Presenter

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Demystifying Assistive Listening Devices

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http://www.wou.edu/nwoc/demyst.htm
PEPNet Regional Centers
Things to investigate

- Why an ALD?
- Components
- Wireless systems
- Troubleshooting
- Keys to success
This is your session

WHAT WOULD YOU LIKE TO DISCOVER?
Properties of Hearing Aids vs ALDs

Hearing Aids

• Tailored to your specific hearing loss

Your hearing loss

• Pick up background noise

Your hearing aid

ALDs

• Amplify all sounds equally

Sounds

• Focus on single speaker

Sound
Components

- Individual
- Sound
- Environment
- Sound Source
- Microphones
- Transmitter and Receiver Systems
- Coupling Devices
- Telecoils
Components: Individual

- Hearing loss
  - binaural or monaural
  - severity (dB) and frequency (Hz)
    - conductive or sensorineural
    - may fluctuate or be progressive
- Age at onset of loss
- Acceptance of loss
- Speech reading ability
- Hearing aid/CI T-coil use
- Knowledge of and comfort with ALDs
Components: Sound

- Dimensions
  - Frequency
  - Loudness
- Impact on Speech
  - Intelligibility
    - Distance
    - Signal-to-Noise Ratio
    - Reverberation
AUDIOGRAM OF FAMILIAR SOUNDS
FREQUENCY IN CYCLES PER SECOND (HZ)
Components: Environment

- Light or dark
- Uncovered windows
- Distance from speaker
- Room acoustics and noise
Components: Sound Source

• Instructor giving a lecture

• Panel of speakers

• Video or audio recording

• Q&A from the audience
  • Hard of hearing student
  • Neighboring student
Components: Microphones

- Omnidirectional
- Unidirectional
- Lavaliere or Lapel
- Table top or conference
- Environmental mic
- Placement is vital!
  - Remember effect of distance on sound
Components: Transmitter and Receiver Systems

- FM
- Infrared
- Electromagnetic induction loop
- Hardwired systems
Components: Coupling Devices

- No hearing aid OR no T-coil
  - headphones
  - earbuds
- Hearing aid with T-coil
  - neckloop
  - silhouette or ear hooks
  - headphones
- Other methods
  - Direct Audio Input
  - FM Boot
Components: Telecoils

- **Hearing Aids: Microphone vs T-coil**
- Not all hearing aids have T-coils
- T-coils are not as sensitive as hearing aids
- Proximity is important
- Found in telephones & speakers
- Susceptible to electromagnetic interference
How to choose the right technology

WHICH SYSTEM IS BEST?
FM

- Uses radio waves
- Transmitter = radio station
- Receiver = radio
- Ex. Crib Monitor
FM Advantages

• Very portable
• Very easy to set up and use
• Offers great flexibility of movement
• Used indoors or outdoors
• Appropriate for mild to profound losses
• Receiver can be covered or put in pocket
• No fluctuation in strength of signal
FM Disadvantages

• Potential for outside interference
• Receivers and transmitters must be on the same channel
• Must be 1 free channel between systems used in close proximity
True or False?

• You can leave the room and still hear the presentation.
  True

• This system can be used indoors or outdoors.
  True

• You must have a receiver to use this system.
  True

• You must have a hearing aid to use this system.
  False

• You can use FM in multiple rooms in a building.
  Only if there is a free channel

• I can use my FM receiver with your FM transmitter.
  Only if they are on the same frequency
Infrared

- Uses infrared light
- Transmitter/emitter panel
  - Like a remote control
  - Signal is 60° cone shape
- Receiver
  - Like receiver on TV
Infrared Advantages

• Compatibility: Home receivers can be used with public transmitters
• No spillover means security
• Can be used in adjacent rooms
• Widest bandwidth and best sound reproduction
• Appropriate for mild to moderate/severe loss
• Not affected by radio transmission
Infrared Disadvantages

- Must have direct line of sight
- Can’t cover the receiver or put in pocket
- Indoor or evening use only
- High intensity or fluorescent lights can cause interference
- Large areas require multiple emitter panels
True or False?

- You can leave the room and still hear the presentation.  
  False
- This system can be used indoors or outdoors.  
  False
- You must have a receiver to use this system.  
  True
- You must have a hearing aid to use this system.  
  False
- You can use infrared in multiple rooms in a building.  
  True
- I can use my IR receiver with your IR transmitter.  
  True
Electromagnetic Induction Loop

- Uses electromagnetic fields of energy, e.g., power lines
- Transmitter - Loop of several wires
- Receiver
  - T-coil in hearing aid
  - Personal or desktop receiver
- Telephone and other devices
- As small as a neckloop or as large as an auditorium
Induction Loop Advantages

- Low equipment costs after installation
- Easy operation
- Lasts forever
- Induction receivers compatible with ALL loop systems
- Unobtrusive with T-coil hearing aid
Induction Loop Disadvantages

- Installation costs may be high
- Installation may not be possible in historic buildings
- Can’t assume everyone will have a T-coil
- Susceptible to electrical interference & spill over
- Must sit around looped area
- May be dead areas within loop
True or False?

• You can leave the room and still hear the presentation.  
  False
• This system can be used indoors or outdoors. 
  True
• You must have a receiver to use this system. 
  True, but could be t-coils
• You must have a hearing aid to use this system. 
  False
• You can use induction loops in multiple rooms in a building. 
  True, only if room between looped areas
• I can use my loop receiver with your loop transmitter. 
  True
Troubleshooting: General

- Batteries charged?
- Deductive reasoning
  - T-coil working?  Try a phone call
  - Try different couplers
- Ultrasonic sensors
- Check with local HLAA group
- Cultivate an expert
- Call the company!
Troubleshooting: FM

• Are receiver & transmitter on the same station (frequency)?
  • Color code or number them
• Sources of interference?
  • Station drift - your system OR someone else’s
  • Police band, construction walkie talkies, pagers
• Must have one free channel difference if 2 different stations are being used in rooms next to each other.
Troubleshooting: Infrared

• Is anything blocking the line of sight?
• Are high intensity fluorescent lights present?
• Is the room bright, or is there direct sunlight?
Troubleshooting: Induction Loop

- Are there sources of electrical interference and spillover nearby?
- Portable systems can be a mobility hazard. Are wires protected?
Keys to Success for the Speaker

- Put mic close to your mouth
- Repeat questions from the audience
- Rephrase instead of repeat
- Don’t stand in front of windows or bright lights
- Face your audience when speaking
Keys to Your Success

• Batteries charged & T-coil working
• Proximity to T-coil
• Proximity to interference
  • just changing seats may help
• Continue to sit within 20 ft. of the speaker if you will use speech reading
• Interact with others about coping techniques - ALDA, HLAA, Beyond-Hearing
Keys to Your Success

- Make sure the volume is down when you first put the coupler on
- Experiment with different couplers, locations, and environments
- Get an environmental mic or hearing aid with mic/t/both position
- Check out equipment ahead of time
- While you are at it, check out the speaker’s too!
Review

• Evaluate the requirements of the setting and the properties of the equipment.
• Buy equipment from companies that will help you troubleshoot.
• Don’t forget the non-electronic communication tips!
It's QUESTION TIME!!
Thank you

You were a great group!
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