

FACT OR FICTION??

Urban Legends of Dysphagia

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Disclosures

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FACT

- Dysphagia management is an evolving field
- Therapists are ethically responsible for determining the best course of treatment for patients
- EBP calls for therapists to integrate:
 - clinical expertise/expert opinion
 - external scientific evidence
 - client/patient/ caregiver perspectives to provide high-quality services reflecting the interests, values, needs, and choices of the individuals we serve
 – asha.org

FICTION

- Everything you were taught in school is still true
- Everything your clinical supervisor told you about swallowing assessment and treatment is true
- SLPs are not responsible for determining the truth of what we are taught or have heard
- All published articles are well done and thoroughly examined
- If it's on the internet, it's accurate

Research-FACT or FICTION?

- Agency for Healthcare Research and Quality (AHRQ)
 - LEVEL 1A: Meta-analysis of multiple LEVEL 1s
 - LEVEL 1: Well designed, randomized, controlled trials
 - LEVEL 2: Well designed, non-randomized, controlled trial
 - LEVEL 3: Observational studies with controls
 - LEVEL 4: Observational studies without controls

Research-FACT or FICTION?

- Investigate
 - Number of subjects? What is their n?
 - Control group?
 - Simultaneous testing?
 - Abstract vs. full text?
 - Who is involved?
 - Where is it published?
 - Correlation vs. causation?
 - Blinded?
 - Magic bullet?

The MBS can be a pass/fail test

The MBS can be pass/fail

The MBS should end when
aspiration occurs

The MBS should end
when aspiration occurs

FEES and MBS assess
dysphagia equally well

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ASPIRATION VS OROPHARYNGEAL DYSPHAGIA

Penetration is abnormal

Penetration is abnormal

The epiglottis is a very important structure for proper swallow function

The epiglottis is a very important structure for swallow function

Important to observe as possible indicator of impairment

“Patient with aspiration due to incomplete epiglottic deflection.”

UES dysfunction can be diagnosed via MBS

UES dysfunction can be diagnosed via MBS

A runny nose and watery eyes are indicators of silent aspiration

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Pulse ox should be part of
the BSE

Pulse ox should be part of
the BSE

Checking temperature
fluctuations or spikes is a good
way to assess for aspiration

Checking for temperature
fluctuations or spikes is a good
way to assess for aspiration

Wet vocal quality is a good indicator of penetration, aspiration and residues

Wet vocal quality is a good indicator of penetration, aspiration and residues

A diminished gag reflex is a good indicator of aspiration risk

A diminished gag reflex is a good indicator of aspiration risk

The chin tuck makes the
swallow safer

The chin tuck makes the
swallow safer

Poor PO intake is possible
indicator of dysphagia

Poor PO intake is a
possible indicator of
dysphagia

Aspiration pneumonia is
always RLL pneumonia

Aspiration pneumonia is
always RLL

The Masako maneuver increases
the strength of the base of
tongue retraction

The Masako maneuver
increases the strength of
the base of tongue
retraction

If a patient is non-compliant with your recommendations, you should discharge them from caseload

If a patient is non-compliant with your recommendations, you should discharge them from your caseload

Thicker liquids are safer

Thicker liquids are safer

Repeating /k/ and /g/ words
with force strengthens base
of tongue retraction

Producing /k/ and /g/ words
with force strengthens base
of tongue retraction

Esophageal dysphagia can
look like pharyngeal
dysphagia at bedside

Esophageal dysphagia can
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VitalStim

- www.vitalstim.com research support
 - Shaw et al., 2007
 - MBS or FEES before and after
 - 61% of patients demonstrated improvement in swallowing
 - 33% no longer required a feeding tube
 - Concluded: "VitalStim therapy seems to help those with mild to moderate dysphagia. However, the patients with the most severe dysphagia in our study did not gain independence from their feeding tubes. "
 - 18 total patients
 - No control group

VitalStim

- www.vitalstim.com research support
 - Carnaby-Mann et al., 2007
 - Meta-analysis of existing studies
 - Examined 81 existing studies, 7 accepted
 - Synthesis of the data was in favor of NMES for swallowing
 - Conclusion: "Because of the small number of studies and low methodological grading for these studies, caution should be taken in interpreting this finding. These results support the need for more rigorous research in this area."

