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TRADITIONAL TREATMENTS FOR SWALLOWING DISORDERS
What we know; what we don't….

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Learner Outcomes

- State one anticipated positive outcome associated with diet modification and one potentially negative outcome associated with diet modification
- State one anticipated positive outcome associated with use of compensatory swallowing strategies and one potentially negative outcome associated with use of compensatory swallowing strategies
- Describe two patient populations with evidence based indications for enteral nutritional support

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Evidence Based Practice

- According to the American Speech-Language and Hearing Association, professionals must strive to provide the highest level of services by using evidence-based practice (EBP) in their clinical decision making

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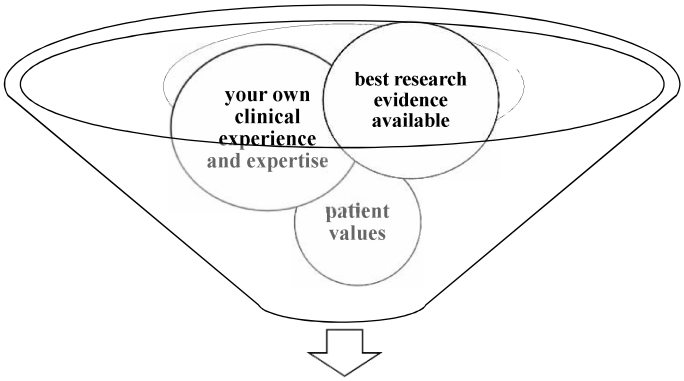
What is Evidence Based Practice?

- A problem-solving approach to clinical practice
- Based on conscientious use of:



Evidence Based Practice

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How can we implement EBP?

- Formulate the clinical question
- Search the literature
- Read and critique the literature
- Make the clinical decision
- Implement recommendations
- Share results

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How do we formulate the clinical question?

- PICO
  - Population
    - What are the characteristics of the patient or population?
    - What is the condition or disease you are interested in? What do you want to do with this patient (e.g. treat, diagnose, observe)?
  - Intervention
  - Comparison
    - What is the alternative to the intervention (e.g. placebo, different drug, surgery)?
  - Outcome
    - What are the relevant outcomes (e.g. morbidity, improvement in function, complications)?

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Where do we find the evidence?

- Systematic Reviews
  - ASHA's Evidence Maps
  - Cochrane Collaboration
  - Dysphagia Research Society
  - Evidence-based Communication Assessment and Intervention (EBCAI) Journal
  - speechBITE™: Speech Pathology Database for Best Interventions and Treatment Efficacy
- Individual Studies
  - MEDLINE etc.
  - Peer-reviewed journals

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How do we evaluate the evidence?

- Systematic Reviews
  - Is this review relevant to your specific question?
  - Who wrote and published the review?

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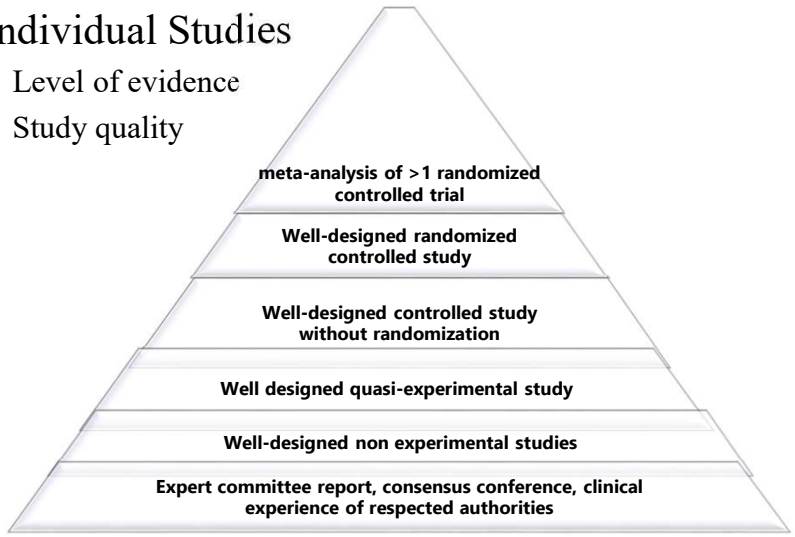
How can we grade the evidence ?

- Individual Studies
  - Level of evidence
  - Study quality



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How do we arrive at a clinical decision?

