



Pediatric Voice Therapy: Evidence Based Practice... and Everything Else

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SURREY VOICE CLINIC AT ABILITIES NEUROLOGICAL REHABILITATION

SURREY, BC



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Evidence Based Practice

*“The term **evidence-based practice** refers to an approach in which **current, high-quality research evidence** is integrated with **practitioner expertise** and **client preferences and values** into the process of making clinical decisions.”*



American Speech-Language-Hearing Association. (2005). *Evidence-based practice in communication disorders* [Position Statement]. Available from www.asha.org/policy.

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External Scientific Evidence

Randomized, double-blind, placebo controlled studies

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Establishing Scientific Evidence (Challenges of Clinical Research)

Prioritizing of clinical research questions,
Divide between clinical research and clinical practice,
The globalization of clinical trials,
Issues of paying for clinical trials,
Narrow incentives for practitioners to participate in clinical research,
Shrinking clinical research workforce,
Difficulties of navigating administrative and regulatory requirements,
Recruitment and retention of patients.

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Challenges of Clinical Research

We're human...and so are our patients/clients/kids

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Seeking out scientific evidence

- Systematic Reviews
 - [ASHA's Evidence Maps \(http://ncepmaps.org\)](http://ncepmaps.org)
 - [ASHA/N-CEP's Compendium of Guidelines and Systematic Reviews](#)
 - [Cochrane Collaboration](#)
 - [Campbell Collaboration](#)
 - [What Works Clearinghouse](#) (U.S. Department of Education)
 - [Psychological Database for Brain Impairment Treatment Efficacy](#)
 - [speechBITE™: Speech Pathology Database for Best Interventions and Treatment Efficacy](#)
 - [Evidence-based Communication Assessment and Intervention \(EBCAI\) Journal](#)

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ASHA Evidence Map

<http://ncepmaps.org>



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Seeking out scientific evidence

Individual studies

- Online bibliographic database
 - **MEDLINE**: the world's largest online bibliographic database of health related studies. MEDLINE cites over 12 million articles from 4,000 peer-reviewed journals.
 - publication in a peer-reviewed journal is not a guarantee of **scientific quality**.
 - **CINAHL**®: Cumulative Index to Nursing and Allied Health Literature, is valuable. Although CINAHL is more likely than MEDLINE to contain studies with negative findings
 - Gray literature: term given to the body of research that is not published in peer-reviewed literature:
 - technical reports, conference proceedings, testimony and other unpublished evidence.
 - typically done through conversations with content experts, relevant professional groups/organizations, and internet search engines.

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Clinical Expertise

Education: past, present, future

Experience

- Life experience
- Clinical experience
- Educational experience
- Role models
- Resources

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Clinical decision making

Ability to make clinical judgement is what makes you a clinician.

What are the communication priorities?

What is medically important?

What is socially important?

What if we do nothing?

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Client Preferences

Who is this kid/client/patient?

What is important to the individual/family?

What other concerns are present?

Communication disorder, behavioural issues, getting to therapy sessions, siblings, attitude of parents, etc...

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EBP Summary

Recognize the needs, abilities, values, preferences, and interests of individuals and families

Integrate those factors along with best current research evidence and clinical expertise

Maintain the knowledge and skills that are necessary to provide high quality professional services,

Evaluate prevention, screening, and diagnostic procedures, protocols, using recognized criteria described in the evidence-based practice literature;

Evaluate the efficacy, effectiveness, and efficiency of clinical protocols for prevention, treatment, and enhancement using criteria recognized in the evidence-based practice literature;

Evaluate the quality of evidence appearing in any source or format,

Monitor and incorporate new and high quality research evidence having implications for your clinical practice.

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EBP Summary (Montgomery, 2003)

“Statistically significant” is not synonymous with “clinically meaningful,”

“Clinical judgement is ALWAYS required,”

“Randomized controlled trials may either be impractical (if not impossible), or inappropriate for answering clinical questions,”

“No substitute for clinical experience in choosing what is appropriate for an individual patient.”

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EBP Summary

EBP is a continuing process, it is a dynamic integration of ever-evolving clinical expertise and external evidence in day-to-day practice.

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Current High Quality Clinical Trials

Pediatric Voice Therapy

- Yes?
- No?

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Any studies on effectiveness of pediatric voice therapy?

Yes

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Voice Therapy efficacy

Lee and Son (2005) found improvements in perceptual analysis (GRBAS), pitch, and jitter, shimmer and noise-to-harmonic ratio in children with hyperfunctional voice disorders (mostly nodules)

Mori and Hirano retrospective of 179 children (reported in Hirschberg 1995) found that of these (mostly nodules, 12 with polyp):

- at 7 month follow-up
 - 6% improved with vocal hygiene alone (30 nodules, 1 polyp)
 - 40% who had therapy improved (78 nodule, 2 polyp)
- At 1 month follow-up
 - 89% of surgery patients improved (9 polyp, 2 nodules)
- After puberty
 - 67% of vocal hygiene alone showed improvement
 - 86% of therapy showed improvement
 - 91% of surgery showed improvement

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Voice therapy efficacy

Ramig and Verdolini (1998) reviewed the literature - at that time. In children, both vocal hygiene and direct therapy programs were found to improve voice quality.

Tezcaner et al. (2009) found post-therapy improvements in jitter, shimmer, noise-to-harmonic ratio and perceptual (GRBAS) assessment in a study of 39 children with nodules age 7-14. Therapy consisted of both indirect (vocal hygiene, reduce vocal abuse) and direct (relaxation, resonant voice, accent method) – but therapy strategies not consistent.

Trani et al. (2006) in 16 patients age 6-11, with different pathologies (nodules, cyst, scar) noted improvement in perceptual assessment (GRBAS), no statistically significant changes in objective assessments, but a trend toward improvement. Type of therapy was not described.

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Future

UW Madison Pediatric Voice Clinic

- Anecdotal evidence, and a recent study of SLPs in Australia, suggests that management of pediatric voice disorders may vary depending on individual clinician preference and experience in combination with service provider policies.
- Researchers at University Wisconsin-Madison are interested to document practice within the United States, to explore influencing factors to management, and to compare and contrast management approaches internationally.
- Survey is currently being conducted
- US only

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Voice

When a child's vocal anatomy and physiology are normal, and they are not under some kind of threat, they will talk and sing if they have heard other people do so.

Campbell 1998; Duchan, 1994

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Pediatric Dysphonia

1-23% of children have a voice problem

General acceptance of research numbers – 6-9%

Issues in measurement of pediatric dysphonia:

- Lack of consistency of measurement
- Variability in listener judgment

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The prevalence of pediatric voice and swallowing problems in the United States.

Bhattacharyya N.

Laryngoscope. 2014 Sep 15. doi: 10.1002/lary.24931. [Epub ahead of print]

An estimated 839 ± 89 thousand children ($1.4\% \pm 0.1\%$) reported a voice problem.

Overall, $53.5\% \pm 1.9\%$ were given a diagnosis for the voice problem and $22.8\% \pm 4.6\%$ received voice services.

Laryngitis ($16.6\% \pm 5.5\%$) and allergies ($10.4\% \pm 4.0\%$) were the most common diagnoses.

A total of 16.4% graded the voice problem as a "big" or "very big" problem.

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Long term results of childhood dysphonia treatment.

[Mackiewicz-Nartowicz H¹](#), [Sinkiewicz A¹](#), [Bielecka A¹](#), [Owczarzak H¹](#), [Mackiewicz-Milewska M²](#), [Winiarski P³](#).

Int J Pediatr Otorhinolaryngol. 2014 May;78(5):753-5. doi: 10.1016/j.ijporl.2014.02.002. Epub 2014 Feb 9.

OBJECTIVE:

The aim of this study was to assess the long term results of treatment and rehabilitation of childhood dysphonia.

METHODS:

This study included a group of adolescents (n=29) aged from 15 to 20 who were treated due to pediatric hyperfunctional dysphonia and soft vocal fold nodules during their pre-mutational period (i.e. between 5 and 12 years of age). The pre-mutational therapy was comprised of proper breathing pattern training, voice exercises and psychological counseling. Laryngostroboscopic examination and perceptual analysis of voice were performed in each patient before treatment and one to four years after mutation was complete. The laryngostroboscopic findings, i.e. symmetry, amplitude, mucosal wave and vocal fold closure, were graded with NAPZ scale, and the GRBAS scale was used for the perceptual voice analysis.

