

WWAMI Geriatric Series

An Orientation to Hearing Loss and Hearing Aids



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GOALS

At the end of this presentation, participants will be able to...

- 1) Discuss with patients the importance of having a **hearing screening** or a **hearing test** as part of routine geriatric health maintenance plan.
- 2) Identify and implement in clinic ways to **better communicate** with patients who have hearing loss.
- 3) Identify and list at least three factors that play into **successful hearing aid use**.
- 4) **BONUS** – basic care and handling of hearing aids.

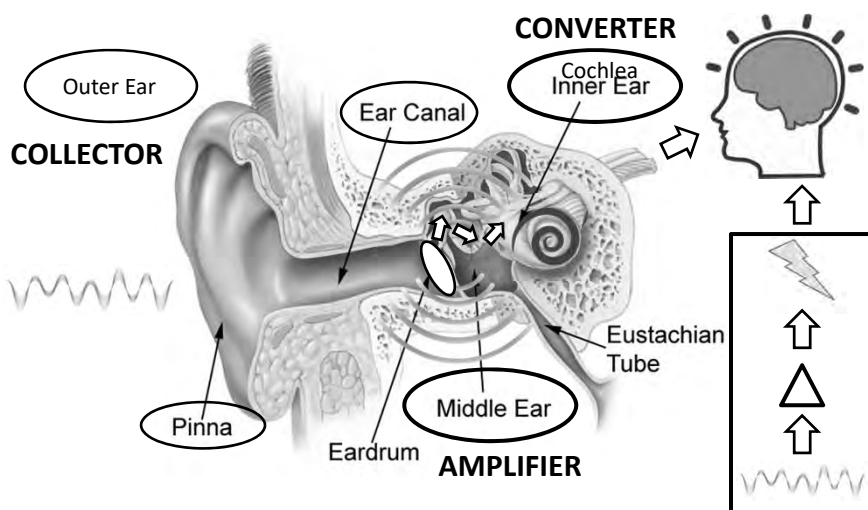


OUTLINE

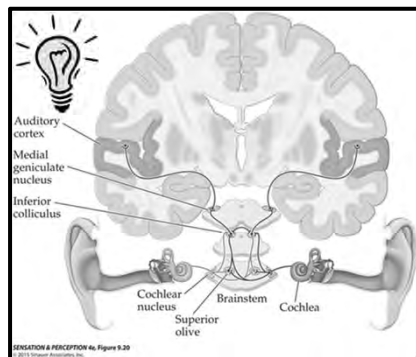


- Review of the ear and hearing test (**audiogram**)
- What does age-related hearing loss (**presbycusis**) look like?
- Effects of hearing loss on the elderly
- Addressing hearing loss in the Primary Care setting – what questions to ask.
- Rehabilitation – an introduction to hearing aids.
- What makes a good hearing aid fitting?
- Generic OTC amplifiers
- Basics in the care and handling of hearing aids.

A review of how the ear works



Hearing is more than just the ear The brain... The rest of the story...



