



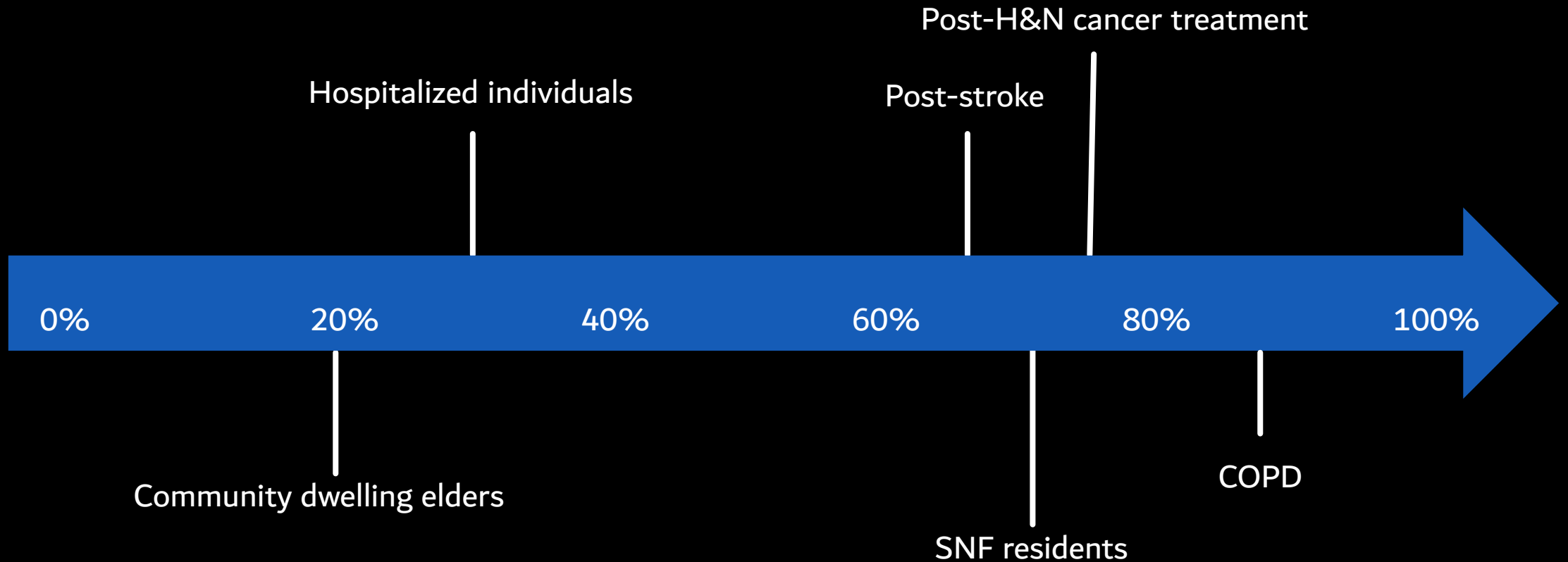
Evidence-Based Use of Thickeners in Dysphagia Management

Lisa Evangelista, CScD, CCC-SLP, BCS-S
University of California, Davis Medical Center
Department of Otolaryngology-Head & Neck Surgery
Center for Voice and Swallowing

