Overcoming the Barriers to Treating Children with Voice Disorders: Multiple Perspectives on a Complex Problem

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Disclosures

Financial:
◦ Jana Childes receives salary from Oregon Health Science University
◦ Alissa Acker receives salary from School District of Superior, Wisconsin
◦ Dana Collins receives salary from the University of Minnesota Duluth

Nonfinancial:
◦ None
Background

Children with voice disorders are historically under-identified and under-served. Access to voice therapy is a challenge across settings. What is the best service delivery model? How do we form partnerships and ensure that these children are identified and receive services?
Misconceptions

Children aren’t aware of or affected by their voice disorder

Voice therapy doesn’t work for kids

A voice disorder doesn’t significantly impact a child’s academic participation or educational success
Learning Outcomes

1. Describe the purpose and use of two pediatric voice screening or evaluation tools
2. Identify three barriers to access of voice services for children
3. Characterize the impact of a voice disorder on communication and academic participation
Current literature related to pediatric voice disorders
Prevalence of pediatric voice disorders

Current literature estimates the prevalence of childhood dysphonia at 6-9% in school age children

~1 million school age children in the U.S. with a voice disorder

ASHA 2016 schools survey
Prevalence studies

Bhattacharyya (2015)

- National Health Interview Survey 2012
- Voice disorders occur in 14 per 1,000 children in the U.S. annually
- 48.9% reported the problem as moderate or greater
- Medical diagnosis and treatment
Prevalence studies

Carding, Roulstone, Northstone, et. al (2006)

Examined the prevalence of dysphonia within a large cohort of 8 year-old children (n=7,389)

- Identified a prevalence of atypical voices in 6% of the study group (n = 445).
  7.4% male, 4.6% female
How are children affected by a voice disorder?
Dysphonia affects many areas of development

General health

Social and emotional development

Self-esteem

Self-image

Participation in school and extra-curricular activities

Negatively affects perception by both peers and adults
Attitudes of children with dysphonia


◦ Focused interviews of 40 children and their parents (ages 2-18 years)
◦ Scripted questions

◦ Children as young as 6 years old expressed awareness and impacts of their dysphonia
Who develops vocal cord nodules?

AND WON’T THEY JUST OUTGROW THEM?
Common perceptions of children with nodules?

- Loud talkers
- Frequent screaming
- Verbally abusive
- Aggressive
- Argumentative
- Immature
- Poor attention

Standardized comparison of behaviors for 26 children with vocal nodules and 29 children without a voice disorder

Childhood Behavior Checklist

Overall behavior consistent with normative expectations, higher social scales

Study of 91 adolescents diagnosed with nodules prior to age 12 years

21% had persistent voice complaints

34 participants completed laryngeal evaluation

◦ Vocal nodules present in 47% of females and 7% of males
Barriers to identification and treatment of pediatric voice disorders
Barriers related to specialty medical care and clinic-based SLP services
Retrospective Chart Review

Review of children evaluated in the Northwest Clinic for Pediatric Voice between January 2014 – December 2015

Research Questions:
 ◦ Are the demographics of children referred to our clinic similar to those previously reported in the literature?
 ◦ What are the referral patterns of children referred for voice evaluation?
 ◦ What is the success of in-office laryngeal examination?
Referral Patterns

Comparing those previously seen by an SLP (n=37) and those not (n=41)

- No significant difference in age, gender, CAPE-V or dysphonia severity
- Those who had seen an SLP were significantly more likely to have the problem first noticed by an SLP than those who had not.
- Those who had seen an SLP were significantly more likely to have a primary complaint of abnormal loudness or nasality.
Primary Complaint

<table>
<thead>
<tr>
<th>Complaint</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Hoarseness</td>
<td>78.21%</td>
</tr>
<tr>
<td>Cough</td>
<td>14.10%</td>
</tr>
<tr>
<td>Volume</td>
<td>5.13%</td>
</tr>
<tr>
<td>Nasality/resonance</td>
<td>5.13%</td>
</tr>
<tr>
<td>Other</td>
<td>10.26%</td>
</tr>
</tbody>
</table>
### Patient and caregiver report

<table>
<thead>
<tr>
<th>SELF-REPORT</th>
<th>CAREGIVER REPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>“If I talk quietly then my voice doesn’t come out.”</td>
<td>“People who don’t know him can’t understand him.”</td>
</tr>
<tr>
<td>“My throat is scratchy when I talk.”</td>
<td>“I know that she gets tired of answering questions about her voice.”</td>
</tr>
<tr>
<td>“Sometimes it’s just easier not to talk.”</td>
<td>“She’s always had a smoker’s voice.”</td>
</tr>
<tr>
<td>“It feels like it’s stuck in there.”</td>
<td>“She had to drop out of choir and is frustrated because she’s still having trouble with her voice.”</td>
</tr>
<tr>
<td>“I don’t like to practice reading because it hurts.”</td>
<td></td>
</tr>
</tbody>
</table>
Laryngoscopy

70% tolerated in-office laryngeal examination
20% deferred due to recent examination
8.2% deferred due to poor candidacy
Examination was attempted, but unsuccessful, in only 2 patients
### Treatment Plan

