


Dysphagia

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Glossary!

- + Aspiration – entry of food/fluid below the levels of the vocal folds
 - + Aspiration pneumonia
- + Silent aspiration – above, happens without any overt signs (no cough)
- + Bolus – thing being swallowed (food/fluid)
- + Pharynx - throat
- + Larynx – airway




Dysphagia after stroke

- + Stroke incidence in NZ is high compared to other developed countries....9000 per year
- + Between 50% and 80% of stroke patients will have swallowing problems
 - + Mann, Hankey & Cameron, 1999; Daniels & Foundas, 1999
- + For NZ this means between 4,500 and 7,200 patients with dysphagia from stroke alone each year




Aspiration pneumonia

- + As many as 40% of post stroke patients can develop aspiration pneumonia as a result of their dysphagia
 - + Conservative estimate of 20%
 - + 900-1500 patients are at risk of aspiration pneumonia in New Zealand annually
- + Stroke admission complicated by chest infection increases cost by approximately \$10,000 (CDHB, 2013)
 - + This equates to \$9 – 15 million healthcare dollars dedicated to aspiration pneumonia costs nationally per year
 - + And many times, it's preventable




How do patients fare after the acute phase?

- + While 87% of stroke patients with dysphagia will have returned to their pre-morbid diet by 6 months, (Mann et al., 1999)
 - + 25% continue to aspirate
 - + 20% have had a chest infection, likely due to aspiration
- + Aspiration pneumonia and infections are the most common cause of 'bounce-back' admissions to hospital
 - + Kind, Smith, Pandhi, Frytak, & Finch, 2007



Who is at risk for aspiration pneumonia?

- + Pneumonia develops when three events materialize (Langmore et al., 1998)
 - + Bacteria that are pathogenic to lungs colonize in the upper airway
 - + Bacteria are aspirated
 - + Lungs cannot clear the aspirated bacteria
- + Risk of aspiration pneumonia requires consideration of these three events



Who is at risk for aspiration pneumonia?

- + Major predictors of aspiration pneumonia in group of 189 elderly participants Langmore et al., 1998
 - + Dependent for oral care, decayed teeth, multiple medications, tube fed (**colonized oropharynx**)
 - + Dependent for feeding** (**aspiration into lungs**)
 - + Current smoker, multiple medical conditions (**decreased host resistance**)
- + Note the absence of dysphagia or documented aspiration of food or liquid as predictors of pneumonia...

**Best predictor of aspiration pneumonia



How do we identify these patients?

People who aspirate

- + 3 factors for aspiration pneumonia to materialize
 - + Bacteria that are pathogenic to lungs colonize in the upper airway
 - + Bacteria are aspirated
 - + Lungs cannot clear the aspirated bacteria
- + We look for patients who cough when eating
- + Absence of cough doesn't mean absence of aspiration
 - + Approximately 30-40% of dysphagic patients will silently aspirate Terre & Mearin 2006, Horner and Massey 1988



Identifying silent aspirators

- + Cough reflex testing
 - + A way to determine if laryngeal sensation MIGHT be sufficient to register when they aspirate
- + CRT vs instrumental assessment in identifying silent aspiration (Miles et al., 2013)
 - + Significant associations, *but not perfect*
 - + 71% sensitivity, 60% specificity
- + Relative risk of developing aspiration pneumonia is 5.6 times greater for silent aspirators compared to those who aspirated with a cough response (Holias et al., 1994)



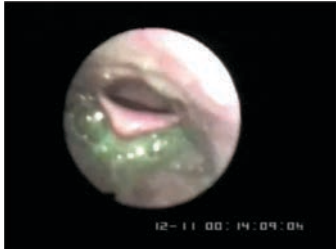
"Why do we thicken liquids?"

Thickened liquids as a treatment for aspiration

- + Common practice
 - + If they cough on thin, thicken it and watch for improvement
- + Thickening the fluid is done to slow the flow of the fluid into the pharynx, providing more time to close the airway, theoretically reducing the risk of aspiration



Delayed pharyngeal swallow



Delayed pharyngeal swallow



Systematic review on diet modification

Dysphagia (2015) 30:2–26
DOI 10.1007/s00455-014-9578-x

ORIGINAL ARTICLE

The Influence of Food Texture and Liquid Consistency Modification on Swallowing Physiology and Function: A Systematic Review

Catrina M. Steele · Wazouf Abdulrahman Alsaaref · Soma Ayanikath · Carly E. A. Barbon · Jianshe Chen · Julie A. Y. Cichero · Kim Coultis · Roberto O. Dantas · Janice Duvestein · Lidia Giosa · Ben Hanson · Peter Lam · Caroline Lecko · Chebea Leigh · Ahmed Nagy · Ashwini M. Namastivayam · Weshania V. Nascimento · Inge Odendaal · Christina H. Smith · Helen Wang

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Summary of findings

- + Thicker liquids reduce the risk of airway invasion
- + Also increases the risk of post-swallow residue in the pharynx.



