Speech and Language Therapy
Endoscopy for voice disordered patients.

Position Paper 2008

Royal College of
Speech and Language Therapists

November 2007

Executive Summary

The Royal College of Speech and Language Therapists (RCSLT) recognise that endoscopic evaluation of the larynx * (EEL) is within the scope of practice for highly specialist SLTs (voice disorders). These EEL procedures are used for the purpose of contributing to the diagnostic process and providing 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 (voice disorders) service. EEL is seen as only one important aspect of SLT assessment and management of patients with a voice disorder. It should not be used in isolation but only in conjunction with other tools such as auditory voice quality evaluation, vocal handicap measurement and detailed case history taking.

This position paper provides the professional clinical context within which SLTs can practice endoscopic evaluation of the larynx and the appropriate procedural protocols that should be observed. The document also provides a structured framework for both the acquisition and 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 SLT endoscopy for voice disordered patients (e.g 2004 policy statement).

It is acknowledged that Speech and Language Therapists also use endoscopic examination techniques for other purposes, for example, in assessment of swallowing or nasal resonance disorders. The specific details of those applications are not covered in this document and have been addressed in separate RCSLT initiatives.

** 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 "Videolaryngeal Endoscopy" as used in RCSLT position paper 2004.*

Acknowledgements

This position paper was written by an expert panel convened by The Royal College of Speech and Language Therapists in November 2007. The panel members were Paul Carding (chair), Sue Jones, Valerie Morton, Fiona Robinson, Suzanne Slade and Claire Wells. This paper constitutes an updated document of the original statement of May 2004. The final document is the result of extensive consultation with highly specialist/expert SLTs (voice disorders) and a number of other colleagues from related disciplines. This consultation process and the colleagues involved are listed in section 7

RCSLT are also grateful to the American Speech and Hearing Association for their generosity in allowing incorporation of sections of their own guidelines [1] within this document. Where appropriate these sections are the copyright of the American Speech-Language-Hearing Association and are used with their permission.

Reference this document as:

Carding PN, Jones S, Morton V, Robinson F, Slade S and Wells C (2008). Speech and language therapy endoscopy for voice disordered patients. RCSLT position paper 2008.

Speech and Language Therapy
Endoscopy for voice disordered patients.

Section 8: Appendices

Section 9: Communications Strategy to RCSLT members

Section 1: Context

1.1 Background and rationale to this document

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 [1,2]. Medical practitioners are the only professionals qualified to make medical diagnoses related to the identification of laryngeal pathology as it affects the voice. Consequently, when used for medical diagnostic purposes, a suitably trained laryngologist should interpret the EEL examinations.

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 voice production and vocal function. Within multidisciplinary settings, these diagnostic and vocal function assessment procedures may be accomplished through the combined efforts of these related professionals [3,4,5]. EEL may also be used as a therapeutic aid and biofeedback tool during the course of voice therapy [2].

1.2 Definitions of terminology

Endoscopic Evaluation of the Larynx (EEL) is defined as an examination of laryngeal anatomy and physiology using endoscopic equipment. EEL can be achieved using either a rigid endoscope introduced through the mouth or 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 “distal chip” flexible scopes are capable of producing images which 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 [1,2,3]. The laryngeal images can be observed directly with the naked eye but more commonly are recorded using a camera attached via a lens coupler to the eyepiece of the endoscope onto a digital storage medium or videotape. This equipment is described more fully in section 2.1.

1.3 Scope of Practice (Role of SLT)

It is the position of RCSLT that EEL examination is within the scope of practice for SLTs (voice) for the purpose of contributing to the diagnostic process and providing 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. RCSLT acknowledges that medical practitioners are the only professionals qualified and licensed to offer medical diagnoses.

