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RCSLT POSITION PAPER

Speech and language therapy endoscopic evaluation of the larynx (EEL) for clinical voice disorders

ROYAL COLLEGE OF SPEECH & LANGUAGE THERAPISTS

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By the Royal College of Speech and Language Therapists (RCSLT)
2 White Hart Yard, London SE1 1NX
020 7378 1200

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This paper has been written on behalf of the Royal College of Speech and Language Therapists (RCSLT) by the following expert panel:

Name	Job title	Employer	Role
Rehab Awad	Clinical lead speech and language therapist	University Hospital Lewisham, London	Supporting author
Karen Esposito	Highly specialist SLT	Sheffield University Teaching Hospitals NHSFT	Supporting author
Sue Jones	Consultant SLT in professional voice rehabilitation	Manchester University Foundation NHS Trust	Lead author
Jane Shaw	Consultant SLT (voice)	Doncaster and Bassetlaw Hospitals NHS Trust	Supporting author
Suzanne Slade	Advanced practitioner SLT	Nottingham University NHS Trust and SVS Training Ltd	Supporting author
Catherine Stewart	Lead clinician in voice	Belfast City Hospital	Supporting author
Kate Young	Clinical lead SLT voice/head and neck	University Hospitals of Derby & Burton Foundation Trust	Supporting author

The paper was originally written by an expert panel convened by the RCSLT in May 2004 and revised by the same panel in 2007. The original panel members were Paul Carding (chair), Sue Jones, Valerie Morton, Fiona Robinson, Suzanne Slade and Claire Wells.

The 2020 document is the result of extensive consultation with highly specialist/expert SLTs (voice disorders) and several other colleagues from related disciplines.

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Executive summary

The Royal College of Speech and Language Therapists (RCSLT) recognises that endoscopic evaluation of the larynx* (EEL) is within the scope of practice for highly specialist speech and language therapists (SLTs) (voice disorders).

These EEL procedures are used to contribute to the diagnostic process and provide information about the function and status of the larynx and/or vocal tract before, during and after treatment. This practice (or direct access to it) is considered essential for any highly specialist SLT working within a voice disorders service, and can be used in head and neck cancer services. EEL is seen as only one important aspect of speech and language therapy assessment, diagnosis and management of patients with a voice disorder. It should not be used in isolation, but only in conjunction with other tools such as perceptual and objective voice quality evaluation, patient-reported outcome measures (PROMs) and detailed case history-taking.

This position paper provides the professional clinical context within which SLTs can practice EEL, and the appropriate procedural protocols that should be observed. The document also provides a structured framework for both the acquisition and the maintenance of the knowledge and skills required. In addition, there are statements on professional issues of responsibility and health and safety matters. This position paper supersedes all previous RCSLT guidance in respect to speech and language therapy endoscopy for voice-disordered patients (2004 policy statement and 2008 position paper).

It is acknowledged that SLTs also use endoscopic examination techniques for other purposes, eg in assessment of swallowing, inducible laryngeal obstruction (vocal cord dysfunction) or nasal resonance disorders (RCSLT 2019; RCSLT 2008; RCSLT 2008). The specific details of those applications are not covered in this document and have been addressed in separate RCSLT guidance/position papers. It is also acknowledged that the SLT role is constantly evolving and new practices are developing (RCSLT 2018).

** The term 'endoscopic evaluation of the larynx' includes both rigid and flexible endoscopy and the use of stroboscopy. Throughout this document it is abbreviated to 'EEL' for ease of reading. Complete definitions are found in section 1.2. This term is chosen in preference to 'video laryngeal endoscopy' as used in RCSLT position paper 2004.*

Contents

1. Context

1.1 Background and rationale

EEL (including rigid and flexible endoscopy and the use of stroboscopy) is a laryngeal imaging procedure that may be used by laryngologists and speech and language therapists (SLTs) as a diagnostic and therapeutic tool (Rattenbury and Carding 2004; ASHA, 1992).

SLTs with expertise in voice disorders and with specialist training in EEL are professionals qualified to perform the procedure(s) for the purpose of assessing laryngeal structure and function and its impact on voice production. Within multidisciplinary settings, these diagnostic and vocal function assessment procedures may be accomplished through the combined efforts of these related professionals (Harris and Howard 2018). EEL may also be used as a therapeutic aid and biofeedback tool during the course of voice therapy or voice surgery (Jones 2016; Rattenbury and Carding 2004).

A literature review was undertaken to capture relevant research papers published since the 2014 revision. Papers that did not contribute to knowledge of the EEL procedure itself, but that included EEL as an examination tool, were excluded. It is not the remit of this position paper to include an extensive systematic review or detailed critical appraisal of the literature.

1.2 Definitions of terminology

EEL is defined as an examination of laryngeal anatomy and physiology using endoscopic equipment, and can be achieved either by using a rigid endoscope introduced through the mouth, or by using a flexible endoscope via the nose. Rigid endoscopy is particularly useful when high-quality images of the larynx and vocal folds are required, while flexible endoscopy allows a more complete assessment of the entire vocal tract during a wider range of phonatory and non-phonatory laryngeal activities. The new generation of flexible videoscopes are capable of producing images that are comparable to those obtained from the rigid endoscope.

