva and chew for as long as it takes food to be formed into a cohesive “ball” (bolus) for safe swallowing. Mixed textures are no problem.

• **DYSPHAGIA ADVANCED SOFT DIET (NDDIII):** Include foods of “nearly regular” textures with the exception of very hard, sticky or crunchy foods. This texture requires chewing and tongue control.
NATIONAL DYSPHAGIA DIETS
(http://www.swallowingdisorderfoundation.com)

- **DYSPHAGIA MECHANICAL SOFT DIET (NDDII):** Moist, soft textured foods. Meats are chopped or ground. Vegetables are well cooked and easily chewed. Foods are cut in small pieces (1/4” or 5mm).

- **DYSPHAGIA PUREED (NDD1):** Food should have a smooth texture, like pudding consistency. Can hold its shape on a spoon. No lumps & not sticky. Pureed foods can be piped or molded and will not spread out if spilled.
NATIONAL DYSPHAGIA DIETS:
(www.essentialpuree.com/national-dysphagia-diet)

• CLEAR LIQUID DIET – Regular liquid which contains no solids
• FULL LIQUID DIET – Regular liquid that contains pureed solids
• NECTAR-THICK LIQUIDS: Liquids resemble a lightly set gelatin. NTL requires a little more effort to drink than thin liquid. Individual has more control through the swallow & it is easier than thin liquid. Can be used with a straw.
NATIONAL DYSPHAGIA DIETS:
(ESSENTIALPUREE.COM/NATIONAL-DYSPHAGIA-DIET)

• **HONEY-THICK LIQUIDS:** Thicker than nectar, and resembles honey as it flows off of a spoon. It allows for a more controlled swallow. Need to use a wide-bore straw vs a standard straw.

• **PUDDING-THICK LIQUIDS:** Liquid stays on the spoon in a heap, but will not hold its shape. These liquids are sipped by cup or taken by spoon.
THICKENING AGENTS FOR DYSPHAGIA PATIENTS

COMMERCIAL AGENTS ARE GUM-BASED OR STARCH-BASED:

- Thick-It
- Quik Thick
- Thicken Right
- Resource Thicken Up Clear
- Hormel Thick & Easy Instant Food Thickener
NATURAL THICKENING AGENTS

Raspberry Apple Sauce, Honey, Yogurt, Pudding, Agar-agar, Bananas Or Banana Flakes, Unflavored/Flavored Gelatin, Pudding Mix, Baby Rice/Cereal, Potato Flakes, Mashed White/Sweet Potatoes, Pureed Fruits, Thick Sauces Or Gravies, Canned Pureed, Strained Meat (Baby Food), Cooked Cream Of Rice Or Wheat Cereal, Bread Crumbs, Cornstarch, Custard Mix, Graham cracker crumbs,
NATURAL THICKENING AGENTS (Continued)

Thick Sauces Or Gravies, Canned Pureed, Strained Meat (Baby Food), Cooked Cream Of Rice Or Wheat Cereal, Break Crumbs, Cornstarch, Custard Mix, Graham Cracker Crumbs, Plain Sauces (White, Cheese, Tomato), Pureed Fruits (Baby Food), Pureed Meats (Baby Food), Pureed Vegetables (Baby Food), & Saltine Cracker Crumbs.
POSITIONING

• IN BED OR CHAIR - UPRIGHT WITH BACK STRAIGHT & SUPPORTED
• IN BED OR CHAIR - PELVIS SHOULD BE LEVEL & EQUAL WEIGHT ON HIPS
• HIPS FLEXED AND BACK IN THE SEAT OF THE CHAIR
• KNEES SHOULD BE FLEXED TO 90 DEGREES.
• FEET ARE FLAT AND SUPPORTED ON FLOOR/FOOTREST
• Wedges, pillows, and bolsters should be utilized to assist with upright positioning.

• Safety chairs, hip belts, chair trays, or tables to lean on can help increase stability.

• The inclined side lying position can be an alternative: fair body alignment, slight chin tuck head position, gravity assists food to go to stomach, food is less likely to pool at posterior wall of stomach, which could cause regurgitation later.
ADAPTIVE EQUIPMENT

- PLATE GUARD
- ADAPTIVE UTENSILS
- SPECIAL CUPS
- TOWELS FOR COVERING
- WRIST WEIGHTS
BEHAVIORAL STRATEGIES

• SMALL BITES AND SMALL SIPS
• SLOW RATE OF EATING
• ALTERNATE SMALL BITES WITH SMALL SIPS/LIQUID WASH
• FINGER SWEEP
• DOUBLE/MULTIPLE SWALLOWs
• THROAT CLEARING
POSTURAL CHANGES

- SIDE- LYING POSITION
- HEAD TILT
- HEAD ROTATION
- CHIN TUCK
- HEAD BACK
SWALLOWING MANEUVERS

- EARLY BREATH-HOLD MANEUVER
- SUPRAGLOTTIC SWALLOW
- SUPER-SUPRAGLOTTIC SWALLOW
- EFFORTFUL/HARD SWALLOW
- MENDELSONH MANEUVER
NEUROMUSCULAR ELECTRICAL STIMULATION

• ALSO KNOWN AS VITAL STIMULATION

• IT IS ELECTRICAL STIMULATION THAT IS DONE DURING PO INTAKE USING SWALLOWING STRATEGIES. IT ACCELERATES STRENGTHENING, RESTORES FUNCTION, AND HELPS THE BRAIN REMAP THE SWALLOW PROCESS.

• CLINICIANS HAVE TO COMPLETE SPECIALIZED COURSEWORK AND BECOME CERTIFIED.
FRAZIER WATER PROTOCOL

• The free water protocol allows patients who are NPO or on thickened liquids to have ice chips/water between meals when following specific guidelines.
• Oral care must be done prior to consuming ice chips/water
• Patient is allowed to drink water between meals and 30 minutes after meals.
• Patient should sit upright and use appropriate swallowing strategies.
SWALLOWING PRECAUTIONS

Diet: 
Liquids:

☐ Sit fully upright at 90°
☐ Small bites / sips
☐ Alternate liquids / solids
☐ Eat & drink slowly
☐ Clear residue (pocketing) from L / R side
☐ Throat clear
☐ Chin tuck
☐ Swallow twice with each bite
☐ Crush pills in applesauce as able
☐ Ice chips ok for oral comfort

Supervision Level:

Please contact Speech Language Pathologist, _____________, with questions. Thank you.
Swallow Precautions

Patient: ____________________________ Date: ____________

☐ 1:1 Supervision ☐ Restorative Dining ☐ In Room Dining

Restorative Dining Priority: I II III

Family Trained: ☐ Yes ☐ No Who:

Adaptive Equipment Needed: ____________________________

Diet: ____________________________

Strategies:

______________________________
FINAL THOUGHTS

• YOUR ROLE IN ASSISTING THE DYSPHAGIA PATIENT MEET THEIR NUTRITIONAL AND HYDRATION NEEDS IS CRITICAL

• SCREEN YOUR PATIENTS ACCURATELY AND IN A TIMELY MANNER

• ENSURE DYSPHAGIA COMMUNICATION IS ACCURATE AND DISPERSED AMONG THE TEAM MEMBERS

• MAXIMIZE SAFETY OF SWALLOWING MEDICATIONS WITH GOOD POSITIONING AND CORRECT LIQUID MODIFICATION

• UNDERSTAND AND FOLLOW THE SLP’S DYSPHAGIA RECOMMENDATIONS


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