Upper airway disorders within adult respiratory services – guidance

Key points

- The term upper airway disorders within adult respiratory services is used to differentiate between upper and lower respiratory disorder and broader speech and language therapy clinical populations related to dysphagia
- SLTs are specialists in the assessment, diagnosis and treatment of upper airway disorders, which includes inducible laryngeal obstruction and chronic cough
- Speech and language therapy for patients with upper airway disorders improves patient-reported quality of life and reduces healthcare use significantly; patients should have equitable access to appropriately trained SLTs.
- SLTs working in upper airway disorders are members of a specialised respiratory multidisciplinary team, and it is recommended they should be commissioned as such.
- Dysphonia, in the absence of any respiratory symptom burden, should be managed according to the **RCSLT voice guidance** and within the context of a multidisciplinary team (MDT) ENT setting.

Please also read RCSLT position paper: **The role of speech and language therapy in upper airway disorders within adult respiratory services (PDF)**.

Clinical population

Upper airway disorders represent abnormal laryngeal functions, which are thought to develop as a result of heightened laryngeal sensitivity and hyper-responsiveness (Famokunwa et al, 2019; Hull et al, 2016; Sundar et al, 2021). They include:

- inducible laryngeal obstruction (ILO)
- chronic cough (CC)
- persistent throat clearing
- globus pharyngeus
- heightened laryngopharyngeal sensitivity symptoms (eg throat irritation, atypical throat sensations)
- dysphagia symptoms (without evidence of impaired swallow function)
- dysphonia

When patterns of abnormal laryngeal function occur a number of respiratory symptoms can develop (eg cough, breathlessness, wheeze). The umbrella term 'laryngeal dysfunction' captures these symptoms, which often appear refractory to treatment and incongruous with a clinical disease state (Hull et al, 2016).

Patients often present with an overlap of upper airway disorder symptoms (Vertigan et al, 2013), which suggests the manifestations of laryngeal dysfunction may be mechanistically linked (Sundar et al, 2021). Evidence supports this theory as the clinical profiles of ILO and CC are markedly similar in terms of demographic and clinical attributes (Ryan et al, 2009).

Inducible laryngeal obstruction

Inducible laryngeal obstruction describes inappropriate transient laryngeal closure during respiration. In the absence of any structural or neurological abnormalities, airflow obstruction occurring at the glottic and/or supraglottic level leads to breathing difficulties (Halvorsen et al, 2017). Understanding of the condition remains limited as available evidence is largely retrospective. Patients present across various healthcare settings with differing levels of morbidity, ranging from mild dyspnoea to acute respiratory distress (Haines et al, 2018).

Symptoms are sudden in onset, often triggered by exposure to an external environmental trigger, and typically affect inspiration (with associated throat tightness and often noisy breathing) (Dunn et al, 2015; Halvorsen et al, 2017). Due to commonality in symptoms ILO is often misdiagnosed as asthma (Haines et al, 2018; Newman et al, 1994; Newman et al, 1995). To add to the complexity the two conditions are not mutually exclusive and can co-occur (Low et al, 2011; McDonald, 2019).

Historically, numerous terms (including vocal cord dysfunction and paradoxical vocal fold motion/disorder) have been applied to describe inappropriate laryngeal closure (Christensen et al, 2015; Haines et al, 2018), which has caused significant confusion and hindered research developments. The European Respiratory Society, European Laryngological Society, and the American College of Chest Physicians led an international task force in 2015 with an aim to standardise nomenclature (Christensen et al, 2015). International consensus was achieved, and the term ‘inducible laryngeal obstruction’ proposed with clear justification and explanation.

The RCSLT supports the adoption of this taxonomy and recommends SLTs working within the field of upper airway disorders use inducible laryngeal obstruction (ILO) routinely.

Chronic cough

Cough is a protective reflex mechanism, which enables airway secretion clearance and prevents aspiration. The majority of cases of cough are acute or subacute and arise due to viral upper respiratory tract infections, usually lasting less than three weeks. However, when a cough persists for more than eight weeks it is defined as ‘chronic cough’ (Irwin et al, 2006).

