



Australian Society for Geriatric Medicine

Position Statement No. 12

Dysphagia and Aspiration in Older People

1. Both dysphagia and aspiration are common and important problems affecting older people. They are also closely related as patients with dysphagia are at increased risk of aspiration.
2. Dysphagia and aspiration are associated with high mortality and morbidity. Dehydration, malnutrition and aspiration pneumonia are important and common consequences.
3. Older people at risk for aspiration include those with stroke, Parkinson's disease, dementia, reduced level of consciousness, and any severely ill and disabled patients.
4. Apart from food, aspirate content can include saliva and gastric content. Clinical symptoms and signs may include dyspnoea, crepitations, signs of consolidation, coughing or choking on food.
5. Silent aspiration is common in older people. Deterioration in oxygen saturation or fever may be the only clues.
6. A high index of clinical suspicion and bedside assessment are initial steps. However bedside assessments alone may not be sufficient and investigations such as modified barium swallow (MBS) may be required for accurate assessments.
7. Teamwork is critical. Early referral to key team members including the speech pathologist and dietitian should be considered.
8. Preventative treatment options for aspiration are limited. The options are nil by mouth, dietary modifications, oral care, positioning, swallowing rehabilitation and education.
9. Preferred management options for patients with recurrent aspiration pneumonia secondary to advanced neurodegenerative diseases such as dementia and Parkinson's disease who have failed usual management strategies (modified diet, oral care, positioning, rehabilitation and education) remains a complex clinical and ethical issue, with a suboptimal evidence base to guide practice.
10. Tube feeding (nasogastric or percutaneous) cannot prevent aspiration and neither method is entirely safe when used in patients with aspiration.
11. Tube feeding may be useful in temporarily providing nutritional support to patients with a non-progressive cause of aspiration such as stroke. However its place for the majority of progressive causes such as dementia is questionable.
12. The patient and the carers should be involved in the decision making.

This Position Statement represents the views of the Australian Society for Geriatric Medicine. This Statement was approved by the Federal Council of the ASGM on 26 April 2004. The preparation of this paper was coordinated by Professor Daniel Chan, Dr Stephen Phoon and Dr Elaine Yeoh.

BACKGROUND PAPER

Introduction

The swallowing process can be divided into oropharyngeal phase and oesophageal phase. The oropharyngeal phase includes biting and chewing in the oral cavity, and the transport of food into the pharynx. In simplified terms, this process is accompanied by elevation and anterior movement of larynx to meet with epiglottis for protection of airway. It is then followed by the passage of bolus through the upper oesophageal sphincter into the oesophagus (oesophageal phase). During the oesophageal phase, the lower oesophageal sphincter relaxes and food is pushed into the stomach by peristalsis and gravity.

Dysphagia refers to difficulty in swallowing. Its estimated prevalence in the community is about 7 to 22% and its incidence is as much as 40 to 50% among elderly in long term care facilities^{1,2}. Not only can dysphagia cause dehydration and malnutrition, it can also result in aspiration pneumonia, which can in turn cause increased morbidity and mortality. Furthermore, dysphagia can lead to depression and deterioration in the quality of life.

Dysphagia and aspiration are closely related. Patients with dysphagia are at risk of aspiration. Aspiration refers to the inhalation of oropharyngeal or gastric contents into the larynx and lower respiratory tract^{3,4}. The severity of the sequelae of aspiration is dependent on the amount, the frequency and the nature of aspirated material as well as the host's immune response to the aspiration⁴. Aspiration pneumonitis is a chemical reaction in the lung parenchyma caused by inhalation of sterile gastric contents. Aspiration pneumonia relates to an infectious process caused by inhalation of oropharyngeal secretions that are colonised by bacteria. There is however some overlap between the two entities. For instance, stroke patients with reduced level of consciousness are at risk of aspiration pneumonitis but stroke per se also increases the risk of aspiration pneumonia. Furthermore, even though the acidic gastric contents usually inhibit bacterial growth in aspiration pneumonitis, secondary complications from bacterial infection can occur at a later stage. Although there are other aspiration syndromes including airway

obstruction and exogenous lipid pneumonia, the following discussion will mainly focus on aspiration pneumonia, as it is the main problem confronted by elderly with dysphagia, with lesser coverage on the overlapping aspiration pneumonitis. It will also focus preferentially on oropharyngeal rather than oesophageal dysphagia, as this is the main type of dysphagia that geriatricians are required to manage.