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 SLT practice. This should include development of departmental policies and procedures stating scope and range of practice. 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 e.g. achieving the RCSLT competency framework in EEL (see Section 3). Additionally, theoretical knowledge and clinical practice in EEL must be evidenced within an individualised Knowledge and Skills Framework (KSF) outline and 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 anatomical structures and their function [3,6]
- Assess the effects of lesions, alteration of function or deformity on phonation and speech [7]
- Assist in the interpretation of the above as part of the clinical discussion thereby contributing to the diagnostic process [7].
- Provide feedback regarding vocal tract function as part of the therapeutic process [2,7]
- Direct treatment and evaluate its effectiveness [2,3]
- Provide visual biofeedback during therapy [2,3]
- Improve patient understanding of their voice disorder and compliance with treatment [2,3]
- Record phonatory behaviour and laryngeal structures for future reference

1.5 Professional Context and clinical location

SLTs should only perform EEL in the context of a multidisciplinary voice disorders service. This should include combined voice clinics (see 1.7 below) with established access to a Laryngologist (specialist ENT surgeon in voice and laryngeal disorders). SLTs should only perform EEL with the full support of their laryngology colleagues and using an agreed protocol to access opinion and/or medical assistance from a specialist laryngologist.

1.6 Benefits and Risks of EEL performed by SLTs

Benefits:
Verify and expand on referral information [2,3,7]
Trial therapy and assess laryngeal postures during phonation [2,3]
Use as prognostic indicator for voice therapy success [2,3]
Visual feedback tool during voice therapy [2,3,5]
Ensure appropriate treatment for presenting disorder [2,8]
Simplify patient pathway [8]
Allow development of voice clinic services [5,8]
Shorten therapy time [2]

Risks:
Health and safety risks as in all invasive procedures (see section 5)
Lack of patient tolerance
Misinterpreting competency and expert practice/service delivery at local level.
Development of inappropriate SLT endoscopy services (ie without sufficient levels of SLT expertise, and not within an appropriate multi-disciplinary voice clinic context).

1.7 Different types of EEL clinic

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

It is common practice in the UK for voice referrals to be triaged into an appropriate EEL assessment clinic. These voice patients are likely to be seen in either a *combined voice clinic* or a *parallel SLT-led clinic*.

a. Combined 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 [5].

b. Parallel SLT-led Clinic.
This model typically uses strict selection criteria in order to try and identify patients most likely to require speech and language therapy as their primary mode of treatment [8]. These clinics aim to reduce the number of hospital visits and 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.

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 [2]. Diagnostic decisions are made jointly with the Laryngologist following a review of the laryngeal image and case discussion of the pertinent assessment findings.

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. The ultimate medical and legal responsibility for these patients is the specialist laryngologist.

Patients who have already had an Ear Nose and Throat 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' (detailed below).

c. *Voice Therapy Clinic*
The aim of this clinic is to assist the SLT 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 which may include:

- an additional voice therapy opinion and assessment [3]
- more detailed understanding of the biomechanics of voice production [7]
- trialling therapy techniques (under endoscopic view) and to increase patient compliance with treatment [2,3,7]
- patient biofeedback (simultaneous or recorded) [2,7]
- obtaining pre- and post-outcome measures post therapy/surgery (in conjunction with other tools) [9,10,11]

1.8 Local arrangements

The SLT must ensure that approval has been given by his/her employer with recognition of competence to perform the procedure (see training and competence section 3). The employer should also approve the type of EEL service that is being offered (usually in consultation with the local ENT service). Use of the EEL procedure must be written in to 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 SLT clinician must have undertaken the appropriate training as set out in this policy statement (section 3).

1.9 Facilities and equipment

EEL should only be performed in an appropriate medical setting (e.g. ENT outpatients/wards) with specialist endoscopic imaging equipment. Access to appropriately trained medical and nursing staff, sterilisation and emergency/resuscitation equipment is essential. It should be performed in a multidisciplinary environment and always with the agreement of the team about the reasons for the endoscopic procedure.

There must be immediate access to other suitably qualified practitioners in case any unforeseen circumstance or emergency arise (eg tissue trauma, epistaxis, 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, e.g. crash team and fully operational equipment.

