Training Guidelines for Laryngeal Videoendoscopy/Stroboscopy

Special Interest Division 3, Voice and Voice Disorders
Subcommittee for Training Guidelines for Laryngeal Videoendoscopy/Stroboscopy

These guidelines are an official statement of the American Speech-Language-Hearing Association but are not official standards. They were developed by members of Special Interest Division 3, Voice and Voice Disorders Subcommittee for Training Guidelines for Laryngeal Videoendoscopy/Stroboscopy: Michael P. Karnell (Chair), Alice Klain Silbergleit, Lyn Roark Adams, Robert M. Skwarecki, Adrienne Lynn Perlman, R. E. (Ed) Stone, Jr., and Hallie E. Savage.

Introduction

Interest and use of laryngeal videoendoscopic/stroboscopic (LVES) techniques by speech-language pathologists has surged in recent years. Speech pathologists have become involved in various aspects of LVES procedures, from the decision that a procedure is necessary, through performance of the procedure, to the interpretation and reporting of the results. With this has come increased interest in how one becomes competent to perform LVES.

The subcommittee’s mission was to formulate some guidelines that should help interested speech-language pathologists learn how to incorporate LVES into the voice assessment protocol. The subcommittee recognized that there are a variety of basic skills necessary to perform LVES. Some skills are acquired during the pursuit of a master’s degree in speech-language pathology. For example, coursework in basic anatomy and physiology, voice disorders, and clinical practicum experiences provide much of the necessary foundation for performing LVES. However, additional advanced information and experiences are needed beyond what is available in most master’s training programs.

The subcommittee also recognized that several approaches exist to become trained to perform LVES. Traditional didactic or classroom learning experiences that specifically consider LVES are rare. Many clinicians who perform LVES initially worked with a mentor, someone more senior who was already competent in the procedure. Supervised clinical LVES practicum experiences are becoming incorporated into some clinical training programs. Continued education experiences, such as LVES workshops, serve an important role in providing initial orientation and exposure to the procedure and, in some cases, provide “hands-on” training and experience. Videotape training programs and review of previously recorded LVES procedures are other useful tools to become oriented to LVES.

Given the range of training options and approaches, the subcommittee elected to design a model curriculum for LVES. The intent was to outline the various areas of knowledge needed to perform LVES and suggest possible appropriate modes of training that might be pursued for acquiring the knowledge suggested. Suggestions are made about the role that Division 3 might play in facilitating and encouraging appropriate clinical preparation for performing LVES. A core bibliography is offered to support the educational mission of the model curriculum.

The committee recognized that LVES requires an important degree of aptitude on the part of the clinician. Not all speech-language pathologists interested in voice will necessarily have the motor skills and aptitude needed to perform safe, effective LVES procedures. In keeping with the ASHA Code of Ethics, it is incumbent upon individual clinicians, supervisors, and mentors to recognize as early as possible in the training program whether the trainee has these basic requisite attributes.
Competencies

The professional who performs LVES should demonstrate the following competencies:

I. Familiarity with the various roles of otolaryngologists, speech-language pathologists, nurses, and support staff involved in the provision of LVES;

II. Ability to communicate well with otolaryngologists, nurses, and patients in an interdisciplinary patient care environment;

III. Familiarity with normal and pathological laryngeal anatomy and physiology, medical terminology as it pertains to laryngeal disorders, and principles and techniques of voice treatment;

IV. Familiarity with the various approaches to becoming trained to perform LVES;

V. Ability to identify, select, assemble, operate, and maintain the equipment necessary to perform LVES;

VI. Ability to recognize and identify patients who are appropriate for LVES;

VII. Ability to technically perform LVES using oral and flexible endoscopes in a manner that yields maximum quality recordings;

VIII. Ability to interpret effects of vocal behavior and laryngeal anatomy on laryngeal physiology in coordination and cooperation with medical colleagues;

IX. Ability to concisely describe LVES findings and interpretations for professional communication purposes;

X. Ability to organize, store, and retrieve LVES data for quality assurance and treatment efficacy purposes.

Training Approaches

The following educational modalities can play an important role in preparing the interested and motivated clinician to perform LVES.

I. Didactic/classroom: Traditional classroom learning experiences provided in the context of accredited training programs;

II. Mentoring: Extended one-on-one experience working with a speech-language pathologist and an otolaryngologist who have had extensive experience with all aspects of LVES in an interdisciplinary environment;

III. Supervised clinical experience: Extended experience performing LVES clinical services under the supervision of a speech-language pathologist and otolaryngologist who has had extensive experience with all aspects of the procedure;

IV. Continuing education experience: Organized training experiences provided outside established educational degree programs;

V. Videotape review: Review and interpretation of previously recorded endoscopic examination;

VI. Experience: Experience leading to expertise in performing and interpreting LVES in the clinical environment.

Laryngeal Videoendoscopy/Stroboscopy Training Curriculum

Note: Bold items are suggested training approaches for the indicated section.