The lack of sensitive and accurate markers of aspiration syndromes means that specific and accurate data are not available. However, some studies have reported that 5 to 15% of cases of community-acquired pneumonia are aspiration pneumonia.⁵⁻⁷ Furthermore, it is estimated that aspiration pneumonia probably affects some 300,000 to 600,000 Americans each year⁸⁻¹⁰. It is also the most common cause of death in patients with dysphagia due to neurological disorders. On the other hand, the incidence of aspiration pneumonitis whilst known to occur in about 10% of overdose-hospitalised patients^{11,12} and in about 1 in 3,000 patients post anaesthesia^{13,14}, has not been systematically recorded in geriatric patients.

Pathophysiology of dysphagia and aspirations

It is important to differentiate oropharyngeal dysphagia from oesophageal dysphagia as they are managed differently, but exhaustive list of causes of dysphagia will not be discussed in this Statement as they are easily referenced in standard texts.

The most common basis for oropharyngeal dysphagia in older people is neurological disease: especially stroke, advanced dementia and Parkinson's disease. Common causes for oesophageal dysphagia include obstructive lesions such as oesophageal cancer, infective causes such as candidiasis, inflammatory causes such as reflux oesophagitis, obstructive causes such as Zenker's diverticulum as well as motility causes and miscellaneous causes such as medication.

Oropharyngeal dysphagia becomes more common with increased age as most of the disorders that cause it have a strongly age-related prevalence. It is also the most common reason for aspiration in older people that geriatricians are required to attend. It

may be characterised by difficulty in initiation of swallowing and the impaired transfer of food from oral cavity to oesophagus. The usual symptomatic complaints include food sticking in the throat, coughing or choking, as well as nasal or oral regurgitation.

Although about half of all healthy adults can be shown to aspirate some oropharyngeal secretions during sleep,^{15,16} the amount is usually small and intact immune responses, coughing, and active ciliary transport, usually clear the aspirate effectively with no pathological sequela. However deficiencies of mechanical or immune defence response, or a large aspirate, increase the likelihood of aspiration pneumonia.

Assessment and Investigations

A careful background history is an essential of the diagnostic evaluation. A history of neurological problems such as stroke, dementia or Parkinson's disease will highlight those at risk, and any history of recurrent pneumonia raises aspiration as a differential diagnosis.

Key clinical symptoms and signs, including coughing or choking on food, dyspnoea, crepitations, and consolidation, should be sought. However even in their absence, a high index of clinical suspicion regarding aspiration is important as bedside assessment alone may not be adequate to detect aspiration. Non-specific features such as a sudden deterioration in oxygen saturation or fever may be the only clues. So called "silent aspiration" (aspiration without key clinical symptoms and signs) is especially common in older people and is found in more than 50% of patients who aspirate.¹⁷ Martino et al¹⁸ reporting a literature review of 89 peer-reviewed studies relating to swallowing screening, found the evidence supporting the use of screening protocols to be lacking, due to the absence of well designed studies and valid outcome measures. Hence, when appropriate, the clinical suspicion of aspiration by the physician should be followed up by bedside swallowing evaluation by the speech pathologist, and supported by further swallowing tests when indicated.

