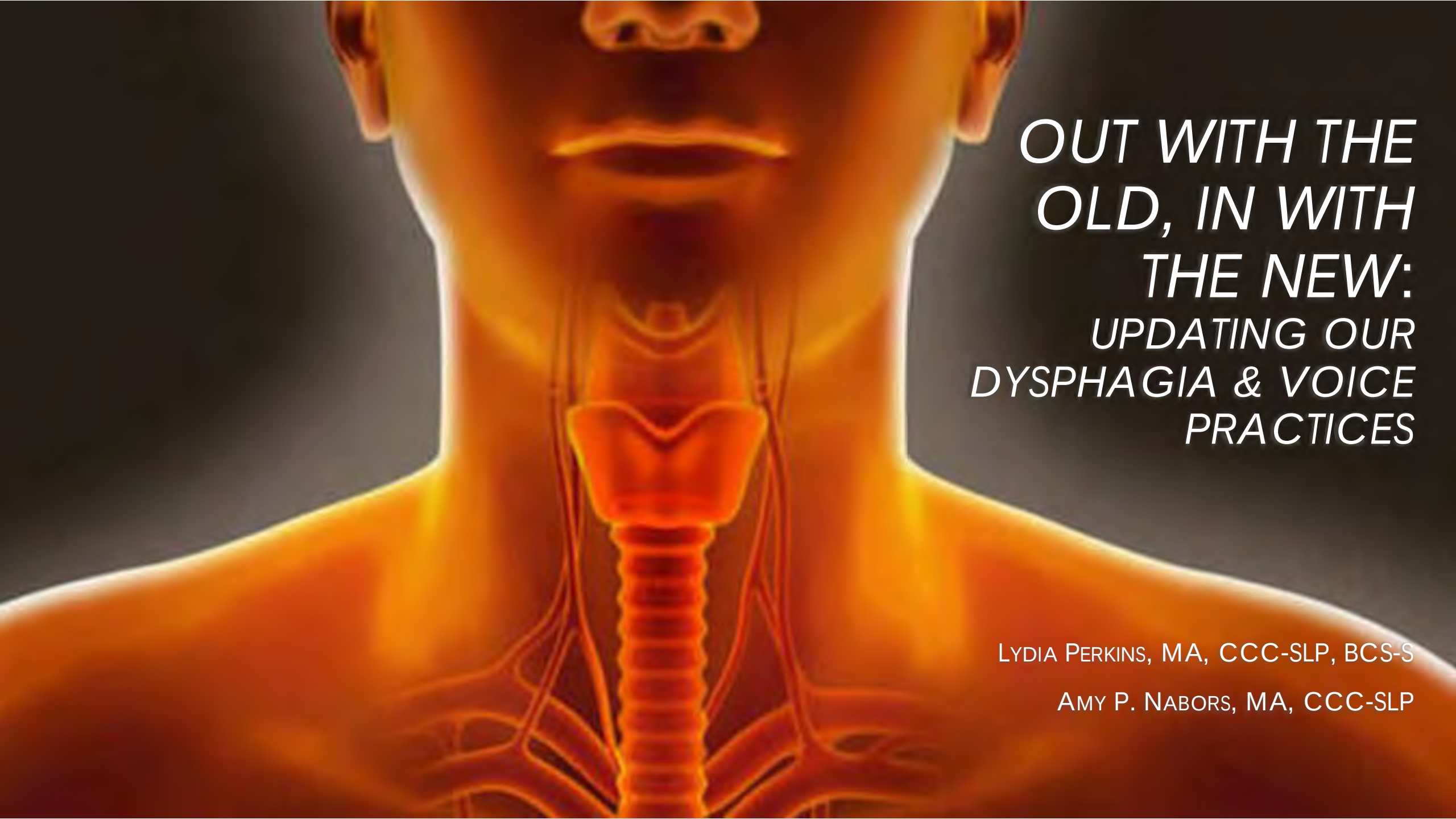


OUT WITH THE OLD, IN WITH THE NEW: UPDATING OUR DYSPHAGIA & VOICE PRACTICES

LYDIA PERKINS, MA, CCC-SLP, BCS-S

AMY P. NABORS, MA, CCC-SLP

DISCLOSURES

- Lydia Perkins
  - Financial: Employed by a number of hospitals in memphis: my views are my own and do not represent my employer(s); Adjunct lecturer at University of memphis
  - Non-Financial: Member of ABSSD, ASHA, SIG 13 (Dysphagia)

- Amy P. Nabors
  - Financial: Employed by the University of Memphis as an hourly employee, clinical supervisor. A portion of work is paid for by Methodist University's Laryngology Department. My views are my own and do not represent my employer(s)
  - Non-Financial: Member of ASHA, SIG 03 (Voice Disorders)

OUTLINE

- Intro
- Dysphagia
- Short Break
- Voice
- Wrap-Up, Questions

2/21/2026 3

SLP'S ROLE IN REFLUX MANAGEMENT AND OBSTRUCTIVE SLEEP APNEA

- Both can impact swallowing
- Pathophysiology
- Behavioral/Educational Strategies
- Referrals/multidisciplinary participation
- Exercises

Reflux

- A few kinds
  - GER - Gastroesophageal Reflux (Normal, occasional)
  - GERD – Gastroesophageal Reflux Disease (consistent, causes other issues)
  - LPR – Laryngopharyngeal Reflux Disease (reflux that reaches the larynx & pharynx)
- Why does it matter?
  - repeated exposure to reflux
    - Esophagitis
    - Dysmotility
    - Peptic stricture
    - Barrett's esophagus
    - Adenocarcinoma
    - Cervical Web
    - CP bar
    - LPR/respiratory complications
    - Dysphagia & dysphonia

REFLUX & DYSPHAGIA

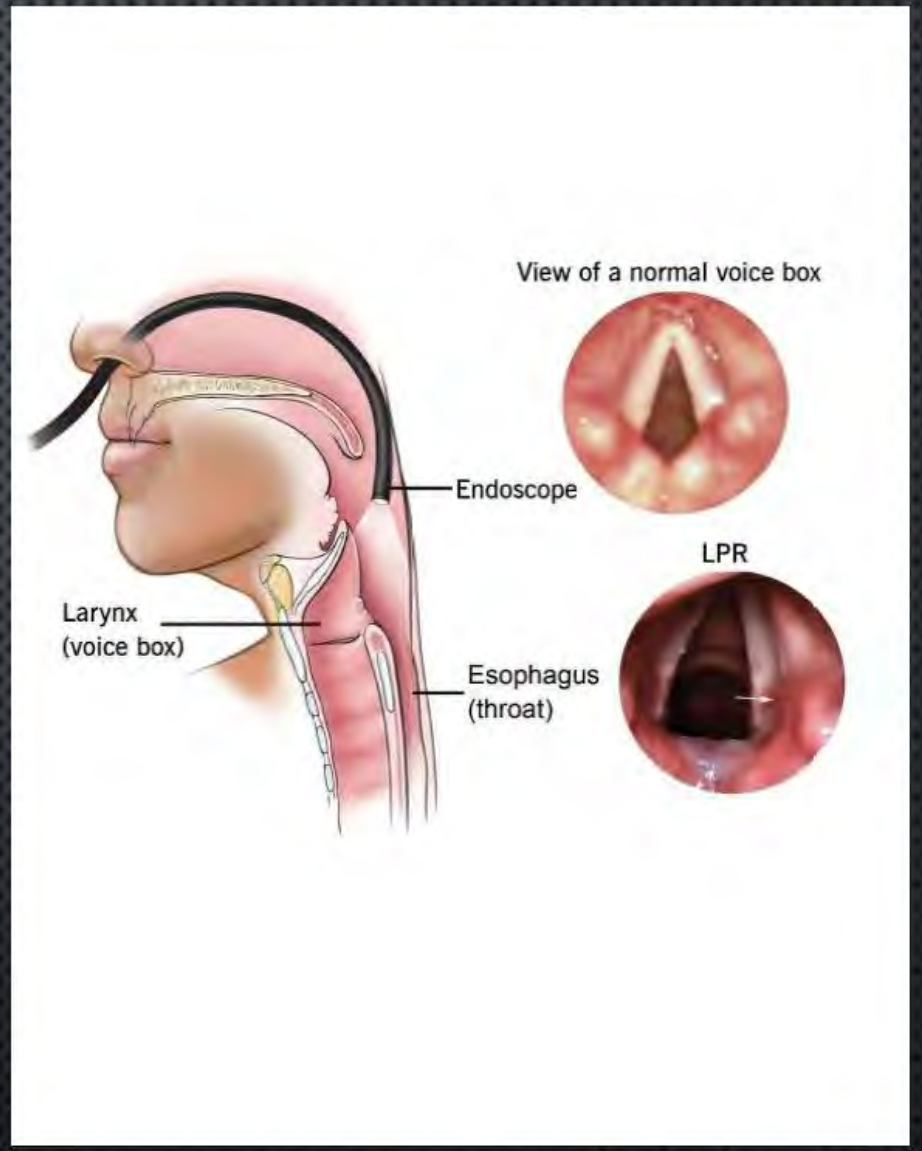
- SPECIFIC PATIENT COMPLAINTS:
  - GLOBUS
  - DYSPHAGIA TO SOLIDS AND PILLS
  - FEELING OF EXCESS MUCUS IN THROAT
  - NEEDING TO PERFORM EFFORTFUL SWALLOW

PHYSICAL DEFICITS:

DELAY IN SWALLOWING (SENSORY RELATED)

ORAL PHASE DELAY (SENSORY FEEDBACK DISRUPTION)

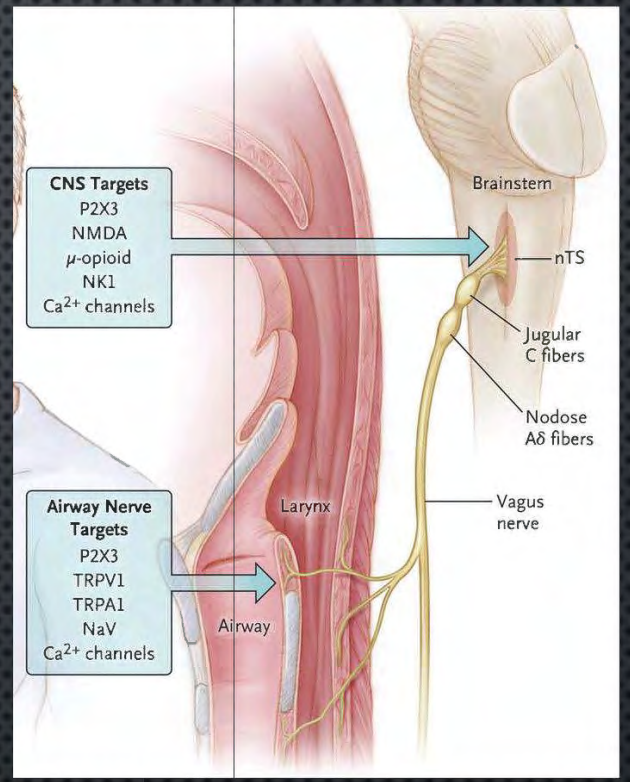
CRICOPHARYNGEAL HTN (IMPACTS HLE, CAN HAVE TETHERING EFFECT)



Results in – increased residue in pharynx, discomfort when eating/drinking, more frequent occurrences of aspiration/penetration, feeling like you can't "get your swallow started."

REFLUX & DYSPHAGIA

- OTHER COMPLICATIONS:
  - REFLUX RELATED CHRONIC COUGH
    - ESOPHAGUS AND AIRWAYS SHARE VAGAL C-FIBERS (IRRITATION IN ONE AREA = RESPONSE IN ANOTHER)
    - COUGH REFLEX BECOMES HYPERSENSITIVE



May see chronic cough without any LPR on instrumentation

SCREEN FOR REFLUX DURING FEES

- REFLUX FINDING SCORE DURING FEES. SCORE OF >7 = 95% CERTAINTY FOR LPR

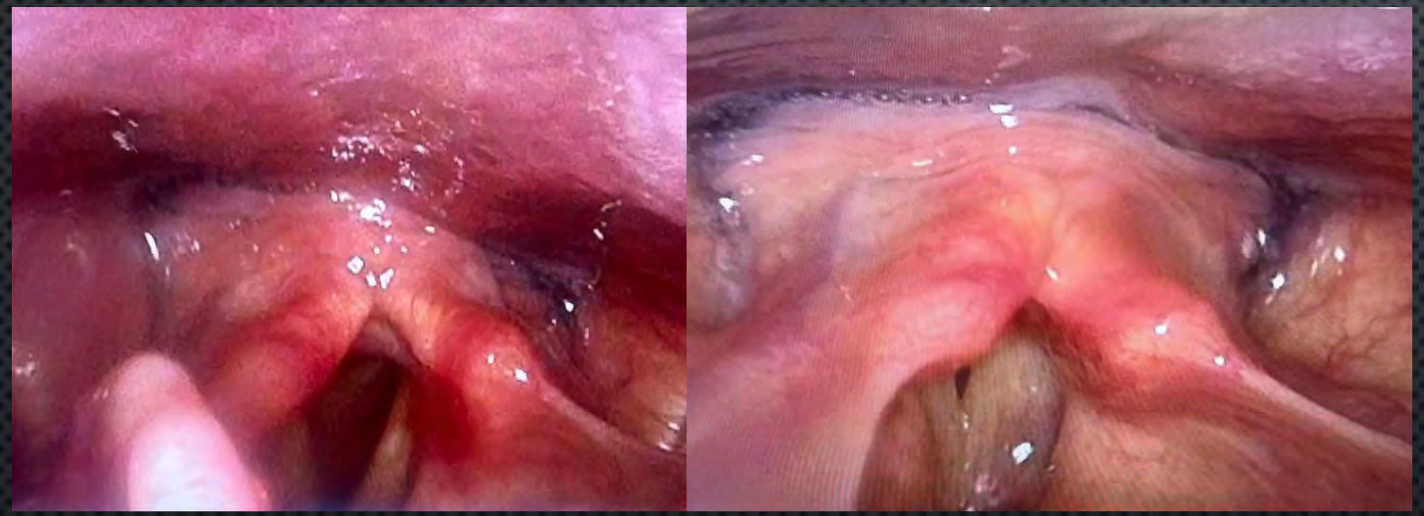


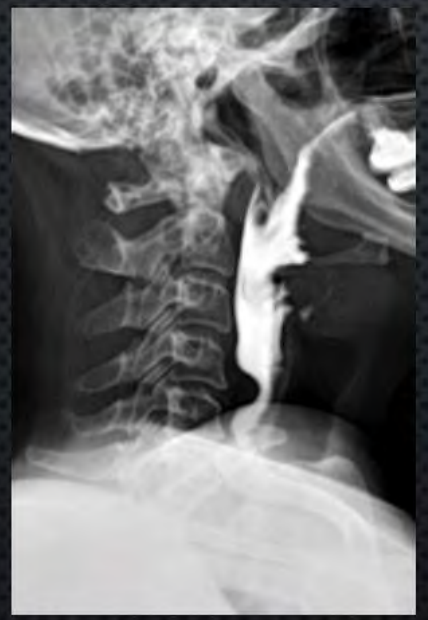
TABLE I.
Reflux Finding Score (RFS).

