



# **Position Paper**

**Speech and language therapy**

**in**

**Adult Respiratory Care**

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**Procedure for reviewing the document:** A group of experts working across sectors will be identified and asked to review the document to determine whether an update is required. Members can submit their feedback on the document at any time by emailing: [info@rcslt.org](mailto:info@rcslt.org)

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# 1. Introduction

Speech and language therapy is a constantly evolving profession within which new roles are developing to fit changing needs and emerging evidence (RCSLT, 2008). In 2011, the RCSLT ran a feature section in their professional publication, *Bulletin*, on the emerging field of respiratory speech and language therapy (Haines, 2011; Illsley, 2011). As a result, numerous clinicians came forward registering their current, planned or intended diverse input in the respiratory field.

It is our vision that the respiratory speech and language therapy role will become established practice, supported by regulatory standards, policy statements, position papers, robust evidence, training opportunities and competency frameworks. This paper is the first stage to formalise discussion of key areas to achieve that goal and ensure implementation is well guided and appropriate.

## **2. Purpose and intention**

The purpose of this document is to provide a comprehensive overview of the evolving role of speech and language therapy in adult respiratory care. This position paper formalises the workforce development to date and acts as a resource for clinicians who are keen to embrace this evolving role.

It is intended that this document will generate discussion between commissioners and service providers regarding the provision of speech and language therapy services which meet the requirements of people with respiratory speech and language therapy needs.

The document is intended to aid stronger collaborations with multi-disciplinary team (MDT) members and professionals, and be used as a platform to foster and formalise emerging links. For example, the British Thoracic Society intends using this as a foundation to address dedicated therapy treatment protocols for upper airway disorders, in particular vocal cord dysfunction (VCD).

The target readership are speech and language therapists (SLTs) working, or wishing to develop in the field of respiratory, and collaborative professionals such as respiratory physicians, respiratory physiotherapists, service managers and commissioners of services. The main target client populations are detailed in section 5.

This paper is a preliminary attempt to define and promote the role of speech and language therapy as part of a dedicated multidisciplinary team (MDT) in the respiratory field. The working group acknowledge that the document will have limitations, given that this is an emerging clinical area for SLTs and a procedure for review is scheduled for 2018.

### **3. Key recommendations**

- All people with idiopathic or refractory chronic cough (CC), VCD or dysphagia in respiratory care should have access to an effective and timely respiratory speech and language therapy service (see Sections 5, 7 & 10);
- Speech and language therapy services for people with respiratory care needs should be provided within an integrated multidisciplinary context (see Section 5);
- Speech and language therapy services need to engage in evolving the respiratory SLT role through continuous appraisal of service provision and skill mix (see Section 7);
- The speech and language therapy profession has a responsibility to work towards improved clinical audit and research in the field of respiratory speech and language therapy. This will influence future clinical guidelines and the commissioning of new services (see Section 9); and
- Standardised training and competencies for the respiratory SLT role need to be agreed to ensure professional credibility and boundaries are protected (see Section 8).



## **4. Methodology**

### **4.1 Working group**

An expert panel was convened in September 2011 by the national respiratory specialist interest group (SIG, as was then named), in order to write this position paper. This was in response to increasing requests from RCSLT members for some formal guidelines to direct respiratory speech and language therapy professionals.

All clinical areas of respiratory speech and language therapy (CC, VCD and respiratory dysphagia) were represented in the working group by individuals working regularly with the identified caseload within a dedicated respiratory service. All members have considerable experience working within respiratory.

As this is an emerging field for the profession, the number of clinicians operating with considerable service and patient experience is limited, and therefore, the working group was relatively small.

### **4.2 Literature search**

Athens and Google Scholar were used to access the National Institute for Health and Care Excellence (NICE) databases advanced search engine (including Medline, Cinahl, BNI, HMIC and EMBASE). A search of the literature using the PICO methodology (Patient, Intervention, Comparison and Outcome) was used; this methodology consists of four components:

- The Patient (service user) situation, population and/or problem of interest;
- The main Intervention under investigation or action;
- A Comparison intervention, which is an alternative intervention or action (if relevant); and
- The desired clinical Outcome.

In conjunction with relevant Medical Subject Headings (MeSH) terms, search terms were based on the following (full and abbreviated terms were used):

<b>P</b>	VCD; paradoxical vocal fold movement; cough; idiopathic chronic cough; chronic cough; dysphagia; swallow; deglutition; oropharyngeal; Chronic Obstructive Pulmonary Disease (COPD); respiratory/pulmonary disease/disorder; thoracics; upper/lower respiratory tract infection; secretion; breathing/respiration/airway
<b>I</b>	<b>Assessment:</b> nasendoscopy; bronchoscopy; provocation; clinical bedside assessment; evaluation; examination; videofluoroscopy; fibreoptic endoscopic evaluation of swallowing; spirometry; manometry; pulse oximetry; chest x-ray; chest CT; oxygen saturation; respiratory rate <b>Intervention:</b> treatment; therapy; rehabilitation; speech and language therapy; speech pathology; education; surgery; advice
<b>C</b>	Medication: prescription; oral/inhaled corticosteroids; oxygen; nebuliser; chest physiotherapy; heliox
<b>O</b>	Efficacy; cost; direct/indirect clinical outcomes including symptom control; reducing hospital admissions/length of stay/medications; improved quality of life

### 4.3 Appraisal of evidence

Rather than the levels of evidence, the quality of the research and methodology formed the basis of the selection as few level one papers have been published in the area; while papers were not excluded on date, and all years were included.

For VCD, only papers where this was the main focus, were included. To that end, those where VCD was a peripheral issue (e.g. where VCD was only mentioned in differential diagnosis to asthma, but the aim of the paper did not include anything directly related to VCD), were excluded.

Where other comorbidities were researched, papers that provided an insight into deglutition and respiration (e.g. gastro-oesophageal reflux disease) were also included. The majority of evidence focuses on understanding normal deglutition and respiration, with an emerging evidence base into COPD and/or patients on respiratory pathways in primary or secondary care.

## **4.4 Writing of the guidelines**

The expert panel initially met in January 2012 to identify and confirm the need of the paper, set out guidelines for the group and then subsequently became the respiratory forum network. It was agreed the network would meet twice a year to discuss, contribute and edit this paper. It was envisaged the process would take a maximum of two years to complete.

Through each stage of the process group members were allocated individual tasks, and although coordinated by the nominated person, the group worked collaboratively throughout the development of this position paper. All proposals put forward were open for discussion and debate, and through member, external and service user consultation, representation was achieved across the four UK nations.

To further ensure the position paper was a clear, accurate and effective document, a senior academic and respiratory consultant acted as the authors' editor for each draft of the document.

## **4.5 Member consultation**

The profession was alerted to the guidelines being in development and were subsequently invited to review the document and make comments. Copies of drafts were made available to significant RCSLT members, relevant Clinical Excellence Networks (CENs) and RCSLT board members (for full representation please see appendix 1).

The respiratory forum network individually received the membership's collated feedback electronically and then met to discuss the comments. The paper was re-drafted as appropriate and all decisions for approval or rejection of submitted comments were tracked and stored appropriately for evidence.

The position paper was generally well-received, and was especially supportive of respiratory speech and language therapy within VCD and CC. Significant changes to the paper occurred in response to membership feedback that related to dysphagia in respiratory care.

## **4.6 External consultation**

Following member consultation and a responsive edit, the group specified which professions outside of the RCSLT membership base should be consulted with, (for full representation please see appendix 2).

As with the member consultation, the feedback was collated and sent to the working group, who then met to discuss the comments. The paper was re-

drafted as appropriate, with minimal edits, and all decisions for approval or rejection of submitted comments were tracked and stored appropriately for evidence.

Most notably, the British Thoracic Society were very supportive of the paper and gave positive feedback.

## **4.7 Consultation with service users**

Following the external consultation stage, and on completion of the final draft, eight service users were asked to review and comment on the final document. Service users who were approached were either 'expert patients' or had previously been involved in research grants and were therefore happy to review a paper not in layman terms. Four service users responded and all comments were supportive and therefore the paper did not require any additional edits.

