



**SPECIAL INTEREST DIVISION 13**

# **Swallowing and Swallowing Disorders (Dysphagia)**

## **Frequently Asked Questions (FAQ) on Swallowing Screening: Special Emphasis on Patients With Acute Stroke**

*This FAQ was originally developed in 2006 by members of the Steering Committee of Special Interest Division 13 (Swallowing and Swallowing Disorders) of the American Speech-Language-Hearing Association: Nancy Swigert (chair), Luis Riquelme, and Catriona Steele. The present version was updated in September 2009. The FAQ expresses the opinions and views of the individual authors and does not represent any official position or policy of the American Speech-Language-Hearing Association or any Special Interest Division. Reference herein to any specific program, product, process, service, or manufacturer does not constitute or imply endorsement or recommendation by ASHA or any Division.*

### **Why this is an issue:**

Many acute care facilities and stroke centers have standards in which it is expected that screening for dysphagia will be performed and documented on all ischemic/hemorrhagic stroke patients (including those with transient ischemic attacks) before food, fluids, or medication are given by mouth (e.g. Joint Commission on the Accreditation of Health Care Organizations, 2004). Screening methods may include, but are not limited to, (a) water swallow tests, such as the Burke water swallow test (De Pippo, Holas, Reding, Mandel, & Lesser, 1994) or the 3 oz. water swallow test (Suiter & Leder, 2008); (b) swallowing screening protocols including brief assessments of oral motor and sensory function as well as water swallow tests, such as the Toronto Bedside Swallowing Screening Test (TOR-BSST; Martino et al., 2009) or the Simple Standardized Bedside Swallowing Assessment (SSA; Perry, 2001); or (c) clinical (bedside) swallow examinations. Given the range of procedures that can be used for swallowing screening, this FAQ document outlines answers to frequently asked questions by speech-language pathologists (SLPs) regarding swallowing screening.

## **DEFINITION–Basic Description of the Issue**

### **1. What is the definition of *swallowing screening*?**

The term *swallowing screening* is generally used to refer to a minimally invasive evaluation procedure that provides quick determination of

- the likelihood that dysphagia exists;
- whether the patient requires referral for further swallowing assessment;
- whether it is safe to feed the patient orally (for the purposes of nutrition, hydration, and administration of medication);
- whether the patient requires referral for nutritional or hydrational support.

However, the majority of screening procedures described in the literature are rather narrow and have focused only on identifying overt signs of aspiration, rather than being broader screening procedures that address the range of aspects listed above.

### **2. What questions can a screening procedure answer with respect to swallowing?**

Screening procedures are usually used to determine whether any of the following represent a risk of dysphagia and/or a reason to maintain an NPO (*nil per oris*, or nothing-by-mouth) status for the patient:

- a known history of dysphagia;
- a medical diagnosis that frequently involves swallowing impairment (e.g., stroke);
- reduced level of consciousness;
- overt signs of aspiration;
- overt signs or complaints of difficulty swallowing.

### **3. What kinds of screening procedures have been used for dysphagia in the past?**

The literature contains many examples of different swallowing screening procedures:

- questionnaires or interviews with the patient and/or caregiver to ask whether they are aware of any past or current swallowing difficulties (Mari et al., 1997);
- medical history review for etiological risk categories (Mari et al., 1997);
- evaluation of gag reflex or pharyngeal sensation (Kidd, Lawson, Nesbitt, & MacMahon, 1993);
- observation for overt signs of cough or other difficulty during planned trial swallows (e.g., water) or routine oral intake (Kidd et al., 1993);
- observation of the patient for combinations of specific clinical signs from oral motor and speech motor examinations as well as trial swallows with water (Daniels, Ballo, Mahoney, & Foundas, 2000; Logemann, Veis, & Colangelo, 1999);
- use of decision-making algorithms considering several factors (Runions, Rodrigue, & White, 2004);
- observation for occurrence of cough during or following water swallows (De Pippo, Holas, & Reding, 1994; Kidd et al., 1993);