Despite its minor limitations, such as sitting position during test as opposed to lying position in the ward, the "modified barium swallow" is still the best test to evaluate the oropharyngeal phase and

the dynamic cause(s) of aspiration in older people. The patients' response to aspiration, or the lack of a response (such as coughing, throat clearing) and the effectiveness of airway protection manoeuvres with various consistencies of barium-coated food, can all be evaluated. Such examinations are more sensitive than bedside tests to identify aspiration and determine the causes.^{17,19,20}

Where the diagnosis of the cause of dysphagia remains unclear following the modified barium swallow, further specialist support may be required. Depending on the differential diagnosis at this stage, referral to a gastroenterologist for oesophageal dysphagia or to an ear nose throat specialist for oropharyngeal dysphagia may be required. A range of further investigation methods is available if appropriate, and may include endoscopy, full barium swallow, fiberoptic endoscopic examination of swallowing and manometry.

Management of Dysphagia

The management plan for dysphagic patients varies according to history, findings from clinical investigations, cause and prognosis of the patient. Apart from treating the underlying disorder whenever possible, the nutritional and hydration aspect should also be considered. Poor physical condition as the result of malnutrition or dehydration will compromise the rehabilitation process. A vicious cycle may develop and a malnourished person is at risk of further decompensation in swallowing ability.

A multidisciplinary approach is essential in the management of dysphagic elderly people who may also have aspiration. A clinical swallow assessment as performed by a speech pathologist is advisable in determining the need for and type of dietary modification and therapy. Modified diets are graded according to the dynamic changes of the swallowing ability of the patient in relation to the physical properties of the food bolus. For example many patients with neurologically-based oropharyngeal dysphagia will have great difficulty with thin fluids, but may safely manage thickened fluids. Aggressive oral care may be associated with a reduced risk of pneumonia²¹ and should be considered.

Swallowing rehabilitation may be beneficial and will usually include education of the patient and carers in safe swallowing methods: including upright posture, chin tucked and careful slow swallowing. It

may also include therapeutic manoeuvres to achieve improved swallow eg supraglottic swallow. Enteral feeding to maintain nutritional status may be required. Dietitians can assist in optimising the nutritional needs of an elderly dysphagic. The issues surrounding enteral feeding are complex and details will be discussed below.

Aspiration Pneumonia and Pneumonitis

Despite careful assessment and precautions, aspiration pneumonia can still develop in dysphagic patients. The management plan will need to embrace these possibilities.

Where the overall aims of care favour active intervention, antibiotic treatment is indicated in patients with aspiration pneumonia. The choice of antibiotics is dependent on the setting in which the aspiration occurs as well as the patient's medical condition. In addition to coverage for gram-positive organisms, antibiotic cover against gram-negative organisms is usually required. Third generation cephalosporins are the treatment of choice. Penicillin, which was often quoted in the past as the standard antibiotic for aspiration pneumonia, may be inadequate in patients²². Antibiotic agents covering anaerobic bacteria are not routinely warranted but may be indicated in patients with severe periodontal disease, foul sputum, evidence of necrotizing pneumonia or lung abscess on the chest x-ray.^{22,23}

Corticosteroids have been used in the management of aspiration pneumonitis but evidence is lacking^{24,25} that the incidence of complications or outcomes is any different, despite faster improvement in radiographic appearance.

Feeding Tube and Aspiration Pneumonia

Dysphagia after stroke is the most common reason for percutaneous endoscopic gastrostomy (PEG) tube insertion in the United States.²⁶ Patients with PEG tubes are at similar risk for aspiration as those with nasogastric tubes in the setting of stroke. Two studies^{27,28} compared PEG tube and nasogastric tube feeding and found that although PEG tube feeding was significantly more effective in delivering nutrition, the incidence of aspiration pneumonia was similar to the nasogastric tube method. Similarly the incidence of aspiration pneumonia with post pyloric tubes (tubes placed in small bowel) have been shown to be similar to that

of intragastric tubes.^{29,30,31}

Feeding tubes offer no protection to aspiration due to dysphagia. There is evidence of aspiration of gastric contents using scintigraphic studies in patients fed using PEG tubes.^{32,33} Long term follow up studies have shown that aspiration pneumonia is the most common cause of death in patients fed by PEG. However owing to the problems associated with nasogastric or naso-duodenal tubes – including discomfort, gagging, oesophagitis, misplacement, displacement or clogging of the tubes, and poor “cosmesis” – PEG tube is the preferred choice for long-term nutritional support. Patients who are likely to recover their ability to swallow within a few weeks are not candidates for PEGs and whether the patients with a shorter life expectancy should be considered for PEG is debatable.