For review purposes, the EEL procedure must be recorded (either digitally or onto video tape) using equipment that provides good quality images (e.g., SVHS but consult locally with Medical Illustration or Clinical Physics to ensure that these requirements are optimally satisfied). 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 periodically.

1.10 Training structure.

Practitioners should only engage 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. Some of the training should take place in a clinical setting, allowing the SLT (voice) to work with more experienced professionals – for example highly specialist/expert SLTs (voice) and/or laryngologists -and with a wide variety of patients (See Section 3; Training and Competencies).

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 an independent skilled practitioner in the appropriate role.

Section 2: The EEL Procedure

2.1 Detailed definition 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 [3,7]. 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. Laryngeal 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 [2,3,7]. The professional undertaking this aspect of the fibreoptic examination must be skilled in interpreting the image, in understanding the physiology, and knowing the types of vocal manoeuvres that might elicit the desired changes in behaviour. Advantages of this technique are 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 Appendix D.

Rigid Endoscopy

At the start of the examination, the patient is asked to protrude his/her 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 [3,6,7]. The patient is asked to phonate, usually on an “e” sound- although the sound “u” (as in the French “une”) 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 is 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 Appendix E.

Stroboscopy

It is possible to carry out a stroboscopic examination using either a rigid endoscope or a flexible nasendoscope [6,7,10,11,12] 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 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 is switched on (usually by operating a foot pedal), and the patient is asked to sustain phonation of the vowel 'e'. A number of 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 and video–kymography [13]. At the time of writing this document, these techniques are commonly used for research purposes only.

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 [21,22] 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.

Recommendations are:

- Seek advice as to whether written or verbal consent is appropriate and consistent with the department.
- Seek guidance from Department of Health/Strategic Health Authority website
- 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 audiovisual material. (See also Section 3.2 Data protection: storage of images).

2.4 Image interpretation and Reporting

Appendix B outlines the features that should be interpreted from the EEL. This should be done within a multidisciplinary clinical context, taking into account all aspects of the patient's presentation. EEL reporting is subject to professional generic standards. [20]

Image interpretation may be influenced by the following factors:

- Quality of the image (e.g., flaring/ demisting)
- Type pf 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.

Section 3: Competencies and Training

3.1 Knowledge and Skills

Communication and Professional Skills

- Understanding of the complementary roles of the multidisciplinary team involved in the management of clinical voice disorders
- Compliance with the RCSLT position on SLT endoscopy (this document)
- Ability to communicate findings with patients and professional colleagues in a clear and appropriate manner.

Specialist Skills

- Advanced clinical knowledge of the normal and disordered anatomy, physiology and neurology of the vocal tract (see Appendix A)
- Ability to appropriately select patients for EEL
- Ability to select appropriate EEL techniques (e.g. fibreoptic v rigid examination, use of stroboscopy)
- Thorough knowledge of the current principles and techniques of voice therapy and the ability to trial as appropriate during EEL.
- Ability to interpret and describe EEL findings (see Appendix B)
- Ability to know when to request further medical/surgical opinion

Facilities and Equipment

- To be aware of local policies regarding the operation and maintenance of EEL equipment including data storage and retrieval, health and safety and risk management (also see procedural issues section)
- To understand the need for performing EEL within an environment with immediate access to medical/nursing support (also see context and procedural issues sections)

Examination Technique

- Ability to perform EEL in a way that minimises risk to patient
- Ability to perform EEL in a manner that yields best quality audiovisual recordings

3.2 Acquisition of knowledge and skills

Competence in EEL may be acquired using a range of learning modalities including:

1. Didactic/Classroom teaching by both external and internal teachers
2. Mentoring
3. Supervised Clinical Experience, including observation and guided practice

A structured programme should include:

- Attendance at an appropriate EEL training course
- Structured reading of appropriate literature (suggested core reading is indicated in the reference list to this document)
- Observation of 10 voice endoscopy clinics
- Assistance (e.g. setting up equipment, storing images, discussing interpretation) with 10 EEL procedures performed by highly specialist SLT (voice) or Laryngologist (specialist ENT surgeon in voice and laryngeal disorders)
- To successfully perform and interpret 10 EEL examinations under direct supervision
- To successfully perform and interpret 10 EEL examinations independently with supervision available