Auditory cortex,
ALERTS the brain to sound



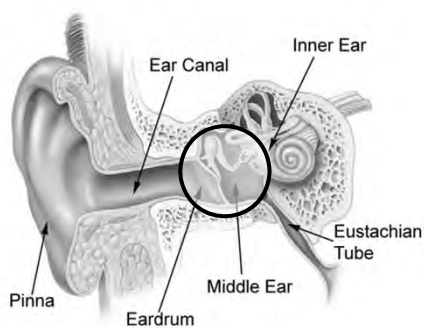
Hippocampus,
IDENTIFIES sound



Amygdala,
REACTION to sound

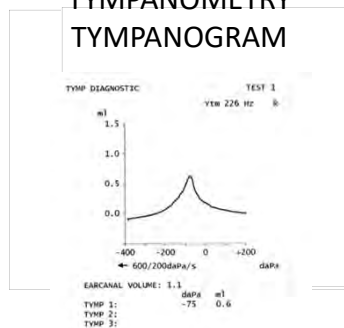


What happens when we test hearing

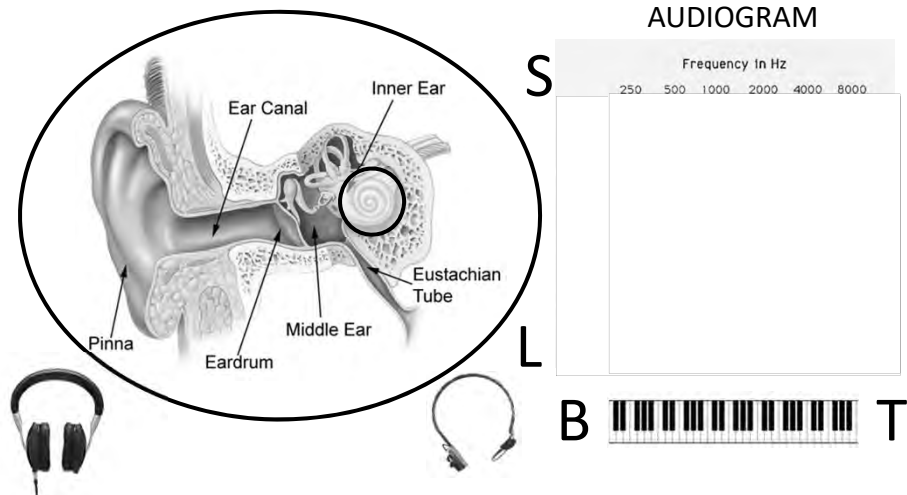


OTOSCOPY

TYMPANOMETRY TYMPANOGRAM

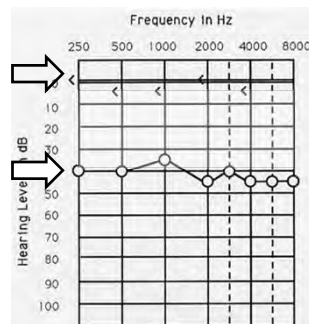


What happens when we test hearing



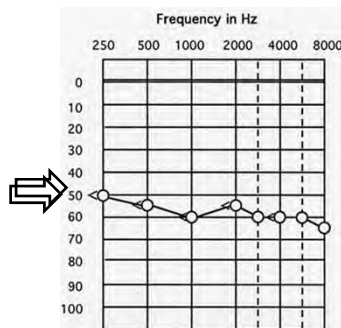
What happens when we test hearing

CONDUCTIVE



ENT FOLLOW-UP

SENSORINEURAL



HEARING AIDS

What happens when we test hearing

Speech testing

- Word Discrimination abilities...
"If I turn the volume up, how well do you hear?"



100 - 90% - **Excellent**
 90 - 75% - **Good**
 75 - 40% - **Fair**
 40 - 25% - **Poor**
 25 - 0% - **Very Poor**



RADIO ANALOGY

What does PRESBYCUSIS look like?

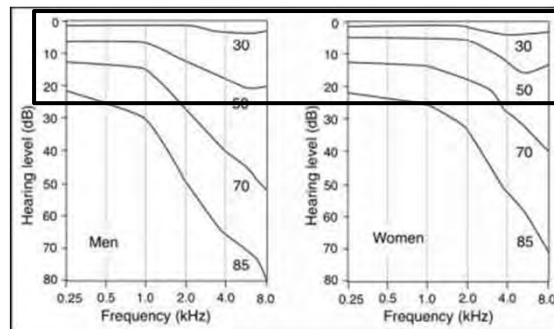
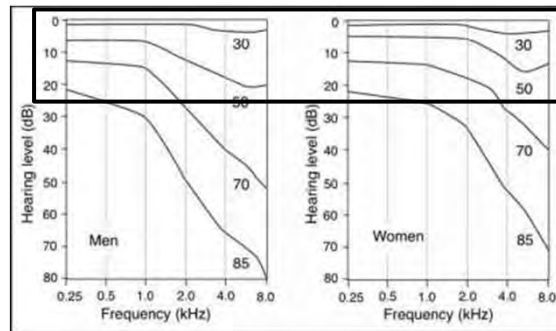


FIGURE 7 Amount of hearing loss in decibels for different pure tones in various age groups of men and women. Note a greater loss in higher frequencies and older ages and a more pronounced hearing loss in men. Source: From Ref. 28, based on the original data of Ref. 124.

<http://www.europeanmedical.info/aging-geriatrics/types-of-presbycusis.html>

What does PRESBYCUSIS look like?



Typically start testing for age-related hearing around age 65.