RESULTS:

Complete regression of the childhood dysphonia was observed in all male patients (n=14). Voice disorders regressed completely also in 8 out of 15 girls, but symptoms of dysphonia documented on perceptual scale persisted in the remaining seven patients.

CONCLUSIONS:

Complex voice therapy implemented in adolescence should be considered as either the treatment or preventive measure of persistent voice strain, especially in girls.

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Listeners' attitudes toward children with voice problems.

Ma EP¹, Yu CH.

J Speech Lang Hear Res. 2013 Oct;56(5):1409-15. doi: 10.1044/1092-4388(2013/11-0242). Epub 2013 Aug 7.

PURPOSE:

To investigate the attitudes of school teachers toward children with voice problems in a Chinese population.

METHOD:

Three groups of listeners participated in this study: primary school teachers, speech-language pathology students, and general university students. The participants were required to make attitude judgments on 12 voice samples using a semantic differential scale with 22 bipolar adjective pairs. The voice samples were collected from 6 children with healthy voices and 6 children with dysphonia. The 22 bipolar adjective pairs were intended to cover nonspeech characteristics about the child's personality, social characteristics, and physical appearance.

RESULTS:

The mean attitude ratings received by children with dysphonic voice were significantly lower (i.e., less favorable) than those received by children with healthy voices in all of the 22 adjective pairs (all $ps < .002$). The attitude ratings made by the 3 groups of listeners were not significantly different from one another ($ps > .05$).

CONCLUSION:

To our knowledge, this is the first study in which the authors examine listeners' perception toward children with voice problems in the Chinese population. The results suggest that voice problems in children warrant attention, and their effects on the child should not be underestimated. The findings also highlight the importance of early identification and intervention for children with voice problems.

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Effects of voice therapy in school age children.

Akin Şenkal Ö¹, Çiyiltepe M.

J Voice. 2013 Nov;27(6):787.e19-25. doi: 10.1016/j.jvoice.2013.06.007. Epub 2013 Sep 3.

OBJECTIVES:

To assess the overall efficacy of voice therapy for dysphonia in school-age children in two different cities in Turkey.

STUDY DESIGN:

Retrospective cohort study.

METHODS:

Ninety-nine outpatients aged 7-15 years with persistent hoarseness for at least 2 months as a primary symptom. Ratings of the Grade, Roughness, Breathiness, Asthenia, and Strain (GRBAS) scale, s/z ratio, and maximum phonation time (MPT). Voice therapy outcome data collected on three types of voice therapy (physiological, hygienic, and symptomatic).

SETTING:

Outpatient clinics in university hospitals in two different cities in Turkey.

CONCLUSIONS:

Vocal nodules were the main cause of the school-age children's voice problems, accounting for 62.6% of the cases. Different types of voice therapy techniques could be used in school-age children. Many of these techniques can successfully restore the normal voice. However, in this study, all subjective voice ratings such as GRBAS, s/z ratio, and MPT statistically changed by symptomatic voice therapy techniques. Symptomatic voice therapy was found to be a successful method of therapy.

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Perceptions of Dysphonia

Ruscello DM, Lass NJ, Podbesek J. Listeners' perceptions of normal and voice-disordered children. *Folia Phoniatr (Basel)*. 1988;40(6):290-296.

Sick

Sad

Unpleasant

Ugly

Dirty

Cruel

Bad

Worthless

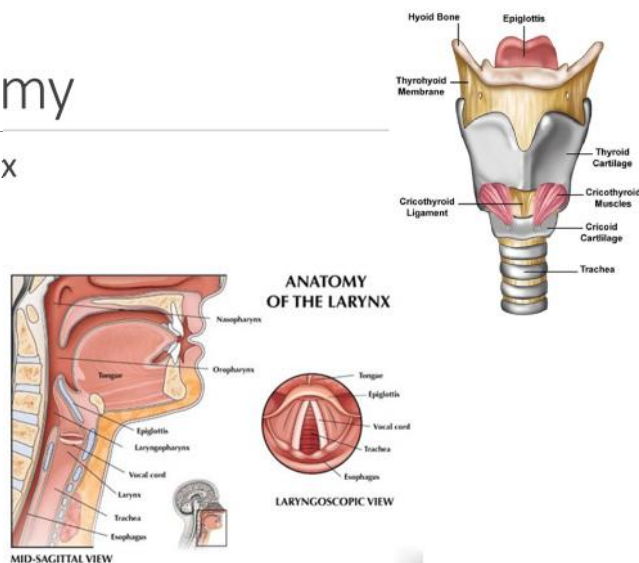
Dishonest

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Vocal Fold Anatomy

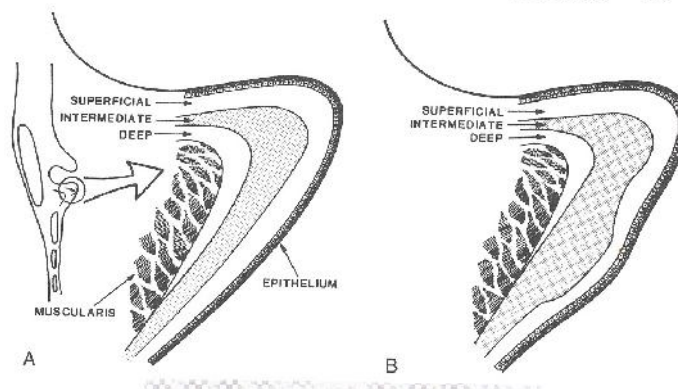
Gross Anatomy of the Larynx

- Cartilaginous structures
- Muscles
- Bone (1)



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Layer Structure of Vocal Folds



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Layer Structure of Vocal Folds

Cover

- Epithelium and superficial layer of lamina propria
- Least stiffness
- Most movement – vibrates most markedly during phonation
- Source of visible mucosal wave/upheaval
- Pliability of this layer is largely responsible for clear voice production

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Layer Structure of Vocal Folds

Transition

- Intermediate and deep layers of lamina propria
- Intermediate stiffness
- Intermediate movement
- Contributes to maintenance of longitudinal stability during phonation

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Layer Structure of Vocal Folds

Body

- Vocalis/thyroarytenoid muscle
- Most stiffness
- Least movement
- Responsible for maintenance of oscillation and vertical stability during phonation

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Layer Structure of Vocal Folds

Each layer must maintain these independent properties for clear voice production

Disruption in the relationship of these layers will result in a voice disorder

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Vocal Fold Development

Age related changes in vocal fold structure and function have been documented

Vocal fold pathology may present differently along the age-span

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Vocal Fold Development

Infant larynx

- Layer structure is absent
- No vocal ligament is found (*ntermediate layer of the lamina propria*, which is made up primarily of elastic fibers and the *deep layer of the lamina propria*, which is made up primarily of collagenous fibers).
- 51% of collagen found in the adult larynx

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Vocal Fold Development

Young child:

- Structure of superficial vs. deep layers appeared in children > 10 years
- Absence of superficial layer/layer structure for children < 10 years may result in severe mechanical stress with increased voice use.
 - May correspond to period of so-called “pediatric hoarseness.”
- Vulnerability may also be attributed to vascular immaturity

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Vocal Fold Development

Teenage years:

- Differentiation of superficial and deep layers (vocal ligament)
- Emergence of mucosal wave
- Increased ability to tolerate impact stress during phonation
 - Layer structure
 - Increased % of collagen
- Prepubertal female laryngeal dimensions are closer to adult size than male counterparts, suggesting less growth per unit time during puberty

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Vocal Fold Development

Puberty

Laryngeal cartilages grow faster in males than females

- 3 x faster in males than females
- Absolute growth in height, width and length of thyroid and cricoid cartilages greater in males than females
- Male membranous vocal fold undergoes over twice the growth of the female VF

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Vocal Fold Development

Male voice change with puberty:

- Decreased stability with larger changes in growth (vs. females) of cartilages and muscle
 - Fluctuations in pitch may be due to diminished control of longitudinal tension in vocalis.
- Fundamental frequency drops
 - Increased density of collagen, which changes mass of the vocalis
 - Layer structure becomes more defined and adult-like
- Growth of resonating chambers of pharynx, nose and face

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Vocal Fold Development

Gender differences

- Males have longer vocal folds
- Males have higher % of collagen
 - Infers that males can take more impact stress
- Males have larger cartilages

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Vocal Fold Development

Geriatric larynx

- Decrease in lamina propria thickness
- Increased collagenous fibers
- Increased fo in males with aging
- Decrease in fo for females with aging
 - May be due to estrogen changes with menopause
- Vocal muscle thins as does other skeletal muscle

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Normal pediatric larynx

The larynx is higher in children than in adults, with the hyoid bone found at the C2-3 level in the youngest children (newborn to 2 years).

