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# Nutrition

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**Jackie McRae**

Consultant Speech and Language  
Therapist  
St George's University Hospitals  
NHS Foundation Trust  
London, UK

Jackie.mcrae@nhs.net

[@daisy\\_project](#)

# The Role of Speech and Language Therapy Supporting Nutritional Management in ICU

Speech and Language therapists have a supporting role in the nutritional management of ICU patients, from identifying dysphagia risk factors to facilitating oral intake and improving clinical outcomes.

Speech and Language Therapists (SLT) are recognised members of the multi-disciplinary team working in the Intensive Care Unit (ICU), with a focus on the rehabilitation of communication and swallowing difficulties (oropharyngeal dysphagia). Patients who are admitted to the ICU are likely to need support for at least two organs and this may include ventilatory support necessitating a tracheostomy. A number of studies have identified a link between insertion of an artificial airway and disruption to laryngeal functions, which includes both voice and swallowing (Brodsky 2018). In the UK, the role of SLT extends to the optimal management of secretions, supporting the weaning process from assisted ventilation to self-ventilation through to decannulation as well as facilitating a return to oral intake (Royal College of Speech and Language Therapists 2014). A great deal of therapy intervention may be required prior to consideration of oral intake during which time a patient will require non-oral nutrition to support them through their rehabilitation.

## Normal Swallowing

To better understand the disruption to swallowing, it is valuable to be familiar with the normal process of swallowing. This involves the precise coordination of reflexes and muscle movements across a three stage process (Groher and Crary

2015). At the oral stage, food or fluid is introduced into the mouth through the lips, then manipulated and controlled by the tongue to form a cohesive bolus that is then forced into the pharynx by the back of the tongue under pressure. This triggers the pharyngeal stage of swallowing leading to a series of biomechanical movements which

► **pharyngeal dysfunction and dysphagia has been associated with muscle weakness in critically ill patients and linked to increased risk of aspiration, with poorer outcomes** ►

raises and tilts the larynx to enable closure of the airway whilst simultaneously opening the oesophageal entrance (**Figure 1**). During the oesophageal stage the bolus transfers through the oesophagus to the stomach for further digestive processing (McRae 2018). Any disruption to the timing or range of movements at the oral or pharyngeal stage results in a risk of food or fluid entering the airway, with negative health consequences, such as chest infection and respiratory compromise. If food or fluid is not being absorbed into the digestive system, there

is a loss of nutritional value which further compromises patients' immunity to fight infection.

## Causes of Oropharyngeal Dysphagia

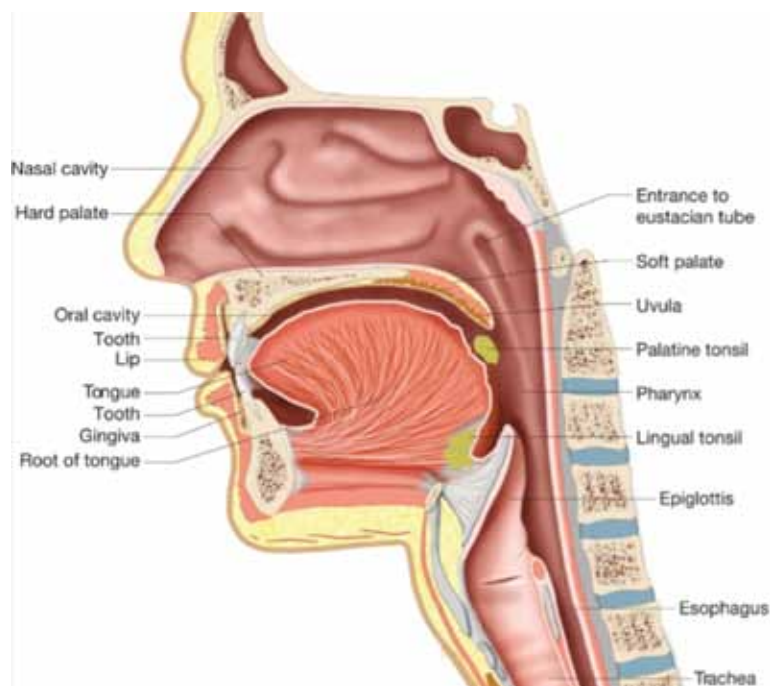
As survivorship of patients increases in ICU, the awareness of the incidence of oropharyngeal dysphagia has also increased, due to its negative impact on mortality. Causes appear to be multi-factorial and include the primary diagnosis, especially neurological, respiratory interventions and ICU acquired weakness (Schefold et al. 2017). For this reason, it has been difficult to identify incidence with reports ranging from 3 to 62% (Skoretz et al. 2010).

