Dysphagia Treatment: Free Water Protocol

**Indexing Metadata/Description**

- **Procedure:** Dysphagia Treatment: Free Water Protocol
- **Synonyms:** Dysphagia treatment: Frazier water protocol
- **Area(s) of specialty:** Swallowing and Swallowing Disorders
- **Description/use:** A free water protocol (FWP) is a method sometimes incorporated into dysphagia treatment as a means of increasing hydration and quality of life in a patient with dysphagia.\(^4\) The original FWP was introduced in 1984 at the Frazier Rehab Institute in Louisville, Kentucky, as a response to the concern that many patients with dysphagia who were on thickened-liquid diets were noncompliant with thin liquid restrictions and complaining of thirst.\(^4\) Previously prohibited, oral intake of water became a major feature in both treatment and day-to-day hydration. In the FWP, consumption of thin water is encouraged for all patients with dysphagia in order to increase hydration; when adequate hydration is achieved by oral intake of water, the need for IV fluids, as well as the associated risks and costs, should be decreased.\(^4\) Post-discharge surveys of Frazier patients with dysphagia indicate water is often the primary means of hydration. In practice, the use of an FWP will vary according to hospital or clinic policy. In some cases, an FWP is implemented across the board for all patients regardless of individual circumstances; however, in other locations, an FWP is recommended and realized on an individual basis\(^4\).

- **Rationale for FWP:** the FWP is based on research supporting the safety of water when it is aspirated into the lungs, as well as patients’ reports of noncompliance with thickened-liquid diets because of associated reduced quality of life
  - **Safety of water**
    - The human body is made up of approximately 60% water, and small amounts of water taken into the lungs are quickly absorbed into the tissues of the lungs\(^4,14\)
    - It is important to note that large amounts of aspirated water, as in the case of near-drowning, cause the blood to become diluted and hemolysis (bursting of the red blood cells [RBCs]) can occur\(^13\)
    - Water has a neutral pH (which does not cause damage to lung tissues), unlike other liquids\(^4\)
  - **Compliance/quality of life**
    - Patients on thickened-liquid diets might limit fluid intake; patients often report that they do not like the taste of thickened liquids and that thickened liquids do not quench thirst\(^4\)
    - In a study conducted in Canada with 13 patients with dysphagia after stroke, researchers found that patients on dysphagia diets did not meet their fluid intake needs. The group of patients who were on enteral feeding with IV fluids did meet their fluid intake needs; however, once transitioned to oral, thickened-liquid diets, fluid intake dropped significantly (from meeting 134% of their fluid needs to 43%)\(^21\)
    - Many patients and families/caregivers dislike thickened liquids; when thin water is an option at other times, patients might be more likely to comply with the thin liquids restriction during meals\(^4\)
- With the Free Water Protocol, patients would be able to have the refreshment of a glass of cold water, which research indicates carries less risk in terms of aspiration compared to other beverages
- With the Free Water Protocol, speech-languagepathologists can focus on improving oral hygiene to reduce the amount of bacteria potentially being aspirated
- After discharge from the hospital, families/caregivers often report that the preparation of thickened liquids becomes overwhelming and that the cost, as well as availability of thickening agents, are prohibitive; having the option of providing the patient with thin water allows for less frequent preparation of thickened liquids

**Indications:** Dysphagia; thickened-liquid diet  
**CPT codes:** 92526 treatment of swallowing dysfunction and/or oral function for feeding  
**Reimbursement:** Reimbursement for dysphagia therapy will depend on insurance contract coverage; no specific special agencies are applicable for this condition

### Indications for a FWP

An FWP is indicated in certain patients with dysphagia. Dysphagia refers to impaired swallowing due to an inability to move food or liquid efficiently during the oral, pharyngeal, or esophageal phase of swallowing. Normal swallowing consists of a set of physiological behaviors, which results in food, liquids, and/or other substances moving safely, as well as efficiently, from the mouth to the stomach. The oral phase includes sucking, chewing, and moving the food or liquid into the throat. The pharyngeal phase is the initiation of the swallowing reflex, when food is squeezed down the throat and the airway is closed off to prevent aspiration (food or liquid entering the airway) or choking. In the esophageal phase, the openings at the top and bottom of the esophagus move the food or liquid to the stomach by relaxing and tightening. Swallowing disorders, also called dysphagia, can occur at different stages in the swallowing process. A speech-language pathologist (SLP) is able to diagnose and treat dysphagia affecting the oral or pharyngeal phase of swallowing, referred to as oropharyngeal dysphagia. Dysphagia affecting the esophageal phase of swallowing is called esophageal dysphagia and is diagnosed, as well as managed, by a gastroenterologist. For detailed information on dysphagia, see the series of Clinical Reviews on this topic.

