

Management of Voice, Speech and Swallowing Issues in PD

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August 10th, 2022

About Me

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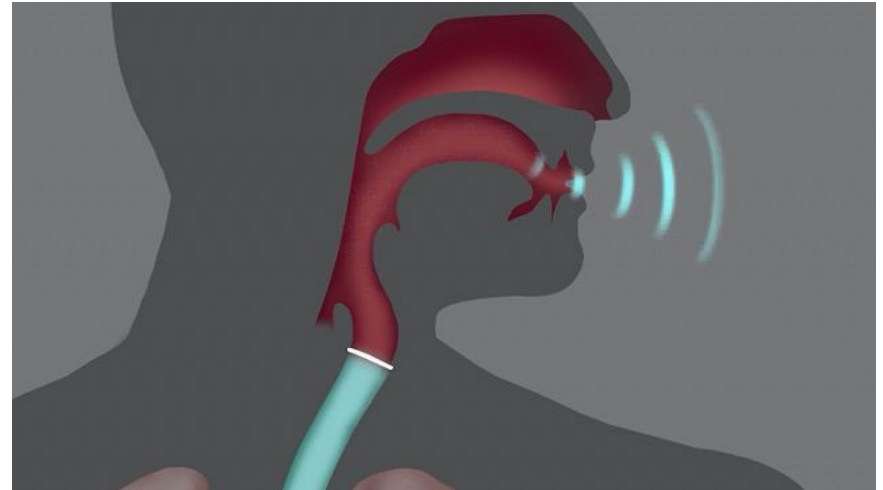


Today's Learning Objectives

- ▶ Talk about normal communication and swallowing function
- ▶ Talk about signs and symptoms of abnormal communication and swallowing function
- ▶ Talk about why progressive changes happen in these domains for persons with PD
- ▶ Talk about the role of a SLP in evaluation and treatment
- ▶ Talk about common management and treatment options

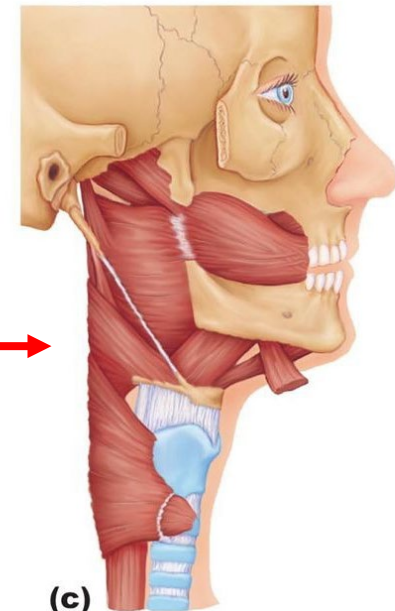
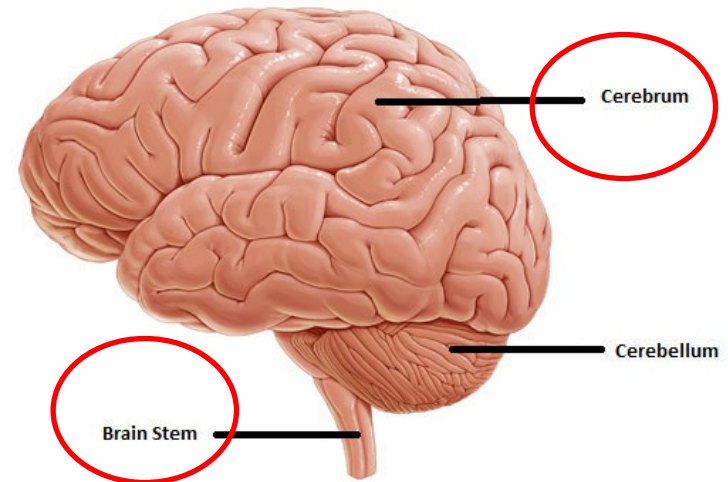
The WHY?