## Primary Diagnoses

A number of neurological disorders cause disruption to muscle strength and movement and interfere with normal swallowing. This includes stroke, progressive neurological disorders and traumatic brain injury. Infections and tumours in the oropharynx or nervous system can also cause disturbances to swallowing functions. Patients with neurological conditions in ICU are reported to require increased mechanical ventilation and extended lengths of stay with persisting dysphagia (Macht et al. 2013).

## Respiratory Interventions

Many ICU patients will require an endotra-



**Figure 1.** Cross section of head and neck anatomy - demonstrating close proximity of laryngeal opening to oesophagus

cheal tube or tracheostomy tube to assist ventilation during their admission. An increasing amount of evidence indicates that these can lead to mechanical and physiological disruption to laryngeal functions (Brodsky et al. 2018; Skoretz et al. 2010). This has been termed post-extubation dysphagia (PED) and is acknowledged as being a hidden condition with a high rate of silent aspiration, which demands early identification and intervention (Kwok et al. 2013; Perren et al. 2019).

### ICU Acquired Weakness

This describes varying degrees of muscle weakness and atrophy that occurs in up to 80% of critical care patients, often due to immobilisation and disuse (Jolley et al. 2016). Pharyngeal dysfunction and dysphagia has been associated with muscle weakness in critically ill patients and linked to increased risk of aspiration, with poorer outcomes (Mirzakhani et al. 2013; Ponfick et al. 2015).

Regardless of cause, dysphagia has a negative impact on overall health status and mortality with higher healthcare costs (Altman et al. 2010). Despite increased awareness, routine swallow screening with a planned

intervention is not standard practice in ICUs, but this may help to prevent symptoms of aspiration (Zuercher et al. 2019).

### The Personal Impact of Dysphagia

It is important to consider the personal impact of not eating and drinking. Oral intake not only provides nutritional benefits but has psychological and emotional importance, adding significantly to quality of life (Barr and Schumacher 2003). Communal eating is often attached to family and social events, with many cultures using food and drink in celebration of life events. This needs to be a consideration in the clinical decision-making process, to ensure that social inclusion is maintained without compromise to health (Watson and Bell 2014). Studies have demonstrated the negative impact of not being able to eat that included shame, anxiety and dependence (Carlsson et al. 2004; Jacobsson et al. 2000; Larsen and Uhrenfeldt 2013). For patients in ICU, the process of resuming oral intake signifies recovery and a return to normality through reintegration into the daily routine of mealtimes and sharing food with friends and family (Segaran 2006).

Consideration of the impact on quality of life is important when decisions are being made about long-term nutritional needs.

### Clinical Management of Oropharyngeal Dysphagia

Recent UK guidance for critical care recommend that all tracheostomy patients are assessed by SLT as standard (Faculty of Intensive Care Medicine & Intensive Care Society 2019) although current levels of SLT staffing are unlikely to be able to achieve this. Instead, frontline staff, such as nurses, doctors and allied health professionals are expected to identify risk factors for dysphagia in order to expedite a referral to SLT for swallowing assessment.

### Swallow Screening

A number of screening tools have been developed for early identification of dysphagia. The Water Swallow Test offers a quick assessment of aspiration by checking for overt signs of coughing or wet voice after taking sips of progressive amounts of water (Suiter & Leder 2008). For ICU patients, there remains a risk of false negative results in the event of silent aspiration so additional detailed SLT assessments may be required to verify clinical signs (Brodsky et al. 2016). Other screening tools employ a two-stage process, where staff first review a checklist of risk factors for dysphagia, if passed, the second stage allows water trials. Examples are the GuSS-ICU (Christensen and Trapl 2018) and the PEDS tool (Johnson et al. 2018) which allow early commencement of oral intake for those with no risk factors or dysphagia signs.