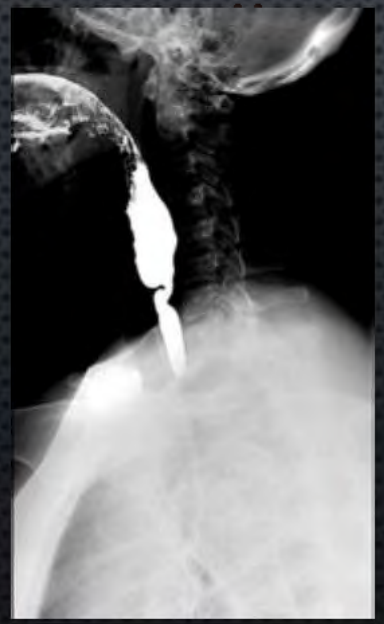
Subglottic edema	0 = absent
	2 = present
Ventricular	2 = partial
	4 = complete
Erythema/hyperemia	2 = arytenoids only
	4 = diffuse
Vocal fold edema	1 = mild
	2 = moderate
	3 = severe
	4 = polypoid
Diffuse laryngeal edema	1 = mild
	2 = moderate
	3 = severe
	4 = obstructing
Posterior commissure hypertrophy	1 = mild
	2 = moderate
	3 = severe
	4 = obstructing
Granuloma/granulation tissue	0 = absent
	2 = present
Thick endolaryngeal mucus	0 = absent
	2 = present

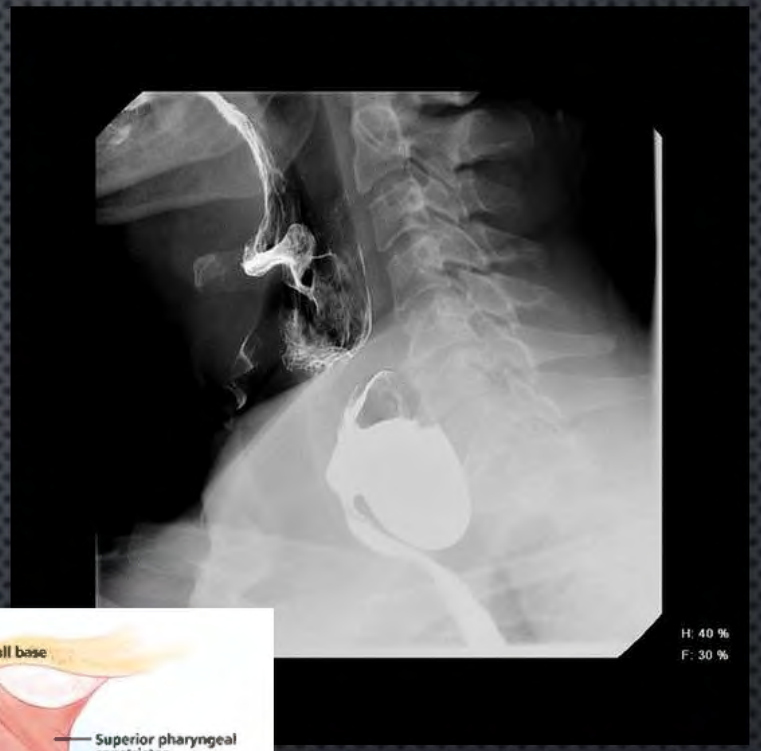
Belafsky, P.C., Postma, G.N. and Koufman, J.A. (2001), The Validity and Reliability of the Reflux Finding Score (RFS)†. The Laryngoscope, 111: 1313-1317. https://doi.org/10.1097/00005537-200108000-00001

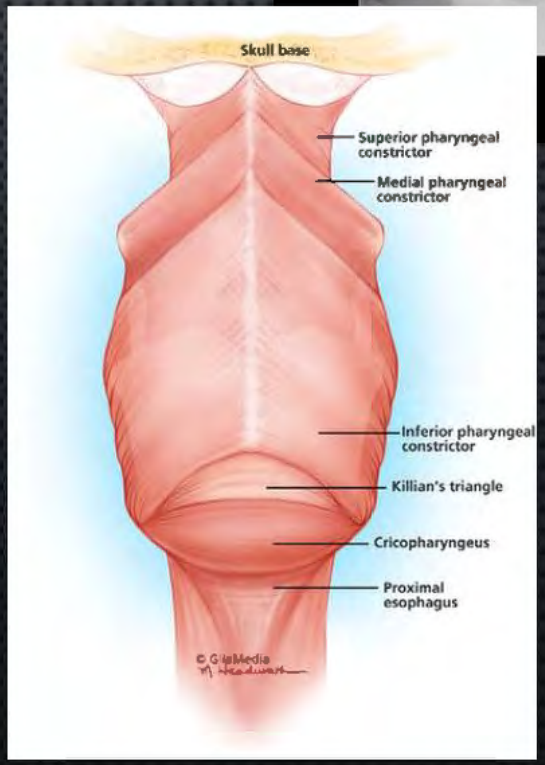
SCREEN FOR REFLUX DURING MBS

- MBS – LOOK FOR ATYPICALITIES THAT ARE NOT A RESULT OF A MECHANICAL DEFICIT
  - REDUCED CP OPENING
  - RETROGRADE FLOW
  - CERVICAL WEB, CP BAR, PHARYNGEAL POUCHES
  - CAN USE ESOPHAGEAL SWEEP HERE









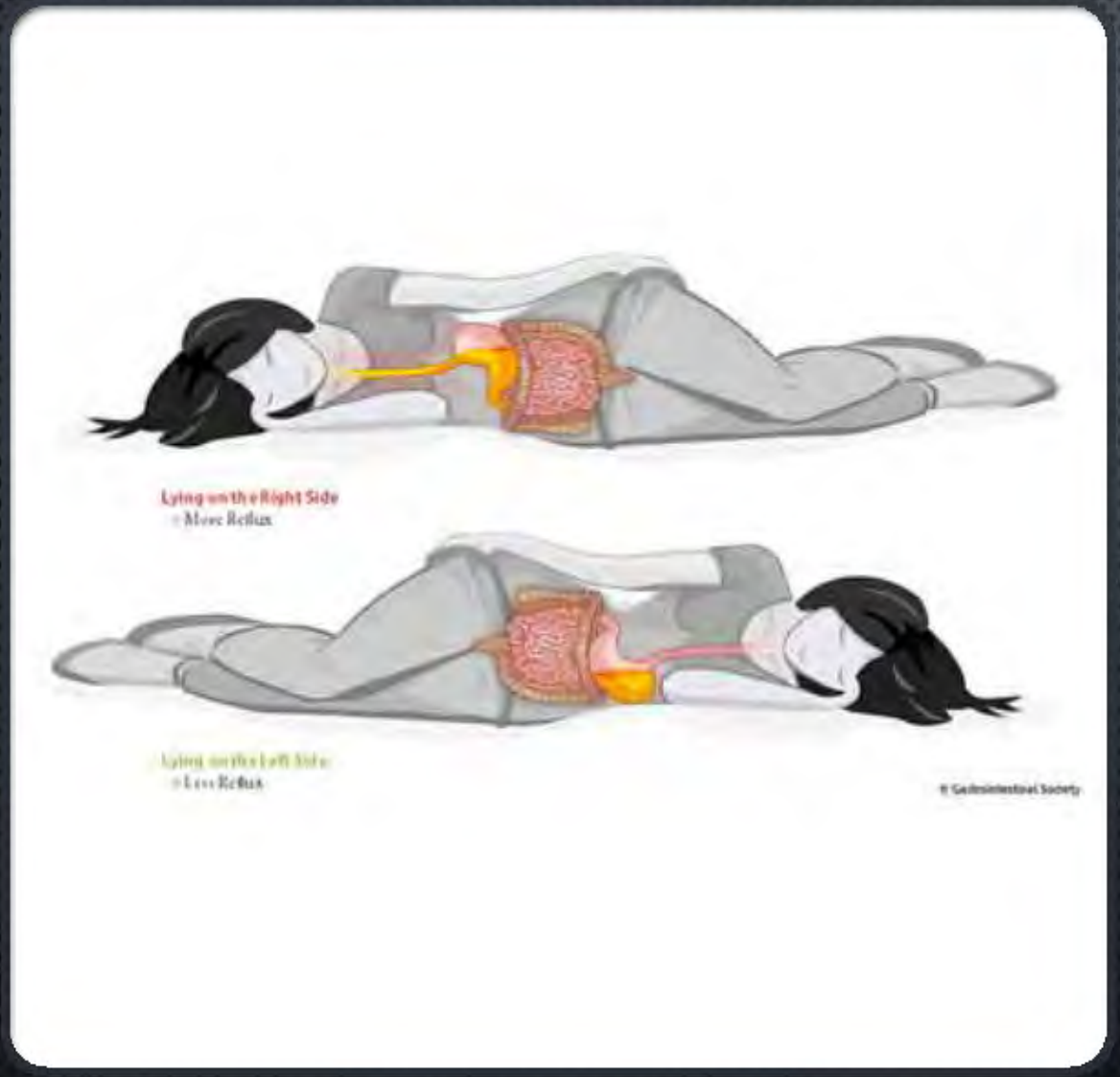
Physician Role in Reflux Management

- Pharmaceutical: typically PPI and/or H2 blockers
- Recommend lifestyle changes (have time limits for education)
- American College of Gastroenterology (ACG)
  - Recommends PPI only meant for short term use (8 wks)
  - Manufacturers state 2 weeks every 4 months
  - Recommends H2 blockers for 2 weeks only
  - Meds don't always work, behavioral changes should be primary
    - Behavioral changes are gold standard per ACG

Medication Side Effects

- PPI side effects are possible:
  - Role in cognitive decline (per observational studies only)
  - CKD by way of AKI, interstitial nephritis, hypomagnesemia (again obs studies only)
  - Osteoporosis – reduced Ca absorption, hypomagnesemia
  - Interrupt digestive process – alter gut microbiome, lower acidity, PPI associated with 1.5x increased risk for PNA

- H2 side effects are possible:
  - HA, drowsiness, GI upset
  - H2 drugs given to patients with renal or hepatic impairment, or over 50 yoa
    - Associated with CNS side effects: AMS, hallucinations, dysarthria



SLP'S CAN HELP WITH REFLUX MANAGEMENT

- A LARGE PART OF WHAT WE DO IS EDUCATION
  - LIKELY HAVE MORE TIME TO SPEND DOING IT THAN MD'S
  - NON-PHARMACEUTICAL STRATEGY EXAMPLES:
- POSITIONAL: DON'T BEND, LIFT WEIGHTS, LAY ON YOUR LEFT SIDE; HOB ELEVATED
- TRY TO WAIT 3 HRS BEFORE GOING TO BED, IF YOU DO – USE ANGLE OF HIS TO YOUR ADVANTAGE
- LOSE WEIGHT (ONLY FACTOR WITH RCT'S PROVEN TO HELP)
- STOP SMOKING
- GO FOR A LIGHT WALK AFTER MEALS (AIDS IN DIGESTION)

Reflux Management Cont.

- Eat fiber – helps with digestion, lessening pressure on the LES
- Triggers can be hidden - avoid food with preservatives
  - More acidic pH to extend shelf life
    - Citric, lactic, ascorbic acid – lower pH to stop any microbial growth
      - Examples: salad dressing, ketchup, canned fruit, anything marinated
    - High-fructose corn syrup contains sulfuric acid
      - Not as an additive and isn't listed as one, but is a processing aid to break down corn starch
    - Citric acid + sodium benzoate added to soda and juice to prevent mold & yeast

- Use a food diary
- Certain foods can act as acid neutralizers: almond, coconut, cashew, rice, oats, soy

Reflux Management Cont.

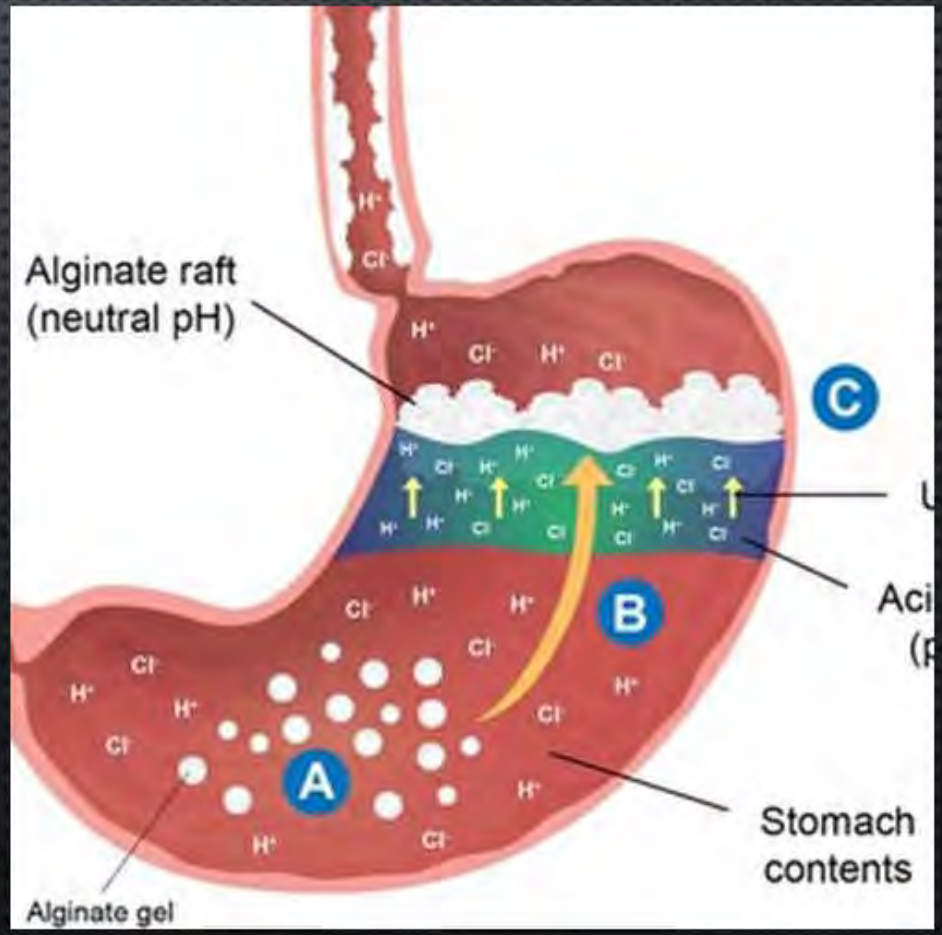
- Some foods have an anti-inflammatory effect (phytonutrients & carotenoid)
  - Lignans
    - suppress cytokines
    - increase expression of protective antioxidant enzymes
    - support healthy gut microbiota, examples: cucumber, flax seed, whole grains
  - Lycopene
    - same mechanism of action as lignans
    - modulates polarization of macrophages in immune system changing their phenotype (causes anti-inflammatory effect)
    - inhibits protein expression of TNF
      - Examples: watermelon, papaya, guavas, sweet red peppers, asparagus, red cabbage, carrots

Reflux management cont.

- Some medications have a relaxing effect on LES (all by reducing/blocking Ca)
  - Benzodiazepines
  - Ca channel blockers
  - Nitrates
  - Beta 2 agonists
  - Xanthines

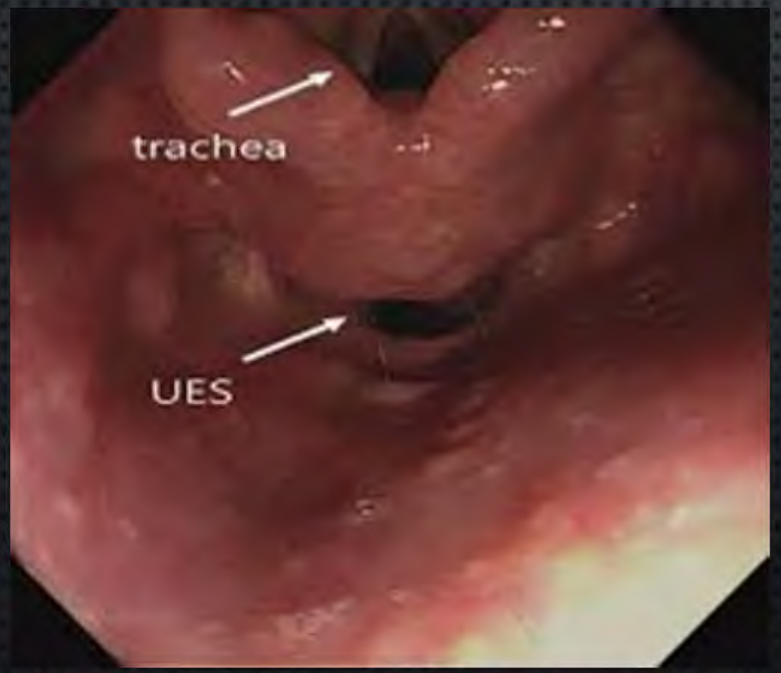
REFLUX MANAGEMENT CONT.