Although much of the detailed laryngeal anatomy and function can be determined using a continuous light source with either type of endoscope, examination with a stroboscopic light source allows additional information about the vibratory patterns of the vocal folds to be obtained (Karnell 1994; Hirano and Bless 1992; Woo et al 1991). Accuracy of interpretation partially depends on image resolution. Technology is constantly under development,

and SLTs should ensure the equipment used for laryngeal examination is of high enough quality to support accurate diagnosis and management. (There is a more detailed description of equipment later in this section.)

1.3 Scope of practice (role of the SLT)

It is the position of the RCSLT that EEL examination is within the scope of practice for SLTs (voice) to contribute to the diagnostic process and provide information about the function and status of the larynx and/or vocal tract, during the treatment of patients with voice disorders. Within this context, SLTs play a key part in delivering EEL services in a multidisciplinary context. The RCSLT acknowledges that medical practitioners are the primary professionals qualified and licensed to offer medical diagnoses. EEL represents an example of SLTs working in enhanced and advanced clinical practice.

SLTs have expert level skills in diagnosis of clinical voice disorders and, where it has been agreed with the employing organisation and the ENT team, it may be appropriate for suitably experienced and competent SLTs to make a medical diagnosis, within a safe and well-defined clinical context. The competencies required for this type of role are set out within the training and competencies section of this document. The types of clinics where this may be appropriate are detailed in section 1.7.

This position paper primarily refers to EEL practice with adults with voice disorders. However, SLTs may also see paediatric and adolescent patients in some voice clinic settings, while not necessarily being SLT paediatric voice specialists. In particular, children and adolescents may be seen in specialist performers' clinics.

The practice of speech and language therapy is dynamic and changing. The scope of practice extends alongside advances in technology, enabling practitioners to provide new and improved methods to obtain diagnosis and progress treatment. Identifying EEL as within the scope of practice of SLTs does not limit other new or emerging areas from being developed by SLTs to help improve treatment and diagnosis of voice disorders. It is also recognised that EEL applications by SLTs may result in a stronger evidence base for existing treatment practices. Some examples of these clinical developments are described within this document. If practitioners choose to perform these procedures, indicators should be developed to continuously monitor and evaluate their appropriateness, efficacy and safety.

SLTs must ensure that approval has been given by the employing organisation for EEL to be incorporated into speech and language therapy practice. This should include development of departmental policies and procedures stating scope and range of practice, which will vary according to the types of clinics undertaken and degree of autonomy required. A description of responsibilities related to EEL must be clearly stated in an individual's job description. Clinical competence to undertake the EEL procedure must be evidenced by additional specialist training, eg achieving the RCSLT competency framework in EEL in section 3. Additionally, theoretical knowledge and clinical practice in EEL must be evidenced within an individualised professional development framework and be subject to an annual review process (see section 3: competencies and training).

1.4 Purpose of EEL for SLTs

Highly specialist SLTs (voice disorders) may carry out laryngeal and vocal tract assessment, via an endoscope, in order to:

- Identify and describe phonatory structures and their function (Harris and Howard 2018; Jones 2016; Colton and Casper 1996; Karnell, 1994)
- Identify the presence and assess the effects of lesions, structural abnormalities or alteration of function on phonation and speech (Harris and Howard 2018; Jones 2016; Karnell 1994)
- Assist in the interpretation of the above as part of the clinical discussion, thereby contributing to the diagnostic process (Harris and Howard 2018; Karnell 1994)
- Independently carry out the above within boundaries of expertise as outlined in the competency framework (Jones 2016)
- Provide feedback regarding vocal tract function as part of the therapeutic process (Harris and Howard 2018; Jones 2016; Rattenbury and Carding 2004; Karnell 1994)
- Direct treatment and evaluate its effectiveness (Jones 2016; Rattenbury and Carding 2004; Colton and Casper 1996).
- Provide visual biofeedback during therapy (Jones 2016; Rattenbury and Carding 2004; Colton and Casper 1996)
- Improve patient understanding of their voice disorder and compliance with treatment (Harris and Howard 2018; Jones 2016; Rattenbury and Carding 2004; Colton and Casper 1996)
- Record phonatory behaviour and laryngeal structures for future reference (Jones 2016)
- Provide endoscopic laryngeal visualisation during laryngeal surgical procedures (Jones 2016)

- Provide surveillance/follow-up of laryngeal cancer post-intervention (Ward et al 2014; Kothari et al 2011).

1.5 Professional context and clinical location

SLTs should perform EEL only where there is a multidisciplinary voice disorders service. This should include combined/joint voice clinics (see sub-section 1.7) with established access to a laryngologist (specialist ear, nose and throat (ENT) surgeon in voice and laryngeal disorders). SLTs should perform EEL only with the full support of their laryngology colleagues and using an agreed protocol to access opinion and/or medical assistance from a specialist laryngologist.

The types of voice services offered within each individual setting will vary depending on caseload, types of interventions offered and specialist skills of both ENT and the SLT. The age ranges covered will vary according to service requirements. Where clinics are run by SLTs working autonomously without an ENT presence, there should be a defined protocol agreed with ENT with regard to criteria of patients accepted into the clinic, including age range and presenting condition.

If the trust does not have an established multidisciplinary voice disorders service, local written agreement may be made with the individual SLT, stating that the trust is liable for providing this service and for the speech and language therapy individual practice, but that it is operating outside the boundaries set out in the RCSLT position paper.

