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Dysphagia Evaluation and Care in the Hospital Setting: The Need for Protocolization

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Abstract

Dysphagia accounts for a small portion of hospital admissions but is associated with severe complications. This has been shown to result in longer hospital length of stay and increased risk of mortality with certain other diagnoses. Although there has been much research on causes and interventions for dysphagia, there has been variable impact in actual hospital practice. Also, nonuniform approaches to evaluating patients, such as screening high-risk populations, makes it difficult to measure outcomes of care. This commentary advises a more systematic approach that includes standardized protocols, risk stratification, and screening high-risk patients; makes the case for broadening the classification of dysphagia; and suggests a growing role for adjunctive enteral nutrition in patients with some compromise to swallowing.

Keywords

dysphagia, interdisciplinary, clinical algorithm, protocol, screening, critical pathway, outcomes, health care value, business process management

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Dysphagia portends a poor prognosis in the hospital setting, and ultimately is associated with longer hospital stay, higher costs, and greater risk of mortality. In a recent study of the National Hospital Discharge Survey (NHDS) from 2005 to 2006, the presence of dysphagia was shown to be associated with 40% increased length of stay (4 days vs 2.4-day hospitalization without dysphagia).¹ Mortality was 13 times higher in patients with dysphagia in the rehabilitation setting compared to those with no dysphagia and 1.8 to 2.6 times higher during hospitalizations associated with cardiac dysrhythmias and atherosclerosis, respectively. Also, the rate of dysphagia was double (0.73% of all hospitalizations) in those older than age 75 compared to those 45 to 64 years old. In another study of the 2003 NHDS, 45% of patients with

stroke and dysphagia had hospital stay greater than 7 days, compared to 15% of patients with stroke and no dysphagia.² Furthermore, only 21% of stroke patients with dysphagia were discharged to home compared to 60% of those with no dysphagia.

Although the importance of dysphagia in these studies is profound, it is likely that the prevalence of dysphagia has been grossly underestimated. The presence of dysphagia as 1 of 7 discharge diagnoses in 2005–2006 was 0.35% of nearly 77.5 million hospitalizations during those 2 years.¹ However, Cichero et al³ recognized a much larger prevalence when instituting formal nurse screening for dysphagia. In their study, 442 patients were assessed at the time of admission, and 109 were recognized to be at risk. Upon further speech and language pathology evaluation, 27% required modified diet or *non per os* (NPO) status. This results in an overall dysphagia rate of 6.7%, in stark contrast to the rate of 0.35%.

Similarly, stroke patients were found to have dysphagia in 2.4% of cases as recognized by the 2003 NHDS.² But it is known that 42% to 67% of stroke patients have dysphagia within the first 3 days of stroke onset.⁴ Although many patients experience improvement before hospital discharge, 35% of deaths that occur after acute stroke are caused by pneumonia, accounting for a 3-fold increased risk compared to stroke patients without pneumonia.⁵ These studies suggest limitations of the NHDS database but, more important, reflect an underappreciation of dysphagia by the reporting hospitals. Proper identification of patients with dysphagia requires a systematic approach to recognize and treat this disorder.

Hospitals and health insurers should take interest in this problem with the significant costs associated with dysphagia. Based on dysphagia present in 0.35% of hospitalized patients, 1.64-day average increased length of stay, and a conservative estimated \$2454 daily fixed and variable costs, the economic impact of dysphagia in the hospital setting was calculated to

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be \$547 million annually.¹ This is a low estimate not only because of the lower than expected prevalence but also because variable costs associated with dysphagia would likely be far greater based on needs for enteral nutrition and consequences of aspiration. If dysphagia was present in 6.7% of patients suggested by Cichero et al,³ then costs would exceed \$10 billion annually. Shortening length of stay and decreasing mortality translates to improved quality of life and hospital efficiency. Furthermore, although identification of dysphagia as a secondary comorbidity has little impact on hospital reimbursement, malnutrition (a result of chronic dysphagia) does result in a higher level of complication as determined through diagnostic-related groups.

The literature examining pathophysiology and interventions for specific causes of dysphagia is growing. However, there still remains little consensus and low consistency in the evaluation of hospitalized patients with dysphagia. With these factors in mind, the following approaches would begin to systematically address these needs.

Protocols would improve standardization for the identification, assessment, and treatment of hospital patients with dysphagia. As we improve the evidence base for different interventions and clinical consensus emerges, the development of protocols will improve compliance and define roles and timing. Measuring outcomes and costs effectively would transform the protocols to clinical pathways, which can then be used to define the rate-limiting steps in a process.⁶ Some protocols already exist for evaluating dysphagia, but they are limited to outpatient assessment and conclude specific diagnoses.^{7,8} Protocols should not substitute for specialty medical care but rather offer guidance that standardizes their approach and creates opportunity for measuring results. Although protocols and pathways are likely used in some hospital practices, there is not a good forum in the literature for sharing prior to their analysis.