VitalStim

- www.vitalstim.com research support
 - Blumenfield et al., 2006
 - Two groups of patients, 40 each group
 - One group-traditional therapy (laryngeal elevation exercises, oral motor)
 - Second group- e stim only
 - Each patient received an instrumental swallowing assessment before and after, given a swallow severity rating score before and after.
 - Group that received e stim had more improvement on score, and required a fewer number of sessions.
 - Groups were not random
 - Clinicians that evaluated also provided treatment
 - Criteria for discharge not described

VitalStim

- www.vitalstim.com research support
 - Crary et al., 2007
 - Survey results
 - Group 1-received training in e-stim and currently using
 - Group 2-Members of SIG13
 - Of therapists currently using
 - Majority reported no specific criteria for using
 - Majority used varied treatment methods
 - Majority did not follow patients after treatment
 - Majority reported therapist and patient satisfaction
 - No reported treatment complications
 - Of therapists not using
 - Waiting for better outcome data

VitalStim

- Humbert et al, 2006
 - Application of surface electrical stimulation during VFSS at rest and during swallowing
 - Reduced hyoid and peak laryngeal elevation during swallow, laryngeal decent at rest
- Freed et al, 2001
 - Compared thermal tactile stim with e stim
 - Improved swallow score with e stim group
 - Thermal tactile stim?

DPNS

- 8,000+ therapists trained and certified
- “DPNS dysphagia treatment techniques were developed utilizing reflex stimulation through the thermal (cold) modality, first used in treatment by Margaret Rood, PT in the 1950s. The clinician practices direct, targeted reflex triggering to generate muscle group contraction. Utilizing the inherent reflex system with the muscle groups of the swallow, the therapist is now able to increase muscle strength, endurance, ROM, and, as a result, function.”
- Developed 1991-1993 in Florida
 - References:
 - Teisemann et al, 2009
 - Increased cortical activity with oral thermal tactile stimulation
 - Handy et al, 1998
 - Increased cortical activity for 30 minutes after electrical stimulation of the pharynx
 - Increased responsiveness of the pharynx and upper esophagus
 - Activity and responsiveness returned to pre-stimulation levels after 60 minutes in all 8 healthy subjects
 - Dysphagia summary
 - Han-Jong Paik, MD, PhD
 - Stimulation of 11 or 12 sites
 - No published works
 - No description of techniques published
 - 3 day course
 - \$500.00
 - v \$,000-\$4,000,000
 - No courses scheduled for 2016
 - www.speechteam.com

DPNS

- Lemon glycerine swabs
 - Dental erosion
 - Drying of oral mucosa
 - Meurman et al., 1996

Cervical Auscultation

- Zenner et al, 1995
 - “Results support the use of cervical auscultation as a highly sensitive and specific method of dysphagia assessment in long-term care.”
 - Listening to swallows and VFSS not completed simultaneously
 - Average of two weeks between BSA and VFSS
 - Examiners not blinded
 - Also completed a clinical bedside exam
 - High detection of aspiration
 - High false positive (catch everyone)

Cervical Auscultation

- Leslie et al., 2007 & Leslie et al, 2004
 - 2007: CA and endoscopy simultaneously
 - Attempted to link sounds with physiological event
 - "No individual sound component was consistently associated with a physiologic event"
 - 2004: CA and VFSS simultaneously
 - Low predictive values, in the 60's%
- Stroud et al, 2002
 - High detection
 - High false positive
- Borr et al, 2006
 - "We conclude that the swallowing sounds contain audible cues that should, in principle, permit reliable classification"
 - Not simultaneous
 - Examined and completed acoustical analysis of swallow sounds
 - Compared sounds of normals with dysphagics
 - Then used same sounds and asked experts, students and laypeople id as normal or dysphagic
 - Rater reliability was poor
 - High detection/high false positive
 - "What does that mean for the clinical applicability of CA? With regard to the foundation we know about CA, we are viewing this method with skepticism."