- Relevance
- Truly evidence based?
- Who wrote and published the guideline?
- Dilemmas
  - Absence of randomized control trials
  - Available evidence is not compelling
  - Evidence is conflicting

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Trending Topics

- Diet Modification
- Free Water Protocols
- Compensatory Strategies
- Exercise Based Treatment Strategies
- Deep Pharyngeal Stimulation
- Neuromuscular Stimulation
- Alternative Nutritional Support

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Texture Modification

- "The Influence of Food Texture and Liquid Consistency Modification on Swallowing Physiology and Function: A Systematic Review" Steele, et al. 2015
- 36 articles were found to contain specific information comparing oral processing or swallowing behaviors for at least two liquid consistencies or food textures

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Results

- Thickening Liquids
  - thicker liquids reduce the risk of penetration–aspiration, but also increase the risk of post-swallow residue in the pharynx
  - insufficient information to support the delineation of specific viscosity boundaries or other quantifiable material properties related to these clinical outcomes
- Food Texture
  - the properties of hardness, cohesiveness, and slipperiness as being relevant both for physiological behaviors and bolus flow patterns
  - there is a need to classify food and fluid behavior in the context of the physiological processes involved in oral transport and flow initiation

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Other Considerations

- Evidence suggests
  - Thicker liquids are not necessarily safer than thin liquids
  - Patients on modified diets are at greater risk for malnutrition and dehydration
    - due to poor oral intake
    - modified textured foods have low nutritional value and particularly tend to have low energy and protein content
  - Modified diets may negatively affect a patient's quality of life

Finestone, et al. 2001; Finestone, et al. 1995; Wright, 2005 ; Velasco et al, 2014; Bennett & Steele, 2005; Colodny, 2005; Ulirch, 2015

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Conclusion

- Diet modification is not a benign recommendation. We must work with patients to carefully weigh the risk vs benefits of modified textured foods and liquids
- Evaluate the risks vs. benefits of texture modification in the context of an instrumental assessment
- Educate patients and families
- Carefully monitor the patient's nutritional status over time
- Make changes as needed

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Free Water Protocols

- Principles:
  - People need water
  - Patients with dysphagia don't like thickened liquids and are going to drink thin liquids anyway
  - Water is relatively "safe" to aspirate

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The Frazier Free Water Protocol

- Frazier Free Water Protocol (Panther, 2005)
  - dysphagia interventions based on instrumental exam findings, medical history, current medical condition, and clinical observations
  - thickened liquids are recommended and provided, but water is permitted between meals
  - compensatory strategies and thickened liquids to minimize aspiration of water is provided therapeutically
  - compensatory maneuvers and behaviors are taught
- A retrospective chart review revealed only two patients developed aspiration pneumonia after receiving the water protocol

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Outcomes of a Pilot Water Protocol Project in a Rehabilitation Setting

- Randomized control study (Carlaw et al., 2011)
- GF Strong Water Protocol (GFSWP)
  - Participants: CVA, TBI, spinal cord injury & one patient with a remote history of H&N Ca
  - Rules of the water protocol specify mode of water access (independent, supervised)
  - Safe swallowing strategies provided based on instrumental evaluation
  - Oral care is addressed
- No adverse events detected in either the control phase or the WP phase, or in the variable time period that followed until discharge [25]

Effects of oral intake of water in patients with oropharyngeal dysphagia

- Randomized control study (Karagiannis et al. 2011)
- Participants: CVA, dementia and neurological conditions
- Control group allowed only thickened fluids. Intervention group was allowed access to water
- Lung related complications, hydrations levels and quality of life evaluated for a period of 5 days
- Results:
  - significantly increased risk in the development of lung complications in patients given access to water (6/42) compared to the control group (0/34)
  - Patients at highest risk: degenerative neurologic dysfunction who are immobile or have low mobility
  - Total fluid intake in the patients allowed access to water, and quality of life surveys suggest patients dissatisfied with thickened liquids [26]

Does a Water Protocol Improve Hydration and Health Status of Individuals with Thin Liquid Aspiration Following a Stroke?

- Randomized control study (Murray et al., 2016)
- 14 Stroke patients with known thin liquid aspiration
- Results:
  - Total beverage intake in the free water group was not higher than thickened liquid group.
  - hydration was better in the free water group
  - participants in the thickened liquid group had more UTI's
  - resolution of dysphagia was somewhat faster for those in the free water group
  - participants were ambivalent regarding taste of thickened liquids

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Conclusion

- Results are conflicting. Free water protocols are not risk free.
- While evidence based physiologic justification for free water protocols exist, further randomized studies need to be completed
- We need to have a better understanding of which patients may be at a higher risk for complications
- We need to help patient understand risks vs. benefits of participating in a free water protocol
- Patients must be carefully monitored and adjustments should made if indicated

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Compensatory Strategy Training

- Effects of Therapy in Oropharyngeal Dysphagia by Speech and Language Therapists: A Systematic Review, Speyer et al. 2009
- 59 articles met the inclusion criteria
- The majority of the studies were nonrandomized
- Patient populations were typically smaller than 10 subjects
- Patient populations were diverse: variety of neurological conditions, head and neck cancer, esophageal cancer, CVA
- A variety of strategies were evaluated: chin tuck, head turns, effortful swallow, supraglottic swallow, super-supraglottic swallow, A few performed statistical analysis to evaluate therapy outcomes