Chronic cough patients classically describe a dry irritable cough, which triggers in response to environmental irritants and a subsequent urge to cough (Hilton et al, 2013). Due to research advances, it is now accepted CC represents a hyperresponsiveness of the neuronal pathways involved in the cough reflex (Satia et al, 2017), and an impairment in descending inhibitory controls (Ando et al, 2016; Farrell et al, 2012). More recently the phenomena have been referred to as cough hypersensitivity syndrome (Morice et al, 2014).

A systematic approach to diagnosis and treatment can be successful but cough can remain refractory in approximately 20% of cases (Pratter and Abouzgheib, 2006). Persistent cough causes significant physical, psychological and social morbidity. Many patients suffer from incontinence, vomiting and depression, thus negatively affecting quality of life (French et al, 1998).

Role of speech and language therapy

The remit of SLTs working in upper airway disorders within respiratory services is both broad and specialised. SLTs are required to manage patients with multiple and complex comorbidities and work across dedicated and disparate MDT teams. The speech and language therapy workforce has the skills to contribute across a patient's clinical journey; ie assessment, differential diagnosis, management planning, treatment and discharge.

SLTs play a key role in educating patients to be able to differentiate respiratory symptoms and therefore maximise effectiveness of medical interventions. Speech and language therapy is frequently referred to as the 'gold standard' beneficial treatment for ILO (Kenn and Balkissoon, 2011; Marcinow et al, 2015; Patel et al, 2015), despite the lack of prospective randomised control trials. In CC, better quality evidence exists and supports the role of SLTs in managing CC patients; in two randomised control trials speech and language therapy reduced cough frequency and improved health-related quality of life (Chamberlain et al, 2017; Vertigan et al, 2006).

Workforce planning within organisations should occur to ensure SLTs are available to provide high-quality care for patients with upper airway disorders. SLTs working in upper airway disorders are members of a specialised respiratory MDT, and it is recommended they should be commissioned as such.

Impact of upper airway disorders and benefit of speech and language therapy

Upper airway disorders are associated with high healthcare utilisation, which negatively impacts healthcare resources and patient morbidity. No robust data exists to quantify the economic impact, but the burden is likely significant. Speech and language therapy can improve outcomes on patient-recorded quality of life (Bassil et al, 2018; Chamberlain et al, 2017; Fowler et al, 2015; Patel et al, 2015; Pargeter and Mansur, 2016; Slinger et al, 2019; Vertigan et al, 2006) and significantly reduce healthcare usage (Murphy et al, 2020). Therefore, the need for speech and language therapy provision to support alleviation of symptoms is self-explanatory.

Inducible laryngeal obstruction

Data from the UK national ILO registry (Haines et al, 2020) identifies high healthcare utilisation within the population; 69% of individuals had visited emergency departments at least once in 12 months, with an average of five attendances. Critical care admission occurred in one in five patients, with 10% receiving intubation and ventilatory support. Patient morbidity was significant; over half were off work on long-term sickness due to their symptoms and 64% reported impaired functional capacity on the MRC breathlessness scale.

According to a recent systematic review, patients with asthma and co-existing ILO demonstrate greater healthcare use by more than a third, compared to those with asthma only (Murphy et al, 2020). Nearly 40% of patients suffering with ILO were misdiagnosed as asthmatic for an average 5.3 years, resulting in inappropriate pharmacological burden.

Chronic cough

Chronic cough affects between 5-10% of the adult population (Song et al, 2015), and is responsible for up to 40% of respiratory outpatient referrals (Pratter et al, 2006). The impact of CC on a patient is significant and includes physical complications (eg vomiting, incontinence, cracked ribs) as well as psychosocial problems (eg social isolation). When compared with other chronic medical conditions, CC sufferers have significantly higher levels of depression due to symptom burden (Adams et al, 2009).

Multidisciplinary working

Multidisciplinary team working is an integral role for SLTs working in upper airways disorders. During differential diagnosis, SLTs inform the MDT of the contribution upper airway function is playing on respiration and suggest appropriate strategies to maximise function when required. Regular input to specialist airway MDT meetings is a common role. Core MDT colleagues include:

- SLTs
- respiratory physicians
- respiratory physiotherapists
- respiratory clinical nurse specialists
- lung physiologist
- mental health practitioners/clinical psychologists
- otolaryngologists

Wider MDT colleagues include:

- allergists
- cardiothoracic physicians
- critical care intensivists
- dietitians
- gastroenterologists
- oesophageal laboratory technicians
- pharmacists

SLTs working in upper airway disorders are often members of a specialised respiratory MDTs, and it is recommended they should be commissioned as such.

