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Maximizing Outcomes for School-aged Children with Hearing Loss: Audiology and speech/language pathology partnership

Gail M. Whitelaw, PhD

Moderated by:
Amy Natho, MS, CCC-SLP, CEU Administrator, SpeechPathology.com

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- Must be logged in for full time requirement
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  - Within **7 days** for live webinar; within **30 days** of registration for recorded/text/podcast formats
- Two opportunities to pass the exam

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Maximizing Outcomes for School-aged Children with Hearing Loss: Audiology and speech/language pathology partnership

Gail M. Whitelaw, Ph.D.
The Ohio State University
whitelaw.1@osu.edu

4

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Learning Outcomes

As a result of this course, participants will be able to:

- Describe how to communicate effectively with the audiologist to obtain relevant information.
- Describe how to communicate effectively with the audiologist in order to direct services and outcomes for the student/patient.
- Identify aspects of audiological care that can be directed for better outcomes (e.g. use of real ear measures).

5

CONTINUED

Foundation and framework

- Today is about how to best have speech/language pathologists and audiologists work together for the best outcomes for school aged students with hearing loss
- Communication is the key
- Practical information is the intent

6

Constantly learning more about children and hearing loss

- A "growth" industry
- Populations that are in schools
  - Epidemic of concussion/TBI
  - Children on the autism spectrum
  - Noise exposure that is recreational; musicians who are like "professionals" in terms of noise exposure in school
    - Monitoring/hearing protection, etc.

7

The foundation: What do we need?

- Complete audiologic results
  - Complete reliable audiogram and if that can't be obtained (e.g. age, attention, cognitive ability), a plan for additional information
  - Behavioral results are key but what other information can be obtained
  - Air and bone conduction, speech reception threshold, word recognition skills in quiet
  - Word recognition in noise (e.g. BKB-SIN test results)

8

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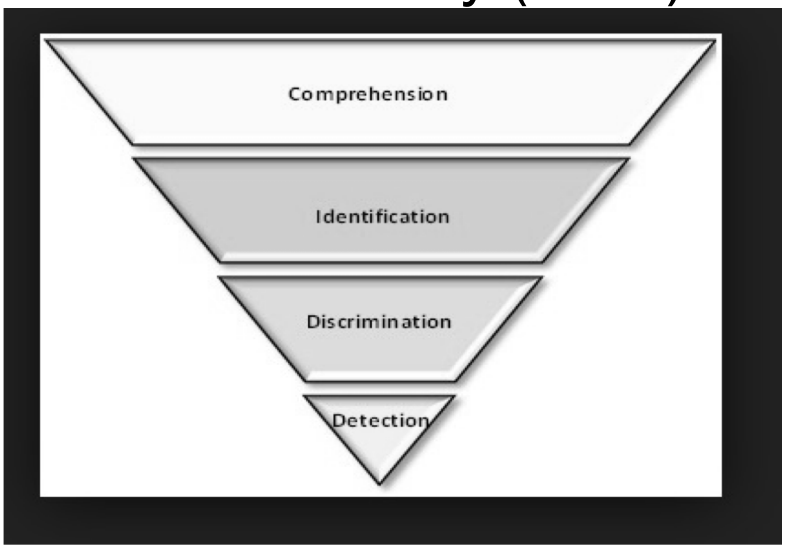
Erber's Hierarchy (1992)



9

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The foundation: What do we need?

- Aided information and results
  - Manufacturer of hearing aid, model (for kids, is it receiver in the ear (RITE)/receiver in the canal (RIC) OR behind the ear(BTE) with earmold)
  - What battery does the hearing aid/CI use?
  - More about this in a few minutes

10

The foundation: What do we need?

Real ear measures (REM)

- Need help in changing this for children as it should be a standard of care (approximately 30% of fittings overall)
- What is it?
  - Probe microphone placed in the ear canal next to the hearing aid
  - Match hearing aid output to targets or a prescription
  - Research indicates better speech understanding

11

The foundation: What do we need?

Real ear measures (REM)

- Great YouTube video for you to check out later
  - https://www.youtube.com/watch?v=cHR0Oa6I-wY

12

The foundation: What do we need?

Real ear measures (REM)

- Case study from last week
  - 12 year old with normal hearing through 2000Hz in both ears sloping to a moderate sensorineural hearing loss in the right ear and a moderate-severe sensorineural hearing loss in the left ear
  - Referred for "auditory processing assessment"
  - Did not like her hearing aids: Mid level BTE technology with earmolds

13

The foundation: What do we need?

