EBP vs PBE

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Evidence Based Practice

Not JUST research evidence

All parts of the diagram are important.

Speakers and Disclosures

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Practice Based Evidence

There are other questions than just "does X cause Y?"

What about "how does adding X intervention affect the complex set of factors that are taking place in this patient that I am evaluating?"

Objectives

• 1. State the characteristics of evidence based practice and practice based evidence.
• 2. Describe three characteristics of ice cream besides viscosity that may influence its use in management of patients with dysphagia.
• 2. Describe at least four variables that contribute to potential negative consequences associated with aspiration.
• 4. Discuss the balancing of quality of life with aspiration risk in patients with dysphagia.

The Messy Myth

• Myth:
  • "...if it isn’t proven by a published study, it should never be done."
  • "...if it IS supported by a published study, it is the ONLY way it should be done."
  • The scientific method is based on the notion of cause and effect.
  • This isn’t wrong, but it’s not that simple.
Practice Based Evidence

In the concept of Practice-Based Evidence, the real, messy, complicated world is not controlled. Instead, real world practice is documented and measured, just as it occurs, “warts” and all. It is the process of measurement and tracking that matters, not controlling how practice is delivered.

Swisher, 2010

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2879420/

What is Practice Based Evidence?

• EBP: Show me the data and effective interventions can be planned.
• PBE: I’ll show YOU the data (Lemoncello & Fanning, 2011) and we will determine if our approaches were effective.
• It involves collecting data from theoretically grounded planned treatment that takes into account the patient-specific variables that published research might not.
  • Medical
  • Physical
  • Cultural
  • Etc.

PBE does not mean to “go rogue.”

The skilled clinician must take “what we know” from the evidence and make decisions about what might be most appropriate care for an individual patient.

This doesn’t mean we throw out evidence from RCTs just because their exclusion criteria would exclude our entire caseload.

It is a call to integrate, to measure what we do and the patient outcomes to provide scenarios that will add to the existing evidence base.

How does pt compare to evidence?

Identify Clinical Problem
Search for Evidence
Discard Poor Evidence
Store Good Evidence
Make Sense of Evidence
Update Evidence
Act on Evidence

The Great Disconnect

Research
Practice
There is a divide between research and practice

- Length of time for research to actually be infused in clinical practice: in the medical world, 17 years for 14% of the information (in Olswang, 2015).
- EVEN IF SLPs READ EVERY RELEVANT JOURNAL ARTICLE:
  - Relevance of the research findings to practice
  - Enough information so treatment can be implemented as outlined
  - An environment that supports treatment innovations
  - Clinician motivation to change what they are currently doing
  - Enough documented benefit to keep it all going.

SO?

- Mr. Johnson had a video and he penetrated thin liquids.
- So he now receives nectar liquids.
- He is not permitted to use straws
- Staff worries about him whenever he drinks during a meal.
- And he isn’t allowed to have ice cream.

What are the consequences of this?

- Outdated clinical practices sustained by clinicians.
- Outdated clinical practices encouraged or regulated by companies.
- Motivations for practice guidelines that stem from financial or liability concerns.
- It’s easy to become “comfortable” doing what we have always done.
- It’s easy to say “it’s our policy/protocol/guideline.”
- It does not take long to become old school.
- EVEN IF YOU READ THE JOURNALS. “Well, I’m not comfortable taking chances with X.....

No matter our experience

- We will be asking clinical questions as we decide how to plan management for Mr. Johnson.
- Is the swallow “broken?” Is it amenable to treatment?
- Airway protective mechanisms, effortful swallow, etc.
- Often absent is some direct swallowing rehabilitation.
- First the SLP has to know the status OF THE SWALLOW.

We are seeing efforts to improve the dissemination of research evidence

- Podcasts (STEP, Swallow Your Pride, etc.)
- CEUs (Medbridge, speechpathology.com)
- Social media groups
- But when people encounter a piece of evidence, do they know how to evaluate it in the context of their patient?
- Do they have the necessary critical thinking skills?
- The motivation to seek out information?
- The humility to recognize that practice patterns change and this is not a reflection on them?

A management plan was developed based up a set of isolated “facts,” but no one may have considered Mr. Johnson’s individual situation OR asked him how he felt about any of it.

Was anything discussed other than taking liquids/foods away?
- Was rehabilitation mentioned?
- Did anyone discuss relative risks and benefits?
- Did anyone discuss what the evidence – if considered – actually meant?
- Did anyone discuss how the evidence might have been personally relevant to Mr. Johnson?
If our treatment plans consist of outlawing items, then we are not following EBP (Langmore et al., 1998).

And that malnutrition, dehydration and poor patient satisfaction can result (Sura et al., 2012).