Referral

Cough, breathlessness and other respiratory symptoms can arise as a symptom of a number of conditions (eg malignancy, airway stenosis, uncontrolled asthma, bronchiectasis). It is therefore imperative, prior to any speech and language therapy intervention, that thorough assessment from a respiratory physician occurs. This assessment may take place in an uni-professional respiratory clinic or as part of a dedicated upper airways MDT respiratory clinic. Referrals containing any red flag symptoms (eg haemoptysis, unintentional weight loss, persistent noisy breathing) should be managed in accordance with existing professional guidelines and re-directed onto relevant pathways.

Referral pathways will vary according to local services and commissioning. In specialist centres, initial referrals may be for MDT respiratory assessment rather than isolated speech and language therapy assessment, with subsequent referral for ongoing speech and language therapy management as a result of the MDT assessment process. SLTs may receive direct referrals from respiratory clinics once respiratory assessment has occurred (especially in CC populations). However, in all cases, referrals should provide as much existing data as possible on previous investigations to support assessment and ongoing management.

For SLTs working in upper airway disorders, the minimum recommended referral criteria include:

- respiratory medical review within the last six months
- ability to refer directly back for respiratory review (with a low threshold applied), if no longer under the care of a dedicated respiratory physician
- endoscopic evaluation of the larynx (continuous laryngoscopy in suspected ILO cases) within the last six months
- optimised management of associated conditions (eg asthma)
- patient being aware of diagnosis and consents to referral
- patient being appropriate for speech and language intervention and is likely to benefit
- patient is aware of the role of speech and language therapy in managing upper airway disorders and is happy to engage

Based on the above minimum criteria, SLTs are unlikely to regularly accept direct referrals from GPs (eg direct GP referral for CC management would be rejected if there had been no respiratory review in the previous six months). Similarly, self-referrals should be rejected.

Assessment

Clinical evaluation

It is important to gain a comprehensive understanding of previous events, current status and patient expectations. The minimum case history data set should include:

- presenting complaint
- history of presenting complaint
- significant past medical history and diagnosed co-morbidities (eg reflux, nasal disease)
- drug history (particularly use of asthma medications and angiotensin-converting enzyme inhibitors)
- occupational history
- social history including smoking and employment status
- respiratory specific details (eg symptom onset, triggers – including any environmental, exacerbations, mucous burden, treatment trials and responses, previous intubations)

Investigations

Investigations will be tailored to the patient and directed by respiratory physicians. As a minimum, prior to speech and language therapy intervention, investigation should include:

- endoscopic evaluation of the larynx (and continuous laryngoscopy in suspected inducible laryngeal cases)
- imaging (chest x-ray)
- lung physiology (spirometry, ± reversibility, flow volume loops)

Other assessment investigations may include:

- breathing pattern disorder assessment
- bronchoscopy
- cardiac specific investigations (eg electrocardiogram)
- data related to allergy (immunoglobulin E, skin prick test) and inflammation (blood/sputum eosinophils, fractional exhaled nitric oxide)
- gastroenterology specific investigations (eg oesophageal manometry and 24-hour ph monitoring/barium swallow)
- imaging (high-resolution computed tomography)
- objective dysphagia assessments

Treatment

Speech and language therapy interventions are typically multi-modal and may be combined with other treatments (eg joint working with respiratory physiotherapists when there is a co-existing breathing pattern disorder). Typically, speech and language therapy will be delivered via a one-to-one method to facilitate a high level of personalisation. However, group therapy for the management of CC has been reported effective (Selby et al, 2018).

Generally, strategies aim to facilitate reduction in laryngeal irritants/aggravating behaviours, behavioural modifications and distraction techniques. Specifically in ILO the primary role is to teach control of the laryngeal area and maintain an adequately open airway during respiration. In CC, there is usually a greater emphasis on cough suppression techniques.