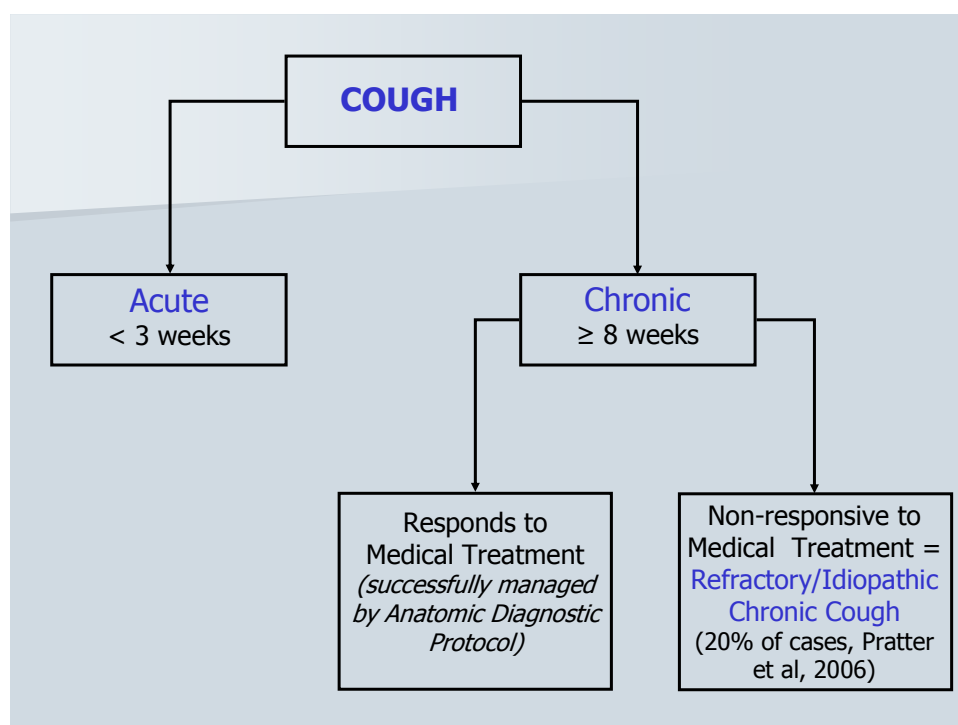
## 5. The role of the speech and language therapist in the respiratory field

Speech and language therapists have clinical expertise in the assessment and management of communication and swallowing difficulties. SLTs working with voice disordered patients and/or complex dysphagia cases have a specialist skills mix that is becoming increasingly recognised as integral to the respiratory MDT.

Transference of skills to the respiratory population is evolving in three key areas of development; CC, VCD and respiratory dysphagia. These conditions are not mutually exclusive and often occur simultaneously but for the purpose of definition will be addressed individually.

### 5.1 Chronic cough

#### 5.1.1 Chronic cough; a definition



Cough is a protective mechanism which represents the outcome of a complex reflex, initiated by activation of irritant receptors in the upper and lower airway (Farrer, Keenan and Levy, 2001). Excessive cough is the most common symptom for which patients seek medical advice (Schappert and Burt, 2006).

Whilst cough in disease states may act to clear excessive airway secretions, dry cough has no discernible physiological benefit for the sufferer. The majority of cases of cough are due to viral upper respiratory tract infections and usually last less than three weeks. However, many patients suffer from coughing lasting more than eight weeks in duration, defined as CC.

Chronic cough is thought to affect approximately 12% of the UK population (Ford et al., 2006) and is responsible for up to 40% of specialist respiratory outpatient referrals (Morice, Garvey and Pavord, 2006). A systematic approach to diagnosis and treatment can be successful but CC can remain refractory to standard therapies in approximately 20% of cases (Pratter and Abouzgheib, 2006).

In specialist clinics, this figure increases to 40% (Haque, Usmani and Barnes, 2005). This significant minority of patients has severe persistent dry cough as an isolated symptom with normal chest radiology and pulmonary function tests. Such patients are very challenging to diagnose and often have severe coughing for many years with a significant impact on their quality of life (French et al., 1998; French et al., 2002; French, Fletcher and Irwin, 2004). They often report coughing in response to otherwise innocuous environmental irritants, such as minor exposure to perfumes, cigarette smoke and temperature changes (Ford et al., 2006).

Patients complain of difficulty controlling coughing once an episode starts. Refractory CC causes considerable physical, social and psychological morbidity (French et al., 1998). Complications of coughing, such as voice disorder, vomiting, urinary incontinence, blackouts, sleep deprivation, depression, relationship difficulties and absence from work, occur frequently (Raj and Birring, 2007).

### 5.1.2 Management of chronic cough

Chronic cough may persist despite systematic evaluation and medical treatment of known triggers, often labelled as idiopathic. Currently there are no effective, acceptable anti-tussive agents for the treatment of such patients. Pharmacological agents such as morphine and inhaled lidocaine may help a few patients but unacceptable side effects limit their usefulness. Nonetheless, there is emerging evidence for the role of non-pharmacological treatment approaches and specifically speech and language therapy interventions (Gibson and Vertigan, 2009). In a recent systematic review of pharmacological and non-pharmacological interventions for cough, speech and language therapy was detailed as showing promise to successful treatment outcomes (Mollassiotis et al., 2010). The review concluded that higher quality research designs, with cough being the primary outcome, were imperative to improve the evidence for cough management.

### 5.1.3 How speech and language therapy benefits idiopathic chronic cough

There is an overlap in CC symptom presentation when compared with other laryngeal disorders such as hyper functional voice disorder (Vertigan et al., 2006) and VCD. SLTs routinely treat these comparable groups in everyday clinical settings. However, in the UK, speech and language therapy within the CC population is limited, despite the current literature detailing interventions, which have been derived from adaptations of established speech and language therapy skills (Gibson and Vertigan, 2009). Vertigan et al.'s (2006) landmark study described the SPEICH-C treatment programme, based upon everyday clinical speech and language therapy methods applied to the CC population. The components of the successful treatment programme included:

- Education about the cough;
- Psycho-educational counselling;
- Strategies to control cough; and
- Vocal training to reduce laryngeal irritation.

In a parallel group randomised controlled trial, SPEICH-C improved symptom frequency and severity ratings for breathing, cough, voice, upper airway and overall symptom limitation in refractory CC compared with a sham treatment.

Suppressing cough in a patient where it is functionally beneficial (e.g. in bronchiectasis) could potentially have adverse consequences. Therefore, it is important to note that speech and language therapy should only be commenced as a treatment option following a full respiratory medical work up, as defined by the British Thoracic Society recommendation for the management of CC (Morice, McGarvey and Pavord, 2006) and within a multi-disciplinary setting.

### 5.1.4 Economic impact of cough

Cough is the commonest symptom for which patients seek medical advice (Schappert and Burt, 2006) and therefore generates significant healthcare and economic costs. It is associated with a spectrum of disorders across multiple medical specialties and can provide significant challenges for effective evaluation and management.

The cost of cough to the UK economy is estimated to be at least £979 million. This comprises £875 million in loss of productivity and £104 million cost to the healthcare system and the purchase of non-prescription medicines (Morice, McGarvey and Pavord, 2006).

It is estimated that approximately 20% of CC patients are resistant to medical treatment (Pratter and Abouzgheib, 2006). From the limited Level 2 evidence available, speech and language therapy intervention has been proved effective in this group. If speech and language therapy is provided as a routine treatment

option, there could be a significant positive impact on reducing the economic burden of this complex condition.

## **5.2 Vocal cord dysfunction**

### **5.2.1 Vocal cord dysfunction; a definition**

VCD is a respiratory condition characterised by abnormal closure of the vocal cords during inspiration, expiration or both. During normal respiration the vocal cords move away from the midline during inspiration and slightly back towards the midline during expiration (England and Bartlett, 1982).

However, in symptomatic patients with VCD, the vocal cords move paradoxically toward the midline during inspiration or excessively so during expiration, resulting in airflow obstruction (Newman, Mason and Schmaling, 1995). True prevalence of VCD is unknown (Mansur, 2010). Patients typically present with episodic or recurrent symptoms of dyspnea and/or stridor (Morris and Christopher, 2010).

Frequently, patients complain of a tightness localised to the laryngeal area and suffer with symptoms of laryngeal tickle, pain, a choking sensation, cough and dysphonia (Newsham et al., 2002). Other symptoms include episodic, sudden onset 'attacks' of:

- Difficulty breathing-in (and sometimes out)
- Inspiratory (and sometime expiratory) wheeze and stridor
- Dyspnoea
- A 'strangled' sensation
- Globus pharyngeus sensation.

Numerous terms have been used to describe VCD. These include hysteric croup, Munchausen's stridor, pseudo-asthma, upper airway dysfunction, irritable larynx syndrome, laryngeal hyper-responsiveness and paradoxical vocal cord movement. There are several theories documented in the literature that try to explain both the presenting complaints and the success of certain interventions.

