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In this article...

- Effects of ageing and dementia on swallowing and eating
- Detrimental effects of dysphagia and risk of aspiration in people with dementia
- Five fundamental recommendations to reduce the risk of aspiration

5 Fundamental Ms: cutting aspiration risk in dementia and dysphagia patients

Key points

Dysphagia may lead to choking, aspiration pneumonia, malnutrition and dehydration

In people with dementia and dysphagia, oral nutrition should be preferred over enteral feeding

This patient group is at high risk of aspiration

Oral nutrition with a high risk of aspiration is called 'risk feeding'

Effective multidisciplinary work, support with eating and drinking, mouth care and drug management are needed

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Abstract Swallowing ability is not only affected by increasing age but also by dementia. People with advanced dementia will often develop dysphagia, resulting in harmful consequences to their health and wellbeing. However, it is recommended that they should continue to receive an oral diet, rather than being put on enteral feeding, because this is better for their quality of life. This article discusses the 5 Fundamental Ms – these are key recommendations that can be used as a framework to help health professionals who are involved in the treatment and care of people with dementia and dysphagia to help their patients eat and drink while reducing their risk of aspiration.

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As people age, the muscles involved in swallowing often become weaker. This may explain why swallowing difficulties are relatively common in older people (Rogus-Pulia et al, 2015). Some will be able to manage certain textures and consistencies of food and fluids, while others will choke on whatever they eat or drink. Dysphagia (difficulty swallowing) often develops in people with long-term conditions such as dementia. Food, drink and even saliva may enter the bronchial tract, potentially leading to:

- Choking;
- Aspiration pneumonia.

The consequences of dysphagia on an individual's health include:

- Malnutrition;
- Dehydration.

The number of frail, older people who have dysphagia, particularly those aged >80 years, is increasing (Leder and Suiter, 2009). The consequence is an increase in hospital admissions and a greater demand placed on the healthcare system.

This article addresses the role of the multidisciplinary team (MDT) in helping people with dementia and dysphagia to eat and drink, while reducing their risk of aspiration. This involves implementing five recommendations – the 5 Fundamental Ms – which I developed to provide a framework for health professionals working with people who have dementia and dysphagia.

Effects of ageing and dementia

With increasing age, there are physiological changes that affect all aspects of swallowing, including:

- A reduction in proprioception (the perception and awareness of the position and movement of the body);
- Diminished muscle tone and bulk (weight of the muscle) in both the tongue and lips, which reduces the ability to identify texture and viscosity (Hiss et al, 2001);
- Altered saliva production;
- Changes to the sensory functions of taste and smell;

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Box 1. Signs of dysphagia to look out for in people with dementia

To reduce the risk of aspiration, health professionals should look out for the following signs in people who have dementia and dysphagia:

- Inability to recognise food and/or utensils
- Coughing or choking during or after meals
- Effortful or prolonged chewing
- Spitting out food
- Food/drink spilling from mouth
- Wet gurgling voice after eating
- Food/drink residue in mouth after meals

- Inability to adapt to physiological stressors (for example, infection) due to a reduced functional reserve (Smithard, 2016).

Factors such as poor oral health (Razak et al, 2014), loose and/or painful teeth and ill-fitting dentures may contribute to reduced oral intake in older people.

The process of eating and swallowing requires cognitive awareness, visual recognition of food, physiologic response, motor planning and execution, as well as patterned sensorimotor responses (Rogus-Pulia et al, 2015). As people with dementia experience apraxia and deficits in attention, initiation, orientation, recognition, executive function and decision-making, eating and swallowing is affected. Box 1 highlights signs of dysphagia to look out for in people with dementia.

Choosing the nutrition route

Decision making

National guidance recommends that people who have advanced dementia and dysphagia continue to eat and drink, rather than receiving non-oral nutrition support, as this is considered better for their quality of life (Royal College of Physicians, 2010). Enteral tube feeding – for example, via a nasogastric tube or a percutaneous endoscopic gastrostomy (PEG) tube – is intended to reduce the risk of aspiration pneumonia and of malnutrition and its sequelae, which include starvation and death. However, in 2009 a Cochrane review highlighted the absence of data to suggest that enteral feeding is beneficial to people with advanced dementia (Sampson et al, 2009).