- observation for changes in voice quality postswallow as a potential marker for aspiration (Ryu, Park, & Choi, 2004; Warms & Richards, 2000);
- pulse oximetry as a means of detecting decreases in arterial blood oxygenation as a possible marker for aspiration (Collins & Bakheit, 1997; Colodny, 2000; Edwards, 2002; Exley, 2000; Leder, 2000; Lim et al., 2001; Sellars, Dunnet, & Carter, 1998; Sherman, Nisenbom, Jesberger, Morrow, & Jesberger, 1999; Smith, Lee, O'Neill, & Connolly, 2000; Zaidi et al., 1995);
- cervical auscultation (Leslie, Drinnan, Finn, Ford, & Wilson, 2004; Zenner, Losinski, & Mills, 1995);
- the laryngeal cough reflex, which looks for a cough response to inhalation of tartaric acid as a marker of the integrity of laryngeal sensation (Addington, Stephens, & Gilliland, 1999).

## **INDICATORS/EVIDENCE FOR SCREENING**

### **4. What is the reported incidence of dysphagia in acute stroke?**

Dysphagia has been reported to occur in 42%–60% of acute stroke patients on the basis of standardized clinical bedside swallowing assessments performed within a median of 3 days from stroke diagnosis (Mann & Hankey, 2001). Videofluoroscopic swallowing assessments performed within a median of 10 days from stroke diagnosis have been reported to detect swallowing abnormalities in 55%–72% of acute stroke patients (Mann & Hankey, 2001). These estimates are considered conservative. In particular, the estimates based on videofluoroscopy are likely to underestimate the initial incidence of dysphagia poststroke, given that dysphagia is thought to resolve in the immediate poststroke interval in some cases (Mann & Hankey, 2001).

### **5. What is the reported incidence of aspiration in acute stroke?**

- The reported incidence of dysphagia in stroke varies from 37% to 78% depending on the type of test used to determine the presence of dysphagia. cursory screening techniques have the lowest detection rates for dysphagia following stroke (37%–45%; Martino, Foley, Bhogal, Diamant, Speechley, & Teasell, 2005).
- Aspiration has been reported to occur in 38%–70% of acute stroke patients (Daniels et al., 1998; Horner & Massey, 1988; Horner, Massey, Riski, Lathrop, & Chase, 1988; Linden & Siebens, 1983).
- Silent aspiration occurs in 40%–67% of patients with dysphagia who aspirate (Daniels et al., 1998; Splaingard, Hutchins, Sulton, & Chaudhuri, 1988).
- Silent laryngeal penetration and aspiration of liquids are reported to be more common in right hemisphere than in left hemisphere cortical strokes (Robbins, Levine, Maser, Rosenbek, & Kempster, 1993).
- There is an increased relative risk of pneumonia in stroke patients with dysphagia (3.17 vs. individuals without dysphagia). This relative risk is even greater (11.56) in stroke patients with documented aspiration (Martino et al., 2005).

## 6. How have screening procedures been evaluated in the literature?

Swallowing screening procedures have been studied for their accuracy in identifying aspiration or dysphagia. The overwhelming majority of studies in this regard have compared the outcomes of a screening evaluation to the results of a videofluoroscopic swallowing examination conducted at a later time. You may encounter the following terms when reading about swallowing screening procedures in the literature:

- *Construct validity*: the extent to which a test (in this case, a swallowing screening procedure) measures the intended theoretical construct or trait (in this case, the presence or absence of risks for dysphagia and/or aspiration).
- *Sensitivity*: the number of patients with a swallowing problem who are correctly identified by the screening procedure as having a swallowing problem.
- *Specificity*: the number of patients with no swallowing problem who are correctly identified by the screening procedure as not having a swallowing problem.
- *Positive predictive value*: the sensitivity of the screening procedure for detecting swallowing difficulty multiplied by the true prevalence of dysphagia in the population.
- *Negative prediction value*: the specificity of a screening procedure for accurately detecting an absence of swallowing difficulty multiplied by the true prevalence of a lack of dysphagia in the population.
- *False positive* (also known as *Type II error*): determination using a screening procedure that a patient has a swallowing problem when in fact that patient has no swallowing problem. A procedure with high sensitivity would have a low rate of false positives.
- *False negative* (also known as *Type I error*): determination using a screening procedure that a patient has no swallowing problem when in fact that patient does have a swallowing problem. A procedure with high specificity would have a low rate of false negatives.
- *Likelihood ratios*: A combination of the sensitivity and specificity of a swallowing screening test that tells you how much a positive or negative result changes the likelihood that a patient would have dysphagia. The likelihood ratio of a positive test result ( $LR^+$ ) is defined as sensitivity divided by 1 minus specificity.

