

Strategies for Improving Care for Patients with Advanced Dementia and Eating Problems: Optimizing Care Through Physician and Speech Pathologist Collaboration

Caroline A. Vitale, MD, Carol Monteleoni, MS, CCC-SLP, Loni Burke, MS, CCC-SLP, Della Frazier-Rios, RN, MS, and Ladislav Volicer, MD, PhD, FAAN, FGSA

Problems with eating, swallowing, and poor caloric intake are common in patients with advanced dementia and often develop during an acute medical event when the immediate prognosis is unclear.¹ For healthcare professionals, managing a patient with advanced dementia and swallowing problems and guiding caregivers through a process of decision making present enormous clinical challenges and require an interdisciplinary approach in order to provide optimal care. We present a pragmatic approach to managing eating and swallowing problems in persons with advanced dementia, emphasizing the importance of accurate clinical assessment, and effective communication and collaboration between physician(s), speech pathologist, other interdisciplinary team members, and family caregivers.

Dementia Progression and Eating Problems

As cortical function deteriorates with the progression of dementia, the patient's ability to obtain adequate nutrition decreases. Some manifestations of this decline include impairment in independent use of utensils due to apraxia, food refusal, failure to recognize food or to understand the feeder's approach due to agnosia, motoric impairment in chewing and swallowing, and weight loss. A survey of 71 residents of a Dementia Special Care Unit found that only 24% of residents were able to eat independently, 18% were hand-fed without any problem, but 58% had significant eating difficulties. These difficulties included isolated feeding

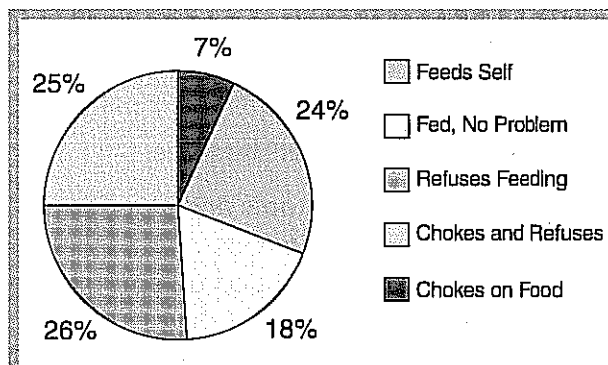


Figure. Prevalence of eating difficulties in residents of a dementia special care unit (N = 71).

Modified from Volicer L, Seltzer B, Rheume Y, et al. Eating difficulties in patients with probable dementia of the Alzheimer type. *J Geriatr Psychiatry Neurol* 1989;2:188-195.

refusal in 26%, isolated choking on food in 7%, and combination of feeding refusal and choking in 25% (Figure).²

Despite apraxia, many individuals can still feed themselves in the moderate stages of dementia by eating finger foods. With progression of dementia, patients ultimately become unable to eat or drink without assistance. In advanced dementia, patients may be unable or unwilling to open their mouths³ and may lose weight.

Clinical Evaluation

It is useful to consider problems with eating or swallowing as a clinical syndrome that triggers a medical assessment and work-up. Many contributing factors are potentially reversible, and thus warrant a careful search for causes that can be treated or managed.

Medical History

Concerns often arise from those involved with caring for and observing the patient at the bedside, including nursing

Dr. Vitale is Clinical Assistant Professor, Department of Internal Medicine, Division of Geriatric Medicine, University of Michigan, Ann Arbor; Ms. Monteleoni is in private practice in Olivebridge, NY; Ms. Burke is Senior Coordinator of Speech-Language Pathology, Lenox Hill Hospital, New York, NY; Ms. Frazier-Rios is Senior Vice President and Director of Education and Outreach, Alzheimer's Association, NYC Chapter, New York, NY; and Dr. Volicer is Courtesy Full Professor, School of Aging Studies, University of South Florida, Tampa.