The subglottic airway is narrowest in the youngest children.

The hyoid bone was the only laryngeal structure ossified in any of the children. A thin line of high density was seen in the expected location of the thyroid cartilage in some children.

Hudgins et al, 1997

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Normal pediatric larynx

Uncalcified laryngeal cartilaginous structures.

The supraglottic airway contour is triangular or oval, the glottis was shaped like a teardrop, and the subglottic contour was oval.

Hudgins et al, 1997

The subglottic airway increases considerably in size during the first 2 years of life (from 13 to 28 mm). Further growth seems to follow a linear mode.

Eckel et al, 2000

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Normal pediatric larynx

The cartilaginous glottis accounts for 60 to 75% of the vocal folds' length in children under two years of age.

The anterior ligamentous part of the glottis out sizes its posterior cartilaginous portion during the third year of life.

Eckel et al, 2000

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Summary of differences in pediatric larynx

Size

Position

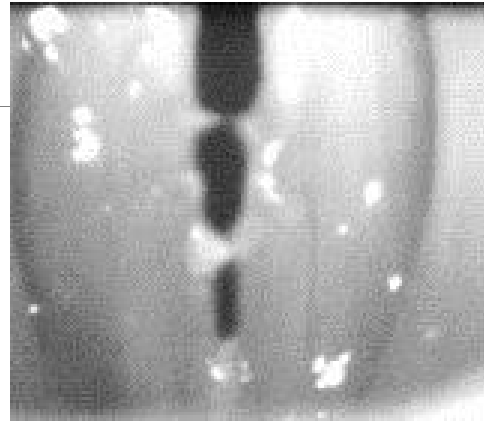
Consistency

Shape

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Production of Sound

- Subglottic pressure
- Supraglottic pressure
- Glottic closure
- Glottic tension
- Mucosal wave
- Shaping of sound



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Voice Disorder

Change in:

- Quality
- Resonance
- Pitch
- Loudness
- Effort

Negative impact on:

- Communicative effectiveness
- Social development
- Scholastic performance
- Self-esteem

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Onset of Pediatric Dysphonia

Since Birth

- Congenital
- Neurologic

After Birth

- Anatomic
- Neurologic
- Neoplastic
- Inflammatory
- Infectious
- Iatrogenic

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Pediatric Dysphonia

Kids are susceptible to the same voice disorders as adults

- Nodules (bilateral)
- Cysts
- Polyps
- Edema
- RRP
- Irritable larynx
 - Chronic Cough
 - Paradoxical Vocal Fold Motion
- Subglottic Stenosis
- Muscle tension dysphonia
- Vocal fold paralysis
- Laryngeal web
- Laryngomalacia

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Typical pediatric laryngeal pathology

Subglottic stenosis

Nodules

Laryngomalacia

Dysphonia without pathology

Vocal fold paralysis

Dobres, et al. 1990

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Pediatric Voice Team

Pediatric ENT

PCP/Pediatrician

Speech Language Pathologist

Pediatric Asthma/Allergy Specialist

Pediatric Pulmonary Specialist

Pediatric Gastroenterologist

Pediatric Neurologist

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Evaluation of Pediatric Dysphonia

History

Baseline data

Visualization

Diagnosis

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History

Complete case history

- Pregnancy and birth
- Developmental
- Other medical issues

Date of onset

- Since birth
- New onset

Associated difficulty

- Swallowing
- Breathing

Patterns of hoarseness

- Intermittent
- Recurrent
- Persistent
- Progressive

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Vocal hygiene questions

Evidence of:

- Yelling
- Screaming
- Making odd noises with voice
- Extreme emotions

◦ Behaviour patterns:

- Activity level
- Sleeping
- Eating
- Siblings

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History

Signs/Symptoms of reflux

- burning in throat
- Burping
- “owie” burps
- lump in throat
- MTU's (Mini throw ups)
- coughing
- throat clearing
- worse at night or morning

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Laryngopharyngeal Reflux and Children

<http://www.entnet.org/?q=node/1455>

Chronic cough	Feeding difficulty
Hoarseness	Turning blue (cyanosis)
Noisy breathing (stridor)	Aspiration
Croup	Pauses in breathing (apnea)
Reactive airway disease (asthma)	Apparent life threatening event (ALTE)
Sleep disordered breathing (SDB)	Failure to thrive (a severe deficiency in growth such that an infant or child is less than five percentile compared to the expected norm)
Spit up	

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Laryngopharyngeal Reflux and Hoarseness

Various studies

- 62 % of hoarse children
- 72 % of children with otolaryngologic symptoms
- 70.5% of children with hoarseness for more than 6 months.

Behavioural management

Medical management

- H2Blockers
- PPI
- Typical recommendation
 - 3 month prescription, 1-2x daily, 10-20mg (dependent on weight) 30 minutes before dinner, or, 30 minutes before competition/physical exercise.

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GERD and Asthma

Allergy/Asthma history

- 50-60% incidence of GERD in children with asthma
- May cause, aggravate or trigger bronchial obstruction

Symptoms

- Hoarseness
- Sore throat
- Thoracic pain
- Cough
- Wheezing

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Instrumental/Non-instrumental Voice Assessment

Perceptual assessment

- Pediatric Voice Handicap Index
- Pediatric Voice Outcomes
- Pediatric Voice Related Quality of Life
- GRBAS
- CAPE-V

Maximum Phonation Time

S/Z ratio

Audio recording

Video recording

Other acoustic parameters if you have the equipment/software

- Fundamental frequency
- Frequency range
- Intensity range
- Jitter

Free Acoustic Software:
<http://www.fon.hum.uva.nl/praat/>

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Pediatric Voice Handicap Index

PEDIATRIC VOICE HANDICAP INDEX (pVHI)

Name: _____ Date: ___/___/___

Instructions: These are statements that many people have used to describe their voices and the effects of their voices on their lives. Please circle the response that indicates how frequently your child experiences the same symptoms.
(0 = never, 1 = almost never, 2 = sometimes, 3 = almost always, 4 = always)

- My child's voice makes it difficult for people to hear him/her. 0 1 2 3 4
- People have difficulty understanding my child in a noisy room. 0 1 2 3 4
- At home, we have difficulty hearing my child when he/she calls through the house. 0 1 2 3 4
- My child tends to avoid communicating because of his/her voice. 0 1 2 3 4
- My child speaks with friends, neighbors, or relatives less often because of his/her voice. 0 1 2 3 4
- People ask my child to repeat him/herself when speaking face-to-face. 0 1 2 3 4
- My child's voice difficulties restrict personal, educational, and social activities. 0 1 2 3 4
- My child runs out of air when talking. 0 1 2 3 4
- The sound of my child's voice changes throughout the day. 0 1 2 3 4
- People ask, "What's wrong with your child's voice?" 0 1 2 3 4
- My child's voice sounds dry, raspy, and/or hoarse. 0 1 2 3 4
- The quality of my child's voice is unpredictable. 0 1 2 3 4
- My child uses a great deal of effort to speak (e.g., straining). 0 1 2 3 4

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Pediatric Voice Outcomes Survey

1. To what extent does your child's voice limit his or her ability to be understood in a noisy area?
 - Limited a lot
 - Limited a little
 - Not limited at all
2. During the past 2 weeks, to what extent has your child's voice interfered with his or her normal social activities or with his or her school?
 - Not at all
 - Slightly
 - Moderately
 - Quite a bit
 - Extremely
3. How often does your child have trouble with food or liquids "going down the wrong pipe" when he or she eats food or drinks liquid and begins to cough after eating or drinking?
 - All the time
 - Most of the time
 - Sometimes
 - Rarely
 - Never
4. Do you find your child "straining" when he or she speaks because of his or her voice problem?
 - Not at all
 - A little bit
 - Moderately
 - Quite a bit
 - Extremely

Figure 1. Pediatric Voice Outcomes Survey.