Steele et al., 2015

European review: ESSD white paper

Dysphagia
DOI 10.1007/s00455-016-9696-8



EDITORIAL

Effect of Bolus Viscosity on the Safety and Efficacy of Swallowing and the Kinematics of the Swallow Response in Patients with Oropharyngeal Dysphagia: White Paper by the European Society for Swallowing Disorders (ESSD)

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Summary of findings

- + Increasing viscosity decreases prevalence of airway invasion
- + Increased viscosity results in increased oral and/or pharyngeal residue
- + Reduced palatability with thickened fluids




Newman, et al., 2016

A caution for using cough at bedside as an indication of aspiration



Thickened liquids as a treatment for aspiration

- + During FEES assessment of dysphagic patients of varied etiologies Miles et al., 2018
 - + Thickening fluids reduced aspiration rates by 14%
 - + HOWEVER, there is a higher prevalence of silent aspiration with thickened vs thin fluids
 - + 11% who coughed on thin liquids during aspiration silently aspirated thickened



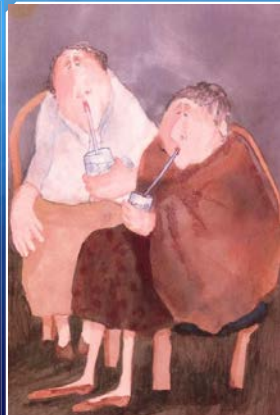

“Why do we thicken liquids?”

Because it can reduce airway invasion – therefore decrease risk of developing aspiration pneumonia

“what are the implications of modifying fluids/diets?”


Logemann (1984)

“Modification of texture should be the last resort in the management of the dysphagic patient”.

Thickened fluids vs chin down

- + Logemann et al. (2008)
 - + Compared nectar thick, honey thick and thin with chin tuck in patients with PD and dementia and confirmed aspiration
 - + 500+ R.C.T.
 - + Most effective in inhibiting aspiration ->
 - + Honey thick -> nectar thick -> chin down
 - + BUT ½ of patients aspirated on all three techniques
 - + Patient preference greatest for chin down



Thickened fluids vs chin down... longer term

- + Robbins et al. (2009) - extension of prior study
 - + 3-month incidence of pneumonia
 - + 9.8% thin liquids with chin down posture
 - + 11.6% thickened-liquid groups
 - + 3-month morbidities: in those on thickened liquids of any type when compared to chin down:
 - + More dehydration (6% vs. 2%),
 - + More urinary tract infection (6% vs. 3%)



As viscosity increases...

- + Feelings of thirst and satiety increase
- + Flavour deteriorates
- + Bioavailability of water isn't impacted
- + Bioavailability of medications is
 - + Cichero, 2013



Does the benefit of thickener outweigh the risks?

- + Pharyngeal residual
- + Decreased fluid ingestion
- + Decreased QOL Carlaw et al., 2012
- + Decreased compliance Leiter, 1996
- + What is our benchmark outcome measure for an intervention?



Free water protocols vs thickened liquids

- + No difference in the risk of developing pneumonia
 - + Kaneoka et al., 2017; Lippert et al., 2019
- + Increased fluid intake with FWP
- + Increased QOL with FWP
- + FW access is NOT unsupervised fluid intake
 - + Posture
 - + Patient education
 - + Aggressive oral hygiene



Oral hygiene

- + Interventions that improve oral hygiene reduce pneumonia rates by between 8 and 54% Yoneyama et al., 2002; Quinn et al., 2014; Simmons-Traut et al., 2004
- + Stroke patients susceptible to AP specific bacteria due to decreased mastication, salivation, swallowing, and oral hygiene
- + Perry et al., (under review)
 - + 102 patients with acute stroke – saliva sampling and CRT
 - + AP specific bacteria were lowest on admission, higher at discharge, and highest at 1 month post discharge. Also associated with development of AP



Shift from focusing on one outcome

- + 3 factors for aspiration pneumonia to materialize
 - + Bacteria that are pathogenic to lungs colonize in the upper airway
 - + Bacteria are aspirated
 - + Lungs cannot clear the aspirated bacteria
- + Need to look at the big picture of the patient
 - + Impact on medical status
 - + Impact on psychological status



So when is it appropriate?

- + When all else tried doesn't resolve aspiration or isn't feasible
 - + Significant cognitive deficits unable to modulate behaviour.
- + When the swallowing pathophysiology is suited to it
 - + Delayed pharyngeal swallow
- + When the effects are confirmed via instrumental exam
 - + Wilson & Howe, 2012
- + When a patient ticks other boxes regarding risk factors for aspiration pneumonia
- + When ingestive aspiration is linked to development of pneumonia