<table>
<thead>
<tr>
<th>Service Description</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Northwest Clinic for Voice and Swallowing (NWCVS)</td>
<td>30.2%</td>
</tr>
<tr>
<td>Local outpatient clinic</td>
<td>9.3%</td>
</tr>
<tr>
<td>NWCVS &amp; School</td>
<td>23.2%</td>
</tr>
<tr>
<td>School – established IEP</td>
<td>16.3%</td>
</tr>
<tr>
<td>School</td>
<td>21.0%</td>
</tr>
</tbody>
</table>

*Over half (60%) intended to use school-based services for all or part of their voice treatment*
Barriers to accessing specialty medical care and outpatient services

Identification and referral

Family burdens related to medical appointments

Attitudes and beliefs
Barriers related to identification of voice disorders in the school setting
Identification

For many children, identification is dependent on awareness of abnormal vocal quality by parent, classroom teacher or another school staff (Lee et al., 2004)

Limited ability for SLP to observe students for possible communication disorders

Inadequate opportunities for identification on speech and language screenings
Acker & Collins, 2014

Survey of school-based SLPs in Minnesota and Wisconsin

Study purpose: to examine school-based speech-language pathologists’ perceptions of why children with voice disorders are under-diagnosed and under-treated.
How does a voice disorder impact academic participation?
Academic participation

Reduced classroom participation
Fewer opportunities for practice and feedback
Child may attempt to conceal the voice disorder
Underdeveloped communication skills
Treating voice disorders under the IDEA
“Under the law, voice disorders constitute an educational disability”
Office of Special Education Programs definition of educational performance
Multidisciplinary collaboration
If I refer a student for ENT evaluation, is my district responsible for payment?
Medical statement

Requirement for medical evaluation varies between states and school districts.

In Oregon, a medical statement by an Otolaryngologist is required, per statewide rule OAR 581-015-2135.

Child find responsibilities mandated by IDEA.

Interpreted that need for medical statement is a shared responsibility.
Addressing this barrier

Identify state and district policies

Contact your state organization or ASHA SEAL
  ◦ Oregon SEAL: Janet Wagner

Parental priority

Educational team

Voice specialty clinic
Barriers related to SLP skills and competence
SLP skill development for voice disorders

Many SLPs report limited confidence in their skills to identify and treat voice disorders

Low incidence population on most caseloads

Limited practice opportunities during graduate programs
Acker & Collins, 2014
Teten, DeVeney & Friehe, 2016

Perception of skills and overall competency

Low incidence of children with voice disorders on caseload

Referral source
How do we overcome these barriers?
Addressing barriers related to the clinic setting

Coordinated evaluation with ENT and SLP

Trial of voice therapy within the evaluation

Communication with referring providers

Collaboration between clinic and school based providers
Addressing the barriers related to SLP preparation and confidence

Academic instruction in voice, including the application of voice management for children

Faculty who teach coursework in articulation and phonological disorder disorders should include voice screening

Increased opportunities to develop skills related to evaluation and treatment of voice disorders within graduate program
Addressing the barriers related to the school setting

Increase teachers awareness of voice disorders
  ◦ [https://uiowa.edu/voice-academy](https://uiowa.edu/voice-academy)

Voice screening as part of every speech and language assessment

Become knowledgeable about policies for referral and payment

Collaboration with other professionals
Voice screening and assessment tools
Voice Screening

Screening Protocol

Voice Screening

Screening Protocol

Quantifying the impact of the voice disorder


Perceptual evaluation


# GRBAS Voice Quality Rating Scale

Hirano (1981)

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Rating</th>
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<tbody>
<tr>
<td>G = Grade</td>
<td></td>
</tr>
<tr>
<td>R = Roughness</td>
<td></td>
</tr>
<tr>
<td>B = Breathiness</td>
<td></td>
</tr>
<tr>
<td>A = Asthenia</td>
<td></td>
</tr>
<tr>
<td>S = Strain</td>
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</table>

- **Rating definitions:**
  - 0 = normal
  - 1 = mildly abnormal
  - 2 = moderately abnormal
  - 3 = severely abnormal
Voice Assessment

Perform an S/Z ratio
- Produce /s/ as long as possible, /z/ as long as possible
- Three trials
- Longest /s/ divided by the longest /z/
- Should be 1 for normal function
Voice Assessment

Maximum Phonation Time (MPT)

- Sustaining a vowel at your modal pitch, comfortable loudness
- For the average adult, 15-20 seconds
- Children, 10 seconds
Voice Assessment
Child’s rating vocal effort and perception of their voice

Scaling of Vocal effort
- Sustain /ah/ at minimum, most comfortable, and maximum loudness levels.
- Ask the child to rate the effort

Perception of voice
- How is your voice today?
- On a scale of 0-6, 0=best, 6=worst
Perceptual assessment and voice therapy trial
Role of voice therapy

- Improve vocal quality and function
- Avoid unnecessary surgery
- Avoid or limit the use of medications
- Adjunct to surgery to improve functional outcomes
- Prevent future laryngeal injury
Voice therapy philosophies

Psychogenic
Symptomatic
Etiologic
Physiologic
Eclectic
Assessing vocal quality

Is their vocal mechanism capable of producing better sound?

Unload learned compensatory voicing patterns

Establish a starting point for treatment
Shaping Tasks

- Lip trills or tongue trills
- Humming
- Sustained /hu/
- Animal sounds
- Voicing through a straw
- Noisy bubbles
- Exaggerated nasal sounds
- Sustained phonation with movement
- Sounds effects
Case studies
References


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