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Adult Aural Rehabilitation: Indications and Assessment

Lindsay Zombek, MS, CCC-SLP, LSLS Cert AVT

Moderated by:
Jessica Lewis, Med, ECSE, Managing Editor, continued

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How to earn CEUs

- Must be logged in for full time requirement
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- Must pass 10-question multiple-choice exam with a score of **80%** or higher
  - Within **7 days** for live webinar; within **30 days** of registration for recorded/text/podcast formats
- Two opportunities to pass the exam

CONTINUED

Adult Aural Rehabilitation: Indications and Assessment

Lindsay Zombek, MS, CCC-SLP, LSLS Cert AVT

CONTINUED

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- **Presenter Disclosure:** Financial: Lindsay Zombek was paid an honorarium for this presentation. Nonfinancial: Lindsay is a Certified Listening and Spoken Language Auditory Verbal Therapist.
- **Content Disclosure:** This learning event does not focus exclusively on any specific product or service.
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Learning Outcomes

After this course, the learner will be able to:

- List at least one indication for aural rehabilitation for adults who have received cochlear implantation.
- Describe at least one typical challenge or area of concern for an adult with a cochlear implant.
- List 1-2 skills that are tested during an aural rehabilitation assessment.

CONTINUED

What is Adult Aural Rehabilitation?

- American Speech Language Hearing Association:
- "If you are an adult, aural/audiologic rehabilitation services will focus on *adjusting* to your hearing loss, making the *best use* of your hearing aids, *exploring* assistive devices that might help, *managing* conversations, and *taking charge* of your communication.

From http://www.asha.org/public/hearing/Adult-Aural-Rehabilitation/

CONTINUED

What is Adult Aural Rehabilitation

- Professional interactive processes actively involving the client designed to help a person with hearing loss
- Services and procedures limiting the negative effects of and compensating for the hearing impairment involving facilitating adequate well-being and receptive and expressive communication

ASHA, 2001 and WHO 2001as cited by Schow and Nerbonne, 2007

CONTINUED

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What is Aural Rehabilitation

- Counseling
- Auditory Training
- Communication Skills
- Environmental Modification
- Technology Training
- So Much More!

Q1

CONTINUED

What is Aural Rehabilitation

- Remember when to refer
  - Technology/Device concerns should be referred to audiology
    - Shocking sensations
    - Damaged equipment
    - Increasing static
    - Decreasing performance
  - Medical concerns should be referred to audiology and ENT
    - Facial Nerve Stimulation
    - Pinkness/Redness around magnet site
    - Redness around suture site

Q4

CONTINUED

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Evidence for Aural Rehabilitation

Aural Rehabilitation is so diverse- there are not studies that will say "Aural Rehabilitation works."

Research proves that various target areas within aural rehabilitation are effective

Not every aspect of aural rehabilitation has been measured; some areas are hard to measure

Q3

CONTINUED

Evidence for Aural Rehabilitation

Aural Rehabilitation should contain synthetic training (practice with meaning)

There is a place for analytic training (focus on specific sound elements)

- (Sweetow & Palmer, 2005)

Evidence for Aural Rehabilitation

Computer programs effective at helping people identify environmental sounds with 15.8 percentage points improvement on average

- (Shafiro, Sheft, Kuvadia, & Gygi, 2015)

Speech tracking exercises helped sentence recognition by 15-20%

- (Bernstein, Bakke, Mazevski, et al; 2012)

Evidence for Aural Rehabilitation

Improved recognition of consonants and vowels on average 20 percentage points higher than baseline

- (Zeh &Bauman, 2015)

Production of individual speech sounds increased between 12.7 to 83.3 percentage points

- (Pomaville & Kladopoulos, 2013)

Evidence for Aural Rehabilitation

Many aspects of music can be improved:

- Melody recognition
- Timbre identification (voice of instrument/ what instrument)
- Sound quality
- Pitch recognition
- Comprehension of lyrics
- General enjoyment of music

(Gfeller, Guthe, Driscoll, & Brown, 2015)

Evidence for Aural Rehabilitation

Sound Quality (Hutter, Argstatter, Grapp, & Plinkert, 2015)

- Subjective ratings increased from " poor" to "good" after training

Timbre Identification (Hutter, Argstatter, Grapp, & Plinkert, 2015)