An FWP is indicated for patients with oropharyngeal dysphagia who are on thickened-liquid diets or who are NPO (nil per oris; i.e., nothing by mouth). All staff caring for those patients who are NPO, but are permitted to have restricted amounts of thin liquid, need to be communicated with regarding the liquid restrictions

### Guidelines for Use of FWP

Guidelines for the use of a FWP, as well as the implementation at specific hospitals or clinics, will vary

- A patient on a dysphagia diet with thickened liquids or who is NPO due to dysphagia is allowed to have thin water, but no other type of thin liquid (e.g., tea, soda, juice)
  - Patients who exhibit impulsivity or excessive coughing and discomfort might be restricted in the amount of water allowed or permitted to take water only under direct supervision. Patients with severe dysphagia or extreme choking might not be permitted oral intake of thin water due to the physical stress of coughing
  - In the FWP, medications are never to be given with water; pills can be administered per physician order whole or crushed in a spoonful of applesauce, pudding, or yogurt, or whole with thickened liquid
  - For patients who are determined to benefit from postural compensations (e.g., chin tuck, head rotation), these compensations should be utilized during consumption of thin water
- Water is used to screen any patient for dysphagia
- For patients on oral diets, thin water is allowed between meals
- According to a FWP, water intake is unrestricted prior to eating a meal and then permitted 30 minutes after the patient finishes a meal. This time delay is intended to allow spontaneous swallows to clear any pooled residue from the meal
- All patients on an FWP must receive aggressive oral care (3–4 times per day); for patients who are unable to thoroughly clean their own teeth and mouths, a trained professional (i.e., nurse, not a family member) should perform oral care frequently to prevent bacteria from contaminating swallowed water
- Aspiration pneumonia develops when colonized oropharyngeal material is aspirated into the lungs. If clean water is aspirated in the lungs, it is unlikely to result in aspiration pneumonia because very few bacteria exist in clean drinking water, fewer than the number of bacteria that exist in saliva.
In a 24-month study conducted in Japan with 88 older adults residing in nursing homes, researchers found that there were significantly fewer fevers and fatal cases of aspiration pneumonia among the group of older adults that received professional oral health care compared to a group that did not receive professional oral health care.

Logistic regression analyses identified the significant predictors of aspiration pneumonia. The best predictors, in one or more groups of subjects, were those who were dependent for feeding, those dependent for oral care, the number of decayed teeth, those receiving tube feeding, those with more than one medical diagnosis, number of medications being taken, and smoking. These significant predictors might play a role in relation to the pathogenesis of aspiration pneumonia. Dysphagia was concluded to be an important risk for aspiration pneumonia, but was generally not sufficient to cause it unless other risk factors were present as well. A dependency upon others for feeding emerged as the dominant risk factor, while not taking into consideration any tube-fed patients.

Patient and family/caregiver education is essential for patients who are on an FWP; education should emphasize the rationale for allowing unthickened water intake, as well as a very specific written FWP tailored to patient’s needs. The SLP, dietary, and nursing staff should repeat the guidelines for water intake during the education process.

**Contraindications/Precautions to Free Water Protocol**

- Patients who exhibit impulsivity or excessive coughing and discomfort might be restricted in the amount of water allowed or required to take water only under direct supervision. Patients with very severe dysphagia and/or extreme choking might not be permitted oral intake of water due to the physical stress of coughing.

- Although there is considerable disagreement among both researchers and clinicians regarding the appropriate application of FWPs in dysphagia treatment, the findings of most research studies are consistent on the subset of patients for whom the protocol is NOT safe. Patients with the following characteristics should not be placed on an FWP:
  - Medical fragility: this includes the risk that coughing could rip stitches and/or cause pain/discomfort, poor oral hygiene despite routine care, and excessive coughing with oral intake.
  - Active pulmonary disease (e.g., pneumonia)
  - Absent pharyngeal swallow response as observed by videofluoroscopic swallow study (VFSS)
  - Acute or unstable medical condition
  - Oral or dental bacterial infection
  - Severe cognitive impairment

**Examination**

- **Contraindications/precautions to examination**
  - Physician order must be obtained prior to evaluation and treatment of dysphagia.
  - Proceed with cultural sensitivity and be aware of any food allergies when providing food and liquid to patients with dysphagia.
  - See full Contraindications/precautions to examination in the series of Clinical Reviews on dysphagia.

- **History**
  - **History of present illness/injury for which an FWP is indicated**
    - **Mechanism of injury or etiology of illness:** What is the underlying cause of the dysphagia (e.g., neurological disorder, head and neck cancer, anatomical abnormality)? When were symptoms of dysphagia first observed and what were they?