Table I: Potential Contributors to Eating Difficulties in Patients with Dementia

Condition	Etiological Factors Impacting Eating
Delirium, hypoactive or hyperactive	Infection, uncontrolled pain, medication adverse effects, hypoxia, metabolic disturbances, stress of hospitalization
Poor oral hygiene and dentition	Oral pain, neglect
Xerostomia	Anticholinergics, mouth-breathing, dehydration, oxygen delivered via face mask, Sjögren's syndrome
Esophageal motility disorders	Neurological and/or gastrointestinal pathology
Neuromotor dysfunction	Stroke, progressive neurological disease, trauma, seizure disorder
Cervical osteophytes and cervical spine surgery	Aging, arthritis, musculoskeletal disease
Zenker's diverticulum	Upper esophageal sphincter dysfunction
Chronic obstructive pulmonary disease/ congestive heart failure	Dyspnea secondary to pulmonary disease or cardiac disease
Head and neck cancer	Oral pain, anatomic or surgical changes to oral and pharyngeal areas
Loss of appetite	Depression, lack of motivation for or attention to eating, infection, uncontrolled pain, nausea, delirium, delayed time for appetite recovery

staff, nursing assistants, or family members. History should be obtained from all current and previous caregivers familiar with the patient's feeding behavior. A clear understanding of the patient's baseline medical problems, functional status, mental status and stage of dementia, and baseline eating status should emerge, and is essential in assessing current eating problems. Vital information includes the timeframe of the eating problem, its nature (eg, coughing, choking, pocketing of food in mouth, resisting food), any attempts made to improve eating, and all coexisting acute medical issues. Descriptions of the patient's baseline food consistencies, food preferences including ethnic foods, degree of independence in eating, and size and frequency of meals during the day are also essential.

A complete review of the patient's medications is also indicated. Symptoms such as nausea or early satiety may manifest as poor oral intake in a patient with dementia, and medications are often a culprit. Older adults are particularly sensitive to many anticholinergic effects such as dry mouth or confusion, which may manifest as problems with eating. Removing an offending medication may offer a simple solution to the eating problem.

Target weight for those with advanced dementia should take into consideration functional impairment. Nonambulatory patients with leg muscle atrophy from disuse have lower body weight than the weight listed in tables that consider only height and frame. Their lower weight is therefore not necessarily an indication of malnutrition.⁴

It is essential to determine whether the patient has provided advance directives regarding artificial feeding or has an assigned healthcare proxy. An early understanding of the nature of any previously stated wishes can help frame discussions with family and healthcare providers and guide potential treatment decisions.

External factors potentially affecting a patient's feeding status must not be overlooked. Healthcare providers may be overly concerned about aspiration risk or feel institutional pressure to discharge the patient. Regulatory policies focusing on documented weight loss can influence providers to seek inappropriate amounts of food intake. Medicare and Medicaid reimbursement policies have been shown to provide a financial incentive for long-term care (LTC) facilities to admit patients with feeding tubes.⁵

Medical Examination

Careful observation of the patient at bedside is required to evaluate level of consciousness, position in bed, level of comfort, presence of muscle atrophy and contractions, presence of an oxygen mask or nasal cannula, and presence of mouth breathing. Attention to the state of dentition and oral hygiene is paramount, as pain from dental caries, poor oral hygiene, and xerostomia can contribute to problems with eating⁶ (Table I).

Assessing the patient's level of consciousness is critical for detecting delirium, a common and potentially reversible

The speech pathologist can help to identify causes for eating difficulties not directly related to the neurologic deterioration of advancing dementia.

cause of eating problems. When delirium is present, a work-up aimed at diagnosing and treating modifiable factors is indicated (Table I).

In addition, by performing a thorough physical exam, one can usually better confirm the patient's stage of dementia. Findings on physical exam should be consistent with the information obtained in the history with regard to functional status, although the evaluation can be limited by the presence of delirium.

Evaluation by a Speech Pathologist

If questions remain about diagnosis or management of eating problems after the history, physical, and initial work-up have begun, it is often helpful to obtain the input of a speech pathologist. Speech pathologists serve as swallowing consultants for acute care and LTC patients who evidence problems with eating. Most elderly patients with moderate or advanced dementia have multiple comorbidities, some of which may contribute to swallowing and eating problems. The speech pathologist can help to identify causes for eating difficulties not directly related to the neurologic deterioration of advancing dementia (Table I). In many cases, appropriate medical management, feeding management, and/or swallowing therapy can facilitate a patient's return to baseline eating function, assuming the patient has not reached the final stage of dementia. The speech pathologist can advise on appropriate medical referrals and feeding strategies to address reversible causes for eating dysfunction.

