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**The Role of Speech and Language Therapists in the Intensive Care Unit****Authors:**

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## **Abstract**

National guidance recommends the involvement of speech and language therapists (SLTs) in intensive care particularly for those requiring tracheostomy and ventilation. However, the role of SLTs is poorly understood especially in the context of critical care. This article aims to increase awareness of the background training and skills development of SLTs working in this context to demonstrate their range of specialist abilities. SLTs support and enhance the process of laryngeal weaning alongside the rehabilitation of speech and swallowing as part of the multi-disciplinary team (MDT). Examples are provided of the types of interventions that are used and technological innovations that may enhance rehabilitation of oropharyngeal impairments.

## **The History**

The role of speech and language therapy (SLT) originated in 19<sup>th</sup> century aimed at the correction of speech problems both for elocution and medical disorders. This role was formalised in 1945 and received recognition following speech therapy for King George VI for a severe stammer, famously portrayed in the film 'The King's Speech' <sup>1</sup>. The professional body was officially awarded royal status in 1995 becoming the Royal College of Speech and Language Therapists (RCSLT). With increased medical involvement, the role has developed further sub specialisms in aphasia, motor speech disorders, head and neck cancer, voice and dysphagia.

As the critical care environment has changed from predominantly sedated and ventilated patients, who do not talk or eat, to a more active rehabilitation setting, this has highlighted the presence of dysphagia and communication impairment, although the role of Speech and Language Therapists (SLTs) in this environment is less familiar <sup>2</sup>. As with early mobilisation, SLTs should be involved alongside other therapy colleagues in the early evaluation of laryngeal function to minimise the impact of oropharyngeal dysphagia and aspiration. A range of interventions are available to facilitate recovery of speech and swallowing function, which is key goal for patients wanting a return to normal function

## **The Specific Training Path**

The training path for all SLTs begins with a degree qualification which can be completed as an undergraduate bachelors or postgraduate masters' course. The course covers anatomy, physiology, neurology, linguistics, phonetics, normal and pathological speech, language, voice and swallowing development as well as acquired disorders of communication and swallowing. Clinical placements ensure development of robust clinical skills in healthcare environments.

Following registration, SLTs tend to specialise in either adult or paediatric caseloads. Adult caseloads are usually in an acute, community or rehabilitation setting and it is common practice for SLTs to work in a variety of these settings as they develop their skill sets. A large focus for SLTs is dysphagia, alongside acquired speech and language impairments. As expertise develops, SLTs will work with more challenging cases which can include patients requiring a tracheostomy for example due to traumatic brain injury, spinal cord injury, burns, head and neck cancer, or complex medical recovery. This increasingly brings them into the ICU environment to support patients with early communication and rehabilitation for swallowing impairments. This competency development takes place at a local level and depends on SLT level of staffing, expertise and patient caseload to supervise practice.

A number of national guidelines<sup>3-5</sup> specify the need for SLT involvement in ICU with a requirement for expertise, experience and seniority to ensure appropriate assessments and interventions are delivered to complex patients, including those requiring ventilation, tracheostomy, and prolonged complex dysphagia and/or communication deficits<sup>6</sup>. SLT competencies for ICU in the UK are guided by the RCSLT critical care recommendations and position statement (in preparation) and competency framework for working with tracheostomies<sup>7</sup>. With no designated post-registration training for SLTs working in critical care, clinicians acquire these skills through experience and CPD which may include opportunities to shadow other teams and SLT colleagues in addition to attendance at Clinical Excellence Networks. Staff should be routinely supported through a system of clinical supervision from an advanced clinician and comply with clinical governance, which includes the development of competencies. In smaller centres, this supervision may need to be sourced externally. A clinical training programme should be provided to more junior therapists, with MDT involvement, in order to develop their skills and roles within the ICU setting<sup>8</sup>.

