


The Speech & Hearing Science Department

LIVING WELL WITH HEARING LOSS

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Outline for Today

- Types of hearing loss
- Understanding the audiogram
- Features of hearing aids
- Obtaining a good fit
- Strategies for Communication
- Cochlear Implants




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Statistics

- Hearing loss is the **third most common** physical condition in America (behind arthritis and heart disease)
- Nearly two-thirds of people age 70 and older have experienced mild to severe hearing loss
 - Yet only 1/5 use hearing aids



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Signs of Hearing Loss

- Require frequent repetition
- Trouble hearing speech when the speaker is at a distance or you can't see speaker's face
- Difficulty understanding speech in noisy situations like crowded meeting rooms and restaurants
- Have your TV or radio turned up to a high volume
- Withdrawing from social situations because of difficulty hearing




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TYPES OF HEARING LOSS



Types of Hearing Loss

- Four main types of hearing loss

- 1) Conductive Hearing Loss**
 - Causes a hearing loss of up to 60-70 decibels
 - Can be temporary or permanent
- 2) Sensorineural Hearing Loss**
 - Usually permanent or not medically treatable
 - Degree of loss can be mild, moderate, severe or profound

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Types of Hearing Loss

- 3) Central Hearing Loss**
 - The hearing loss is usually profound and permanent
- 4) Mixed Hearing loss**
 - combination of 2 or more of the losses we just discussed.

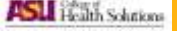




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The Most Common Type of Hearing Loss

- Sensorineural hearing loss due to:
 - Aging (presbycusis)
 - Noise exposure
 - Heredity
 - Health factors
 - Head Trauma




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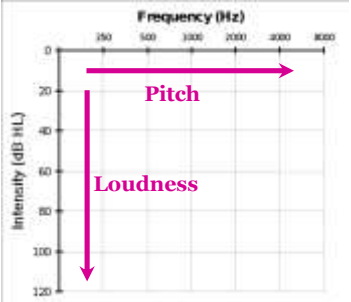


The Audiogram



Understanding Your Hearing Loss



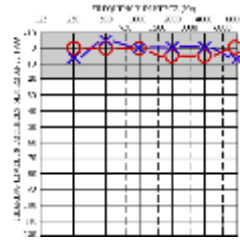
Hearing Test = Audiogram 11



Measures ability to hear sounds of varying pitch and loudness



The Audiogram 12

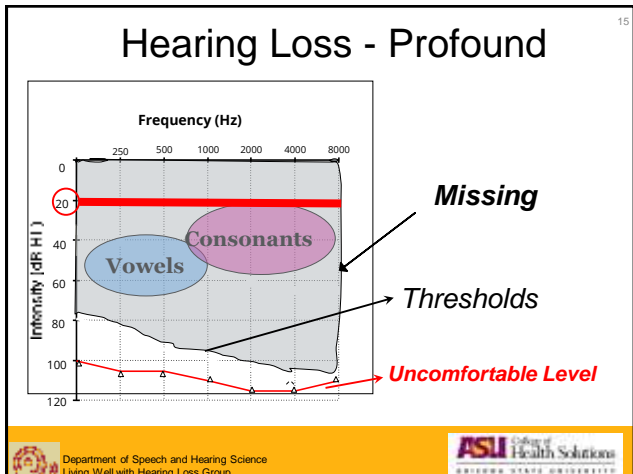
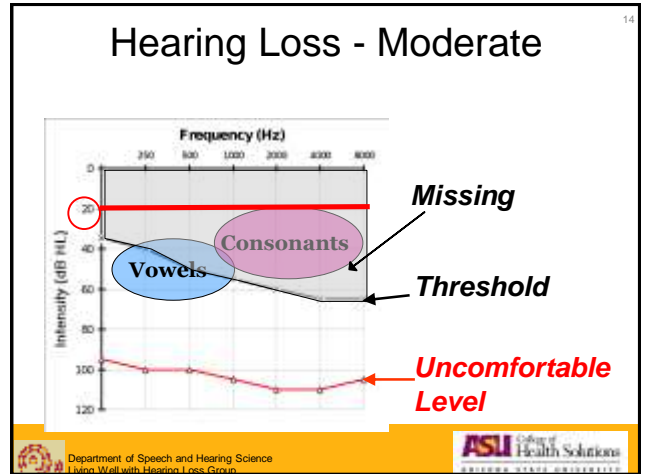
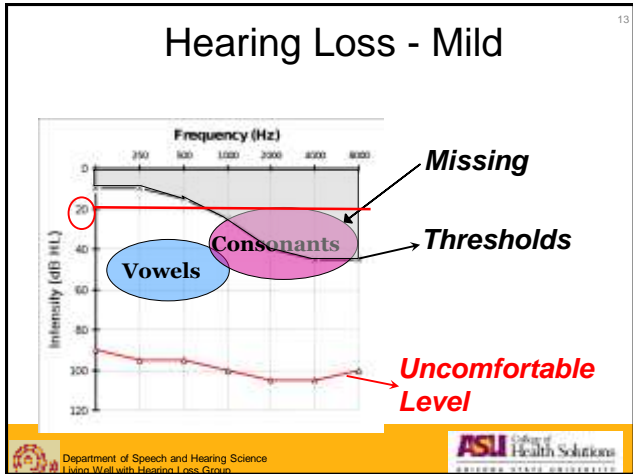