What do we know about laryngeal vestibule penetration?
- The definition of "laryngeal penetration" has changed over the years. In 1983, the term was equivalent to "aspiration." By 1992, penetration was defined by as entry of material into the laryngeal vestibule but not below the true vocal folds. This definition remains in use today (Daggett et al., 2006).
- Tracy et al. (1989) did not find differences in the swallow in their older participants. Ekberg et al. (1989) did not note any penetration in an N of 10 volunteers age 21-41.
- Daggett et al. (2006) found that 53% of typical people penetrated, more with liquids and more with aging.

Let’s take each issue one at a time
- Penetration
- Thickened liquids
- Straws
- And ice cream

Is penetration “as dangerous as aspiration”?
- There is research documenting higher pneumonia rates in children who penetrate (Gurberg et al., 2015)
- But in adults, aspiration itself is insufficient to cause pneumonia (Langmore et al., 1998)
- Condition of the host (comorbidities), what is aspirated, how much, over how long.
- Penetration is not abnormal in typical aging (Daggett et al., 2006)
- Penetration is not abnormal in younger people.
- Definition of "typical" is changing – huge variability.

Should we be concerned about Mr. Johnson’s penetration?
- What matters with his swallow?
- What matters with his comorbidities?
- What matters with his potential intake?
- What matters with his wishes?
- In our conversation with him, what ARE the costs/risks vs benefits of ANY plan of care?
- Is intervention needed?
When did use of thickened liquids start?

Thick-It® products were developed by caring, dedicated individuals seeking the best possible solutions for people with swallowing challenges and their caregivers. In 1987, after rigorous research and development, these scientists and healthcare professionals introduced Thick-It Original Food Thickener, the first healthcare food thickener on the market. 

http://thickit.com/about-us/history/

What have we learned about thickening liquids?

- Thicker liquids lead to increased pharyngeal residue – eventually aspirated (Villardel et al., 2016; Robbins et al., 2002)
- No better outcomes for thick liquids as opposed to thin (Robbins et al., 2004)
- Dehydration is a concern for people on thick liquids.
- FEAR OF ASPIRATION remains a large concern and leads many clinicians to rely on thickened liquids as a management approach despite the evidence.

Robbins et al., 2002
Would Mr. Johnson benefit from thick liquids?

• Why were they recommended in the first place?
• What are the potential complications?
• What matters with his wishes?
• In our conversation with him, what ARE the costs/risks vs benefits of ANY plan of care?
• Is thickening his liquids a reasonable intervention?

Cognition

• Divided attention tasks have been shown to affect FEEDING, but not SWALLOWING (Brodsky, 2006)
• But feeding is an integral part of meal consumption

“He penetrated on the video but in time with fatigue he is likely to aspirate.”

Is there evidence to support this?

Fatigue

• The muscles of the speech-production system, from the respiratory to laryngeal to articulatory muscles of the upper airway, are predominantly resistant to fatigue. Given the shared responsibility of many of these muscles with the life-sustaining functions of breathing and maintaining nutrition, it is not surprising that this system was designed to last. (Solomon, 2006, p.4)

• But PEOPLE fatigue and this can affect posture, alertness, etc.

Penetration may occur in normal swallows, and in typical healthy individuals is not pathological. It isn’t likely to become more problematic with physical fatigue but this could make a person less careful when they eat/drink.

Cognition affects FEEDING... not swallowing

There is a place for discussion of fatigue and cognition in food and liquid consumption.
What about straws?

- Some facilities have no-straw policies in place.
- Some nursing training programs teach students that patients with swallowing problems should not use straws.
- Many people entering a facility suddenly are given straws even if their typical ingestion pattern was via cup.

How is it different from cup drinking?

(Corbin-Lewis & Liss, 2014)

- Cup-drinking: Less strength to establish and maintain lip contact with the cup than for lip seal around the straw.
- Cup: Volumes tend to be larger and there is more likely to be posterior spillage/reduced containment
- Straw: Tend to use a smaller bolus, more posterior placement, more sequential swallows, maintaining airway closure and UES opening.
- Easier to avoid head extension with a straw.
- Butler et al. (2010) found penetration and aspiration in typical older adults via both straw and cup, more with straw, but less than 3% of the swallows.
- with dysphagia may respond differently to cups and straws

How do we drink from a straw?

- Encourages lip seal around the utensil, which creates a vacuum, and the liquid is transported into the oral cavity.
- Bolus is directed to the posterior part of the oral cavity from suction due to the work of the buccal, lingual and palatal muscles (Cichero & Halley, 2006).
- Need sufficient strength to generate the required oral pressure.
- Interestingly, oral containment is often better with the straw
- The use of repeated swallows increases the period of apnea since the airway remains closed.