To evaluate a patient with swallowing difficulty, the speech pathologist first obtains a detailed medical history via chart review, then interviews the patient, caregiver, and involved family members, friends, and physicians. This history augments that obtained by the physician, as new information often arises when questions are asked again or presented in a different manner. A bedside clinical evaluation is then performed to assess cognitive status, postural and positioning characteristics, oral motor function, oral sensation, vocal function, and response to food trials.

If the patient is able to participate in and benefit from instrumental evaluation, the speech pathologist may perform one or more of a variety of studies including fiber-endoscopic evaluation of swallowing (FEES), fiber-endoscopic evaluation of swallowing with sensory testing (FEEST), videofluorographic swallowing study (VFSS; also called modified barium swallow [MBS]), manometry, or sonography. Based on the results of clinical and instrumental evaluations, the speech pathologist recommends and institutes a course of treatment. It is important to note that instrumental tests are performed only when they will affect the course of treatment and will not present an unnecessary risk or burden to the patient. Due to severe cognitive impairment, patients with advanced dementia are unable to follow directions necessary to participate in instrumental testing or therapeutic swallowing treatment. Therefore, instrumental testing is inappropriate for these patients.

In practice, some physicians base an order for placement of a feeding tube on a speech pathologist's finding of swallowing dysfunction.^{7,8} The consideration of alternative feeding methods is a complex medical issue, and is the responsibility of the physician, not the speech pathologist. As will be discussed later in this article, enteral feeding is not medically appropriate for patients with advanced dementia.

Treatment Strategies

Treatment of eating difficulties in patients with dementia is aimed at optimizing oral intake as safely as possible in order to preserve the pleasures of tasting and eating, while attempting to counteract malnutrition, dehydration, and aspiration pneumonia for as long as possible. Malnutrition and dehydration, resulting from decreased appetite and impairment of chewing and swallowing abilities, and aspiration pneumonia occur commonly as dementia progresses and are often unavoidable in the terminal stages. There are several strategies that can be used to enhance continued adequate nutrition and hydration (Table II).

Psychosocial Strategies to Enhance Continued Eating

In the LTC setting, continuous activity programming has been shown to improve nutritional status of residents with dementia.⁹ Food-related activities are included in daily programming. Conversation about food, either as a discussion of recipes or as a food-related trivia game, is conducted before meals. Social gatherings and celebrations of birthdays and holidays accentuate eating and drinking. Food consumption also may be promoted by a "march to dine" before lunch and dinner to awaken the residents and provide physical stimulation that increases appetite.

Table II: Common Eating Problems in Dementia and Their Management Strategies

Problem	Strategy
Patient resists eating or being fed alone in bedroom	Create a natural eating environment with patient seated at a table with other people, including a feeding assistant, if necessary.
Patient coughs or chokes when being fed in a semi-recumbent posture	Seat patient upright in a stable chair, bolstering with pillows or foam wedges, as needed. Trunk and head should be flexed slightly forward.
Patient has difficulty chewing or swallowing a particular food consistency	Feed patient only consistencies he or she can tolerate.
Patient bats away spoon presented by feeder	Encourage self-feeding by using modified utensils, if necessary, or finger foods.
Patient holds food in mouth or spits it out	Experiment with food textures and flavors that appeal to patient. Patients with dementia often prefer sweet foods, culturally familiar foods, or foods with heightened sensory input (eg, salty, spicy, cold, carbonated).
Patient fails to contain food orally, form a bolus, or move food within oral cavity	Try bypassing the voluntary oral stage of swallowing by presenting liquids for straw drinking, "sippy cup," or suckling from a baby bottle.
Patient loses attention to eating after a few bites	Present small frequent meals rather than large infrequent ones. Reduce competing sensory stimulation to focus patient's attention on eating.
Patient chews perseveratively without swallowing	Try straw drinking or suckling of liquids.