- Bilateral CI users improved from identifying 74% to identifying 80% of instruments
- Unilateral CI users improved from identifying 33% to identifying 63% of instruments

Melody Recognition (Hutter, Argstatter, Grapp, & Plinkert, 2015)

- Bilateral CI users increased from recognizing 45% to 57% of melodies
- Unilateral users increased from recognizing 33% of melodies to 48% of melodies

CONTINUED

Evidence for Aural Rehabilitation

- When training with speech filtered to telephone frequencies:

Unfiltered	Filtered
Recognized sentences on the phone better after training	Recognized sentences on the phone significantly better after training
Understood one syllable words on phone better	Understood one syllable words on phone better
Reported benefit from training	Reported benefit from training

(Ihler, Blum, Steinmetz, et al, 2017)

CONTINUED

Indications for Aural Rehabilitation

- Seasoned users unhappy with outcomes or who have continued areas of concern
- Persons visiting audiology frequently for reteaching
- People needing information about technology of amplification or assistive devices
- People receiving new technology

Q2

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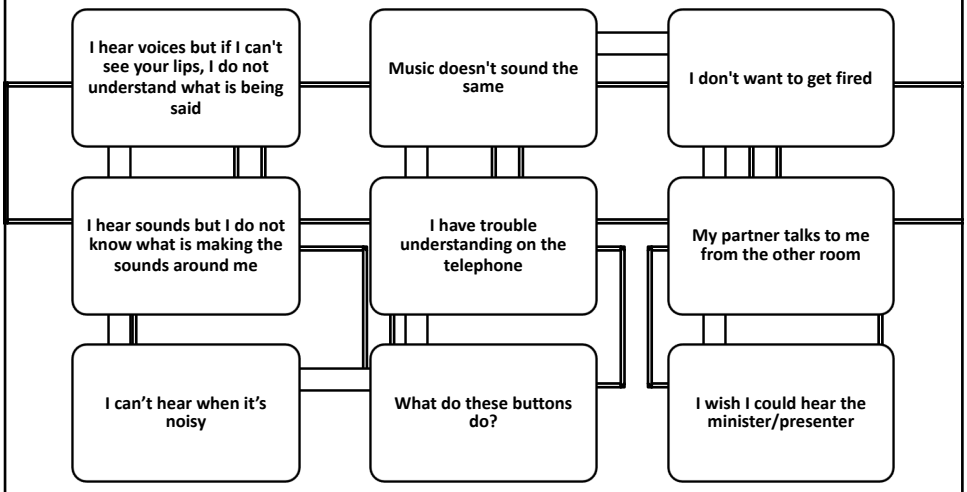
Common Concerns of Adults



Q5

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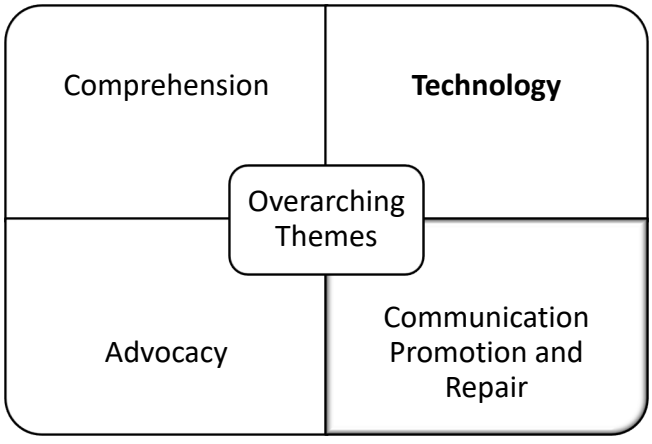
Common Concerns Of Adults



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Areas to Assess

- Very few thorough, formal standardized tests
- The nature of Aural Rehabilitation requires use of additional informal assessment

CONTINUED

Areas to Assess

- **Case History**
- **Subjective Perception of Performance**
- **Auditory Skills**
- **Specialty Areas of Concern**
- **Technology Knowledge and Use**

Case History

Is your case history form asking the right questions?

Are YOU asking the right questions?