1.6 Benefits and risks

The benefits of EEL performed by SLTs are as follows:

Service-related	Clinical
Allows development of voice clinic services (Harris and Howard 2018; Jones 2016; Carding 2003)	Verifies and expands on referral information (Harris and Howard 2018; Jones 2016; Rattenbury and Carding 2004; Colton and Casper 1996; Karnell 1994)
Simplifies and enhances patient pathway for therapeutic and surgical intervention (Carding 2003)	Trials therapy and assesses laryngeal postures during phonation (Jones 2016; Rattenbury and Carding 2004; Colton and Casper 1996)
Reduces length of intervention (Rattenbury and Carding 2004)	Use as a prognostic indicator for voice therapy success (Jones 2016; Rattenbury and

	Carding 2004; Colton and Casper 1996)
Reduces waiting times (Carding 2003)	Visual feedback tool during voice therapy (Harris and Howard 2018; Jones 2016; Rattenbury and Carding 2004; Colton and Casper 1996)
Allows timely follow up of post-operative patients (Carding 2003)	Ensures appropriate treatment for presenting disorder (Rattenbury and Carding 2004; Carding 2000)
Provision of outcome measures to support efficacy and clinical research (Carding 2000)	Evaluates the effects of medication prescribed to impact vocal recovery, such as anti-reflux or anti-fungal medications (Harris et al (2014)
Training and developing clinical skills	

The risks of EEL performed by SLTs are as follows:

- Misinterpreting competency and expert practice/service delivery at local level
- Development of inappropriate speech and language therapy endoscopy services (ie without sufficient levels of speech and language therapy expertise, and not within an appropriate multi-disciplinary voice clinic context).

1.7 Different types of EEL clinic

The following types of EEL clinic currently exist. A brief description of each type is included here, although it should be acknowledged that local variance of clinical practice is inevitable:

a) Combined/joint voice clinic

The aim of this clinic is to provide patients with a multidisciplinary approach to evaluating and managing a clinical voice disorder. The patients' problems often require the expertise of both the laryngologist and the SLT (voice) in their diagnosis and management. Other professionals, such as a clinical psychologist, an osteopath and/or a singing teacher, may also be involved in the clinic or be part of the extended team (Harris and Howard 2018).

b) (i) Parallel SLT-led clinic

This model typically uses strict selection criteria in order to try to identify patients most likely to require voice therapy as their primary mode of treatment (Jones 2016; Carding 2003). These clinics aim to reduce the number of hospital visits, and to enable the patient to be seen by the voice specialist who is most likely to manage their voice problem.

This SLT-led clinic runs 'in parallel' to a designated otolaryngology clinic. This arrangement facilitates ease of patient transfer to the laryngologist, should the consultation require it. The SLT is the first point of contact with the patient from the referring agent, and there will be a local triage process. These clinics operate only when the consultant laryngologist is running a parallel clinic.

Detailed endoscopic assessment of the structure and physiology of the larynx (in conjunction with perceptual, instrumental and case history findings) enables the SLT to plan and deliver treatment more effectively and efficiently (Harris and Howard 2018; Jones 2016; Rattenbury and Carding 2004). Diagnostic decisions are made jointly with the laryngologist, following a review of the laryngeal image and case discussion of the pertinent assessment findings. The ultimate medical and legal responsibility for these patients is with the specialist laryngologist. SLTs should practice within the RCSLT Duty of Care Guidelines (RCSLT 2020) and HCPC Standards of Proficiency (Health Care and Professions Council 2020).

This model of service delivery requires advanced clinical practice and a philosophy of team working which is integral to a well-developed voice disorders service.

c) (ii) Expert SLT-led clinic

This is another model of parallel clinic, where the SLT is practising at expert or consultant practitioner level and works autonomously in the assessment, diagnosis and management of referrals. The fundamental difference is access and level of autonomy of the practising SLT, but the types of patient diagnoses may be similar to those seen in joint and parallel clinics. This type of clinic is viewed as a further development from a parallel clinic.

The SLT must be a level 3 endoscopist (see training and competencies resource), and there must be an agreed referral pathway and protocol with the ENT team. This type of clinic may be for general referrals (with a clear selection criterion), specific patient groups or a follow-up clinic. The following specialist clinics are an indicative, but not exhaustive, list:

- Performers clinic
- Surveillance/follow-up laryngeal cancer clinic
- Post-benign vocal fold lesion surgical review clinic

- New referral hoarse voice clinic/two-week wait clinic (triaged, according to specific locally agreed criteria, as low-risk).

The SLT will independently assess/review patients. Joint review of findings is not essential, but there should be access to laryngological opinion if required.

SLTs should practice within the RCSLT Duty of Care Guidelines (RCSLT 2020) and HCPC Standards of Proficiency (HCPC 2020). This model of service delivery requires expert clinical practice and a philosophy of team working which is integral to a well-developed voice disorders service.

d) Voice therapy clinic

Patients who have already had an ENT or consultant/expert practitioner laryngeal examination, and who are referred to voice therapy, may also undergo additional EEL assessments by an SLT (voice disorders). This clinic is commonly called a 'voice therapy clinic'.