To improve quantity and safety of oral feeding, a speech pathologist may recommend environmental changes and skilled feeding techniques. Negative environmental influences at mealtime include visual overstimulation in a crowded room, poor lighting, lack of visual contrast when objects are close together or on top of each other, and auditory confusion secondary to background noise.¹⁰ Addressing these common environmental problems often results in improved food intake.

Patients who can no longer feed themselves require skilled hand-feeding to ensure safety and optimal food intake. Eating is one of the few arenas in which a patient is able to maintain social contact and function as dementia progresses. The skill of the feeder has a direct impact on the quality of the patient's eating experience. It is always important to rule out poor feeding practices on the part of staff, which can result in decreased intake of food and liquids.¹¹ Specific strategies that a feeder can implement include facing the patient while feeding, making eye contact, using a gentle tone of voice, feeding small amounts at a slow, consistent rate, providing verbal encouragement to participate in eating by talking about the food taste and smell, and providing verbal prompts to chew and swallow. These strategies are often overlooked in healthcare facilities where demands on staff time are high. The speech pathologist has an important role in training both professional

and family caregivers to feed in a way that optimizes safety, quality of life, and nutritional intake.

Pharmacological Strategies to Enhance Continued Eating

There are several medications that may be used to improve intake of food and liquids in patients with advanced dementia. Food refusal may be a symptom of depression and may respond to antidepressant treatment.¹² Dronabinol, a medication approved for treatment of anorexia in AIDS, may be useful in dementia-induced anorexia.¹³ Megestrol acetate is frequently used to improve appetite¹⁴; however, studies have found that its use increased body weight only after the end of the therapy, and caused a significant increase in all-cause mortality without a significant increase in weight in elderly nursing home residents.¹⁵

Prevention/Reduction of Aspiration Pneumonia

There is no absolute way to prevent recurrent aspiration, which is consistent with the natural progression of dementia. In fact, it is not prandial aspiration but aspiration of pathogenic flora from oral secretions or from refluxed enteral material from tube feedings⁶ that is a common cause of pneumonia and death among patients with advanced dementia.¹⁶ Aspiration of nasopharyngeal secretions occurs during sleep in half of healthy adults, but the low burden of

Table III: Adverse Effects of Tube Feeding

Increased rate of pneumonia development and death rate in residents with evidence of aspiration on videofluoroscopy
Infections of sinuses and middle ears, cellulitis, abscesses, myositis, necrotizing fasciitis
Gastrointestinal symptoms and bacteriuria from contaminated feeding solution
Increased mortality due to arrhythmia during insertion of nasogastric tube and perioperative mortality during percutaneous endoscopic gastrostomy placement
Increased incidence of pressure ulcers from the use of restraints and increased production of stool and urine
Deprivation of taste of food and contact with caregivers during feeding
Increased discomfort of patients from both the tube presence and use of restraints
Family caregivers' decreased satisfaction with care

virulent bacteria in normal saliva, together with normal cough reflex, ciliary transport, and normal immune mechanisms, protect the airways from repeated infections.¹⁷ Silent aspiration is present in a large percentage of individuals who develop pneumonia in the community.¹⁸ With development of swallowing difficulties during progression of dementia, aspiration extends to food and liquids and may result in choking during food intake. The role of food aspiration in the development of pneumonia is, however, unclear.^{19,20} The major independent risk factors for developing pneumonia include feeding dependence, dental caries and poor oral care, and tube feeding.⁶

Management strategies, including those listed in Table II, are recommended by speech pathologists to enhance food intake and reduce the risk of food aspiration, with the aim of prolonging oral intake for comfort and enhancing quality of life. It is, however, common practice in many acute care and LTC settings for a speech pathologist to be consulted for a swallowing evaluation when a patient with severe dementia develops, or is considered at high risk for developing, aspiration pneumonia. Patients who have reached the terminal stage of dementia are frequently lethargic, and therefore not appropriate participants in either bedside or instrumental evaluation by a speech pathologist; they are candidates for palliation.

