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DYSPHAGIA AND NUTRITIONAL INTERVENTIONS IN STROKE CARE

effects, showing improvements in patient outcomes.

Every fourth minute, someone somewhere in the UK endures a stroke (1). Stroke survival is on the increase and post-stroke care needs are rising, with stroke treatments from acute to recovery phase to managing stroke side



Louise Dickie Specialist Stroke Dietitian in hyperacute/ acute stroke care, Imperial College HealthCare Trust

Louise is currently working as a Specialist Dietitian in inpatient stroke care. Previously, Louise worked as a Specialist Nutrition Support Dietitian in gastroenterology, ICU, parenteral nutrition and care of the elderly. Dysphagia is a common side effect of strokes, with between 27 percent and 50 percent of stroke patients being diagnosed (2, 3, 4), and requires clinical and nutritional management. Nutritional consequences linked to dysphagia include compromised dietary intake, leading to malnutrition and dehydration, which in turn may lead to reduced scope to rehabilitate, prolonged hospital stay and increased mortality.

DYSPHAGIA

Dysphagia is the impairment of the swallow process during transit of solids or liquids from the mouth to the stomach. Depending on the site and extent of brain injury following stroke, different muscles and nerves used in the swallowing reflex may not be triggered or functioning properly, leading to dysphagia. Strokes that damage the cerebella are more likely to lead to swallow problems. Dysphagia is classified into four categories based on the location of the swallow impairment: Oro-pharangeal, oesophageal, oesophagogastric and paraoesophageal dysphagia. It is oro-pharangeal that affects the stroke population (5).

Within four hours following admission, it is recommended that stroke patients have their swallow screened for a dysphagia diagnosis with a validated screening tool by appropriately skilled professionals (6). Fifty percent of stroke patients will recover full swallow capacity in the first two weeks, although 15 percent will still have swallowing problems after one month (7). As strokes are more common in elderly patients, agerelated swallow deterioration and other stroke symptoms can further complicate managing stroke-related dysphagia.

MALNUTRITION RISK

Protein energy malnutrition (PEM) (either pre-existing or during stroke recovery) is an independent indicator of poorer outcome and mortality after stroke (8, 9, 10, 11, 12).

Malnutrition risk is increased in elderly patients (65 years and over) due to reduced lean body mass and many



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other factors that compromise nutrient and fluid intake. Since restoration of lean body mass is more difficult as age increases, preventive nutritional support is important in the elderly (13). Most strokes occur in those over 65 years; with mean ages in the UK being 72.6 years in men and 78.8 years in females (14).

Malnutrition figures vary with up to 60 percent of patients being malnourished post stroke (15) and in 25 percent of the post-stroke population weight loss will persist for up to 12 months (16).

The odds of stroke patients becoming malnourished increases with the presence of dysphagia, and with prolonged periods of inadequate dietary intake during hospitalisation being a possible cause. This suggests more structured monitoring of nutritional status is needed during stoke admission (17).

NUTRITIONAL SCREENING FOR THE DYSPHAGIC STROKE PATIENT

The National Stroke Guidelines for England and Wales recommend that every patient with nutritional problems, including dysphagia and requiring food of a modified consistency, should be referred to a dietitian and an ongoing nutritional plan should be in place (6, 14). Screening is recommended to be carried out on admission and then repeated weekly. (RCP, 2014). There are now two validated screening tools for the stroke population: Malnutrition Universal Screening Tool and The Guys and St Thomas Nutrition Screening Tool, although there are currently no stroke-specific validated screening tools. Dysphagia is not a criterion to trigger scoring on many screening tools.

NUTRITIONAL INTERVENTIONS IN DYSPHAGIA CARE

National recommendations for post stroke patients at risk of malnutrition are to provide specialist dietary advice with the consideration of either oral nutrition support or enteral feeding. The research into nutritional interventions in dysphagia stroke care is becoming stronger to provide us with guidance on the best use of these different nutritional interventions. Interventions include dietary counselling, food texture modification, oral nutritional supplements and tube feeding, sometimes with various interventions used together to supplement one another. Areas such as palliative care with dysphagia and other common ethical dilemmas are beyond the scope of this article.

ORAL NUTRITIONAL INTERVENTIONS Modified foods

The rationale for the use of texture-modified diets (TMDs) within stroke care is to enable the safe transition of food and fluids to the oesophagus, therefore avoiding penetration or aspiration into the trachea and chest, whilst enabling those with a partial dysphagia to safely continue oral diet. Further research is needed to establish the efficacy of TMDs in clinical and nutritional management of dysphagia.