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Pediatric Quality of Life

“The PVRQOL is a more comprehensive survey than the previously validated Pediatric Voice Outcomes Survey and is another valid instrument to examine the health-related quality-of-life issues in pediatric voice disorders.”

Please answer these questions based on what your child's voice (your own voice if you are a teenage respondent) has been like over the past 2 weeks. Considering both how severe the problem is when you get it, and how frequently it happens, please rate each item below on how bad it is (that is, the amount of each problem that you have). Use the following rating scale:

- 1 = None, not a problem
- 2 = A small amount
- 3 = A moderate amount
- 4 = A lot
- 5 = Problem is "as bad as it can be"
- 6 = Not applicable

Because of my child's voice, how much of a problem is this?

1. My child has trouble speaking loudly or being heard in noisy situations.	1 2 3 4 5 6
2. My child runs out of air and needs to take frequent breaths when talking.	1 2 3 4 5 6
3. My child sometimes does not know what will come out when he or she begins speaking.	1 2 3 4 5 6
4. My child is sometimes anxious or frustrated (because of his or her voice).	1 2 3 4 5 6
5. My child sometimes gets depressed (because of his or her voice).	1 2 3 4 5 6
6. My child has trouble using the telephone or speaking with friends in person.	1 2 3 4 5 6
7. My child has trouble doing his or her job or schoolwork (because of his or her voice).	1 2 3 4 5 6
8. My child avoids going out socially (because of his or her voice).	1 2 3 4 5 6
9. My child has to repeat himself or herself to be understood.	1 2 3 4 5 6
10. My child has become less outgoing (because of his or her voice).	1 2 3 4 5 6

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GRBAS Hirano, 1981

“Simple, reliable measure for clinical use.”

Webb AL, Carding PN, Deary IJ, MacKenzie K, Steen N, Wilson JA (2004) The reliability of three perceptual evaluation scales for dysphonia. *Eur Arch Otorhinolaryngol*;261: 429–434 16.

GRBAS scale

Grade

Roughness

Breathiness

Asthenicity

Strain

Scale of 0–3

Example: G3R2B3A3S2

The rating is made by assessing current conversational speech or when reading a passage.

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CAPE-V

Consensus Auditory-Perceptual Evaluation of Voice (CAPE-V) ASHA Special Interest Division 3, Voice and Voice Disorders

The following parameters of voice quality will be rated upon completion of the following tasks.

- Sustained vowels, /a/ and /s/ for 3-5 seconds duration each.
- Sentence production:
 - The blue spot is on the key again.
 - How hard did he hit him?
 - We were away a year ago.
 - We eat eggs every Easter.
 - My mama makes lemon muffins.
 - Peter will keep at the peak.
- Spontaneous speech in response to: "Tell me about your voice problem," or "Tell me how your voice is functioning."

Legend: C = Consistent I = Intermittent
 MI = Mildly Deviant
 MO = Moderately Deviant
 SE = Severely Deviant

									SCORE
Overall Severity	MI	MO	SE	C	I				/100
Roughness	MI	MO	SE	C	I				/100
Breathiness	MI	MO	SE	C	I				/100
Strain	MI	MO	SE	C	I				/100
Pitch	(Indicate the nature of the abnormality): _____			C	I				/100
	MI	MO	SE						
Loudness	(Indicate the nature of the abnormality): _____			C	I				/100
	MI	MO	SE						
	MI	MO	SE	C	I				/100
	MI	MO	SE						
COMMENTS ABOUT RESONANCE:	NORMAL		OTHER (Provide description): _____						
ADDITIONAL FEATURES (for example, diplophonia, fry, falsetto, asthenia, aphonia, pitch instability, tremor, wobble, or other relevant terms): _____									

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Laryngeal Visualization
DO NOT TREAT WITHOUT IT

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Assessment of Structure

Halogen light

- Gross assessment of laryngeal structure
 - Glottic margins
 - Color of laryngeal tissue
 - Symmetry of arytenoid complex
- Signs of LPR
 - Erythemic (red) laryngeal tissue, particularly in posterior larynx
 - Edema – particularly of the infraglottic edge
 - Described in literature as “pseudosulcus”

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Assessment of Function

Xenon/Stroboscopic light

- Arytenoid movement
- Pliability of vocal fold mucosa
- Edge pliability
 - Mucosal wave/mucosal upheaval
 - Adynamic segments
- Glottic closure pattern
- Symmetry
- Open/Closed Quotient
- Hyperfunction

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Flexible Fiberoptic Nasendoscopy

Important to have right equipment - infant and pediatric flexible endoscope

Important to have knowledge and skills necessary for airway evaluation



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Flexible Endoscopy

Allows view of the infant and pediatric larynx

Allows view of entire larynx and nasopharynx

Images during connected speech

Smaller overall laryngeal image

- Cannot always see stroboscopic assessment
- May miss small pathologies

About 40% of laryngeal pathologies are missed with flexible endoscopy when stroboscopic light is not used

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Endoscopic Assessment

Rigid endoscopy

- Allows increased magnification of the larynx
- Better able to see mucosal wave if light is adequate
- Better able to see laryngeal detail for more accurate diagnosis of disease (MD) and laryngeal function (SLP)
- Can only assess phonation on sustained /i/



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Flexible vs Rigid

Flexible

- Birth to 8
- Complete upper airway exam
- Velopharynx
- Optics not as good

Rigid

- 8 and up
- Depends on anatomy
- Great optics
- Larynx Hypopharynx
- Not tolerated by some

Kids will surprise you!
And so will the
teenagers!

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Clinical Assessment Questions

- 1. Is the child's vocal quality what you would expect given how the laryngeal tissue functions?*
- 2. Is the child using more effort than needed to produce*
- 3. Is there a role for the SLP when the laryngeal tissue appears severely-profoundly permanently damaged?*

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Is the child's vocal quality what you would expect given how the laryngeal tissue functions?

Yes - your therapy goals may target:

- Reducing effort
- Reducing phonotrauma
- Improvement of laryngeal tissue, e.g., nodules, cyst, edema
- Preservation of laryngeal tissue, e.g., hemorrhage

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Is the child's vocal quality what you would expect given how the laryngeal tissue functions?

No, the voice is worse than it should be.

- Presence of muscle tension, or, something you can't see. Your therapy goals should reflect the physiological change targeted in therapy that will bring about clearer voice.

No, the voice is actually better than expected given the condition of the vocal folds

- Is there medical concern about what is there? You may be able to build on established functional compensatory behavior.

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Is the child using more effort than needed to produce voice?

This may be a second therapy goal, *or*

This may be just as important as clearer vocal quality.

The perception of effort is a sensitive measure of improvement in therapy.

Can you differentiate effort vs. strain?

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Is there a role for the SLP when the laryngeal tissue appears severely/profoundly permanently damaged?

Occasionally, there is little hope of improving vocal quality, e.g., scarring, repeated DMLs for RRP.

Decreasing effort in spite of this may dramatically improve the child's quality of life even if vocal quality does not improve.

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Pediatric Behavioural Voice Therapy

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Options for treatment

Do nothing

Vocal hygiene alone

Medico-surgical management

Behavioural Voice therapy

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Do nothing

No medical complications

Not having an impact on life

Family or child does not wish to pursue

Anticipate limited compliance (very hard to judge)

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Vocal hygiene alone

At least one session with parents/caregivers

Provide written material

- Pleasing to the eye
- Easy to read

Bring back for re-evaluation in 12 weeks

May have phone contact with family

Always leave open option for treatment

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Medico-surgical management

Extremely rare,

Airway compromise,

Recommend complete course of voice therapy prior to any phonosurgery,

Requires at least 24 hours of voice rest and 1-2 weeks of voice conservation,

Risk for scar tissue

Risk for recurrence.

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Behavioural voice therapy

The child, the family *and the* speech language pathologist must:

- Understand the diagnosis
- Understand the impact of the voice disorder on communication
- Be **Motivated, Cooperative and Reliable**
- Be COMPLIANT!