SwallowStrong

- Developed by Swallow Solutions in Wisconsin, founded by JoAnne Robbins
- 2008 paper describing its use as a measurement device and potential for strengthening
 - Hewitt et al, 2008
- Madison Oral Strengthening Therapeutic Device (MOST)
 - MOST device
- 2013 ASHA
 - Presented findings on the decrease of gross and fine motor with age, and the different pressures generated by gross and fine motor tongue movement
- 2013 ASHA
 - Presented findings of early clinical trials of Isometric Progressive Oropharyngeal therapy and the MOST
 - Data collection on:
 - Pre and post penetration-aspiration scale
 - Swal QOL
 - Dietary intake
- 2014 DRS Convention
 - Presented finding on improved PAS, FOIS, QOL
- MOST became SwallowStrong
 - Added a touch screen interface, redesigned the mouthpiece

SwallowStrong

- Recent research:
 - Rogus-Pulia et al, 2016
 - Juan et al, 2013
 - Single subject
 - 27 months post CVA, post STx-strengthening and e-stim, post esoph dilation, PEG
 - 8 weeks with MOST- increased strength, unrestricted PO intake

SwallowStrong

- Training:
 - Free videos on website on set up, use, therapy
 - www.swallowsolutions.com

It's not my fault...

- ASHA 2013 Health care survey
 - In adult settings, 42% care provided was in dysphagia
 - voice, AAC, accent modification, aphasia, dementia, TBI, cognitive, motor speech, other
 - In general medical and LTAC-59%
- CEU
 - Dysphagia CEU requirements
 - In person: 3 in Ohio
 - ASHA CEUFind, www.asha.org (January 2016)
- Education
 - ASHA suggests 60 clinical hours
 - Casual survey: 3 credit hours in dysphagia
 - Combined with: motor speech, dysarthria

...or is it?

- Online dysphagia courses
 - 1,383
 - ASHA CEUFind, www.asha.org (January 2016)
- SIG 13
 - \$35/yr
- Facebook/Twitter
 - SNL
 - Swallow Neurophysiology Lab
 - Dr. Ianessa Humbert
 - DRS
 - Dysphagia Research Society
- PubMed
 - Know your swallowing experts!
- Research Gate
 - Full text
 - Can request full text
 - www.researchgate.net
- BCS-S
 - www.swallowingdisorders.org

References

- Agency for Healthcare Research and Quality. (2002b). Systems to rate the strength of scientific evidence. Summary, evidence report/technology assessment: Number 47. AHRQ Publication No. 02-0015. Rockville, MD: Agency for Healthcare Research and Quality.
- American College of Radiology. PRACTICE PARAMETER FOR THE PERFORMANCE OF THE MODIFIED BARIUM SWALLOW, Amended 2014, Resolution 39. Available: <http://www.acr.org/~media/70396289d61341dd9146466186a77d0e.pdf>. Last accessed Feb. 2016.
- American Speech-Language-Hearing Association. (2013). ASHA SLP Health Care Survey 2013: CaseLoad characteristics. Available from www.asha.org.
- American Speech-Language-Hearing Association. (2004). Guidelines for Preferred Practice Patterns for the Profession of Speech-Language Pathology -Swallowing Assessment-Adults. www.asha.org
- American Speech-Language-Hearing Association. (2004). Guidelines for speech-language pathologists performing videofluoroscopic swallowing studies [Guidelines]. Available from www.asha.org/policy.
- American Speech-Language-Hearing Association. ASHA CEUFind. Available from www.asha.org.
- Bastian, R., Riggs, L. (1999). Role of sensation in swallowing function. *Laryngoscope*. 109(12):1974-7.
- Berg, J., Appelbaum, P., Lidz, C., Parker, L. (2001). Informed consent: Legal theory and clinical practice. New York: Oxford.
- Bernat, J. (2001). Informed consent. *Muscle & Nerve*. 24:614-621.
- Bleach, N. (1993). The gag reflex and aspiration: a retrospective analysis of 120 patients assessed by videofluoroscopy. *Clinical Otolaryngology and Allied Sciences*. 18(4):303-7.
- Bory, C., Hielcher-Fastabend, M., Lucking, A. (2007). Reliability and validity of cervical auscultation. *Dysphagia*. 22(3):225-34.
- Carnaby-Mann, G., Craty, M. (2007). Examining the evidence on neuromuscular electrical stimulation for swallowing: a meta-analysis. *Archives of Otolaryngology-Head and Neck Surgery*. 133(6):564-71.
- Chang, H., Torng, P., Wang, T., Chang, Y. (2012). Acoustic voice analysis does not identify presence of penetration/aspiration as confirmed by videofluoroscopic swallowing study. *Archives of Physical Medicine and Rehabilitation*. 93(11):1991-4.

