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Understanding Hearing Loss: What's new -- and what we all should know

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Today's workshop

- Aging and hearing loss: social and interpersonal aspects
- Hearing aids: better than ever (?)
- New and emerging technologies
- Beyond devices: communication strategies
- Will using hearing aids help prevent/forestall cognitive decline?



Prevalence of Hearing Loss

- Prevalence data vary by study and by age range, but **hearing loss is more prevalent than *any* other health condition**



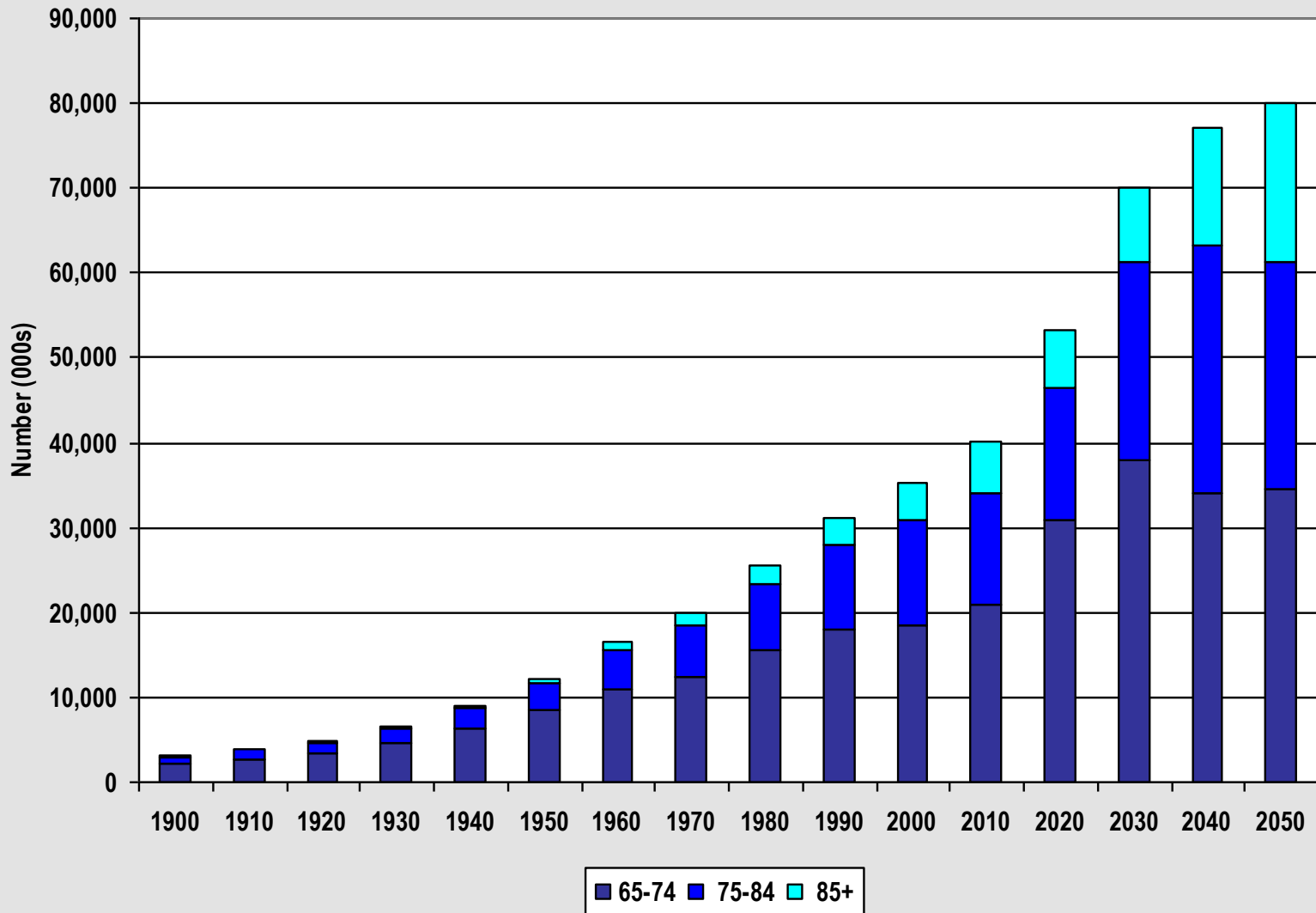
Hearing loss: a bigger problem than you might think