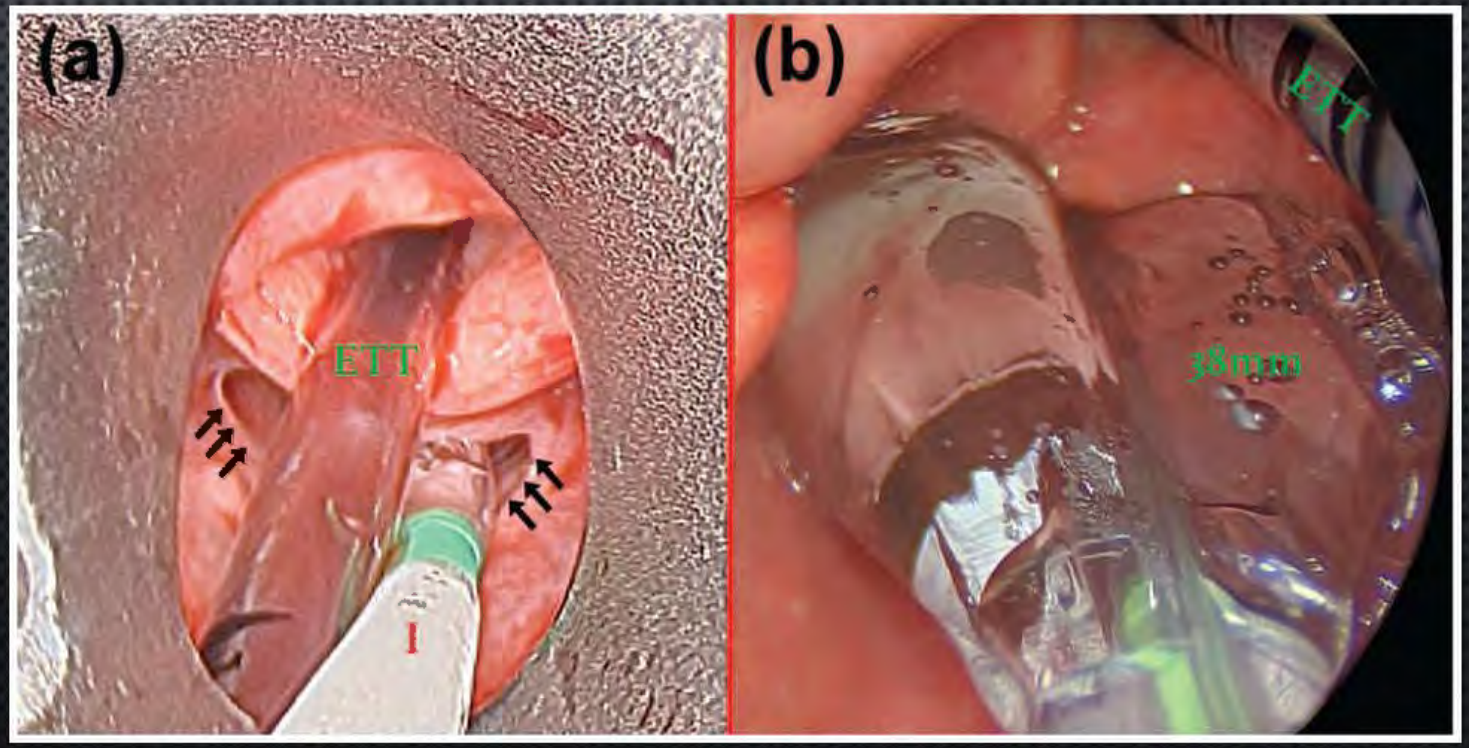
- ALGINATE THERAPY – JUST ALGAE, NON-PHARMACEUTICAL
- BAD REPUTATION BC OF ASSOCIATION WITH GAVISCON
- NDMA – N-NITROSODIMETLAMINE, A CARCINOGEN
- NOW CAN BE USED INDEPENDENT OF RX



REFLUX MANAGEMENT CONT.

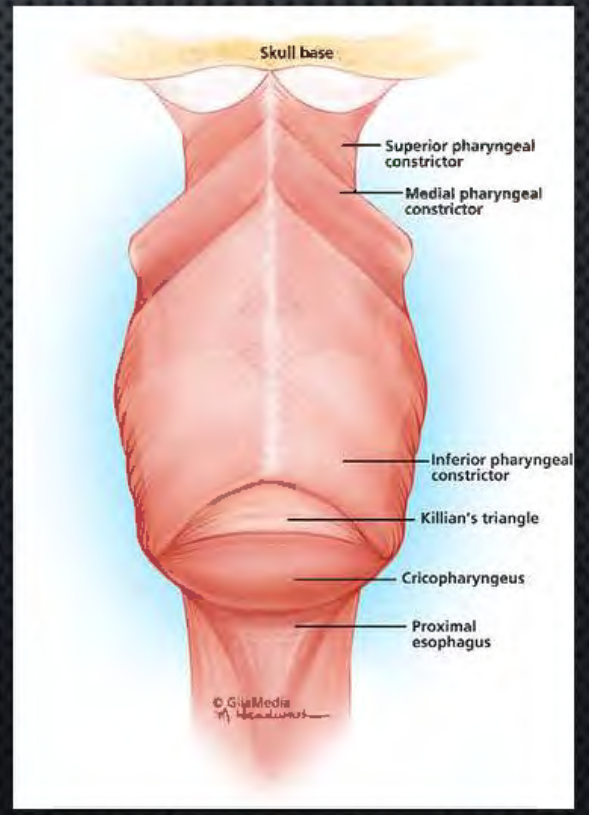
- EXERCISES
  - RECOMMENDED EVEN IF THERE ARE OTHER MEDICAL/SURGICAL INTERVENTIONS RELATED TO REFLUX DAMAGE
    - EXAMPLES: UES STRICTURE (MD MAY USE BOTOX, DILATION, MYOTOMY IN SEVERE CASES)
    - WITH EXERCISE THIS HELPS THE ISSUE NOT REOCCUR





Reflux Management Cont.

- Rule out a web, ring, or stricture first- any exercise that increases pressure could cause a diverticulum
  - Think about how the area opens – relaxation of CP, suprahyoid + thyrohyoid contraction
  - bolus weight/volume impacts duration
    - .3s for dry swallow, .65s for 20 ml liquid
    - Max AP distance .9-1.5 cm
- Exercises
  - Target muscles responsible for better traction on CP ---> Shaker, CTAR
  - Strategies to try:
    - Head turn R or L to pull open CP
    - Mendelsohn to increase extent/duration
    - Increase bolus size/weight



Reflux & OSA

- OSA & reflux have a bi-directional relationship
  - Pressure – high negative intrathoracic pressure results from trying to breath against a collapsed airway (apnea), this creates a suction effect pulling stomach contents up.
  - Irritation from reflux can cause mucosal swelling/edema, tonsillar hypertrophy, all of which can contribute to less space in the airway

Obstructive Sleep Apnea

- OSA definition: a sleep-related breathing disorder in which airflow significantly decreases or ceases due to upper airway collapse, disrupting sleep cycles

- Why does it matter?
  - Sleep arousal – not getting to deep sleep
  - O2 desaturation (SNS= adrenaline & norepinephrine)
  - increased BP
  - atrial fib (intermittent drops in o2, dramatic spikes in BP, - chest pressure during apneic episodes = stretching atria and trigger ANS changes that create irregular electrical signals)
  - OSA is independent risk factor for CVA
  - increased risk for dementia via glymphatic system dysfunction

Obstructive Sleep Apnea& Swallowing

- Systematic review of the prevalence of swallowing disorders in those with OSA,
  - Range of 16-78% co-occurrences of it
- Delayed swallow, PEN/ASP at higher rates, residue, impaired breathing/swallowing coordination (Bhutada et al 2020)
- Valarelli, et al (2018)
  - Lower hyoid position
  - Narrower AP airway distance
    - Correlated to severity
  - Significant lower myofunctional scores
  - Velum & hyoid contraction timing lower regardless of severity

Obstructive Sleep Apnea& Swallowing

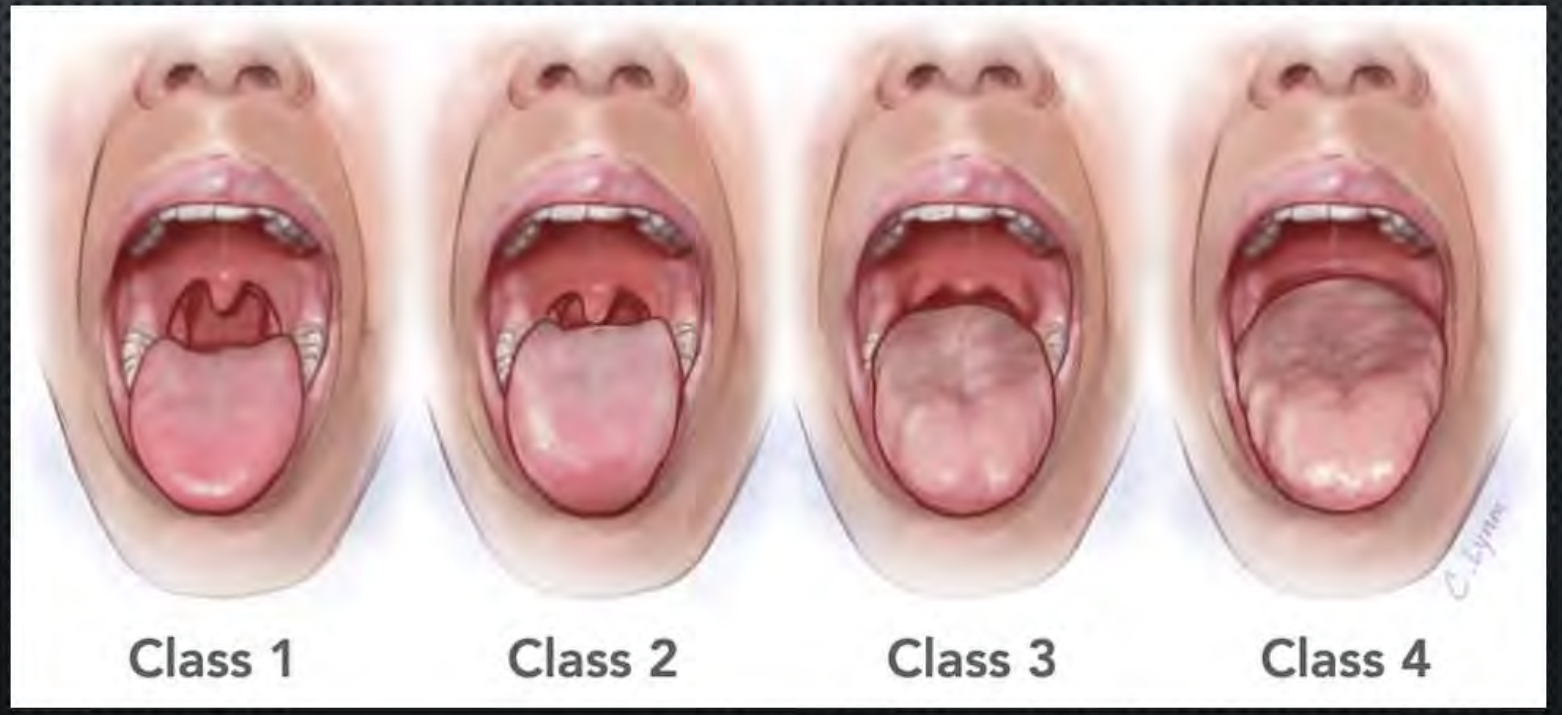
- Structural changes vs pre-existing
  - Micrognathia, retrognathia, macroglossia, neck circumference
  - Narrowed pharyngeal space 2* anatomical changes
    - Tonsillar hypertrophy, adenoids, soft tissue
    - structural changes in the epithelial–connective tissue boundary - Paulson, et al (2002)
- Muscle Dysfunction
  - Chronic sleep fragmentation + desaturation events can impact muscle strength & coordination
- Sensory Changes
  - Habituation impacting sensory receptors
  - Alters sensory feedback for swallowing
  - Low- frequency vibration, intermittent hypoxia, frequent stretching, inflammation Friberg, et al. (1998)
  - reduced taste and smell per Wallace et al (2022)

Obstructive Sleep Apnea& Swallowing

- Swallowing coordination impacted
  - Breathing disruption during sleep changes coordination in breathing/swallowing pattern
  - Persons with OSA have shorter inspiratory suppression time
    - Inhale quicker post-swallow
  - Treatment of OSA can impact swallowing:
    - Use of CPAP or oral devices – can alter oral sensation and muscle activity

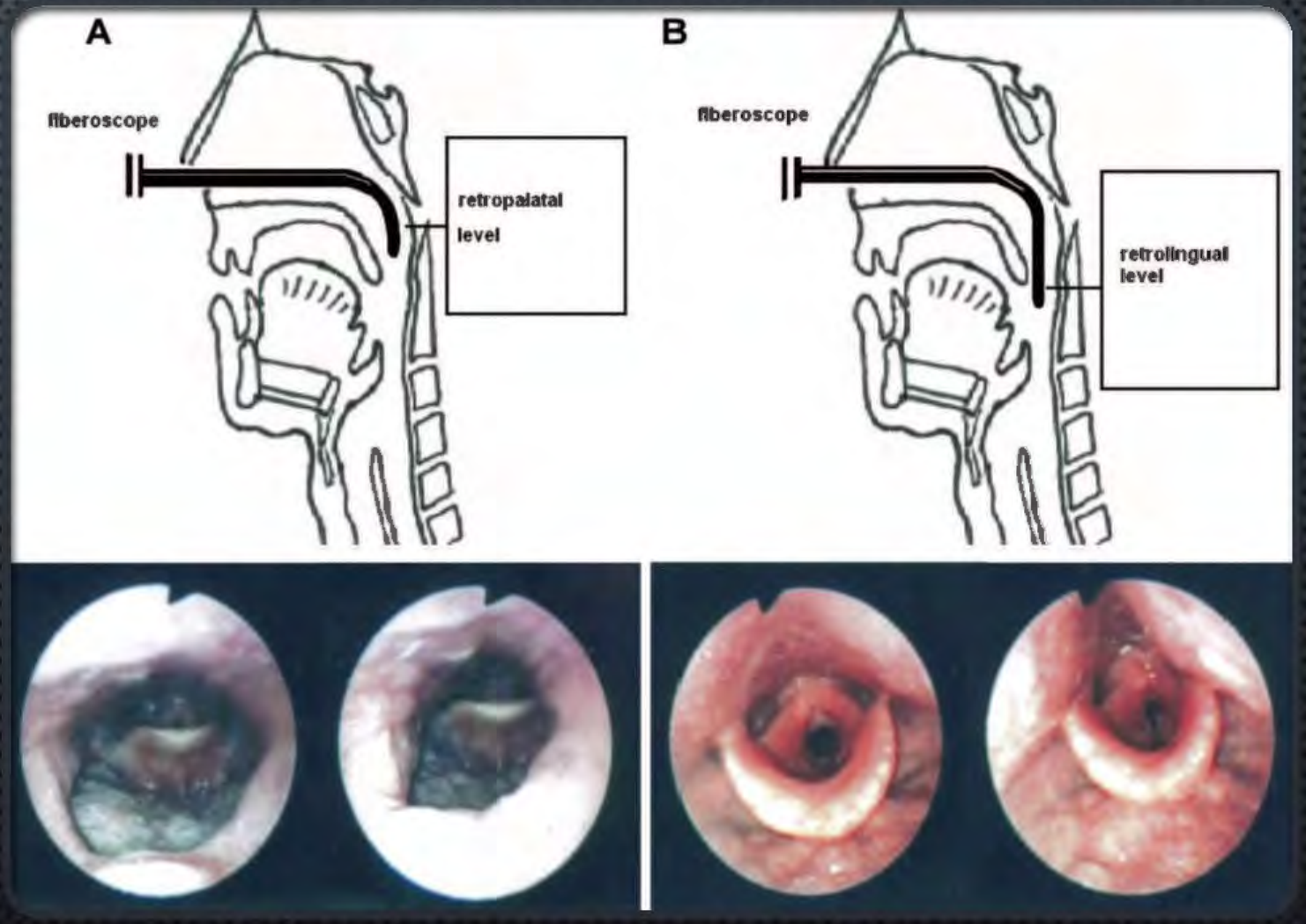
Obstructive Sleep Apnea Screening

- Physicians routinely screen for dysphagia in patients with OSA
- Conversely, we can screen for OSA in dysphagia referrals
  - Can be done with clinical exam and FEES
    - Oral mech exam: can use mallampati scale



OBSTRUCTIVE SLEEP APNEA SCREENING

- TAKE INTO ACCOUNT SYMPTOMS RELATED TO OSA
  - DAYTIME DROWSINESS
  - HA, OTHER MEDICAL SEQUELAE ASSOCIATED WITH IT
  - ANATOMY – ANYTHING THAT CAUSES CROWDING OF PHARYNX?
  - LATERAL WALL COLLAPSE OF PHARYNX IS ONLY INDEPENDENT PREDICTOR OF OSA.
    - THUS, **MÜLLER'S** MANEUVER IS A GREAT SCREENING TOOL



Obstructive Sleep Apnea Screening

Müller Maneuver Grading Scale

The degree of collapse is evaluated at three main levels (palate, base of tongue, lateral pharyngeal walls):

0: No collapse or minimal movement.

1+ (Mild): <25% collapse.

2+ (Moderate): 25–50% collapse.

3+ (Severe): 50–75% collapse.

4+ (Complete): >75% to 100% collapse (total obstruction).