References

- Chichero, J. (2013). Thickening agents used for dysphagia management: effect on bioavailability of water, medication and feelings of satiety. *Nutrition Journal*. 12:54.
- Collins, M. J., & Bakheit, A. M. O. (1997). Does pulseoximetry reliably detect aspiration in dysphagic stroke patients? *Stroke*, 28 (9), 1773-1775.
- Davies, A., Stone, S., Kidd, D., MacMahon, J. (1995). Pharyngeal sensation and gag reflex in healthy subjects. *Lancet*. 345(8948):487-88.
- Daggett, A., Logemann, J., Rademaker, A., Pauloski, B. (2006). Laryngeal penetration during deglutition in normal subjects of various ages. *Dysphagia*. 21(4):270-74.
- Groves-Wright, K., Boyce, S., Kelchner, L. (2010). Perception of wet vocal quality in identifying penetration/aspiration during swallowing. *Journal of Speech Language and Hearing Research*. 53(3):620-3.
- Handy, S., Rothwell, J., Aziz, Q., Singh, K., Thompson, D. (1998). Long-term reorganization of human motor cortex driven by short-term sensory stimulation. *Nature Neuroscience*. 1:64-68.
- Hewitt, A., Hind, J., Kays, S., Nicosia, M., Doyle, J., Tompkins, W., Gangnon, R., Robbins, J. (2008). Standardized instrument for lingual pressure measurement. *Dysphagia*. 23(1):16-25.
- Humbert, I., Christopher J. Poletto, C., Saxon, K., Kearney, P., Crujido, L., Wright-Harp, M., Payne, J., Jeffries, N., Sonies, B., Ludlow, C. (2006). The effect of surface electrical stimulation on hyolaryngeal movement in normal individuals at rest and during swallowing. *Journal of Applied Physiology*. 101(6):1657-1663.
- Jovancevic, L., Georgalas, C., Savovic, S., Janjevic, D. (2010). Gustatory Rhinitis. *Rhinology* 4(10): 7-10
- Juan, J., Hind, J., Jones, C., McCulloch, T., Gangnon, R., Robbins, J. (2013). Case study: application of isometric progressive resistance oropharyngeal therapy using the Madison Oral Strengthening Therapeutic device. *Topics in Stroke Rehabilitation*. 20(5):459-70.
- Lang, I. M., & Shaker, R. (2000, June). An overview of the upper esophageal sphincter. *Current Gastroenterology Reports*, 2(3), 185-190.
- Leder, S. (1997). Videofluoroscopic evaluation of aspiration with visual examination of the gag reflex and velar movement. *Dysphagia*, 12(1):21-3.