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Behavioural voice therapy

Ages 1-4

- Behavioral management of communication environments by parents, caregivers
- Education of parents regarding
 - voice use and vocal hygiene.
 - Level of emotions while speaking (parent and child)
 - Encouraging quiet time
 - Education of siblings for support
 - Importance of communication

Age 4 and older

- (some exceptions to this guideline)
 - 6-8 sessions
 - 50 minutes each
 - Weekly at first, then spaced out further
 - Begin with basic exercises, gradually build to conversation
 - Home practice is important!
 - Collaboration with any other speech pathologists involved

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Physiologic-Based Treatment

Developing treatment plans that state the targeted physiologic changes needed to improve voice quality distinguishes SLP expertise from physicians.

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Incomplete Glottic Closure



Physiologic goal

- Improve glottic closure pattern from persistently (or inconsistently) incomplete to complete during sustained /i/ as assessed with videostroboscopy.

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Hourglass Glottic Closure



Physiologic goal:

- Patient will improve glottic closure pattern by closing the membranous vocal fold edges completely during phonation as assessed during phonation with videostroboscopy.

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High Closed Quotient-Pressed Voice



Physiologic goal:

- Restore open/closed quotient to expected ratio (70/30) during phonation as assessed with videostroboscopy

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Laryngeal Edema



Physiologic goal:

- Restore straight glottic margins and discrete edge pliability and mucosal wave as assessed during phonation with videostroboscopy.

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Include goals specific to the child

Decrease/eliminate

- Shouting
- Animal noises
- Muscle tension
- Throat clearing

Improve shouting technique

- Lessac "Call"

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Treatment

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Visual biofeedback

Review examination with the child and parents.

Explain why laryngeal findings cause hoarseness.

Explain risks of lesions.

Reassure it is not cancer or other life threatening problem.

Help child and parent understand short and long term benefits of behavioral therapy and empiric treatment for reflux.

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Challenge with kids

Some children may not ever have had *normal* (not hoarse) voice production.

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Hydration



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Hydration

SYSTEMIC HYDRATION

Internal hydration of the entire body that keeps the skin, eyes, and all other mucosal tissue healthy.

Important:

- 6-8 glasses of water per day

SUPERFICIAL HYDRATION

The moisture that keeps the epithelial surface of the vocal folds slippery enough to vibrate easily

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Hydration

WHAT WE KNOW

Dehydration of the vocal folds increases phonation threshold pressures

Some evidence for increased systemic and superficial hydration in promoting laryngeal health

In bench models, hydration treatments may optimize vocal fold biomechanical properties

In human subjects, investigations on the beneficial phonatory outcomes of current hydration treatments (e.g. increasing water intake, humidifying ambient air, nebulizing solutions into the airway) have revealed positive trends of varying degree.

WHAT WE DON'T KNOW

What clinical recommendation is the best?

Is there an Optimal treatment that has sustained, beneficial effects on voice.

Is hydration, systemic or superficial, prophylactic or therapeutic?

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Superficial Hydration

Roy, et al (2003)

- Evaluated the effects of three laryngeal lubricants on phonation threshold pressures
- Nebulized water, Mannitol, and Entertainer's Secret Throat Relief.
- Mannitol, which encourages osmotic water flux superficially, decreased PTPs

Sivasankar & Fisher (2002)

- Oral breathing increases Pth and vocal effort by superficial drying of the vocal fold mucosa
- Results – subjects demonstrated increased PTPs after 15 minutes of oral breathing

Verdolini-Marston, Titze, & Druker (1990)

Verdolini, Titze, and Fennell (1994)

Verdolini, Sandage, and Titze (1994)

Nice summary article:

- **The role of hydration in vocal fold physiology** Curr Opin Otolaryngol Head Neck Surg. Jun 2010; 18(3): 171–175. Mahalakshmi Sivasankar, Ph.D., CCC-SLP¹ and Ciara Leydon, Ph.D., CCC-SLP²

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Hydration Recommendations

Combination of systemic and superficial hydration methods

- Systemic hydration is good for all bodily systems
- Superficial hydration
 - Increase ambient humidity
 - Get mouth to water to activate mucous secreting system
 - Hard candies
 - Wet snacks
 - Mucalytic
 - Steam inhalation
 - Nebulizer

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Therapy Approaches

- Depends on pathology (structure)
- THINK PHYSIOLOGY (function)
- Often a combination of strategies
 - Stretching/ relaxation
 - Diaphragmatic Breathing - Belly breathing
 - Forward focus/ resonant “buzzy” voice/Flow mode
 - Semi-occluded vocal tract exercises
 - Vocal function exercises
 - Voice building/ LSVT (hypofunction)

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Relaxation and breathing exercises

- Teach parents and recommend daily practice.
 - Blow up chest like a balloon then let the air out of the balloon, s-l-o-w-l-yyyyyyyyyy
 - Hiss like a snake to let the air out
 - Rag doll relaxation
 - Feather/Paper blowing contests
 - Physical stretching -head and neck release
 - Yawn-sigh

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Resonant Voice: Hierarchy of Targets

Lip trills– a good warm-up

Mmmm

Sustained, pitch glides

M+vowels, repeated

/mamama/, /mumumu/, /mimimi/

Chanted and exaggerated prosody can help bridge to natural production

M-initial words, phrases

/u, i/ vowels and additional nasals will facilitate

moon, noon, mean, mom, money, mine

Single syllables will be easier

Careful of glottal fry at ends of words/phrases

Prolong /m/ to feel “buzzy voice”

Use nasals at end of word to sustain forward focus

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Resonant Voice: Hierarchy of Targets

Voiced continuants (/v, z, n, r, l/, “-ng”)
Sustained, pitch glides

Positive/negative practice helps with these

Voiced continuant loaded words, phrases

/u/ vowels and /m, n/ will be facilitators
room, vacuum, lion, zoom, lemon, etc.

Draw attention to “buzzy sounds” to facilitate success

Use chant and/or exaggerated prosody as needed

Sentences

Reading

Conversational activities

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Resonant Voice

Immediate need for real world applications of “buzzy voice”

Begin addressing carry-over ASAP

Ideas for this:

- Imagery – find a name for the forward voice
- Start pointing out spontaneous use of clear/scratchy, buzzy/not buzzy in conversation right away
- Family member names
- Functional sentences
- Embedding targets in session activities (i.e., memory with /m/ cards, Guess Who, reading, 20 questions)

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Resonant Voice

Child as clinician

- Immediately begin training self- judgment skills
- Improve sensory awareness, imagery
- Children will require more direct feedback than adults
- Identification of clinician productions
- Positive/negative practice
- Self-judgments of productions
- Rating scales

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SOVT (semi-occluded vocal tract)

Lip trills

Tongue trills

Straw phonation

Lax Vox

Kazoo buzz

Card buzz

Cup buzz

Cave buzz

Straw bubbles

"buzzy"humming

Using Semi-Occluded Vocal Tract Exercises in Voice Therapy: The Clinician's Primer

[Marci D. Rosenberg](#)

SIG 3 Perspectives on Voice and Voice Disorders, July 2014, Vol. 24, 71-79. doi:10.1044/vvd24.2.71

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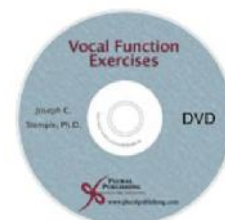
Vocal Function Exercises (Stemple)

"A series of direct, systematic voice manipulations (exercises), similar in theory to physical therapy for the vocal folds, designed to strengthen and balance the laryngeal musculature, and to improve the efficiency of the relationship among airflow, vocal fold vibration, and supraglottic treatment of phonation."

Warm-Up

Stretching and Contraction

Power



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LSVT type exercises (www.lsvtglobal.com)

Loudness

Ah – loud, as long as possible

Effort

Ah to high pitch

Loudness drives the system

Ah to low pitch

Systematic scaling up of the communication mechanism

**Functional phrases

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Awareness questions

How is your voice?

- Same Better Worse
- Beginning and End of session

Show me how you are doing your exercises at home.

- When do you do them?

What did you learn about your voice today?