Medical Obstructive Sleep Apnea Treatment

- Refer to physician for sleep study
- Medical treatment may include
  - Equipment prescription (CPAP, BiPAP, mouth guard)
  - May be surgical
    - UPPP
    - Mandibular surgery
    - Hypoglossal nerve stimulator

Our Role in Obstructive Sleep Apnea Treatment

- It's impacting some of the same muscles used in swallowing.
  - Idea dysphagia/voice exercises could help came from studies on musicians:
    - Singers & musicians who play wind instruments have lower snoring scale score
    - Ojay & Earnest, (2002) - vocal exercises may decrease snoring by increasing pharyngeal tone
    - Guimaraes, et al: 31 patients with Moderate OSA completed 30 min of oropharyngeal exercises x3 months = 39% decrease in OSA severity

- "Speech-language pathologists (SLPs) can have a role in the management of OSA, just as they do in other related breathing disorders, such as inducible laryngeal obstruction and chronic cough. Speech-language pathology professionals possess specialized knowledge in oral and pharyngeal anatomy, physiology, and breathing mechanics, which can significantly contribute to the comprehensive treatment of these conditions. A multidisciplinary approach in a sleep clinic—incorporating specialties such as sleep medicine, otolaryngology, pulmonology, psychiatry, neurology, dentistry, oral and/or plastic surgery, and speech-language pathology—should be considered the optimal model for managing patients with OSA." – **ASHA** https://doi.org/10.1044/2025_PERSP-24-00290

Obstructive Sleep Apnea Treatment

Use in conjunction with medical treatment

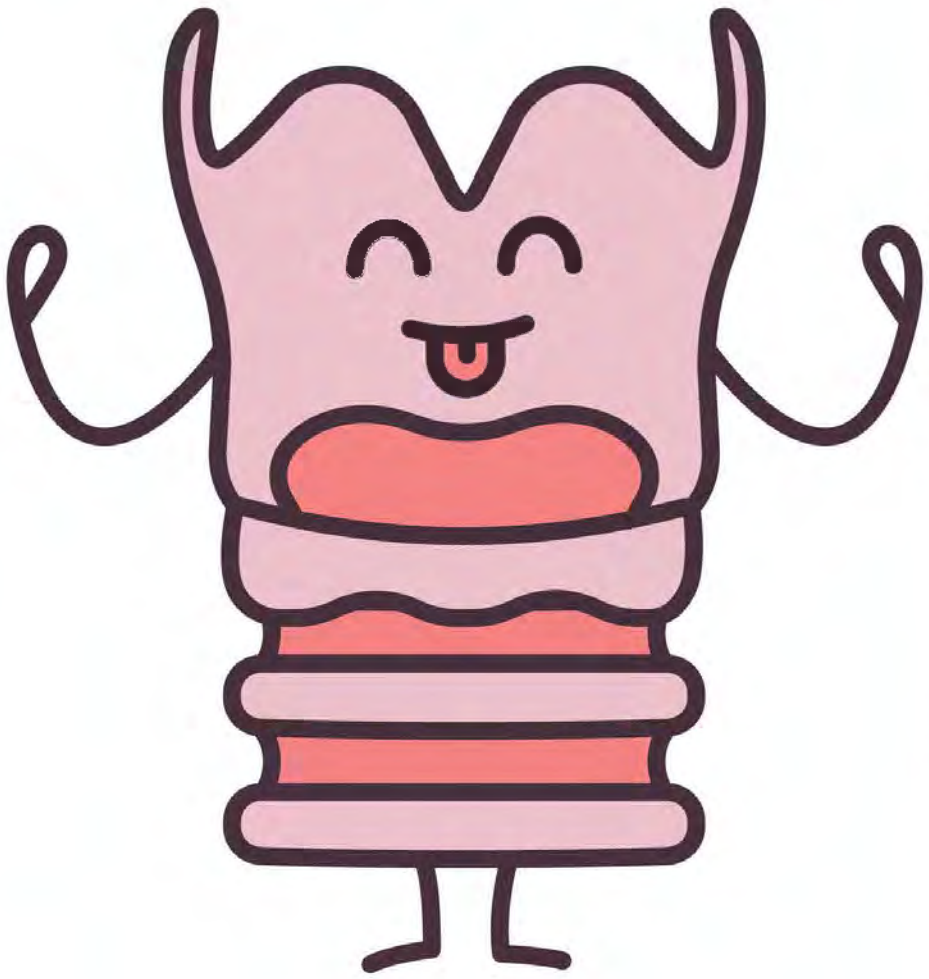
Goal: lessen severity of OSA, treat any deficits that could impact swallowing:

- exercises that target the tongue, pharyngeal walls, and soft palate
  - Examples:
    - EMST
    - Effortful swallow + lingual press
    - Lingual exercises with use of intraoral pressure device
      - IOPI, tongueometer

STRETCH BREAK

2/21/2026 30


What do you do for a living?
I do my best.
@flovehannah



FUNCTIONS OF THE LARYNX

- Breathing control/airway modulation
- Pulmonary toiletry
  - Coughing and airway clearance
- Swallow
    - Airway protection from solid and liquid materials
- Sound source for speech
  - Source for vowels and voiced consonants
  - Articulator for glottal sounds

IMPORTANT TO REMEMBER:

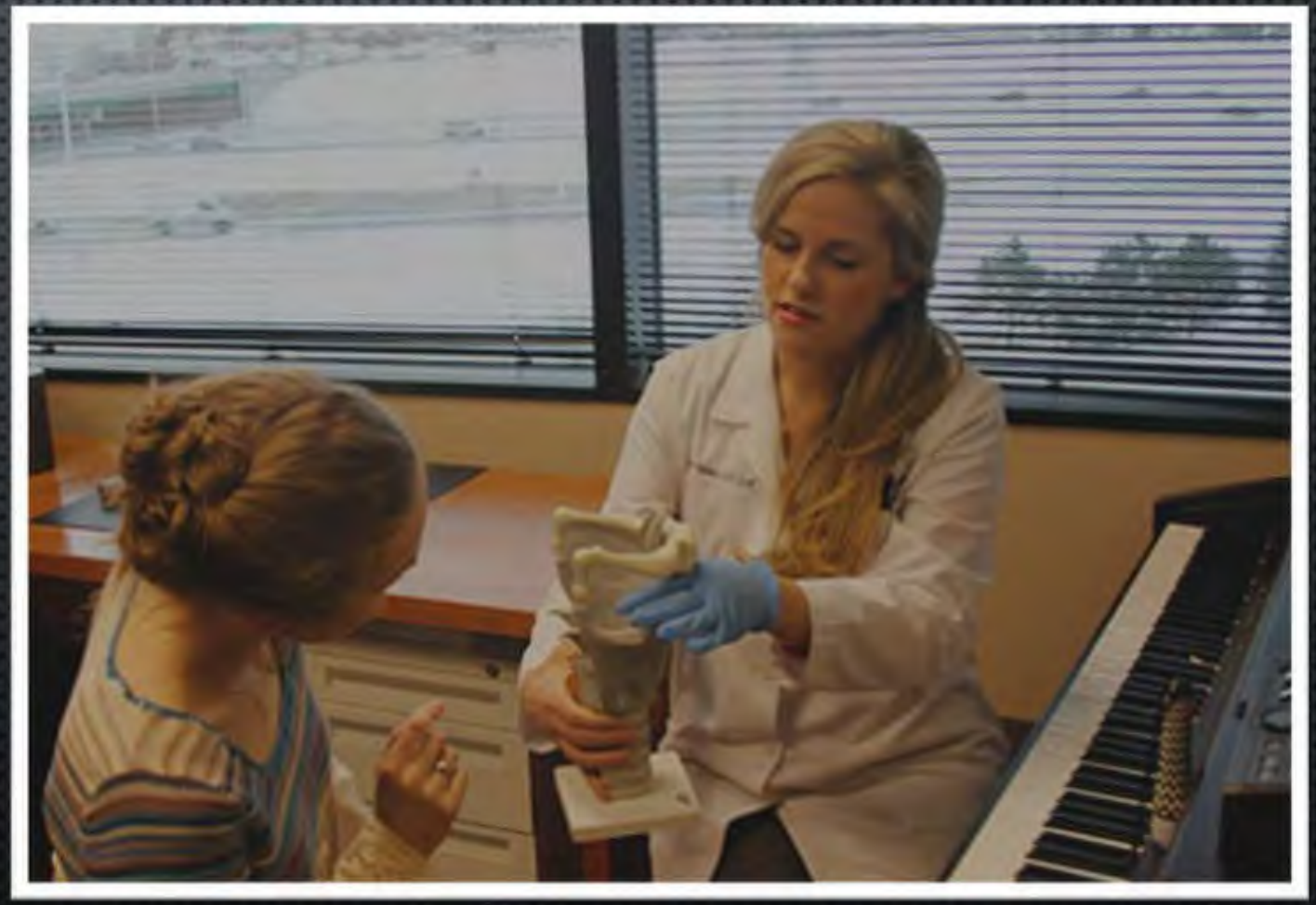
VOICE RESEARCH IS SO NEW!

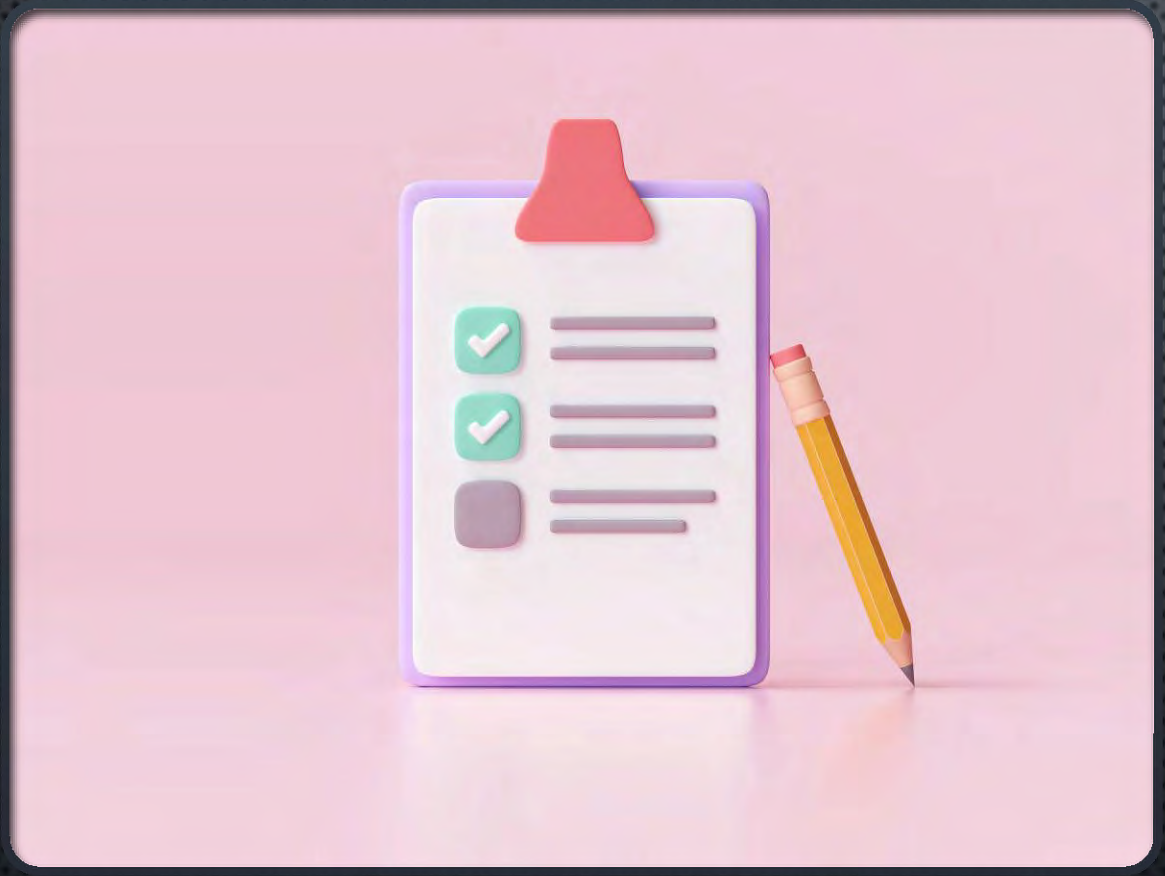

Be cautious,
mindful, &
aware!

WHAT SHOULD VOICE THERAPY LOOK LIKE?

- Begins with an evaluation
- Joint evaluation with ENT
- Separate evaluations
- Laryngeal visualization is *necessary* prior to commencing therapy
- Trial therapy
- Education and orientation

- Not just about the larynx
- Assess four systems of speech
- Include psychosocial aspects
- Not simply exercises
- Wide variety of approaches





Integrative Diagnostic Model

- History
- Vocal Capability Battery
- Videostroboscopic Examination

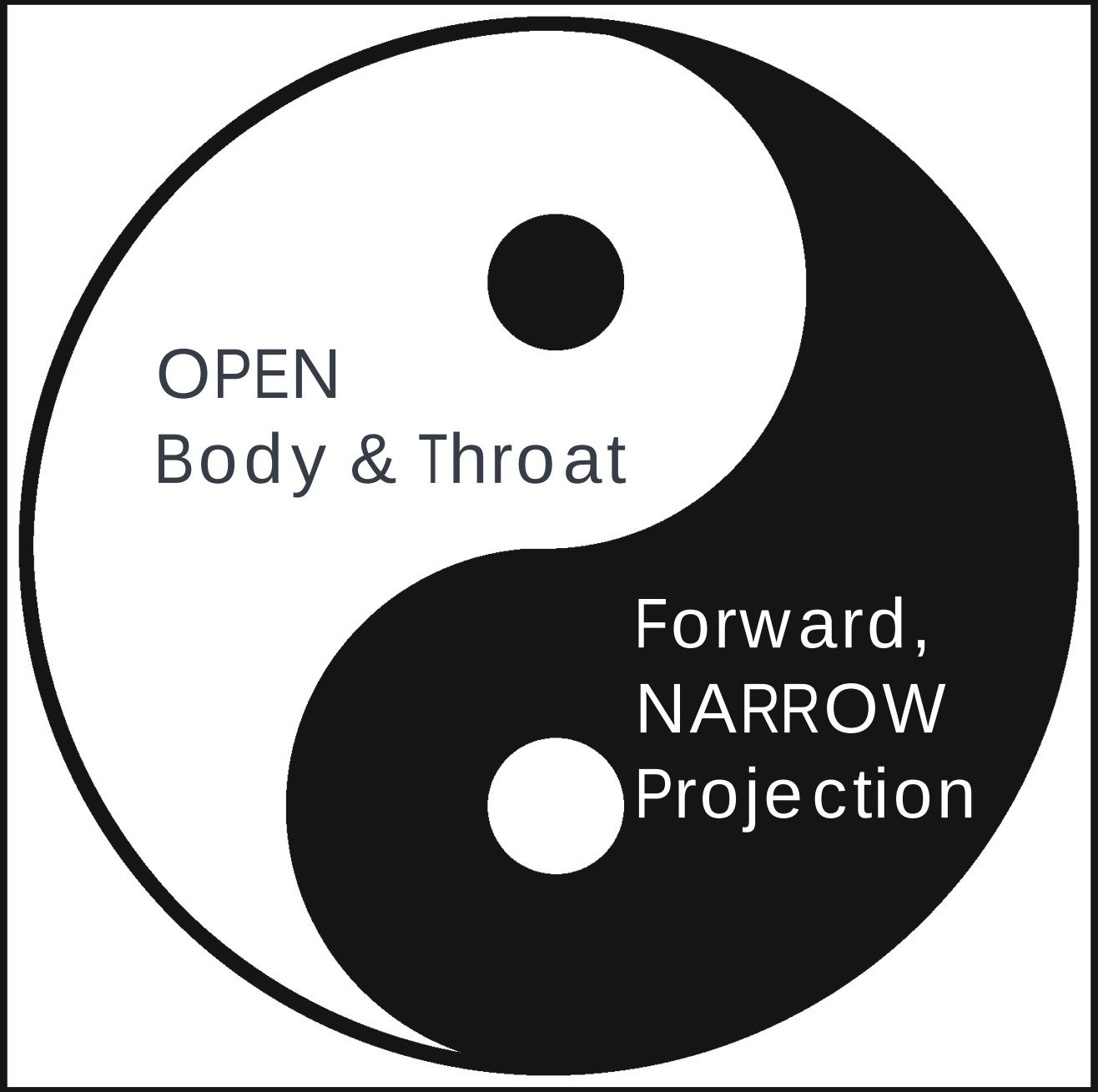

“THE MAGIC EXERCISES!”