The aim of this clinic is to assist the speech and language therapy management of a voice-disordered patient. Patients may undergo an endoscopic assessment, performed by an appropriately skilled specialist voice SLT, in this clinic for reasons that may include:

- An additional voice therapy opinion and assessment (Harris and Howard 2018; Jones 2016; Colton and Casper 1996)
- More detailed understanding of the biomechanics of voice production (Harris and Howard 2018; Jones 2016)
- Trials to ascertain appropriate therapy intervention (under endoscopic view) (Harris and Howard 2018; Jones 2016; Rattenbury and Carding 2004; Colton and Casper 1996)
- Therapy trials to improve patient compliance with treatment (Harris and Howard 2018; Jones 2016; Rattenbury and Carding 2004; Colton and Casper 1996)
- Patient biofeedback (simultaneous or recorded) (Jones 2016; Rattenbury and Carding 2004)
- Obtaining pre-and post-outcome measures post-therapy/surgery (in conjunction with other tools) (Carding 2000).

If, during the assessment procedure, the SLT becomes aware of any anatomical or physiological abnormality that has not been mentioned in the referral letter, the opinion of a laryngologist, or more senior SLT endoscopist, should be requested.

e) Laryngeal intervention clinic

This is a multidisciplinary clinic involving a laryngologist and SLT (voice). Other staff, such as a nurse/physiotherapist (as appropriate), may also be present. The aim of this clinic is to deliver surgical laryngeal interventions in an out-patient or theatre setting. These interventions may include injection medialisation, botulinum toxin injection, laser laryngeal procedures and laryngeal biopsy. The laryngologist executes the surgical intervention under endoscopic control.

The SLT (voice) contributes to the patient selection for the procedure, provides advanced endoscopic laryngeal visualisation during the procedure, advises the patient on post-intervention care, and provides post-operative intervention follow-up as appropriate. It is expected that SLTs performing endoscopy in this type of clinic are trained to level 3 (see training and competencies section and resource).

f) Tertiary joint voice clinic for complex disorders

This is a multidisciplinary clinic involving a laryngologist and an expert SLT. These clinics act as tertiary centres, receiving referrals from other consultant and speech and language therapy colleagues. The patients referred are complex, often having been seen by several other professionals, or with differential diagnosis and management that remains unclear. Patients may have undergone previous surgery and/or therapy without their voice problem being resolved. It is expected that SLTs performing and interpreting endoscopy in this type of clinic are trained to level 3 (see training and competencies section and resource).

1.8 Local arrangements

The SLT must ensure that approval has been given by their employer with recognition of competence at the appropriate level to perform the procedure (see training and competence section 3). The employer should also approve the type of EEL service that is being offered (in consultation with the local ENT service). Use of the EEL procedure must be written into the SLT's individual job description, in agreement with their head of department. It is good practice to inform other colleagues (ie referrers) as appropriate.

In order to obtain full clinical privileges to perform independent endoscopic evaluation of voice disorders (including serving as the endoscopist), the speech and language therapy clinician must have undertaken the appropriate training as set out in this policy statement (section 3).

1.9 Facilities and equipment

EEL should be performed only in an appropriate medical setting (eg ENT outpatients/wards/theatre) with specialist endoscopic imaging equipment. Access to appropriately trained medical and nursing staff, decontamination and emergency/resuscitation equipment is essential. It should be performed in a multidisciplinary environment, and always with the agreement of the medical team responsible for that person's care about the reasons for the endoscopic procedure.

EEL is an invasive procedure and therefore may be performed only in line with local policies on invasive procedures by an SLT, with a suitably trained supporting healthcare professional present in the clinic room, eg SLT, speech and language therapy assistant (SLTA), nurse or technical instructor.

There must be immediate access to other suitably qualified practitioners in case any unforeseen circumstances or emergencies arise (eg tissue trauma, epistaxis, and vasovagal episode). See section 2 (procedural issues) of this document.

In common with other invasive procedures, arrangements must be in place to ensure that the EEL procedure is safe for attending patients. Therefore it is essential that there is immediate access to emergency trained personnel, eg crash team and fully operational equipment.

For review purposes, the EEL procedure must be recorded using equipment that provides good-quality images. Recording and viewing equipment should have the capacity for recording sound and for still-advance, to enable frame-by-frame analysis or slow motion. Data should be backed up regularly.

1.10 Training structure

Practitioners should engage only in those aspects of the EEL procedure that are within the scope of their competence, considering their level of education, training and experience.

Education and training for EEL may be obtained by a variety of means. Initial training should take place in a clinical setting, allowing the SLT (voice) to work with more experienced professionals – eg highly specialist/expert SLTs (voice) and/or laryngologists – and with a wide variety of patients (see training and competencies section).

For SLTs working in more remote areas, virtual consultations could be considered as an adjunct to training following acquisition of initial competencies within a multidisciplinary setting.

It is recognised that SLTs developing EEL skills will perform different roles within the clinical procedure. The purpose of the training is to acquire and develop skills to work towards autonomy. Only highly specialist/expert SLTs (voice) can function as independent skilled practitioners in the appropriate role.

2. The EEL procedure

2.1 Detailed definitions of the procedure

It should be noted that flexible nasendoscopy and rigid endoscopy are complementary and not mutually exclusive.

Flexible nasendoscopy

The flexible laryngoscope is passed transnasally to the hypopharynx, where the larynx and surrounding structures can be viewed (Jones 2016; Karnell 1994; Hirano and Bless 1992). The moveable tip can be angled and rotated to view the full larynx. The tip of the scope is usually positioned slightly above the epiglottis, but can be moved closer to the vocal folds for more detailed visualisation (which is particularly necessary if used with stroboscopic light). The supra-glottic structures and the velo-pharyngeal function can also be assessed by withdrawing the endoscope into the nasopharynx.