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Increasing motivation (and compliance)

Physical motivators

- Less tired
- Less pain
- Feels good

Social/communicative motivators

- Ability to be heard
- Ability to be understood
- Sound like other kids
- Not teased

Increasing motivation

The COOL factor

- Princess voice, Superman voice, Motorboats

Functional reminders throughout the day

- Turkey baster
- Post-it notes

Limit parent criticism

- Assure them they don't have to be the "Voice Police"

Childhood Singers

Singers may be significantly impaired by subtle laryngeal changes that may be considered within the normal range of variability in the general population.

Singers as athletes

- Using a higher percentage of total vocal ability

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Childhood singers

Motivation and compliance

- Willingness to explore
- More attuned to subtle changes?

Emotional concerns

- Consequences of dysphonia
- The connection of the voice to self-concept

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Assessing the Singer

Adult vs. adolescent singers

- fully developed vs. developing larynx

“Trained” vs. “untrained” singers

- training varies widely
- classical training or voice coaching?

Professional vs. avocational singers

- demand on vocal mechanism
- different stress levels (money, career, etc)
- Commitment is high in both groups

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Adolescent Voice

Type of training

- Classical
- Musical theatre

The “Annie Syndrome”

- Belting
 - Strenuous laryngeal muscle use
 - High collision
 - Shearing forces on the vocal folds

Parental dynamics and expectations

- Enjoying singing vs. meeting parental hopes

Director dynamic and expectation

- Enjoying singing vs. meeting director wants/needs

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Childhood singers

If you have a child who is serious about singing:

Get a good voice teacher

- 1:1 training for technique and vocal hygiene

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My Voice Book

EASILY ADAPTED FOR ANY AGE

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My Voice Book

Anatomy and physiology

Vocal awareness

Vocal hygiene

Sensory awareness

Exercises

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Anatomy and Physiology

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My vocal folds are two muscles in my throat

MY VOCAL FOLDS ARE
TWO MUSCLES IN MY
THROAT.

MY VOCAL FOLDS ARE
TWO MUSCLES IN MY
THROAT.

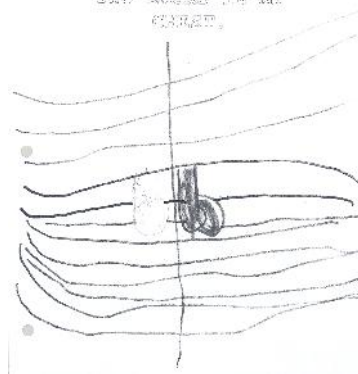
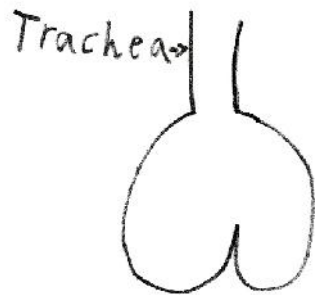


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My lungs are like two sacks in my chest.

MY LUNGS ARE LIKE
TWO SACKS IN MY
CHEST.

MY LUNGS ARE LIKE
TWO SACKS IN MY
CHEST.

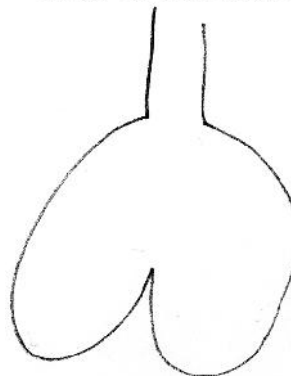


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When I breathe in, they blow up like a balloon.

WHEN I BREATHE IN
MY LUNGS BLOW UP
LIKE A BALLOON!

WHEN I BREATHE IN
MY LUNGS BLOW UP
LIKE A BALLOON!



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Air from my lungs moves my vocal folds

AIR FROM MY LUNGS
MOVES MY VOCAL
FOLDS

AIR FROM MY LUNGS
MOVES MY VOCAL
FOLDS

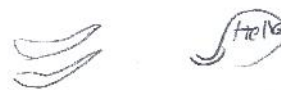


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When my vocal folds move, they make a sound I call my voice.

WHEN MY VOCAL FOLDS
MOVE THEY MAKE
SOUND THAT I CALL
MY VOICE!

WHEN MY VOCAL FOLDS
MOVE THEY MAKE
SOUND THAT I CALL
MY VOICE!

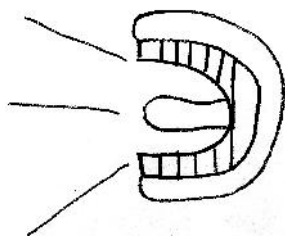


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I use my mouth, lips teeth and tongue to talk to people.

I USE MY MOUTH,
LIPS, TEETH AND
TONGUE TO TALK TO
PEOPLE!

I USE MY MOUTH,
LIPS, TEETH AND
TONGUE TO TALK TO
PEOPLE!



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I have two bumps on my vocal folds that make my voice sound hoarse.

I HAVE TWO BUMPS ON
MY VOCAL FOLDS THAT
MAKE MY VOICE SOUND
HOARSE.



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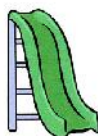
Vocal awareness and hygiene

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Ages 1-4

I LIKE TO PLAY

OUTSIDE



INSIDE



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Ages 1-4

I USE MY VOICE
TO TALK TO MOM
AND DAD



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Ages 1-4

I CAN STRETCH
TALL



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Ages 1-4

I CAN BE RAG
DOLL



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Ages 1-4

I CAN DO
EXERCISES TO
KEEP MY VOICE
HEALTHY

MOTOR BOATS



HUMMINGBIRDS



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Ages 1-4

SOMETIMES MY
VOICE IS TOO
LOUD



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Vocal awareness and hygiene

Things I can do to help my voice.

Things I do to hurt my voice.

I know the places where I use my voice correctly.

I know the places where I use my voice incorrectly.

Games I can play with a quiet voice.

Changes we can make at home to help my voice.

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I like to talk to...

- I LIKE TO TALK TO:
my friends
my brother
my mom and dad
- my teacher
my self
-



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THINGS I DO THAT
HURT MY VOICE ARE:

Yelling

Calling

Wend House's

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I KNOW THE PLACES
WHERE I USE MY
VOICE CORRECTLY!

droing
Library
restmant
dad ofis

Dinner

What are some of the ways I use my voice correctly?

1. playing in the sand box.
2. playing army
3. playing lego with Kyle

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Things I do to help my voice

- THINK OF THE VOICE
 (H) (P) (B) (M) (N) (L)
 model - Not shouting
 in a box
- ~~Use a~~ ~~voice~~ ~~box~~ ~~to~~ ~~help~~ ~~me~~ ~~to~~ ~~talk~~ ~~in~~ ~~a~~ ~~box~~
-
-

Words to describe voices.

WORDS TO DESCRIBE VOICES.

- smooth ✓
- rough ✗
- Squeaky ✗
- Cabney ✗
- Steady ✗
- Muddy ✓
- Better ✓

Sensory Awareness

Things that are rough.

Things that are smooth.

My voice feels good when...

My voice doesn't feel good when....

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Some other ideas

Fishing game

- Sensory awareness tasks

Voice use chart

- Have the child generate activities

Reinforcement chart

- Have parents help with positive reinforcement

Quiet time chart

- Have the child generate activities
- Maintain involvement of parents

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Fishing game



Pretend to call mom with a loud voice.

Pretend to call mom with a soft voice.

Close your eyes and say....

Where do you feel your voice?

Hum with your lips closed tight.

Hum with your lips loose.

Which one felt better?

Which felt tight?

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Voice use chart

	Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
DRINK WATER							
I PLAYED OUTSIDE AND DID NOT YELL OR SHOUT.							
I STOOD CLOSE TO MOM AND DAD WHEN I TALKED TO THEM.							
I WENT TO FIND MOM INSTEAD OF YELLING FOR HER.							
I WENT TO FIND DAD INSTEAD OF YELLING FOR HIM.							
I PRACTICED MY VOICE EXERCISES.							