Tube feeding in patients with advanced dementia

This is a difficult and complex area involving ethical and medico-legal issues. From a pure scientific point of view, a thorough review of existing literature by Finucane et al³⁴ examined whether tube feeding for patients with advanced dementia can prevent aspiration pneumonia, prolong survival, reduce the risk of pressure sores or infections, improve function, or provide palliation. They found no randomised trials that compared tube feeding with oral feeding and found no data to suggest tube feeding improves any of the clinically important outcomes listed. Further, tube feeding may be associated with significant morbidity and mortality and the authors concluded that the widespread practice of tube feeding should be carefully reconsidered.

In a carefully performed study that compared outcomes of nursing home residents with advanced dementia being fed with a gastrostomy tube and those who continued to be hand fed, the investigators had found similar survival rates.³⁵

The belief that feeding tubes promote comfort with feeding in patients dying with advanced dementia is difficult, if not impossible to prove or disprove. However experience from patients dying from cancer or stroke has cast doubt about suffering from transient hunger or thirst.³⁶

In a paper by Low, Chan and Chye, the question of what would patients want for themselves was

investigated by a scenario setting of advanced dementia and recurrent aspiration pneumonia.³⁷ The results revealed that most patients do not want tube feeding either in the form of nasogastric (69%) or PEG (71%), but they do want aspiration pneumonia to be treated (73%) and also want admission into hospital if aspiration has developed (62%).

Jonsen et al³⁸ in their seminal work on approaching ethical problems in clinical practice, put forward four areas for consideration. These are (not in order of ethical priority): 1) medical indications, 2) patient preferences, 3) quality of life, and 4) contextual features. Each cannot be taken in isolation but has to be seen in the context of the other three. Perhaps patient preferences are often not considered as highly by medical practitioners as reflected commonly in the non-adherence to advanced directives by doctors³⁹. Recently, the BWV decision in the Victorian Supreme Court (Justice Stuart Morris in May, 2003) provides a legal precedent for PEG feeding to be regarded as a medical treatment that can be refused in accordance with the wishes of the patient and the medical circumstances of the case, rather than as a method for the ordinary provision of hydration and nutrition. Cessation of active treatment can be considered in the case of recurrent pneumonia secondary to progressive neuro-degenerative disease such as dementia. This should be discussed as an option with patients and carers when appropriate, and ideally as an issue in advance care planning, rather than at the time of a crisis.

Conclusion

Dysphagia and aspiration are common and important problems in older people, and they are closely related. Aspiration pneumonia and aspiration pneumonitis are different entities with overlapping features. Bedside assessment for aspiration is unreliable and silent aspiration is common in older people. Therefore consideration should be given for assessment by a speech pathologist and investigation such as modified barium swallow may be helpful. Oropharyngeal dysphagia is the most common form of dysphagia in older people and neurological causes (such as stroke, Parkinson's disease and dementia) are the most common disorders causing dysphagia and aspiration. Available treatment options are less than ideal in many cases of aspiration, but following diagnostic evaluation patients may benefit from a range of specific interventions including: nil by mouth, dietary

modification, oral care, positioning, swallowing rehabilitation, education, and treatment with antibiotics when indicated. Tube feeding (nasal or percutaneous), although it remains a useful means of temporarily providing nutritional support to patients with a non-progressive cause such as stroke, has not been shown to improve or prevent aspiration, and its place in progressive causes of aspiration such as dementia is questionable.