- ▶ Why are speech and swallowing function so important?
- ▶ The average person swallows about 900 times per day
 - 1x per minute while awake
 - 3x per hour while sleeping
 - Even more during a meal!!!!
- ▶ Most professionals spend 50-80% of their day communicating, 2/3rd in that for actual talking



Normal Swallowing

- ▶ Swallowing is complex event
 - Involves ~50 pairs of muscles
 - Many sensory and motor cranial nerves
- ▶ It's mostly an automatic process
- ▶ However, both the cortical and brainstem regions of our brain provide neural input
- ▶ The muscles in our head and neck execute the motor plans for swallowing once signals are sent from the brain via cranial nerves



Normal Swallowing (cont.)

- ▶ So how does it work?
- ▶ We break swallowing down into roughly 3 phases or stages
 - ▶ Oral (*aka mouth*)
 - ▶ Pharyngeal (*aka throat*)
 - ▶ Esophageal (*aka esophagus or food pipe*)
- ▶ They are interdependent of one another
- ▶ This highly sequenced event can last ~1 second in a healthy adult

Normal Communication

- ▶ Communication is also a complex event that involves multiple brain networks and ~100 muscles
- ▶ Requires many different processes, from putting thoughts into words, forming a comprehensible sentence, and then physical production of voice and speech

Normal Communication

- ▶ To simplify things....
 - Voice is sound production
 - Speech is the modified “final product”
- ▶ Voice production depends on
 - An air pressure system
 - A vibratory system
 - A resonatory system
- ▶ Speech production depends on
 - Movement of the palate, tongue, lips, teeth, etc. to shape each sound



Normal Communication

How does it work?

- ▶ Diaphragm contracts and expand vertically to lift the rib cage and inflate the lungs
- ▶ When it's time to speak, air is forcibly thrust upwards to the larynx until high pressures cause the vocal folds to blow open/closed
- ▶ High speed movement of air through the vocal folds causes sound vibration
- ▶ This sound wave is then resonated upwards into the throat, mouth and nasal tracts
- ▶ We position the velum, tongue, jaw, lips, teeth against other parts of vocal tract to shape sound

WHAT HAPPENS WHEN THINGS GO WRONG?

Abnormal Swallowing

Better Question: What happens when things don't go perfectly right?!

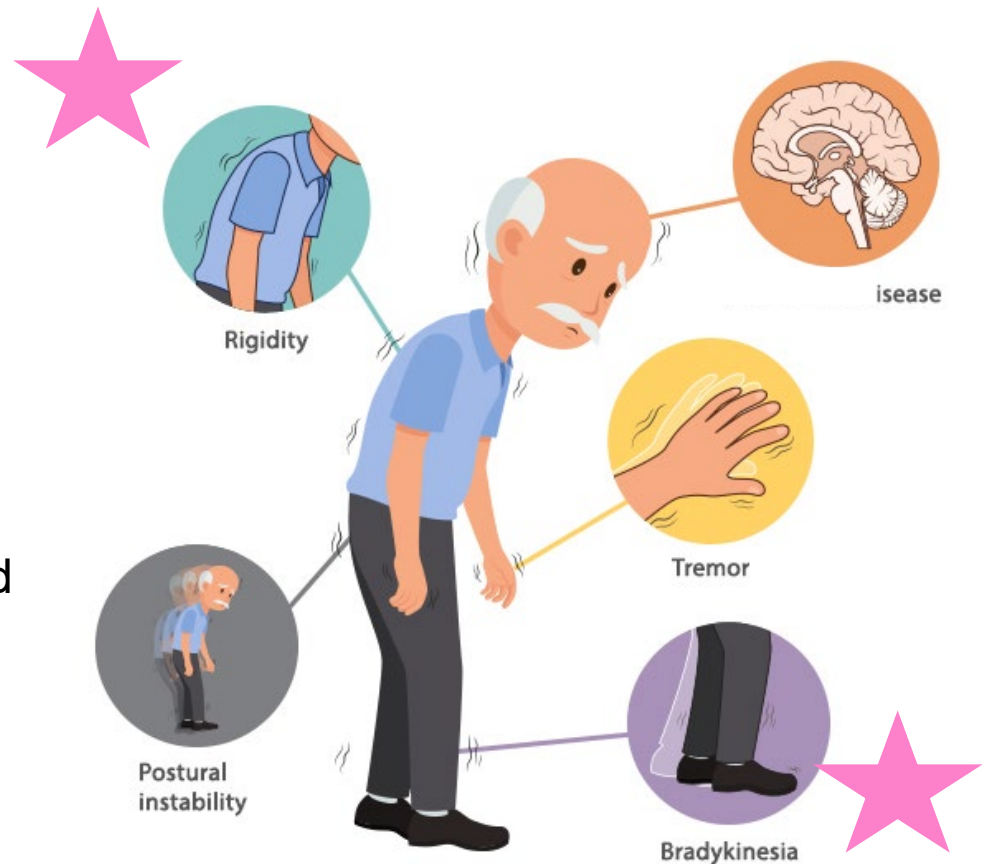
- Swallowing events require so many things to be perfect
 - Good awareness of what the person is eating/drinking
 - Good posture and alertness
 - Good strength, tone and range-of-motion in all the muscle groups
 - Good timing and coordination of muscle movement