Audiograms record the threshold for each of the frequencies (pitch) tested

Threshold= the softest level in which you hear the sound

O = the right ear
X = the left ear



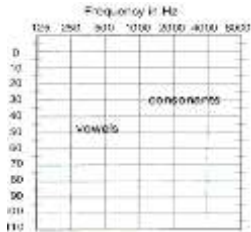
Importance of Consonants and Vowels in Terms of Speech Understanding

THE CAT IN THE HAT

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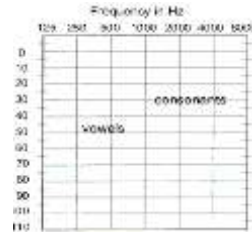
Vowels and Consonants



- Example:
- Look at this sentence with the consonants removed:
- “_ _ e _ a _ _ a _ o _ _ _ e _ a _”

18

Vowels and Consonants



- Example:
- Now with the consonants left in
- “th_ c_ t s_ t _ n th_ m_ t”

19



HEARING AIDS



22

Six (little-known) Facts about Modern Hearing Aids*

- Virtually invisible
 - Discreet and easy to use
- Automatically adjust to different soundscapes (due to a transition from analog to digital processing)
- Many options for design and features

*courtesy of Better Hearing Institute

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23

Six (little-known) Facts about Modern Hearing Aids*

- Water, sweat and dust resistant
- They love smartphones, computers, televisions, MP3
- Even some with rechargeable features

* courtesy of Better Hearing Institute

- <http://www.betterhearing.org/hearing-loss-adults/what-about-hearing-aids>

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24

Styles

BE
(invisible-in-the-canal)

CIC
(completely-in-the-canal)

ITC
(in-the-canal)

ITE
(in-the-ear)

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25

Styles

BIC
(invisible-in-the-canal)

BTE
(behind-the-ear)

Super Power

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26

Hearing Healthcare Providers


- Otolaryngologists (ENT), Otologist, Neuro-otologist
 - Medical degree (M.D. or D.O.)

- Audiologists
 - Clinical doctorate (Au.D), and/or Ph.D

- Hearing Aid Specialists (Dispensers)
 - Educational requirements vary by state
 - Some pass a national competency exam to obtain a BC-HIS



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BREAK

27



Which instrument is best for me?

It is more than about picking a style or size!!!


ASU

29


What to Look for:

Focus on product features and not brands

- Valuable features include:
 - Telecoils and direct auditory input
 - Directional microphones
 - Feedback cancellation
 - Noise reduction
 - Options to use hearing aids with digital cell phones, assistive technology
 - Bluetooth options
 - FM options



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Directional Microphones

- Directional microphones are most sensitive to sounds coming from the front and reduce sound coming from the sides and the rear
- Today's digital hearing aids have automatic features and can change to directional settings on their own
- Or you may have a program to manually change to the directional microphone program (restaurant program)



Remember to position yourself so that the noise is behind you to get the most benefit from the directional microphone



Selecting a hearing aid

- Sophisticated digital signal processing is good *BUT* be leery of lofty promises
 - Avoid buying features that will be of minimal value to you
 - Difference between a high-level vs. mid-range hearing aid can be just a few features
 - But the cost difference can be significant!
- Binaural versus monaural
 - Two aids for two impaired ears



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Steps to Getting Fit Well With a Hearing Aid

32

1. Audiological evaluation from an audiologist
2. Understanding your test results
3. Assessment of your communication needs, preferences, goals and other factors
4. Hearing aid evaluation with speech-in-noise testing



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Verification of Programming

- The use of objective verification measures to ensure a satisfactory and accurate fitting are extremely important!
- Pitfall: hearing professionals who only rely on fitting software to fit a hearing aid may result in less optimal fit
- Research has documented that relying on a manufacturer's 1st fit software choice often results in less accurate fittings



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What testing should be included in a hearing aid fitting?