Risk stratification would help identify groups and direct resources to those patients at high risk for dysphagia and its consequences. Risk stratification has been used in the development of a protocol for reflux disease that was related to warning signs and prevalence of complications.⁹ In dysphagia, patients can be stratified based on (1) severity of underlying disease such as suspicion for tumor or stroke, (2) consequence such as malnutrition or dehydration, and (3) demographic association with aspiration (elderly, neurodegenerative disease, rehabilitation patients, spine surgery). In the prior 2005-2006 NHDS study, the most common dysphagia-related comorbid conditions were (1) fluid and electrolyte disorder (ie, dehydration), (2) disease of the esophagus (ie, reflux or tumor), (3) ischemic stroke, and (4) aspiration pneumonia, accounting for about half of all dysphagia hospitalizations.¹

Screening high-risk groups should be routinely employed for early identification of dysphagia. This is especially important in stroke patients. Hinchey et al¹⁰ explored the usefulness of dysphagia screening in stroke patients with the goal of reducing aspiration pneumonia. They surveyed 15 institutions over a 1-year period with a total of 2532 stroke patients. Overall adherence to a dysphagia screen was only 61%. In the 6 sites

with a formal dysphagia screen, adherence rate was 78%, compared to 57% at sites with no formal screen. Also, the pneumonia rate in stroke patients at sites with a formal screen was 2.4% compared to 5.4% at sites with no formal screen. One may infer that nonstroke patients at higher risk for dysphagia would similarly benefit from screening. Although a number of screening tools are available, it should generally have 3 components: (1) observations of cognition and gross motor ability, (2) a survey reporting patient or family awareness of dysphagia, and (3) observed trial of POs.¹¹⁻¹³

The classification of dysphagia needs to include cortical and laryngeal function, in addition to the traditional oral, pharyngeal, and esophageal phases. Swallowing requires a complex set of reflexes in the brain and brainstem that are integral to muscular coordination of bolus propulsion from the oral to the pharyngeal phases. Intact cortical function is also necessary for awareness of food in the mouth, driving oral behaviors of chewing and bolus manipulation, as well as sensation of the pharynx, larynx, and esophagus. Respiratory cessation is also required during the swallow, along with reflexive and voluntary cough following microaspiration. Aspects of cognition and gross motor control in stroke dysphagia¹¹⁻¹³ are applicable to other conditions such as neuromuscular degenerative diseases, head injuries, and dementia in the elderly.

The role of the larynx in deglutition has also been under-recognized. These include sensation of laryngeal penetration through the superior laryngeal nerve, true vocal fold closure as an additive layer of aspiration protection, and compensatory cough in the event of microaspiration. Laryngeal defects may result in gross aspiration or nonexpulsive cough (with vocal paralysis). The cricopharyngeus should also be included as a shared muscle between the pharynx and the larynx. In addition, cessation of posterior cricoarytenoid muscle activity during the swallow permits closure of the laryngeal inlet. Therefore, analysis of patients should include an otolaryngologist who is also able to perform procedures for glottal incompetence and cricopharyngeal dysfunction.

Intermediate-term adjunctive enteral nutrition may be considered to help patients maintain nutrition and hydration early, while cautiously advancing their oral intake. In many debilitated patients, malnutrition delays recovery of motor strength and a safe coordinated swallow. Once dysphagia and aspiration risk are identified, nutritional status should be determined and enteral feeding instituted if needed to reestablish proper nitrogen balance. Although controversial and based on personal observation, this may expedite transition of patients to subacute care or earlier hospital discharge, even when clinical evaluation shows some uncompensated microaspiration.

A suggested protocol is presented in **Figure 1** and may be used as a starting point for systematic evaluation and care of the hospitalized patient with dysphagia. Upon admission, proper nursing and physician intake should stratify patients at high risk for dysphagia and its consequences, and a screening procedure should be instituted. This may be as simple as a brief nursing assessment or a formal stroke dysphagia assessment.

When patients with dysphagia and aspiration risk are identified, their best result comes from an interdisciplinary partnership,

