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Editorial

Dysphagia and Aspiration



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Dysphagia is extremely common in community-dwelling aging persons, with a prevalence of approximately 9% in persons 65 to 74 years of age, 19% in those 75 to 80 years, and 19% to 33% of persons older than 80 years.¹ This is due in part to the variety of aging-related changes in swallowing that occur with normal aging (Figure 1).² Clinically obvious dysphagia occurs in at least 40% to 60% of residents in nursing homes.³

Frailty is very common in older persons^{4–12} and a number of studies have demonstrated that frailty is associated with dysphagia.^{13,14} Frail patients have delayed laryngeal vestibule closure and impaired tongue propulsion.¹⁵ A major component of the frailty syndrome is sarcopenia.^{16–21} Sarcopenia is an independent risk factor for dysphagia.^{22–28} With sarcopenia dysphagia there is a decreased tongue pressure.²⁹ As is the case for peripheral sarcopenia, age-associated dysphagia is related to a decline in hypoglossal motor neuron units.^{30,31} Persons with stroke also develop sarcopenia, which plays a role in their dysphagia.³²

Multimorbidity is a major component of a large proportion of the aging population.^{33–36} Multimorbidity puts older persons at increased risk of being hospitalized, which leads to iatrogenic disability.³⁷ Multimorbidity is associated with polypharmacy.^{38–42} Polypharmacy has been identified as one of the major areas in which more research is required to improve quality of care for nursing home residents.⁴³ In a general practice setting, 37.4% of patients struggled to swallow tablets or capsules.^{44,45} This led to no compliance in nearly 1 in 10 and drug modification and could alter the benefit or safety of their drugs in 58.8%. In long-term care, the need to alter drug consistency tripled medication errors.¹ The literature has a number of reports of medications causing esophageal injury leading to dysphagia and odynophagia.^{46,47} Antipsychotics have been recognized as potentially dangerous drugs and a major attempt is being made to reduce their use in nursing homes.^{48–55} Neuroleptics as a cause of dysphagia are well recognized.^{56–58} Their major effect is to reduce the tone of the pharyngeal muscles by interfering with dopaminergic input.¹ Anticholinergic drugs, narcotics, and diuretics all lead to xerostomia. Nonsteroidal anti-inflammatory drugs, potassium salts, and bisphosphonates can cause direct esophageal injuries.^{59,60} Drugs that relax the lower esophageal sphincter, such as nitrates and calcium channel antagonists, can lead to acid reflux and esophageal injury.⁶¹

Dysphagia is very common in persons with impaired cognitive function, whether it is due to delirium,^{62–64} Alzheimer disease,^{65,66} dementia with Lewy bodies due to lack of dopamine,⁶⁷ vascular dementia,^{68–70} or cognitive frailty.^{71–73} Other causes of dysphagia include stroke, Parkinson disease, multiple sclerosis, amyotrophic lateral sclerosis, muscular disease, Zenker diverticulum, and diabetes mellitus.^{17,74–77}

Persons who consistently cough when eating and fail a bedside swallow test are highly likely to have dysphagia.⁷⁸ Two formal trial swallow tests, the Standardized Swallowing Assessment and the Gugging Swallow Screen, have excellent sensitivity and acceptable specificity and can be performed by nurses.⁷⁹ A large number of other tests, including questionnaires and oximetry during meals, are also available. The gold standard for diagnosis is videofluoroscopic swallowing study and fiberoptic endoscopic evaluation of swallowing.

Malnutrition and weight loss are major problems in nursing homes.^{80–86} Persons with dysphagia often limit the amount they eat, leading to weight loss.⁸⁷ However, there is a shortage of high-quality studies to determine the impact of dysphagia on malnutrition in nursing homes.⁸⁸

Pneumonia requiring hospitalization occurs in 3.3% of nursing home residents each year.⁸⁹ Dysphagia is a major risk factor for pneumonia in frail older persons.^{13,90,91} Aspiration pneumonia may account for as much as 31.5% of nursing home–acquired pneumonia.⁹² It can be clinically identified by lack of purulent sputum and absence of crepitations when the chest is auscultated. High-quality oral health care is an important component in lowering the risk of aspiration pneumonia and pneumonitis.⁹³

A number of complex management approaches are available to treat dysphagia (Table 1).⁹⁴ Many of these require a high degree of self-management skills, which are not always feasible in cognitively impaired nursing home residents. This results in most residents being prescribed thickened liquids. However, even with these, appropriate positioning of the head and chin remain important. Most of these diets are strongly disliked by the residents. Nutritional intake tends to be lower in persons receiving a modified diet.^{95,96} This can be improved with feeding assistance that focuses on a slow rate of feeding with no external distractions and availability of appropriate adaptive equipment.^{95,97} Thickened liquids also result in dehydration.^{97–99} There is a paucity of long-term literature suggesting that any of these techniques decrease aspiration. This viewpoint has been vigorously argued previously in the pages of your *Journal*.^{78,100,101} In contradistinction, there are reasonable data supporting positive results in persons who are capable of undertaking rehabilitation.^{102–107} Neuromuscular electrical stimulation for short-term treatment of

