

Frazier Water Protocol Summary

Disclaimer: This document is compiled based on information received from Kathy Panther, CCC-SLP, Frazier Rehab, Louisville, KY. No claim is made by VitalStim Therapy of the efficacy or safety of utilizing the protocol described in this document.

Background

- Frazier Rehab has implemented Water Protocol in 1984
- Water Protocol is based on several assumptions:
 - aspiration of water poses little risk to the patient if oral bacteria associated with the development of aspiration pneumonia can be minimized
 - allowing free water decreases the risk of dehydration
 - allowing free water increases patient compliance with swallowing precautions and improves patient quality of life
 - good oral hygiene is key ingredient of the water protocol and offers other benefits with regards to swallowing

Aspiration Risk

- Risk of developing aspiration pneumonia is significantly greater if thick liquids or more solid consistencies are aspirated (Holas, DePippo, & Reding, 1994)
- Incidence of aspiration pneumonia is not significantly different between patients who aspirate thin liquids and those who do not aspirate (Feinberg, et al, 1996)
- Aspiration must be present, but will result in pneumonia only if the aspirated material is pathogenic to the lungs and host resistance is compromised
- Delayed swallow initiation and excess residue are only significant when occurring with pureed food, but not with liquids
- Several factors are highly predictive of development of aspiration pneumonia (Langmore, et al, 1998)
 - Dependence for feeding (41%)
 - Dependence for oral care (40%)
 - Number of decayed teeth (34%)
 - Tube feeding (27%)
 - More than one medical diagnosis
 - Number of medications prescribed
 - Now Smoking
 - Reduced activity level (43%)
 - GER (28%)
 - Esophageal dysmotility
 - Aspiration of food
 - Decreased pharyngeal transit time
- Of documented aspirators, only 38% developed pneumonia
- Dysphagia by itself, without the presence of one of the above predictors is not sufficient to cause pneumonia

- The role of dysphagia/aspiration in the development of pneumonia may be better understood by considering the colonization of pathogenic bacteria and the host resistance to the process
- Oral and dental disease may contribute to pneumonia by increasing levels of certain oral bacteria in the saliva, and/or by changing the composition of the salivary flora
- Changes in oral milieu occur secondary to xerostomia, medications, reduced oral care, changes in the patients LOC, and changes in the patients' ability to clear the organisms mechanically, e.g. stroke. (Millns, et al., 2003)
- Aggressive oral care, when done frequently:
 - Reduces the number of gram-negative bacteria
 - Increases the desire to eat
 - Increases oral awareness of food
 - Decreases aspiration
 - Increases oral movement of food
 - Increases alertness
 - Prepares the patient for the meal by increasing taste sensation/salivation

Dehydration

- Xerostomia, which can significantly and negatively impact nutrient intake, reportedly affects more than 70% of the geriatric population
- Potential for reduction in health care spending related to avoidable hospitalizations in dehydrated patients could be as much as 1.14 billion dollars in 1999 (Xiao, Barber, & Campbell, 2004)
- "Dehydration costs Medicare \$450 million dollars monthly." Tufts University, 1994.
- Dehydration can lead to a variety of negative health consequences (Gross et al., 1992; Copeman, 2000; Kleiner, 1999)
 - changes in drug effects
 - infections
 - poor wound healing
 - pressure sores
 - decreased urine volume and urinary tract infections
 - falls
 - confusion and lethargy
 - constipation
 - altered cardiac function
 - acute renal failure
 - weakness
 - declining nutritional intake

Dysphagia interventions and oral water intake

- Some of the recommendations made by dysphagia clinicians may slow down the rate of intake and decrease fluid intake
- Mean compliance level with safe swallowing instructions by clinicians is 35.6%
- There is no published research that will give dysphagia clinicians a definitive scientific basis for the safe delivery of water to dysphagic patients.

- When water enters the alveoli, it is taken up into the blood vessels and rapidly reabsorbed into the bloodstream
- Aspiration during water drinking trials is a benign event; even massive entry may cause only transient respiratory changes (Feinberg, 1990)
- The quantity and type of aspirate that can be safely tolerated by the lungs has not been clearly defined
- Clear liquids do not pose an aspiration pneumonia risk unless the pH is very high or very low, or if the quantity is great enough to cause asphyxiation. (Crossley & Thum, 1989)

Evidence Base for Water Protocol

- To date, the only published research related to the consumption of water by patients with dysphagia is by Garon, Engle & Ormiston (1997)
 - Control group of patients received thickened liquids
 - Experimental group of patients received thickened liquids and water between meals
 - No patients in either group developed aspiration pneumonia or dehydration during the study, or during a 30-day follow up period
- Unpublished retrospective chart review at Frazier rehab in early 1990s over an 18-month period
 - 234 dysphagic inpatients who received thickened liquids during their admissions
 - Two of the 234 patients developed aspiration pneumonia (0.9%); both were suspected of aspirating solid foods

Frazier Water Protocol Guidelines

- Water intake is unrestricted prior to a meal, and allowed 30 minutes after a meal
- The period of time following the meal allows spontaneous swallows and gravity to clear pooled solid or thickened liquid residues
- Aggressive oral care is provided to patients who are unable to clean their own teeth and mouths
- Implement oral care protocol by training staff, patient and family member
 - Twice-daily brushing
 - Suctioning of oral secretions as needed to decrease bacterial load
 - Keep oral mucosa moist
 - Allow frequent and convenient cleansing
 - 3x/day oral rinse with 1.5% H₂O₂-peroxide (>3% is harmful and <1% has no benefit); dilute with water not normal saline