$$LR^+ = \frac{\text{sensitivity}}{1 - \text{specificity}}$$

The likelihood ratio of a negative test result ( $LR^-$ ) is defined as 1 minus sensitivity divided by specificity.

$$LR^- = \frac{1 - \text{sensitivity}}{\text{specificity}}$$

## **7. What is the evidence for the different screening procedures in terms of sensitivity and specificity?**

There is general consensus that swallowing screening procedures have broad construct validity; that is, they measure the presence of clinical signs and symptoms that are considered relevant as indicators of the presence or absence of dysphagia. Two systematic reviews have been reported in the literature regarding the evidence supporting swallowing screening procedures (Martino, Pron, & Diamant, 2000; Perry & Love, 2001). Neither review concluded that any single approach to screening has both good sensitivity and specificity in identifying the likelihood that dysphagia or aspiration exists.

### **PROCEDURE ADMINISTRATION:**

## **8. What are the different models of swallowing screening that might be considered for use?**

*Model A.* The SLP trains nursing staff to conduct swallowing screenings. Nursing staff perform swallowing screenings and refer patients with identified swallowing problems to a speech-language pathologist for a comprehensive swallowing assessment. Given nursing staff turnover, training may need to be offered on a regular basis. In one study reported in the literature, the SLP maintained a presence in the emergency room for several months with the purpose of conducting swallowing screenings and, at the same time, demonstrating screening procedures to nursing staff who ultimately assumed the responsibility of conducting swallowing screenings for future patients (Steele, 2002). This model may allow for senior nursing staff to become sufficiently skilled to train future nursing staff in screening.

*Model B.* The physician performs swallowing screening in the course of his or her regular medical evaluation. He or she requests further swallowing assessment by the SLP when he observes signs of swallowing difficulty. Physician swallowing screening tends to be less structured than swallowing screening conducted by nursing staff.

*Model C.* Model A or B followed by an automatic referral within a specific timeframe (often 24–48 hours) for swallowing assessment by speech-language pathology for all patients admitted to the acute stroke unit or with a specific diagnosis. This model may include an ongoing in-service training module for nurses during annual education days or new-hire orientations, as well as frequent in-services/presentations to medical residents and/or attending physicians.

*Model D.* All patients are automatically referred to speech-language pathology for swallowing screening or assessment.

*Model E.* Nursing staff contact the SLP on an on-call basis to request screening for patients who have presented to the emergency room with conditions that are recognized to pose a possible risk of dysphagia.

## **9. What do screening tools look like?**

Many facilities have developed screening tools based on a review of the articles described in Question 3 above. Although these specific features are not necessarily all supported by high-level evidence, these tools or checklists generally include the following:

- a few questions about history/risk factors;
- observation of the patient's level of alertness;
- observation of signs of motor speech and/or voice abnormalities;
- observation of signs of dysphagia that can be determined without presenting any food to the patient (e.g., weak cough, inability to control saliva);
- for some tools, presenting small amounts of food or liquid (often water) to the patient.

Many of the tools are designed as decision trees or flowcharts. For example, as soon as one of the questions answered indicates increased risk, the screening procedure is terminated and a referral to speech-language pathology is initiated.

## **10. What should a facility consider when determining who will conduct the screening/documentation?**

Most facilities will want a medical professional who is available 24 hours a day, 7 days a week to complete the screening because patients with stroke may be admitted at any time of day or night throughout the week. A delay in screening the patient for safety of oral intake can delay the administration of oral medications. The emergency department physician or other admitting physician might be selected to complete the screening. Nursing staff are also available 24/7. SLPs should be involved in training these individuals to identify signs of swallowing difficulty. If the speech-language pathology staff are selected to perform the screening, procedures will have to be established to ensure timeliness. Policies and procedures for documenting the results of swallowing screening should be established by the facility.