Professionals who may be involved in skill acquisition include:

- Laryngologist (specialist ENT surgeon in voice and laryngeal disorders)
- Highly Specialist SLTs in voice who have achieved competency in EEL
- Specialist ENT nurse (i.e. sterilisation procedures/infection control/risk management)

3.3. Verification of competency

Competency should be verified by an experienced clinician:

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

A competency checklist is included in Appendix C of this document.
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 (eg see previous section – 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. However for the Parallel-Led clinic, joint review is essential.

3.4. Maintenance of competency

Specialist SLTs (voice) are responsible for maintaining their competency to perform EEL and to ensure the pre-requisites for practice are in place. It is anticipated this would involve regular practice (at least monthly). It is unlikely that maintenance could be achieved without performing or supervising at least 75-80 procedures per year. However, in the case of specialist SLTs (voice) who work on a frequent basis (i.e. 2 sessions per month) within a multidisciplinary voice clinic setting who are interpreting EEL but not necessarily performing the procedure, this number could be reduced. There is a professional responsibility to review competencies for EEL if the procedure has not been performed for one year.

Section 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 the medico-legal issues associated with professional practice in general. These issues are covered comprehensively in:

RCSLT's Communicating Quality 3 [20]
HPC: Managing fitness to practice (http://www.hpc-uk.org)
Dept of Health (http://www.dh.gov.uk)

RCSLT acknowledges that professional practice continues to grow and develop. Members should contact College for advice about any areas of practice out with 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 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 (e.g. waiting times for EEL, interpretative accuracy, compliance to recommendations, multi-disciplinary team 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 (i.e. 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

Section 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 (http://www.pasa.doh.gov.uk/medicalconsumables)

5.1 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.

Full COSHH regulations can be found at http://www.opsi.gov.uk

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 [24].

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 sterilisation 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.

General governmental regulations pertaining to infection disease and public health can be found at http://opsi.gov.uk.

Patients with known infection status 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. The BAO-HNS are currently producing guidelines on endoscope sterilisation [14].

5.3 Topical Anaesthesia

Topical anaesthetics (nasal and oropharynx) and nasal decongestants. SLTs should be aware of the indication, contraindication, and possible drug interactions with their use**.** This includes knowledge of correct dosage and possible pharmacological side effects.

SLTs can administer topical anaesthetic sprays and nasal decongestants under Patient Group Directions (Department of Health, April 2004 document MLX 294) [15,16]. This is subject to local agreement within each trust/health board.

However, SLTs can perform comfortable flexible EEL without administration of any substance to the nasal mucosa [17]. It has also been shown that topical anaesthesia may alter vocal performance [18].

5.4 First Aid Training

Annual resuscitation training is mandatory for all Speech and Language Therapists. It is the SLT's responsibility to familiarise themselves with local guidelines in handling an emergency e.g. vaso-vagal response, epistaxis, 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.