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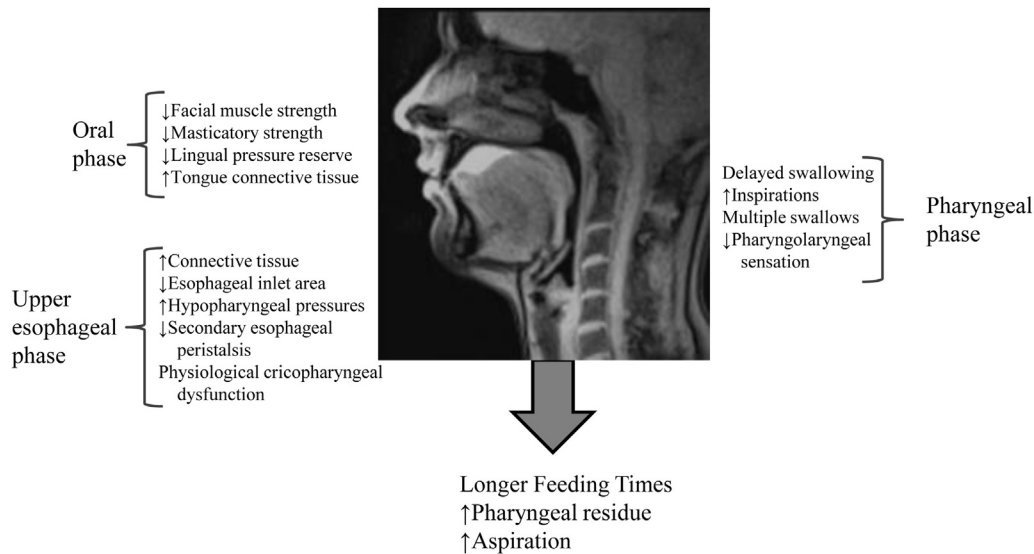


Fig. 1. Physiological changes in swallowing that may occur with aging. Up arrow, increased; down arrow, decreased.

dysphagia appears to be superior to swallow therapy.¹⁰⁸ This can be performed by patients alone at home and thus could be used by nurses in the nursing home.¹⁰⁹ Overall, it would seem that nursing home residents should be given a choice on whether or not they are given modified diets, with the risks and benefits being carefully explained to them. The utility of these diets in hospice patients is highly questionable.^{110–113}

Two classes of drugs, angiotensin-converting enzyme (ACE) inhibitors and dopamine agonists, have been shown to improve swallowing in older persons and reduce aspiration pneumonia.¹¹⁴ ACE inhibitors increase cough reflex by inhibiting the breakdown of substance P. In persons with stroke and hypertension, there is evidence that pneumonia occurs less commonly when they are treated with ACE inhibitors.^{115–117} However, in this issue of the *Journal*, Kwok et al¹¹⁸ report that in a group of older persons with dysphagia where over 80% were living in nursing homes, there was an increased mortality in those receiving ACE inhibitors. It is possible that higher doses may have had better effects on swallowing and the prevention of aspiration pneumonia. However, at present, before more

randomized controls are carried out, ACE inhibitors cannot be recommended for dysphagia in frail older persons.

The dopamine agonist, amantadine, has been used for dysphagia in persons with stroke.¹¹⁴ Amantadine decreased the rate of pneumonia by 20%.¹¹⁹ Rotigotine transdermal patches improved swallowing in patients with Parkinson disease.¹²⁰

The use of feeding tubes is even a less useful alternative in residents with dementia and most persons receiving end-of-life care.^{121–125} In persons with dementia, there is no advantage of a feeding tube and it does not appear to reduce aspiration.

The International Association of Gerontology and Geriatrics has called for an increase in research in nursing homes to improve the quality of life of persons in nursing homes.^{126,127} There is no question that carefully designed studies on the treatment of dysphagia in nursing home residents represents an important area of study. In the meantime, residents and their families should be given the choice of whether or not they want to have specialized diets.

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Table 1
Management Strategies for Older Persons With Dysphagia

- Head and body postural maneuvers
eg, chin tuck, turn head, sit upright
- Swallowing maneuvers
eg, supraglottic swallow, “hard” swallow
- Dietary modifications
 - Solid food modification
 - Soft solids
 - Semisolids
 - Pureed, homogeneous, pudding-like
 - Nectar- or honey-thickened fluids
- Rehabilitation approaches
 - McNeil dysphagia therapy program
 - Expiratory muscle strength training
 - Shaker/head-lift
 - Lingual resistance
- Neuromuscular electrical stimulation
- Tube feeding (nasogastric or percutaneous endoscopic gastrostomy) – greatly overused
- Drugs
 - ACE inhibitors
 - Dopamine agonists

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