Result: it's really EASY for something to be “off”

- Dysphagia is the medical term most widely used to refer to any kind of swallowing difficulty, abnormality, or discomfort.

Etiology and Reasoning

- Persons with PD have these primary motor impairments:
 - Bradykinesia (small movement)
 - Rigidity (stiff movement)
 - Akinesia (lack of movement)
 - Dyskinesia (extra abnormal movements)
- They can impact the swallow and speech muscles the same way they impact the muscles in our arms, legs, trunk, etc.
 - E.g. Lung movement for speech breathing
 - E.g. Pharyngeal movement for bolus clearance



Signs and Symptoms

Oral Stage

- Chewing is slow and/or effortful
- Food, liquid or saliva pools out the front of the mouth
- Fast, impulsive eating or drinking (e.g. over-stuffing, “chugging”)
- Holding food in the mouth for prolonged periods before swallowing
- “Pocketing” food or liquid in the cheek cavities
- Prolonged mealtimes

Pharyngeal + Esophageal

- Increased effort to start a swallow
- Coughing
- Throat clearing
- Wet voice after swallowing
- Feeling like something is sticking in the throat
- Choking sensation
- Having to swallow multiple times to get something down

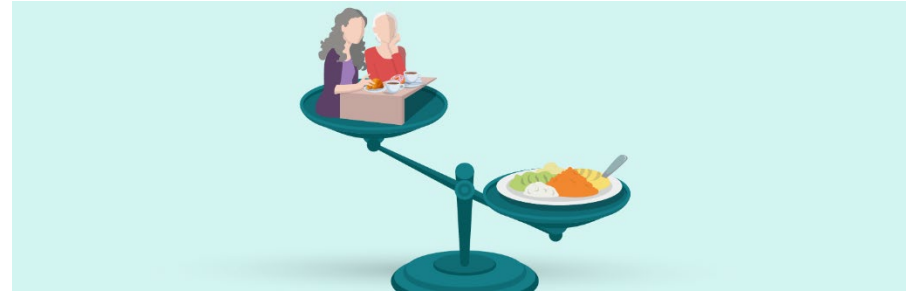
Consequences

► Vary from patient to patient

- Onset
- Frequency
- Severity

► Includes things like:

- Dehydration and malnutrition
- Unintentional weight loss
- Pneumonia or other pulmonary complications
- Death
- Increased health care costs
- Disinterest or reduced enjoyment in meals
- Embarrassment
- Social isolation
- Overall reduced quality of life