<http://www.europeanmedical.info/aging-geriatrics/types-of-presbycusis.html>

Tracking PRESBYCUSIS over time

How long to I have...?



The importance of a **BASELINE** audiogram.

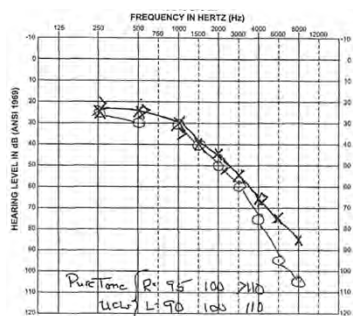
<http://www.europeanmedical.info/aging-geriatrics/types-of-presbycusis.html>

If you have a hearing loss,
it is recommended to have an **annual** hearing test.

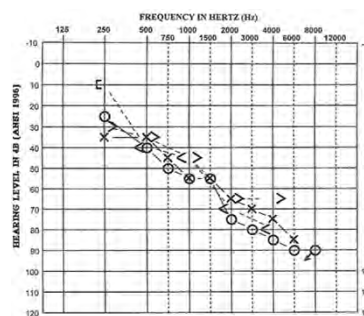


<http://www.europeanmedical.info/aging-geriatrics/types-of-presbycusis.html>

Presbycusis is most often a **gradual progressive** loss.



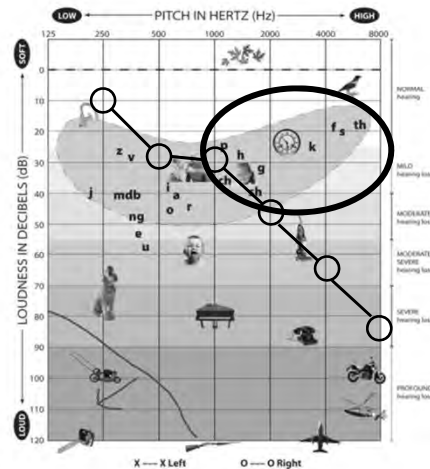
2011, 87 y/o M



2019, 95 y/o M

<http://www.europeanmedical.info/aging-geriatrics/types-of-presbycusis.html>

What does PRESBYCUSIS look like?



More hearing loss in the high pitches = **missing consonants**

Map

Math

Mat

Switch gears...

OBJECTIVE to SUBJECTIVE



<http://www.europeanmedical.info/aging-geriatrics/types-of-presbycusis.html>

How does HEARING LOSS SUBJECTIVELY present in clinic?

- *My hearing is not as good as it used to be*
- *I'm missing or mixing words...*
- *I can hear you, but I can't understand you*
- *I have trouble hearing in groups*
- *If I can't see you, then I can't hear you*
- *I have trouble hearing when there is lots of other noise around (i.e. dining area or background noise).*
- *I have trouble hearing if someone is far away (i.e. across room, in another room, in a lecture or meeting situation)*
- *I'm tired of asking for repeats - I say, "what?" a lot*
- *The TV is up louder than others prefer*

How does HEARING LOSS SUBJECTIVELY present in clinic?



Often it is close family, and sometimes friends, that will notice a hearing problem first

How does HEARING LOSS SUBJECTIVELY present in clinic?

Typically the elderly are more accepting of a hearing loss, as it is associated with aging and of gradual onset.

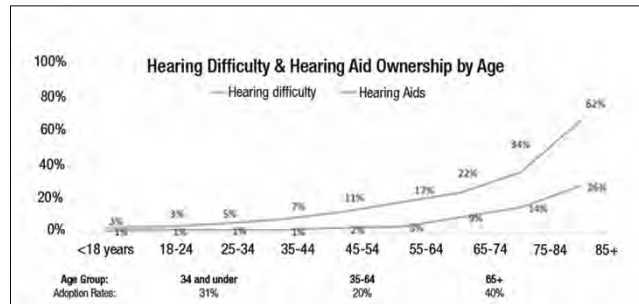
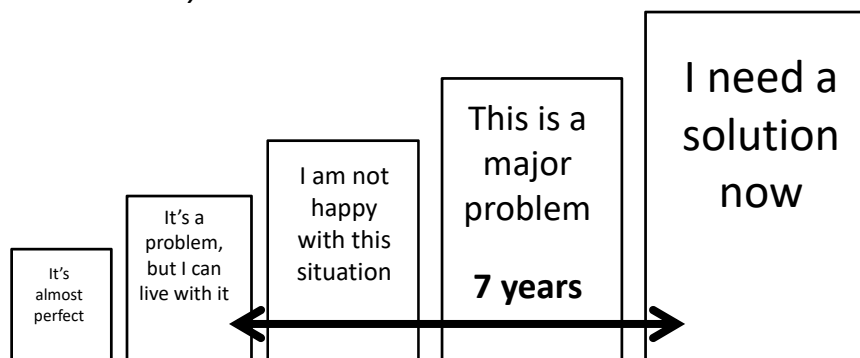