Section 6: References

** Indicates suggested core reading as part of acquiring basic competency

1. American Speech-Hearing Association (1992) Vocal tract visualisation and imaging, *ASHA*, **34** (March Supplement 7) 25-33.**
2. Rattenbury H and Carding PN (2004). Evaluating the effectiveness and efficiency of voice therapy using transnasal flexible laryngoscopy; a randomised trial. *Journal of Voice* **18**;4: 522-533**
3. Colton, R.H., & Casper, J.K. (1996). *Understanding voice problems*. Baltimore: Williams & Wilkins.
4. Mathieson L (2002). *Greene and Mathieson's The Voice and its Disorders.* San Diego. Singular Publishing Group.
5. Harris T, Harris S, Rubin J and Howard D (1997) *The Voice Clinic Handbook.* London: Whurr.
6. Hirano, M., & Bless, D.M. (1992). *Videostroboscopic evaluation of the larynx.* San Diego: Singular Publishing Group **
7. Karnell, M.P. (1994). *Video-endoscopy: From Velopharynx to Larynx.* San Diego: Singular Publishing Group **
8. Carding PN (2003). Voice pathology clinics in the UK. *Clinical Otolaryngology* **28**: 477-478 **
9. Carding PN (2000) *Evaluating voice therapy ; measuring the effectiveness of treatment.* London: Whurr
10. Sataloff, R.T., Spiegel, J.R., & Hawkshaw, M.J.. (1991). Strobovideo-laryngoscopy: Results and clinical value. *Annals of Otology, Rhinology & Laryngology,* **100**(9, Pt 1): 725-727.**
11. Bless, D.M., Hirano, M., & Feder, R.J. (1987). Videostroboscopic evaluation of the larynx. *Ear, Nose & Throat Journal,* **66(7),** 289-96**
12. Woo, P., Colton, R., Casper, J., & Brewer, D. (1991). Diagnostic value of stroboscopic examination in hoarse patients. *Journal of Voice*, **5(3**), 231-238.**
13. Schutte H K., Svec J G., Sram F (1998) First Results of Clinical Application of Videokymography. *Laryngoscope* **108** ;1206-1210
14. "Guidelines for cleaning Fibreoptic Laryngoscopes" Jones P.H., Malik T. ENT UK 2005
15. http://www.entuk.org/members/publications/scopesfullweb2.pdf
16. Document MLX 294. Sale, Supply and Administration of Medicines by Allied Health Professionals under Patient Group Directions. *Medicines and Healthcare Products Regulatory Agency* 2004.
17. Patient Group Directions, NHS Executive, series number HSC 2000/026, 2000.
18. Lim V PC, Oates JM, Phyland DJ, Campbell MJ (1998) The Effects of Laryngeal Endoscopy on the Vocal Performance of Young Adult Females with Normal Voices. *Journal of Voice* **12 (1)**: 68-77.
19. Leder B, Ross D, Briskin KB and Sasaki CT (1997). A prospective, double-blind, randomised study of the use of topical anaesthetic vaso-constrictor and placebo during transnasal flexible fibreoptic endoscopy. *J Speech, Language and Hearing Research* **40**; 1352-1357.**
20. NHS Executive 2001. Good Practice in Consent, Health Service Circular Series Number HSC 2001/023.

21. Communicating Q 3 RCSLT's guidance on best practice in service organisation and provision. Royal College of Speech and Language Therapists, London 2006.
22. Mental Capacity Act (2005). http://www.opsi.gov.uk/acts
23. Adults in Incapacity (Scotland) Act 2000. http://www.legislation.gov.uk/legislation/scotland/acts
24. Department of Health: Uniforms and workwear; an evidence base for developing local policy. http://www.dh.gov.uk/publications.

Section 7: Consensus process

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.

The authors would like to acknowledge the contributions of:

RCSLT Clinical Advisors (voice disorders)
Regional Voice Special Interest Group chairpersons and members

Otolaryngology advisors:
Mr Tom Harris, Mr Meredydd Harries, Mr Phil Jones, Professor Tony Narula, Mr Julian McGlashan, Mr Mark Watson and Prof Janet Wilson.

The final document was approved by RCSLT Council

Section 8: Appendices

Appendix A: **KNOWLEDGE OF NORMAL AND DISORDERED LARYNGEAL ANATOMY AND PHYSIOLOGY**

Core Competencies:
The practitioner should have advanced clinical knowledge of the anatomy, physiology and neurology of the larynx and vocal tract.