Much of the early literature focuses on psychogenic reasons for VCD (Christopher et al., 1983) and it was felt that psychogenic and emotional disturbances act as triggers in some patients. More recently co-existing organic presentations have been stated, such as:

- Upper airway sensitivity (Bucca et al., 1995)
- Laryngeal irritants (Morrison, Rammage and Emami, 1999)
- Laryngo-pharyngeal reflux (LPR) (Morris and Christopher, 2010)
- Asthma (Newman, Mason and Schmaling, 1995)
- Post nasal drip (Ryan, Vertigan and Gibson, 2009).

However, none of these has been robustly investigated and no consensus has been agreed. Psychological morbidity is experienced in some VCD sufferers.



Commonly associated triggers of VCD include:

- Exposure to cold air/temperature changes
- Exercise/exertion
- Inhalation of strong smells such as perfumes or chemical cleaning agents
- Smoke
- Cough, laughing, talking
- Reflux
- Viral infections
- Allergens
- Emotional stress
- Food and drink (patient specific)

## 5.2.2 Management of vocal cord dysfunction

The potential irregularity and inconsistency of VCD attacks mean that a detailed case history is essential to diagnosing the condition. Visualising the paradoxical movement of the vocal cords with nasendoscopy is recommended as the gold standard (Morris and Christopher, 2010). SLTs using this tool should follow RCSLT guidelines (Nasendoscopy PP). Pulmonary function tests and oxygen status are supplementary diagnostic tools.

## 5.2.3 Case history

Getting a clear description of symptoms from the patient is a key to diagnosis. When a patient describes difficulty breathing in with restriction at the throat level, further investigation is warranted. VCD frequently mimics asthma presentation because of the episodic restricted airflow and respiratory sounds. Often a diagnosis of VCD is made after treatment for asthma stretching over a period of a few years has been unsuccessful.

As VCD frequently co-exists with asthma (Ayres and Mansur, 2011), diagnosis can be challenging and patients must be taught how to differentiate between the two conditions. In view of the multiple medical conditions that can co-exist with VCD, patients must undergo assessment by a specialist respiratory physician in order to ensure that these are either excluded or adequately treated before VCD-specific therapy is commenced.

## 5.2.4 Nasendoscopy

The classic finding for VCD is inspiratory vocal cord adduction of the anterior two-thirds of the vocal cords with a posterior diamond shaped chink (Christopher et al., 1983). However, abnormal adduction of the true and false vocal cords on both inspiration and expiration is recognised (Echternach et al., 2008). It is now suggested that greater than 50% inspiratory closure of the vocal cords is sufficient for diagnosis (Morris and Christopher, 2010).

During nasendoscopy, the vocal cords are visualised at rest, whilst deep breathing and during phonation. If the patient is asymptomatic, they are challenged with environmental or physical triggers in an attempt to elicit a VCD attack. Stress or provocation testing should only be carried out in a multi-disciplinary setting with medical support, in case of complications or adverse reactions. Assessment when asymptomatic usually shows normal laryngeal function and does not exclude diagnosis (Pargeter, Stonehewer and Mansur, 2011).

## 5.2.5 Pulmonary function tests and emerging diagnostic tools

Flow-volume loops may show inspiratory loop truncation representing extra-thoracic airflow obstruction. However, lung function is frequently poorly tolerated and non-reproducible in patients with VCD. Normal flow-volume loops are not sensitive enough to exclude diagnosis (Ruppel, 2009) and should not influence the decision to perform nasendoscopy (Watson et al., 2009). Likewise, inspiratory airflow limitation is often seen due simply to poor technique or posture.

There are some emerging experimental tests including impulse oscillometry, which can discriminate between central versus peripheral airway obstruction, and may be more sensitive than spirometry (Hira and Singh, 2009). Airway fluoroscopy, plethysmography (measuring functional residual capacity, total lung capacity and airway resistance) and colour Doppler ultrasound imaging of vocal cord movement are non-invasive tools that have not been standardised against nasendoscopy.

## 5.2.6 Treatment options

With MDT involvement, VCD is often well managed such that patients become asymptomatic. Recommended MDT personnel include an SLT, respiratory physician, respiratory physiotherapist, clinical psychologist and an otolaryngologist. At times, VCD will reoccur but with taught techniques, patients have a better understanding of the reasons for their symptoms and feel more in control.

Sniffing and panting manoeuvres can abort acute attacks by inducing vocal cord abduction. Heliox gas mixture can alleviate symptoms by enhancing upper airway laminar air flow and reducing dyspnoea feeling (Weir, 2002).

Critical to successful long-term VCD management is patient education. Video or photographic demonstration of the cause of a patient's symptoms enables proper understanding and allows patient engagement with therapy. Identifying specific triggers and how to avoid them; techniques to prevent, control and resolve attacks as they occur form the mainstay of treatment.

This is usually led by a specialised SLT (Pargeter and Mansur, 2006) working in close cooperation with respiratory physician, otolaryngologist, physiotherapist and clinical psychologist. (Clinical psychology intervention is often indicated and includes management of stress and anxiety, psycho-behavioural therapy and coping strategies. Physiotherapy is often required for patients with VCD as a high proportion of these patients also reveal a dysfunctional breathing pattern (Pargeter, Stonehewer and Mansur, 2011)).

### 5.2.7 How speech and language therapy benefits vocal cord dysfunction

Speech and language therapy has been identified as the cornerstone for VCD management and treatment (Altman et al., 2000). An SLT's skill mix enables a positive and insightful contribution to the entire VCD management pathway. Consequently s/he is acknowledged as a key member of the treating MDT.

Often, SLTs lead nasendoscopy examinations and are instrumental in resolving acute attacks when a patient becomes severely symptomatic. However, it is noted that this is a group of patients that could have morbidity in the outpatient clinic and thus medical personnel must be physically present and resuscitation equipment at hand.

Speech and language therapy teaches patients to relax the upper airway and control the laryngeal area utilising techniques commonly used in voice therapy. Ultimately, the emphasis should be on readily identifying and reducing excessive tension associated with respiration, during a variety of activities and in a variety of settings. By learning to detect increased tension, the patient can implement easier breathing behaviours before an acute VCD attack occurs. Accountability and robust outcome measures are essential to attribute change in patient symptoms to effective speech and language therapy intervention, the VCD (Fowler et al, 2015) is a newly validated and responsive questionnaire which can support this.

### 5.2.8 Economic impact of vocal cord dysfunction

Due to current poor awareness and reporting of VCD the actual true economic impact of the condition is unknown. However, for illustrative purposes the inclusion of a recent cost analysis exercise in an established respiratory speech

and language therapy service (Airways Clinic, Lancashire Teaching Hospitals NHS Foundation Trust) is summarised. This highlights the significant economic impact of VCD pre-speech and language therapy intervention and the favourable returns, post-speech and language therapy management.

### 5.2.9 Cost analysis

It is acknowledged that as this is an emerging field, cost analysis data is limited. Data based on five selected patients with previously unknown respiratory diagnosis, pre respiratory speech and language therapy intervention, are highlighted. All patients were diagnosed with VCD and led by a respiratory SLT in an airways MDT setting. All patients were individually treated with an average of seven respiratory speech and language therapy sessions each. Cost codes are from national tariffs for 2013. Pre- and post-data collection occurred for twelve months either side of the respiratory speech and language therapy sessions given:

	Pre-respiratory speech and language therapy intervention	Post-respiratory speech and language therapy intervention	Percentage reduction	Cost savings
Number of Emergency Department visits	100	14	86%	£24,080
Length of hospital overnight stay days	256	40	84%	£94,824

Further, a study of 20 patients consecutively referred, noted significant reduction in hospital admissions post-therapy (Pargeter et al., 2012).

## **5.3 Dysphagia in respiratory care**

### **5.3.1 Dysphagia in respiratory care**

This relates to people on a respiratory pathway with a primary respiratory diagnosis/disorder and who are under the care of a respiratory physician. This may be in hospital or in the community (for example, a Level 2 Respiratory Care Unit or a Pulmonary Rehabilitation setting). People who require clinical support for their acute or chronic respiratory condition may experience dysphagia symptoms, which require specialist speech and language therapy input (Schindler et al., 2013; Chaves et al., 2011; Cvejic et al., 2011; Illsley, 2011; McPhee, 2011; McKinstry, 2010; Alexander, 2009; Martin-Harris, 2006).