University Hospitals Cleveland Medical Center
Outpatient Speech-Language Therapy
ADULT AURAL REHABILITATION
MEDICAL HISTORY and HEALTH SCREENING

Name (last, first) _____ Office Use: Med Rec # ___
Date of Birth _____ Age _____ Sex: M F Primary Language, if other than English _____
Referring Physician _____ Phone No _____
ENT _____ Audiologist _____

Describe why you have been referred for Auditory Training/Aural Rehabilitation _____

Was your hearing loss (check all that apply):
☐ Since birth ☐ Sudden (happened all at once) ☐ Progressive (got worse over time)
How long have you had a hearing loss: _____
Do you wear:
A Hearing Aid: ☐ Right Ear ☐ Left Ear ☐ Both Ears ☐ No Hearing Aid
A Cochlear Implant: ☐ Right Ear ☐ Left Ear ☐ Both Ears ☐ No Cochlear Implant
Do you wear your hearing aid:
☐ No hearing aid. ☐ Whenever Awake ☐ For ___ hours a day ☐ Other: _____
Do you wear your cochlear implant:
☐ No cochlear implant. ☐ Whenever Awake ☐ For ___ hours a day ☐ Other: _____
If you have cochlear implants, what was the approximate date(s) of your surgery(jgs): _____

Have you been diagnosed or have any of the following conditions? Check all that apply.

Acid Reflux	Heart Disease	Speech Problem
Arthritis	Hearing Problems	Spinal Condition
Brain Injury	High Blood pressure	Stroke
Cancer – Head/Neck	Lung Disease	Swallowing Problem
Cancer – Other	Neurological Condition	Tuberculosis
Depression	Psychological Problem	Vision Problems
Diabetes	Radiation or Chemo	Voice Problems
Endocrine Problem	Seizure Disorder	

List any other medical problems that you have: _____
List surgeries and approximate dates: _____
List recent hospitalizations and approximate dates: _____

over

List allergies (food, medication and environmental): _____
List medications (prescription and over the counter) that you are currently taking: _____
List any recent illness (example cold, flu, bronchitis, pneumonia): _____
Describe how much talking is required in your daily routine: _____

Please answer yes or no to the following questions.	Yes	No	Have Not Tried
I have difficulty hearing sounds around me.			
When I hear sounds around me, I do not know what they are.			
I have trouble figuring out from what direction a sound came.			
I frequently have trouble understanding what others are saying.			
I need to be able to read lips in order to understand someone who is talking.			
It is hard to talk on the phone.			
I have trouble hearing people talk when it is noisy.			
I have difficulty hearing/enjoying music.			
I have ringing in my ears.			
I have difficulty with balance.			
I have trouble or do not know how to use the buttons and accessories for my hearing aid or cochlear implant.			

Describe any other concerns/problems: _____
Describe what you would like to be the outcome of this therapy/ what are your personal goals: _____
Office Use: Reviewed by: _____ Date _____

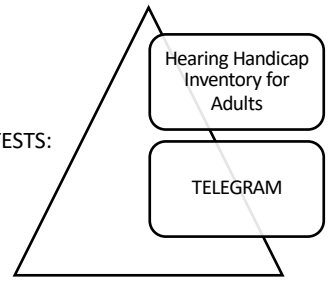
Some Questions To Ask

- What are some things you are hearing?
- When you hear a sound, do you know what makes the sound?
- Do you find anything hard to hear?
- Where do you need to listen during your week?
- Have you used your accessory yet?
- Have you tried the phone?
- How do you do when you are some place noisy, like a restaurant?
- WHAT ARE YOUR GOALS?

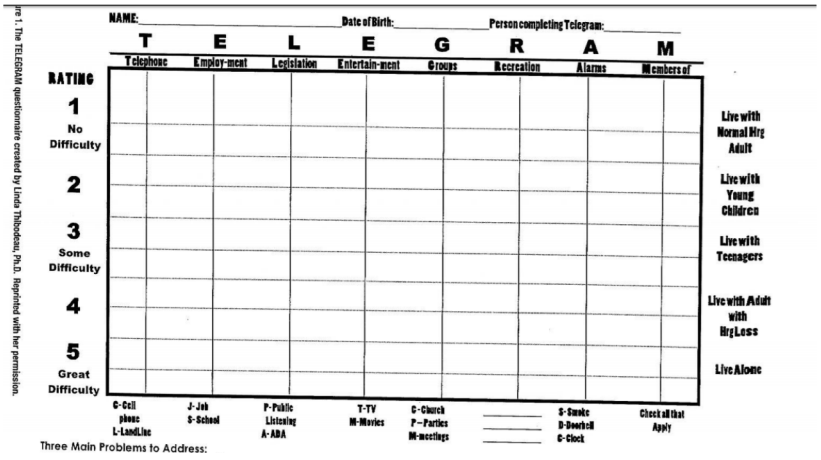
Subjective Personal Assessment

- Audiology speech perception tests do not give the whole story
- The participant can give you a personal impression of current levels of functioning

EXAMPLES OF TESTS:



TELEGRAM



re 1. The TELEGRAM questionnaire created by Linda Thibodeau, Ph.D. Reproduced with her permission.