A review on pharmacological prevention of aspiration pneumonia was recently published.²¹ Research results, based mainly on investigation of individuals with history of stroke, show that several classes of drugs may be useful in preventing aspiration because they may increase cough reflex or improve swallowing reflex. Dopamine agonists

reduced latency to a bolus of distilled water injected into pharynx (levodopa), decreased rate of silent aspiration (cabergoline), and decreased risk of pneumonia by 20% (amantadine). Folic acid improved latency of the swallowing reflex, and capsaicin and theophylline administration improved both latency time of the swallowing reflex and cough reflex sensitivity. Cilostazol and angiotensin-converting enzyme (ACE) inhibitors decreased the risk of aspiration pneumonia.²¹

Use of these medications is limited by their possible adverse effects. Cabergoline increased incidence of cardiac valve regurgitation, amantadine may cause confusion, theophylline has a narrow therapeutic window that requires monitoring of blood levels, and cilostazol may cause bleeding. ACE inhibitors may cause hypotension, renal failure, and hyperkalemia. Capsaicin and folic acid did not have any adverse effects. Folic acid should be used in individuals with folate deficiency, and ACE inhibitor administration should be considered in individuals with hypertension.²¹

Enteral Feeding

The use of artificial nutrition in patients with advanced dementia has been deemed to lack benefit and to carry substantial treatment burdens²² (Table III). The imbalance of burdens and benefits of tube feeding justifies the recommendation that tube feeding should not be used in individuals with advanced dementia.²³ However, use of tube feeding in advanced dementia is still prevalent, although highly variable.²⁴ Reasons for this are complex, likely due to multiple system factors potentially affecting the provision of optimal comfort-based care near the end of life. Challenges include the frequent absence of a documented diagnosis of dementia, the patient's inability to communicate his or her wishes, a paucity of advance directives, and inexperienced and/or multiple surrogates speaking for the patient. These issues are compounded by poor communication between LTC and acute care facilities, lack of coordination among the medical team resulting in conflicting advice coming to beleaguered family members or surrogates, and physicians' resistance to palliative care. All of this occurs in an atmosphere of pressure to reduce length of hospital stay and find an appropriate discharge site, with fiscal and regulatory practices often giving a financial incentive to the use of feeding tubes.^{5,25} Some family members and physicians also view nutrition, including artificial nutrition, as a means of providing basic, humane care.²⁶

Strategies for Prevention of Enteral Feeding

High variability in the use of feeding tubes for patients with advanced dementia suggests that this undesirable practice may be susceptible to change by applying appropriate strategies. These strategies may differ depending on the setting of care.

Acute care. Quality improvement initiatives and institutional policies have been shown to induce changes in clinical practice within acute care settings.²⁷ A nine-month rapid-cycle quality improvement project at a New York City hospital significantly reduced placement of feeding tubes in patients with advanced dementia. This multidisciplinary project utilized intensive education for clinical staff, and a protocol for providing a palliative care consultation whenever feeding tube placement was under consideration.²⁸ A study of two hospitals in the United Kingdom, one with specific evidence-based guidelines for tube placement and the other without such guidelines, revealed reduced tube placements and better cumulative survival rates for patients with dementia in the hospital employing guidelines.²⁹ A policy limiting repeat evaluations by speech pathologists can hasten focus on consensus-based decision-making and treatment plans consistent with the patient's goals of care.³⁰

Long-term care. The advantage of LTC is that there is time for the clinical staff to develop a relationship with the patient and family. If family members feel that the resident is receiving good care from a loving staff, they trust that the staff has the best interests of the resident in mind and are usually open to limitation of aggressive medical interventions that are medically inappropriate. These limitations should be discussed shortly after admission to a LTC facility and should include not only cardiopulmonary resuscitation, but also transfer to an acute care setting, use of antibiotics for treatment of generalized infections, and use of tube feeding.