- Associated with falls, cognitive decline, social isolation



Older Population by Age: 1900-2050

Source: U.S. Bureau of the Census



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Other Quick Facts

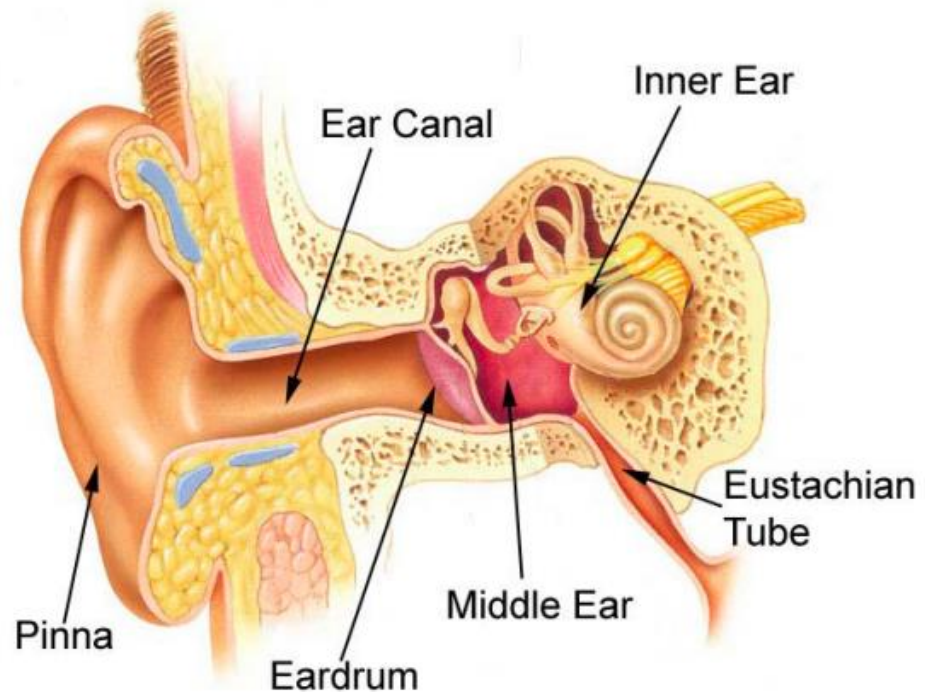
- **37.5 million American adults** have some difficulty hearing
- **Age** is strongest predictor of hearing loss among adults 20-69, with greatest amount of hearing loss in 60-69 yo group
- **Men** are almost twice as likely as women to have hearing loss in 20-69 yo group
- **25 million people** have tinnitus (head noise)
- **50% of adults over 75 years** have hearing loss