Laryngopharyngeal structure, function and posture are assessed during both speech and non-speech tasks, eg habitual speech behaviour, flexibility of pitch adjustments, adductory non-speech behaviour, resting state, and any other behaviours of interest. At the end of the examination, activities designed to elicit specific behaviours of interest, or to attempt to change a laryngeal gesture, may be added (Jones 2016; Rattenbury and Carding 2004; Colton and Casper 1996; Karnell 1994).

The professional who undertakes this aspect of the EEL examination must be skilled in interpreting the image, in understanding the physiology, and in knowing the types of vocal manoeuvres that might elicit the desired changes in behaviour. Advantages of this technique are that they present an excellent image of the vocal folds and velopharyngeal structures during voicing, conversation and singing. Nasal discomfort may be a disadvantage, together with triggering of the gag and swallow reflexes. A procedural protocol is outlined in the resource ‘Protocols for flexible endoscopic evaluation’ found on the RCSLT website.

Rigid endoscopy

At the start of the examination, the patient is asked to protrude their tongue, which is held (by the examiner or by the patient), outside the oral cavity with a gauze pad. The endoscope is then inserted into the mouth and advanced towards the oropharynx. The exact position of the endoscope needs to be altered as the examination progresses, in order to bring the vocal folds into full view (Jones 2016; Hirano and Bless 1992). The patient is asked to phonate,

usually on an /i/ sound, although the sound /u/ (as in 'ooze') may facilitate a better view. Changing the pitch (from low to high) may also produce a better view of the larynx.

Advantages of this technique are high illumination, wide field of view and excellent image quality. Disadvantages are interferences with normal speech production and examination being limited to a phonation on a sustained vowel and during respiration. The procedure can trigger a gag reflex, and views may be limited if the tongue is backed and will not relax. A procedural protocol is outlined in the resource 'Protocol for rigid endoscopy' found on the RCSLT website.

Stroboscopy

It is possible to carry out a stroboscopic examination using either a rigid endoscope or a flexible nasendoscope (Jones 2016; Karnell 1994; Hirano and Bless 1992; Woo et al 1991, Sataloff et al 1991), although superior views are obtained with the rigid endoscope and the new generation of flexible videoscopes. A variety of methods are used to detect the voice signal from which the fundamental frequency is extracted, and which is also used to control the rate of triggering of the stroboscopic light. This allows the vibratory pattern of the vocal folds to be observed in apparent slow motion. The rigid or flexible scope is introduced, the stroboscopic light setting is enabled, and the patient is asked to sustain phonation of the vowel /i/. Several samples will be produced, varying the loudness and pitch, because vocal fold vibratory behaviour will vary under these conditions.

Other imaging techniques are available, and include high-speed photography, NBI and video–kymography (Schutte et al 1998). These require additional training and local agreement, if included in the speech and language therapy scope of practice.

2.2 Patient and carer information

Patients must be fully informed about the EEL procedure prior to the examination. Consideration should be given to providing information in accessible spoken, written and/or visual formats, including the nature, purpose and likely effects of the examination.

2.3 Consent

Consent to a procedure is subject to legal requirements and may be subject to local variations in practice. In most NHS trusts/health boards, it is routine practice to obtain verbal consent prior to EEL rather than written consent. This is in line with laryngological practice, although it may vary between employing authorities.

The recommendations are to:

- Seek advice as to whether written or verbal consent is appropriate and consistent with the department
- Seek guidance from Department of Health/local health authority (Mental Capacity Act 2018; Department of Health 2009)
- Review consent policy in the light of regular national and local changes.

Separate consideration needs to be given to gaining consent in relation to storage and use of audio-visual material. (Please also see section on 'Data protection'.)

2.4 Image interpretation

The features that should be interpreted from the EEL are outlined in the additional resources listed on the RCSLT website. This should be done within a multidisciplinary clinical context, taking into account all aspects of the patient's presentation.

Image interpretation may be influenced by the following factors:

- Quality of the image (eg flaring/demisting/use of disposable sheaths)
- Type of endoscopic equipment used (ie rigid vs flexible endoscope)
- Quality of the camera equipment
- Skill/competency of the endoscopist
- Single vs 'team' rating
- Availability of slow-motion playback facility on recording equipment.

Images should be recorded with simultaneous high-quality audio input.

3. Competencies and training

EEL is an invasive procedure which carries some risks to the patient. In order to be able to perform EEL, SLTs must complete appropriate training, which encompasses both passing the flexible and/or rigid endoscope and interpretation of laryngo-pharyngeal anatomy/physiology and laryngopharyngeal gestures during speech. SLTs must be fully competent in both aspects of training, as in many clinic settings they will be acting as both the endoscopist and assessing clinician simultaneously.

The level of knowledge and skills required will be dependent on the types of clinic in which the SLT is required to work. This is outlined here, with more detail in the competencies and training (on the endoscopy resources section on the RCSLT website).