NAME:_____ Date of Birth:_____ Person completing Telegram:_____

RATING	T Telephone	E Employ-ment	L Legislation	E Entertain-ment	G Groups	R Recreation	A Alarms	M Members of
1 No Difficulty								Live with Normal Hrg Adult
2								Live with Young Children
3 Some Difficulty								Live with Teenagers
4								Live with Adult with Hrg Loss
5 Great Difficulty								Live Alone
	C-Cell phone L-LandLine	J-Job S-School	P-Public Listening A-ADA	T-TV M-Movies	C-Church P—Parties M-meetings	_____ _____ _____	S-Smoke D-Doorbell C-Clock	Check all that Apply

Three Main Problems to Address:

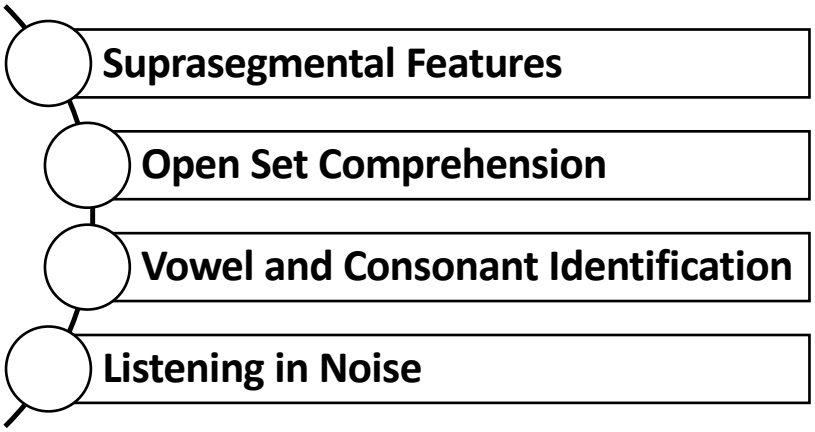
TELEGRAM Developed by Linda M Thibodeau, 2004

TELEGRAM

TELEGRAM Rating Scale Key

Topic	Question	Rating
T	Are you having difficulty with communication over the **telephone**?	Difficulty 1=None, 2=Occasional, 3=Often, 4=Always, 5= (*Use "L" to designate Landline and "C" to desi*
E	Are you having any difficulty with communication in your **employment** or **educational** environment?	Difficulty 1=None, 2=Occasional, 3=Often, 4=Always, 5=
L	Do you know about **Legislation** that provides assistance for you to hear in public places or in hotels when you travel?	Knowledge 1=Vast, 2=Considerable, 3=Some, 4=Limi
E	Are you having difficulty with hearing during **Entertainment** activities that you enjoy such as television, movies, or concerts?	Difficulty 1=None, 2=Occasional, 3=Often, 4=Always, 5=
G	Are you having difficulty with communication in **Group** settings?	Difficulty 1=None, 2=Occasional, 3=Often, 4=Always, 5= Can
R	Are you having difficulty with hearing during **Recreational** activities such as sports, hunting, or sailing?	Difficulty 1=None, 2=Occasional, 3=Often, 4=Always, 5= S
A	Are you having difficulty hearing **Alarms** or **Alerting** signals such as the smoke alarm, alarm clock, or the doorbell?	Difficulty 1=None, 2=Occasional, 3=Often, 4=Always, 5= *Use "S" for Smoke Alarm, "D" for Doorbell, and "*
M	Are you communicating with **Members** of your family?	1=Live with Normal Hrg Adult, 2=Live with Young Children, 3=Live withTeenagers, 4=Live with Adult with Hrg Loss, 5=Live Alone *Check all that apply*