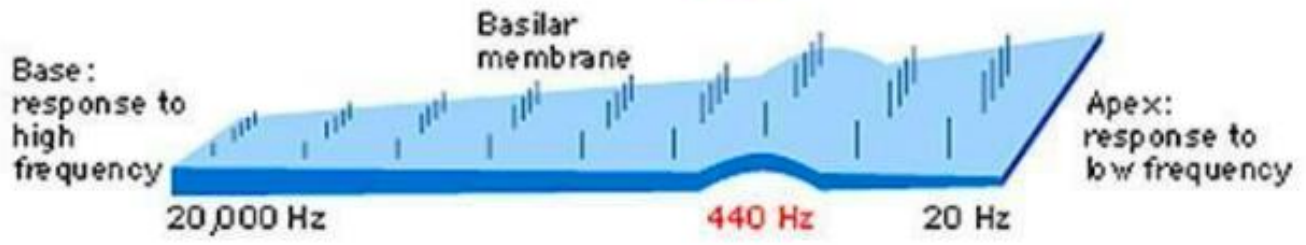
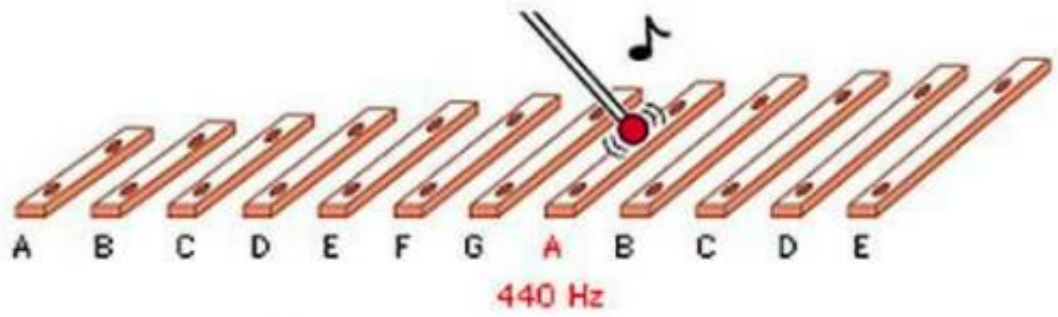
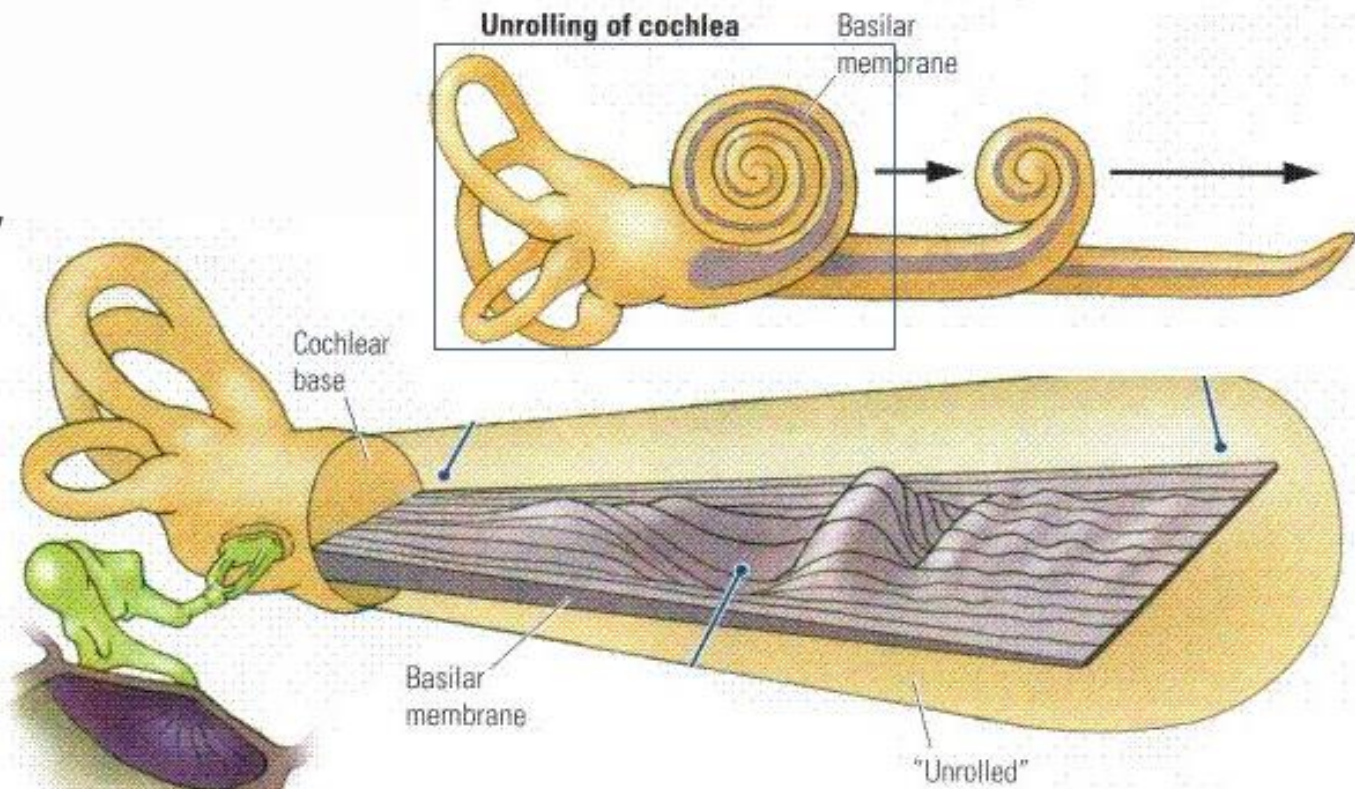
Source: NIDCD