I. Rationale for performing videoendoscopy

Suggested Training Approaches: didactic/classroom, mentoring, supervised clinical experience, continuing education, videotape review, experience

A. Evaluating vocal tract anatomy/physiology

B. Assessment of treatment outcomes

C. Interdisciplinary communication/collaboration

D. Patient education

E. Biofeedback

II. Normal and disordered anatomy and physiology

Suggested Training Approaches: didactic/classroom, mentoring, supervised clinical experience, continuing education, videotape review, experience

A. Anatomy and physiology of the normal vocal tract

1. Vocal tract anatomy/physiology

2. Laryngeal and respiratory anatomy/physiology

   a. Role of respiration on appearance of vocal fold vibration

      1. Pressure

      2. Flow

   b. Laryngeal anatomy

   c. Laryngeal physiology

      1. Body-cover theory

      2. Frequency
3. Intensity
4. Timing
5. Quality

B. Pathophysiology

1. Gross appearance, causes, mechanical properties, and treatment
   a. Nodules
   b. Polyps
   c. Granuloma
   d. Carcinoma
   e. Polypoid chorditis
   f. Papilloma
   g. Trauma
   h. Edema/erythema
   i. Leukoplakia
   j. Reflux laryngitis
   k. Vascular abnormalities
   l. Cyst
   m. Hyperkeratosis/Leukoplakia
   n. Other

2. Neurogenic
   a. Upper motor neuron disorders
      1. Parkinson’s
      2. ALS
      3. Stroke
      4. Other
   b. Lower motor neuron disorders
      1. Recurrent laryngeal nerve paralysis/paresis
      2. Superior laryngeal nerve paralysis/paresis
      3. ALS
      4. Myasthenia gravis
      5. Other
   c. Spasmodic Dysphonia

3. Behavioral
   a. Abuse
      1. Nodules
      2. Contact ulcer
      3. Hemorrhagic polyps
      4. Pharmacological reactions
   b. Vocal misuse (poor vocal technique)
   c. Muscle tension dysphonia
      1. Psychogenic
      2. Compensatory
      3. Functional

III. Endoscopic equipment and technique

Suggested Training Approaches: didactic/classroom, mentoring, supervised clinical experience, continuing education, videotape review, experience

A. Equipment
   1. Endoscope
      a. Rigid
      b. Flexible
         1. Pediatric
         2. Adult
         3. Clarity/brightness
   2. Light Sources
      a. Continuous
      b. Stroboscopic
   3. Cameras/adapters/lenses
   4. Video cassette recorders
   5. Printers
   6. Computer assisted systems
   7. Defogging
      a. Warming methods (caution-may damage scope)
         1. Warm water (less than 1500)
         2. Warm bead sterilizer (rigid scope only, approx. 1 second only)
      b. Endoscopic soaps
      c. Endoscopic waxes
   8. Miscellaneous supplies
      a. Gloves
      b. Glasses
      c. 4 x 4 gauze pads
      d. Water-based lubricant (flexible scopes only)
B. Technique
   1. Infection control
      a. Endoscope storage
      b. Endoscope handling
      c. Endoscope cleansing
      d. Endoscope sterilization
      e. Use of barriers
         1. Gloves
         2. Glasses
         3. Masks
   2. Oral
      a. Preparation
         1. Patient preparation
            a. Instructions
            b. Phonatory capability
            c. Anxiety reduction
         2. Patient posture/positioning
         3. Examiner positioning
         4. Defogging
      b. Procedures
         1. Scope insertion technique
         2. Scope maneuvering
         3. Nasal desensitization
            a. Anesthesia
            b. Vasoconstriction
         4. Gag management (anesthesia)
            a. Anesthesia
            b. Distraction
         5. Vocal maneuvers
            a. Sustained phonation [i]
            b. Pitch variation
            c. Loudness variation
            d. Adductor/abductor maneuvers
            e. Word, phrase, sentence repetition
         6. Stroboscopy modes
            a. Slow motion mode
            b. Stop action mode
   3. Flexible
      a. Preparation
         1. Patient preparation
            a. Instruction
            b. Phonatory capability
            c. Anxiety reduction
         2. Patient posture/positioning
         3. Examiner positioning
         4. Defogging
      b. Procedures
         1. Scope insertion technique
         2. Scope maneuvering
         3. Nasal desensitization
            a. Anesthesia
            b. Vasoconstriction
         4. Gag management (anesthesia)
            a. Anesthesia
            b. Distraction
         5. Vocal maneuvers
            a. Sustained phonation [i]
            b. Pitch variation
            c. Loudness variation
            d. Adductor/abductor maneuvers
            e. Word, phrase, sentence repetition
         6. Stroboscopy modes
            a. Slow motion mode
            b. Stop action mode