3.1 Knowledge and skills

3.1.1. Core prerequisite knowledge and skills

- Advanced knowledge of normal and disordered anatomy and physiology for voice production
- Advanced knowledge of a wide range of assessment methods, including:
    - Case history-taking
    - Perceptual analysis
    - Laryngeal palpatory assessment
    - Acoustic analysis
- Advanced knowledge of a wide range of voice therapy techniques
- Knowledge of change in voice production over the lifespan
- Established regular caseload of range of clinical voice disorders within a multidisciplinary voice setting (likely to be a minimum of three years)
- Knowledge of relevant local and national guidelines and policies in clinical voice disorders
- Understanding of the particular impact and demand for professional voice users
- Knowledge of the:
    - clinical indicators for flexible and rigid endoscopic evaluation of the larynx
    - limitations of flexible and rigid endoscopic evaluation of the larynx
    - theory and purpose of stroboscopy
    - risks involved in performing EEL
- Knowledge of local and national relevant policies on:
    - Consent
    - Health and safety
    - Infection control
    - Risk management

    - Information governance
- Understanding of the complementary roles of the multidisciplinary team involved in the management of clinical voice disorders
- Ability to communicate findings with patients and professional colleagues in a clear and appropriate manner.

3.1.2. Level 1: endoscopist knowledge and skills

- Anatomy, physiology and pathology of:
    - nasal passage
    - laryngo-respiratory system
    - vocal folds
- Neurogenic laryngeal disorders
- Expected post-surgical laryngo-pharyngeal appearances
- Phonatory physiology (Harris and Howard 2018; Jones 2016)
- Appropriate selection of patients for EEL (Jones 2016)
- Appropriate selection of EEL techniques (eg fibreoptic vs rigid examination, use of stroboscopy) (Jones 2016; Hirano and Bless 1992; Spiegel et al 1991; Woo et al 1991)
- Effects and use of topical anaesthesia to the nose and pharynx (Jones 2016)
- Awareness of local policies regarding the operation and maintenance of EEL equipment, including data storage and retrieval, health and safety, infection prevention and risk management
- Understanding of the need for performing EEL within an environment with immediate access to medical/nursing support
- Insertion and manipulation of flexible/rigid endoscope (ENT Academy 2019; Jones 2016; The American Academy of Otolaryngology 2012; Karnell 1994)
- Performance of EEL in a way that minimises risk to patient
- Management of adverse incidents
- Performance of EEL in a manner that yields best-quality audio-visual recordings
- Appropriate selection of assessment protocols
- Current principles and techniques of voice therapy and the ability to trial as appropriate during EEL (Jones 2016)
- Appropriate description and documentation of EEL findings (Jones, 2016)
- Appropriate selection of still picture/pictures from the video for inclusion in the medical notes
- When to request further medical/surgical opinion
- When to refer on for other tests, eg pH monitoring, barium swallow, videofluoroscopy

- Role of anti-reflux and anti-fungal medication in the management of voice disorders, and how this may be supplied. (Rubin et al 2014; Sataloff et al 2013).

3.1.3. Additional skills required for specific clinic settings

Pre-/post-thyroid clinics (level 2 endoscopists) (Lennard 2014; Furtado 2011)

- Understanding of the:
  - patient pathway for thyroid surgery
  - potential effects of thyroid surgery on the voice
  - role of other diagnostic procedures, eg EMG
- Assessment of the extent of laryngeal nerve damage
- Knowledge of the role of voice therapy for patients with laryngeal nerve damage following thyroid surgery
- Knowledge of the role of voice surgery for patients with laryngeal nerve damage following thyroid surgery
- Ability to explain all the above to the patient.

Laryngeal intervention clinic (level 3 endoscopist)

- In-depth knowledge of the surgical procedure they are supporting, eg indications and contra-indications, what types of implant are available, feasible needle routes. This will require additional training and observations of well-established laryngeal intervention clinics
- Familiarity with NICE guidelines (www.nice.org.uk/IPG) and ENT UK Laryngeal Intervention Clinic Standards of Care and Guidelines for development (Benson 2019)
- Awareness of risk of needle-stick injury, its prevention and local policies in the event of injury. Up-to-date vaccination programme
- Advanced endoscopic skills: capable of achieving and maintaining close-up endoscopic view in presence of blood-stained secretions while closely monitoring patient and surgeon
- High level of auditory evaluation for post-intervention follow-up and indicators of negative outcomes/complications.

Additional skills/knowledge for in-theatre surgical endoscopic support:

- Ability to scope with inverted and reversed images
- Ability to scope with and without intubation
- Stamina to maintain steady image for up to an hour
- Additional training in theatre protocol.

Performers' clinic (Level 3 endoscopist) (Benson 2019; Williams 2018; Chapman 2016; Jones 2016)

- Knowledge of the development of the vocal tract from childhood through adulthood and the ageing larynx
- Understanding of the particular needs of the performing voice in both acting and singing, in terms of vocal tract flexibility and laryngopharyngeal gestures for different singing genres
- Understanding of the performer's lifestyle and the effects on the voice
- Expert knowledge of expectations of laryngopharyngeal gestures in the singing voice during endoscopy in a range of genres, making therapeutic suggestions for change.

Laryngeal cancer clinic (level 3 endoscopist) (Simo et al 2016; Ward et al 2014; Oxford University 2012; Kothari et al 2011)

- Knowledge of the aetiology of laryngeal cancer, its stages of progression and laryngeal appearances
- Understanding of the impact of laryngeal cancer treatment, including chemotherapy, radiotherapy, laser resection and cold excision, and the effect on voice production
- Interpretation of stroboscopic images in the detection/ monitoring of laryngeal cancer
- Use and interpretation of other laryngeal examination techniques/equipment if used locally, eg narrow band imaging.