  - **Course of treatment**
    - **Medical management:** Note current and previous medical management of the patient’s underlying diagnosis; do any of the medical treatments exacerbate the patient’s dysphagia (e.g., radiation for head and neck cancer, intubation for respiratory failure)?
    - **Medications for current illness/injury:** Determine what medications the physician has prescribed; are they being taken? How are the medications being taken? Whole with water, puree, or thickened liquids? Crushed in puree?
      - Medication-induced dysphagia can occur even if dysphagia is not specifically listed as a possible side effect.
      - Medications that reduce the patient’s alertness and awareness increase the risk of dysphagia.
      - Drug interactions can cause xerostomia (dry mouth condition that can impair taste and swallowing functions).
      - Contact a pharmacist or physician regarding questions about side effects.
- **Diagnostic tests completed:** Document the results of any swallowing assessments that have been completed to date. 
  Usual diagnostic tests for patients with dysphagia include the following:
  - Chest x-ray
  - Clinical swallow examination (CSE)
  - Modified barium swallow study (MBSS)/VFSS
  - Fiberoptic endoscopic examination of swallowing (FEES)
- **Home remedies/alternative therapies:** Document any use of home remedies (e.g., chopping food into smaller pieces, alternating solids and liquids) or alternative therapies (e.g., acupuncture) and whether or not they help
- **Previous therapy:** Document whether the patient has had speech, occupational, or physical therapy for this or other conditions and what specific treatments were helpful or not helpful. Document prior therapy for dysphagia, as well as previously recommended dysphagia diet
- **Aggravating/easing factors:** Document any factors that appear to improve or worsen swallowing ability and length of time before the symptoms come on or are eased
- Does the patient complain of difficulty swallowing?
  - With specific foods?
  - With specific meals?
  - Only halfway through the meal?
  - When he or she is distracted or having a meal with a group of people?
- **Nature of symptoms:** Document nature of symptoms
  - For patients who complain of difficulty swallowing, what exactly is the problem with swallowing?
  - Does food stick in the throat?
  - Does the patient cough and/or choke while eating or drinking?
  - Is there pain associated with swallowing?
- **Pattern of symptoms:** Document changes in symptoms throughout the day and night, if any (a.m., mid-day, p.m., night); also document changes in symptoms due to weather or other external variables. How frequently does the patient experience symptoms of dysphagia?
- **Sleep disturbance:** Does difficulty swallowing saliva and/or secretions interfere with patient’s ability to sleep? Document number of wakings/night
- **Other symptoms:** Document other symptoms the patient is experiencing that could exacerbate the condition and/or symptoms that could be indicative of a need to refer to physician (e.g., dizziness, bowel/bladder/sexual dysfunction, saddle anesthesia)
- **Respiratory status:** Patients with a compromised respiratory status are at higher risk for complications (such as aspiration pneumonia) of dysphagia
  - Does the patient require supplemental oxygen? Nasal cannula?
  - Does the patient require ventilator support?
  - Patients who have required endotracheal mechanical ventilation are at elevated risk for aspiration during swallowing when they return to oral feeding
- **Psychosocial status:** Document any psychosocial issues, such as depression or anxiety; patients with dysphagia can experience feelings of social isolation as a result of being unable to eat meals in a normal manner. It is important when implementing an FWP to document the patient’s perceptions of quality of life because improved quality of life is one of the goals of the protocol. The SWAL-QOL is a quality of life measure that includes patient self-ratings of quality of life in ten domains related to swallowing and eating ability in adults
- **Hearing:** Document hearing ability, including history of hearing impairment and need for hearing aid(s) or cochlear implant(s)
- **Barriers to learning**
  - Are there any barriers to learning? Yes___/No__
  - If Yes, describe
- **Medical history**
  - **Past medical history**
    - **Previous history of same/similar diagnosis:** Document previous history of oropharyngeal or esophageal dysphagia
    - **Comorbid diagnoses:** Ask the patient about other problems, including diabetes, cancer, heart disease, complications of pregnancy, psychiatric disorders, and orthopedic disorders
- **Medications previously prescribed:** Obtain a comprehensive list of medications prescribed and/or being taken (including over-the-counter drugs)
- **Other symptoms:** Ask the patient about other symptoms he or she is experiencing

**Social/occupational history**
- **Patient’s goals:** Document what the patient and family/caregiver hope to accomplish with therapy and in general
- **Functional limitations/assistance with ADLs/adaptive equipment:** Document functional limitations and use of adaptive equipment
  - Does the patient require adaptive feeding devices?
  - Does the patient require use of a communication device?
  - Does the patient require hearing aids? If so, are the hearing aids in good working order?
  - Does the patient wear glasses?
  - Does the patient require a wheelchair for mobility? Does the patient require a cane or walker?
  - For patients with visual neglect or inattention, does this impair functioning or feeding abilities?
- **Living environment:** With whom does the patient live (e.g., spouse, caregiver, family members, children, parents, siblings)? Identify if there are barriers to independence in the home; are any modifications necessary? Who is responsible for preparing the patient’s food?