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Logemann et al. 1989, Logemann et al. 1997, Bülow et al. 2001, Shanahan et al. 1993, Lewin et al. 2001, Bogaert et al. 2003, Zuydam et al. 2000, Logemann et al. 1994 & 1994)

Other Considerations

- Not all patients benefit from the use of compensatory swallowing strategies (Shanahan, et.al., 2002)
- Maneuvers can impact other systems
  - Chaudhuri et al., 2002: studied the use of the supraglottic swallow and the super-supraglottic in three groups of patients. 13 of 15 subjects in the CVA groups showed abnormal cardiac findings during swallowing treatment with these when using the compensatory strategies. No cardiac abnormalities were noted in the control subjects.
- Patients with cognitive deficits may have difficulty implementing maneuvers
- Using compensatory strategies may be labor intensive for some patients
- Compensatory strategies are not effective if the patient does not or cannot consistently implement the strategy

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Conclusion

- There is sound evidence to support utility of compensatory strategies in a wide variety of patient populations
- Strategies should be objectively tested to verify desired effect
- Use of maneuvers is not entirely benign. Maneuvers can impact other systems
- Patients with cognitive deficits may have difficulty implementing maneuvers
- Patient adherence varies

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Exercise Based Treatment Strategies

- Effects of Therapy in Oropharyngeal Dysphagia by Speech and Language Therapists: A Systematic Review Speyer et al. 2009
- Nonrandomized clinical trial
  - El Sharkawi et al. 2002 found an improved neuromuscular control of the entire upper aerodigestive tract as a result of the Lee Silverman Voice Treatment.
  - Robbins et al. 2007 studied the effects of an isometric lingual exercise program by compressing an air-filled bulb between the tongue and the hard palate. After 8 weeks of progressive resistance lingual exercises, all patients had significantly increased isometric and swallowing pressures resulting in improvement in swallowing function and quality-of-life measures.
- Randomized clinical trial
  - Shaker et al., 2002 studied the improvement in upper esophageal segment opening in a diverse patient population using a head-raising exercise program

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Exercise Based Treatment Strategies con't

- 31 studies used a combination of different types of interventions and four were randomized controlled trials
  - Hwang et al. 2007 preemptive swallowing stimulation on intubated patients
  - Robbins et al. 2008 chin tuck and nectar thick liquids on patients with Parkinson's and dementia
  - Rosenbek et al. 1998 tactile thermal application and effortful swallow
  - Carnaby et al. 2006 performed statistical analyses to compare differences between therapy conditions but used descriptive statistics to describe post- versus pre-therapy status

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Study Design Issues

- Diverse patient populations
- A wide variety of strategies employed
- Outcome parameters varied
- Very little data available on the long term effects of treatment
- Typically small numbers of patients are included in the studies
- Some studies do not use instrumental assessment
- Frequently the authors ignore the possibility of spontaneous recovery

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Conclusion

- There is a growing body of evidence which suggests the principles of exercise physiology may be applied to feeding and swallowing disorders
- But…….
  - we do not know specifically what populations benefit from exercise and what populations do not
  - we don't know what type of exercise is best
  - we don't know if there are potential negative side effects to exercise
  - we don't know how long a patient can expect to maintain benefits if they discontinue therapy
- Patients need to be educated regarding the anticipated benefits of participating in an exercise program and be advised that outcomes cannot be guaranteed
- The benefits of participation need to be weighed against the burdens
- Patients need to be closely monitored

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Deep Pharyngeal Neuromuscular Stimulation (DPNS)

- Indirect therapy developed by Karlene H. Stafanakos, M.A., CCC/SLP
  - Speech pathologist must become certified in this technique by taking a course
  - Therapists stimulates certain areas of the oral cavity with a frozen lemon swab. The philosophy is that stimulating certain areas will triggers reflexes in the muscles used for swallowing and that this should increase muscle strength, endurance, and range of movement
  - Although this technique is used, there are no published studies with regard to its benefit in treatment

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- Conclusion: Studies need to be conducted

Neuromuscular Electrical Stimulation NMES

- NMES was adopted as a dysphagia treatment strategy in 2002
- **Surface** electrical stimulation for treatment of dysphagia is controversial but is within the scope of practice for certified SLPs
- No adverse reactions related to applying electrical current to the anterior portion of the neck have been published to date
- The most recent systematic review was completed in 2009 (Clark et al.)
- Initially very few randomized control trials were completed. This is no longer the case. As the body of research grows we must re-evaluate the data with proper attention to level of evidence and study quality