References

1. Bloem BR, Lagaay AM, van Beek W, et al. Prevalence of subjective dysphagia in community residents aged over 87. *BMJ* 1990; 300: 721-722
2. Lindgren S, Janzon L. Prevalence of swallowing complaints and clinical findings amount 50-79 year-old men and women in an urban population. *Dysphagia* 1991; 6:187-192
3. Irwin R S. Aspiration. In: Irwin RS, Cerra FB, Rippe TM, eds. *Irwin and Rippe's intensive care medicine*. 4th ed. Vol. 1. Philadelphia: Lippincott-Raven, 1999: 685-692
4. Cassiere HA, Niederman MS. Aspiration pneumonia, lipoid pneumonia and lung abscess. In: Baum GL, Crapo JD, Celli BR, Karlinsky JB, eds. *Textbook of pulmonary diseases*. 6th ed. Vol 1. Philadelphia: Lippincott-Raven, 1998:645-655
5. Torres A, Serra-Barlles J, Ferrer A, et al. Severe community-acquired pneumonia: epidemiology and prognostic factors. *Am Rev Respir Dis* 1991; 144:312-8
6. Moine P, Vercken JP, Chevret S, Chastang C, Gajdos P. Severe community-acquired pneumonia: etiology, epidemiology, and prognosis factors. *Chest* 1994;105:1487-95
7. Marrie TJ, Durant H, Yates L. Community-acquired pneumonia requiring hospitalization: 5-year prospective study. *Rev Infect Dis* 1989;11:586-99.
8. *Diagnosis and treatment of swallowing disorders (dysphagia) in acute-care stroke: summary, evidence report/technology assessment*. No.8. Rockville, Md.: Agency for Health Care Policy and Research, March 1999.
9. Holas MA, DePippo KL, Reding MJ. Aspiration and relative risk of medical complications following stroke. *Arch Neurol* 1994; 51:1051-3.
10. Daniels SK, Brailey K, Priestly DH, et al. Aspiration in patients with acute stroke. *Arch Phys Med Rehabil* 1998;79: 14-9.
11. Roy TM, Ossorio MA, Cipolla LM, et al. Pulmonary complications after tricyclic antidepressant overdose. *Chest* 1989;96:852-6.
12. Aldrich T, Morrison J, Cesario T. Aspiration after overdosage of sedative or hypnotic drugs. *South Med J* 1980;73: 456-8.
13. Olsson GL, Hallen B, Hambraeus-Jonzon K. Aspiration during anaesthesia: a computer-aided