KNOWING WHAT TO DO WHEN

- LESSAC-MADSEN RESONANT VOICE THERAPY
- VOCAL FUNCTION EXERCISES
- VOICE BUILDING: LSVT, PHORTE
- VOICE HYGIENE
- SOVTES
- ACCENT METHOD
- CASPER-STONE STRETCH-FLOW
- REDUCING HYPER*DYS*FUNCTION VIA LARYNGEAL RE-POSTURING
- CIRCUMLARYNGEAL MASSAGE
- ETC, ETC, ETC.....

VOICE REHABILITATION= NOT JUST ABOUT EXERCISES

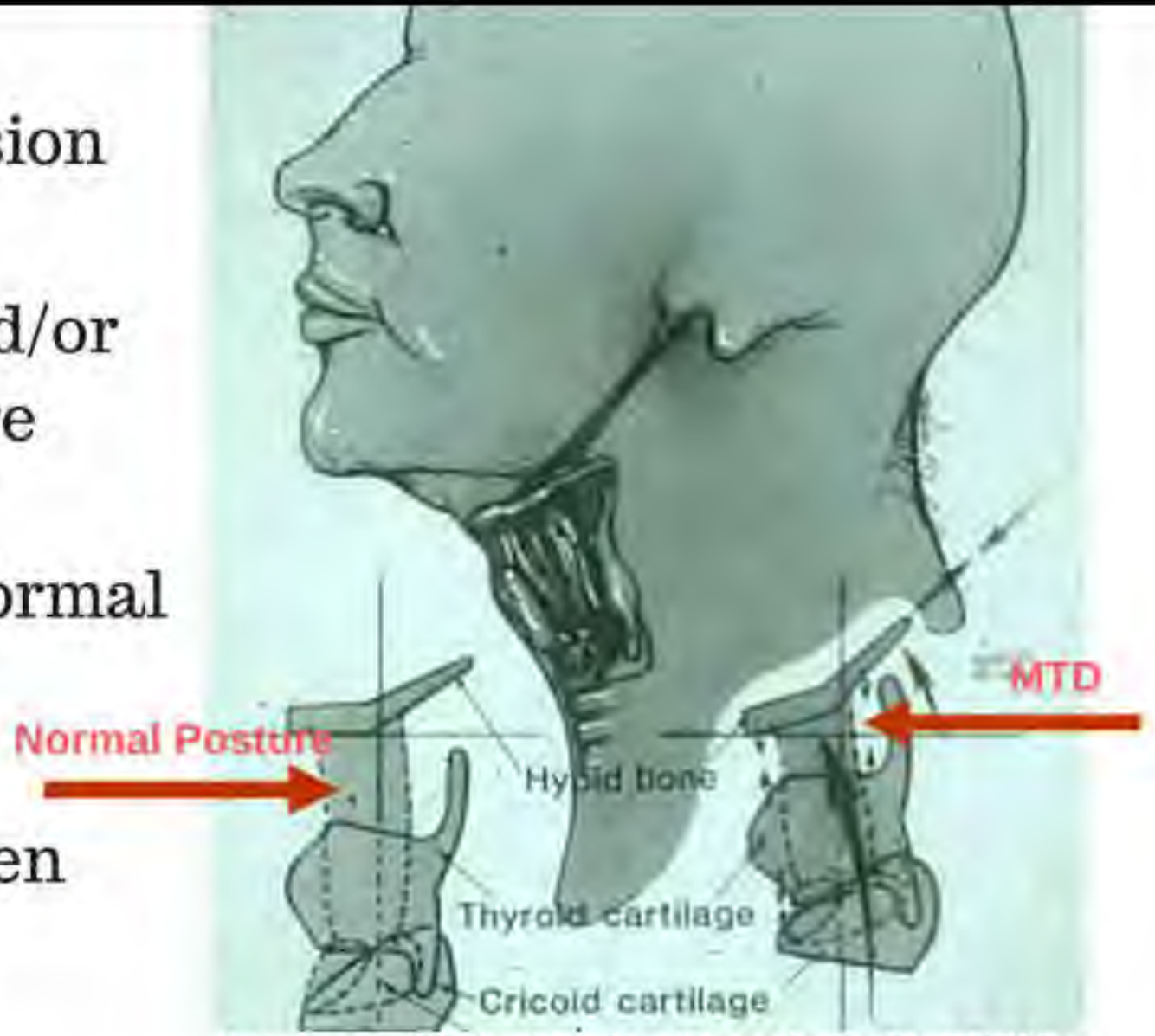
- IT INVOLVES A COHERENT SYSTEM INVOLVING FOUR BUILDING BLOCKS:
  - OPEN
  - GROUND
  - FOCUS
  - TRUST


OPEN
Body & Throat
Forward,
NARROW
Projection

"BREATHE FROM YOUR DIAPHRAGM."

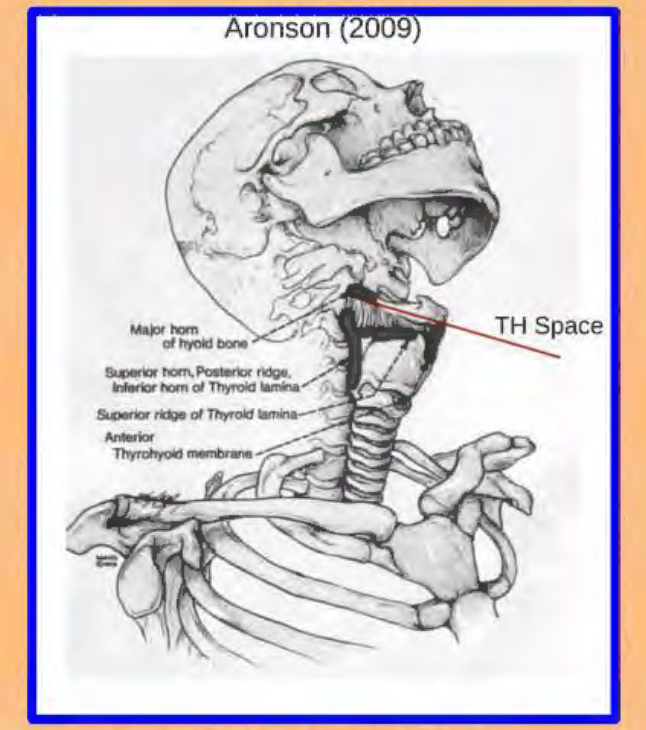
Emerich, K, Reed, O (2020). The role of the pelvic floor in respiration: a multidisciplinary literature review. *J Voice; 34(2): 243-249.*

- Locked larynx
- Excessive air expulsion
- Hyperdysfunction
- Several intrinsic and/or extrinsic muscles are overactive
- Compensatory, abnormal posturing patterns
- Phonation is often initiated from an open (abducted) position

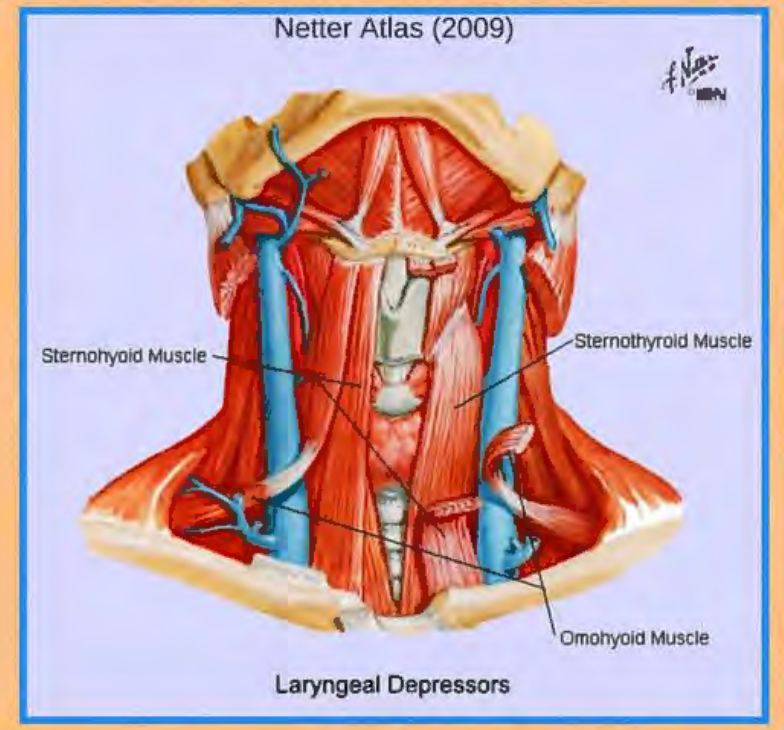


Aronson, Clinical Voice Disorders, 2nd Edition

Laryngeal (Re) Posturing:



Loosen thyrohyoid space



- Decrease muscle tension (contraction, pull) of laryngeal elevators,
- Strengthen the muscles that lower the larynx downward
- Think "wide, dilated neck"


VOCAL HYGIENE

Vocal hygiene alone isn't beneficial...

- 58 teachers diagnosed with voice disorders placed in one of three groups:
  - Vocal Hygiene
  - Vocal Function Exercises
  - Control

- Six weeks of treatment
  - Voice Handicap Index (VHI)
  - Additional instrumental and self-report measures

- **Vocal Function Exercise** group was the only group that showed improvement!

- Vocal training should be considered as an alternative to voice hygiene programs

ROY, N, GRAY, S, SIMON, M, DOVE, H, CORBIN-LEWIS, K, STEMPLE, J (2001). An evaluation of the effects of two treatment approaches for teachers with voice disorders: a prospective randomized clinical trial. *JSLHR; 44: 286-296*.

Vocal hygiene alone isn't beneficial... (continued)

- 62 females diagnosed with phonotrauma randomly assigned to 6 weeks of Voice Production Therapy (n=31) or Vocal Hygiene Education (n=31), followed by 4 weeks of self study
- Voice Handicap Index (VHI) given at baseline, post-therapy, and post-self study. Pt adherence was also assessed as a cofactor.
- Both groups achieved a decrease (improvement) with VHI scores, however the **VP group showed a significantly greater improvement.**
- VP therapy may be more effective than VHE in addressing patient perception of vocal handicap

BEHRMAN, A, RUTLEDGE, J, HEMBREE, A, SHERIDAN, S (2008). Vocal hygiene education, voice production therapy, and the role of patient adherence: a treatment effectiveness study in women with phonotrauma. *JSLHR; 51: 350-366.*

Amplification is also helpful.

ChatterVox Voice Amplifier

- 64 teachers with voice disorders were randomly assigned to 1 of 3 treatment groups: Voice Amplification, Resonance Therapy, or Respiratory Muscle Training.
- Although more questions remain, results supported evidence that **voice amplification** and **respiratory retraining** were the most helpful
- VA might be considered as the first reasonable step in the treatment protocol.
- Based on teachers' responses, this approach may need to be augmented with approaches such as RVT or VFE to achieve the desired outcomes

ROY, N, WEINRICH, B, GRAY, S, TANNER, K, STEMPLE, J, SAPIENZA, C (2003). Three treatments for teachers with voice disorders: a randomized clinical trial. *JSLHR, 46: 670-688.*

Reflux:

Often over-diagnosed or not the main issue!

Thomas JP, Zubiaur FM. Over-diagnosis of laryngopharyngeal reflux as the cause of hoarseness. Eur Arch Otorhinolaryngol. 2013 Mar;270(3):995-9.

Sulica, L. Hoarseness misattributed to reflux: sources and patterns of error. Ann Otol Rhinol Laryngol. 2014 Jun;123(6):442-5.

Bastian, RW. When acid reflux takes you down a rabbit trail (2009). Originally published in *Classical Singer.*

- *Helpful tool to share with patients*
- *Can help an individual (or their physician) verify if acid reflux is the correct diagnosis.*
- *Free download from www.laryngopedia.com*

https://voice-academy.uiowa.edu/prescription-medications-and-voice

*Steroid use, NSAIDs, alcohol, drying meds

Abaza, M. M, Levy, S, Hawkshaw, MJ, Sataloff, RT (2007). Effects of medications on the voice. *Otolaryngol Clin North Am.; 40(5): 1081-90.*

Bock JM. Medications and Vocal Function. *Otolaryngol Clin North Am.;* 2019 August; 52(4):693-702. doi: 10.1016/j.otc.2019.03.013. Epub 2019 May 7. PMID: 31076163.


“YOU CAN FIX AN INJURED VOICE WITH HONEY AND LEMON TEA!”

PSA: Nothing you eat or drink touches your vocal folds!

(But if someone has a special ritual they feel helps, by all means…)

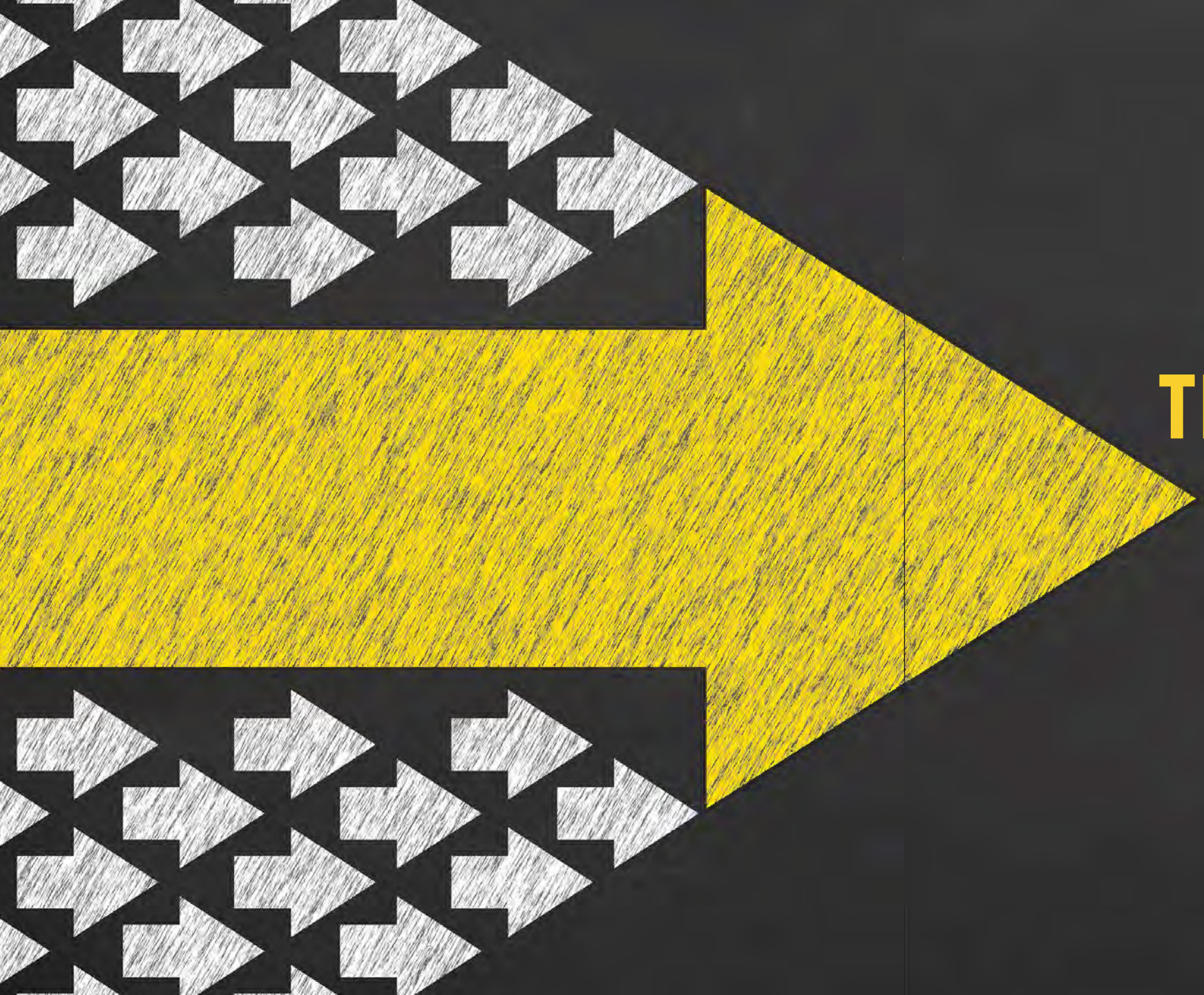
Coffee is bad for your voice.

Short answer:

NO! Not if you're otherwise hydrated and it's not a huge reflux trigger for you.

- When someone regularly drinks large amounts of caffeine (up to 2-3 cups per day) they develop a tolerance to its diuretic effects.
- Standard servings (about 1 cup of coffee) do not appear to have a diuretic effect.