Real ear measures (REM)

- Case study from last week
  - Hearing loss identified at age 6
  - Fit with hearing aids at age 7
  - Wears hearing aids 6 hours a day or less
  - Real ear measures indicated considerable over amplification in the lower frequencies:
    Consistent with patient report
  - Changed hearing aid technology to a RIC; real ear measures met target
  - Early input was good; more natural

14

CONTINUED

Other considerations

- How does child hear in "real world" situations: Authentic Assessment
  - Screening Inventory for Targeting Educational Risk (SIFTER); Preschool, School Aged, Secondary
    - http://home.earthlink.net/~karenlanderson/sifter.htm
- Listening demands: Hot topics right now are listening fatigue and anxiety
- Other things important in the child's life
  - Sports
  - Music
  - Other listening demands

15

CONTINUED

Other considerations

- The classroom:
  - Study published by Outcomes of Children with Hearing loss group at Boys Town in 2018
  - Studied noise levels in 158 classrooms
    - 20 classrooms (12.7%) had unoccupied noise levels below the ANSI recommended guidelines (35 dbA)
    - Only 2 of the 83 classrooms with HVAC system on met the standards

16

CONTINUED

Other considerations

- The classroom:
  - Children, by virtue of childhood, have greater difficulty listening in noise (developmental and peaks, depending on type of noise, at aged 12-16)
  - Sensorineural hearing loss results in a "widening" of critical bands, resulting in greater difficulty in listening in less than optimal environments
    - Impacts academic abilities, impacts speed of processing, and can impact auditory memory for students with hearing loss
- REQUIRES ADVOCACY

17

CONTINUED

Why school may be "different"

- The "fallacy" of hearing loss
  - Back to detection again
  - Just because a student "seems" like they are hearing, doesn't mean they are
  - Don't ask a person with a hearing loss what they missed because they missed it
  - Are the terms "mild" "moderate", etc. useful? Even hearing loss classified as "mild" can have a significant educational impact
    - Hearing loss is hearing loss

18

CONTINUED

Technology

19

CONTINUED

The times, they are a changin'

Technology

- Speed of change is greater than when the hearing aid/cochlear implant, FM/DM "wears out"
- Newer technology may meet hearing/listening needs but have issues with compatibility/connectivity with technology
- Some is complex! Who's responsible?
- Things will be changing in the next few months, too.

20

21

Hearing aids

- Levels of technology
- Newer technology compatibility/connectivity
  - Bluetooth connectivity
  - Use with iPads, Chromebooks, etc.
  - Relatively easy but ask for **extra manual** for hearing aids (can be provided electronically)
  - Often not compatible with DM
- Rechargeable batteries
- Digital modulated (DM) receiver will be built into certain hearing aids this year

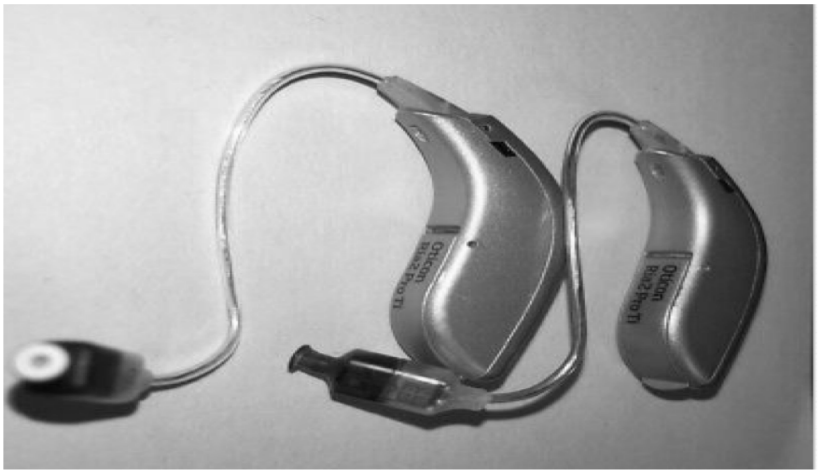
22

Receiver in the Canal (RIC)

- Most common style of hearing aid in use
- Older children and tees but use may be further expanding
- Natural sound
- May not be compatible with DM system

23

Receiver in the Canal (RIC)