**Relevant tests and measures** (While tests and measures are listed in alphabetical order, sequencing should be appropriate to patient medical condition, functional status, and setting):

- **Arousal, attention, cognition (including memory, problem solving):** Briefly screen the patient’s cognitive abilities. In order to safely implement an FWP, it is important that the patient understand the associated risks and benefits. For patients with impulsivity or severe cognitive impairment, water ingestion might need to be limited or directly supervised at all times. (4) If cognitive deficits are evident on the screening measure, it is often appropriate to complete a cognitive evaluation with the patient as well
- **Assistive and adaptive devices:** Document if the patient currently uses any assistive or adaptive devices to aid in feeding and swallowing. Referral to occupational therapy might be necessary to determine if the patient would benefit from equipment to assist with self-feeding
- **Speech and language examination:** Screen communication abilities during a swallowing examination; if speech and language deficits are noted, complete a full speech-language evaluation as well. For detailed information on speech and language disorders, see the series of Clinical Reviews on these topics
- **Oral structure and oral motor function:** Complete a full oral mechanism examination prior to beginning direct dysphagia therapy
  - Examination should include the lips, buccal muscles, tongue, teeth, mandible, and hard/soft palates
  - Bacteria from the oral cavity might be aspirated into the respiratory tract, which can influence the initiation and progression of systemic infectious conditions, such as pneumonia
  - For an edentulous patient, determine if he or she has dentures or partials; if so, request that the dentures/partials be brought during the swallowing evaluation and available during treatment sessions
- **Posture:** Is the patient able to maintain adequate sitting posture for feeding trials?
  - Patients should be able to maintain upright positioning of the head and trunk while feeding
  - If the patient does not have adequate strength or muscle tone to maintain upright positioning, refer to physical and occupational therapy for muscle strengthening and adaptive positioning equipment
- **Swallow examination:** Complete a thorough swallowing examination prior to initiating an FWP
  - CSE (for detailed information on a CSE, see *Clinical Review ... Dysphagia Assessment: In-depth Bedside Swallow Examination (Adults)*; CINAHL Topic ID Number: T709037 and *Clinical Review ... Dysphagia Assessment: In-depth Bedside Swallow Examination (Pediatrics)*; CINAHL Topic ID Number: T709064)
  - FEES (for detailed information on FEES assessments, see the series of Clinical Reviews on this topic)
  - Manometry (for detailed information on manometry, see *Clinical Review ... Dysphagia Assessment: Manometry*; CINAHL Topic ID Number: T709040)
  - MBSS/VFSS (for detailed information regarding MBSSs, see *Clinical Review ... Dysphagia Assessment: Modified Barium Swallow (Adults)*; CINAHL Topic ID Number: T709046 and *Clinical Review ... Dysphagia Assessment: Modified Barium Swallow (Pediatrics)*; CINAHL Topic ID Number: T709077)
- **Tracheostomy examination:** If present, assess tracheostomy tube and document date of placement, current respiratory status, and use of speaking valve. For detailed information on dysphagia in patients with tracheostomy tubes, see *Clinical
Review ... Dysphagia: Adults with Tracheostomy; CINAHL Topic ID Number: T709084 and Clinical Review ... Dysphagia: Children with Tracheostomy; CINAHL Topic ID Number: T709082

When the patient has an uncapped tracheostomy tube, subglottic pressure is reduced and the strength of the swallow is altered\(^2\). For detailed information on assessment of a tracheostomy tube and use of a speaking valve, see Clinical Review ... Passy-Muir Tracheostomy & Ventilator Swallowing and Speaking Valve; CINAHL Topic ID Number: T708919

**Assessment/Plan of Care**

› **Contraindications/precautions**

• Only those contraindications/precautions applicable to this protocol are mentioned below, including with regard to modalities. Rehabilitation professionals should always use their professional judgment.

• Patients with a diagnosis for which this procedure is used may be at risk for falls; follow facility protocols for fall prevention and post fall prevention instructions at bedside, if inpatient. Ensure that patient and family/caregivers are aware of the potential for falls and educated about fall prevention strategies. Discharge criteria should include independence with fall prevention strategies.