IV. Patient safety.

Suggested Training Approaches: didactic/classroom, mentoring, supervised clinical experience, continuing education, videotape review, experience

A. Universal precautions
   1. Differences between techniques
   2. Targeted microbes
      a. Varieties of hepatitis
      b. HIV
      c. TB
      d. Methicillin-resistant Staph aureus (MRSA)
      e. Vancomycin-resistant Enterococcus (VRE)
      f. Other
B. Cleaning agents
   1. Various agents
      a. Cold sterilization agents
      b. Glutaraldehyde
      c. Bleach
   2. Deleterious effects of hot sterilization
C. General patient and clinician safety
   1. Control of transmission of disease via
      a. Eyeglasses
      b. Gloves
      c. Biohazard recepticals
D. Anesthetics
   1. Various agents
      a. Hurricane
      b. Lidocaine
      c. Xylocaine
      d. Astra
      e. Cetacaine
      f. Others
   2. Pharmacological effects of above agents
   3. Dosage and side effects
   4. Indications and contraindications
E. Patient-specific concerns
   1. Informed/photographic consent
      a. Patient benefits (see Section I)
      b. Patient risks (see above) agency’s lawyer for components of consent statement
   2. Precautions
      a. Adverse/allergic reactions to topical agents
         1. Runny nose following topical anesthetic in nasendoscopy in performers on day of performance
         2. NPO until anesthetic effects abate
         3. Tachycardia associated with epinephrine
         4. Dosage
      b. Vasovagal response
         1. Signs/symptoms
         2. Treatment
      c. Minimizing nasal irritation
         1. Nasal inflammation
         2. Nasal turbinate hypertrophy
         3. Implications of blood thinners and hemophilia
V. Reading videostroboscopic images
   Suggested training approaches: didactic/classroom, mentoring, supervised clinical experience, continuing education, videotape review, experience
   A. Symmetry
      1. Vertical phase difference (phase asymmetry)
      2. Abnormal modes of vibration
   B. Amplitude
      1. Symmetrical
      2. Normal/diminished/great
   C. Periodicity
      1. Always periodic
      2. Usually periodic
      3. Sometimes periodic
      4. Never periodic
   D. Mucosal wave
      1. Normal
      2. Diminished
      3. Great
      4. Adynamic segments
      5. Symmetrical (R/L)
   E. Closure
      1. Complete
         a. Open quotient normal
         b. Open quotient increased
         c. Open quotient decreased
      2. Incomplete
         a. Posterior chink
         b. Anterior chink
         c. Elliptical
         d. Hourglass
         e. Half hourglass
         f. Slit
F. Appearance
1. Malmovement
2. Malposition
3. Excrucence
4. Inflammation
5. Edema
6. Erythema

VI. Interpretation
A. Voice quality abnormal, larynx normal -> behavioral disorder
B. Phase asymmetry -> mass, compliance, neurogenic difference
C. Amplitude asymmetry -> mass, compliance, neurogenic difference, scarring, granuloma
D. Mucosal wave adynamic segment -> cover scarring, intracordal cyst, fibrosis, neurogenic disorder, edema
E. Inadequate closure -> intervening mass, neurogenic disorder (paralysis), hypofunctional disorder
F. Supraglottic compression -> hyperfunction, compensatory hyperfunction

c. Vibratory characteristics
1. Glottal closure
2. Vibratory amplitude
3. Vibratory symmetry
4. Mucosal wave
d. Description of clinical impressions
1. Appearance of laryngeal anatomy and physiology is consistent with that of...
2. Description of vocal use
e. Recommendations
1. Medical/surgical follow-up
2. Vocal conservation
3. Vocal hygiene
4. Voice treatment
5. Repeat examination
6. Vocal pedagogy
7. Other comments

VII. Reporting
A. Patient identification
B. Patient history
1. Medical history
2. History of presenting problem
3. Previous treatment
4. Vocal use inventory
C. Current voice quality
D. Phonatory function measures
E. Stroboscopic examination
1. Description of procedure
2. Description of findings
   a. Laryngeal tissue abnormalities
      1. Tissue appearance
      2. Vocal fold edge
   b. Gross laryngeal movement
      1. Arytenoid movement
      2. Supraglottic compression

References

Rationale for Performing Videostroboscopy


**Normal & Disordered Anatomy & Physiology**


Patient Safety

Reading, Interpreting, & Reporting Findings