In these circumstances, an oropharyngeal swallowing disorder can arise as a result of obstructive or restrictive lung conditions or from their respiratory treatment/medication. Issues regarding cough, laryngeal sensitivity and reflux may also be a factor. Other comorbidities may also be present. (RCSLT, 2014; Kavitt and Vaezi, 2013; Vertigan and Gibson, 2011; Terada et al., 2010; Gallagher and Naidoo, 2009; O’Kane and Groher, 2009; Gross et al., 2008; Clayton, 2007; Aboussouan, 2005; RCSLT, 2005; Braverman, 2001).

### **5.3.2 Management**

Speech and language therapists have clinical expertise in the areas of assessment and management of swallowing difficulties. They are integral to the respiratory care MDT and provide specialist knowledge and skills. All people with swallowing difficulties in respiratory care should be able to access this specialist respiratory dysphagia service.

The role of the SLT in respiratory care is to work as an integral part of the MDT to:

- Use specialist skills to recognise that a patient has dysphagia related to their respiratory condition and/or its treatment
- Use specialist skills to inform differential diagnosis regarding the nature and cause of swallowing difficulties
- Carry out specialised instrumental methods of assessment for swallowing difficulties such as videofluoroscopy (RCSLT, 2013) and FEES (Kelly et al., 2007) where appropriate
- Provide respiratory specific swallowing rehabilitation including goals, equipment and advice to optimise and maintain function and promote well-being, in liaison with the MDT
- Provide training to the MDT and families/carers regarding swallowing difficulties in respiratory care, such as screening for dysphagia and supporting safer eating and drinking

- Assess and manage swallowing in oxygen-dependent patients, those who require use of secretion clearance devices, nebulisers or inhalers, (which can aid or impede swallow function)
- Contribute to the MDT assessment of changing needs in oxygen, secretion management, nebuliser or inhaler use with the patient's ability to manage and swallow secretions safely
- Support the patient in respiratory care to recognise swallow function changes (including during exacerbations), and to self-manage to the safest extent possible
- Carry out clinical audit, service improvement projects and research alongside respiratory MDT colleagues and evaluate outcomes of therapy.

### 5.3.3 The benefits of providing a speech and language therapy service

The benefits of providing a speech and language therapy service include:

- Early confirmation of the presence of dysphagia in respiratory care patients, differential diagnosis and prognosis dependent on the progression of the respiratory condition and its treatment
- Working with the patient and respiratory MDT to establish alternative feeding needs, consistency of food, drink and medication, timing and volume of oral intake, timing of medication including oxygen and inhaler use with oral intake, changes in medication, postural and breathing techniques
- Specialist advice on timing and strategies for secretion management affecting oral hygiene and swallow
- Specialist evaluation in managing the impact of laryngeal sensitivity, cough issues or reflux for the patient with dysphagia in respiratory care
- Specialist evaluation of swallow function including videofluoroscopy or FEES
- Specialist speech and language therapy intervention in swallow disorders may reduce respiratory inpatients' length of stay or outpatients' risk of (re-)admission with concomitant cost-savings.

## 6. Current skills

Respiratory disorders and respiratory-related illness can result in CC, VCD and dysphagia (Chung and Pavord, 2008; Balkissoon and Kenn, 2012; Hibberd et al., 2013). The evolution of the respiratory SLT has come about by the amalgamation of skills from a variety of other specialisms that SLTs routinely treat. This list is not exhaustive, but these may include:

- ENT
- Head and Neck
- Critical Care
- Neuro-rehabilitation

The appropriate speech and language therapy skill mix must be provided and reviewed to meet the needs of people requiring respiratory care. Many speech and language therapy skills are transferable from one area of current clinical practice to another and this must be acknowledged when treating patients under the care of a respiratory physician.

## **7. Workforce development and planning**

### **7.1 Service development**

The skill mix within teams or between trusts may vary according to the local population and clinical setting. This could be a tertiary specialist centre in an acute hospital or community rehabilitation. However, clinicians will have a relevant background working in ENT/dysphagia with specific application to respiratory care.

The patient population frequently has multiple conditions with similar presentations and co-morbidities e.g. asthma with VCD or CC and reflux (Benich and Carek, 2011). As such, patient pathways can be complex and differential diagnosis difficult. Successful management depends on identifying specific conditions and treating them effectively; misdiagnosis can result in iatrogenic complications (e.g. steroid toxicity) and lead to increased clinical consultations and admissions (Mikita and Parker, 2006) and reduced quality of life (Kuzniar et al., 2007).

Given the diversity of aetiologies associated with this patient population, it is essential that all respiratory SLTs work as an integral part of a dedicated MDT also comprising of a respiratory physician, clinical nurse specialist, physiotherapist (Balkissoon and Kenn, 2012) and psychologist. A combined multi-disciplinary clinic provides optimal service provision for the complex and diverse needs of this population (Natt, Earis and Swift, 2012). This allows patients to access several disciplines during one visit, gives the team opportunities for joint working, assessment and problem solving, and streamlines patient care (Pinnock et al., 2009).

In primary care, this might take the form of an outreach service, providing easier access for those with long-term conditions. Irrespective of setting, it is imperative that the complexity of this population requires joint working and close links with a range of other services. MDT members must identify their roles, boundaries and associated competencies.



## A table of multidisciplinary skills mix

A list of essential and desirable MDT skills mix is summarised below:

<b>Essential</b>	<b>Desirable</b>	<b>Onward Referral</b>
Respiratory Physician Respiratory SLT Respiratory Clinical Nurse Specialist Respiratory Physiotherapist Clinical Psychologist Otolaryngologist (VCD/CC)	Respiratory Physiologist Dietician Nutrition Team GI Physiologist	Gastroenterology Thoracic Surgery Cardiology Oncology Immunology Occupational Therapist Neurology Thoracic Radiologist Otolaryngologist (RD)

Regular MDT meetings should be organised to discuss cases and formulate a treatment plan. MDT collaboration both in-house as well as through external links provides a greater database for research opportunities, which should be greatly encouraged.

Depending on funding and team networks, some SLTs will work solely in this specialist area while others will combine this work with related disciplines (such as acute dysphagia care, voice outpatients etc.). Funding for services can take lengthy negotiation. Robust business cases should be drawn up in collaboration with ENT/respiratory clinicians, business development units and finance (Haines and Lillie, 2012). These should include figures demonstrating: capacity-demand over time; risk assessments; revenue opportunities; audits of waiting times; hospital admission prevention and length of stay (Pargeter, Manney and Mansur, 2012).

Manney and Pargeter note that demonstrating a new scope of practice and a streamlined patient pathway, can attract referrals from a wider area and add weight to any potential bid (Advancing Healthcare Awards, 2011).

## 7.2 Respiratory speech and language therapy development

Clinical and/or service leaders should carry out regular appraisal of skill mix to address fluctuations and changes in service needs. Clinical supervision should be arranged both in house as well as externally, depending on clinician need. Senior members of the team should allow junior members to shadow, especially when they are new in post. It is recommended that systematic review of service planning and succession planning must be regularly undertaken.

It is the respiratory SLT's responsibility to share knowledge and expertise with other speech and language therapy colleagues within the service and throughout local/regional networks. Currently there is a respiratory forum (started September 2011) where respiratory SLTs meet every six months to discuss developments/changes in respiratory speech and language therapy and support each other in the newly-developing role. It is here that this position paper was developed. There is also a respiratory speech and language therapy CEN (started March 2012), in which a variety of allied health professionals (AHPs) involved in respiratory care inform SLTs on their roles/responsibilities and ideas for the future.

Further, a virtual cloud service has been utilised for information-sharing. Journal clubs and local CENs provide further information sharing opportunities. Within service development, SLTs should train other professionals regarding their role and the populations they manage. Information to service users should be readily available through websites, information sheets and patient forums. It is anticipated that this work will culminate in the development of an RCSLT respiratory speech and language therapy adviser.