The existing evidence on non-oral nutrition, which is based on observational studies, suggests it does not improve survival or reduce the risk of aspiration. People receiving non-oral nutrition are still likely to develop chest infections due to compromised positioning and high dependencies, such as needing help with eating, drinking and mouth care (Hibberd et al, 2013; Langmore et al, 2002). When PEG-tube feeding may be indicated in people with dementia, it is crucial to refer to guidelines, adopt a multidisciplinary approach when selecting patients and discuss quality of life (Sanders et al, 2004). In people with advanced dementia, Palecek et al (2010) argued in favour of 'comfort feeding' through careful hand feeding as a clear goal-oriented alternative to enteral feeding.

Deciding on the nutrition route should also include consideration of associated risks, such as the surgical risks linked with gastrostomy insertion and the risk of chest infection (which can lead to death). The patient's diagnosis, condition and personal preferences are equally essential to the decision-making process.

Risk feeding

Using the oral nutrition route despite the risk of aspiration pneumonia can be called 'risk feeding'. Deciding whether to use risk feeding should involve discussing risks and benefits with the individual, their significant others and the MDT. In 2011, a risk-feeding protocol was designed to coordinate and formalise these discussions in the acute setting (Hansjee, 2018). It provides a person-centred framework to facilitate decisions on nutrition, outlines the reasons why a person may be a candidate for risk feeding, addresses mental capacity and quality of life, and guides discussions with the MDT, the patient and/or their family.

After discussions have taken place, a management plan authorised by the consultant and a speech and language therapist (SLT) is put in place. The plan features risk-reducing recommendations, including an assessment of swallowing conducted to determine the safest and least-distressing diet and fluid regimen for the individual.

The study

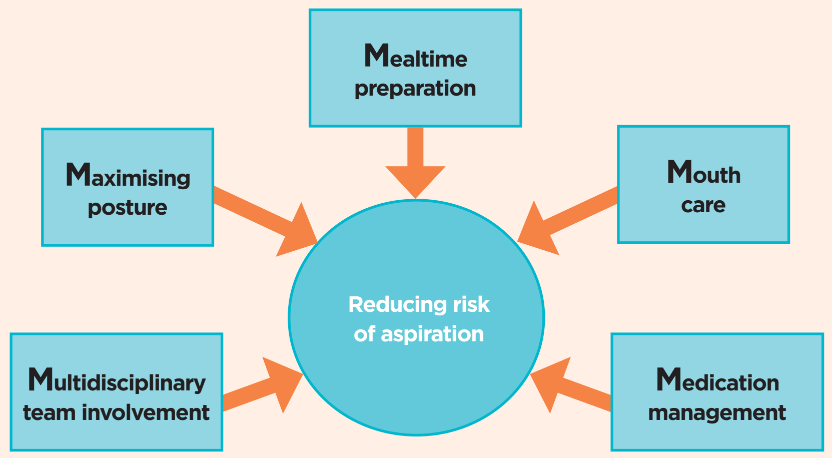
In January 2018, I conducted a small-scale study in an acute hospital in London to ascertain the preferences of nine patients

Table 1. Study of patient preferences regarding nutrition route

Participant	Recommendations post swallowing assessment	Chosen route	Participant's comments
1	Puréed diet and level-1* fluids	Oral	
2	Soft and bite-sized diet and level-1* fluids	Oral	*"I want to continue to eat and drink"*
3	Puréed diet and level-0* fluids	Oral	
4	Regular diet and level-0* fluids	Oral	*"If I had an operation and died, at least I had my quality of life"*
5	Puréed diet and level-0* fluids	Oral	
6	Puréed diet and level-1* fluids	Oral	
7	Puréed diet and level-0* fluids	Oral	*"I take a lot of pleasure from eating"*
8	Puréed diet and level-0* fluids	Oral	
9	Soft and bite-sized diet and level-0* fluids	Oral	*"I don't want any tube in me"*