MAUGHAN, RJ, GRIFFIN, J (2003). CAFFEINE INGESTION AND FLUID BALANCE: A REVIEW. *J HUM NUTR DIET, 16 (6); 411-20.*



USING THE **TERM "VOCAL ABUSE"** IS OKAY.

THE IDEA OF VOICE REST

VOCAL REST (CONTINUED)

Newer research surrounding the role of exercise in wound healing, causing us to rethink traditional beliefs and recommendations surrounding voice rest.

- Verdolini, KV, Li, N, Branski, R, Rosen, C, Grillo, E, Steinhauer, K, Hebda, P (2012). Vocal exercise may attenuate acute vocal fold inflammation. J Voice; 26(6): 814.
- Branski, R, Verdolini, KM, Sandulache,V, Rosen, C, Hebda, R (2005). Vocal fold wound healing: a review for clinicians. J Voice; 20 (3): 432-42.

SIMILARLY…

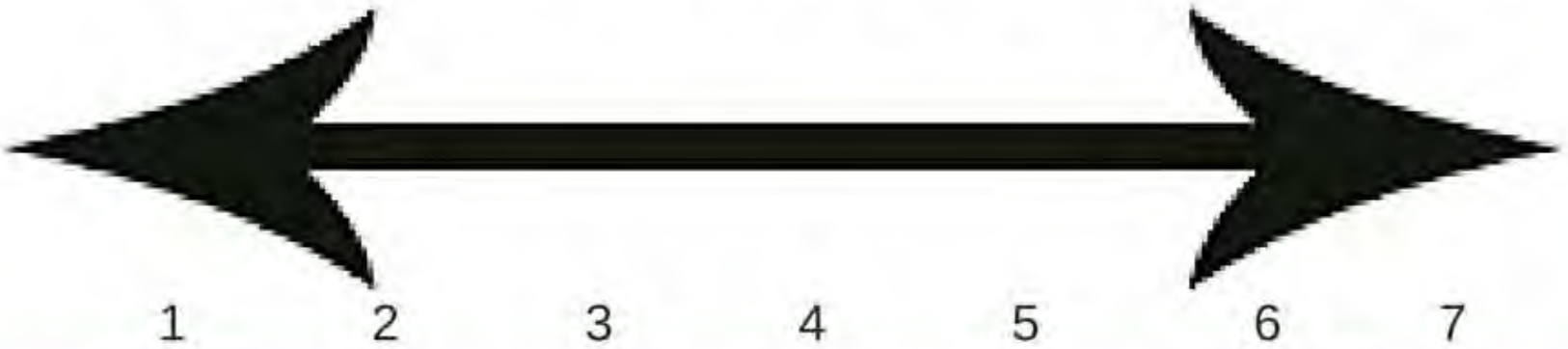
- Voice rest is commonly recommended following Microsurgery to help prevent worsening injuries and to aid with healing
  - Randomized controlled clinic study included several different phono-microsurgeries for leukoplakia, cancer, vocal fold polyp, Reinke's edema, and cyst (31 total)
  - Participants were randomly assigned voice rest 3 to 7 days postoperatively.
  - Voice therapy was administered to <u>all</u> following the voice rest
  - Compared to the 7-day voice rest group, VHI, GRBAS, and mucosal wave all improved significantly with the 3-day voice rest group at 1, 3 and 6 months post operation
  - Study suggests that 3 days of voice rest may lead to better wound healing compared to a full 7 days (mechanical stimulation= favorable functional recovery)

- Kaneko M, Shiromoto O, Fujiu-Kurachi M, Kishimoto Y, Tateya I, Hirano S. Optimal Duration for Voice Rest After Vocal Fold Surgery: Randomized Controlled Clinical Study. J Voice. 2017 Jan;31(1):97-103. doi: 10.1016/j.jvoice.2016.02.009. Epub 2016 Aug 1. PMID: 27492336.

- Bastian, RW (2015). The vocal overdoer syndrome: when voice rest or restraint only hurts. *Journal of Observational Laryngology*.

- *www.laryngopedia.com*

Vocal Underdoer or Overdoer?



[Terms coined by Keidar, A. and Bastian, R.]

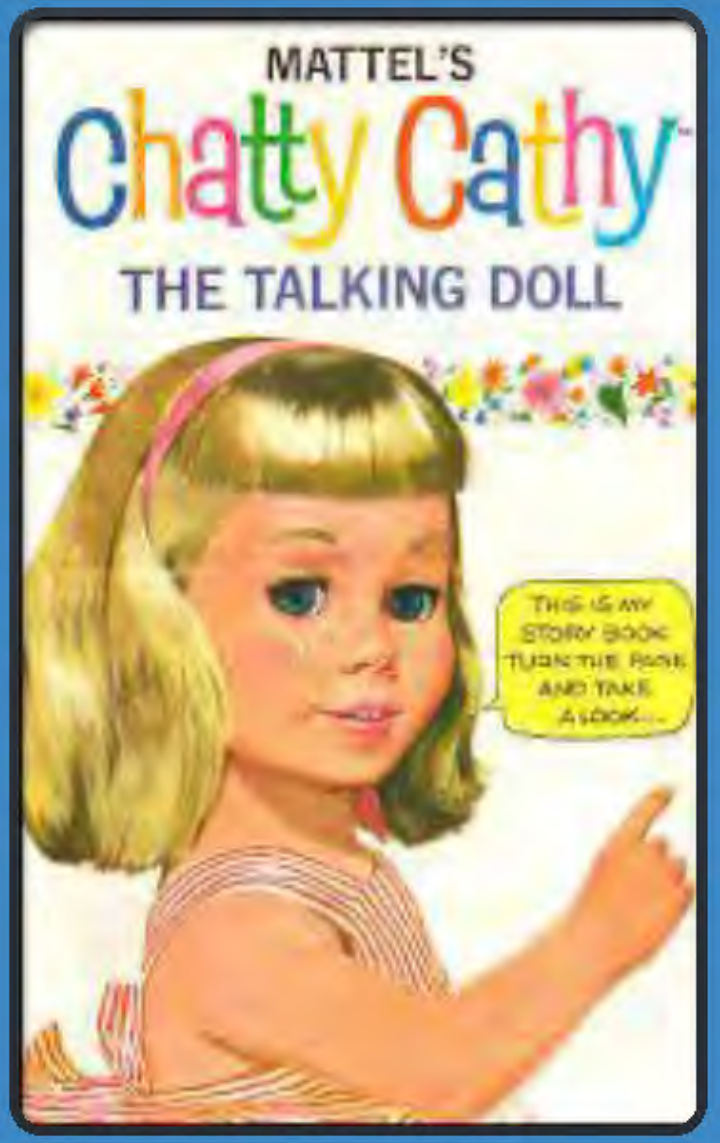
Keidar, A., Wetzel, R., & Cloninger, R. **Personalities, voice use, and pathologies of vocal over-doers and under-doers.** *Presented at the Annual Convention of the American Speech-Language-Hearing Association; 1989.*

THOSE MORE PRONE TO CERTAIN VOICE DISORDERS COME WITH **CERTAIN PERSONALITY TRAITS…**

- KEIDAR, WETZEL, & CLONINGER (1989). THE RELATIONSHIP BETWEEN PERSONALITY, VOCAL BEHAVIOR AND VOCAL PATHOLOGY IN VOCAL OVERDOERS AND VOCAL UNDERDOERS. *PRESENTED AT ASHA, ST. LOUIS, 1989.*

- ROY, N. PERSONALITY AND VOICE DISORDERS (2011). *PERSPECTIVES ON VOICE AND VOICE DISORDERS*; *21(1): 17-23.*

- VANMERSBERGEN, M (2011). VOICE DISORDERS AND PERSONALITY: UNDERSTANDING THEIR INTERACTIONS. *PERSPECTIVES ON VOICE AND VOICE DISORDERS; 21(1): 31.*



TALKATIVENESS AND LOUDNESS LEVEL

- 974 patients
- + case-controlled study 544 patients
- 1-7 point Likert self-rating scales for talkativeness and loudness level were compared with laryngeal disease

- Voice Complaint Group- 89% rated themselves as a 6 or higher in talkativeness and/or loudness
- The high degree of talkativeness and loudness seen in vocal over-doers correlates well with mucosal disorders such as nodules, polyps, capillary ectasia, epidermoid inclusion cysts, and hemorrhage.
- A lower degree of talkativeness correlates with muscle deconditioning disorders such as vocal fold bowing, atrophy, presbyphonia, and vocal fatigue syndrome.

Bastian RW, Thomas JP. Do Talkativeness and Vocal Loudness Correlate With Laryngeal Pathology? A Study of the Vocal Overdoer/Underdoer Continuum. J Voice. 2016 Sep;30(5):557-62.


“Nodules don’t grow on wallflowers.”
-Anat Keidar, PhD, CCC-SLP

SWELLING CHECKS

- Akin to building a fence at the edge of a cliff
- "Happy Birthday" (Legato Task)
- Know where your ceiling is at your best
- If ever lower= Warning sign that you've developed mucosal disturbance
- Helpful along with monitoring amount, manner, and spacing of voice use

https://laryngopedia.com/swelling-checks/

Robust vs. Aesthenic

Different approaches for each.

VOICE BUILDING

- SUBTRACT THE "WRONG" MUSCLE GROUPS, BUILD TONE AND FLEXIBILITY IN THE "RIGHT" MUSCLE GROUPS
- RMST AND PHORTE , LSVT/SIMILAR TYPE
- VFES
- DAILY EXERCISE
- "MOTION=LOTION"

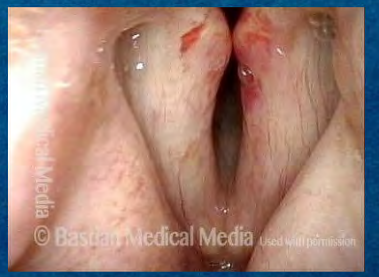
- JOHNSON, AM, SANDAGE, MJ. EXERCISE SCIENCE AND THE VOCALIST. J VOICE. 2021 JUL:35(4):668-677.
  - VOCAL TRAINING BASED ON THE PRINCIPLES OF EXERCISE SCIENCE CAN BE USED TO RESTORE OR HABILITATE DESIRED VOCAL OUTPUT
  - VOICE TRAINING MAY REQUIRE A REGIMEN SIMILAR TO AN ATHLETE REQUIRING BOTH ENDURANCE AND BALLISTIC COMPONENTS
  - LOOKS AT PRIMARY MUSCLE FIBER TYPES; CAN THIS EXPLAIN WHY SOME PATIENTS RESPOND QUICKER TO VOICE BUILDING THAN OTHERS?

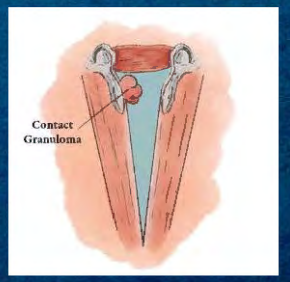
- SACCENTE-KENNEDY, B, GILLIES, F, DESJARDINS, M, VANSTAN, J, GOVENDER, R. A SYSTEMATIC REVIEW OF SPEECH-LANGUAGE PATHOLOGY INTERVENTIONS FOR PRESBYPHONIA USING THE REHABILITATION SPECIFICATION SYSTEM. J VOICE. 2024 JAN 8: S0892-1997(23).
  - 1,050 PATIENTS, VARIOUS THERAPY APPROACHES
  - DESPITE WIDE RANGE OF MODALITIES, VOICE THERAPY IN GENERAL RESULTED IN SIGNIFICANT IMPROVEMENTS IN PATIENT-REPORTED, AERODYNAMIC, ACOUSTIC, AND EXPERT-RATED OUTCOMES.

"AVOID THROAT CLEARING": *FAULTY REASONING.*

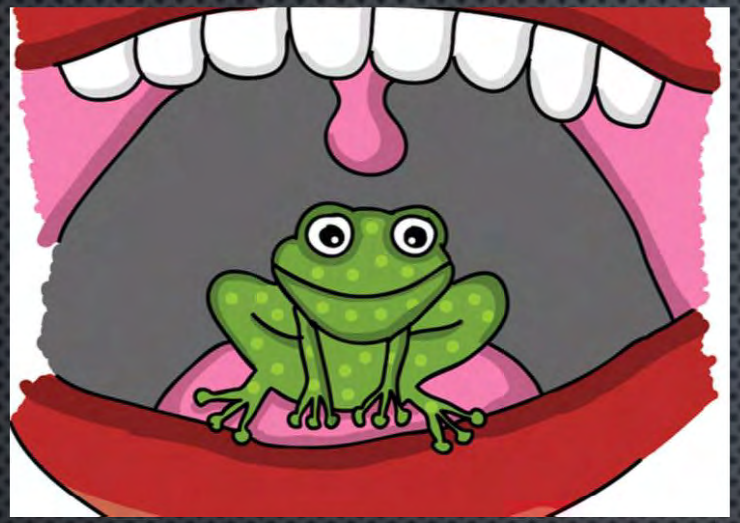
- With any kind of swelling that causes glottal constriction, throat clearing increases (because of laws of fluid mechanics not '*smart mucous*').
- Most habitual, incessant, ritualistic throat 'cleansers' are Males…but MTD is much more common in WOMEN.

"Coughing is another vocally abusive behavior."
True: Coughing may cause:
- a hemorrhage
- trauma to the posterior aspect (ulcer, granuloma, etc.)





False: Coughing causes MTD, nodular swellings*
No known direct correlation between MTD and/or swellings*
and neuropathic cough (Ditto URI, Pertussis, allergies…)



Throat Clearing Causes Nodules

Razura DE, Gallagher T, Khachikyan N, Johns MM 3rd, Shuman EA. Laryngeal Sensory Neuropathic Cough Is Not Associated With Membranous Vocal Fold Lesions. Laryngoscope. 2025 Jul 5.

ADESSA, M, XIAO, R, HULL, D, BOWEN, AJ, MILSTEIN, C, BENNINGER, M, BRYSON, P (2020). BENIGN VOCAL FOLD LESIONS IN PATIENTS WITH CHRONIC COUGH. *OTOLARYNGOL HEAD NECK SURG. 162(3): 322-325.*

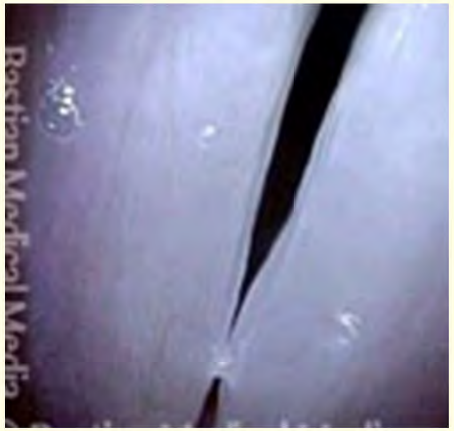
- BVFLs were *not* associated with longer cough duration or more severe cough.

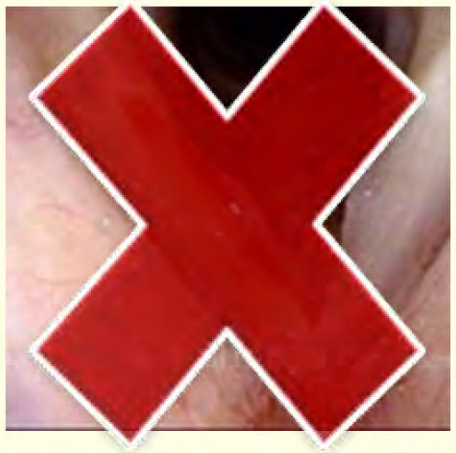
Chronic Cough

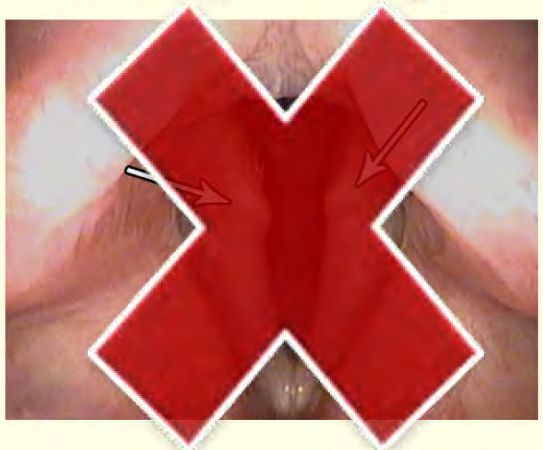
159 patients with RCC. Majority of patients who underwent behavioral voice therapy for RCC experienced an improvement in their cough and quality of life, suggesting that early intervention with SLP may be a more cost-effective and efficient options vs. prescribing mediation or undergoing nerve block.