Auditory Skills

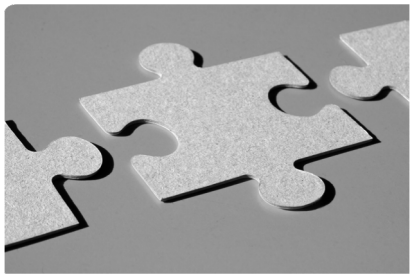


Suprasegmental Features

- Suprasegmental Features:
  - Duration, Intensity, Pitch
  - Most likely to be troublesome for:
    - Cochlear Implant Recipients
    - People with Long Term Hearing Loss with Little/No Amplification

Duration

- Length of a sound, word, phrase, sentence, paragraph…
- Duration has implications for:
  - consonant identification
  - ability to follow sentences and paragraphs
  - ability to segment conversation into meaningful chunks
  - Pragmatic functions
- Duration does not provide comprehension



Q9

Duration is a foundational skill and must be mastered to build further skills

PRE FEATURE IDENTIFICATION CONTRASTs (PREFICs) measures ability to:

Detect sound	Identify long versus short	Identify continuous versus broken	Identify 1 versus 3 syllables, 1 versus 2 syllables	Identify words of same number of syllables

Phrase and Sentence Length

- Phrase Length: Closed set: How do I finish the sentence/carrier phrase:
  - I went: shopping; to the movies, to the football game on Friday (note each choice has a different number of syllables)
- Sentence Length: Closed set: Given 4 sentences of varying lengths, which sentence do I say.
- Cochlear Corporation Rehabilitation Manual and Screen has a section for this

Q10

Open Set Comprehension

Assess comprehension of phrases and sentences without written/visual materials

Common Phrases Test

A phrase is presented auditory only	Participant repeats the phrase	Multiple lists consisting of 10 sentences

Vowel and Consonant Identification

IMPACTS PARTICIPANT'S ABILITY TO COMPREHEND SPECIFIC WORDS

IMPACTS ABILITY TO USE CONTEXT CLUES WHEN WORDS ARE HEARD INCORRECTLY

Vowels and Consonants

One way to test is through minimal pairs testing

Minimal pairs testing helps determine whether the participant can identify:

Vowel Place and Height

Consonant Manner, Voicing, and Place of Articulation

Q7

CONTINUED

Vowel and Consonant Identification

- Minimal Pairs Test
- Given 2 pictures of minimal pair words, patient is asked to select the picture corresponding with the target word
- Examines vowel height, vowel place, consonant manner of production, voicing, and consonant place of articulation cues

shoe

two

McConkey Robbins, Renshaw, Miyamoto, Osberger, & Pope, 1988

CONTINUED

Listening in Noise

- The world is noisy (background noise, music, meetings, office, church, competing speakers)!
- Hearing loss impacts listening in noise
- Amplification alone may not be sufficient- amplifies noise
- Practicing listening in noise and determining appropriate assistive listening devices and environmental modification may help
- The ability to listen in noise is a predictor of conversational communication as conversations rarely happen in ideal listening environments

Q4, Q8

CONTINUED

Listening in Noise

- Try open set assessment task in noise
  - Environmental noise
  - Competing speech noise

Specialty Areas

TELEPHONE USE

MUSIC APPRECIATION

Telephone Use

Telephone Use Information to Assess:

Please demonstrate how you make a call.

Do you use your amplification for phone calls?

How often do you need to talk on the phone in the course of your day?

Do you use your phone the same, more, or less than you did before your new amplification?

Do you use any assistive devices for phone calls (streamers, caption call, etc)?

Is speech over the phone sometimes, always, or never clear?

When the phone rings, do you answer the phone some, most, or none of the time?

Do you call family members, friends, strangers?

Do you call doctor's offices to make appointments?

Do you recognize voices on the phone?

Can you understand a conversation without asking for repetitions or clarification most of the time, some of the time, or none of the time?

Music Appreciation

- Generally for cochlear implant recipients
- To appreciate music you must be able to identify rhythm, timbre, and pitch
- Munich Music Questionnaire (MUMU) by S Brockmeier

CONTINUED

Technology Use Assessment

- What do buttons do
- Know capabilities of programs
- Know how to pair assistive listening devices
- Know when and how to maximize technology options

Q6

CONTINUED

Summary

- Adults should receive aural rehabilitation with new amplification
- Adults are shown to benefit from aural rehabilitation
- Teens and adults regardless of duration of hearing loss should enroll
- Testing should include many measures and areas to get a full picture of current performance

Questions and Answers

Thank you!

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