

Assessment and Treatment of Voice Disorders in Children

The instruments to be used in assessment and eligibility determination are IEP Team decisions. Eligibility for every area should be based on documentation of:

- A disability that negatively impacts academic achievement or functional performance, and
- Requires specially designed instruction

Characteristics of Voice Disorders

- Voice disorders are related to laryngeal and upper airway structure and function.
 - Voice disorders are defined as any deviation in pitch, loudness, variability or vocal quality relative to a child's age, gender and cultural background.
 - An estimated 6-23% of school-aged children experience voice disorders.
 - All children suspected to have chronic voice disorders should be
 - evaluated by a physician prior to beginning treatment as part of the assessment
 - process.
- 1) Voice disorders/dysphonia (Lee, Stemple, Glaze & Kelchner, 2004; ASHA, 2006)
 - a) Roughness/hoarseness: lack of clear vocal quality
 - b) Breathiness: Excessive air escape during phonation
 - c) Strain: Perception of excessive vocal effort (hyperfunction)
 - d) Consistent hard glottal attacks
 - e) Aponia: Intermittent or consistent absence of voicing
 - f) Pitch: Too high or too low
 - g) Loudness: Too loud or too soft
 - h) Variability: Excessive or reduced (monotone) variation in pitch and loudness
 - 2) Potential causes of voice disorders
 - a) Misuse/abuse – yelling, excessive talking, excessive crying, chronic coughing, throat clearing, poor hydration, misuse of pitch, chronic exposure to irritants, excessive muscle tension
 - b) Structural impairment – nodules, cysts, polyps, laryngeal webs, stenosis, chronic upper airway impairment, limited breath support for speech, inflammation due to acid reflux, laryngeal papilloma
 - c) Neurogenic – cerebral palsy, TBI, muscular dystrophy, vocal fold paralysis, laryngeal scarring
 - d) Psychologic – conversion aponia/dysphonia, mutational falsetto
 - e) Hearing loss – may cause child to speak with high intensity or louder than normal
* 85-90% of voice disorders in school age children are related to vocal misuse/abuse and/or chronic upper airway inflammation (Boyle, 2000). Roles of the school-based SLP in the management of voice disorders

- 3) Impact of voice disorders on education (Ruddy & Sapienza, 2004, page 329)
 - a) Difficulty in being heard in and out of the classroom
 - b) Limited classroom participation (oral reading, discussions, oral presentations) in an effort to conceal vocal differences
 - c) Impaired social interactions
 - d) Reluctance to participate in extracurricular activities
 - e) Negative attention from teachers, as well as peers

- 4) Provide information to students, teachers, other professionals and families about voice disorders
 - a) Assess voice and laryngeal function
 - b) Provide appropriate referrals for structural management
 - c) Provide treatment to improve voice quality and laryngeal usage
 - d) Make referral to appropriate medical personnel

- 5) Assessment of voice disorders
 - Voice quality is a perceptual phenomenon that cannot be diagnosed by instrumentation
 - Vocal function can be determined by assessing physical measures of pitch, loudness and respiratory support
 - Disorders of laryngeal structure and function are physical characteristics that must be diagnosed by a physician, usually an Otolaryngologist (ear nose and throat doctor specialist (ENT))
 - a) Background information and medical history
 - i) Onset of disorder
 - ii) Progression of disorder
 - iii) Association with other physical ailments, emotional distress or psychological disturbance
 - iv) Use of medications (e.g. inhalants, decongestants)
 - v) History of laryngeal procedures (e.g. intubation)
 - vi) Diagnosis of general motor impairments (e.g. cerebral palsy)
 - vii) Assessment of chronic vocal behaviors at home and at school (e.g. yelling, throat clearing)
 - viii) Amount of daily hydration
 - ix) Perception of the problem (child, parent, teacher)
 - x) Physician diagnosis of laryngeal pathology or structural impairment

 - b) Perceptual assessment of voice quality
 - * Among the many protocols available for rating perceptual qualities of voice in children are:
 - i) Buffalo III Voice Profile (Boone, et al. 2009)
 - ii) GRBAS Scale (Karnell, et al. 2007)
 - iii) Quick Screen for Voice (Lee, et al. 2004)

- c) Assessment of respiratory support for speech
 - i) Informal observation (e.g., running out of air during conversational speech)
 - ii) Maximum phonation time (MPT) – amount of time the child can sustain a vowel on one breath (average 9-15 seconds for elementary school children)
- d) Assessment of the perception vocal quality: Pediatric Voice Handicap Index (Zura, et al, 2007)

6) Treatment of voice disorders

Goals

- To develop the best possible voice quality based on the physical status of the larynx
- To eliminate abusive vocal behaviors
- To develop appropriate respiratory support

a) Procedures

- Vocal hygiene – identifying and charting vocal abuse/misuse, adequate hydration, elimination/reduction of exposure to allergens or environmental irritants, and reduction of acid reflux
- Self-identification of “best voice” vs. “rough voice” or “clear voice” vs. “unclear voice”
- Self-monitoring of vocal quality and vocal behaviors
- Adequate hydration
- Resonant voice therapy (Verdolini, 2000) Easy phonation through a barely closed glottis that produces high amplitude of vocal fold vibration with minimal stress on the vocal folds. Treatment focuses on achieving a continuum of oral sensations and easy phonation, beginning with basic speech productions through conversational speech.
- Vocal function exercises (Stemple, Glaze, & Klaben, 2000) Improve breath support, decrease excess muscle tension, improve vocal fold closure, and improve forward focus resonance, all in an effort to improve voice quality and decrease vocal effort and fatigue.
- Diaphragmatic breathing
- Lip trills
- Generalized muscle relaxation as well as neck and laryngeal massage

Note:

* Procedures are similar to those used for adults, but must be adapted through appropriate level of language and descriptions of techniques.

*Children may not be motivated to change vocal quality and behaviors, so it is essential to develop an intrinsic reinforcement system that will ensure that the child complies with the treatment process.

b) Dismissal criteria

- Acquisition of goals or normal or best possible vocal quality

7) Service delivery methods

- a) Individual or group pullout sessions
- b) Classroom based inclusion services – particularly for vocal hygiene
- c) Collaboration with other professional (e.g. PT, OT, EC, reading specialist, tutor)
- d) Consultation

References and Resources

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