Figure 3. Hearing difficulty (in blue) and hearing aid ownership (in green) as a function of age, with adoption rates for three age groups shown at the bottom of the graph. Hearing aid adoption rate is calculated by dividing the hearing aid ownership percentage by the self-perceived hearing aid difficulty percentage ($n=13,018$).
<http://www.hearingreview.com/2015/05/introduction-markettrak-ix-new-baseline-hearing-aid-market/>

HEARING LOSS is the “SILENT SICKNESS”

- *No immediate indicators that something is wrong*
- *Easily missed or rationalized*



HEARING LOSS is the “SILENT SICKNESS”

*Hearing loss is very socially isolating,
and impacts **ALL** relationships.*



*Untreated hearing loss can have a cascade effect,
impacting mental health (i.e. isolation & depression).*

HEARING LOSS is the “SILENT SICKNESS”



*Rule out a hearing loss contributing to communication difficulties
– **especially important when assessing cognitive function** -
Slowing the rate of speech will help more than raising the voice*

Improved communication

Fast speech is like fine print.



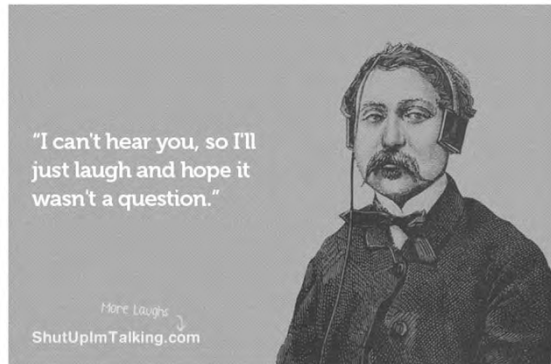
Talking at a slower rate is often more helpful than talking at a louder level.

Improved communication



Face the patient when speaking
(not the computer screen!)

Improved communication



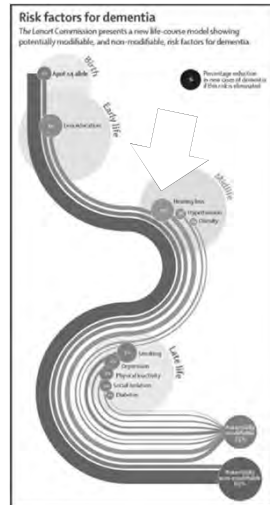
If hearing aids are off, then don't talk.

Improved communication



Provide information in writing

HEARING LOSS and Dementia/ Alzheimer's



If hearing loss is treated in midlife, then **9% reduced risk** in new cases of dementia.

Table 1. Life Course Model of Potentially Modifiable Risk Factors (from Lancet. 2017;pii:S0140-6736(17)31363)

Early Life (<18 years of age)

- Less education

Midlife (45-65)

- Obesity
- Hearing loss
- Hypertension

Later Life (>65 years of age)

- Smoking
- Depression
- Physical inactivity
- Social isolation
- Diabetes

Dementia and Age-Related Hearing Loss – Part II

Weinstein, Barbara E. PhD

The Hearing Journal: November 2017 - Volume 70 - Issue 11 - p 26,28,30

HEARING LOSS and Dementia/ Alzheimer's

“Several studies have recently explored the connection between hearing interventions (e.g., hearing aids, hearing assistance technologies, and cochlear implants). Notably, **available evidence does not support the robust effect of hearing-aid use in protecting against cognitive decline; these devices are not effective at slowing down or reversing cognitive decline** (*J Alzheimers Dis.* 2017;58[1]:123; *J Am Geriatr Soc.* 2015;63[10]:2099).

