

# Safe Swallowing of Oral Liquid Medications in Patients with Dysphagia

## A Patient Quality & Safety Initiative - Trillium Health Partners

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### **CSHP 2015 Objective:**

Increase the extent to which pharmacy departments in hospitals and related healthcare settings have a significant role in improving the safety of medication use

### **Background:**

Oropharyngeal dysphagia affects 15-40% of people over age 60<sup>i</sup>. The prevalence of dysphagia in the hospital setting can be up to 20%<sup>ii</sup>. At Trillium Health Partners (THP), the prevalence is about 2%. Individuals with poorly managed dysphagia are at high risk for aspiration pneumonia<sup>iii</sup>.

These patients are often on a texture modified diet with thickened fluids to increase their safety with liquids<sup>iv</sup>. In the past, starch-based thickening products were used to achieve the desired consistency. Recently, however, many hospitals including THP have moved towards xanthan gum based thickeners due to better palatability.

Patients with dysphagia often require modifications of their medication dosage forms as certain forms cannot be crushed (for example, modified release tablets). Unfortunately, oral liquid medications may not be of the safest consistency for patients on modified texture diets and the use of xanthan gum based thickeners to thicken these has not been established.

A multi-disciplinary team consisting of a pharmacist, speech-language pathologist and diet technician worked on designing a tool that can be used at THP to address this gap. The current project sought to:

- (i) classify commonly ordered liquid medications based on their viscosity
- (ii) standardize the process of thickening liquid medications to a safe consistency
- (iii) establish a collaborative process between pharmacy, speech-language pathology, the diet office, and nursing to ensure the administration of oral liquid medications at the appropriate consistency for each patient

### **Process:**

Commonly prescribed oral liquid medications were first classified according to their viscosity based on visual comparison to commercially available thickened products (Appendix A). Liquid medications for which safe and effective alternatives could not be determined were tested further for thickening strategies (Appendix B).

At THP, commercially prepared 16ml applesauce packets are widely used as an administration vehicle for most medication for patients with dysphagia. Applesauce is also the most commonly recommended pureed consistency. Therefore, the next step was to determine the maximum volume ( $V_{max}$ ) of liquid medication that can be added to a fixed volume of applesauce without altering its pureed consistency significantly. Furthermore, since water is the thinnest possible consistency, it was used to replace medication for testing purposes. The Line Spread Test was used to determine the viscosity of varying volumes of applesauce-water combination<sup>v</sup>.

For liquid medications prescribed at volumes greater than  $V_{max}$ , the xanthan gum based thickener (Thicken Up Clear) was added to the medications to thicken it to pudding consistency. The Line Spread Test was used to test final viscosities (Appendix C).

### **Recommendations:**

Based on our findings, thin liquid medications given in doses up to 2.5 ml can be added to a 16ml package of applesauce without dramatically altering its pureed consistency. These applesauce packages are readily available in all patient care units in the hospital and can be easily ordered from diet office.

For medications administered at volumes greater than 10ml, fixed recipes with Thicken Up Clear thickening agent were determined. These recipes are now available to nursing staff as well as pharmacy.

There is no information available with regards to adding multiple different liquid medications to the applesauce or thickening agent at the same time. Therefore, this is not a practice we endorse at this point in time. It is also important for nurses to judge the likelihood that a patient will ingest the full quantity of the prepared mixture prior to mixing it. For patients requiring multiple liquid medications, a large volume of applesauce may need to be ingested. Therefore, the volume of the final product to be consumed can be an issue for some patients. In these cases, it may be prudent to space out the dosing times for the medications to maintain compliance.

### **Education:**

All gathered information was presented at the Nursing Advisory Committee for feedback and approval. An education tool in the form of an online learning module has been developed for all nurses and allied health staff (Appendix D). This will be included in the Annual Nursing Skills Day as well. All other tools (consult process, recipes, thickening agent) will be posted in the medication preparation area in each patient unit (Appendix E & F). The nurse educators will provide ongoing support to the nurses with process related issues. Ongoing evaluation of the process will be performed based on feedback from the nursing staff to ensure the feasibility of the process and the protocols. A pharmacy newsletter article will be published outlining the process, the recipes and instructions for accessing available tools.

### **Conclusion:**

Administering medications in the safest form is a significant challenge that nurses face on a day to day basis when dealing with patients who have oropharyngeal dysphagia. Our goal was to standardize the process for nursing to administer the liquid medications at the safest consistencies.

An interdisciplinary approach is required to ensure the safe and effective administration of medications to patients with oropharyngeal dysphagia. Initial and ongoing assessments need to be performed by a speech-language pathologist who will determine the safest modified texture for the patient. Pharmacy will assess medications to maintain this texture and will make recommendations where appropriate. The diet office will provide the unit with the thickening agent if needed.

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<sup>i</sup> Robbins, J. & Barczki S, 2003. Disorders of Swallowing. In W.R. Hazzard, I.P. Glass, J.B. Halter et al. Principles of Geriatric Medicine and Gerontology. (5<sup>th</sup> ed 1993-1212), New York: McGraw Hill, Inc.

<sup>ii</sup> Wilkins, T., Gillies, R.A., Thomas, A.M. and Wagner, P.J., 2007. The prevalence of dysphagia in primary care patients: a HimesNet Research Network study. Journal of American Board of Family Medicine, 20, 144-150.

<sup>iii</sup> Langmore, S.E., Skarupski, K.A., Park, P.S. and Fries, B.E., 2002, Predictors of aspiration pneumonia in nursing home residents. Dysphagia, 17, 298-307.

<sup>iv</sup> Leonard, R. and Kendall, K. 1997, Dysphagia Assessment and Treatment Planning. A Team Approach (San Diego, CA: Singular).

<sup>v</sup> Paik, N.J., Han, T.R., Park, J.W., Lee, E.K., Park, M.S., Hwang, I.K., 2004. Categorization of dysphagia diets with the line spread test. Archives of Physical Medicine and Rehabilitation, May, 85(5), 857-861.