Anatomy and physiology of the normal vocal tract

1. Vocal tract anatomy/physiology
2. Basic nasal anatomy/physiology
3. Laryngeal and respiratory anatomy/physiology
    a. Effect of air pressure and flow on vocal fold vibration
    b. Laryngeal anatomy
    c. Laryngeal physiology
        i. Mucosal wave
        ii. Frequency
        iii. Intensity
        iv. Timing
        v. Quality

Pathophysiology

1. Gross appearance, causes, mechanical properties, and principles of treatment
    a. Nodules
    b. Polyps/polypoid degeneration
    c. Granuloma
    d. Carcinoma/dysplasia/ hyperkeratosis
    e. Reinke's oedema
    f. Papilloma
    g. Trauma
    h. Acute and chronic laryngitis
    i. Leukoplakia
    j. Laryngopharyngeal reflux
    k. Vascular abnormalities
    l. Cysts
    m. Sulcus/vergeture/mucosal bridges
    n. Effects of drugs and systemic diseases

2. Neurogenic laryngeal disorders
    a. Upper motor Neurone Disorders (ie Parkinson Disease, Multiple Sclerosis, Stroke)
    b. Lower motor Neurone Disorders (ie Recurrent Laryngeal nerve paralysis/paresis, Superior Laryngeal nerve paralysis/paresis, Myasthenia Gravis)
    c. Spasmodic Dysphonia (ie Abductor and Adductor types)

APPENDIX B: **REPORTING EEL FINDINGS**

When reporting EEL findings and interpretations, clinicians should include the following details and parameters:

Patient Identification including hospital number

Patient History

History of presenting problem
Medical history
Lifestyle issues
Previous treatment
Voice Use Summary

Current voice quality

Palpatory findings

Observe thyro-hyoid membrances/muscles
Observe crico-thyroid visor mechanism (at rest and with pitch changes)
Note position of larynx (at rest and during phonation)

EEL Examination

Description of procedure
Description of findings

1. Laryngeal tissue abnormalities
    a. tissue appearance
    b. vocal fold edge
2. Supraglottic features
    a. Ventricular fullness and appearance
3. Gross laryngeal movement
    a. arytenoid movement
    b. supraglottic constriction
    c. testing for paresis and other neurolaryngological disorders
4. Vibratory Characteristics (as appropriate)
    a. The degree and pattern of glottal closure and opening
    b. Vibratory amplitude
    c. Vibratory symmetry
    d. Mucosal wave
    e. Expected changes with pitch and loudness
5. Description of clinical impressions
    a. Appearance of laryngeal anatomy and physiology is consistent with that of…….
    b. Description of vocal use
    c. Differential diagnosis
6. Recommendations
    a. Medical/surgical investigation/treatment
    b. Voice conservation
    c. Vocal hygiene
    d. Voice treatment/therapy
    e. Repeat examination

Appendix C: **COMPETENCY DEVELOPMENT PROGRAMME**

Topic	**Date Achieved**	**Signed by**
Read RCSLT position paper on endoscopy		
Acquire Advanced Clinical Knowledge of Anatomy, Physiology and Neurology of the Vocal Tract		
Demonstration of knowledge of local policies / guidelines on • Consent • Health and Safety • Risk Management		
Acquire thorough knowledge of current principles and techniques of voice therapy		
Observation of 10 voice clinics		
Assist with 10 EEL procedures		
Successfully perform and interpret 10 EEL examination under direct supervision (see additional competency assessment list)		
Successfully perform and interpret 10 EEL examination with supervision available (see additional competency assessment list)		

Appendix C (cont)

DETAILED COMPETENCY ASSESSMENT FOR SLTs PERFORMING/INTERPETING EEL

Topic	Comments
Scope introduced with minimal discomfort to patient	
Satisfactory view obtained	
Ability to select appropriate EEL tool	
Ability to interpret and describe EEL findings	
Ability to make accurate SLT Differential Diagnosis	
Ability to trial appropriate therapy techniques	
Ability to record data accurately	
Ability to feedback to patient appropriately	
Ability to retrieve data for reporting and discussion purposes	
Appropriate management decisions taken	
Ability to adhere to correct health and safety policies and procedures	

Appendix D: A PROTOCOL FOR FLEXIBLE NASENDOSCOPY **Taken from Understanding Voice Disorders – Colton & Casper, 1996.**