Further more, in their pilot study on hearing interventions (including rehabilitation, e.g., Williams Sound Pocketalker®, Sound World Solutions® CS-50) for people with dementia, Mamo, et al., demonstrated that **addressing hearing problems in patients with dementia improves communication, which can potentially reduce some of the patient's behavioral symptoms as well as the caregiver's burden** (*Am J Geriatr Psychiatry.* 2017;25[1]:91).”

Dementia and Age-Related Hearing Loss – Part II

Weinstein, Barbara E. PhD

The Hearing Journal: November 2017 - Volume 70 - Issue 11 - p 26,28,30

Addressing hearing loss in clinic



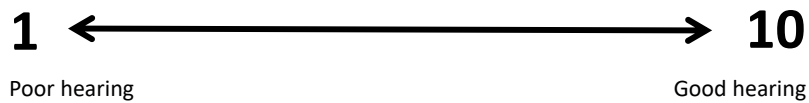
Asking the right questions...



"Do you think you have a hearing loss?"

Gauging self-perception of hearing loss

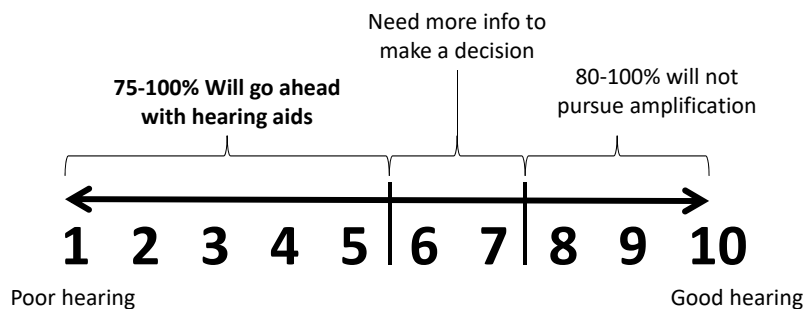
***“On a scale from 1 to 10
how would you rate your overall
hearing abilities?”***



“Self-Perception of Hearing Ability as a Strong Predictor of Hearing Aid Purchase” Palmer, C., Solodar, H., Hurley, W., et al. JAAA 20:341-347 (2009)

Gauging self-perception of hearing loss

SUMMARY



“Self-Perception of Hearing Ability as a Strong Predictor of Hearing Aid Purchase” Palmer, C., Solodar, H., Hurley, W., et al. JAAA 20:341-347 (2009)

Asking the right questions...



"We can't put it off any longer, we must book hearing tests."

The majority of the geriatric population will already have some amount of hearing loss

Gauging self-perception of hearing loss or Impact of Hearing Loss on Lifestyle

Hearing Handicap Inventory – Elderly, Screening Version

HHIE-S ²³		Yes (4) Sometimes (2) No (0)		
E-1.	Does a hearing problem cause you to feel embarrassed when you meet new people?	—	—	—
E-2.	Does a hearing problem cause you to feel frustrated when talking to members of your family?	—	—	—
S-1.	Do you have difficulty hearing when someone speaks in a whisper?	—	—	—
E-3.	Do you feel handicapped by a hearing problem?	—	—	—
S-2.	Does a hearing problem cause you difficulty when visiting friends, relatives, or neighbors?	—	—	—
S-3.	Does a hearing problem cause you to attend religious services less often than you would like?	—	—	—
E-4.	Does a hearing problem cause you to have arguments with family members?	—	—	—
S-4.	Does a hearing problem cause you difficulty when listening to TV or radio?	—	—	—
E-5.	Do you feel that any difficulty with your hearing limits or hampers your personal or social life?	—	—	—
S-5.	Does a hearing problem cause you difficulty when in a restaurant with relatives or friends?	—	—	—

Gauging self-perception of hearing loss

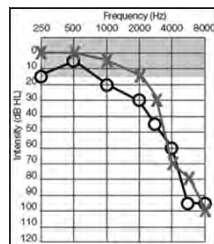
HHIE- S: Hearing Handicap Inventory – Elderly, Screening Version

SCORING & RESULTS

- Yes = 4 pts
- Sometimes = 2 pts
- No = 0 pts
- Total score: 40 pts

Score of 10 and lower =
non-significant impact of hearing loss on lifestyle

There is **no correlation** between the extent of **hearing loss** and the **self perception** of hearing impairment.



