The AUDacity of Listening: New Opportunities for Language & Learning for Young Children with Hearing Loss - Part 1

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The AUDacity of Listening: New Opportunities for Language & Learning for Young Children with Hearing Loss – Part 1

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Learning Objectives

- Describe the incidence and prevalence of pediatric hearing loss
- Identify current trends in the early detection and early intervention with children with hearing loss & their families
- Describe differences between auditory learning and other approaches for children with hearing loss

Peer Review Process

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Acknowledgement

- Children with hearing loss are NOT a homogeneous group. Therefore, due to a number of factors, a single communication methodology isn’t appropriate for all children with hearing loss.
- **HOWEVER**, because of changes in the field of deafness and enhancements in hearing technology and intervention/educational strategies, an increasing number of children with hearing loss are now learning to listen and talk.
- This presentation will focus on these trends.

**AUDacity of Listening**

- Children with hearing loss have more potential for listening and acquiring intelligible spoken language today – than at any time in history!
- **AUDacity of Listening** = High expectations for listening to, comprehending, and using spoken language
- If we expand a child’s **auditory capacity**, then we improve their **auditory performance**

**Hearing Loss - General**

- **Statistics**
  - Approximately 28-32 million people in the United States have a significant hearing loss.
  - Approximately 2 million are under the age of 18.
  - 40-60% of all children with hearing loss have additional medical needs.
Universal Newborn Hearing Screening

- Statistics
  - All 50 states & US territories have UNHS
  - Significant hearing loss occurs in 1 to 3 per 1000 newborns in the well-baby nursery.

Universal Newborn Hearing Screening

- Statistics
  - Four per 100 infants in the intensive care unit have significant hearing loss.
  - 2 - 4 per 1000 will develop hearing loss in childhood, possibly passing screenings at birth.
  - 33 each day

Incidence per 10,000 of Congenital Defects/Diseases

- [Bar graph showing incidence per 10,000 for various conditions]
Universal Newborn Hearing Screening

• Statistics
  ◦ Prior to UNHS, the average age of identification was 18 to 30 months (Calderon et. al, 1998).
  ◦ On average, a parent suspects their child has a hearing loss for 12 months before the child is diagnosed.

Percentage of Newborns Screened for Hearing in the United States

Barriers To UNHS

• Parents are being misinformed by hospital staff
• Transportation, ESL barriers exist
• Lack of hospital resources exist
• Inefficient tracking among hospitals and personnel for NICU and transfer babies.
• Out-of-state babies
• Message of need for early detection is often not stressed
Early Intervention

- EHDI programs are currently screening approximately 98% of the 4 million babies born in the United States each year.
- According to the CDC, only about 50-70% of babies who fail the hearing screening receive an audiological exam and are connected to early intervention.

Early Intervention

- **Statistics**
  - If appropriate intervention begins by the time the infant is six months old, language development can be normal, regardless of the severity of the hearing loss (Yoshinaga-Itano, 1999, 2000, 2002).
  - Most states have implemented the 1-3-6 formula as suggested by the Joint Committee on Infant Hearing (JCIH).

JCIH 2007: Early Intervention

- Families of infants with all degrees of HL should be offered early intervention.
- The recognized point of entry for EI for infants with a confirmed HL should be linked to EHDI, and be provided by professionals with expertise in HL, including educators of the deaf and speech language professionals.
- Both home-based and center-based options should be offered as appropriate interventions.
JCIH 2007: Options and Decisions
- Families should be made aware of all communication options and all available hearing technologies.
- Family choice should guide the decision making process.

Early Intervention
- Statistics
  - Even with conservative estimates – multiple studies indicate that nationally, less than one-tenth of children with hearing loss receive services to which they are entitled through early intervention or in the public schools (English, 1995; AG Bell Assn., 2004).

Fact
- Most federal and state laws, policies, and procedures that govern service delivery were implemented before:
  - Universal Newborn Hearing Screening
  - Early diagnosis & amplification
  - Use of digital hearing aids & cochlear implants in infants & toddlers
  - Widespread use of listening & spoken language strategies
  - Widespread mainstreaming of children living with deafness
“If we teach today like we taught yesterday, we rob our children of tomorrow.”