The NHS stipulates that nationally recognised terminology is used for food textures by all health and care settings providing TMDs (NHS 2011). These were developed under the auspices of the National Patient Safety Agency (2011) as a result of clinical incidents. They define the types and textures of foods needed by individuals who have oro-pharangeal dysphagia. Specific standards are provided in a guideline document for four food textures that are to be used with checklists to enable measurement against these standards, in terms of texture consistency. All clinical care settings are recommended to provide at least texture C and texture E (NPSA, 2011), and hospital caterers are advised to provide these as an a la carte menu (The Nutrition and Hydration Digest, BDA/NHS 2011).

Use of TMDs is associated with malnutrition; however, causality is difficult to demonstrate due to confounding factors such as the requirement for feeding assistance, particularly in the post-stroke elderly patient. Many patients with dysphagia find eating uncomfortable and an





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References: 1. Data on file

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Assessment of the comparison between thickened fluids, food, enteral and parenteral nutrition on fluid intake in stroke dysphagic patients has suggested that there is a greater contribution of fluid provided from food, than beverages

unpleasant experience. This can lead to early satiety and refusal of food and beverages (14) and lower energy and protein intakes when compared to those taking normal diets (18).

TMDs are not always nutritionally adequate (19, 20, 21). Some nutritional composition analyses have shown some to provide as little as 45 percent of average daily energy needs (22). There are no separate regulations to assure that the nutritional composition of TMDs are adequate in health and care settings. However, guidance for catering services is getting better on how to optimise the nutritional content and appeal of TMDs. The Hospital Caterers Association provides practical guidance for provision of TMDs, such as how to best thin puree without detriment to the nutritional value and optimising cooking methods and food presentation. Outsourced food services are also improving the provisions available.

There is now a recommendation for a dedicated catering liaison dietitian in every hospital department (Nutrition and Hydration Digest, BDA 2012); however, they are not solely focused on TMDs. Stroke specialist dietitians are likely to have the largest proportion of patients requiring the TMDs, so working with the catering liaison dietitian and hospital catering team is invaluable. Each catering service should provide a nutritional break down of their TMDs and, by using the Nutrition and Hydration Digest as a guide, the nutritional composition can be deduced. Strategies to maximise provisions of appetising nutrient-dense foods (including snacks) and fluids of suitable textures can increase nutrient intakes (19, 23). Targeted feeding assistance with dysphagic patients has also been seen to be beneficial to nutritional intakes (24).

Modified fluids

As well as TMDs, thickened fluids are also used as a method of safely consuming oral intake during dysphagia. Dysphagic stoke patients who are restricted to thickened fluids are at high risk of dehydration (25, 26). Stroke-associated reduced thirst sensations and cognitive impairments, as well as non-stroke related risk indicators, such as age and physical disabilities, further increase the potential of dehydration risk for this patient group (28). Other risk factors for dehydration include the low acceptance rates of thickened fluids (29).

It is currently unclear whether thickened fluids induce early satiety. Although studies agree that increasing the thickness of a liquid reduces the amount consumed when compared to unthickened fluids. Assessment of the comparison between thickened fluids, food, enteral and parenteral nutrition on fluid intake in stroke dysphagic patients has suggested that there is a greater contribution of fluid provided from food, than beverages (31). Therefore, designing menus and promoting fluid dense foods rather than thickened beverages is an important way of improving





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fluid intakes in patients with dysphagia. Enteral or parenteral supplementation may be needed. Although costly, some settings use pre-thickened beverages, which may help to improve fluid and nutrient intakes for our dysphagic stroke patients (31, 32). There are also now pre-thickened ONS available which may be of some benefit for our patients requiring nutritional supplements. Initial observational studies using them in in non-stroke patients with dysphagia requiring ONS, demonstrated achievements in nutritional aims being met in ease of use and palatability (14).

ADDITIONAL SUPPORT FOR STROKE PATIENTS ON ORAL INTERVENTIONS/ORAL DIETS

Stroke patients should be provided with appropriate equipment and assistance. The use of a plate guard, specialist cutlery and adhesive place mats are examples of such equipment (34). In addition, the red tray system is a simple strategy that alerts healthcare staff that a patient requires assistance and is useful for patients who require a level of physical or cognitive support.

Stroke patients can vary in their need for support with eating and drinking due to other stroke side effects. The use of dining areas have been shown to improve energy intake in elderly patients. With much of post stroke dysphagic population being within this bracket, it may have a positive improvement on nutritional intakes (33).

USING ORAL NUTRITIONAL SUPPLEMENTS (ONS)

Oral nutritional supplements may be helpful for dysphagic patients on oral diets and are recommended for malnourished stroke patients regardless of swallow difficulties (13). A recent Cochrane review concluded that, although we need more studies, the present studies suggest that we should be using oral nutrition supplements for our at-risk patients as their use is associated with increased energy and protein intake and reduction in pressure sores for the dysphagic stroke patient (7) compared to diet alone.