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WILLIAM'S GOOD VOICE CHART

CATCH WILLIAM BEING GOOD CHART

	Tues	Wed	Thurs	Fri	Sat	Sun	Mon
I TALKED USING MY QUIET LIBRARY VOICE	1/11	1/11	1/11	1/11	1/11	1/11	1/11
I STAYED WITHIN 3 FEET WHEN TALKING TO A PERSON	1/11	1/11	1/11	1/11	1/11	1/11	1/11
I PLAYED OUTSIDE AND DID NOT YELL OR SHOUT	1/11	1/11	1/11	1/11	1/11	1/11	1/11
I DID NOT CALL MOM FROM ANOTHER ROOM	NEVER	1/11	1/11	1/11	1/11	1/11	1/11
I PRACTICED VOICE EXERCISES	1/11	1/11	1/11	1/11	1/11	1/11	1/11

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Quiet time chart

ACTIVITY	Herd your horses	Life	Puzzles	Angelina	Read	Draw	Playing with puppets (regular quiet voice)
Sunday							
Monday							
Tuesday							
Wednesday							
Thursday							
Friday							
Saturday							



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Journal

Dependant on age

- Reflux symptoms
 - When
 - After what meal
- Voice awareness
 - Better/worse in morning
 - Muscle tension (whole body)

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Journal - Stressful situations

- | | |
|------------|-------------|
| ◦ Who | ◦ What |
| ◦ Coaches | ◦ Homework |
| ◦ Teachers | ◦ Sports |
| ◦ Parents | ◦ Classes |
| ◦ Peers | ◦ SCHEDULE! |

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Case example

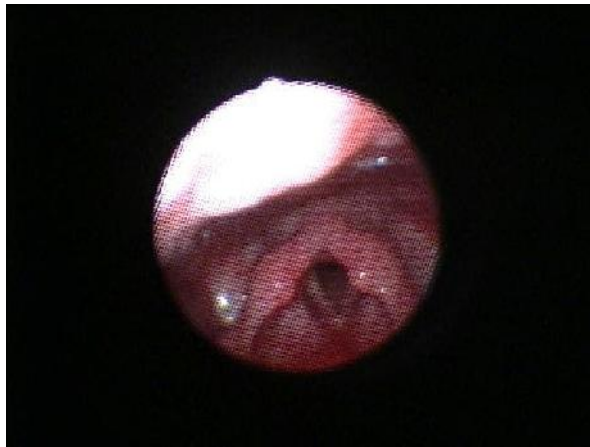
8 year old boy adopted from Chinese orphanage

Bilateral true vocal fold nodules

Flexible fiberoptic nasendoscopy

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Initial evaluation



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Treatment

Initial findings/concerns

- Hourglass closure
- Significant extrinsic muscle tension
- Impaired conversational intelligibility
- Voice breaks
- Voice loss

10 tx visits, including prep for class presentation

Voice book for kids

Great parental support

Classroom presentation

- Examination presentation
- Vocal hygiene poster
- Stickers
- Tuna can/rubber band demonstration

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Stickers for classmates

You have no choice, use your voice!

PROPERLY!

I Scream!

You Scream!

Don't Scream!

Help Us OUT-

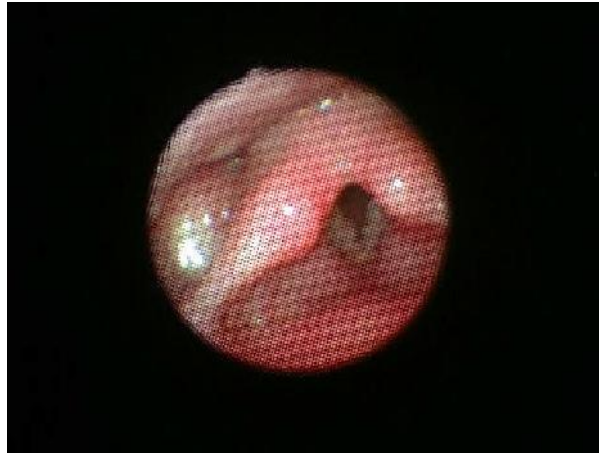
Please Don't Shout

Your voice is a gift

Don't Wear it out.

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Post treatment visualization –



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Was therapy successful if the lesions are still there post treatment?

YES!

- Goals met:
 - Improved glottic closure
 - Decreased musculoskeletal tension
 - Improved vocal hygiene
 - Improved quality and intelligibility
 - Decreased aphonic breaks
 - Eliminated episodes of voice loss

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Successful treatment of pediatric hoarseness

Complete investment and support of parents, caregivers.

- Home follow through
- School support
- Compliant with medication
- Compliant with therapy appointments
- Compliant with supporting home exercises
- Good voice models

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Successful treatment

How important is voice to the child?

- Can you help explain importance of voice?
 - Participation in sports
 - Communication with friends
 - Singing
 - Theater
 - Pain/soreness/discomfort

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Successful Therapy

Child aged 2-4 should have some very simple degree of understanding

- Right/wrong way to call mom in the house
- Inside/Outside voice

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Successful Therapy

Older kids

- Hoarseness must be having an impact on their life.
- Healthy voice production must be meaningful to the child
 - Feels better
 - Sounds better

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Don't shy away from voice therapy

Plenty of resources.

Have a good understanding of WHY the exercises work.

Very rewarding therapy for child and clinician.

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Advice to the SLP performing pediatric voice therapy from Maia Braden, Manager Pediatric Voice Therapy UW -Madison

Go beyond vocal hygiene

- Teach children healthy voice exercises
- Teach children a healthy way to use their voice
- Replace (rather than eliminate) unhealthy vocal behaviors

Help them develop a voice that is functional and comfortable. Once it FEELS easier, generalization becomes easier

You don't need fancy equipment – you can use your ears and eyes

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Advice to the SLP performing pediatric voice therapy from Sarah Blakeslee, MA CCC-SLP

Focus on **actual vocal technique** for talking, not just DO's and DON'Ts.

Make it **simple and concrete** – How does it sound? How does it feel? Be able to demonstrate (+ and -) in your own voice to help them learn.

Make it **rewarding** – stress why this is important to their daily lives (being heard/understood, less pain, less effort, not losing voice, etc)

Make it **meaningful** – use relevant stimuli (family member names, sentences they say often, conversation about favorite topics)

Make it **fun!!** – play games, be silly, let them judge your productions, etc

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S U C C E S S

Because you too can own this face of pure accomplishment

DIY.DESPAIR.COM

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Resources

- Net connections for communication disorders:
 - <http://www.mnsu.edu/comdis/kuster2/sptherapy.html#voice>
- Teachers Pay Teachers
 - A lot of speech material and a lot is free, or very low cost
 - <http://www.teacherspayteachers.com/>
- Lax Vox
 - <https://www.scribd.com/doc/231038819/LAX-VOX-Handouts>
- Titze Straw video link
 - <https://www.youtube.com/watch?v=0xYDvwvmBIM>

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NCVS – www.ncvs.org

Information for Young Explorers

An Incredible Journey

About thirty years ago, there was a neat movie called *Fantastic Voyage*. In it, a group of scientists shrunk themselves (and their submarine) into teensy proportions and traveled through a human's body to save his life. Well, we thought that idea was just too cool to ignore. So, [take your own incredible journey inside the body's vocal system](#).

Science Fair

The investigators at the National Center for Voice and Speech conduct experiments to learn more about how people talk and sing. But you won't need to be a PhD to try some of the fascinating science explorations we'll present here. [Hint: Some of the ideas would make great school projects.]

Beastly Babble A set of explanations, quizzes and exercises to jumpstart your thinking: how do animals communicate differently than humans? do members of the same species always understand one another? is animal chatter understandable between different species?

How We See How We Sound We know that voice is really just air formed into sound waves that our ears can hear. So, how do scientists and doctors study the voice? Finding out if a person has a broken voice can't be as easy as finding out if someone has a broken leg. Or, is it?

What's Your Vocal IQ?

How much do you know about how your voice works? Sure, there's stuff about speaking and singing, but we didn't forget the fascination about hiccupping, whispering, burping or giving somebody the raspberry either. Immediate scoring lets us know how much vocal homework you may need to do....

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KayPentax

www.kayelemetrics.com/

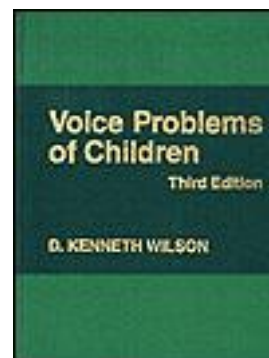
Software packages with the Computerized Speech Lab and the Visi-Pitch IV, offer customizable computer games that motivate with activities for voicing, timing, pitch level and control, and amplitude



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Oldy but a goody

Wilson, DK. Voice Problems of Children, Third Edition. Williams & Wilkens 1987.