≠



There is no magic line on the audiogram that determined hearing aid candidacy.

There is a **strong correlation** between the extent **self perception** of hearing impairment and **readiness** for hearing aids.



IN CLINIC USE OF portable **SCREENING AUDIOMETERS**

- Lightweight and battery operated (~\$1000)
- Can be done by R.N. or M.A. prior to seeing PCP
- CPT = 92551 (screening test, pure tone, air only)



IN CLINIC USE OF portable SCREENING AUDIOMETERS

- *"Raise your hand when you hear the beep"*
- Four main pitches for speech clarity and understanding.
- Three loudness levels

HEARING SCREENING				
	500Hz	1000Hz	2000Hz	4000Hz
SOFT 30dB	✓	✗	✗	✗
MEDIUM 50dB	✓	✓	✗	✗
LOUD 70dB	✓	✓	✓	✗

Switch gears...

HEARING LOSS to HEARING AIDS



<http://www.europeanmedical.info/aging-geriatrics/types-of-presbycusis.html>



Asking *"How do you feel about wearing hearing aids?"*
can be more telling than,
"Do you think you have a hearing loss?"



"The vast majority of consumers think of hearing aids as medical devices, and many consider a positive recommendation from their physician to be a key motivator."

Of all the experiences that would motivate a hearing aid purchase sooner – the third most common is, ***"A positive recommendation from my doctor"***

MarkeTrack IX Research
<http://www.hearingreview.com/2015/05/introduction-marke-track-ix-new-baseline-hearing-aid-market/>

Candidacy

"Do I need a hearing aid?"

If leaning toward hearing aids....

- All hearing aids sold in WA have a 30 day trial period
- "You don't know unless you try"
- "You're worried enough that you came in today..."
- Better to start sooner rather than later...



Candidacy

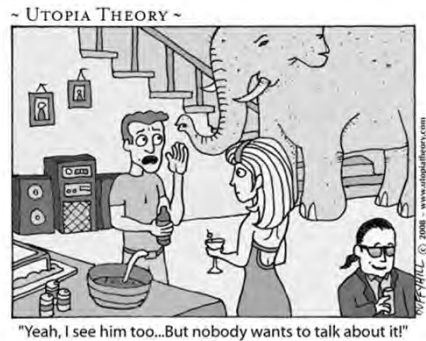
"Do I need a hearing aid?"

If not keen on hearing aids....



- Watch for denial
- Discuss "red flags" to watch for
 - i.e. *avoidance behaviors*
 - Feeling isolated*
- Agree to meet back in at least a year to recheck hearing.
- "Hearing aids are in your future - start saving now..."
- One of the biggest barriers to getting HA is cost

The Driving Factor of COST



Most insurances pay **little if anything** towards hearing aids, although an annual hearing test is usually always covered.

The cost of a hearing aid is connected to the **TECHNOLOGY** on board, and NOT the style.



Generic Amplifier: The **Pocket Talker Ultra**



Good for those that need amplification but cannot obtain funding.
(\$140 on Amazon.com)

Adult Hearing Aid Funding Sources....

- DVR - Division of Vocational Rehabilitation (HA needed for work/school + low income)
- L&I – Labor and Industry (damaged hearing from work)
- WSAF – Washington State Access Fund (loans ... if need a payment plan...)

⇩ **These hearing aids are not fit at Harborview** ⇩

- Northwest Lion's Club – basic new HA from Starkey (must have more than a mild HL)
- HAAP – UW SPHC Hearing Aid Assistance Program. Refurbished. Medicaid/AppleHealth
- Epic/ Audient program – third party. Payment plans available – new basic BTEs
- Starkey Hear Now program – new basic BTE hearing aids (at HSDC)
- Hearing Speech and Deafness Center – charity sources of funding not at HMC

Generic OTC ear-level Amplifiers:



Strongly recommend against:

- Poor physical fit
- Poor battery life
- No discrimination in amplification
- No noise management technology

Save your money!!

Appointment flow for hearing aid fitting

- Hearing Test — must be within 6 mo.
- Hearing Aid Evaluation — pick out instruments
- Hearing Aid Fitting — 2 weeks later
- F/U to Hearing Aid Fitting — 3 weeks later
- Annual Review



Even if you have hearing aids, you can still have significant hearing problems

ASK: *When did you last have your hearing aids adjusted?*

Fact: Most hearing aid problems can be successfully addressed by an audiologist.