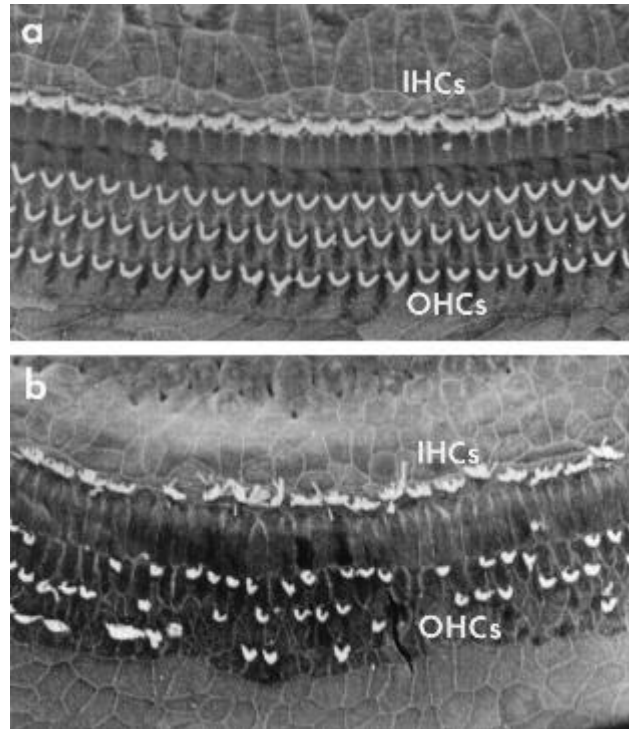
Hearing and hearing loss

- Auditory pathway
- Hearing loss

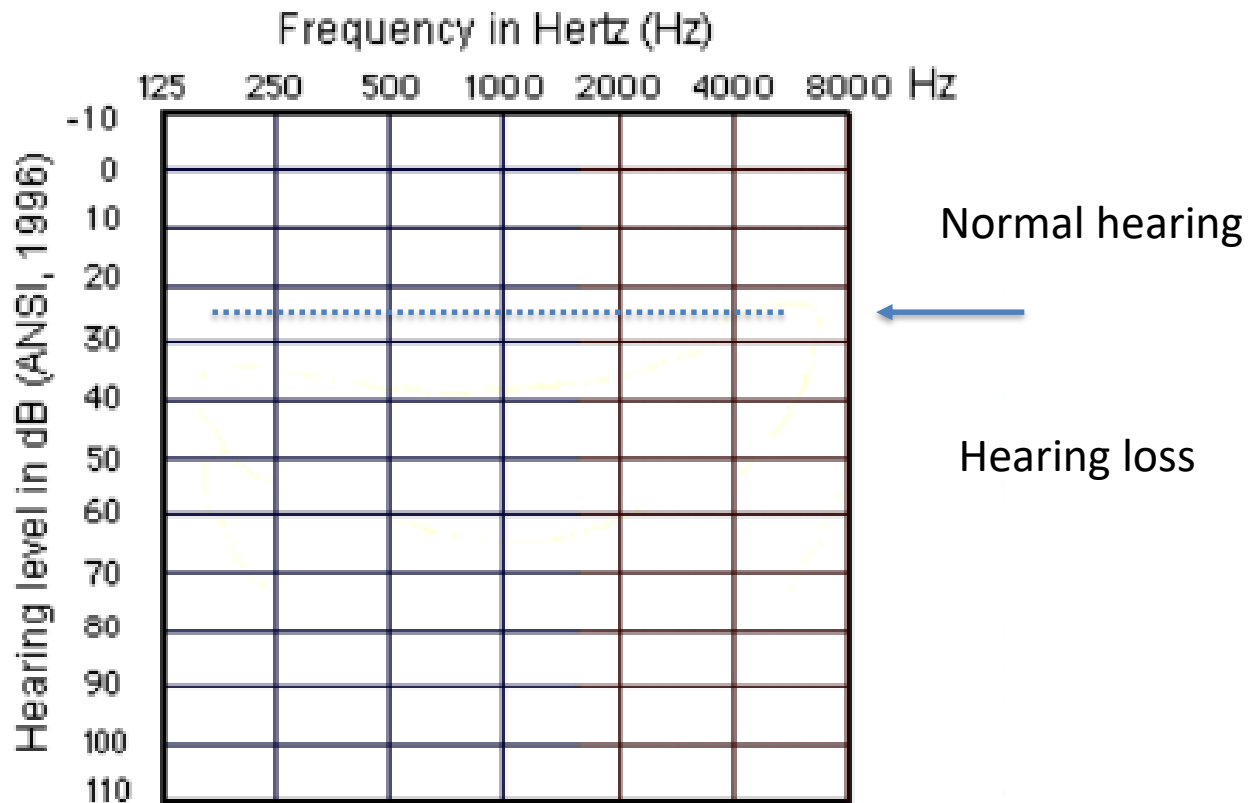