24

Hearing aids

- Supplies:
  - Who provides them
  - What is needed
    - Batteries
    - Domes (part that seats receiver in the ear)
    - Wax guards
    - Cleaning tools

25

Unique aspects of school for kids with hearing loss

- Even the best fit hearing aids or the most incredible fitting of a CI cannot address all aspects of the classroom for a child with hearing loss.
- It does not help the case for CI kids to describe their hearing as “normal” with the CI
  - Implanted detection results ONLY reflect detection and no child with a CI has “normal hearing”
  - How this is interpreted in many school districts

26

CONTINUED

Cochlear implant processors

Nucleus® 7 Sound N7

Nucleus® Kanso Sound Processor

27

CONTINUED

Cochlear implants

- Programming and compatibility
- Binaural implant
- Bimodal: What processor and what hearing aid manufacturer
  - Accessories
  - Adaptor for DM

28

Newer technology for signal-to-noise ratio enhancement

- No longer referred to as FM (Frequency modulated) by the largest manufacturer: Now called Digitally modulated (DM)
  - Clearer speech perception
  - Ease of use
  - May not be compatible with all newer hearing aid technology with a direct connect
    - May need to use a "streaming type" device

29

Newer technology for signal-to-noise ratio enhancement

- Receivers (part that is used by the listener to "catch" or receive the sound)
  - Attach by a shoe
  - Direct fit into the hearing aid (Phonak aids only)
  - Available this year—receiver is a feature in the hearing aid that will be activated by the audiologist
  - Streaming type of device as some newer hearing aids are NOT compatible/connective to hearing aids directly
- Can check this on Phonak configurator: https://www.phonakpro.com/com/en/support/product-support/wireless-accessories/roger-configurator.html

30

Newer technology for signal-to-noise ratio enhancement

- Transmitters:
  - Many options and more flexibility
  - The “mic” used by the teacher or speaker

31

Newer technology for signal-to-noise ratio enhancement

Roger Select	Roger Table Mic II	Roger Touchscreen Mic	Roger Pen
			
Choose	Choose	Choose	Choose

32

CONTINUED

Oticon Amigo (still call this product FM)

- https://www.oticon.com/solutions/for-children/amigo-fm
- Integrated receiver R12G2

33

CONTINUED

DM considerations

- In order for hearing loss to be considered, it must be educationally handicapping: e.g. the disability impacts academic access
- Not all children with hearing loss NEED DM and it is only ONE consideration in school placement, not the ONLY recommendation

34

CONTINUED

DM considerations

- In order for hearing loss to be considered, it must Clinical audiologists make the recommendation…best way to recommend is a trial use of DM so that the "right" solution can be selected/provided (also, provide speech-in-noise information), etc.

35

CONTINUED

DM considerations

- "Authentic assessment": District asks for a questionnaire, such as the Screening Instrument for Targeting Educational Risk (SIFTER), Children's Auditory Processing Scale (CHAPs) prior to trial
  - Functional Listening Evaluation (FLE)

36

DM considerations

- Pre-post assessment using the Listening Inventory for Targeting Educational Risk-Revised (LIFE-R) : Anderson, Smaldino, & Spangler (https://successforkidswithhearingloss.com/wp-content/uploads/2011/08/LIFE-R.pdf_
- Helps to provide direction on need, choice of devices, etc.
- So, use SIFTER, CHAPs and LIFE-R

37

DM considerations

- Schools can “borrow” equipment to determine the best solutions and effectiveness
  - Some schools may have a stock of DM solutions
  - In Ohio, the district can borrow a system from Ohio Center for Autism and Low Incidence (OCALI) for up to 90 days
  - Purchase from manufacturer with opportunity to return

38

CONTINUED

DM considerations

- If written into an IEP, this is a legally binding document
  - What if the child refuses to use the FM? Who "forces" them to wear it?
    - Involve the child in their own meetings early on (development of self-advocacy skills)
    - Partnership between everyone involved to address this
      - Can't just defer to school and say "make him (her) wear it"
      - Kids who sabotage their systems
        - What is the value?

39

CONTINUED

DM considerations

- The question of using "home" equipment at school
  - If equipment is needed, it is the district's responsibility to provide
  - Using personal equipment has many issues. If a district were to agree to this, what are the liability issues? Get information in writing (this would be a VERY rare situation)
  - Using school equipment in other situations (e.g. sports, etc.)