Complex tertiary joint voice clinic (level 3 endoscopist)

- Ability to make an accurate differential diagnosis in complex cases by taking into account previous medical/surgical/therapy information and interventions.

3.2 Acquisition of knowledge and skills

Level 1 competency in EEL may be acquired using a range of learning modalities, including:

1. Reading of relevant literature
2. Didactic/classroom teaching by both external and internal teachers
3. Online resources
4. Mentoring
5. Supervised clinical experience, including observation and guided practice
6. Telemedicine for supervision at a distance.

A structured programme for flexible EEL should include:

- Attendance at appropriate EEL training course(s) which provide training that links with the competency framework in this document. This should include training on both practical endoscopy, involving passing endoscopes, and interpretation of images. It may be necessary to attend more than one course in order to complete all the competencies required.

The training may include both internal and external training. Bespoke training packages with other specialist clinics may also be appropriate, particularly when completing level 3 competencies
- Structured reading of appropriate literature (suggested core reading is indicated in the reference list to this document)
- Observation of a minimum of 10 voice endoscopy clinics
- Assistance (eg setting up equipment, storing images, discussing interpretation) with a minimum of 10 EEL procedures performed by highly specialist SLT (voice) or laryngologist (specialist ENT surgeon in voice and laryngeal disorders)
- Successfully performing and interpreting a minimum of 10 flexible EEL examinations under direct supervision
- Successfully performing and interpreting a minimum of 10 flexible EEL examinations independently with supervision available (including telemedicine)
- In addition to the above, for rigid EEL, SLTs should observe a minimum of 10 procedures, perform a minimum of 10 procedures under supervision, and perform a minimum of 10 procedures independently with supervision available.

Professionals who may be involved in skill acquisition include:
- Highly specialist SLTs in voice who have achieved competency in EEL
- Laryngologist (specialist ENT surgeon in voice and laryngeal disorders)
- Specialist ENT nurse (ie sterilisation procedures/infection control/risk management)
- Technical instructor/assistant (operation of equipment).

Level 2 and 3 endoscopy knowledge and skills

As SLTs develop their skills and observe different types of clinics, they will become exposed to an increasingly wide range of patient caseloads and presentations of clinical voice disorders. Depending on the caseload of voice disorders within an individual's working environment and level of specialist support available, skills in interpretation will differ in how quickly they can be achieved and how easily maintained. SLTs should ensure they complete all the different aspects of competencies for the clinics in which they are required to work.

Level 3 endoscopist competencies will be achieved mainly through working closely with laryngologists, developing an expert level knowledge of laryngopharyngeal pathophysiology, and interpreting increasingly complex laryngopharyngeal gestures in speech and potentially in singing where this is required. To develop these skills, images should be reviewed jointly and

regularly with the laryngologist and level 3 SLT endoscopist. This may be done in the clinic setting, by attending courses or by image review.

For some clinics, observation or bespoke training in other trusts may be of value. SLTs should keep a written log of a minimum of 200 EEL procedures, demonstrating 95% agreement with a laryngologist on the patient's diagnosis and management plan before achieving level 3.

Where the SLT sees the patient independently as an initial referral, the SLT is responsible for the medical diagnosis and care of the patient until such time as they pass the patient on to the ENT consultant/another medical specialist. This should be documented in local policies/procedures and as part of an agreed pathway with the ENT team.

3.3 Verification of competency

Competency in passing a flexible and/or rigid endoscope and interpretation of laryngopharyngeal anatomy/physiology may be verified by an:

- Expert SLT in voice (competent in EEL)
- Specialist laryngologist (competent in EEL).

Competency in interpretation of laryngopharyngeal gestures for speech and singing should be verified by a level 2 or level 3 SLT endoscopy practitioner in voice (see endoscopy competency framework and training log).

A competency checklist is included on the RCSLT website. Once competency has been verified and well established, the highly specialist SLT (voice) may practise the procedure independently, but should be subjected to regular audit as part of standard clinical governance procedures. A variety of clinical models may be developed (see section on types of EEL clinic). The type of clinic and the experience of the SLT clinician will determine whether joint review of all EEL images is necessary, and this practice is subject to local agreement.

3.4 Maintenance of competency

Specialist SLTs (voice) are responsible for maintaining their competency to perform and interpret EEL, and to ensure the prerequisites for practice in their specific working environment are in place.

Passing a flexible nasendoscope: it is anticipated this would involve regular practice (at least one clinic monthly) once competency is achieved.

Passing a rigid oral endoscope: it is anticipated this would involve regular practice (at least one examination monthly) once competency is achieved.

Interpretation of EEL

Interpretation competencies will be maintained largely through working closely with laryngologists, peer review and with another level 2/3 SLT endoscopist, and reviewing the latest evidence-based practice. Level 1 SLTs who practice EEL sporadically should maintain a log of practice and have regular review meetings with a more senior SLT endoscopist. It is expected that level 2 and 3 endoscopists would be practising EEL regularly and have frequent contact with a laryngologist.

There is an individual professional responsibility to review competencies for both performing and interpreting EEL if the procedure has not been performed for one year, or if an SLT is returning to practice after an extended break of 12 months or longer. Competencies should be checked and signed off by an EEL supervisor with the relevant competency level (who may be internal or external).