SLOVARP, L, JETTE, M, GILLESPIE, A, REYNOLDS, J, BARKMEIER-KRAEMER, J (2021). EVALUATION AND MANAGEMENT OUTCOMES AND BURDENS IN PATIENTS WITH REFRACTORY CHRONIC COUGH REFERRED FOR BEHAVIORAL COUGH SUPPRESSION THERAPY. *LUNG; 199 (3): 263-271.*

EVERYTHING IS A NODULE!







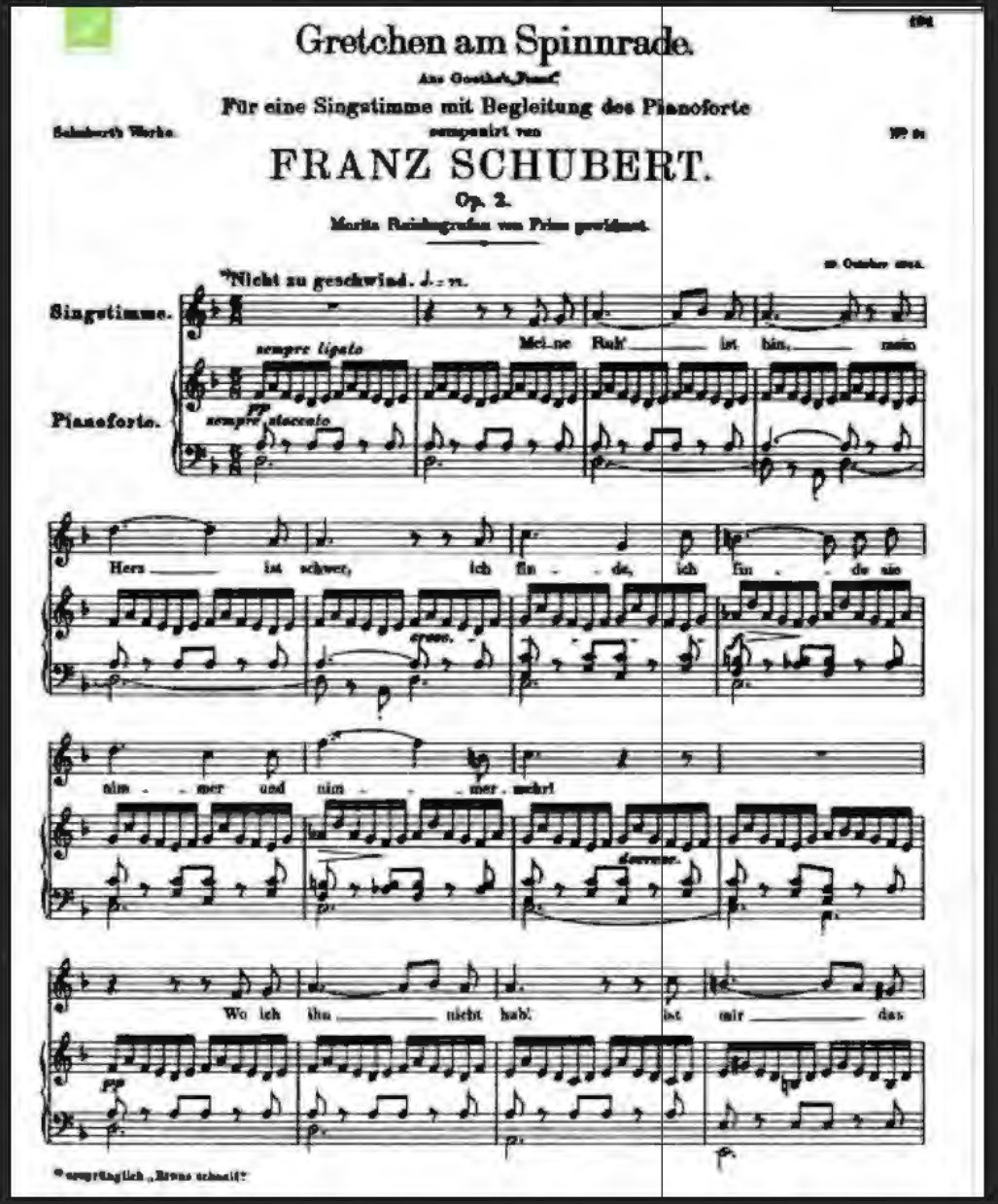
Glottal Fry

Blum, H. “Totally Fried.” *ASHA Leader (2016); 21(2).*

- “There’s NO evidence that shows glottal fry, in and of itself, causes injury.” -Cookman
- “If a person can shut it off at will, that’s not a disorder.” –Gerratt
- “Choosing to eliminate glottal fry is akin to choosing to modify or reduce an accent.” – Gerratt & Keating

Can also be used in the therapy room!

NIX, J, EMERICH, K, TITZE, I (2005). APPLICATION OF VOCAL FRY TO THE TRAINING OF SINGERS. *J SINGING; 62(1): 53-59.*



Avoid Glottal Stops

More Air is Good!

Not always! Often, I see patients with excessive air hoarding and excessive air expulsion.

Misunderstood Phrases:

- *"Incorporate '**easy onsets**'"*
- *"Insert aspirate /h/ prior to sound initiation" (especially on vowels in initial word position)*
- *"Use /h/ words to practice consistent, increased pre-phonatory and phonatory airflow"*
- *"Pause frequently to take an extra breath"*
- *"Parse the phrase into smaller segments to insert more breath."*
- *"Use a **whispery, breathy** voice"*
- *"Let air out after saying the initial sound"*
- *"Keep air coming through the phrase"*
- *'Helpful use of imagery'…for example: "Make it feel as though **your voice is floating effortlessly out of** your throat and up into your head" can describe to the patient a way that effortless **voicing might feel.***
- *Convert plosives from voiced to voiceless. Example: b=p, d=t, g=k*

Consequence: Reduced intelligibility (both vowels & consonants affected) and more air pushing.

BE CAREFUL HOW YOU INCORPORATE AIR

- If you have a major fuel leak, why would you want to flood the engine? Or create another leak?
- Many common didactic and 'therapeutic' practices exacerbate the vicious cycle!
- Air leakage creates sound pollution
- Excessive air expulsion decreases intelligibility & clarity
- Make it about focus & projection

IMPORTANT TO REMEMBER:

When people perceive or detect they are in vocal trouble, they will either PUSH (blow air from bottom up) and/or SQUEEZE (contract muscles), regardless of the etiology.

THE MAGICAL LIST OF M, N, AND NG WORDS/PHRASES?

MISUNDERSTOOD PHRASES THAT CAN ENCOURAGE HYPERNASALITY:

- "PUT SOUND IN THE NOSE…" (EVEN ON VOWELS AND NON-NASAL CONSONANTS)
- "USE /M/ AND /N/ WORDS TO INCREASE 'NASAL AIR FLOW' AND ACHIEVE OPTIMAL RESONANCE"
- "THE NOSE AND PARANASAL SINUSES HELP FOCUS AND AMPLIFY THE SOUND"

Reminder: The nose is a muffler (acoustic energy attenuator)

"SPASMODIC DYSPHONIA CAN BE CURED WITH VOICE THERAPY ALONE"

- Ludlow, CL (2009). Treatment for spasmodic dysphonia: limitations of current approaches. *Curr Oppin Otolaryngology Head Neck Surgery; 17(3): 160-165.*

- Mor, N, Simonyan, K, Blitzer, A (2018). Central Voice Production and Pathophysiology of Spasmodic Dysphonia. *Laryngoscope; 128(1): 177-183.*

- Barkmeier-Kraemer, J, Clark, H (2017). Speech-language pathology evaluation and management of hyperkinetic disorders affecting speech and swallowing function. *Tremor Other Hyperkinet Mov (NY); 7:489.*

- Roy, N, Ford, CN, Bless, DM (1996). Muscle tension dysphonia and spasmodic dysphonia: the role of manual laryngeal tension reduction in diagnosis and management. *Ann Otol Rhinol Laryngol; 105: 851-856.*

- Silverman, EP, Garvan, C, Shrivastav, R, Sapienza, CM (2012). Combined modality treatment of adductor spasmodic dysphonia. *J Voice. 2012; 26: 77-86.*

SUPPORT GROUP

"ONLY SINGERS WITH POOR TECHNIQUE HAVE INJURIES."

NOT True!

Several excellent singers have had vocal injuries

The overall prevalence of self-reported dysphonia in singers = 46%

Pestana, PM, Vaz-Freitas, S, Manso, MC (2017). Prevalence of voice disorders in singers: systematic review and meta analysis. *J Voice; 31(6): 722-727.*

The very attributes which make one a performer also put him/her/they at risk for vocal injuries!

Sapir, Keidar, Mathers-Schmidt, 1993

Bastian, Keidar, Verdolini, 1990

COMING OUT OF COVID-19…

Studies following COVID-19 vary: Some suggest that voice symptoms are frequent in patients with coronavirus and may occur after infection (Martins et al., 2025). Other studies suggest the symptoms correlate with other infectious upper Respiratory diseases. (Romero Arias et al., 2022).

- *Biggest issue I personally saw with patients coming out of the pandemic= Deconditioning*

"ANYONE CAN PROVIDE VOICE THERAPY!"

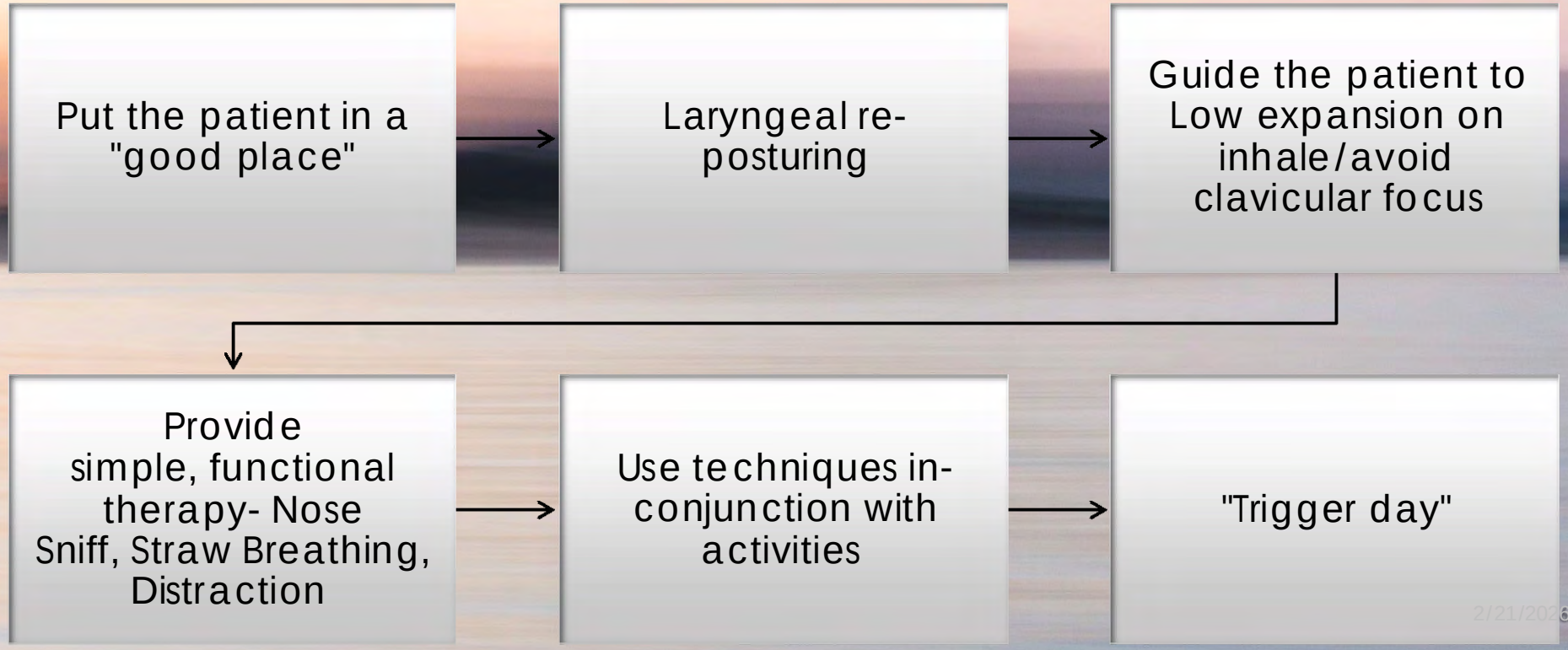
ONE MUST HAVE:

- GOOD EAR, EXCELLENT ABILITY TO MODEL AND MATCH PITCH
- FAMILIARITY, CONTROL, AND RAPPORT WITH ONE'S OWN VOICE
- ABILITY TO ELICIT, MODEL, AND IMITATE A VARIETY OF PRODUCTIONS
- CREATIVITY WITH VOICE USE IN BOTH SINGING AND SPEAKING

AND TO WORK WITH VOCALISTS…

- MUSICIANSHIP, MUSICAL LITERACY
- AFFINITY FOR VOCAL MUSIC, APPRECIATION AND UNDERSTANDING OF VOCALISTS
- KNOWLEDGE OF VOCAL GENRES AND REPERTOIRE
- VOICE TRAINING AND PERFORMANCE EXPERIENCE IS ALSO EXTREMELY HELPFUL

VCD/LARYNGOSPASM TREATMENT

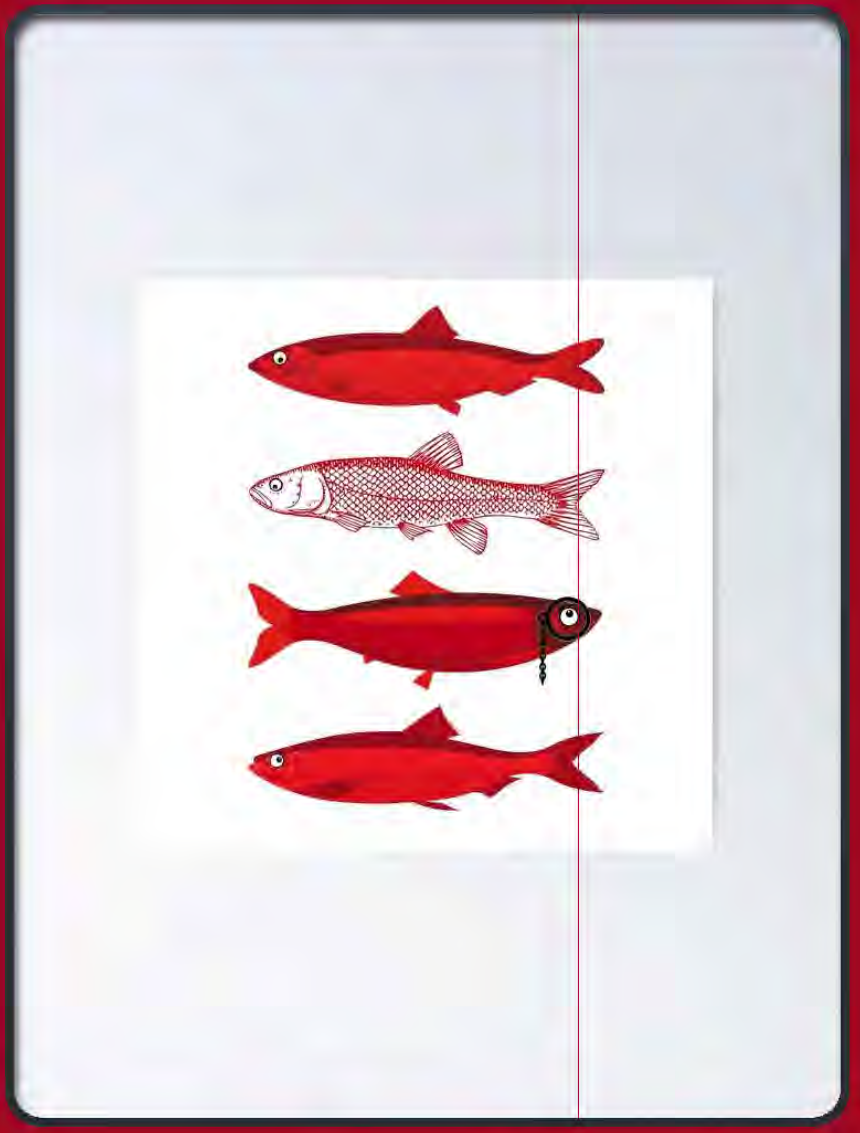


BACK TO THE BASICS: "GOOD OLD-FASHIONED BREAD & BUTTER"