*Level-0 fluids = thin; level-1 fluids = slightly thickened

Fig 1. **The 5 Fundamental Ms of aspiration risk reduction**



with mild dementia regarding their route of nutrition. The severity of their cognitive impairment was established using the Abbreviated Mental Test Score (they scored 6-8 points) and Mini Mental State Examination (they scored 18-23 points). Participants' mental capacity to make a decision regarding their route of nutrition was established in line with the Mental Capacity Act 2005 (Bit.ly/MCA2005); with all deemed to have that capacity.

All participants had some degree of swallowing impairment. They had undergone an assessment of swallowing, following which recommendations for diet and fluids had been made.

Participants were given a choice of eating and drinking with aspiration risks or being nil by mouth and receiving nutrition via an enteral tube. They were informed of the risks associated with both options. All indicated strongly that they preferred oral nutrition to tube feeding.

Table 1 summarises the data from the study, including participants' comments, which show their desire to maintain their quality of life.

The 5 Fundamental Ms

For individuals who have dementia and dysphagia, the goal of risk feeding is to maintain their quality of life. Five recommendations – the 5 Fundamental Ms (Fig 1) – provide a framework that can help to reduce the risk of aspiration in these patients:

- **M**DT involvement;
- **M**aximising posture;
- **M**ealtime preparation;
- **M**outh care;
- **M**edication management.

> *"People should be supported to sit in a chair rather than in bed, as sitting in a reclined position in bed can negatively affect the ability to breathe and expectorate"*

MDT involvement

Treating dysphagia in people with dementia involves a problem-solving approach from the various professionals involved in nutritional management and care. This is where a risk-feeding protocol and accompanying policy can help coordinate and formalise team discussions. The individual's wishes should remain at the forefront of all decisions.

SLTs identify the safest and least-distressing foods and drinks for each individual. Dietitians work closely with SLTs to determine whether oral intake is sufficient or whether supplements are required. Diet and fluid recommendations and strategies are disseminated to the nursing and support staff involved in feeding people or assisting them during mealtimes. As people who are risk fed are likely to develop frequent chest infections, physiotherapists liaise with medical colleagues to determine the level of chest management and ceiling of care. Pharmacists are alerted to make sure any medication is provided in a form that is easy to swallow.

Documenting decisions on current and future nutritional management and care allows for accuracy when there is a handover to another hospital team, GP, care home, or health and social care services.

Maximising posture

For oral food intake, people should be supported to sit in a chair rather than in bed, as sitting in a reclined position in bed can negatively affect the ability to breathe and expectorate. Taking the time to optimise the person's position before eating and drinking is essential. According to Alghadir et al (2017), correct positioning improves the speed and safety of swallowing. A physiotherapist can be consulted on how to improve positioning and posture. The aim is usually for a 90° angle at the hips, knees and ankles. The person's head, feet and arms should be appropriately supported.

Spouted beakers are beneficial for some people but should only be used if recommended by the SLT; they should not be used routinely. Spouted beakers require more tilting to access the fluid, which can alter neck positioning and cause straining; they can also increase the risk of choking if the individual is unable to control the amount of fluid taken in.

Mealtime preparation

A good mealtime experience can have a positive impact on the individual's nutritional intake and social wellbeing (Alzheimer's Society, 2016). Before the meal, food and fluid recommendations need to be checked so that appropriate food and fluids are offered. Volunteers will not normally feed people who are at high risk of aspiration, but they may contribute to preparing the environment and/or the meal – as such, they must be made aware of an individual's needs and any precautions that are required.

Patients need to be informed of the time of day and the meal they will be having. If they are able to self-feed, food should be placed in front of them where it can be seen and reached. The sight and smell of the food will stimulate the olfactory and optic nerves, which forms the first step in the process of swallowing.