Terminology:

- ▶ Dysphonia: medical term that refers specifically to disorders of the voice only
- ▶ Dysarthria: medical term that refers to dysfunction at one or many levels of the speech mechanism (e.g. respiratory, laryngeal, articulatory, rate, resonatory, prosody, etc).
- ▶ Patients with PD typically have a “hypokinetic dysarthria”

Signs

- ▶ Vocal intensity (volume) is low
- ▶ Vocal quality is breathy, weak and hoarse
- ▶ Speed becomes fast and indistinguishable
- ▶ Articulation becomes small and blurred
- ▶ Prosody is monotone
- ▶ May occasionally stutter

Consequences

- ▶ Vary from patient to patient
 - Onset
 - Frequency
 - Severity
- ▶ Includes things like:
 - Vocal discomfort or pain
 - Miscommunications
 - Early retirement or forced unemployment
 - Disinterest or reduced enjoyment in social gatherings/functions
 - Embarrassment
 - Depression
 - Social isolation and social anxiety
 - Overall reduced quality of life

SO WHAT CAN WE DO?

Role of The SLP

- ▶ Speech-Language Pathologists have a wide scope of practice
 - Speech production and fluency
 - Language and cognition
 - Voice and resonance
 - Feeding and swallowing
 - Auditory rehabilitation
- ▶ We see people across the lifespan

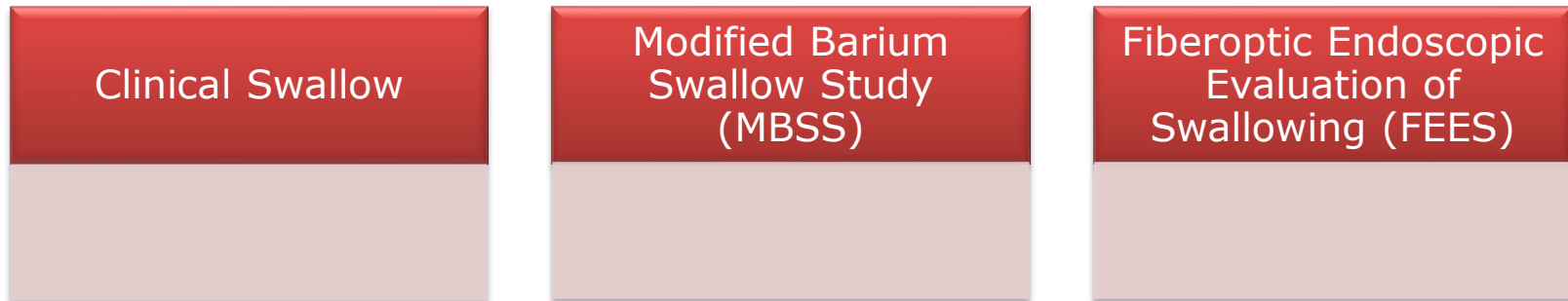


- ▶ Many SLPs are trained to be generalists, but some are more specialized in working with neurologic conditions
- ▶ Physicians can refer a patient to see an SLP for communication and swallowing problems, just like they refer for PT and OT

Role of the SLP for Swallowing

Step 1: Evaluation

- ▶ SLPs have 3 different types of evaluations they can conduct with a patient



- ▶ Each evaluation type has its own positive and negative features
- ▶ Certain factors may determine which type(s) a patient receives
 - Clinician's preference
 - Facility and equipment limitations
 - Nature and severity of the patient's dysphagia symptoms
 - Medical fragility of patient

Role of the SLP Treatment

Step 2: Treatment

- ▶ Once the SLP knows the physiological reason *why*, treatment can begin
- ▶ Treatment recommendations are usually broken down into 3 areas