Thomas Dewey, Educator and Philosopher

A Shifting Paradigm

If early identification and technological advances are going to be beneficial, **EARLY** habilitation utilizing a strong auditory approach (as a parent choice), which teaches parents how to develop their child’s spoken language through listening, is critical.

A Shifting Paradigm

- Early cochlear implantation has an extraordinary impact on the verbal achievement of children with prelingual hearing loss.
- The proportion of children with cochlear implants achieving age-appropriate verbal scores in preschool reflects a dramatic improvement in language learning.

(Source: Moog, 2002; 2003)
Early Intervention in North Carolina
- Number served/ 0 to 3 (2002): 250
- Communication Methodology

<table>
<thead>
<tr>
<th>Year</th>
<th>TC/ASL</th>
<th>A-O/A-V</th>
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<td>1997-98</td>
<td>60%</td>
<td>40%</td>
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<tr>
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<td>52%</td>
<td>48%</td>
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<tr>
<td>1999-00</td>
<td>36%</td>
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<td>2000-01</td>
<td>33.5%</td>
<td>66.5%</td>
</tr>
<tr>
<td>2003-04</td>
<td>16%*</td>
<td>84%*</td>
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</tbody>
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Statistics from BEGINNINGS

Key Concepts
- Informed family choice
- Decision-making process
- Range of options
- Unbiased presentation
- Dynamic process (family needs, desired outcomes, assessment guided)

Service Provision Goal
- To provide all infants and young children with hearing loss and their families with services that are:
  - Timely
  - Comprehensive
  - Frequency, duration, and consistency
  - Coordinated
  - Effective
Early Diagnosis & Early Intervention

- Benefits of early immersion in audition & spoken language:
  - Same results – regardless of:
    - Type of loss
    - Degree of loss
    - Socioeconomic level
    - Other variables
  - Permits natural development instead of remediation

The Promise of Early Intervention

Developmental Approach

Remediation

Birth → 6 yrs

Family Involvement: How Important is It?

- Factors Predicting Language Outcomes
  - Among factors such as degree of hearing loss, age of enrollment in early intervention, nonverbal intelligence, and family involvement.
  - Two factors predicted language, vocabulary, and verbal reasoning skills at age 5.

(Mary Pat Moeller Pediatrics 106, 3 2000)
The Two Most Important Factors

- Age at enrollment in EI & Family involvement
- Family involvement explained most of the variance

*How do we facilitate Family Involvement?*

What does it mean to be *family centered*?

- Role of the family is recognized and respected
- Family members are supported in their natural care-giving and decision-making roles
- Parents and professionals are seen as equals.
- Family and professional agendas are interwoven and coordinated.

*Brewer (1989)*

Auditory Verbal Therapy

- Auditory-Verbal Therapy is an approach used with young children with hearing loss that expands auditory capacity and allows improvements in auditory performance.
- As the child gets older, he/she will be able to learn auditorily (auditory learning) within the academic setting.
- Please visit: www.agbellacademy.org
Principles of Auditory-Verbal Therapy

- Promote early diagnosis of hearing loss in newborns, infants, toddlers, and young children, followed by immediate audiologic management and Auditory-Verbal therapy.
  - Support Universal Newborn Hearing Screening
  - 1-3-6 model, if not earlier
  - Infants can be fit with hearing aids by 4 weeks of age & can begin intervention

- Recommend immediate assessment and use of appropriate, state-of-the-art hearing technology to obtain maximum benefits of auditory stimulation.
  - Immediate fitting of hearing aids with optimum settings; then cochlear implants if necessary
  - Wearing hearing technology during all waking hours

- Guide and coach parents to help their child use hearing as the primary sensory modality in developing spoken language without the use of sign language or emphasis on lipreading.
  - The teacher or therapist should have a thorough understanding of speech acoustics.
    - For example:
      - Why would a child confuse /u/ and /i/ if they had hearing to 1000 Hz within the speech range?
      - Maintain high expectations for listening
Principles of Auditory-Verbal Therapy