References

- Leder, S. (2000). Use of arterial oxygen saturation, heart rate, and blood pressure as indirect objective physiologic markers to predict aspiration. *Dysphagia*, 15(4):201-5.
- Leder, S., Burrell, M., Van Daele, D. (2010). Epiglottitis is not essential for successful swallowing in humans. *The Annals of Otolaryngology, Rhinology, and Laryngology*, 119(12): 795-8.
- Leslie, P., Drinnan, M., Finn, P., Ford, G., Wilson, J. (2004). Reliability and validity of cervical auscultation: a controlled comparison using videofluoroscopy. *Dysphagia*, 19(4):231-40.
- Leslie, P., Drinnan, M., Zammit-Maempel, I., Coyle, J., Ford, G., Wilson, J. (2007). Cervical auscultation synchronized with images from endoscopy swallow evaluations. *Dysphagia*, 22(4): 298-8.
- Lim, S., Lieu P., Phua, S., Sehadri, R., Venkatasubramanian, N., Lee, S., Choo, P. (2001). Accuracy of bedside clinical methods compared with fiberoptic endoscopic examination of swallowing (FEES) in determining the risk of aspiration in acute stroke patients. *Dysphagia*, 16(1): 1-6.
- Lindroos, E., Saarela, R., Soini, H., Muurinen, S., Suominen, M., Pitkala, H. (2014). Caregiver-reported swallowing difficulties, malnutrition, and mortality among older people in assisted living facilities. *Journal of Nutrition, Health, and Aging*, 18(7):718-22.
- Logemann JA, Gensler G, Robbins J, et al. A Randomized Study of Three Interventions For Aspiration of Thin Liquids in Patients With Dementia or Parkinson's Disease. *Journal of Speech, Language, and Hearing research : JSLHR*. 2008;51(1):173-183.
- Logemann, J.A., (2013). Treatment For complicated dysphagia patients. Presented ARKSHA, Sept. 2013.
- Martin-Harris, B., Logemann, J., McMahon, S., Schleicher, M., Sandidge, J. (2000). Clinical Utility of the Modified Barium Swallow. *Dysphagia*, 14(3), 156-161.
- Medda, B., Kern, M., Ren, J., Xie, P., Uluap, S., Lang, I., Shaker, R. (2003). Relative contribution of various airway protective mechanisms to prevention of aspiration during swallowing. *American Journal of Physiology Gastrointestinal, and Liver Physiology*, 284 (6) G933-9.
- Meurman, J., Sovani, R., Palltari, A., Rytomaa, I., Franssila, S., Kroon, L. (1996). Hospital mouth cleaning aids may cause dental erosion. *Periodic Care Dentist*. 16(6):247-50.

References

- Nagaya M, Kachi T, Yamada T, Sumi Y. (2004). Videofluorographic observations on swallowing in patients with dysphagia due to neurodegenerative diseases. *Nagoya Journal of Medical Science*, 2: 17-23.
- Namasivayam A., Steele, C. (2015). Malnutrition and Dysphagia in long-term care: a systematic review. *Journal of Nutrition in Gerontology and Geriatrics*. 34(1):1-21.
- Perلمان, A. L., Ettema, S. L., & Barkmeier, J. (2000). Respiratory and acoustic signals associated with bolus passage during swallowing. *Dysphagia*, 15 (2), 89-94.
- Perلمان, A. L., Luschei, E. S., & Du Mond, C. E. (1989). Electrical activity from the superior pharyngeal constrictor during reflexive and nonreflexive tasks. *Journal of Speech & Hearing Research*, 32(4), 749-754.
- Ramsey, D., Smithard, D., Kalra, L. (2006). Can pulse oximetry or a bedside swallowing assessment be used to detect aspiration after stroke? *Stroke*, 37(12): 2084-8.
- Raphael, G., Hauptstein Raphael, M., Kalliner, M. (1988). Gustatory rhinitis: A syndrome of food-induced rhinorrhea. *The Journal of Allergy and Clinical Immunology* 83(1): 110-115.
- Rao, N. et al (2002). Gold standard? Analysis of the videofluoroscopic and fiberoptic endoscopic swallow examinations. *Journal of Applied Research in Clinical and Experimental Therapeutics*. (13):1.
- Robbins J, Gensler G, Hind J, et al. Comparison of 2 Interventions for Liquid Aspiration on Pneumonia Incidence: A Randomized Trial. *Annals of Internal Medicine*. 2008;148(7):509-518.
- Rogus-Pulis, N., Rusche, N., Hind, J., Zielinski, J., Gangnon, R., Safdar, N., Robbins, J. (2015). Effects of Device-Facilitated Isometric Progressive Resistance Oropharyngeal Therapy on Swallowing and Health-Related Outcomes in Older Adults with Dysphagia. *Journal of the American Geriatric Society*. January [Epub ahead of print].
- Rosenbek, J., Robbins, J., Roeker, E., Coyle, J., Wood, J. (1996). A penetration-aspiration scale. *Dysphagia*, 11(2):193-8.