Dietary Modifications



Behavioral Adaptations + Strategies



Therapeutic Exercises

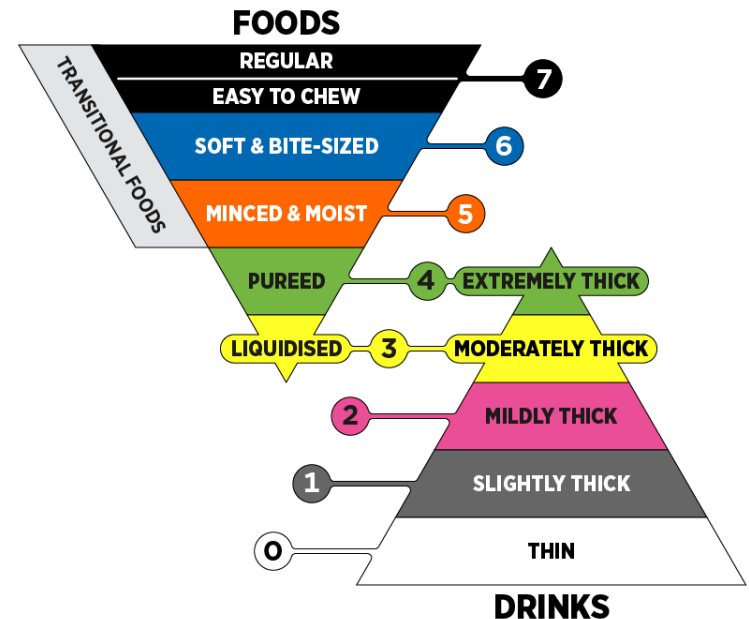
- ▶ Unfortunately, there's no specific medication(s) or surgery that can fix the whole problem

Dietary Modifications

- ▶ Based on the evaluation....
- ▶ Certain consistencies of food and/or liquid may need to be altered, avoided, or eliminated from diet
- ▶ Commercial thickening products can be mixed into liquids
 - Sometimes labeled as “nectar thick” or “honey thick”
 - Can be powder or gel-based
 - Don’t need a prescription
 - Examples: SimplyThick, ThickIt, Thick & Easy
- ▶ Decisions about feeding tube placement are discussed on an individual basis

The IDDSI Framework

Providing a common terminology for describing food textures and drink thicknesses to improve safety for individuals with swallowing difficulties.

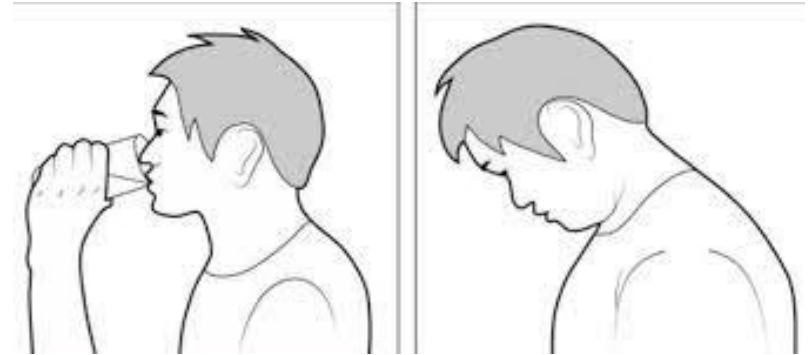


© The International Dysphagia Diet Standardisation Initiative 2019 @ <https://iddsi.org/framework/>
Licensed under the Creative Commons Attribution Sharealike 4.0 License <https://creativecommons.org/licenses/by-sa/4.0/legalcode>.
Derivative works extending beyond language translation are NOT PERMITTED.