- Be person oriented (not just diagnoses oriented)
- Rely on intuition and introspection, not just formal knowledge
- Be familiar with your own voice
- Know when to consult with other professionals
- Be ethical, accountable, and honest

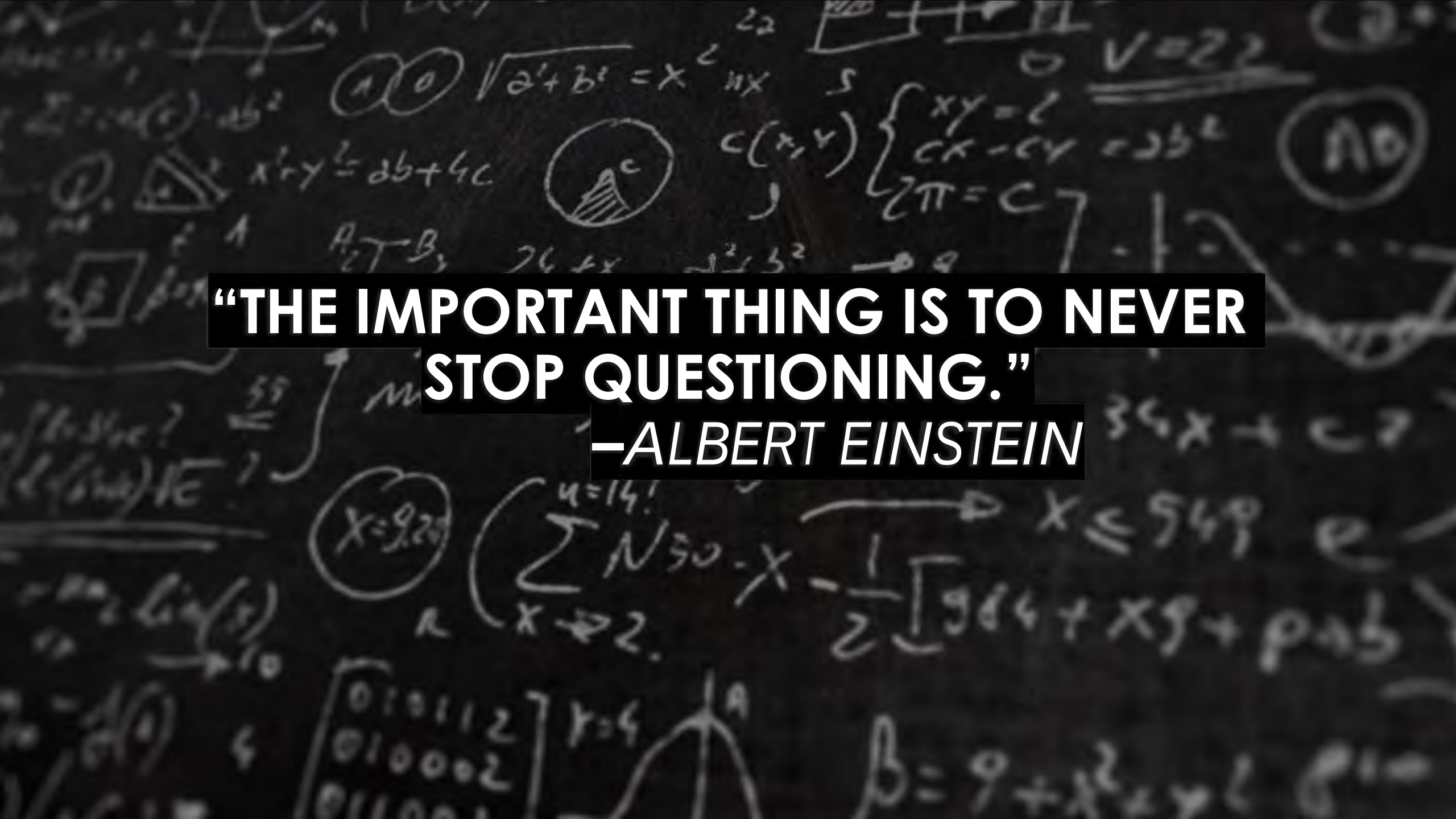
THE RED HERRING PITFALL

- EXAMPLES:
  - A KINDERGARTEN TEACHER AND MOTHER OF THREE YOUNG CHILDREN WHO IS ATTRIBUTING HER HOARSENESS TO ALLERGIES, WHEN IT IS LIKELY BECAUSE OF HER HIGH VOCAL LOAD.
  - A PERSON WITH A NORMAL SPEAKING VOICE WHO MAY HAVE SOME CATCHES/GLITCHES IN SUSTAINED PHONATION DURING VCB MAY END UP BEING DIAGNOSED WITH MILD SD
  - BASE OF TONGUE LESION BEING THE FOCUS OF ATTENTION WHEN THERE IS SOMETHING ELSE GOING ON.
- DYSPHAGIA
  - NOT EVERY SYMPTOM THAT "FEELS" LIKE IT;'S IN THE PHARYNX IS – ONLY ABOUT 33% OF PEOPLE ARE ABLE TO ACCURATELY LOCALIZE WHERE GLOBUS IS OCCURRING (WHEN CHECKED UNDER FLUORO/ENDOSCOPY)



CLOSING


“LARNYNX”


“THE IMPORTANT THING IS TO NEVER STOP QUESTIONING.”
–ALBERT EINSTEIN

DYSPHAGIA REFERENCES

A Ojay, E Ernst. Can singing exercises reduce snoring? A pilot study, Complement Ther Med, 8 (3) (2000), pp. 151-156

Pai, I., Lo, S., Wolf, D. et al. The effect of singing on snoring and daytime somnolence. *Sleep Breath* **12**, 265–268 (2008). https://doi.org/10.1007/s11325-007-0159-1

Guimarães, K.C.; Drager, L.F.; Genta, P.R.; Marcondes, B.F.; Lorenzi-Filho, G. Effects of oropharyngeal exercises on patients with moderate obstructive sleep apnea syndrome. *Am. J. Respir. Crit. Care Med.* **2009**, *179*, 962–966. [Google Scholar] [CrossRef]

Barnes, M., Goldsworthy, U. R., Cary, B. A., & Hill, C. J. (2009). A diet and exercise program to improve clinical outcomes in patients with obstructive sleep apnea--a feasibility study. *Journal of clinical sleep medicine : JCSM : official publication of the American Academy of Sleep Medicine*, *5*(5), 409–415.

Borges, T.G.V., Muniz, C.R., Ferreira, F.R. et al. Swallowing outcome to speech therapy intervention in resistant hypertensive patients with obstructive sleep apnea. *Eur Arch Otorhinolaryngol* **280**, 443–453 (2023). https://doi.org/10.1007/s00405-022-07612-3

Demeter, P., Pap, A. The relationship between gastroesophageal reflux disease and obstructive sleep apnea. *J Gastroenterol* **39**, 815–820 (2004). https://doi.org/10.1007/s00535-004-1416-8

Slowik JM, Sankari A, Collen JF. Obstructive Sleep Apnea. [Updated 2025 Mar 4]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK459252/

Soares, M. C., Sallum, A. C., Gonçalves, M. T., Haddad, F. L., & Gregório, L. C. (2009). Use of Muller's maneuver in the evaluation of patients with sleep apnea–literature review. *Brazilian journal of otorhinolaryngology*, *75*(3), 463–466. https://doi.org/10.1016/S1808-8694(15)30667-4

Teramoto, S., Sudo, E., Matsuse, T., Ohga, E., Ishii, T., Ouchi, Y., & Fukuchi, Y. (1999). Impaired swallowing reflex in patients with obstructive sleep apnea syndrome. *Chest*, *116*(1), 17–21. https://doi.org/10.1378/chest.116.1.17

Valarelli, L. P., Corradi, A. M. B., Grechi, T. H., Eckeli, A. L., Aragon, D. C., Küpper, D. S., Almeida, L. A., Sander, H. H., de Felício, C. M., Trawitzki, L. V. V., & Valera, F. C. P. (2018). Cephalometric, muscular and swallowing changes in patients with OSAS. *Journal of oral rehabilitation*, *45*(9), 692–701. https://doi.org/10.1111/joor.12666

DYSPHAGIA REFERENCES

Bhutada, A. M., Broughton, W. A., & Focht Garand, K. L. (2020). Obstructive sleep apnea syndrome (OSAS) and swallowing function-a systematic review. *Sleep & breathing = Schlaf & Atmung*, 24(3), 791–799. https://doi.org/10.1007/s11325-020-02037-w

Sadegh Ghaderi, Sana Mohammadi, Farzad Fatehi, Glymphatic pathway dysfunction in severe obstructive sleep apnea: A meta-analysis, Sleep Medicine, Volume 131, 2025, 106528, ISSN 1389-9457, https://doi.org/10.1016/j.sleep.2025.106528.

Losurdo A, Brunetti V, Broccolini A, et al. Dysphagia and obstructive sleep apnea in acute, first-ever, ischemic stroke. *Journal of Stroke and Cerebrovascular Diseases*. 2018; **27**: 539-546.

Gastroesophageal reflux in patients with morbid obesity: a role of obstructive sleep apnea syndrome? Sabaté JM, Jouët P, Merrouche M, et al. Obes Surg. 2008;18:1479–1484. doi: 10.1007/s11695-008-9508-9. [DOI] [PubMed] [Google Scholar]

Gastroesophageal reflux disease and sleep quality in a Chinese population. Chen MJ, Wu MS, Lin JT, et al. J Formos Med Assoc. 2009;108:53–60. doi: 10.1016/S0929-6646(09)60032-2. [DOI] [PubMed] [Google Scholar]

GI Motility online (2006) doi:10.1038/gimo37
Published 16 May 2006, **Clinical disorders of the upper esophageal sphincter.** Ian J. Cook, M.D., F.R.A.C.P.

Mittal RK. Motor Function of the Pharynx, Esophagus, and its Sphincters. San Rafael (CA): Morgan & Claypool Life Sciences; 2011. Available from: https://www.ncbi.nlm.nih.gov/books/NBK54283/

Wei, Pengxu MD*; Xu, Yafei MD; Zhang, Zuting MD; Zhang, Simin MD; Lv, Zeping MD. Treatment for upper esophageal sphincter dysfunction in a patient with poststroke dysphagia: A case report. Medicine 98(13):p e14988, March 2019. | DOI: 10.1097/MD.0000000000014988

Kahrilas, P. J., Dodds, W. J., Dent, J., Logemann, J. A., & Shaker, R. (1988). Upper esophageal sphincter function during deglutition. *Gastroenterology*, 95(1), 52–62. https://doi.org/10.1016/0016-5085(88)90290-9

Cha, J. H., Kim, W. K., Ha, A. W., Kim, M. H., & Chang, M. J. (2017). Anti-inflammatory effect of lycopene in SW480 human colorectal cancer cells. *Nutrition research and practice*, *11*(2), 90–96. https://doi.org/10.4162/nrp.2017.11.2.90

DYSPHAGIA REFERENCES

Karakoy, Z., Cadirci, E., & Dincer, B. (2022). A New Target in Inflammatory Diseases: Lycopene. *The Eurasian journal of medicine*, *54*(Suppl1), 23–28. https://doi.org/10.5152/eurasianjmed.2022

Baldi, S., Tristán Asensi, M., Pallecchi, M., Sofi, F., Bartolucci, G., & Amedei, A. (2023). Interplay between Lignans and Gut Microbiota: Nutritional, Functional and Methodological Aspects. *Molecules (Basel, Switzerland)*, *28*(1), 343. https://doi.org/10.3390/molecules28010343

Ayoub, J., & White, N. D. (2017). GERD Management: The Case for Lifestyle in an Era of PPIs. *American journal of lifestyle medicine*, *11*(1), 24–28. https://doi.org/10.1177/1559827616671505

Pinto-Sanchez MI, Yuan Y, Bercik P, Moayyedi P. Proton pump inhibitors for functional dyspepsia. Cochrane Database Syst Rev. 2017 Mar 08;3(3):CD011194.

Nugent CC, Falkson SR, Terrell JM. H2 Blockers. [Updated 2024 Aug 11]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK525994/

Howell, R., Tang, A., Allen, J., Altaye, M., Amin, M., Bayan, S., Belafsky, P., Cervenka, B., deSilva, B., Dion, G., Ekbom, D., Friedman, A., Fritz, M., Giliberto, J.P., Guardiani, E., Harmon, J., Kasperbauer, J.L., Khosla, S., Kim, B., Kuhn, M., Kwak, P., Ma, Y., Madden, L., Matrka, L., Mayerhoff, R., Piraka, C., Rosen, C., Tabangin, M.E., Wahab, S.A., Wilson, K., Wright, S.C., Young, V., Yuen, S. and Postma, G.N. (2023), Killian Jamieson Diverticulum, the Great Mimicker: A Case Series and Contemporary Review. The Laryngoscope, 133: 2110-2115. https://doi.org/10.1002/lary.30508

Belafsky, P.C., Postma, G.N. and Koufman, J.A. (2001), The Validity and Reliability of the Reflux Finding Score (RFS)†. The Laryngoscope, 111: 1313-1317. https://doi.org/10.1097/00005537-200108000-00001

Karur, P. S., Morjaria, J. B., Wright, C., & Morice, A. H. (2012). Neurological conditions presenting as airway reflux cough. *European respiratory review : an official journal of the European Respiratory Society*, *21*(125), 257–259. https://doi.org/10.1183/09059180.00000212

Kollarik, M., Ru, F., & Undem, B. J. (2007). Acid-sensitive vagal sensory pathways and cough. *Pulmonary pharmacology & therapeutics*, *20*(4), 402–411. https://doi.org/10.1016/j.pupt.2006.11.010

DYSPHAGIA REFERENCES

Jessen, N. A., Munk, A. S., Lundgaard, I., & Nedergaard, M. (2015). The Glymphatic System: A Beginner's Guide. *Neurochemical research*, *40*(12), 2583–2599. https://doi.org/10.1007/s11064-015-1581-6

Paulsen, F.P.; Steven, P.; Tsokos, M.; Jungmann, K.; Müller, A.; Verse, T.; Pirsig, W. Upper airway epithelial structural changes in obstructive sleep-disordered breathing. *Am. J. Respir. Crit. Care Med.* **2002**, *166*, 501–509.

VOICE & AIRWAY REFERENCES

Adessa M, Xiao R, Hull D, Bowen AJ, Milstein CF, Benninger MS, Bryson PC. Benign Vocal Fold Lesions in Patients with Chronic Cough. Otolaryngol Head Neck Surg. 2020 Mar;162(3):322-325.

Bastian, RW, Keidar, A, Verdolini-Marston, K. Simple vocal tasks for detecting vocal fold swelling. J Voice. 1990 Jun;4(2):172-83.1

Bastian RW, Thomas JP. Do Talkativeness and Vocal Loudness Correlate With Laryngeal Pathology? A Study of the Vocal Overdoer/Underdoer Continuum. J Voice. 2016 Sep;30(5):557-62.

Emerich, K, Reed, O (2020). The role of the pelvic floor in respiration: a multidisciplinary literature review. *J Voice; 34(2): 243-249.*

Johnson AM, Sandage MJ. Exercise Science and the Vocalist. J Voice. 2021 Jul;35(4):668-677.

Martins RHG, de Azevedo ES, Müller JVC, Loli A. Dysphonia and COVID-19: A Review. J Voice. 2025 Jan 14:S0892-1997(24)00419-3.

Maughan RJ, Griffin J (2003). Caffeine Ingestion and Fluid Balance: A Review. J Hum Nutr Diet, 16 (6); 411-20.

Nix, J, Emerich, K, Titze, I (20025). Application of vocal fry to the training of singers. J Singing; 62(1): 53-59.

Rafii B, Taliercio S, Achlatis S, Ruiz R, Amin MR, Branski RC. Incidence of underlying laryngeal pathology in patients initially diagnosed with laryngopharyngeal reflux. Laryngoscope. 2014 Jun;124(6):1420-4.

Razura DE, Gallagher T, Khachikyan N, Johns MM 3rd, Shuman EA. Laryngeal Sensory Neuropathic Cough Is Not Associated With Membranous Vocal Fold Lesions. Laryngoscope. 2025 Jul 5.

Romero Arias T, Betancort Montesinos, M. Voice sequelae following recovery from covid-19. J Voice. 2025 Jan; 39(1):287.

Sulica L. Hoarseness misattributed to reflux: sources and patterns of error. Ann Otol Rhinol Laryngol. 2014 Jun;123(6):442-5.

Thomas JP, Zubiaur FM. Over-diagnosis of laryngopharyngeal reflux as the cause of hoarseness. Eur Arch Otorhinolaryngol. 2013 Mar;270(3):995-9.