In hospitals with larger ICUs, SLTs may develop specialised skills for specific populations, such as cardiothoracic surgery, neurosurgery as well as general medicine. SLTs provide treatment for critically ill patients who have an acute neurological or medical condition (including trauma, haemorrhage, tumours, spinal injuries, respiratory conditions) or patients following complex neuro, cardiac and general surgery. These conditions may impact language skills, motor speech, swallowing, cough and voice. In addition to this, the medical interventions required in critical care may have an additional and unrecognised impact. This may include prolonged endotracheal intubation and post-extubation dysphagia and dysphonia<sup>9</sup>. Within the ICU setting, patients may also be at risk of recurrent laryngeal nerve damage<sup>10</sup> (mainly patients following cardiothoracic intervention or anterior cervical spinal cord surgery) which will further compromise glottic function impacting swallow and voice ability. Early use of

fibreoptic nasendoscopy by trained SLTs helps to identify structural, sensory and motor problems in the assessment of swallowing and cough functions.

Regular MDT ICU ward rounds help to review, discuss and support a coordinated rehabilitation approach and set achievable goals to improve outcomes. Following the development of NICE guidance QS158<sup>10</sup>, each patient should have a rehabilitation prescription completed within 72 hours, outlining their impairments and planned interventions, which would be updated regularly.

### **The current impact in ICU**

The role of SLT on ICU encompasses assessment, rehabilitation and advice in the key areas of communication, swallowing and tracheostomy weaning:

#### **Communication:**

Early SLT involvement helps to facilitate a successful communication route for all patients on critical care. This is essential to optimise their psychosocial wellbeing, engagement in their day-to-day care and consent decisions. It is well documented that communication difficulties on critical care are a major source of stress<sup>11, 12</sup>. Links have been identified between patients with communication impairments and delirium<sup>13</sup>. SLTs carry out formal and informal assessments of receptive and expressive language (verbal and non-verbal), speech, voice and cognitive communication function. On occasion, communication facilitation may begin when a patient is still intubated but awake and attempting to communicate. The aim will then be to establish a nonverbal communication route to aid communication interaction with family friends and MDT staff on the unit. Nonverbal communication options may include low technology methods for example, partner-assisted scanning of alphabet or picture charts, using eye pointing, finger pointing, writing or high technology devices, such as, pillow switches to access communication buttons, IPADs, grid 3 depending on patient ability and methods of access. Once a successful communication route has been established it is essential to train family members and staff to consistently use these. Patients are reliant on communication partners and the environment to facilitate alternative methods of communication. For those patients presenting with linguistic or cognitive communication deficits bespoke communication guidelines are provided to support interactions on the critical care unit. SLTs deliver individualised intervention programmes to work at both a functional and impairment-based levels, for example, word retrieval strategies, increasing insight into communication deficits, self-monitoring and self-correction. SLTs can support patient communication skills during capacity assessments, ensuring they have the most effective tools to help them understand and communicate their own decisions, demonstrating capacity despite a communication

deficit. For those patients who have a cuffed tracheostomy in situ, SLT will work with the MDT to aim for early cuff deflation trials (including patients requiring ventilation) evaluating the benefits of a one-way valve to maximise trans-laryngeal airflow to help re-stimulate laryngeal functions for phonation, swallowing and cough. SLTs may need to work with patients to coordinate the respiratory cycle to achieve phonation as this can sometimes take place during an inspiratory rather than expiratory cycle, when ventilated. For patients where cuff deflation is not possible, a method known as Above Cuff Vocalisation (ACV) permits low pressure gas to be passed through the port of a subglottic suction tracheostomy tube whilst maintaining cuff inflation. This has been reported to facilitate phonation in some patients under close guidance<sup>14</sup>. This procedure should always involve SLTs who are familiar with anatomy and physiology of the upper airway and specific contraindications and risks associated with this method. Fiberoptic nasendoscopic assessment by SLTs can facilitate identifying those patients appropriate for this technique and the benefit for particular patients.