## **11. What training is required to competently conduct screening?**

If the SLP is to conduct the initial swallowing screening, then expertise in the area of dysphagia and familiarity with current literature should suffice in order to conduct a competent swallowing screening at bedside. If the screening is to be conducted by other health care personnel (e.g., nurse, physician), then it should be understood that training requirements will vary by facility, based on the model/protocol approved for use in swallowing screening. A competency evaluation should be included in the training process. Ideally, if personnel available 24/7 (as discussed above) conduct a swallowing screening, the SLP's involvement might include serving as the primary trainer in swallowing screening or monitoring quality outcomes for the screening program.

If the SLP is to be the primary trainer, content of the training will be dependent on the model or protocol to be employed. Basic description of the anatomy and physiology of deglutition and signs and symptoms of dysphagia are usually included in any training program.

**12. What is the difference between training other professionals to conduct swallowing screening procedures and cross-training?**

In the the 2002 ASHA position statement, *Roles of Speech-Language Pathologists in Swallowing and Feeding Disorders* (see <http://www.asha.org/docs/html/PS2002-00109.html>), one of the roles of the SLP is described as “educating other professionals regarding the needs of individuals with dysphagia, and the speech-language pathologists’ role in the evaluation and management of swallowing and feeding disorders.” This type of education could include teaching another professional how to screen for potential dysphagia so that a referral can be made to the SLP. The screening is not a complete clinical swallowing evaluation. Training another professional to perform a clinical evaluation would be considered cross-training at the professional level.

**ROLE OF THE SLP:**

**13. What is the role of SLP in conducting or designing and supporting a screening program?**

The SLP should be involved from the beginning in the discussions at the facility regarding how dysphagia will be screened. The SLP has the most in-depth understanding of the signs and symptoms of dysphagia, risk factors, possible medical complications if dysphagia is not identified, and so on. The SLP has also read the most recent information in the literature and can share this knowledge so that the facility makes evidence-based decisions as it designs and conducts the screening program. There are numerous swallowing screening “tools” described in the nursing literature. Without the SLP’s involvement in the design of the program, one of these may be selected without thorough review of the literature.

**14. Who else should I work with when designing or implementing a swallowing screening process?**

Administration varies by facility. Most often, the SLP may initially contact nursing administration to discuss their role in this process. The process may also be initiated as a joint/interdisciplinary performance improvement project. Another possibility is for the SLP to contact the medical education office and identify who from the physician side of services might be appropriate for a discussion of this nature. In some instances it is a senior medical resident, or perhaps the chair of the neurology service. It is important for the SLP to initially contact key players on the nursing and on the physician side of the table. Initial calls and/or meetings may serve to further guide the process of development and/or implementation.

**15. How do I advocate for my involvement in the design and/or implementation of a swallowing screening process, if SLP involvement has not been requested?**

It is suggested that initial contacts be more “fact finding” in nature, rather than reactive meetings or calls. During these initial contacts, specific data may be shared (see answers to earlier

questions). These initial meetings may provide a clearer understanding of the structure the SLP may need to work with in order to effect change. This may include sharing information, committee involvement, and so on.

## **OUTCOMES/COMPLICATIONS:**

### **16. What should happen when a patient fails a screening?**

Patients who show signs of dysphagia upon a swallowing screening should be referred for comprehensive swallowing assessment. It is common for precautions (such as no oral intake or dietary precautions) to be put in place while the patient is waiting for further assessment.

### **17. What kind of data might you collect to help the facility continually assess the effectiveness of a swallowing screening program?**

The speech-language pathology department might analyze patient data to answer questions like:

- How many patients with CVA were admitted?
  - What types of CVA were seen?
- How many patients were kept NPO until screened for dysphagia?
- How long between time of admission and dysphagia screening?
- How many patients were referred to speech-language pathology for complete swallowing evaluation?
  - How long did it take the speech-language pathology department to see the patient once the referral was made?
- How many patients were referred for instrumental assessment following their initial screening or bedside evaluation?
  - Of those who received instrumental assessment, in how many cases did the instrumental assessment contradict or change the findings and/or recommendations from the initial screening and/or bedside assessment?
- How many patients experienced specific complications related to dysphagia (e.g., aspiration pneumonia)?
  - Of those, how many were kept NPO until screening?
  - How many were evaluated by the speech-language pathology department?



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