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Efficacy of electrical stimulation and exercise for dysphagia in patients with head and neck cancer: A randomized clinical trial. Langmore et al., 2016

- double-blinded, randomized controlled trial
- 170 patients with H&N Ca experiencing posttreatment dysphagia
- randomized into active NMES + swallow exercise / sham NMES / swallow exercise groups.
- outcomes after a 12-week program included changes in MBS, diet, and quality of life.
- the active NMES group had significantly worse Penetration Aspiration Scale scores than the sham group.
- Both groups reported significantly better diet and quality of life. No other measures were significant
- NMES did not add benefit to traditional swallow exercises.
- unfortunately, swallow exercises were not effective by themselves either
- sham group performed better than the other two groups

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The effects of surface neuromuscular electrical stimulation on post-stroke dysphagia: a systemic review and meta-analysis, Chen et al. 2016

- Intended to evaluate whether swallow treatment with NMES is superior to that without NMES, and whether NMES alone is superior to swallow therapy
- Eight studies were identified
- For the comparison "swallow treatment with NMES vs. swallow treatment without NMES
- Swallow treatment with NMES seems to be more effective than that without NMES for post-stroke dysphagia in the short term considering the limited number of studies available.
- But evidence was insufficient to indicate that NMES alone was superior to swallow therapy.

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Frequently Asked Questions Regarding the Use of Electrical Stimulation to Treat Feeding and Swallowing Disorders in the Pediatric Population

- Pediatric Advisory Committee of Special Interest Division 13 (Swallowing and Swallowing Disorders) of the American Speech-Language-Hearing Association (ASHA)
  - Concerns about advisability and possible detrimental effects of applying electrical current to developing neurological systems particularly in the case of premature and medically fragile infants
  - Concerns about appropriate intensity of the electrical input for maximal effect in conjunction with patient comfort. Infants do not respond to pain in the same way that adults do, and children who are non-verbal may not be able to communicate their discomfort.
  - Are the size of the electrodes appropriate for infants and children?

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Conclusion

- Neuromuscular stimulation may be a beneficial adjunct for treating oropharyngeal dysphagia in some patient populations
- Further research is warranted to examine the timing and placing of stimulation, what the treatment is actually doing, the effectiveness of this treatment

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Alternative Nutritional Support

- In 1980, Gauderer and Ponsky introduced PEG tube placement as a safe and effective alternative to open surgical gastrostomy for severely disabled babies
- Patients 65 and over represent about 61% of those receiving the procedure
- A growing proportion are aged 45-65
- Children and infants are now a small minority of recipients

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The Road to Hell……..

- Overuse: Use doubled in Medicare patients (National Hospital Discharge Surveys, 1989 and 1995)
- Disproportionate use: Marked racial disparities; African American receiving tubes at nearly twice the rate of Caucasians (Plonk, 2005)
- Misuse: By 1999, 34% of severely cognitively impaired residents of U.S. nursing homes had PEG tubes (Mitchell, 2003)
- PEG tube use for non-evidence-based indications rose from 16% to 31% in 10 years (Janes, 2005)

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Reality Check

- In pts. with advanced dementia, no strong evidence to suggest enteral feeding prevented aspiration pneumonia, prolonged survival, improved wound healing, or reduced infections (Finucane et al. 1999)
- Aspiration pneumonia is most common cause of death after PEG placement (Plonk, 2005)

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Alternatives to PEG

- McCann, 1994 evaluated frequency of symptoms of hunger and thirst in a group of terminally ill patients
  - patients did not experience hunger and those who did needed only small amounts of food for alleviation
  - complaints of thirst and dry mouth were relieved with mouth care and sips of liquids
  - food and fluid administration beyond patient's request did not provide comfort

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To PEG or Not to PEG?

- Potential Benefits for
  - Head & Neck cancer pts: shown to improve quality of life but not mortality (Mekhail ,2001)
  - ALS: shown to improve quality of life scores and weight but not mortality (Mitsumoto, 2003)
  - CVA: Compared to NG tube use, PEG tube placement after stroke decreased mortality, treatment failures, and malnutrition (Norton, 1996 and Park, 1992)
  - Catabolic state with reversible illness (sepsis, trauma, etc.)
  - Pts with severe esophageal motility issues or obstructions
  - Malignant bowel obstruction (Campagnutta, 1996)
  - Some HIV patients (Crotty, 1998)

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Conclusions

- Benefits should clearly outweigh risks and burdens
- PEG placement cannot be justified without convincing objective clinical evidence of patient benefit:
  - improving mortality
  - improving quality of life

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Summary/Q&A

- Evidence based practice is essential for positive patient outcomes
- There are numerous resources available to help clinicians understand and implement evidence based practice

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