Hospitalization itself presents a significant health risk to the frail elderly patient.³¹ Institutional policy changes can reduce hospitalization of nursing home residents,³² increase timely formulation of goals of care, increase early formulation of advance directives, and facilitate compliance with advance directives.³³ Universal discharge/transfer forms, transportable interdisciplinary treatment plans, and transportable medical order sets for life-sustaining treatments have been adopted in some communities to ensure continuity of care across treatment settings.^{27,33,34}

Caregiver considerations. In both settings, defining goals of care is the most important factor. In defining overall goals of care and implementing an optimal treatment plan, the family member's role in caregiving and treatment decisions must be considered. The needs of the patient can best be served by creating a partnership, which includes the healthcare professional (or healthcare team), the family caregiver, and, to the extent possible, the patient with dementia. To this partnership the healthcare professional brings knowledge of the disease and its progression, and

It should be explained that comfort will be maintained by intensive nursing care, and that with palliation the patient does not feel hunger or thirst during the dying stage, but may feel less pain because of natural analgesia provided by terminal dehydration.

methods to provide comfort; the family caregiver brings knowledge of the person with dementia, his or her history, values, preferences, and other personal information, all of which are important factors that need to be a part of the dialogue between the family caregiver and the healthcare provider.

Given the powerful influence of the medical professional in providing guidance to caregivers, it is important that explanations are framed in ways that do not imply that the person with dementia is being deprived of needed care. Prognosis related to any acute event needs to be placed in the context of a realistic assessment of the patient's overall prognosis and stage of dementia. For someone who can no longer eat, focusing on comfort in dying is most appropriate.³⁵ It should be explained that comfort will be maintained by intensive nursing care, and that with palliation the patient does not feel hunger or thirst during the dying stage,³⁶ but may feel less pain because of natural analgesia provided by terminal dehydration.

When discussing goals of care with caregivers, it is important to take time to sit down, listen to and acknowledge caregivers' concerns and values, and emphasize what can actively be done for the patient to ensure comfort. The benefits and burdens of tube feeding should be discussed early, if possible, before the patient develops any nutritional problems. However, it is important to assure the family that the patient will be fed by natural means until the dying stage. Teaching the family member how to provide comfort measures for the person with dementia is beneficial, and allows the professional and the caregiver to remain actively engaged in caring for the patient. Strategies could include offering mouth care with moist

Table IV: Strategies for Improvement of Care for Individuals with Dementia

Target Sites	Strategies
Bedside interaction	Make sure that the decision maker is aware of the patient's condition and prognosis, and/or overall burdens and benefits of any proposed intervention, use of decision aids when appropriate. (Decisionaid.ohri.ca/decaids.html ; Dhmc.org/shared_decision_making.cfm)
Professional education	Include palliative care curricula with a strong emphasis on communication in medical schools, medical and surgical residency programs, nursing schools, graduate speech pathology, and clinical nutrition programs.
Institutional policies and procedures	Quality improvement projects to achieve guidelines for feeding tube placement, mandated time frame for establishment of goals of care, protocols for treating pneumonia without acute hospitalization
Interfacility links	Partnerships between LTC and acute care facilities, Portable Medical Orders for Life-Sustaining Treatments (MOLST, POLST), community-wide initiatives (Rochester Community-Wide End-of-life/Palliative Care Initiative)
Professional organizations	Position papers on artificial nutrition at the end of life by the American Academy of Hospice and Palliative Medicine, the American Geriatrics Society, the American Dietetic Association, the American Speech-Language-Hearing Association Clinical Practice Guidelines for Quality Palliative Care by the National Consensus Project
Regulatory and reimbursement procedures	Joint effort by consumers and professionals to lobby for change in reimbursement to eliminate fiscal incentives for use of tube feeding
Consumer education ²⁸	Growth House, Inc. (www.growthhouse.org), Americans for Better Care of the Dying (www.abcd-caring.org)

swabs, giving small amounts of food for taste, if tolerated, providing a gentle hand massage, positioning pillows to support body alignment and reduce pressure points, providing a sense of physical support and safety by holding the patient's hand, and talking to the patient in a calm, soft, reassuring voice.

Probing for spiritual, psychological, and social issues is important. Interdisciplinary team members trained to counsel the family at all stages of the dying process can provide reassurance and guidance for meeting specific needs. Social workers, nutritionists, speech pathologists, nurses, physical therapists, and chaplains are all important members of the treatment team.