It is suggested that the monitoring of competencies should be reviewed according to local policies.

Ongoing peer support should be sought in interpretation competencies, and regular opportunities for continuing professional development should be considered as part of annual appraisal.

4. Professional issues

4.1 Medico-legal issues

This document is the RCSLT's official statement of professional practice for SLTs using EEL. Adherence to its content and recommendations are the professional responsibility of the individual therapist. Proof and assurance of this adherence will help ensure professional indemnity through the individual's employer. Failure to comply with the details of this position paper may amount to a breach of acceptable professional conduct.

It is the responsibility of the SLT who is performing EEL to demonstrate, ensure and maintain competence in line with this policy.

It is not within the scope of this document to discuss at length issues associated with professional practice in general. These issues are covered comprehensively on the RCSLT website (www.rcslt.org) in guidance on Professional Accountability & Autonomy and Duty of Care (RCSLT, 2020). Further information can also be found within the HCPC website (www.hcpc-uk.org).

RCSLT acknowledges that professional practice continues to grow and develop. Members should contact the RCSLT for advice about any areas of practice outside this policy statement.

4.2 Duty of care

As with any other clinical procedure, SLTs are subject to the legal requirements of duty of care. It is incumbent on the SLT in discussion with other members of the multi-disciplinary team (MDT) to report undiagnosed medical conditions to the surgeon responsible.

4.3 Audit and research

EEL services should be audited on a regular basis within a local clinical governance framework (eg waiting times for EEL, interpretative accuracy, compliance to recommendations, compliance to Patient Group Directions (PGD) and MDT working).

EEL practice offers an opportunity to SLTs wishing to undertake research into best practice in managing voice disorders. Therapists are encouraged to pursue developments in evidence-based practice in this field.

Suggestions for possible areas of research include:

- EEL as a prognostic indicator in voice therapy
- EEL as an outcome measure (ie with muscle tension dysphonia patients)
- The additional benefit of stroboscopy
- EEL as a visual feedback tool in therapy
- Diagnostic accuracy of patients referred for voice therapy
- Impact on the improvement in treatment times/outcomes using EEL
- Multicentre studies on the impact of EEL on treatment efficacy
- Patient perceived value of, investment in and compliance with therapy intervention
- Investigation of relative efficacy of voice therapy strategies using EEL.

5. Health, safety and data protection

SLTs involved in the conduct of EEL are responsible for a full awareness of health and safety issues, and must adhere to national and local policies and their application. All clinical staff should be fully aware of general NHS policy in this area.

5.1 Care of substances hazardous to health (COSHH)

Training in the use and care of substances hazardous to health (COSHH): training must be undertaken and regularly updated if relevant substances are to be used and/or stored within the EEL clinical area. Any used items of consumable equipment, such as gauze and sheaths, must be disposed of as clinical waste or as advised by the local infection control policy (COSHH 2002).

5.2 Control of infection

SLTs should comply with the Department of Health Policy on control of infections, with regard to appropriate dress/uniform, and staff should refer to their local policy for implementation and audit.

Disease transmission is possible via contact with equipment contaminated by saliva, blood and other body fluids. SLTs should be familiar with and adhere to Universal Precautions (Blood and Body Fluid 1984) and their local and institutional policies regarding the cleaning, decontamination and storage of the equipment, and isolation precautions (Disease Specific and Category Specific). Sterilisation and storage of equipment should comply with current infection control procedures to avoid cross-infection of both patients and staff involved in the clinic.

Patients with known infection status (eg Creutzfeldt–Jakob disease (CJD)) should be scheduled to be seen at the end of the EEL clinic if possible, and the nature of the infection documented and appropriate extra precautions taken after consultation with the infection control clinical lead in the institution. ENT UK has produced guidelines on endoscope decontamination (Swift 2017).

5.3 Topical anaesthesia

Topical anaesthetics (nasal and oropharynx) and nasal decongestants may be used during the EEL procedure. SLTs should be aware of the indications,

contraindications, and possible drug interactions with their use. This includes knowledge of correct dosage and possible pharmacological side-effects. The evidence base for the use of topical anaesthesia in laryngeal examinations is outlined by Jones (2016).

SLTs can administer topical anaesthetic sprays and nasal decongestants under PGD (NHS Executive, 2017). This is subject to local agreement within each trust/health board.

5.4 Immediate life-support training

Annual resuscitation training is mandatory for all SLTs. It is the SLT's responsibility to familiarise themselves with local guidelines in handling an emergency, eg vaso-vagal response, epistaxis and hyperventilation.

5.5 Risk management

The clinician should be aware of and minimise possible risks of passing the endoscope, as well as adverse reactions to topical anaesthesia/nasal decongestants.

5.6 Incident reporting

If an adverse reaction occurs, appropriate local incident report procedures should be followed.

5.7 Data protection

Storage and retrieval of images will be subject to legal requirements as interpreted at a local level. These requirements must be incorporated into the local EEL Procedures document.

Official statement

This final document is the result of expert panel consensus and extensive consultation with both specialist SLTs (voice disorders) and other professionals and colleagues in related disciplines.

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Indicates suggested core reading for:
**Acquiring basic competency
@ Level 2/3 competency
+ Pre-/post-thyroid surgery clinics
$ Laryngeal intervention clinics
^ Performers' clinics
# Laryngeal cancer clinics.