Common components used in speech and language therapy management of upper airway disorders include (not an exhaustive list):

- cough suppression
- diaphragmatic breathing
- differentiation of symptoms
- discussion of contributory and maintaining factors
- education and explanation
- laryngeal airway control exercises (including emergency 'release' breathing techniques)
- psychoeducational counselling (including goal setting)
- relaxation of head and neck extrinsic muscle tension
- release of inappropriate upper airway constriction
- supporting decision making for pharmacological interventions, as part of an MDT (eg biological therapy for severe asthma, reduction in inappropriate steroid use)
- upper airway health
- visual-biofeedback therapeutic laryngoscopy
- Controlling symptoms during purposeful trigger exposure

Monitoring

Several symptom questionnaires exist to evaluate upper airway disorders. Key questionnaires include:

- Leicester Cough Questionnaire (Birring et al, 2003)
- Cough Severity Index (Shambel et al, 2013)
- VCDQ (Fowler et al, 2015)
- Newcastle laryngeal hypersensitivity questionnaire (Vertigan et al, 2014)
- Pittsburgh vocal cord dysfunction index (Traister et al, 2014)
- Dyspnoea index (Witek et al, 2003)

Supplementary questionnaires may include (not an exhaustive list):

- Reflux symptom index (Belafsky et al, 2002)
- Nijmegen Questionnaire (Van Doorn et al, 1982)
- Brompton Breathing Pattern Assessment Tool (Todd et al, 2018)
- EAT-10 (Belafsky et al, 2008)
- Voice Handicap Index (Rosen et al, 2004)
- Voice Symptom Score (Wilson et al, 2004)

The RCSLT has adopted **Therapy Outcome Measures** (TOMS) (Enderby et al, 2013) as the profession's outcome measurement tool. To support SLTs working in upper airway disorders, a group of senior SLTs are developing a standardised TOMS framework for upper airway disorders. The final validation of the tool is underway and will be available here in due course.

In line with the requirements of the Health and Care Professions Council (HCPC), ongoing monitoring should occur. This will facilitate an understanding of progress and provide data on the effectiveness of speech and language therapy intervention to support ongoing management and appropriate discharge (together with patient therapy goals).

For patients with known co-existing respiratory disease it is essential that if treatment response is not as expected, there is deterioration in respiratory symptoms or there are any other concerns, respiratory review should occur prior to continued speech and language therapy intervention, preferably within the MDT context.

Continuous laryngoscopy

Endoscopic evaluation of the larynx enables endoscopic evaluation of the nasal cavities, pharyngeal space and laryngeal vestibule. It establishes if there are any structural, pathological, neurological or functional abnormalities. However, in the context of ILO, it only provides a snapshot in time and in the absence of concurrent respiratory symptoms, the laryngopharynx functions normally.

The frequently cited gold standard for ILO diagnosis is laryngoscopy during a symptomatic episode (Halvorsen et al, 2017). However, diagnostic confirmation is dependent on being able to perform laryngoscopy during a symptomatic attack. This is not always logistically possible and highly dependent on direct accessibility of equipment and appropriately trained clinicians. Therefore, in recent years provocation agents have been used on individuals who are baseline asymptomatic, with an aim to induce and replicate compatible clinical features within a controlled environment.

Continuous laryngoscopy during provocation (Hull et al, 2019) or exercise (Heimdal et al, 2006) provides a more targeted assessment as continuous monitoring occurs while symptom inducers are presented. It enables visualisation of any laryngeal reactions within the laryngeal vestibule in real time. Diagnostic yields in this context are reported to be more accurate and targeted (Halvorsen et al, 2017; Hull et al, 2019). However, despite efforts to provoke symptoms during continuous laryngoscopy, individuals may remain asymptomatic. It is therefore important to ensure false negative ILO diagnoses are not given; the confirmation of an ILO diagnosis during continuous laryngoscopy is only possible when the individual is symptomatic. When no symptoms are elicited during the procedure, the MDT should look to the presence or absence of other clinical signs to inform differential diagnosis (eg patient history/description of symptoms/truncation of inspiratory flow loops).

The **RCSLT upper airways position paper (PDF)** provides the professional clinical context within which SLTs should practice continuous laryngoscopy and is the RCSLT's official statement of professional practice for SLTs using it. It is the professional responsibility of individual SLTs to ensure adherence to its content; evidence of such adherence will help to ensure professional indemnity. Guidance includes scope of practice, purpose, procedure, patient information, consent, equipment, assessment protocols and image interpretation guidance.

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Key organisations

- **British Thoracic Society**
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- **Association of Chartered Physiotherapists in Respiratory Care**
- **British Laryngology Society**
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