References

- Shaker, Belafsky, Postma, Easterling. (2012). Principles of Deglutition: A Multidisciplinary Text for Swallowing and Its Disorders. Springer- Publ.
- Shanahan TK, Logemann JA, Rademaker AM, Pauloski BR, Kahrlas PJ. (1993). Chin-down posture effect on aspiration in dysphagic patients. *Arch Phys Med Rehabil*, 74: 736-9.
- Sharma, T. & Massey, B. (2012). Evaluation of Upper Esophageal Sphincter Function. SIG3 Perspectives on Swallowing and Swallowing Disorders (Dysphagia). 21: 60-67.
- Sharp, H. (2005). When Patients Refuse Recommendations for Dysphagia Treatment. *Swallowing and Swallowing Disorders*. October: 3-6.
- Shaw, G., Sechtem, P., Searl, J., Keller, K., Rawl, T., Dowdy, E. (2007). Transcutaneous neuromuscular electrical stimulation (Vitalstim) curative therapy for severe dysphagia: myth or reality? *Annals of Otolaryngology, Rhinology and Laryngology*, 116(1):36-44.
- Smith, A., Lee, S., O'Neill, P., Connolly, M. (2000). The combination of bedside swallowing assessment and oxygen saturation monitoring of swallowing in acute stroke: a safe and humane screening tool. *Age and Aging*, 29(5): 495-9.
- Stroud, A., Lawrie, B., Wiles, C. (2002). Inter- and intra-rater reliability of cervical auscultation to detect aspiration in patients with dysphagia. *Clinical Rehabilitation*. 16(6):648-5.
- Takeuchi, K., Aida, J., Ito, K., Furuta, M., Yamashita, Y., Osaka, K. (2014). Nutritional status and dysphagia risk among community-dwelling frail older adults. *Journal of Nutrition, Health and Aging*, 18(4):352-7.
- Teismann, I.K., Steinstrater, O., Warnecke, T., Suntrup, S., Ringelstein, E. B., Pantev, C., DiLewas, R. (2009). Tactile thermal oral stimulation increases the cortical representation of swallowing. *BMC Neuroscience*, 10:71. available
- Terris, R., Wearin, F. (2012). Effectiveness of chin-down posture to prevent tracheal aspiration in dysphagia secondary to acquired brain injury. *A videofluoroscopy study. Neurogastroenterology & Motility*, 24: 414-419.
- Wakto, A., Bailey, G., Wolfenter, S., Zoratto, D., Steele, C. (2011). Voice-quality abnormalities as a sign of dysphagia: validation against acoustic and videofluoroscopic data. *Dysphagia*, 26(2):125-34.

References

- Wang, T. G., Chang, Y. C., Chen, S. Y., & Hsiao, T. Y. (2005). Pulseoximetry does not reliably detect aspiration on videofluoroscopic swallowing study. *Archives of Physical Medicine and Rehabilitation*, 86 (4), 738-734.
- Warms, T., Richards, J. (2000). "wet Voice" as a predictor of penetration and aspiration in oropharyngeal dysphagia. *Dysphagia*, 15(2):84-8
- Zaidi, N., Smith, H., King, S., Park, C., O'Neill, P., Connolly, M. (1995). Oxygen desaturation on swallowing as a potential marker of aspiration in acute stroke. *Age and Aging*, 24(4): 267-70.
- Zenner, P., Losinski, D., Mills, R. (1995). Using cervical auscultation in the clinical dysphagia examination in long-term care. *Dysphagia*, 10(1): 27-31.