Improving Quality and Future Imperatives

With the prevalence of dementia in older Americans at an all-time high and its expected increase in the near future, there is a pressing need to improve care for this population.³⁷ Improving care requires change upstream of the acute care hospitalization so that important treatment decisions will be made in a careful, considered, pressure-free way. Target sites for change include bedside interactions, clinical practice and professional education, hospital policies and procedures, interfacility links, professional organizations, the regulatory and reimbursement establishment, and consumer education (Table IV).³⁸

Conclusion

Although challenging, providing optimal care for patients with dementia and eating problems can often be achieved through careful clinical assessment. Although not always necessary, input from a speech pathologist can be helpful in characterizing the eating problem and in implementing a feeding management plan. The patient will benefit if the physician communicates to the consulting speech pathologist important information such as the stage of dementia and the patient's goals of care upon consultation. Subsequently, collaboration between physician and speech pathologist is paramount for effective communication with family caregivers to take place. Ongoing communication with family caregivers is necessary in order to implement strategies allowing for palliation and continued natural eating, while avoiding more medically aggressive procedures deemed to not be of benefit. In addition, evidence-based quality improvement initiatives, educational initiatives, and system changes are needed on multiple levels to improve care of patients with dementia.

The authors report no relevant financial relationships.

References

- Callahan CM, Haag KM, Buchanan NN, Nisl R. Decision-making for percutaneous endoscopic gastrostomy among older adults in a community setting. *J Am Geriatr Soc* 1999;47(9):1105-1109.