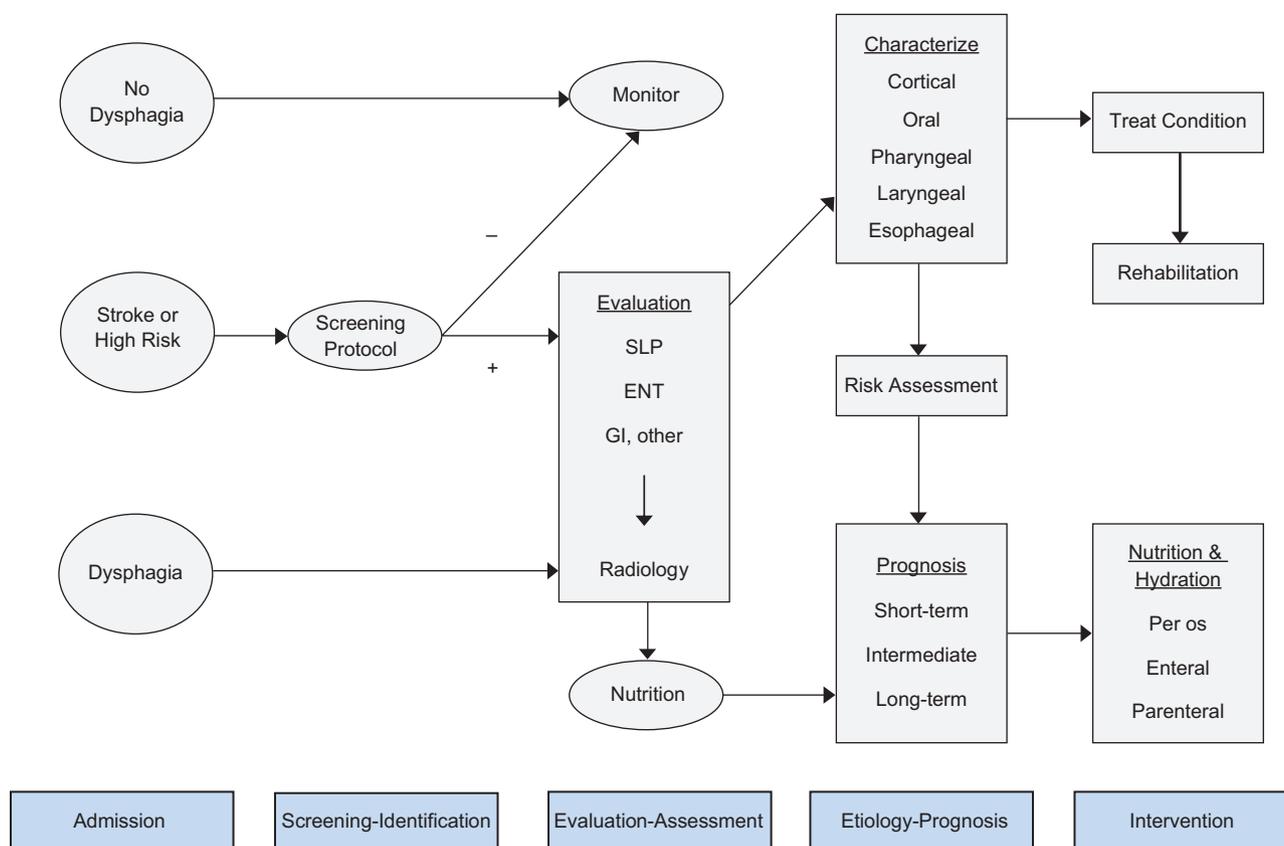


Figure 1. Clinical protocol/algorithm for screening, evaluating, and treating dysphagia in the acute-care hospital setting. The use of bedside swallow evaluation, functional endoscopic evaluation of swallowing, fluoroscopic modified barium swallow, or formal barium esophagogram depends on the individual clinical situation and availability of resources. ENT, otolaryngology; GI, gastroenterology; SLP, speech and language pathology.

including (1) the speech and swallowing pathologist to perform bedside/radiographic evaluation and treatment of oral/pharyngeal impairment, (2) the otolaryngologist to visualize laryngeal anatomy and function, and perform a variety of procedures, (3) the gastroenterologist and general/thoracic surgeon to further evaluate the gastrointestinal tract and access interim and longer term feeding ports, and (4) the nutritionist, neurologist, gastrointestinal radiologist, social worker, and others.

Characterization of dysphagia in terms of cortical, oral, pharyngeal, laryngeal, and esophageal contributions helps identify conditions needing treatment and rehabilitation. This also helps determine aspiration risk. Patients with dysphagia should have proper assessment of nutritional deficit, which influences the short-term, intermediate, and long-term prospects for improvement.

Although this protocol seems obvious to those who care for hospital patients with dysphagia, it is more likely that patients will get appropriate screening with a protocol in place, and sub-protocols could also be formalized. The idea of protocolizing the process further allows for a more accurate measurement of numbers of patients with dysphagia, the benefits and costs of different interventions, and the time that it takes for a patient to progress through the hospitalization. This protocol is a starting point that should evolve with time, new evidence, and as a result of

outcomes measures, thereby creating a true clinical pathway. With these issues in mind, including broadening the categorization of cortical and laryngeal function, a greater vision of dysphagia in the hospitalized patient emerges that may improve outcomes, quality of life, and value in health care delivery.

Conclusion

Dysphagia not only results in impaired quality of life, nutritional deficiency, and poor hydration, it is also an *indicator* of aspiration risk with all its consequences and further suggests delay in the potential for patient discharge. It is also more prevalent than presently recognized, especially in stroke and patients older than 75. In this age of limited hospital resources, it is particularly important to make the needed investment to coordinate a comprehensive approach to patients with dysphagia in the hospital setting.

Author Contributions

Kenneth W. Altman, concept, wrote manuscript.

Disclosures

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