Attendance at respiratory conferences and writing peer-review abstracts for these conferences should be highly encouraged. Members of the respiratory forum have presented nationally and internationally at the American Thorax Society (ATS), British Thoracic Society and European Respiratory Society (ERS) conferences. Topics of research have included:

- The efficacy of the speech and language therapy role
- The improved understanding of the presenting conditions and co-morbidities
- The screening tools for referrers
- The standardised symptom questionnaires for outcome measures

### **7.3 Referral criteria/protocols**

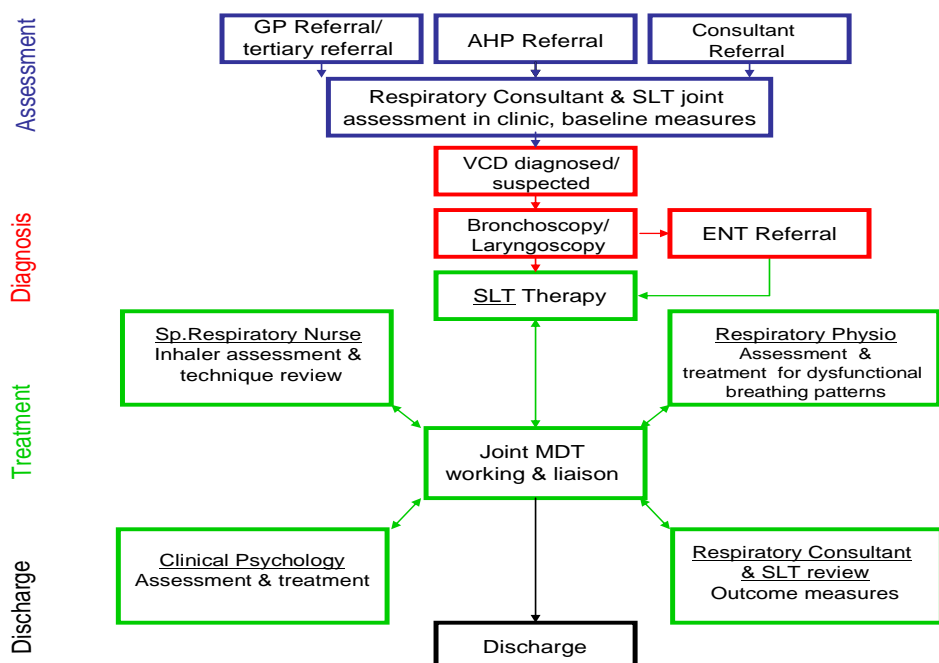
Robust referral criteria and clinic protocols, underpinned by evidence base and professional clinical guidelines, are imperative when working with such complex patient pathways. These measures improve the appropriateness of referrals and efficiency of work practice. These will vary between services but some examples are listed below.

Example of screening criteria for referrals into a respiratory speech and language therapy service:

<b>Vocal cord dysfunction</b>	<b>Chronic cough</b>	<b>Dysphagia in respiratory care</b>
		Patient exhibits dysphagia symptoms

		Patient is under the care of a respiratory physician
Dyspnoea/wheeze	Cough has occurred greater than eight weeks and has been fully assessed and treated (as appropriate) by respiratory physician with specialist interest in CC	
Poor response to inhalers	Not on ACE inhibitors and does not have bronchiectasis	
Truncation of inspiratory flow loops on lung function testing	GORD/nasal disease /asthma /non-asthmatic eosinophilic bronchitis diagnosis excluded after robust medical investigation	
Restricted breathing at throat level	Patient is not awaiting further respiratory investigations and/or results	

Example of a protocol care pathway (Airways clinic, Lancashire Teaching Hospitals NHS Foundation Trust)



Examples of VCD/CC protocol tests:

ROUTINE TESTS	ADDITIONAL INVESTIGATIONS
Case history – screening for VCD/idiopathic or refractory CC  Clinic questionnaires – e.g. HADs, VOISS, AQLQ, Leicester Cough, John Hunter Cough  Lung function tests  SLT-led nasendoscopy with provocation (excluding LPR/post nasal drip)  Medical work up as directed by clinic anatomical diagnostic protocol	Bronchoscopy  24 hour impedance pH monitoring  ENT/SLT joint assessment  Allergy/skin prick testing  HRCT thorax/nasal cavity

Example of dysphagia in respiratory care protocol tests:

<b>ROUTINE TESTS</b>	<b>ADDITIONAL INVESTIGATIONS</b>
<p>Case History – screening for dysphagia</p> <p>Clinic Questionnaires – Respiratory dysphagia screen, SWAL QOL, Sydney Swallow Scale, MRC Dyspnoea Score</p> <p>Observations – oxygen saturation/ respiratory rate</p> <p>Chest X-ray</p> <p>SLT bedside swallow assessment</p>	<p>FEES(ST)</p> <p>Videofluoroscopy (VF)</p> <p>Barium/Water-soluble contrast swallow</p> <p>24-hour impedance pH monitoring</p> <p>Lung Function Tests</p>

## **8. Training and competencies**

### **8.1 Knowledge and skills**

It is the consensus of the expert panel that the underpinning knowledge and skills required to work in the role of a respiratory SLT is, at minimum, core competencies in dysphagia and/or voice disorder. This background facilitates the skill mix required to diversify into respiratory speech and language therapy. Each SLT choosing to work in this new role is ethically responsible for achieving the appropriate level of training to fulfil the role competently. The possible core pre-requisites are:

- Post graduate dysphagia training
- Post graduate voice disorder training
- Advanced clinical knowledge of normal and disordered anatomy and physiology for respiration, airway protection, laryngeal mechanisms and swallowing
- Awareness and understanding of local and national related policies, e.g. RCSLT clinical guidelines and British Thoracic Society clinical guidelines
- Experience and competency with relevant instrumental procedures and interpretation (e.g. nasendoscopy, videofluoroscopy, FEES) or an ability to understand implications of reports and act accordingly (see relevant RSCLT policy documents for the full knowledge and skills required).

#### **Additional knowledge and skills**

This list is not exhaustive and acts as a guide. The additional knowledge and skills required include:

- Awareness and understanding of specialist respiratory multi-disciplinary assessments and diagnoses and how they affect speech and language therapy management, e.g. pulmonary function tests, pulse oximetry, bronchoscopy, impedance manometry
- Awareness and understanding of common medications and use within the respiratory population, e.g. different types of inhalers and the specifics of application
- Specialist direct speech and language therapy intervention skills, e.g. techniques to control an acute VCD attack
- Awareness and understanding of outcome measures used within the respiratory population, e.g. Asthma Control Test
- Training in life support in line with local trust guidelines

## **8.2 Training**

Methods of acquisition of knowledge and skills may be acquired using a range of learning methods. These may include:

- Mentoring
- Supervised clinical experience
- Peer review of clinical practice
- Attendance at relevant conferences/training days
- Critical appraisal of the literature
- E-learning

Currently, as with many specialisms within the speech and language therapy profession, there is no widely accepted training structure to guide a clinician to become a competent practicing respiratory SLT.

It is acknowledged the guidelines set out here are based on expert panel members' consensus and opinion. As this role develops, we suggest specific detailed training programmes are devised, that are nationally endorsed, to ensure a competent, equitable and regulated workforce nationally.

## **9. Research and audit**

It is not within the scope of this document to systematically review current research and audit data related to the field of respiratory speech and language therapy. Key research references have been cited throughout the document to support its content and are included at the end of the position paper.

Any speech and language therapy services or individuals working in the field of respiratory speech and language therapy should audit on a regular basis within a local clinical governance framework (e.g. impact of service on hospital length of stay, accurate diagnosis, outcomes on patient care).

Additionally, there is a unique opportunity for SLTs working in the previously identified respiratory roles to engage in collaborative research. Current speech and language therapy evidence, particularly in the field of CC and VCD, is lacking and robust, prospective, well-designed research projects are missing from the literature.

To continue to evolve this emerging respiratory speech and language therapy role effectively it is imperative that research into best practice occurs to direct and underpin future care models of intervention.



## **10. Benefit and risk**

The list provided below is not exhaustive. It reflects consideration of the benefits of and risk of not providing adult respiratory speech and language therapy services. Primarily it is derived from the expert panel members' experiences of and conclusions on delivering this new and emerging respiratory speech and language therapy role.

### **10.1 Benefits of providing adult respiratory speech and language therapy services**

The benefits to the individual are:

- To provide correct diagnosis which helps prevent misdiagnosis and incorrect management;
- The reduction in medications and more appropriate medications prescribed;
- The reduction in hospital admission, hospital visits and length of stay;
- The reduction of inappropriate diagnostic investigations in searching for an organic cause of VCD and CC;
- To improve the patient experience and concordance due to more streamlined pathways and multi-disciplinary working;
- The improvement of symptom frequency and severity rating for patients with CC;
- The increased quality of life and psychological wellbeing;
- Dysphagia education and management of patients contributes to early identification, self-management of dysphagia and may prevent secondary respiratory and nutritional complications;
- A reduced number of chest infections;
- The specialist weaning intervention which may reduce the time taken to wean from the tracheostomy/ventilator and reduce the length of stay in critical care; and
- A reduction in mortality and exacerbation rates.