### **Swallowing:**

One of the key aspects of the SLT role within ICU is assessment of oropharyngeal swallow function. This not only includes assessment for suitability of oral diet and fluids but also the ability to swallow and manage oral secretions. As well as bedside assessments, SLTs are able to carry out instrumental assessments of swallow that provide a more detailed view of functional anatomy and physiology for swallowing using multiple textures, which then directs a bespoke intervention. Videofluoroscopy (VFS)<sup>15</sup> takes place in the radiology department using radio-opaque material added to food textures which the patient is given orally whilst the passage of food is video recorded to highlight abilities of food manipulation, swallow effectiveness and airway protection and transit to the oesophagus. Fiberoptic endoscopic evaluation of swallowing<sup>16</sup>, known as FEES, is a particularly useful tool within ICU, due to its portability compared to VFS, but also the added benefit of directly viewing dynamic pharyngeal and laryngeal anatomy and secretion management. For patient weaning from ventilation and tracheostomy, this can support clinical decisions and often highlight causes of difficulty that can then be resolved<sup>17</sup>. SLTs undertaking a FEES assessment would make recommendations for pharmacological management of excessive secretions and therapeutic swallowing interventions to focus on improving swallowing through strengthening base of tongue, pharyngeal constriction and laryngeal range of movement<sup>18</sup>. In managing dysphagia, the SLT identifies signs and symptoms of aspiration and informs the team of the need to make a decision on whether to proceed with oral intake. With early screening for dysphagia risks by nurses or SLTs, a preventative approach helps to reduce complications and poorer outcomes<sup>19, 20</sup>.

## **Tracheostomy weaning:**

Both swallowing and communication are impacted by the presence of a tracheostomy through redirection of airflow and alterations to valving and pressure systems that power the muscles in normal swallowing. SLTs have specific knowledge and understanding of this physiology and make valuable contributions to MDT decision-making regarding tracheostomy manipulation for weaning<sup>21, 22</sup>. SLTs can optimise communication by supporting cuff deflation and use of one-way valves for phonation. Similarly, trans-laryngeal airflow helps to re-stimulate laryngeal reflexes for swallowing and cough to increase airway safety. In conjunction with respiratory muscle training and biofeedback tools, the rehabilitation of speech and swallowing significantly improves patients' sense of wellbeing and perception of quality of life<sup>23</sup>, enabling them to engage in normal social functions again.

## **The future**

National guidance in the UK recognises and supports SLTs as key members of the critical care MDT<sup>5</sup> promoting early intervention to manage dysphagia, communication and a team approach to weaning<sup>6</sup>. Few units directly fund SLT services, however recommended level of staffing for SLTs in critical care have recently been set at 0.1 wte per bed to include direct involvement with clinical and strategic decisions as part of the wider MDT<sup>3</sup>. This may help to support increased SLT involvement, as studies gather evidence of the impact of intubation on laryngeal function and post-extubation dysphagia<sup>24, 25</sup> and the value of early SLT intervention to improve outcomes. The high level of expertise that many SLTs have developed utilising FEES as a functional evaluation of the airway, have seen this tool add value to decision-making for secretion management and airway manipulation to support both ventilator and tracheostomy weaning, with measurable outcomes<sup>21, 26</sup>.

A number of devices have been developed to maximise swallow interventions and provide either neuromuscular stimulation or biofeedback of the oropharyngeal structures. Surface EMG (sEMG) attached to the submental muscles, acts as an adjunct to therapy providing visual biofeedback to the range and strength of swallow movements<sup>27</sup>. Functional improvements have been reported in other patient groups although more studies are needed<sup>28</sup>. A pharyngeal electrical stimulation device has been trialled in a number of multi-site RCTs and has shown evidence of reducing time to decannulation in stroke patients<sup>29</sup>. In the UK, the National Institute for Health and Care Excellence have issued guidance for using transcutaneous neuromuscular electrical stimulation (NMES) for oropharyngeal dysphagia in adults<sup>30</sup>, as these are not routinely available to SLTs. The guidance permits the use of NMES for clinical management of stroke but for other patient groups it is for research use only, which may be of interest to ICU teams with SLT staffing wishing to evaluate these devices.

In summary, the skills and expertise of SLTs in the area of swallowing function, language and communication skills add great value to the existing multi-professional team in critical care. They already bring a range of assessments and interventions to enhance patient care, with opportunities for future development using advanced technologies.

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