UCDAVIS
HEALTH

MEDICAL
CENTER

Prevalence of Dysphagia



Sura et al., 2012
Cichero, 2013
Garcia-Peris, 2007
Good-Fratturelli et al., 2000

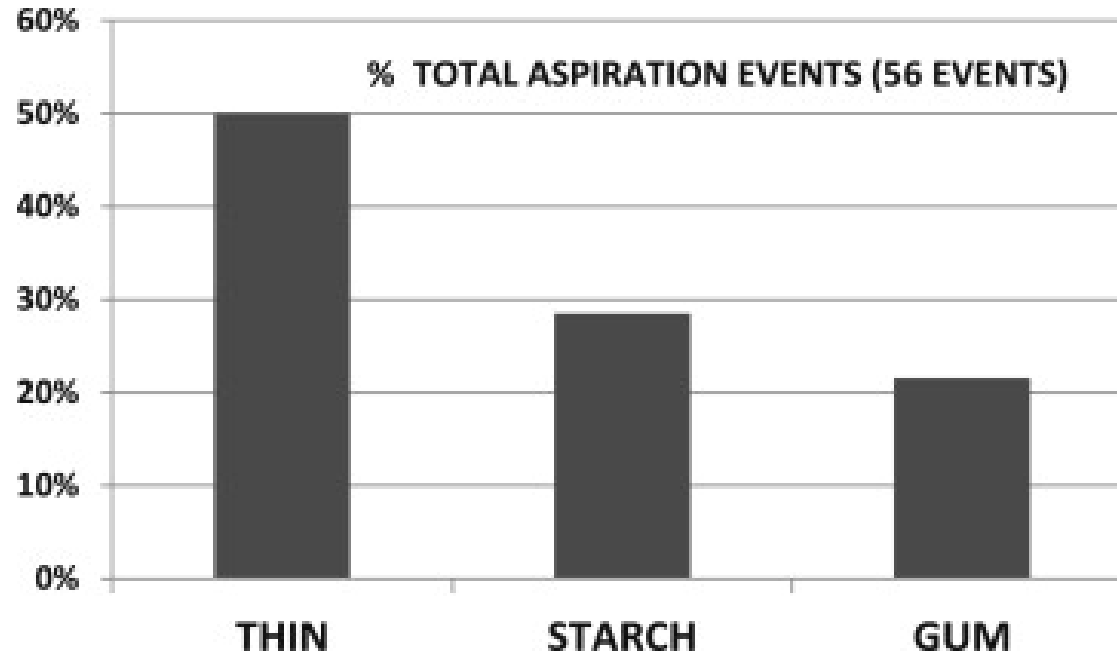
Goals of Thickeners

- Long-standing use in dysphagia management
- Altering fluid viscosity to prevent aspiration
- Impairments
 - Sensory function
 - Kinematic coordination



Bolus Rheology and Aspiration

- 20-40% of patients with dysphagia demonstrate aspiration
- Aspiration of liquid > solids (Feinberg et al., 1990)
- Aspiration of thin liquid > thickened liquids (Leonard et al., 2014)



Perlman et al., 1994

Leonard, et al., 2014

Thickened Liquid and Swallow Physiology

- Increased tongue pressures (Steele et al., 2014)
- Changes in biomechanics (Dantas et al., 1990)
- Reduced Penetration-Aspiration Scale scores (Vilardell et al., 2016)
- Post-deglutitive residue and aspiration (Bhattacharyya et al., 2003)



Practice Patterns

Speech Pathologists

84.8% in favor of thickeners

Poor oral control

Delayed pharyngeal swallow

Garcia et al., 2005

Patients

91.6% of facilities used thickened water

8-28% of patients consume thickened liquids

60% nectar thick

33% honey thick

Castellanos et al., 2004

What's The Problem with Thickeners?



Algorithmic recommendations



Risk of systemic sequelae

Dehydration

Medication absorption

Lung injury



Limited evidence as preventative measure against adverse events

Pneumonia

Algorithmic Recommendations

Table 3. Dietary adjustments for oral-pharyngeal dysphagia

Problem	Adjustment
Delayed triggering of pharyngeal swallow	Thickened liquids and pureed foods. Cold or stimulating foods. Avoid thin liquids
Reduced lingual control	Thickened liquids are usually required. Chopped, ground, or pureed foods may be required with gravies or sauces to help hold foods together
Reduced airway protection	Pureed foods and thickened liquids
Pharyngeal dysfunction	Consistency is dependent on the severity of the dysfunction. Liquids are necessary for patients with a more severe dysfunction. Those less impaired will tolerate more solid foods or alternating solid and liquids
Reduced oral awareness	Thickened liquids and cold or stimulating foods. Patients should alternate bites of cold foods with those of other temperatures

factor in how well a dysphagic resident handles his/her diet. Stroke victims, especially, often have a great deal of difficulty taking clear liquids because they are the least controllable during swallowing. Therefore, liquids should be very thick, even gelatinous. Small