• Guide and coach parents to become the primary facilitators of their child’s listening and spoken language development through active consistent participation in individualized Auditory-Verbal therapy.
  ◦ Sessions are one-on-one
  ◦ Parents or caregivers are active participants in the therapy session
  ◦ Parents are the primary consumers of the approach
  ◦ Sessions are typically weekly for 1 or 1½ hours

Principles of Auditory-Verbal Therapy

• Guide and coach parents to create environments that support listening for the acquisition of spoken language throughout the child’s daily activities.
  ◦ Time spent everyday talking, reading and facilitating listening and spoken language
  ◦ Language targets and goals integrated into daily routines – bath time, eating dinner, going on walks, etc.

Principles of Auditory-Verbal Therapy

• Guide and coach parents to help their child integrate listening and spoken language into all aspects of the child’s life.
  ◦ Listening becomes a part of the child’s personality
  ◦ The child wants to wear HAs and/or CIs
  ◦ An average or better than average rate of progress is expected
Principles of Auditory-Verbal Therapy

• Guide and coach parents to use natural developmental patterns of audition, speech, language, cognition, and communication.
  ◦ Typical language development is followed
  ◦ Child’s progress is measured against hearing peers

Principles of Auditory-Verbal Therapy

• Guide and coach parents to help their child self-monitor spoken language through listening.
  ▪ Development of the ‘auditory-feedback loop’
  ▪ The child is able to monitor the speech of others and self-monitor their own speech.

Principles of Auditory-Verbal Therapy

• Administer ongoing formal and informal diagnostic assessments to develop individualized Auditory-Verbal treatment plans, to monitor progress, and to evaluate the effectiveness of the plans for the child and family.
  ◦ Sessions are diagnostic in nature; diagnostic teaching
Principles of Auditory-Verbal Therapy

- Promote education in regular schools with peers who have typical hearing and with appropriate services from early childhood onward.
  - Placement in regular education is the goal
  - Every child should receive appropriate support/related services – itinerant teacher of the deaf, speech-language pathology, resource teaching, audiology, etc.

Within the home and academic setting,…

**Auditory Learning Is Different!**

Auditory Learning: Goals (Houston, 2002)

- To foster greater independence and academic success for children with hearing loss through listening and talking.
- To ensure that children with hearing loss are successful – with appropriate supports – within a mainstream setting.
- To ensure that children are functioning at their highest possible levels which, in turn, promotes greater academic success and life choices.
Introduction to Auditory Learning

- Hard-of-Hearing children function more like a hearing person. That is, they use the auditory centers of the brain to process language and information.

- Because Hard-of-Hearing & Deaf children are processing information differently, we need separate programs to meet their specific group needs.

Auditory Learning is Different

- A "one size fits all" program simply has not worked for children with hearing loss.

Auditory Learning is Different

- *Listening* - rather than being a passive sense - becomes a major active force in nurturing the development of the child’s personal, social, and academic life.
Auditory Learning is Different

- The fundamental goal of auditory learning instruction is to systematically increase the child’s auditory capacity in order to achieve greater auditory performance.

- Auditory Learning vs. Auditory Training

Auditory Learning is Different

- **Auditory Capacity**
  - The ability to perceive significant contrasts among acoustic speech patterns in meaningful contexts.
  - Auditory capacity becomes *auditory performance* only with appropriate amplification, linguistic experience, and conditions within the listening environment.

Auditory Learning is Different

- Hearing is the PRIMARY sense used to develop speech, therefore, the best and most appropriate hearing technology is pursued by all professionals working with the child.
Auditory Learning is Different

- Instruction occurs in both one-to-one and in small groups (within an academic setting).
- The parent or caregiver is encouraged to actively participate throughout the educational process. Often, the professional works with the child to demonstrate how the parent is to develop a target behavior in the child. After demonstration, the parent is given an opportunity to practice techniques and strategies.

Auditory Learning is Different

- Typically, the first several months in sessions with a young child are spent helping the child learn to listen before any attempt is made to get him/her to imitate.