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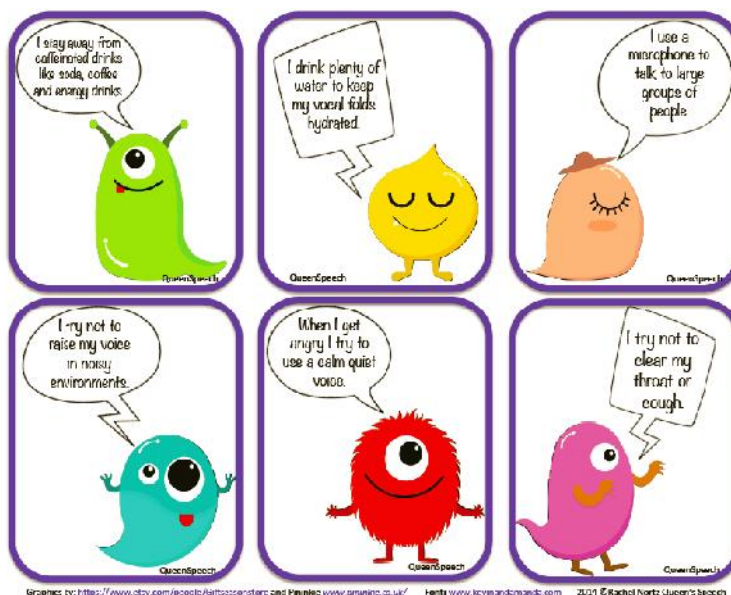
Boone Voice Therapy Program proedinc.com

- | | |
|-------------------------------|-------------------------------------|
| Changing Horizontal Focus | Establish New Pitch |
| Changing Loudness | Explanation of Problem (Counseling) |
| Changing Vertical Focus | Masking |
| Chewing | Open Mouth |
| Ear Training | Pushing |
| Eliminate Hard Glottal Attack | Yawn-Sigh |

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TPT Voice Monsters

\$6.00



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TPT
Voice Monsters

Tired Monsters "Yawn-Sigh"

Also called "easy-onset"


By yawning and sighing, the pharynx is open and relaxed, the larynx is lowered, thus reducing vocal tension (associated with things like nodules).

Use the same hierarchy as you would for articulation: vowels, words, phrases, sentences, conversation etc.

For more information references:
<http://ballment.com/Voice/Voice.html>
<http://search.asha.org/default.aspx?q=yawn-sigh>


QueenSpeech

Begin a yawn, then end it with an audible sigh. Practice until you can do this easily.



QueenSpeech


Yawn-sigh, then add a vowel at the end.



"e" as in "pet."

QueenSpeech


Yawn-sigh, then add a vowel at the end.



"a" as in "pat."

QueenSpeech

Yawn-sigh, then add a vowel at the end.



"i" as in "pit."

QueenSpeech

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Voice Monsters

Warm-Up

1. Make sure you are relaxed. Practice stretching/relaxing as a group.
2. Practicing humming a few times (hummm, mmmmm, nnnnn)
3. Talk about where you felt a tickle or vibrations.
4. Chant CV-CV patterns (voiced and voiceless) soft→loud→soft again.

QueenSpeech


Practice "buzzy voice" by chanting multiple times:



ma-ma-ma-ma

QueenSpeech


Practice "buzzy voice" by chanting multiple times:



moh-moh-moh

QueenSpeech


Practice "buzzy voice" by chanting multiple times:



me-me-me-me

QueenSpeech


Practice "buzzy voice" by chanting multiple times:



moo-moo-moo

QueenSpeech

Practice "buzzy voice" by chanting multiple times:



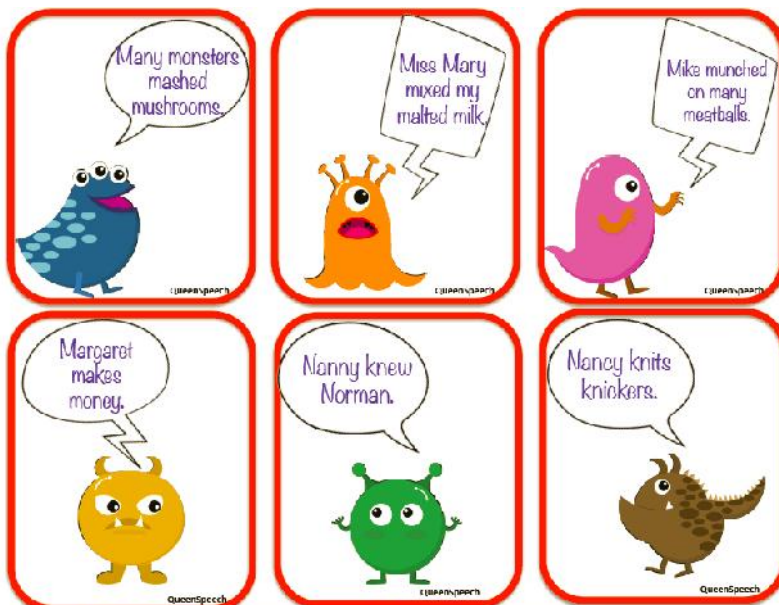
na-na-na-na

QueenSpeech

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TPT
Voice Monsters



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TPT
Voice Monsters

Name: _____ Date: _____

The Voice Monster Review

4 things that can hurt your voice:

1. _____
2. _____
3. _____
4. _____

4 things that help your voice:

1. _____
2. _____
3. _____
4. _____

Pick one way you will help your voice at home: _____.

Queen's Speech

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Voice Monsters

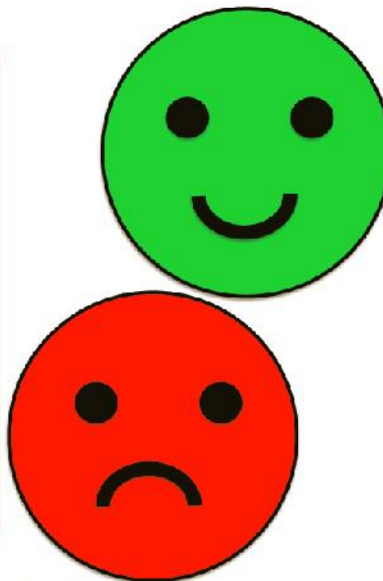
Be a Voice Detective!

Directions: Print this page on cardstock. Cut out the two circles. Make a paddle! Use a popsicle stick and some glue. Green on one side and red on the other. Make multiple copies.

Game Play: Ask students to show the sad/happy face for a "good" vs "bad": voice, technique, or habit. Can they identify good habits versus bad?

Tips: I usually model the good/bad voices myself (yelling, hoarse, coughing etc.), funny voices, imitations etc. Also use this for true or false (e.g. True or False? "Clearing your throat helps your voice.")

Voice Thermometer (next page): use this as a visual during therapy or on the student's desk to help self monitor volume.



Queen's Speech Graphics by: <https://www.tspv.com/second/voice-monsters> and www.melville.co.uk/ Font: jenny.kennan@mac.com 2014 © Rachel Merz Queen's Speech

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TPT
Voice Volume
and Tone of
Voice

\$3:00

Voice Volume Scale

0 = No Talking



1 = Whisper

2 = Soft Voice



3 = Regular Voice

4 = Loud Voice



5 - Yelling

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TPT
Voice Volume
and Tone of
Voice

**The teacher is talking to
someone who is hurt**

**You are playing with a
friend at their house**

**You and some friends are in
your mom's car, it's snowing
hard and your mom is nervous**

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TPT
Voice Volume
and Tone of
Voice

MAKING KAZOOS

Materials:

- *Paper towel roles cut in half or toilet paper roles (1 per kazoo)
- *Small squares of wax paper (1 per kazoo)
- *Elastic bands or tape (1 per kazoo)

Directions:

- *Put wax paper over one end of the toilet paper roll
- *Secure the wax paper tightly with an elastic band or tape
- *Poke a small hole in the middle of the wax paper

To Use:

- *Hum gently while pressing lips against the wax paper. Try humming "Mary Had A Little Lamb"

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After you leave....

Questions, comments, support....

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