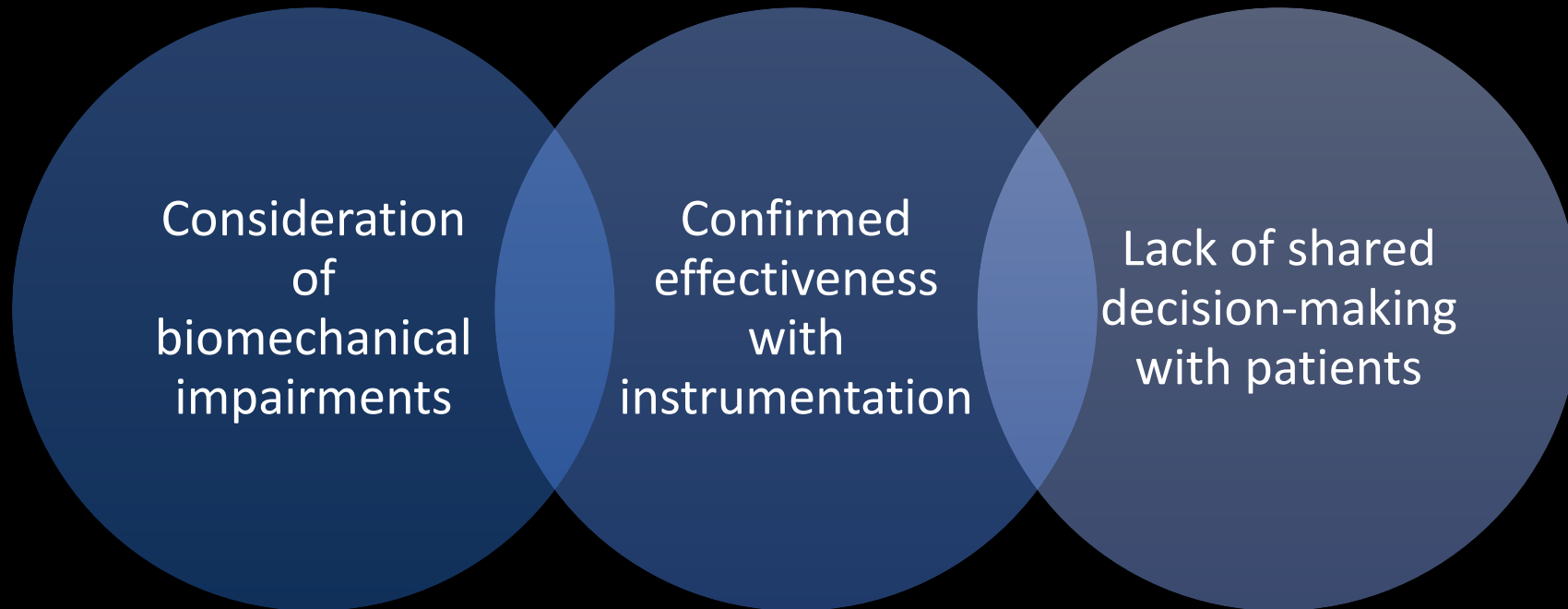
Matthews, Lorraine E. "Techniques for feeding the person with dysphagia." *Journal of Nutrition for the Elderly* 8.1 (1989): 59-64.

For patients who do not tolerate thin liquids, fluids are being thickened in our facility with Thick-It (Milani Foods). Fluids can be thickened

Curran, Jean, and Michael E. Groher. "Development and dissemination of an aspiration risk reduction diet." *Dysphagia* 5.1 (1990): 6-12.

O'Gara, Judith A. "Dietary adjustments and nutritional therapy during treatment for oral-pharyngeal dysphagia." *Dysphagia* 4.4 (1990): 209-212.

Algorithmic Recommendations



Systemic Sequelae



Dehydration

Cichero, 2013

Early satiety

Flavor deterioration



Medication Absorption

Cichero, 2013

Impaired bioavailability



Pulmonary Injury (Rabbit Model)