### SLT Assessment

A swallow assessment by SLT will firstly involve a bedside evaluation to check range and strength of oral-motor movement, swallow timing, voice and cough. Gold standard instrumental assessments that support a definitive dysphagia diagnosis are Fiberoptic Endoscopic Evaluation of Swallowing (FEES) and Videofluoroscopy



**Figure 2.** The IDDSI Framework and Descriptors. Licenced under Creative Commons

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(VFS). For patients restricted to ICU, FEES offers portability and can be undertaken at the bedside to directly view the functions of the pharynx and larynx for speech, breathing and swallowing tasks (Langmore 2001). In contrast, VFS is a video-x-ray that takes place in the radiology department, with the patient being given radio-opaque coated food and drink of varying textures which is then recorded and analysed for swallow timing, speed and effectiveness (Logemann 1998). Based on these assessments, an intervention plan can be developed to address specific swallowing impairments.

## Dysphagia Management Options

### Non-oral

If assessments show that swallowing function is unsafe for fluids or food consistencies and there is evidence of aspiration, the SLT may make a recommendation for the patient to remain nil by mouth in order to undertake a programme of therapy to rehabilitate the swallowing impairment. To maintain nutrition, the team would need to decide

on short- or long-term options for enteral feeding which may be via a nasogastric (NGT) or gastrostomy tube. National guidance recommend that those with dysphagia should have a 2-4 week trial of nasogastric feeding prior to a team review to consider prognosis and future feeding requirements (National Collaborating Centre for Acute Care 2006). There has been evidence to suggest that NGT can disrupt swallow physiology (Pryor et al. 2014), so if dysphagia is likely to be prolonged, a percutaneous endoscopic gastrostomy should be considered (Dwyer et al. 2002). This is a reversible procedure, so that when oral intake resumes the tube can be removed.

### Dry Mouth

A strong feature of the acute experience of many ICU patients is the feeling of a dry mouth and a strong desire to drink to achieve relief from thirst (Arai et al. 2013). Dry mouth is often a side effect of medication, reduced oral intake and mechanical ventilation (Kjeldsen et al. 2018; Stotts et al. 2015). A dry mouth

and throat can make it difficult to swallow or talk but for those with dysphagia who need to be nil by mouth drinking poses a dilemma, as this may introduce a risk of aspiration. Regular mouthcare as well as oral moisturisation using artificial saliva products (McRae 2011) or a thirst care-bundle (Puntillo et al. 2014) can help to provide relief whilst minimising risk and improve wellbeing during acute care.

### Swallow Therapy Interventions

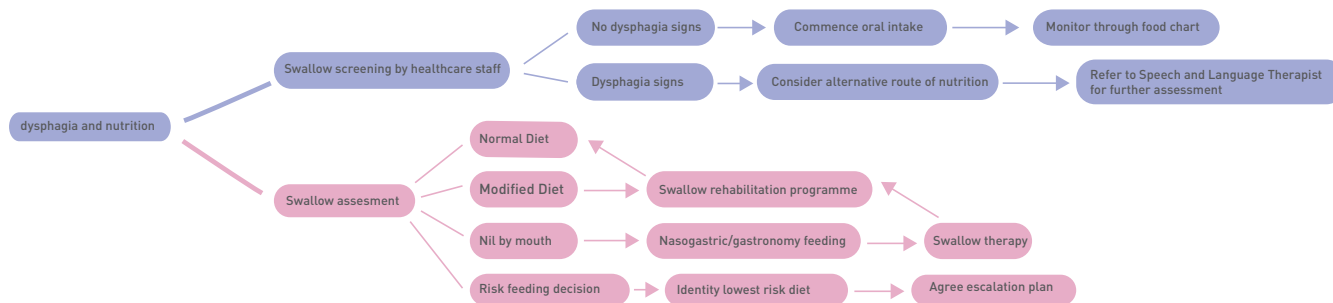
The SLT may identify specific impairments that can still permit safe swallowing with diet modifications to minimise risk of aspiration. The International Dysphagia Diet Standardisation Initiative (IDDSI) provides a universal framework to describe food and fluid textures on a continuum of eight levels (Figure 2). Oral intake will need to be supervised and a food chart kept, to track both amount and consistency of food and drink taken so that informed decisions are made to upgrade or downgrade diet textures.