• Ingestion of food and/or liquid in patients with dysphagia is associated with the risk of aspiration, and appropriate precautions must be taken when recommending an FWP.\(^2\) SLPs must make every effort to maximize patient/client safety when administering swallowing assessments and management procedures.

• The following are practice standards and guidelines for dysphagia therapy involving ingestion of food and liquid published by the College of Audiologists and Speech-Language Pathologists of Ontario (CASLPO)\(^2\):

  – Obtain informed consent from the patient or appropriate medical decision maker prior to initiation of any dysphagia management program\(^2\)

  – The SLP must have current knowledge of and be fully trained in how to provide emergency assistance to someone who is choking; cardiopulmonary resuscitation (CPR) certification is highly recommended\(^2\)

  – When a patient has been designated as NPO by his or her physician, the SLP must follow the facility’s appropriate protocol; if the patient is NPO awaiting a surgical procedure, he or she should not have anything to eat or drink\(^2\)

  - Regardless of NPO status, an SLP should communicate with the patient’s physician and/or assigned nurse prior to administering any food or liquid trials\(^2\).

  – Certain food or liquid stimuli used in swallowing assessments may pose greater risk of harm than others:

    - For patients with known allergies or certain medical conditions (e.g., diabetes), specific foods and liquids will be medically contraindicated; discuss specific foods/liquids to be used in therapy with the patient, physician, and nutritionist to ensure patient safety\(^2\)

    - Food coloring can be added to assessment stimuli to aid visual detection of aspiration. Concerns have been raised in the medical literature regarding the safety of blue food dye, particularly when administered in large volumes, or to medically fragile patients/clients at risk for sepsis. SLPs should consider the safety of food dyes for the individual patient/client before using these products in swallowing assessments.

    - Highly acidic stimuli can contribute to an elevated risk of aspiration pneumonia in patients/clients who aspirate. SLPs should avoid the use of highly acidic stimuli in swallowing assessments.

• Clinicians should follow the guidelines of their clinic/hospital and what is ordered by the patient’s physician. The summary presented below is meant to serve as a guide, not to replace orders from a physician or a clinic’s specific protocols.

• The FWP is an interdisciplinary initiative, with roles and accountabilities specified for different members of the inter-professional healthcare team. The entire treatment team, including all therapists, nurses, and physicians, should be in agreement about an FWP prior to initiation\(^2\).

› **Diagnosis/need for FWP:** An FWP is intended to increase hydration and quality of life in a patient with dysphagia who is on a diet with thickened liquids or who is NPO because of aspiration risk.\(^2\) In order to determine if an FWP is appropriate for a specific patient, risks and benefits of the protocol should be discussed with the patient and family member(s)/caregiver(s), as well as a multidisciplinary rehabilitation team that includes a physician, nurse, and dietitian. After the screening is performed, such patients are often permitted to drink thin water.

› **Prognosis:** Prognosis for improvement of swallowing function will differ for each patient; factors such as age, motivation for therapy, severity of dysphagia, and treatment approach can all have an impact on prognosis. An author of an opinion piece supporting the use of FWP in patients with dysphagia writes that a patient who is ambulatory, living at home, and managing his or her own oral care is a better candidate for success on an FWP than a patient who is acutely ill, bedbound,
and dependent for both feeding and oral care. Authors of a review of FWP evidence concluded that FWPs appear effective and safe for patients who exhibit dysphagia with thin liquids and have low risk of aspiration pneumonia as long as aggressive oral care is maintained. The factors that increase the risk of aspiration pneumonia were the need for 1:1 assistance for feeding and oral care, the presence of tooth decay, tube feeding, multiple medications, smoking, and reduced level of consciousness.

Referral to other disciplines

- Referral to gastroenterologist for patients in whom esophageal dysphagia is suspected.
- Referral to neurologist for patients with dysphagia who do not have a known underlying diagnosis.
- Referral to pulmonologist for patients who appear to have poor respiratory status and/or function.
- Referral to otolaryngologist for patients who present with apparent vocal fold dysfunction.
- Referral to nutrition services/dietician for patients with poor oral intake or those at risk for malnutrition.
- Referral to physical and/or occupational therapy for patients with poor posture, difficulty sitting up in the bed or chair, or difficulty feeding themselves.

Other considerations: Among clinicians and researchers, there is a high degree of disagreement about the appropriate application of the FWP due to the lack of evidence in the research literature. There is limited direct evidence supporting the FWP. SLPs are ethically obligated to use evidence-based methods of clinical decision making.