Nativ-Zeltzer et al., 2018

Cornstarch thickener

- Death
- Intra-alveolar hemorrhage

Xanthan gum thickener

- Pulmonary inflammation
- Interstitial congestion
- Alveolar edema

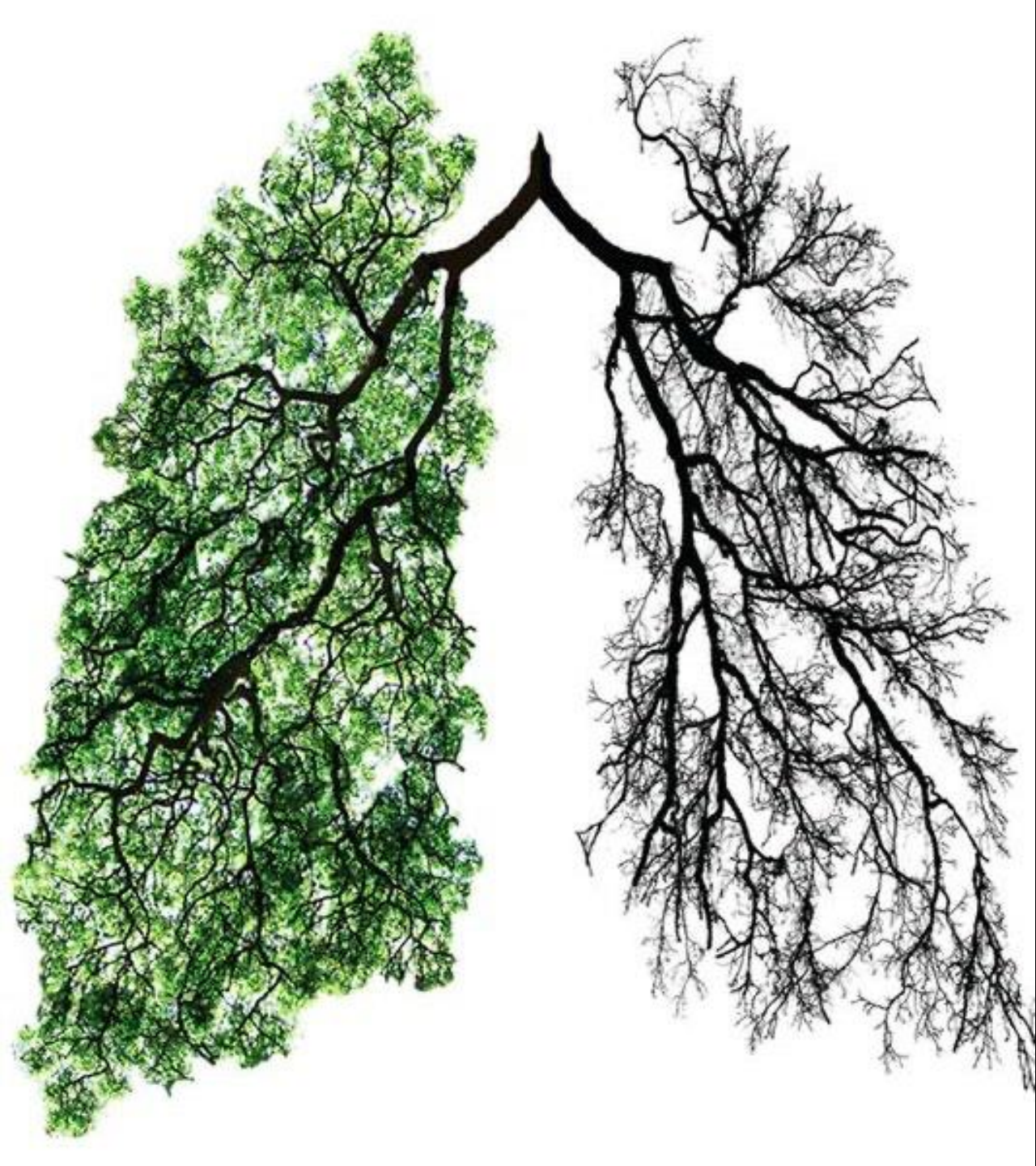


Aspiration Pneumonia

- Thin vs. thick liquids and pneumonia
- No difference in pneumonia rates across
 - Water
 - Thin liquids with compensatory strategies
 - Thickened liquids

Aspiration Pneumonia

- Chin tuck with thin liquids vs. thickeners
 - No difference in pneumonia development
 - Longer hospital stay with honey thick liquids
 - Adverse events with thickened liquids



Pneumonia Risk

Medical Status

- COPD
- GI disease
- Co-morbidities
- Polypharmacy

Functional Status

- Dependent for oral care
- Dependent for feeding

Dental Status

- Decayed teeth
- Edentulous
- Oral hygiene

Swallowing Status

- Feeding tube
- Dysphagia

Clinical Utility

- Temporizing measure
- Last resort intervention
- Confirmed effectiveness
- Translates into improved clinical outcome
- Absence of adverse consequences
- Shared decision-making





UC DAVIS
HEALTH

MEDICAL
CENTER

Thank You

evangelista@ucdavis.edu