Alongside a modified diet, SLTs may recommend a range of swallow exercises or strategies to improve motor and sensory functions of the oropharyngeal system to improve swallow safety and return to normal diet (Martino and McCulloch 2016).

consideration of the impact on quality of life is important when decisions are being made about long-term nutritional needs

### Risk Feeding

In some instances, there may be a decision to continue oral diet that is at risk of being aspirated, if alternatives are not an option. This is termed 'risk-feeding' or Eating and Drinking with Acknowledged Risk (EDAR). This may be considered as an option for patients who have significant multi-system



**Figure 3.** Flow diagram of clinical decisions for dysphagia and nutritional management

impairments with poor prognosis, and alternative methods of nutrition may be unsuitable or unsafe (Hansjee 2018). This requires discussion and documentation of decisions with staff, family members and the patient, if possible. The SLT's role will be to assess the patient's swallowing to ensure the most risk-free textures are provided. As a team it is crucial to achieve an agreement on the course of action in the event of clinical deterioration. Use of a decision tool (Figure 3) for those with complex dysphagia can ensure that patients experience less time being nil by mouth and a patient-centred approach to decision-making (Sommerville et al. 2019).

### Outcome Measures

There are a number of outcome measures to evaluate progress in dysphagia rehabilitation. Some are used by SLTs with instrumental assessments to describe the degree of impairment, such as the Penetration Aspiration Scale (Rosenbek et al. 1996), the Secretion Severity Rating scale (Murray et al. 1996) and Yale Pharyngeal Residue Severity Rating scale (Neubauer et al. 2015). Patient reported outcome measures provide insight into the

impact dysphagia on the person and environment. The Functional Oral Intake Scale (FOIS) is a seven-point scale that describes the degree of swallowing function and oral intake or tube feeding required (Crary et al. 2005). The Swallowing Quality of Life Questionnaire (SWAL QOL) (McHorney et al. 2002) is a 44 item self-rating scale that helps to describe dysphagia symptoms, whilst the Eating Assessment Tool (EAT-10) (Belafsky et al. 2008) is a shorter 10 item list for people to describe their dysphagia severity and monitor changes.

### Conclusion

SLTs are an integral member of the multidisciplinary team and have a role in the decisions around oral intake and interventions that may be required for those with dysphagia who will have compromised nutritional intake. Early identification of risk factors and management of impairments can help to ensure nutrition is optimised so that patients can participate in rehabilitation to improve their outcomes and quality of life. ■

### Conflict of Interest

None.

### Key points

- In the UK, the role of Speech and Language Therapists (SLT) extends to the optimal management of secretions, supporting the weaning process from assisted ventilation to self-ventilation through to decannulation as well as facilitating a return to oral intake.
- Recent UK guidance for critical care recommend that all tracheostomy patients are assessed by SLT as standard.
- SLTs are an integral member of the multidisciplinary team and have a role in the decisions around oral intake and interventions that may be required for those with dysphagia who will have compromised nutritional intake.

### Abbreviations

EAT	Eating Assessment Tool
EDAR	Eating and Drinking with Acknowledged Risk
FEES	Fibreoptic Endoscopic Evaluation of Swallowing
FOIS	Functional Oral Intake Scale
ICU	Intensive Care Unit
IDDSI	International Dysphagia Diet Standardisation Initiative
NGT	Nasogastric
PED	Post-Extubation Dysphagia
SWAL QOL	Swallowing Quality of Life Questionnaire
SLT	Speech & Language Therapists
VFS	Videofluoroscopy

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