People with dementia may take a long time to eat. Staff who help them with eating need to follow each person's rhythm and establish the appropriate rate of feeding and mouthful size. Hand-over-hand assistance involves the caregiver placing their hands on the hands of the person and initiating the movement or action, prompting the person to complete it. The technique can be used, where adequate, to help people self-feed.

People with dementia may become dehydrated because they forget to drink. Placing a cup in front of them is not always sufficient, as they may not know what to do with it. Some people will need to be prompted to drink; support staff can encourage fluid intake through social interaction.

Coloured cups have been shown to attract the attention of people living with dementia (Dementia UK, 2016). It is better, however, to avoid cups of opaque plastic in dark shades, as fluid levels will not be visible; cups in translucent material and light shades of colour are preferable. Likewise, colourful plates can increase the oral intake of food in people with dementia. According to Chaudhury and Cooke (2014), 25% more food is consumed from a red plate compared with a white one. Occupational therapists may recommend using items such as non-slip mats, plate guards and adapted utensils to increase independence.

People with advanced dementia may have difficulties communicating their needs and preferences, and this will manifest in their behaviour; for example, they may refuse to eat, or they may spit out food or drinks. It is crucial that staff are aware of such issues, so they can provide the assistance, supervision and encouragement required. Most SLT departments in hospitals offer bespoke training to care staff, who are often responsible for helping patients with feeding.

Mouth care

Failure to deliver good mouth care (including twice-daily teeth brushing) can contribute to difficulties with swallowing and exacerbate dehydration, malnutrition and frailty (National Institute for Health and Care Excellence, 2016). Older people who are frail often depend on others for oral care due to functional limitations of the limbs, oral motor impairment, neglect, apraxia and cognitive deficits (Willumsen et al, 2012). Beyond oral impairments related to oral structure and function, mastication, swallowing and saliva control may also be affected (Smithard, 2016). Oral pathogens are the most likely cause of pneumonia, so good oral care is vital to reduce pneumonia risk of (Seedat and Penn, 2016).

A study by Durgude and Cocks (2011) identified deficits in nurses' knowledge regarding the link between oral hygiene, dysphagia and pneumonia, thereby identifying the necessity of further training for nursing and care staff. Good oral hygiene not only enhances quality of life and nutrition, but also reduces the occurrence of aspiration pneumonia and, in turn, the risk of death (Rosenblum, 2010).

Medication management

Staff may be tempted to make tablets easier to swallow by crushing them, melting them or dispersing their contents, but the altered medication may not be absorbed by the body as it should, with subsequent risks of reduced effectiveness and/or increased occurrence of side-effects (Royal Pharmaceutical Society, 2011). A qualitative study of medicines-related care of people with dysphagia living in care homes found limited staff awareness of the impact of tampering with medication, reinforcing the need for training in this area (Patients Association, 2015).

Before altering medication in any way, it is advisable to check directly with a pharmacist or GP, or check the medication administration record chart for specific instructions. The information should be communicated to other health and care settings on admission, transfer or discharge.

> *"For individuals with dementia and dysphagia, the goal of risk feeding is to maintain quality of life"*

According to Kelly et al (2011), medicine administration errors are three times more likely to occur in patients with dysphagia than in those without the condition. In its guidance on oral health in care homes, NICE (2016) recommends identifying problems with swallowing as part of the medication review process, which is integral to safe medicines administration in care home residents (Morris et al, 2018).