Two essential factors for a good hearing aid experience:



PHYSICAL FIT



ACOUSTICAL FIT



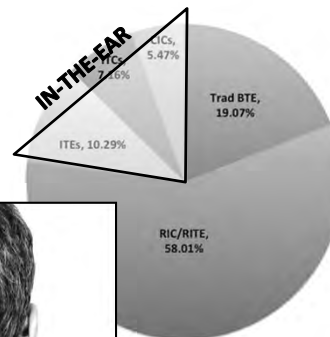
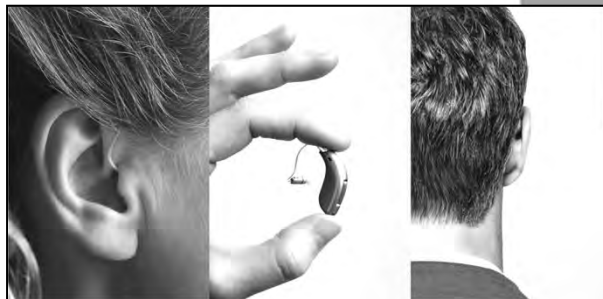
PHYSICAL FIT

- Inserted correctly
- Retention
- Comfort
- Patient's ability to manipulate the controls



- Dexterity
- Vision / eye sight
- Shape or size of pinna and canal
- Cerumen, drainage, or otitis externa
- Memory or cognitive issues

HEARING AID STYLE

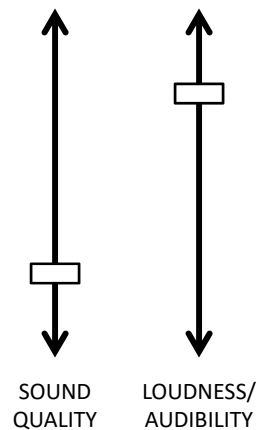


<http://www.hearingreview.com/2015/01/hearing-aid-sales-increase-4-8-2014-rics-continue-market-domination/>



ACOUSTICAL FIT

- Loudness & audibility
- Sound quality
- Noise management
- Maximum loudness



BASIC CARE AND MAINTENANCE



BONUS

The “big six”... hearing aid manufacturers....

PHONAK
life is on

signia
Life sounds brilliant.



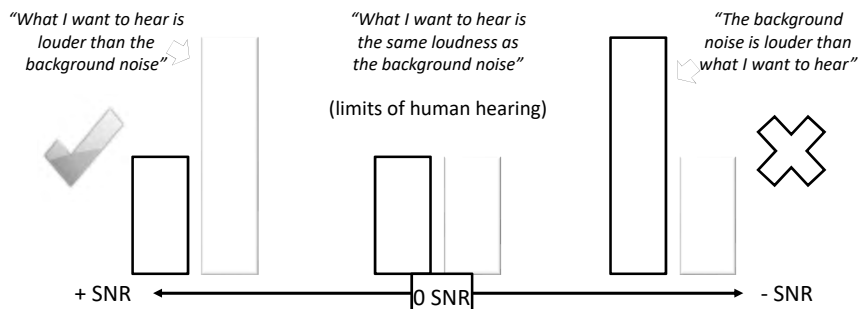
WIDEX
HIGH DEFINITION HEARING

oticon
PEOPLE FIRST

ReSound
rediscover hearing

DISCLAIMER: There is no such thing as “noise reduction”

- Most fittings are not creating a 100% acoustic seal in the ear
- More like “**not amplifying**” then “**reducing noise**”
- Yes, trying to improve the signal-to-noise ratio (SNR)



Identify R & L + Insertion & Removal:

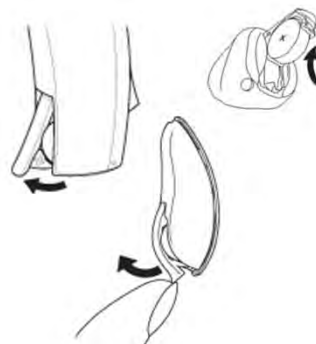
"Think 'R' and 'R' – red for right..."

"They're like shoes – they only fit on one way..."



Red for Right and Blue for Left – marked at the end, back, and/or battery drawer.

On/Off: Open up the battery drawer to turn the hearing aid off.