(Thompson-Ward et al., 1999; Good-Fraturelli, Curlee and Holle, 2000; Vertigan et al., 2006; McKinstry, Tranter and Sweeney, 2010; Illsley 2011; Anderson and Coles, 2013)

The benefits to the organisation are:

- A reduction in visits to medical professionals and a reduction in prescribed medications leading to reduced costs;
- A reduction in intensive care admissions and reduced use of tracheostomy/ventilation;
- The reduction of hospital admissions, appointments, inappropriate medications, assessments and reduced length of stay;

- The extended speech and language therapy role and skill set reduces consultant time and cost; and
- The further support for specialist centre recognition, in any future Department of Health national respiratory re-commissioning programmes.

(Gibson and Vertigan, 2009; Mollasiotis et al., 2010; Anderson and Coles, 2013)

The benefits to the SLT are:

- The advancement of research and development;
- That it improves the profile of the speech and language therapy role;
- The adapting specialist skill set enables extended role into respiratory MDTs;
- Income generation for speech and language therapy departments; and
- Career progression, and the creation of new roles and opportunities.

(RCSLT, 2008)

## **10.2 Risks of not providing a respiratory speech and language service**

The risks to the patient are:

- The potential for reduced life expectancy;
- The potential for repeat hospital admissions, increased length of stay and failed discharges;
- The increased risk of chest infections;
- An increase in co-morbidities, including malnutrition and secondary chest complications;
- The potential for steroid toxicity; resulting in cushingoid syndrome;
- A reduced quality of life; and
- Inappropriate management.

(Carter, Young et al., 1990; Odderson, Keaton and McKenna, 1995; McClave et al., 2002; Raj and Birring, 2007; Anderson and Coles 2013)

The risks to the organisation are:

- The increase in costs for primary and secondary care due to misdiagnosis and management; and
- An increase in waiting times, hospital stays and failed discharges.

The risks to the SLT are:

- The lost opportunity to improve knowledge, clinical skills and career progression;
- The lost opportunity to raise profile of speech and language therapy and create speech and language therapy positions;
- The risk of clinical incompetency if SLTs manage respiratory caseloads without adequate training and supervision; and

- A diversification into respiratory speech and language therapy role without adequate senior support could impact job satisfaction and morale.

## **11. Medico-legal considerations**

It is not within the remit of this position paper to discuss in full the medico-legal issues associated with clinical practise.

The role of a respiratory SLT is emerging and becoming increasingly recognised as a legitimate speciality within the speech and language therapy profession. However, as this role is in its infancy it is imperative that any SLT working within it adhere to current professional standards, guidelines and regulations. It is recommended that any formalised respiratory role is included within an individual's job description with clear direction on roles and responsibilities, which conform and reflect current professional standards.

Any SLT practising in the area of respiratory disorders should be aware of the following:

### **11.1 Royal College of Speech and Language Therapists**

- As the professional body for SLTs, RCSLT has a leadership role in working to ensure that public policy takes account of issues concerning the profession and that people with communication, eating, drinking or swallowing difficulties receive the best possible support and care;
- Evidence-based practice is crucial to the quality and effectiveness of the care we provide. As practitioners, we need to access the evidence and appraise it before we apply the evidence to our own clinical practice. Services need to provide evidence-based services that anticipate and respond to the needs of individuals who experience speech, language, communication or swallowing difficulties. (See the RCSLT website for more information about evidence based practice); and
- RCSLT provides an insurance policy that indemnifies all its practising members in the UK, Channel Islands and the Isle of Man. This covers proven liability arising from alleged professional negligence, breach of professional conduct and damage to property. (See the RCSLT website for more information about their insurance policy.)

Further;

- This position paper is the RCSLT's official statement of recommendations for a code of practice in the clinical area of respiratory disorders. The therapist has a professional responsibility to adhere to these recommendations and to those of related position papers and policy statements; failure to do so may amount to a breach of conduct; and
- RCSLT acknowledges that professional practice is dynamic in nature and will continue to develop. Members should contact RCSLT for advice about any areas of practice relating to this position paper.

## **11.2 Health and Care Professions Council**

- The individual SLT's right to practise is governed by the regulations of the Health and Care Professions Council (HCPC);
- The practising SLT must adhere to HCPC's code of practice (HCPC, 2012) to meet the, "minimum standards we consider necessary to protect members of the public" (p2); and
- HCPC (2012) defines the SLT's acceptable scope of practice as, "the area or areas of your profession in which you have the knowledge, skills and experience to practise lawfully, safely and effectively, in a way that meets our standards and does not pose any danger to the public or to yourself" (p3).

## **11.3 National and local guidelines**

- In addition, SLTs must practice in accordance with the policies and guidelines of their employer; of related publications from NICE ([www.nice.org.uk](http://www.nice.org.uk)), and in Scotland, SIGN ([www.sign.ac.uk](http://www.sign.ac.uk)); and of related policies published by the relevant government department responsible for health in their nation of the UK ([www.gov.uk](http://www.gov.uk), [www.scotland.gov.uk](http://www.scotland.gov.uk), [www.wales.gov.uk](http://www.wales.gov.uk), [www.dhsspsni.gov.uk](http://www.dhsspsni.gov.uk)).

## 12. Future steps

The future for the speech and language therapy profession is exciting. In the current economic climes, accountability and delivery of cost-effective services is key to further development and investment.

This position paper introduces the role of respiratory speech and language therapy and considers its evolution to date. It addresses key areas for consideration and highlights the need for further consensus on the specifics of this emerging specialism.

Several key issues need to be addressed in the future to enable the role to be developed succinctly, within professional boundaries, and facilitate effective delivery of care. These include:

- The improved and standardised audit data from existing respiratory speech and language therapy services;
- Some cost analysis data on the provision of respiratory speech and language therapy;
- Some robust prospective evidence for treatment;
- An increased speech and language therapy representation at national and international respiratory conferences;
- The improved information dissemination across the profession and multi-disciplinary professions;
- An increase in RCSLT's national and regional respiratory speech and language therapy advisers; and
- The formalised training and competency requirements for the respiratory speech and language therapy role.

Addressing the above points would facilitate a better understanding of the respiratory speech and language therapy role and highlight the cost-effectiveness of its development. The data gathered would influence clinical guidelines, both within speech and language therapy and other professions, give support for further resources to increase the number of respiratory SLTs and most importantly, have a positive impact on patient care.

It is important to note, as with any emerging role, barriers to evolution and implementation of change will occur. This may be within the profession, externally with service commissioners or with members of the MDT. Educating the workforce and generating high-quality evidence base will be key to overcoming these barriers, in addition to those points above.

## 13. References

Aboussouan LS. Respiratory disorders in neurologic diseases. *Cleveland Clinic Journal of Medicine* 2005; 72(6), 511-520.

Abu-Hasan M, Tannous B, and Weinburger M. Exercise induced dyspnea in children and adolescents: if not asthma then what? *Annals of Allergy, Asthma & Immunology* 2005; 94 (3), 366-371.

Advancing Healthcare Awards (2011) Allied Health Professionals and Healthcare Scientists Leading Together On Health. Category 6. [Press release]. Available from: [www.ahpandhsawards.co.uk](http://www.ahpandhsawards.co.uk) [Accessed 28 September 2013].

Alexander JE. Assessment and Treatment Approaches for the Patient with COPD. *Perspectives on Gerontology* 2009; 14 (2), 33-36.

Altman KW, Mirza N, Ruiz C, and Sataloff RT. Paradoxical vocal fold motion: presentation and treatment options. *Journal of Voice* 2000; 14 (1) March, 99-103.

Ayres JG and Mansur AH. Vocal Cord Dysfunction and Severe Asthma. *American Journal of Respiratory and Critical Care Medicine* 2011; 184 (1), 2-3.

Balkissoon R and Kenn K. Asthma: vocal cord dysfunction (VCD) and other dysfunctional breathing disorders. *Seminars in Respiratory and Critical Care Medicine* 2012; 33 (6), 595-605.

Benich JJ and Carek PJ. Evaluation of the patient with chronic cough. *American Family Physician* 2011; 84 (8), 887-892.

Braverman J. Airway clearance dysfunction associated with cerebral palsy: an overview. *Advanced Respiratory* 2001.

Bucca C, Rolla G, Brussino L, De Rose V, Bugiani M. Are asthma-like symptoms due to bronchial or extrathoracic airway function? *Lancet* 1995; 23(346), 791-795.

Butler SG. The SLP's Clinical Use of Pharyngeal and Upper Esophageal Manometry. In: Kay Pentax, ed. *Swallowing Application Notes and Articles*, Lincoln Park, NJ, Kay Pentax, 1997; 33-44.

Cappell MS. Endoscopic, radiographic, and manometric findings associated with cardiovascular dysphagia. *Digestive Diseases and Sciences*, 1995; 40(1), 166-176.