Conclusion

The 5 Fundamental Ms highlight the need to pay attention to fundamental areas of care likely to enhance the quality of life of people living with dementia and dysphagia. It is the responsibility of the MDT, both in acute and community settings, to take the lead in delivering an individualised approach to reducing the risk of aspiration in this population. **NT**

References

Alghadir AH et al (2017) Effect of posture on swallowing. *African Health Sciences*; 17: 1, 133-137.
Alzheimer's Society (2016) *Eating and Drinking.* Bit.ly/ASEating
Chaudhury H, Cooke H (2014) Design matters in dementia care: the role of the physical environment in dementia care settings. In: Downs M, Bowers B (eds) *Excellence in Dementia Care: Research into Practice*. Maidenhead: Open University Press.
Dementia UK (2016) *Tips for Eating and Drinking with Dementia.* Bit.ly/DUKEating
Durgude Y, Cocks N (2011) Nurses' knowledge of the provision of oral care for patients with dysphagia. *British Journal of Community Nursing;* 16: 12, 604-610.
Hansjee D (2018) An acute model of care to guide eating and drinking decisions in the frail elderly with dementia and dysphagia. *Geriatrics;* 3: 4, 65.
Hibberd J et al (2013) Can we use influencing factors to predict aspiration pneumonia in the United Kingdom? *Multidisciplinary Respiratory Medicine;* 8: 1, 39.
Hiss SG et al (2001) Effects of age, gender, bolus volume, and trial on swallowing apnea duration and swallow/respiratory phase relationships of normal adults. *Dysphagia;* 16: 2, 128-135.
Kelly J et al (2011) Medicine administration errors in patients with dysphagia in secondary care: a multi-centre observational study. *Journal of Advanced Nursing;* 67: 12, 2615-2627.
Langmore SE et al (2002) Predictors of aspiration pneumonia in nursing home residents. *Dysphagia;* 17: 4, 298-307.
Leder SB, Suiter DM (2009) An epidemiologic study on aging and dysphagia in the acute care hospitalized population: 2000-2007. *Gerontology;* 55: 6, 714-718.
Morris JE et al (2018) Pilot of a charter to improve management of medicines and oral care for residents with dysphagia in care homes. *Geriatrics;* 3: 4, 78.
National Institute for Health and Care Excellence (2016) *Oral Health for Adults in Care Homes.* nice.org.uk/ng48
Palecek EJ et al (2010) Comfort feeding only: a proposal to bring clarity to decision-making regarding difficulty with eating for persons with advanced dementia. *Journal of the American Geriatrics Society;* 58: 3, 580-584.
Patients Association (2015) *Survey of Medicines-related Care of Residents with Dysphagia in Care Homes.* Bit.ly/PADysphagia
Razak PA et al (2014) Geriatric oral health: a review article. *Journal of International Oral Health;* 6: 6, 110-116.
Rogus-Pulia N et al (2015) Understanding dysphagia in dementia: the present and the future. *Current Physical Medicine and Rehabilitation Reports;* 3: 1, 86-97.
Rosenblum R Jr (2010) Oral hygiene can reduce the incidence of and death resulting from pneumonia and respiratory tract infection. *Journal of the American Dental Association;* 141: 9, 1117-1118.
Royal College of Physicians (2010) *Oral Feeding Difficulties and Dilemmas: A Guide to Practical Care, Particularly Towards the End of Life.* Bit.ly/RCPOralFeeding
Royal Pharmaceutical Society (2011) *Pharmaceutical Issues when Crushing, Opening or Splitting Oral Dosage Forms.* Bit.ly/RPSCrushing
Sampson EL et al (2009) Enteral tube feeding for older people with advanced dementia. *Cochrane Database of Systematic Reviews;* 2: CD007209.
Sanders DS et al (2004) PEG placement in patients with dementia: a contentious ethical and clinical dilemma? [letter]. *Gastrointestinal Endoscopy;* 60: 3, 492.
Seedat J, Penn C (2016) Implementing oral care to reduce aspiration pneumonia amongst patients with dysphagia in a South African setting. *South African Journal of Communication Disorders;* 63: 1.
Smithard DG (2016) Dysphagia: a geriatric giant? *Medical and Clinical Reviews;* 2: 1, 5.
Willumsen T et al (2012) Are the barriers to good oral hygiene in nursing homes within the nurses or the patients? *Gerodontology;* 29: 2, e748-e755.

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