1	**Observe larynx at rest**	
	Instructions to patient:	*Just sit quietly for a moment.*
2	**Observe deep inspiration**	
	Instruction to patient:	I want you to take a deep breath and release it. Then do it two more times.
2	**Observe sustained vowel phonation at comfortable (modal) pitch (3x) repetitions**	
	Instruction to patient:	I'd like you to say 'ee' at a pitch that is comfortable for you and hold onto it for a few seconds. (Can be modelled). May be repeated saying 'oo'.
3	**Observe sustained vowel phonation at elevated (modal) pitch (3x) repetition**	
	Instruction to patient:	Now I'd like you to do the same thing, hold on to that 'ee' but at a high pitch. (Can be modelled) (may be repeated using 'oo')
4	**Observe dynamics of pitch change:**	
	Instruction to patient:	I want you to start with that high sound and let your voice glide down to a deep sound, like this: model a downward glissando. (3x repetitions). Now let's start at the bottom low note and let your voice glide upward, like this: model an upward glide (3x) repetitions.
6	**Observe speech:**	
	Instruction to patient:	Please repeat each of these sentences twice. a) See the busy bees, b) We eat green beans, c) Do queens eat honey? d) Who hoots at the moon? e) Do you chew your food?
7	**Observe the non-phonatory laryngeal behaviour:**	
	Instruction to patient:	I'd like you to whistle for me like this: (model a few short interrupted bursts of whistle). Now I'd like you to whistle a little bit of Happy Birthday. If patient cannot whistle, a 'pretend' whistle is acceptable.
8	**Period of diagnostic therapy:**	
	Instruction to patient:	The instructions to the patient will depend on the vocal manoeuvres you wish to elicit. It is appropriate at this time to follow-up on any of the above activities if behaviours of interest were noted, or if you wish to make another attempt to teach a task. If particular type of voice usage is of concern (e.g. higher notes in singing or louder voice during lecturing) it is helpful to obtain a sample of that behaviour.

Appendix E: A PROTOCOL FOR RIGID ENDOSCOPY

The protocol is limited to sustained /i/ vowels because the tongue needs to be held.

When the larynx has been visualised ask the patient to

1. Phonate / i / at normal pitch and loudness for at least 2 seconds.

2. Produce the same vocal starting at normal pitch and loudness and gradually get louder.

3. Produce the same vowel starting at normal pitch and loudness and gradually elevate the pitch. Take a breath, repeat the procedure lowering the pitch.

4. Produce a syllable chain of / i / repetitions at a fast rate.

For most speakers the vowel / i / provides the best image of the larynx. Occasionally an /ai / or /ou / is better.

The tasks are repeated as needed to ensure that the examiner has a representative sample of how the patient typically produces voice and what the patient is capable of producing with their current anatomy. For some patients extended observation of laryngeal dynamics is needed. It is also important to note the opening and closing patterns of the vocal folds, the position of the arytenoid cartilages, gross rotation or tilting of the larynx and the voice quality during the voice task.

Adapted from: Videostroboscopic Examination of the Larynx, Hirano M, Bless DM 1993

Appendix F: Essential Endoscopic Equipment

1. Endoscope

   (a) Rigid and/or
   (b) Flexible
   A narrow bore scope should be available for paediatric examinations.

2. Light Sources

   (a) Continuous
   (b) Stroboscopic

3. Cameras/adapters/lenses

4. Video cassette tapes/recorders or Digital storage recorders (and DVDs, CDs) for purposes of retrieval and review

5. Printers (not essential)

6. Computer assisted systems – for purposes of retrieval and review

7. Sterilising Equipment (or disposable sheaths if used)

Section 9: Communications Strategy to RCSLT members

ALL RCSLT members have access to this full document.

It can be downloaded in pdf format from the RCSLT website (www.rcslt.org/resources)

The completion of the updated position paper (2008) which will supersede all previous RCSLT documents in this area will be announced in *Bulletin* and documented in the executive council minutes.