40

CONTINUED

Building a team for the student

- Input from all
  - Parents are experts on their own children and that is recognized and appreciated
  - Clinical audiologist and SLP may have worked with the child for years and can provide a unique perspective
  - Educational audiologist—understands the classroom and the technology
    - School placement needs all of this input
    - Where things go wrong: DEMANDING, ACUSING, BLAMING, listening to BAD information (e.g. the problem of "WiFi" giving FM interference—WRONG!)

41

CONTINUED

Sharing information

- Assume the best
- The student is the focus
- Reasonable expectations: Parents not needed to be there to "monitor" school services…if a problem arises, it's reasonable to hear about it
  - Need a visit to the clinical audiologist (new earmold, tubing, reprogramming to facilitate FM, etc.)

42

Sharing information

- Equipment will need to repaired—expectations regarding that (timeframe, etc)
  - No child should be so dependent on FM that a few days will be an issue, but what's a backup plan?
  - Backup equipment in the district
  - Who sends the equipment back
  - A box shouldn't stand between the student and a working FM system ☺

43

The SLP/Audiology team

- Using technology to it's best
  - Feedback regarding speech/language goals
  - Example of "s" and "sh" discrimination
    - How hearing aids are set: "Sound recover"
- Supporting each other's goals and developing common goals
- Communication and reaching out to each other

44

CONTINUED

The SLP/Audiology team

- Provide in-service education/training that addresses the functions and use of technology and who is responsible for it
- People using the technology must be comfortable with it
- “changing that waxy dome”

45

CONTINUED

The SLP/Audiology team

- Considerations for a successful school experience for a child with a hearing loss:
- Checking and troubleshooting equipment and who is responsible
- Where supplies (e.g. batteries, domes, wax guards) are kept
- Who is responsible for the supplies and how they are used (district, family, etc.)

46

CONTINUED

Keys for success

- Involve the child! Even at a young age
  - How to empower children with hearing loss
  - "One and only"
  - Kids that are most successful are self confident about loss
  - Reinforce this "everywhere": If technology is key, student must wear it all the time—not just in school

47

CONTINUED

Keys for success

- Provide information (audiogram, etc.)
- Approach as a team
- Recognize that the school priority is to assure that the child is set for educational success (e.g. assume that the child has functioning hearing aids, batteries, etc.)
- Recognize that the district has responsibility to provide agreed upon services to the student and that this should be based on "evidence" yet open to be modified

48

CONTINUED

Putting the child in the center

- We are not the experts: Families are
- Not all families have same degree of internal motivation
  - Identify family priorities while trying not to judge
  - Partner with others (social work, psychology, early intervention)
  - Address needs: schedule, finance
  - How could a clinical/educational partnership support needs

49

CONTINUED

Basics at the beginning

- Who is the appropriate contact:
  - Most often, someone in special education at the school district
  - Sharing information with the decision maker (this is NOT the classroom teacher, school nurse, etc.)

50

Directing families appropriately to the "decision makers"

- Quick read for review: Colker, C. (2018). Special Education Law in a Nutshell. St. Paul., MN: West Academic Publishing.
- A Guide to Parents Rights in Special Education: Special Education Procedural Safeguards Notice; Ohio Department of Education (published in 11 languages in addition to English)
- Begins with state "Child Find" and early identification services
- Part C of Individuals with Disabilities in Education Act (Individualized Family Service Plans) (age 3-5 years)

51

Directing families appropriately to the "decision makers"

- Individuals with Disabilities in Education Act Part B
  - 13 different categories
  - Common in audiology/SLP
    - Hearing impairment/Deafness
    - Deaf-Blind
    - Multiple disabilities
    - Speech/language impaired
    - Other health impaired

52

Directing families appropriately to the "decision makers"

- Individuals with Disabilities in Education Act Part B
  - The law is clear that being in one of these categories is not enough to qualify as having a "disability"
  - The child must NEED special education or related services
    - What does "need" mean?
    - Does hearing loss adversely impact the ability to participate in the academic program?