2. Volcker L, Seltzer B, Rheume Y, et al. Eating difficulties in patients with probable dementia of the Alzheimer type. *J Geriatr Psychiatry Neurol* 1989;2:168-195.
3. Blandford G, Watkins LB, Mulvihill MN. Assessing abnormal feeding behavior in dementia: A taxonomy and initial findings. In: Vellas B, Riviere S, eds. *Weight Loss and Eating Behavior Disorders in Alzheimer's Disease*. New York, NY: Springer; 1998:47-64.
4. Khodel M, Conte EE, Morris JJ, et al. Effect of decreased mobility on body composition in patients with Alzheimer's disease. *J Nutr Health Aging* 2000;4:19-24.
5. Mitchell SL, Buchanan JL, Littlehale S, Hamel MB. Tube-feeding versus hand-feeding nursing home residents with advanced dementia: A cost comparison. *J Am Med Dir Assoc* 2003;4:27-33.
6. Langmore SE, Terpenning MS, Schork A, et al. Predictors of aspiration pneumonia: How important is dysphagia? *Dysphagia* 1998;13:69-81.
7. Vitale CA, Hiner T, Ury WA, et al. Tube feeding in advanced dementia: An exploratory survey of physician knowledge. *Care Manag J* 2006;7:79-85.
8. Shega JW, Hougham GW, Stocking CB, et al. Barriers to limiting the practice of feeding tube placement in advanced dementia. *J Palliat Med* 2003;6:885-893.
9. Volcker L, Simard J, Pupa JH, et al. Effects of continuous activity programming on behavioral symptoms of dementia. *J Am Med Dir Assoc* 2006;7:426-431. Published Online May 11, 2006.
10. Brush JA, Calkins MP. Environmental interventions and dementia. *The ASHA Leader* 2008;13:24-25.
11. Kayser-Jones J, Schell ES, Porter C, et al. Factors contributing to dehydration in nursing homes: Inadequate staffing and lack of professional supervision. *J Am Geriatr Soc* 1999;47:1187-1194.
12. Volcker L, Rheume Y, Cyr D. Treatment of depression in advanced Alzheimer's disease using sertraline. *J Geriatr Psychiatry Neurol* 1994;7:227-229.
13. Volcker L, Stelly M, Morris J, et al. Effects of dronabinol on anorexia and disturbed behavior in patients with Alzheimer's disease. *Int J Geriatr Psychiatry* 1997;12:913-919.
14. Yeh SS, Wu SY, Lee TP, et al. Improvement in quality-of-life measures and stimulation of weight gain after treatment with megestrol acetate oral suspension in geriatric cachexia: Results of a double-blind, placebo-controlled study. *J Am Geriatr Soc* 2000;48:485-492.
15. Bodenner D, Spencer T, Riggs AT, et al. A retrospective study of the association between megestrol acetate administration and mortality among nursing home residents with clinically significant weight loss. *Am J Geriatr Pharmacother* 2007;5:137-146.
16. Volcker L. Management of severe Alzheimer's disease and end-of-life issues. *Clin Geriatr Med* 2001;17:377-391.
17. Janssens JP, Krause KH. Pneumonia in the very old. *Lancet Infect Dis* 2004;4:112-124.
18. Kikuchi R, Watabe N, Konno T, et al. High incidence of silent aspiration in elderly patients with community-acquired pneumonia. *Am J Respir Crit Care Med* 1994;150:251-253.
19. Feinberg MJ, Knebl J, Tully J. Prandial aspiration and pneumonia in an elderly population followed over 3 years. *Dysphagia* 1996;11:104-109.
20. Croghan JE, Burke EM, Caplan S, Denman S. Pilot study of 12-month outcomes of nursing home patients with aspiration on videofluoroscopy. *Dysphagia* 1994;9:141-146.
21. El Solh AA, Saliba R. Pharmacologic prevention of aspiration pneumonia: A systematic review. *Am J Geriatr Pharmacother* 2007;5:352-362.
22. Flinucane TE, Christmas C, Travis K. Tube feeding in patients with advanced dementia: A review of the evidence. *JAMA* 1999;282:1365-1370.
23. Gillick MR. Rethinking the role of tube feeding in patients with advanced dementia. *N Engl J Med* 2000;342:206-210.
24. Mitchell SL, Berkowitz RE, Lawson FM, Lipsitz LA. A cross-national survey of tube-feeding decisions in cognitively impaired older persons. *J Am Geriatr Soc* 2000;48:391-397.
25. Flinucane TE, Christmas C, Liff BA. Tube feeding in dementia: How incentives undermine health care quality and patient safety. *J Am Med Dir Assoc* 2007;8:205-208. Published Online: April 18, 2007.
26. Gillick MR, Volandes AE. The standard of caring: Why do we still use feeding tubes in patients with advanced dementia? *J Am Med Dir Assoc* 2008;9:364-367.
27. Lynn J, Schuster JL, Wilkinson A, Simon LN. *Improving Care for the End of Life: A Sourcebook for Health Care Managers and Clinicians*. 2nd ed. New York, NY: Oxford University Press; 2000.
28. Monteleoni C, Clark E. Using rapid-cycle quality improvement methodology to reduce feeding tubes in patients with advanced dementia: Before and after study. *BMJ* 2004;329:491-494.
29. Sanders DS, Carter MJ, D'Silva J, et al. Percutaneous endoscopic gastrostomy: A prospective audit of the impact of guidelines in two district general hospitals in the United Kingdom. *Am J Gastroenterol* 2002;97:2239-2245.
30. Clonolo J. *Speech pathology and the palliative care team*. Presented at: American Speech Language and Hearing Association (ASHA) National Convention; November 18, 2005; San Diego, CA.
31. Creditor MC. Hazards of hospitalization of the elderly. *Ann Intern Med* 1993;118:219-223.
32. Loeb M, Carusone SC, Goeree R, et al. Effect of a clinical pathway to reduce hospitalizations in nursing home residents with pneumonia: A randomized controlled trial. *JAMA* 2006;295:2503-2510.
33. Physicians orders for life sustaining treatment: POLST. POLST Website. <http://www.polst.org>. Accessed December 11, 2008.
34. Medical orders for life sustaining treatment (MOLST). New York State Website. http://www.health.state.ny.us/professionals/patients/patient_rights/molst/. Accessed December 11, 2008.
35. End-of-life decisions: Honoring the wishes of the person with Alzheimer's disease 2006. Alzheimer's Association Website. http://www.alz.org/national/documents/brochure_endoflifedecisions.pdf. Accessed December 11, 2008.
36. McCann RM, Hall WJ, Groth-Juncker A. Comfort care for terminally ill patients. The appropriate use of artificial nutrition and hydration. *JAMA* 1994;272:1263-1266.
37. 2008 Alzheimer's Disease Facts and Figures. Alzheimer's Association Website. http://www.alz.org/national/documents/topicsheet_2008_facts_figures.pdf. Accessed December 11, 2008.
38. Teno J, Lynn J. Putting advance-care planning into action. *J Clin Ethics* 1996;7:205-213.