- Opponents of the FWP contend that there is enough evidence to safely and confidently allow patients with dysphagia (who are known aspirators) to have thin liquids, even water. Though it may not be considered direct evidence, there appears to be enough indirect evidence to support the FWP. The author of an opinion piece against the FWP asserts that clinicians must continue to use good clinical judgment when recommending treatment options for patients with dysphagia and takes issue with having an FWP that applies to all patients, regardless of individual characteristics and aspiration risk.

- Those who support and use the FWP also acknowledge lack of research and solid evidence with definitive outcomes; however, supporters recommend an FWP be used on a case-by-case basis to promote hydration and improved quality of life. With the FWP, patients would be able to have the refreshment of a glass of cold water, which research indicates carries less risk in terms of aspiration compared to other beverages. The author of an opinion piece supporting the use of FWP cites multiple studies that have found that aspiration of thickened liquids results in higher rates of pneumonia than in patients who did not aspirate thickened liquids (i.e., those who aspirate thin liquids only). This finding is relevant as it suggests that thickened liquids might be harder than thin liquids to clear from the lungs, if aspirated. The developers of the initial FWP state that another advantage of an FWP is that it allows patients with dysphagia increased opportunities to swallow, which can allow the SLP more opportunities for continued assessment of swallowing ability in patients who are NPO or on restricted diets. Drinking water during swallowing therapy allows better recognition of patient readiness for repeated videofluoroscopy or endoscopy, as well as diet advancement.

Treatment summary: Research studies do not wholly support the safety and efficacy of an FWP for all patients with dysphagia. The current research studies, described below, have multiple limitations, mostly in terms of sample size (too small to draw firm conclusions) and heterogeneity of study subjects (great variety of underlying diagnoses causing dysphagia, e.g., neurological dysfunction, head and neck cancer, degenerative disease).

- Authors of a systematic review published in 2017 that included eight studies on FWPs concluded:
  - Overall, the evidence for FWP is promising, but is low-quality.
  - Adults on inpatient rehabilitation units who did not have degenerative neurological conditions, and whose motor and cognitive abilities were intact (or appropriately compensated for) who were on a FWP, did not develop lung infections and hence appear appropriate candidates for FWPs.
  - There was some evidence that FWP results in increased fluid intake levels in people on thickened liquids diets or those who are NPO who had medical complications related to dehydration.
  - In the studies that reported on quality of life changes with the FWP, most reported improvements in quality of life associated with FWP.
  - Not all of the studies included instrumental studies to determine aspiration risk or confirm presence of aspiration.

- In a randomized controlled trial conducted at an Australian teaching hospital with 91 patients with dysphagia, researchers found that there was a significantly increased risk of lung complications related to dysphagia in a group of patients given free access to water compared to the control group, which was restricted to thickened liquids. They further defined patients...
at highest risk, namely those with degenerative neurological dysfunction, who are immobile or have low mobility. Their results indicated increased total fluid intake in the patients allowed access to water, and the quality of life surveys that suggested the dissatisfaction in patients with diets composed of only thickened fluids\(^{(19)}\).

All patients in the study had dysphagia, had been prescribed a thickened-liquid diet by an SLP, and were confirmed to be thin-liquid aspirators on an instrumental examination of swallowing; additionally, patients with chronic respiratory conditions or prior tracheostomy were excluded from the study group\(^{(19)}\).

The patients were recruited from both acute and subacute units of the hospital and randomly assigned to experimental or control group; those in the experimental group were allowed free access to thin water for a period of five days after careful consultation with and recommendations from medical experts for the determination of aspiration pneumonia\(^{(19)}\). Prior to initiating the FWP, all nurses involved in the patients’ care were given education about oral hygiene and strict parameters for provision of water (water was only allowed 30 minutes after a meal following thorough oral care). An oral hygiene screening tool developed for nursing staff and utilized for all patients involved a thorough brushing of teeth or cleaning of dentures to ensure there was no food build-up or residue noted on/between teeth. Chlorhexidine mouthwash was used where necessary to ensure thorough cleaning of the oral cavity prior to provision of water\(^{(19)}\).

Quality of life surveys were administered on the final day of the pre-intervention phase, as well as the final day of the post-intervention phase (five days after the completion of the five-day intervention period). Participants were asked to point to one of six faces that best represented their feelings and were assessed on the basis of a pain scale rating chart. This test assessed pain on a 0–10 scale with an increment of two, and with the use of drawn faces ranging from a smiley to a crying sad face, which was adapted to be utilized for the purpose of defining quality of life\(^{(19)}\).

Six patients in the experimental group (allowed to have water) developed lung-related complications of dysphagia; three of these were confirmed aspiration pneumonia, and three were suspicious for aspiration pneumonia but not confirmed. As expected, an increase in mean core body temperature, corresponding to the time of diagnosis of the first signs of respiratory symptoms by experienced physicians, was noted in these patients. The increase in core body temperature and the first signs of aspiration pneumonia typically occurred 2–3 days after the ingestion of water.\(^{(19)}\) There were no cases of lung-related complications in the control group, who only consumed prescribed thickened liquids\(^{(19)}\).