Auditory Learning is Different

- In the early months of therapy emphasis is on the development of appropriate voice patterns, rather than an immediate and primary focus on “articulation.”
- Speech is developed by encouraging the child to through normal stages of babble. Deaf/HH children also require this foundation in order to develop fluent, natural-sounding spoken language.
Auditory Learning is Different

• Single-word practice is rarely, if ever, encouraged.

• Software programs are rarely, if ever, used to develop speech as they cause the child to focus on externals, rather than on auditory feedback, in order to monitor speech production.

Auditory Learning is Different

• An average, or better than average, rate of progress is used as the standard by which success is measured, unless the child has severe, atypical learning issues.

• Language and vocabulary goals are based on current events in the child’s life at home or at school, rather than on isolated “themes” assigned by the professional. In this way, the child hears and has an opportunity to use the new spoken language targets in as many contexts as possible.

Auditory Learning is Different

• “Practice” of any speech sound or language target is almost always done in a conversational context rather than in drill-type exercises such as with articulation cards.
**Variables Affecting Progress & Outcomes**
- age at diagnosis
- cause of hearing impairment
- degree of hearing impairment
- effectiveness of amplification devices or a cochlear implant
- effectiveness of audiological management
- hearing potential of the child
- health of the child
- emotional state of the family
- level of participation of the family
- skills of the therapist
- skills of the parents
- child’s learning style
- child’s intelligence

**Summary**
- Improved UNHS, early diagnostics, & fitting of advanced hearing technology have increased the potential for children with hearing loss to expand their auditory capacity and -- by extension – their auditory performance.
- Auditory Verbal Therapy is a philosophy, way of life, & intervention approach that supports auditory learning.
- Multiple variables can affect a child’s progress & must be managed well.

**References**
- Alexander Graham Bell Association for the Deaf & Hard of Hearing – [www.agbell.org](http://www.agbell.org)
  - AG Bell Academy for Listening & Spoken Language (www.agbellacademy.org)
- BEGINNINGS for Parents of Children Who are Deaf or Hard of Hearing, Inc. (www.ncbegin.org)
- Jean Moog, Moog Center for Deaf Education – St. Louis, MO
- National Center for Hearing Assessment & Management (NCHAM) (www.infanthearing.org)
References

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- Dr. Daniel Ling
- Beth Walker, MA, CED, LSLS Cert. AVT
  - Alabama Ear Institute (www.alabamaearinstitute.org)
- Kathryn Wilson, MA, CCC-SLP, LSLS Cert. AVT
- Dr. Karl White – Utah State University/NCHAM

Resources

- Advanced Bionics Corporation (www.bionics.com)
- American Academy of Audiology (AAA) (www.audiology.org)
- American Academy of Otolaryngology-Head & Neck Surgery (www.entnet.org)
- American Speech-Language-Hearing Assn. (ASHA) (www.asha.org)
- Association for Research in Otolaryngology (www.aro.org)
- Better Hearing Institute (www.betterhearing.org)
- Boystown National Research Hospital (www.babyhearing.org)
- Central Institute for the Deaf (www.cid.wustl.edu)
- Cochlear Americas (www.cochlearamericas.com)
- Council for Exceptional Children (CEC) (www.ced.sped.org)
Resources

- Deafness Research Foundation (www.drf.org)
- First Years (www.firstyears.org)
- Hands & Voices (www.handsandvoices.org)
- Hearing Loss Association of America (www.hearingloss.org)
- John Tracy Clinic (www.johntracyclinic.org)
- Listen-Up (www.listen-up.org)

Resources

- MED-EL Corporation (www.medel.org)
- National Institute on Deafness and Other Communication Disorders (NIDCD) (www.nidcd.nih.gov)
- Oral Deaf Education (www.oraldeafed.org)
- Plural Publishing (www.pluralpublishing.com)
- Warren Estabrooks, LSLS Cert. AVT (www.welisteninternational.com)

Resources

- FM Systems
  - Audio Enhancement (www.audioenhancement.com)
  - Phonic Ear Inc. (www.phonicear.com)
  - Phonak Inc., USA (www.phonak-us.com)
  - Lightspeed Technologies (www.lightspeed-tek.com)
Thank you for Listening!

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