



Thickening Without Instrumentation: An EBP Review

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History of Thickener Use

Thickener use has historically been widely considered to be a benign intervention for dysphagia. In fact, many SLPs believed the benefits of thickener use outweighed the risk of aspiration. However, as research in this area has grown, we as SLPs must re-evaluate our clinical practice accordingly. In certain areas of dysphagia practice, discrepancies exist between SLP beliefs, the current literature, and self-reported clinical practice.

In order to advance our field and earn respect of our peers and interdisciplinary colleagues, we must challenge ourselves to re-think our beliefs and clinical practice on a regular basis!

Thankfully, the research and evidence about thickening agents used to compensate for dysphagia has significantly grown over the last decade.

As this evidence emerges, it is becoming clear that (1) thickeners are not as benign as we SLPs previously thought and (2) that thickeners should not be prescribed without first utilizing dysphagia instrumentation.

Evidence Regarding Thickener Use

Miles et. al (2018) found that patients may be more likely to silently aspirate thickened liquids than thin liquids. So **just because a patient coughs with thin liquids and does not cough with thickened liquids does not mean that they are not aspirating!** The patient may be silently aspirating!

Also, O'Keeffe (2018) reported that thickened liquids have no sound evidence to reduce the risk of pneumonia in patients with dysphagia. In fact, patients are more likely to reduce their fluid intake when they are recommended thickened liquids. This increases their risk of dehydration along with increased risk of UTI, electrolyte imbalance, constipation, fecal impaction, cognitive impairment, functional decline, and even death (Langmore, 2002; Panther, 2016)!

Aspiration of Thickeners and Pulmonary Implications

There is a growing body of animal-based research that shows **aspiration of thickened liquids causes changes in the lungs that are harmful and potentially fatal** (Nativ-Zeltzer et al., 2018; Nativ-Zeltzer et al., 2021; & Araie et al., 2020).

Nativ-Zeltzer et al, (2018) placed rabbits into 3 groups: 1- water aspirators; 2- cornstarch/modified food starch thickened water aspirators; 3- xanthan gum thickened water aspirators. They aspirated each group with equal amounts of liquids each day and then looked at the changes in the lungs after 4 days. On that day, they found that 100% of the water and xanthan gum aspirators survived and only 12% of the cornstarch/modified food starch aspirators survived. Results indicated that 3 days of 1.5mg/kg of aspirated cornstarch thickened water was fatal for rabbits. Additionally, aspiration of cornstarch thickener led to significantly increased alveolar hemorrhaging as compared to water and xanthan gum aspirators. Xanthan gum aspiration led to increased pulmonary interstitial congestion, pulmonary edema, and significantly increased heterophilic inflammation as compared to water and cornstarch aspiration. (Nativ-Zeltzer et al., 2018)



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Further study in rats by Nativ-Zeltzer's group in 2020 agreed with the 2018 rabbit study that recurrent aspiration of xanthan gum thickened liquids can lead to increased pulmonary inflammation. (Nativ-Zeltzer et al., 2021)

Along with inducing pulmonary inflammation, Araie et al (2020) found that aspiration of thickened liquids can also prolong the duration of lung injury in mice.

Clinical implications for Thickener Use

Now, knowing the risk of silent aspiration of thickened liquids, thanks to Miles et al (2018), and what can happen to the pulmonary system when thickeners are aspirated, thanks to Araie et al (2020); Nativ-Zeltzer et al, (2018); and Nativ-Zeltzer et al, (2020) we must take that information to guide our practice.

Along with the pulmonary risk, we should keep in mind that SLPs have been found to misdiagnose dysphagia up to 70% of the time at the bedside (Leder & Espinosa, 2002). That means we are putting patients at risk for dehydration and other serious diagnoses for potentially no reason at all!

Because of these considerations, we must reconsider the use of thickened liquid trials as part of our bedside swallow examinations. **Based on current evidence, the use of thickened liquids is contraindicated (in most cases) in the absence of dysphagia instrumental assessment due to the risk of pulmonary harm.**

We need to weigh the risk of pulmonary harm and other risks of thickened liquid use prior to prescribing them for each patient. There is no "one-size-fits-all" option.

What to do without access to instrumentation

Unfortunately, there are times where we are unable to determine the need for instrumentation and complete it quickly. This is where it is important to understand the risks/benefits of each potential choice!

Ensure to discuss with the medical team, the patient/caregivers, and use your clinical (and evidence-based) knowledge. Consider the list of predictors of aspiration as Langmore et al., (2002) pointed out. In order of highest risk: Suctioning, COPD, CHF, Feeding Tube, Bedfast, High Case Mix Index, Delirium, Weight Loss, Dysphagia, and UTI.

Using that along with the knowledge from Ashford (n.d.) that shows the presence of aspiration, a compromised immune system, and poor oral health all contribute to the development of aspiration pneumonia, we can determine the risks associated with each potential option.



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