Patients in the control group were allowed only thickened fluids for the total eight day period before and after intervention, whereas patients in the experimental group were allowed access to water for the five day post-intervention period. The total daily oral liquid intake by each of the participants in the study was noted. Daily fluid intake for both groups was similar prior to the intervention phase; however, there was a significant difference in fluid intake during the intervention phase with those in the experimental group taking in significantly more liquids. There was one patient in the experimental group and two patients in the control group who required IV fluids to meet hydration needs\(^{(19)}\).

The completion rate for quality of life surveys was low, likely due to cognitive impairments among patients in the study group. The findings indicate that the patients in both the control and intervention groups were generally feeling okay at the end of the pre-intervention period in which all patients were on a thickened modified diet for three days. However, during the same period, they were largely dissatisfied when asked about how the control and intervention groups felt about the drinks, their level of thirst, and mouth cleanliness. At the follow-up survey after the intervention period, the experimental group reported profoundly higher levels of quality of life with respect to overall satisfaction with drinks, level of thirst, and mouth cleanliness; however, this did not correspond to an overall increase in positive feeling. Although the experimental group did report higher quality of life than the control group, there was a slightly worse general feeling post-intervention\(^{(19)}\).

Researchers concluded that there was an increased risk of lung complications associated with intake of water for known aspirators. The subgroup with the highest risk was patients with degenerative neurologic conditions who were bed-bound or had low levels of mobility. Importantly, had the researchers considered only the newly admitted CVA patients with relative mobility in the intervention group, their findings would have indicated no cases of lung complications and been in complete accordance with their previously published findings\(^{(19)}\).

Because of timing of onset in the cases of lung complications, the researchers in this study concluded that if patients are started on an FWP, they should be monitored very closely for the first 72 hours for the development of pneumonia\(^{(19)}\).

- In a prospective study conducted in Canada with 16 patients, researchers concluded that a trial of free water access can be introduced safely for patients who are thin-liquid aspirators\(^{(23)}\).
- Participants in the study were randomly assigned to one of two groups: immediate FWP group or delayed FWP group (during which time the participants continued to receive standard care for dysphagia); all participants were known...
thin-liquid aspirators who were on dysphagia diets or NPO. There was a large variety of underlying diagnoses causing dysphagia among the participants in this study.\textsuperscript{23}

Prior to implementing the FWP intervention, researchers developed a protocol specific to their patient population with input from SLPs, occupational therapists (OTs), physicians, nurses, and nutritionists, and devised a written FWP algorithm for use in the study.\textsuperscript{23} Once the FWP algorithm was developed, the nurses who were going to work with the study participants received thorough training on use of the FWP.\textsuperscript{23} Researchers developed very clear exclusion criteria for the use of the FWP; participants were not eligible for FWP if they had any of the following: an absent pharyngeal swallow response as observed by VFSS, active pneumonia, acute or unstable medical condition, and oral or dental bacterial infection.\textsuperscript{23}

Fluid intake and quality of life were outcome measures in this study and all participants were monitored for any adverse events; course of intervention was 14 days and follow-up measures were taken 1–3 days after the intervention period ended.\textsuperscript{23}

There were no adverse events (e.g., aspiration pneumonia) in either group during the implementation of the FWP.\textsuperscript{23} Outcome measures indicated a trend toward significance in quality of life improvement during use of the FWP; there was considerable variability in the amount of fluid intake for each patient while on the FWP, with no significant increase when the participants were taken as a group.\textsuperscript{23}

In a prospective study conducted in Australia with 16 subjects with dysphagia who were on thickened liquid diets, researchers found that implementation of an FWP led to improvement in hydration, as well as significantly increased quality of life when compared to a diet consisting of thickened fluids only. They had undertaken a relatively large scale clinical trial to investigate the relationships between the effects of free access to water and the development of aspiration, aspects of hydration, and issues related to quality in people with dysphagia. The researchers who conducted this study only selected participants who had good cognitive ability and good mobility to be on an FWP. The FWP was implemented for a period of five days during which time the patients were monitored very closely for signs of aspiration pneumonia. The medical staff, nurses, and allied health professionals, who worked with these patients during the intervention phase, were previously trained in the FWP, including aggressive oral hygiene. At the conclusion of the study period, hydration was improved, quality of life measures showed a significant improvement from baseline, and there were no incidences of aspiration pneumonia.\textsuperscript{26}