"The hearing aids are like a flashlight: when you're not using it, turn it off to save the battery."

Batteries: Getting the right size...

Notify patient of both the
NUMBER and the COLOR



- The brand does not matter, as long as you have the right size.
- The cheapest batteries are either Amazon.com or at Costco (25 cents each)

Wax Guards: – will only look at most common kind

“bucket” wax guard
(**“double wax guard”** for domed HA)



“There is a wax guard on the end of the hearing aid. It is like a plastic bucket with a sieve on the bottom. It’s job is to catch wax, and stop it from getting into the hearing aid.

Just like a filter, when it fills up, it will need to be changed. If the wax guard is blocked you will not hear any sound from the hearing aid.”



Wax Guards: Generic “stick” guards




Everyone else = black
Usually interchangeable across manufacturers







Starkey = orange!




Wax Guards:



Different names for different sizes:

- No Wax (discontinued) – blue
- Pro Wax (grey)
- Pro Wax miniFit (black)



3 step process for TROUBLESHOOTING any hearing aid

- 1) Try a new battery
- 2) Make sure the hearing aid is not blocked with wax
- 3) Contact your hearing aid provider



MiFi tech: PAIRING WITH iPhone

SETTINGS

General Settings

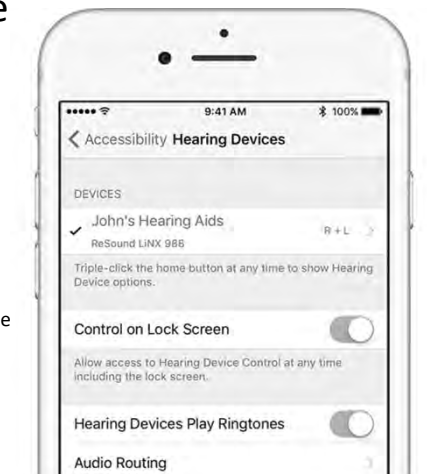
Accessibility

Hearing Aids

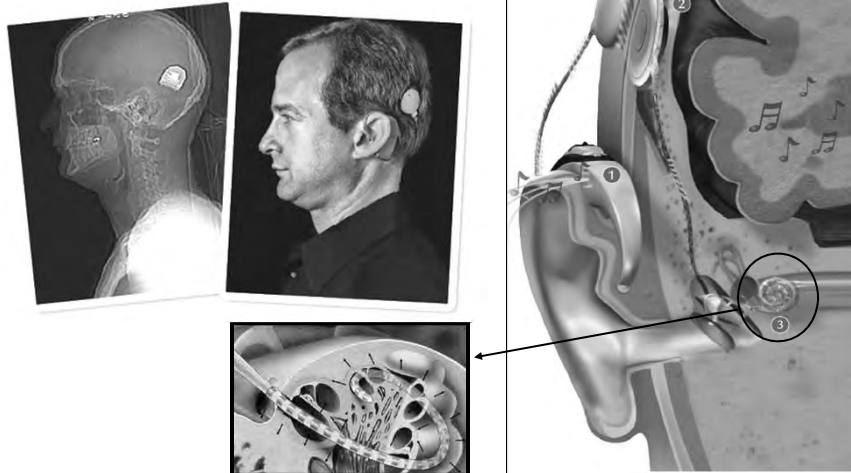
Note: some HA have to flip off/on for phone

(select devices)

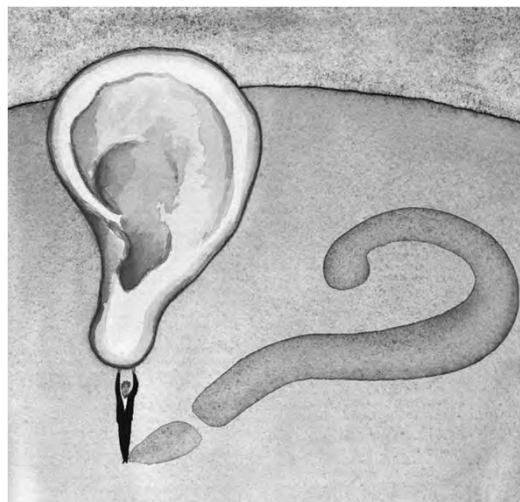
(press "Pair" for each device)



Cochlear Implant



Questions?



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