53

Directing families appropriately to the "decision makers"

- How do we address this question?
  - Speech in noise testing
  - Verification and Validation (remember real ear measures and authentic assessment!)
  - Authentic Assessment
  - Breadth of recommendations (don't write outdated information about Digitally modulated system use; avoid outdated things like recommending tennis balls on chair and table legs; explain issues like the fact that preferential seating has minimal acoustic benefit)

54

Directing families appropriately to the "decision makers"

- How do we address this question?
  - Explain that hearing loss is educationally handicapping
    - Not correlated to degree of hearing loss
    - Focus on the reality of hearing loss: Fatiguing, can produce anxiety, address the fact that it can be socially/emotionally isolating, raise the fact that students with hearing loss are at least 3X more likely to be bullied than students who don't have hearing loss

55

Directing families appropriately to the "decision makers"

- Section 504
  - Section 504 of the Rehabilitation Act of 1973
    - No individual shall be excluded from participation in a program or activity based on their disability if the activity receives Federal financial assistance
    - Not on an IEP; legally this says that the child does not need special education or related services even though they have a disability

56

Directing families appropriately to the "decision makers"

- Influencing the decision makers
- Provide specific information about the impact of hearing loss, about the child's specific technology, etc.
- Help family understand issues
- Recommendations of a parent advocate

57

Resource for parents

- Educational Advocacy for Students Who Are Deaf or Hard of Hearing: The Hands and Voices Guidebook
  - www.handsandvoices.org
  - 800-4220422

58

CONTINUED

Putting the child in the center

- Our first job is to get information not give information
  - What does the family want for the child?
  - Stephen Covey's concept of beginning with the end in mind
- Asking positive questions/rephrasing
- Proactively define and manage expectations
  - Typical speech and language development requires consistent auditory input

59

CONTINUED

Putting the child in the center

- Role is to influence change not make change
  - Provide resources
  - Lead the way
  - May not know about brain development
    - Reading and speaking to the child: The Three Million Word initiative
      - "Within every parent and caregiver lies the power to shape his or her child's learning capacities from day on"
      - http://tmwcenter.uchicago.edu/
    - Music (Research by Nina Kraus)

60

Putting the child in the center

- Engaging in difficult conversations with parents, educators, and the child
- "Start with why" (Simon Sinek)
- Trust! (Families, each other)

  Adapted from How to Be an Effective Influencer for Good

61

Developing family centered goals

- Framing abstract concepts with a concrete tool
  - "My world" at Ida Institute
    - Incredible resource for anyone with hearing loss, family members of anyone with hearing loss, professionals who work with people who are hearing impaired
    - FREE for anyone who wants to join!
    - International perspective
  - http://idainstitute.com/tool_room/pediatric_audiology/

62

CONTINUED

The changing face of auditory issues in the classroom

Three of many issues: Vestibular, tinnitus, noise exposure

63

CONTINUED

Issues related to pediatric vestibular issues

- At least 40% of children with hearing loss are thought to have concomitant vestibular issues
- Growing knowledge of the vestibular system in children
- Parents and teachers who comment on kids being "clumsy"
- Impacts reading, physical education, etc.
- Postural control and vision

64

Issues related to pediatric vestibular issues

- Current recommendations are that children with hearing loss should have ophthalmological assessment and vestibular screening
- Generalized population: 5-8% of children experience vertigo (Doetti and McCaslin, 2017)
- Major cause of balance issues in school aged kids is otitis media
- Screening with Vanderbilt Dizziness Handicap Inventory for Patient Caregivers OR Pediatric Vestibular Symptom Questionnaire

65

Gracie's case

66

Questions about tinnitus in children

- Incidence and prevalence not known
  - Not asked
  - 12% of the general pediatric population and up to 55% of children with hearing loss
  - Does not mean it's bothersome but should be investigated
    - Tinnitus may start in childhood
      - "My little friend"
    - Treating may address attention and concentration

67

Educational impact of tinnitus

- Quiet is the "enemy" of the person with tinnitus
- Quiet reading may be distracting/student may have difficulty with concentration
- Need to ask/discuss with the student
- Hearing aids with a habituation device
- Tinnitus app

68

Noise exposure and noise induced hearing loss in teens

- Growing number of teens with noise induced hearing loss
- Recommendation that in addition to current hearing screening frequencies, 6000 Hz be added to the standard screening in high school

69

References

Erber, N. (1982). Auditory Training. Washington DC: Alexander Graham Bell Association for the Deaf & Hard-of-Hearing.

Smith, Michael S. MA; Smith, Joanna T. MS; Elder, Tamara MS; Wolfe, Jace PhD. How to Be an Effective Influencer for Good

The Hearing Journal: June 2015 - Volume 68 - Issue 6 - p 32,34,36

70