Effect of different diameter of straws

- Smith et al. (2016) examined the effect of different diameter straws on ultimate sip volumes.
- Volumes taken with coffee stirrer straws were compared with volumes taken with standard straws plus a verbal direction to “take a small sip.”
- GREAT VARIABILITY as to what is “a small sip” and “a typical sip.”
- Straw diameter can affect sip volumes, but...

Videofluoroscopic views – cup vs straw
Does use of a narrow straw do the same thing to/for sip size as a verbal direction?

- **NO.**
- The sip size for a narrow straw, normal sip was larger than that for the wide (normal) straw, small sip.
  
  \( t (74) = 10.005 \)  
  \( p < 0.001 \).

We are all screaming for ice cream!

- The argument presented is that ice cream melts to a thin liquid.
- Products exist that do not thin out as they melt.

  But do ice creams melt to a thin liquid?  
  If they do, when?  
  If they do, how much?  
  If they do, does it matter?  
  And where did this original statement come from?

Can Mr. Johnson use a straw?

- What matters with his swallow?  
- What matters with his comorbidities?  
- What matters with his potential intake?  
- What matters with his wishes?

  - In our conversation with him, what **ARE** the costs/risks vs benefits of ANY plan of care?

Many foods and drinks exhibit properties of both liquids and solids and are termed viscoelastic. The range of consistencies is therefore: Newtonian fluid (water) - viscoelastic fluid (pudding, ice cream) - viscoelastic solid (gels) - elastic solid (bread, cheese). (Coster & Schwartz, 1987)

Viscoelastic - possessing flow properties in addition to elasticity.  
Viscoelastic solids and viscoelastic liquids respond differently to applied stresses.

ICE CREAM!
What is in your ice cream?

- Ben & Jerry's: CREAM, SKIM MILK, LIQUID SUGAR (SUGAR, WATER, EGG YOLKS, SUGAR, GUAR GUM, VANILLA EXTRACT, VANILLA BEANS, CARRAGEENAN.

- Breyer's: Milk, sugar, corn syrup, cream, whey, mono and diglycerides, carob bean gum, guar gum, carrageenan, natural flavor, annatto (for color), vitamin A palmitate, tara gum.

What’s in your Magic Cup?

- MAGIC CUP® Frozen Dessert - Vanilla Ingredients: SKIM MILK, HIGH FRUCTOSE CORN SYRUP, PALM OIL, MALTODEXTRIN, MILK PROTEIN CONCENTRATE, STABILIZER (FOOD STARCH-MODIFIED, GELATIN, MONO & DIGLYCERIDES, POLYSORBATE 80, CELLULOSE GUM, CARRAGEENAN, XANTHAN GUM), VITAMIN AND MINERAL BLEND (DIMAGNESIUM PHOSPHATE, SODIUM ASCorbate, FERRIC DITHPHOSPHATE, MALTODEXTRIN, VITAMIN E ACETATE, NIACINAMIDE, ZINC OXIDE, COPPER GLUCONATE, D-CALCIUM PANTOTHENATE, VITAMIN A PALMITATE, PYRIDOXINE HYDROCHLORIDE, RIBOFLAVIN, THIAMIN MONONITRATE, FOLIC ACID, BIOTIN, POTASSIUM IODIDE, VITAMIN D3, CYANOCOBALAMIN), NATURAL AND ARTIFICIAL FLAVOR, MOLASSES, CARAMEL COLOR

What do we know about aspiration of fats?

- In general, fats are harder to clear from the lungs and are more harmful to aspirate.

- Operating under the assumption that these items will not be aspirated because they are thicker...and that ice cream WILL be aspirated because it thins to thin liquid.

- But does it? Is it necessarily swallowed like a thin liquid?

Images of Ice Cream
Can Mr. Johnson have ice cream?

- What matters with his swallow?
- What matters with his comorbidities?
- What matters with his potential intake?
- What matters with his wishes?

- In our conversation with him, what ARE the costs/risks vs benefits of ANY plan of care?

What can clinicians do about it?

- Know how to read research
- Know how to apply research to practice
- Collect practice based evidence
- Integrate PBE with EBP
- Advocate to policy makers

ARE WE STILL SCREAMING?

THE QUESTIONS TO ASK OURSELVES

- What do we know from the evidence?
- What is the source of the evidence?
- How does the evidence relate to clinical practice?
  - What PARTS of the evidence INFORM our clinical practice?
  - How SHOULD the evidence INFLUENCE our conversations with patients?
  - Information should be used to EDUCATE PATIENTS so they can make THEIR OWN DECISIONS