- study of 185,358 anaesthetics. *Acta Anaesthesiol Scand* 1986;30:84-92.
14. Warner MA, Warner ME, Weber JG. Clinical significance of pulmonary aspiration during the perioperative period. *Anesthesiology* 1993; 78:56-62.
 15. Huxley EJ, Viroslav J, Gray WR, et al. Pharyngeal aspiration in normal adults and patients with depressed consciousness. *Am J Med* 1978;64: 564-8.
 16. Gleeson K, Eggli DF, Maxwell SL. Quantitative aspiration during sleep in normal subjects. *Chest* 1997; 111:1266-72.
 17. Lundy DS, Smith C, Colangelo L, et al.: Aspiration: cause and implications. *Otolaryngol Head Neck Surg* 1999, 120:474-478.
 18. Martino R, Pron G, Diamant N: Screening for oropharyngeal dysphagia in stroke: insufficient evidence for guidelines. *Dysphagia* 2000, 15:19-30.
 19. Schurr MJ, Ebner KA, Maser AL, et al.: Formal swallowing evaluation and therapy after traumatic brain injury improves dysphagia outcomes. *J Trauma Injury Infect Crit Care* 1999, 46:817-823.
 20. Brady SL, Hildner CD, Hutchins BF: Simultaneous videofluoroscopic swallow study and modified Evans blue dye procedure: an evaluation of blue dye visualization in cases of know aspiration. *Dysphagia* 1999, 14:146-149.
 21. Yoneyama T, Yoshida M, Matsui T, Sasaki H. Oral care and pneumonia. *Lancet* 1999;354:515.
 22. Mier L, Dreyfuss D, Darchy B, et al. Is penicillin G an adequate initial treatment for aspiration pneumonia? A prospective evaluation using a protected specimen brush and quatitative cultures. *Intensive Care Med* 1993; 19:279-84.
 23. Marik PE, Careau P. The role of anaerobes in patients with ventilator-associated pneumonia and aspiration pneumonia: a prospective study. *Chest* 1999; 115:178-83.
 24. Sukumaran M, Granada MJ, Berger HW, Lee M, Reilly TA. Evaluation of corticosteroid treatment in aspiration of gastric contents: a controlled clinical trial. *Mt Sinai J Med* 1980;47: 335-40.
 25. Lee M, Sukumaran M, Berger HW, et al. Influence of corticosteroid treatment on pulmo -nary function after recovery from aspiration of gastric contents. *Mt Sinai J Med* 1980;47:341-6.
 26. Graves EJ, Gillum BS. Detailed diagnoses and procedures, National Hospital Discharge Survey, 1995. Vital and health statistics. Series 13. No. 130. Washington, D.C.: Government Printing Office, 1997. (DHHS publication no. (PHS) 1791.)
 27. Park RH, Allison MC, Lang J, et al. Randomised comparison of percutaneous endoscopic gastrostomy and nasogastric tube feeding in patients with persisting neurological dysphagia. *BMJ* 1992;304:1406-9.
 28. Baeten C, Hoefnagels J. Feeding via nasogastric tube or percutaneous endoscopic gastrostomy: a comparison. *Scand J Gastroenterol Suppl* 1992;194:95-8.
 29. Strong RM, Condon SC, Solinger MR, et al. Equal aspiration rates from postpylorus and intragastric-placed small-bore nasoenteric feeding tubes: a randomized, prospective study. *J Parenter Enteral Nutr* 1992;16:59-63.
 30. Spain DA, DeWeese RC, Reynolds MA, et al. Transpyloric passage of feeding tubes in patients with head injuries does not decrease complications. *J Trauma* 1995;39:1100-2
 31. Fox KA, Mularski RA, Sarfati MR, et al. Aspiration pneumonia following surgically placed feeding tubes. *Am J Surg* 1995;170:564-6.
 32. Cole MJ, Smith JT, Molnar C, et al. Aspiration after percutaneous gastrostomy: assessment by Tc-99m labeling of the enteral feed. *J Clin Gastroenterol* 1987;9:90-5.
 33. Balan KK, Vinjamuri S, Maltby P, et al. Gastroesophageal reflux in patients fed by percutaneous endoscopic gastrostomy (PEG): detection by a simple scintigraphic method. *Am J Gastroenterol* 1998;93:946-9.
 34. Finucane T, Christmas C, Travis K. Tube feeding in patients with advanced dementia: a review of the evidence. *JAMA* 1999;282:1365-1370
 35. Mitchell SL, Kiely DK, Lipsitz LA. The risk and impact on survival of feeding tube placement in nursing home residents with severe cognitive impairment. *Archives of Internal Medicine* 1997; 157:327-332.
 36. McCann RM, Paul WJ, Groth-Juncker A. Comfort care for terminally ill patients: the appropriate use of nutrition and hydration. *JAMA* 1994;272:1263-1266.
 37. Low JA, Chan DKY, Hung T, Chye R. Treatment of recurrent aspiration pneumonia in end-stage dementia: preferences and choices of a group of elderly nursing home residents. *Internal Medicine Journal* 2003;33: 345-349
 38. Jonsen AR, Siegler M, Winslade WJ. *Clinical ethics - a practical approach to ethical decisions in clinical medicine*, 5th ed. McGraw-Hill, 2002.
 39. Schroeder SA. The legacy of SUPPORT, Editorial. *Ann Intern Med* 1999; 131:780-1