In a retrospective study conducted in the United States, researchers examined the medical records of inpatients of an acute rehabilitation hospital and compared outcomes before, as well as after, an FWP was implemented in the hospital for those admitted with diagnoses of both stroke and dysphagia.\textsuperscript{18}

There were 30 patients identified from the years 2003–2005 in the water group who were on thickened-liquid diets and had been placed on an FWP; the control group was derived of 28 patients who had been on thickened-liquid diets with similar age, sex, and admission FIM score distribution who were hospitalized during the period 1999–2001 prior to the implementation of an FWP (no water group).\textsuperscript{18}

Both groups—water and no water—had patients who were known thin-liquid aspirators as documented by an instrumental examination of swallowing.\textsuperscript{18}

Researchers found that the incidence of aspiration pneumonia was higher in the group of patients who were not on an FWP (i.e., the no water group).\textsuperscript{18}

At this acute rehabilitation, patients who were extremely impulsive, had significant cognitive impairments, had wet or gurgly vocal quality, or demonstrated severe coughing with ice chips or water were not candidates for an FWP; hence, no patients with the above mentioned characteristics were included in the water group.\textsuperscript{18}

Their findings supported the premise that even in known thin liquid aspirators, offering water does not increase incidence of aspiration pneumonia.

In a small randomized controlled trial conducted in the United States with 20 subjects, researchers found that allowing known aspirators to have thin liquids did not result in aspiration pneumonia.\textsuperscript{20} The patients were all admitted to the hospital with the diagnosis of stroke, and neither group (ten patients were put on a thickened liquid diet and ten were allowed to have thin water) received any swallowing therapy during the study period, which varied with each patient according to length of stay.\textsuperscript{20} There was no evidence of aspiration pneumonia in either the control or experimental group.\textsuperscript{20}
In two studies that were both reported in abstract form at the 2008 American Speech-Language-Hearing Association conference, findings suggested that FWPs promote increased fluid intake in patients on dysphagia diets. However, in one of the studies, there were no reported occurrences of pneumonia among a small study population of skilled nursing facility patients on FWPs, with the participants reporting favorable quality-of-life outcomes. In the other study, there were reported increased pneumonia rates in a small group of sub-acute patients on FWPs.

One point from the presenters of the second above mentioned study was the lack of standardization in how to administer water in an FWP. There is no consensus about the amount of water that should be swallowed at a time (e.g., cup sips, spoonfuls) or if patients should have water in the form of liquid or ice chips. Researchers emphasized that clinical judgment, rather than a standard protocol, is the best way to ensure safety when using an FWP.

See Description, Indications for FWP, and Guidelines for use of free water protocol, above.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Goal</th>
<th>Intervention</th>
<th>Expected Progression</th>
<th>Home Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dehydration; Poor quality of life</td>
<td>Increase fluid intake and hydration</td>
<td>Therapeutic strategies</td>
<td>Progression of the amount of water that a patient can ingest safely will vary depending on individual patient characteristics</td>
<td>FWP can be utilized at home; a written protocol should be provided to the patient and primary caregiver for reference</td>
</tr>
<tr>
<td></td>
<td>Improve quality of life</td>
<td>FWP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Desired Outcomes/Outcome Measures

- The desired outcome of an FWP is increased level of hydration and improved quality of life
- Outcomes of an FWP can be measured by quality-of-life measures, such as the SWAL-QOL, as well as measures of hydration level

Maintenance or Prevention

- Aggressive oral care is necessary for prevention of respiratory complications associated with aspiration and should be provided to those patients who are unable to clean their own teeth/mouths so that pathogenic bacteria are less likely to contaminate secretions

Patient Education

- Patient and family/caregiver education is essential for patients on an FWP. Education should include information on the rationale for allowing water intake, as well as a very specific written FWP tailored to the patient’s needs. The SLP, dietitian, and nurse are responsible for educating the patient and family/caregiver, and should repeat the guidelines for water intake frequently during the education process. Written material about the FWP should be provided, and education should be documented in the patient’s medical record

Coding Matrix

References are rated using the following codes, listed in order of strength:

- M Published meta-analysis
- SR Published systematic or integrative literature review
- RCT Published research (randomized controlled trial)
- R Published research (not randomized controlled trial)
- C Case histories, case studies
- G Published guidelines
- RV Published review of the literature
- RU Published research utilization report
- QI Published quality improvement report
- L Legislation
- PGR Published government report
- PFR Published funded report
- PP Policies, procedures, protocols
- X Practice exemplars, stories, opinions
- GI General or background information/texts/reports
- U Unpublished research, reviews, poster presentations or other such materials
- CP Conference proceedings, abstracts, presentation
References