Verification:

- Use of electroacoustic and real-ear measures

Validation Measures

- Testing after you are fit with the hearing aid/s.



Adjusting to Hearing Aids

- Appropriate expectations
- Giving yourself time to adjust
- Eyes open, ears on
- Teaming with your communication partners
- Partnering with your audiologist



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35



Consumer Guide to Hearing Aids

- http://assets.aarp.org/www.aarp.org/articles/health/docs/hearing_guide.pdf
- This is a non-biased guide from AARP that covers:
 - Signs of Hearing Loss
 - How to select a hearing care provider
 - Styles of hearing aids
 - Paying for hearing aids
 - Warranties
 - Aural rehabilitation e.g. coaching on listening skills, using visual cues, and talking to someone who is Hard of Hearing



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37

Communication Strategies

Reminder:

"We Hear with our Ears, but Listen with our Brain"

- So hearing aids are only one part of the solution to improving speech understanding with hearing loss
- Let's talk about some communication strategies



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38

Communication Strategies

- Using visual cues
 - Face-to-face
- Frequent communication partners using "clear speech"
- Filling in the blanks with top-down skills
 - If you know the topic being discussed this is easier
- Reducing background noise
- Good lighting helps



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39

The Advantage of the Visual Cues

- How many of you rely on watching the person's face as well as listening so you can understand speech better?
- Visual Awareness Exercise
 - Visual only:
 - Auditory only:
 - Auditory-Visual:
- Which was the easiest?



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40

Clear Speech

- Slightly slower speech
- Enunciating each word clearly
 - Instead of "How ya doin?"
 - Use: "How are you doing?"
- Pausing after short phrases
 - Where (pause) would you like (pause) to go for dinner?



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41

What is a Cochlear Implant?



(Source: Dr Bob Shannon – House Ear Institute, Los Angeles)



A Cochlear Implant

2 main parts:

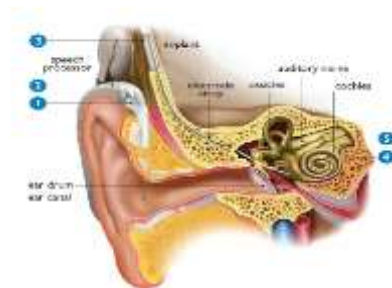
- Internal device
- External device



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How a Cochlear Implant Works



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Adult Candidacy Requirements:

- Moderate to profound sensorineural hearing loss in both ears
- Receive little or no benefit from hearing aids
 - Limited understanding of speech even with hearing aid(s)



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Cochlear Implant Evaluation

- Audiological testing
 - Comprehensive audiological evaluation
 - Aided testing (best aided condition)
 - Aided thresholds and speech recognition in quiet and in noise
- Some clinics will do vestibular testing (balance evaluation)
- Medical evaluation and radiological test:
 - CT-scan and/or MRI
- Optional: speech/language eval, psychological eval

Factors Predictive of Success

- While no one can predict post-implant speech understanding performance, research has identified several factors predictive of success:
 - Appropriate expectations for what implants *cannot* do
 - Amount of auditory stimulation prior to implantation
 - Motivation
 - Integrity of cochlear and neural structures (neural survival)



Call to Action

- Don't let hearing problems go untreated

Teeth checked. Eyes checked.
What about your hearing?



Call to Action

- Consequences associated with untreated hearing loss
 - Reduced social interactions and isolation
 - Hearing loss is associated with higher risk of cognitive decline once it begins to interfere with the ability to communicate (per Frank Lin, M.D. coauthor of study from John Hopkins)

Benefits of Hearing Better

- Rediscover your self-confidence
- Improve personal relationships
- You will perform better in everyday activities
- You will be less likely to miss those important events
- Boost your physical, emotional, and mental health

HearStrong Champions

- <http://www.hearstrong.org/hearstrong-champions.php>



Rachael Lynee Burns
Miss Texas International 2014



Jessica Dunkley
Physiotherapist

Join In

- Remember to communicate face-to-face, use visual cues and clear speech
- Get your hearing checked
- See an Audiologist!