Behavioral Adaptations + Strategies

► Change how you eat + drink

- Small sips/bites
- Slowing down pace of eating
- Alternating liquids/solids
- Taking pills 1x time



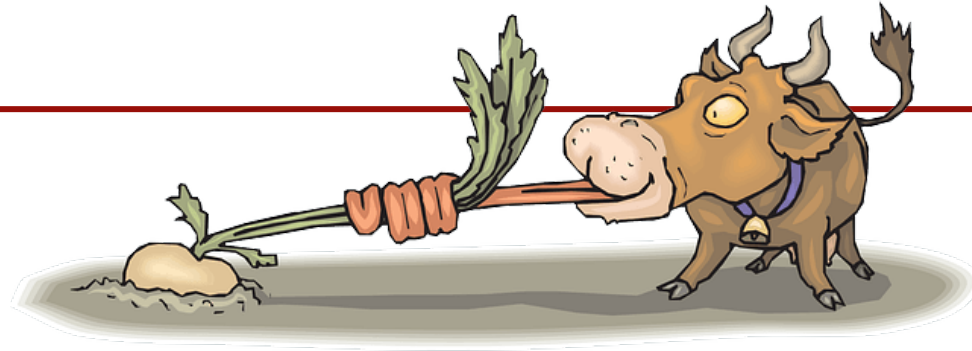
► Change your posture

- Always be seated upright
- Maintain a neutral chin
- Avoid tilting head back
- Chin tuck or head turns can be used as effective maneuvers for some



Therapeutic Exercise

- ▶ Swallowing exercises can be helpful early in the course of disease
 - Not everyone is a candidate
- ▶ Exercises are NOT “one size fits all”
 - SLPs base them on the different types of physiologic impairments that they see (e.g. tongue versus throat muscles)
- ▶ The exercise program also can vary
 - Intensity
 - Frequency
 - Duration
- ▶ Outcomes are not always visible; goal is sometimes to maintain rather than improve
- ▶ Maintenance is required for upkeep



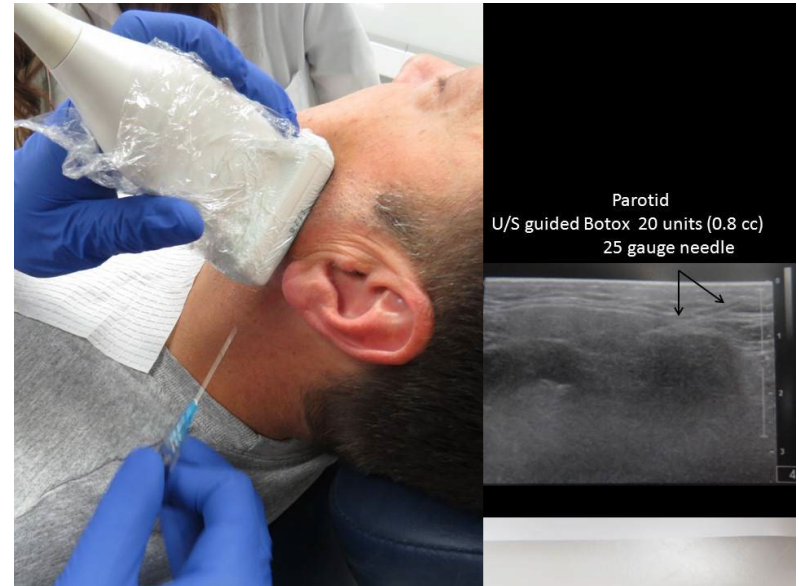
Medical Dysphagia Interventions from Physician

► Drooling

- A neurologist or ENT can provide Botox injections to the salivary glands in severe cases of drooling
- Must be done every 3-4x months for continued benefit
- There are also medications that can be take daily to prevent secretion production
- Neither are a perfect fix!