Carter Young E and Durant-Jones L. Developing a Dysphagia Program in an Acute Care Hospital: A needs assessment. *Dysphagia*, 1990; 5(3), 159-165.

Chaves RD, Carvalho CR, Cukier A, Stelmach R, Andrade CR. Symptoms of dysphagia in patients with COPD. *Jornal Brasileiro de Pneumologia* 2011; 37(2), 176-83.

Christopher KL, Wood RP, Eckert RC, Blager FB, Raney RA, Souhrada JF. Vocal cord dysfunction presenting as asthma. *The New England Journal of Medicine* 1983; 308(26), 1556-1570.

Chung KF, Pavord ID. Prevalence, pathogenesis and causes of chronic cough. *Lancet* 2008; 371(962), 1364-1374.

Clayton NA. 2007 The Effect of Chronic Obstructive Pulmonary Disease on Laryngopharyngeal Sensitivity and Swallow Function. Masters of Science in Medicine Thesis. The University of Sydney. [Internet]. Available from: <http://hdl.handle.net/2123/2236> [Accessed 18 August 2013].

Cobeta I, Pachecho A, Mora E. The role of the larynx in chronic cough. *Acta Otorrinolaringológica Española* 2013; 64(5), 363-368.

Cvejic L, Harding R, Churchward T, Turton A, Finlay P, Massey D, Bardin PG, Guy P. Laryngeal penetration and aspiration in individuals with stable COPD. *Respirology* 2011; 16(20), 269-75.

Echternach M, Delb W, Verse T, Richter B. Does isolated expiratory vocal cord dysfunction exist? *Otolaryngology – Head and Neck Surgery* 2008; 138(6), 805-806.

England SJ and Bartlett D Jr. Changes in respiratory movements of the human vocal cords during hyperpnea. *Journal of Applied Physiology*, 1982; 52(3), 780-785.

Farrer J, Keenan J, Levy P. Understanding the pathology and treatment of virus induced cough. *Home Healthcare Consultant*, 2001; 8(2), 10-18.

Ford AC, Forman D, Moayyedi P, Morice AH. Cough in the community: a cross sectional survey and the relationship to gastrointestinal symptoms. *Thorax*, 2006; 61(11), 975-979.

Fowler SJ, Thurston A, Chesworth B, Cheng V, Constantinou P, Vyas A, Lillie S, Haines J. The VCDQ – a questionnaire for symptom monitoring in vocal cord dysfunction. *Clinical and Experimental Allergy* 2015 Published online DOI: 10.1111/cea.12550

French CT, Fletcher KE, Irwin RS. Gender differences in health-related quality of life in patients complaining of chronic cough. *Chest* 2004; 125(2), 482-488.

French CT, Irwin RS, Curley FJ, Krikorian CJ. Impact of chronic cough on quality of life. *Archives of Internal Medicine*, 1998; 158(15), 1657-1661.



- French CT, Irwin RS, Fletcher KE, Adams TM. Evaluation of a cough-specific quality-of-life questionnaire. *Chest* 2002; 121(4), 1123-1131.
- Gallagher L and Naidoo P. Prescription Drugs and Their Effects on Swallowing. *Dysphagia* 2009; 24; 159–166.
- Gibson P and Vertigan A. Speech pathology for chronic cough. *Pulmonary Pharmacology & Therapeutics*, 2009; 22(2), 159-162.
- Gross RD, Atwood CW, Ross SB, Eichhorn KA, Olszewski JW and Doyle PJ. The Coordination of Breathing and Swallowing in Parkinson's Disease. *Dysphagia* 2008; 23, 136-145.
- Haines J. (2011) Respiratory Speech and Language Therapy. *Bulletin* [Internet], Feb, pp. 15-16. Available from:  
[http://www.rcslt.org/docs/bulletin/2011/feb\\_bulletin\\_pdf](http://www.rcslt.org/docs/bulletin/2011/feb_bulletin_pdf) [Accessed 18 August 2013].
- Haines J and Lillie SF. Providing a multi-disciplinary approach to the management of vocal cord dysfunction and other associated conditions: Airways Clinic Service. RCSLT Conference, 2012. London.
- Haque RA, Usmani OS, Barnes PJ. (2005) Chronic idiopathic cough: a discrete clinical entity? *Chest* 2005; 127(5), 1710 – 1713.
- Harulow, S. (2011) Saving Money, Transforming Lives. *Bulletin* [Internet], April, pp. 12-15. Available from:  
[http://www.rcslt.org/docs/bulletin/2011/april\\_bulletin\\_pdf](http://www.rcslt.org/docs/bulletin/2011/april_bulletin_pdf) [Accessed 18 August 2013].
- Health & Care Professions Council (HCPC) (2012) Standards of Proficiency – Speech and Language Therapists. London, HCPC.
- Hibberd J, Fraser J, Chapman C, McQueen H, and Wilson A. Can we influence factors to predict aspiration pneumonia in the United Kingdom? *Multidisciplinary Respiratory Medicine* 2013; 8(39), 1-7.
- Hira HS and Singh A. Significance of upper airway influence among patients of vocal cord dysfunction for its diagnosis: Role of impulse oscillometry. *Lung India* 2009; 26(1), 5-8.
- Illsley I. (2011) Dysphagia and chronic obstructive pulmonary disease. *Bulletin*. [Internet], Feb, pp.13-14. Available from:  
[http://www.rcslt.org/docs/bulletin/2011/feb\\_bulletin\\_pdf](http://www.rcslt.org/docs/bulletin/2011/feb_bulletin_pdf) [Accessed 18 August 2013].
- Kavitt RT and Vaezi MF. (2013) Extraesophageal Manifestations of Reflux Disease and Dysphagia. In: Shaker R, Belafsky PC, Postma GN, Easterling C. eds.

Principles of Deglutition, A Multidisciplinary Text for Swallowing and its Disorders, New York, Springer Science, pp.739-751.

Kelly AM, Hydes K, McLaughlin C, Wallace S. (2007) Fiberoptic Endoscopic Evaluation of Swallowing (FEES): The role of speech and language therapy. RCSLT Policy Statement.

Kenn K and Balkissoon R. Vocal cord dysfunction: what do we know? *European Respiratory Journal*, 2011; 37(1), 194-200.

Kuzniar TJ, Morgenthaler TI, Afessa B, Lim KG. Chronic cough from the patient's perspective. *Mayo Clinic Proceedings*, 2007; 82(1), 56-60.

Logemann JA. (1998) Evaluation and Treatment of Swallowing Disorders. ProEd, Austin, Texas.

McClave SA, DeMeo MT, DeLegge MH, DiSario JA, Heyland DK, Maloney JP, Metheney NA, Moore FA, Scolapio JS, Spain DA, Zaloga GP. North American Summit on Aspiration in the Critically Ill Patient: Consensus Statement. *Journal of Parenteral and Enteral Nutrition*, 2002; 26(Suppl. 6), S80-S85.

McKinstry A, Tranter M, Sweeney J. Outcomes of Dysphagia Intervention in a Pulmonary Rehabilitation Program. *Dysphagia*, 2010; 25(2), 104-111.

McPhee K. (2011) A preliminary investigation into the association between Chronic Obstructive Pulmonary Disease (COPD) and oropharyngeal dysphagia, and its impact on health. PhD Thesis. University of Sheffield. [Internet]. Available from: <http://etheses.whiterose.ac.uk/1593/> [Accessed 18 August 2013].

Martin-Harris B. (2006) Coordination of respiration and swallowing. *GI Motility Internet*. [Internet]. Available from: <http://www.nature.com/gimo/contents/pt1/full/gimo10.html> [Accessed on 18 August 2013].

Mikita J and Parker J. High levels of medical utilization by ambulatory patients with vocal cord dysfunction as compared to age and gender-matched asthmatics. *Chest* 2006; 129(4), 905-908.

Miles A, Zeng ISL, McLauchlan H, Huckabee, M-L. Cough Reflex Testing in Dysphagia Following Stroke: A Randomized Controlled Trial. *Journal of Clinical Medicine Research* 2013; 5(3), 222-233.

Mollasiotis A, Bryan G, Caress A, Bailey C, Smith J. Pharmacological and non-pharmacological interventions for cough in adults with respiratory and non-respiratory diseases: a systematic review of the literature. *Respiratory Medicine*, 2010; 104(7), 934-944.

Morice AH, McGarvey L, Pavord I. Recommendations for the management of cough in adults. *Thorax*, 2006; 61(1), 1-24.