TUBE FEEDING

Tube feeding may be a chosen method of nutritional intervention either to wholly supplement nutritional needs or to supplement intake in those with partial dysphagia. Currently, ESPEN recommend enteral feeding for elderly neurological patients with severe dysphagia, and the RCP 2014 guidelines advise to start within 24 hours via a nasogastric tube for any patient deemed in need of artificial feeding (13, 14).

There have been few evaluation studies made regarding tube feeding to supplement TMDs to see how they impact on outcomes and to guide clinical practice.

No significant difference to mortality rates or pneumonia has been found between the use of NGTs or PEGs in the short term (7). However, when longer-term artificial feeding support is required, then PEG feeding is seen as advantageous, with a significantly lower probability of feeding failure (14). Post-pyloric feeding should be considered if upper gastrointestinal dysfunction is suspected, once medical and pharmacological treatment approaches have been tried or considered.

Available evidence suggests that neither the gastric nor post-pyloric route is seen to be superior to the other, with no advantage in terms of reduction in aspiration pneumonia, tube displacements or nutritional intake (7).

As stroke survival is on the increase and the successes of rehabilitation are becoming more evident, we need to strive to optimise the nutritional care that we provide to assist in promoting the best patient outcomes we can

NASAL BRIDLES, MITTENS OR OTHER RESTRAINING DEVICES

Research is sparse in guiding us with the use of these devices, with no randomised trials evaluating the effects of mittens or other forms of restraint. One two-week study involving 104 dysphagic stroke patients found that the use of nasal bridles significantly increased the amount of enteral nutrition and fluid delivered, ameliorated electrolyte disturbances and improved incidence of NGT failures (35). No difference in mortality, morbidity, PEG placements, functional outcomes, or length of stay was seen.

If patients are not tolerating NGTs, the current RCP guidelines recommend the use of nasal bridles or early gastrostomy placement with locally agreed protocols (14) and recommend that locally agreed protocols and training is in place if mittens are used.

WEANING

Very few studies focus on this transition and there are no national recommendations available for guidance. Some papers suggest as a minimum that a patient must be able to consume adequate oral nutrition and demonstrate a safe and effective swallow on a consistent basis (36). Buchholz (37) proposed a two-step process. Firstly, initiating a intermittent feed schedule as step one and only once a patient is able to consume 75 percent or more of their nutritional needs consistently for at least three consecutive days should the tube then be removed. Reliance on food and fluid charts for assessment of calorie, protein and fluid intake is essential, particularly for patients with impaired memory, or communication barriers, while review of anthropometric and blood results can help to guide if your nutritional plans are working.

SUMMARY

As stroke survival is on the increase and the successes of rehabilitation are becoming more evident, we need to strive to optimise the nutritional care that we provide to assist in promoting the best patient outcomes we can. The forms of nutritional intervention used for dysphagic patients are in need of more research to establish their impact on stroke patient outcomes, including nutritional status, and on what the best strategy is for achieving weight gain, nutritional maintenance or improvements and measurable benefits.

Each patient should be holistically assessed to ensure that the most suitable nutritional intervention is used at each step of their post stroke care, with the available current evidence and recommendations guiding your current practice, weighing up of the risks and benefits and thinking about the impact between using the intervention or not on the patient's quality of life. Whilst the medical aims of active dysphagia management are to continue oral feeding whilst reducing the risk of clinical harm, the nutritional aims are to maintain a good nutrition and hydration status with the most suitable nutritional intervention. More research needs to be done to evaluate the benefits and most suitable nutritional intervention available to maintain or improve nutritional status in our growing dysphagic stroke population. Recent updates in guidance of stroke patients and dysphagic patients should contribute to improved care for these patients and research questions have been asked to add to the current evidence and help strengthen our knowledge for clinical practice.

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Questions relating to: Dysphagia and nutritional interventions in stroke care Type your answers below and then print for your records or print and complete answers by hand.	
Q.1	Describe dysphagia, the 4 classifications and the type that affects stroke patients.
A	
Q.2	Explain why such a high percentage of stroke patients suffer from dysphagia.
A	
Q.3	What are the nutritional risks and consequences of dysphagia in stroke patients?
A	
Q.4	Explain the likelihood of swallow recovery in stroke patients.
A	
Q.5	What screening is recommended for patients with dysphagia (the National Stroke Guidelines for England and Wales)?
A	
Q.6	Outline the advantages and disadvantages of texture-modified diets (TMDs) in stroke care.
A	
Q.7	Give the factors that can influence the risk of dehydration in elderly stroke patients.
A	
Q.8	What can improve fluid intakes of stroke patients?
A	
Q.9	Describe two other methods of nutritional intervention in stroke care.
A	
Q.10	Describe how to wean a stroke patient during the transition phase from enteral tube feeding to oral diet and what needs to be monitored and reviewed to ensure nutritional needs are met.
A	
Please type additional notes here	