► Vocal Fold Immobility

- If there is paresis or paralysis in the vocal folds, ENTs can recommend injections or surgical interventions to improve closure



Role of the SLP for Communication

Step 1: Evaluation

- ▶ SLPs need to hear you talk!
 - Examination of the oral mechanism and testing cranial nerve function
 - Complete speech and non-speech tasks to see how each mechanism is functioning
 - ▶ Julie to give examples
 - IF needed, Pt may need to undergo a laryngoscopy to look at laryngeal function for things like:
 - ▶ Incomplete glottal closure
 - ▶ Muscle tension
 - ▶ Cysts or nodules

Role of the SLP Treatment

Step 2: Treatment

- ▶ Once the SLP knows which speech mechanisms are impaired, treatment can begin
- ▶ Treatment recommendations are usually broken down into 2 areas



Behavioral Adaptations +
Strategies



Therapeutic Exercises

- ▶ Again, there's no specific medication(s) or surgery that can fix the whole problem

Behavioral Adaptations + Strategies

► Change how you talk

- Maintain an upright posture when talking
- Deep breath before every sentence
- Pace yourself to one word at a time
- Keep mouth open and over-exaggerate each sound
- Always say a topic sentence first so people know the context
- Directly face the person you're talking to
- Plan important conversations for when you're at your best

► Change how they listen

- Turn off background noise
- Ask closed questions (e.g. yes-no, multiple choice)
- Repeat portions that you did understand
- Give constructive and supportive feedback

Therapeutic Exercise

- ▶ Speech exercises can be started early on and maintained throughout the disease span
- ▶ Like with swallowing, the exercise programs also can vary
 - Intensity
 - Frequency
 - Duration
- ▶ Maintenance is **REQUIRED** for upkeep (“USE IT OR LOSE IT”)
- ▶ Several different programs out there:
 - Lee Silverman Voice Therapy (“LSVT LOUD”)
 - Parkinson’s Voice Project (“SpeakOut”)
 - Respiratory Muscle Strength Training programs (EMST + IMST)
- ▶ Most patients do best with a combination of strength training and behavioral training

Medical Dysphonia Interventions from Physician

- ▶ As with dysphagia, ENT can utilize injectables to help with laryngeal pathologies impacting the voice such as....
 - Vocal bowing and tissue loss
 - Incomplete glottal close during phonation
 - Extra muscle tension in the laryngeal structures
- ▶ Best outcomes are achieved when ENT procedures are paired with therapy exercises from SLP



Assistive Technology

- ▶ When voice and speech production become arduous, technology can always step in to help
- ▶ Low tech options
 - Letter boards
 - Picture boards
- ▶ High tech options
 - Speech generating apps on iPhone, iPad, computer
 - Personal amplification devices (e.g. microphones)
 - SpeechVive device TM



Conclusions and Wrap-Up

- ▶ Impairments to communication and swallowing are frequent and disabling symptoms for persons with PD
- ▶ Most all persons with PD will experience symptoms of dysphonia, dysarthria, or dysphagia at some point in their disease
- ▶ The onset time, progression and severity of these symptoms varies from patient to patient
- ▶ The SLP plays an important role in the management of progressive communication and swallowing disorders
- ▶ Evaluation + treatment options vary depending on the facility location/resources, clinician preferences, and individual circumstances
- ▶ THERE IS HOPE!!!

Resources

- ▶ American Speech-Language-Hearing Association (ASHA):
<https://www.asha.org/practice-portal/clinical-topics/adult-dysphagia/>
<https://www.asha.org/public/speech/disorders/dysarthria/>
- ▶ National Foundation for Swallowing Disorders:
<https://swallowingdisorderfoundation.com/>
- ▶ American Board of Swallowing and Swallowing Disorders:
<https://www.swallowingdisorders.org/>
 - *Use their “Find a Specialist” feature!
- ▶ Dysphagia Research Society: <https://www.dysphagiaresearch.org/>
- ▶ International Dysphagia Diet Standardization Initiative (IDDSI):
<https://iddsi.org/Resources/Patient-Handouts>
- ▶ Parkinson’s Foundation <https://www.parkinson.org/speech-swallowing-library>
- ▶ Stanford Neurology: <https://med.stanford.edu/parkinsons/symptoms-PD/speech-swallowing.html>