Morris MJ and Christopher KL. Diagnostic Criteria for the Classification of Vocal Cord Dysfunction. *Chest*, 2010; 138(5), 1213-1223.

Morrison M, Rammage L, Emami, AJ. The Irritable Larynx Syndrome. *Journal of Voice*, 1999; 13(3), 447-455.

Natt RS, Earis JE, Swift AC. Chronic cough: a multidisciplinary approach. *Journal of Laryngology & Otology* 2012; 126(5), 441-444.

Newman KB, Mason UG, Schmaling KB. (1995) Clinical features of vocal cord dysfunction. *American Journal of Respiratory and Critical Care Medicine*, 1995; 152(4), 1382-1386.

Newsham KR, Klaben BK, Miller VJ, Saunders JE. Paradoxical vocal-cord dysfunction: management in athletes. *Journal of Athletic Training*, 2002; 37(3), 325-328.

O'Kane L and Groher M. Oropharyngeal dysphagia in patients with chronic obstructive pulmonary disease: a systematic review. *Revista CEFAC*, Jul-Sept; 2009; 11(3); 499-506.

Pargeter NJ, Manney S, Mansur AH. Speech and Language Therapy Effectiveness in Vocal Cord Dysfunction. *European Respiratory Journal* 2012; 40 (Suppl. 56), 3528.

Pargeter NJ and Mansur AH. The effectiveness of speech and language therapy in vocal cord dysfunction. *Thorax*, 2006; 61 (Suppl. 2), ii126.

Pargeter NJ, Stonehewer L, Mansur AH. Patient Management: Hyperventilation Syndrome and psychological aspects of breathlessness. *Foundation Years Journal* 2011; 5(9), 34-39.

Pinnock H, Huby G, Tierney A, Hamilton S, Powell A, Kielmann T, Sheikh A. Is multidisciplinary teamwork the key? A Qualitative study of the development of Respiratory Services in the UK. *Journal of the Royal Society of Medicine* 2009; 102(9), 378-90.

Powell C and Brazier A. Psychological approaches to the management of respiratory symptoms in children and adolescents. *Paediatric Respiratory Review*, 2004; 5(3), 214-224.

Powell DM, Karanfilov BI, Beechler KB, Treole K, Trudeau MD, Forrest LA. Paradoxical vocal cord dysfunction in juveniles. *Archives of Otolaryngology - Head and Neck Surgery* 2000; 126(1), 29-34.

Pratter MR and Abouzgheib W. Make the cough go away. *Chest* 2006; 129(5), 1121-1122.

Raj A and Birring SS. (2007) Clinical assessment of chronic cough severity. *Pulmonary Pharmacology and Therapeutics*, 2007; 20(4), 334-337.

Royal College of Speech and Language Therapists (RCSLT) (2005) Disorders of feeding, eating, drinking and swallowing. In: Clinical guidelines. 2nd ed. Oxon: Speechmark, 63-71.

Royal College of Speech and Language Therapists (RCSLT) (2008) Policy Statement. Evolving roles in speech and language therapy. RCSLT Position Paper. London: RCSLT.

Royal College of Speech and Language Therapists (RCSLT) (2013) Videofluoroscopic evaluation of oropharyngeal swallowing function (VFS): The role of speech and language therapists. RCSLT Position Paper. London: RCSLT.

Royal College of Speech and Language Therapists (RCSLT) (2014) Speech and language therapy in adult critical care. RCSLT Position Paper. London: RCSLT.

Ruppel GL. (2009) The inspiratory flow-volume curve: the neglected child of pulmonary diagnostics. *Respiratory Care*, 2009; 54, 448-449.

Ryan NM, Vertigan AE, Gibson PG. Chronic cough and laryngeal dysfunction improve with specific treatment of cough and paradoxical vocal fold movement. *Cough* 2009; 5(4), 1-8.

Schappert S and Burt C. Ambulatory care visits to physician offices, hospital outpatient departments, and emergency departments: US, 2001-2. Vital and Health Statistics. Series 13, Data from the National Health Survey 2006; 13 (159), 1-66.

Schenkel NS, Burdet L, de Murait B, Fitting JW. Oxygen saturation during daily activities in chronic obstructive pulmonary disease. *European Respiratory Journal*, 1996; 9(12), 2584-2589.

Schindler A, Mozzanica F, Sonzini G, Plebani D, Urbani E, Pecis M, Montano N. (2013) Oropharyngeal Dysphagia in Patients with Obstructive Sleep Apnea Syndrome. *Dysphagia* [Internet], July 2013. Available from: <http://link.springer.com/article/10.1007%2Fs00455-013-9474-9> [Accessed 27 September 2013].

Terada K, Muro S, Ohara T, Kudo M, Ogawa E, Hoshino Y, Hirai T, Niimi A, Chin K, Mishima M. Abnormal Swallowing Reflex and COPD Exacerbations. *Chest* 2010; 137(2), 326-332.

Thompson-Ward E, Boots R, Frisby J, Bassett L, Timm M. Evaluating Suitability for Tracheostomy Decannulation: A Critical Evaluation of Two Management Protocols. *Journal of Medical Speech Language Pathology* 1999; 7(4), 273-281.

Vertigan AE and Gibson PG. Urge to Cough and its Application to the Behavioural Treatment of Cough. *Bratislava Medical Journal*, 2011; 112 (3), 102-108.

Vertigan AE, Theodoros DG, Gibson PG, Winkworth AL. Efficacy of speech pathology management for chronic cough: a randomised placebo controlled trial of treatment efficacy. *Thorax* 2006; 61(12), 1065-1069.

Watson MA, King CS, Holley AB, Greenburg DL, Mikita JA. Clinical and lung function variables associated with vocal cord dysfunction. *Respiratory Care* 2009; 54(4), 467-473.

Weir M. Vocal cord dysfunction mimics asthma and may respond to heliox. *Clinical Paediatrics* 2002; 41(1), 37-41.

Yamanda S, Ebihara S, Ebihara T, Yamasaki M, Asamura T, Asada M, Une K, Arai H. Impaired urge-to-cough in elderly patients with aspiration pneumonia. *Cough* 2008; 4(11), 1-6.

## 14. Appendices

### Appendix 1 - Member consultation

Membership consultation occurred between 27/05/14 and 20/06/14. Twenty-nine responses were received from across England, Scotland, Wales and Northern Ireland (please note that not all respondents left personal contact details).

<b>RCSLT Hub region</b>	<b>No of responses</b>
London	2
Wales	1
Scotland	1
Northern Ireland	2
South West	2
North West	5
Yorkshire and Humber	1
East Midlands	3
West Midlands	2
East of England	2

Responses were received from across the following organisations:

<b>Organisation</b>	<b>Sector</b>
Whittington Health	NHS
East Lancashire Hospitals Trust	NHS
Heart of England NHS Foundation Trust	NHS
Hertfordshire Partnership University Foundation NHS Trust	NHS
UHSM, NHS	NHS
North Bristol NHS Trust	NHS
University of Greenwich	HEI
Belfast Health and Social Care Trust	NHS
Belfast Trust	NHS
Doncaster and Bassetlaw NHS Trust	NHS
Lancashire Teaching Hospitals NHS Foundation Trust	NHS
Cwm Taf Health Board	NHS

Cambridgeshire Community Services	NHS
Chesterfield Royal Hospital NHS Foundation Trust	NHS
University Hospital of South Manchester	NHS
Bradford District Care Trust	NHS
West Suffolk Hospital	NHS
Coventry and Warwickshire Partnership Trust	NHS
Gloucestershire Care Service NHS Trust	NHS
Pennine Care NHS trust	NHS
Royal National Orthopaedic Hospital	NHS

## Appendix 2 – External consultation

External consultation occurred between 31/10/14 and 15/12/14. The working group identified a list of external stakeholders who should be invited to feedback on the document prior to publication. The following stakeholders were invited to respond to the consultation:

<b>Stakeholder</b>	<b>Stakeholder type</b>	<b>Response received</b>	<b>Comments submitted</b>
North West Severe Asthma Network	Clinical multi-disciplinary commissioned network	Yes	No
Asthma UK	Professional body	No	No
ENT UK	Professional body	Yes	Yes
British Lung Foundation	Professional body	No	No
Royal College of Physicians	Professional body	No	No
Royal College of Surgeons	Professional body	Yes	No
Royal College of Physiotherapists	Professional body	Yes	No
British Thoracic Society	Professional body	Yes	Yes
Association of Chartered Physiotherapists in Respiratory Care	Professional body	Yes	No
Association of Respiratory Nurse Specialists (ARNS)	Professional body	Yes	Yes