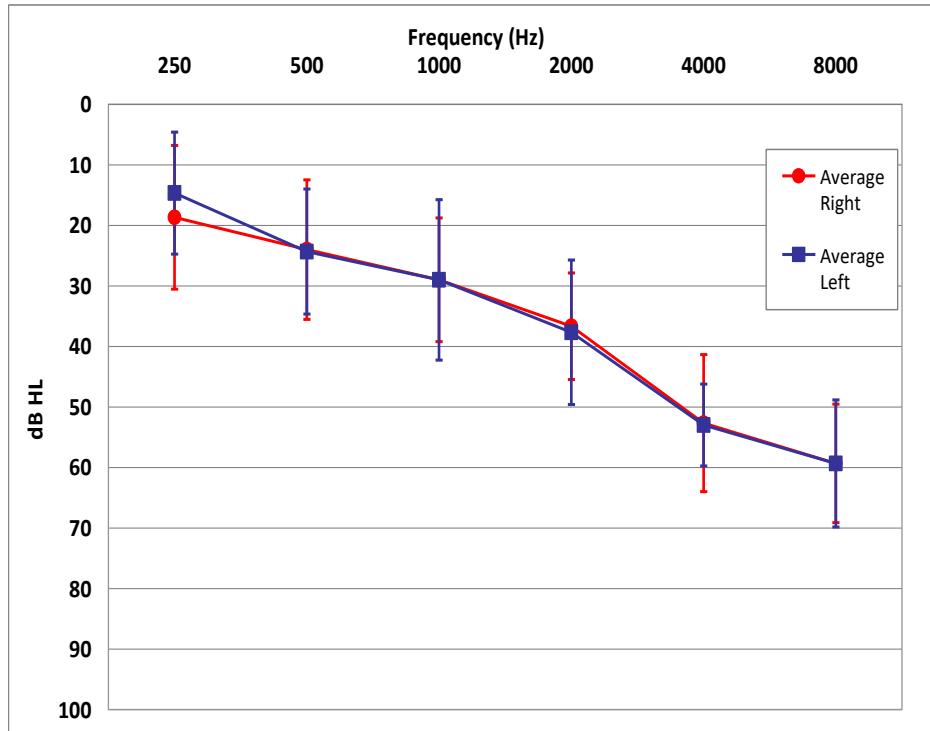


Sensorineural hearing loss – damaged hair cells



The audiogram

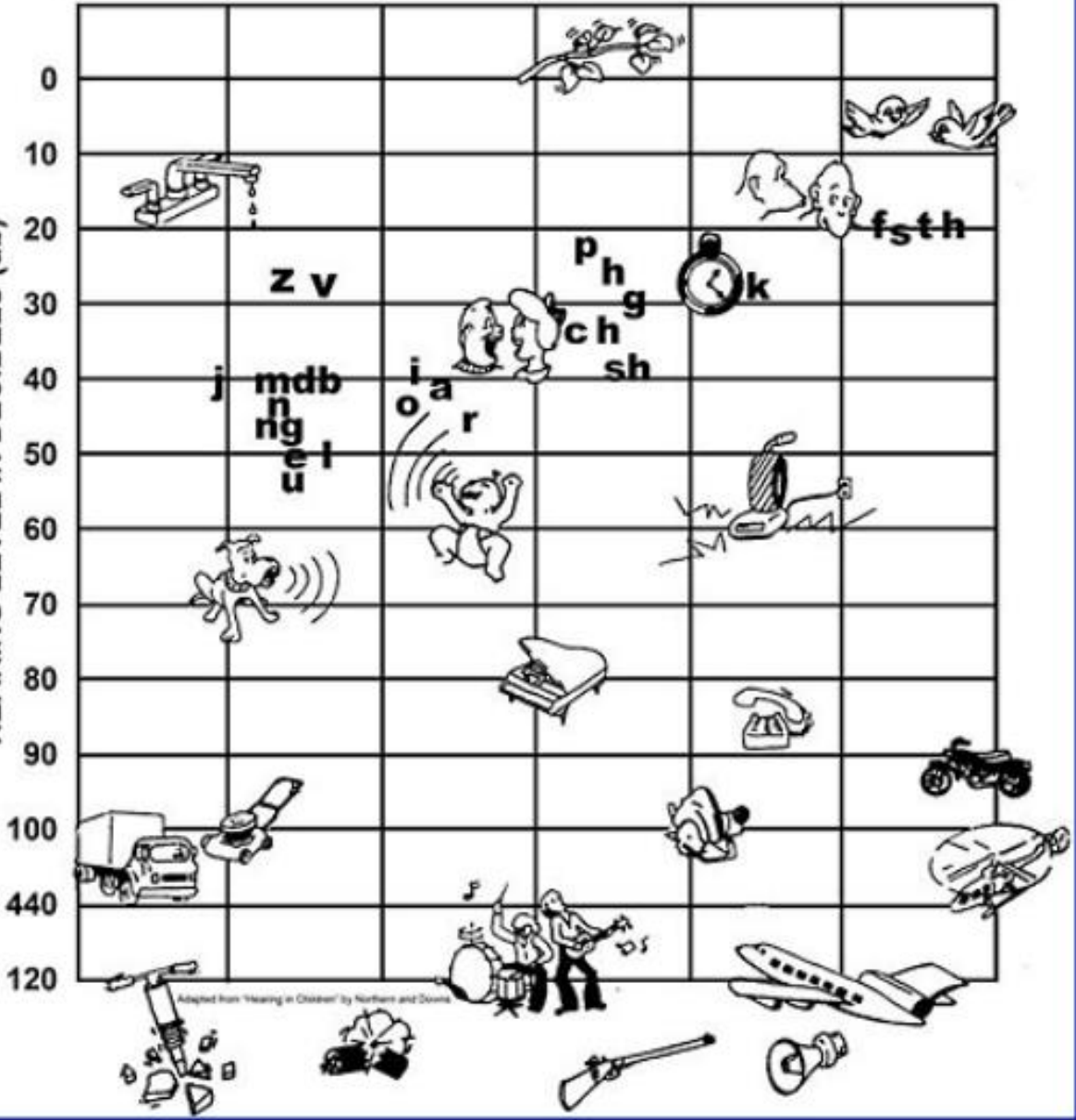




FREQUENCY IN CYCLES PER SECOND (HZ)

125 250 500 1000 2000 4000 8000

HEARING LEVEL IN DECIBELS (db)



Adapted from "Hearing in Children" by Northern and Downs

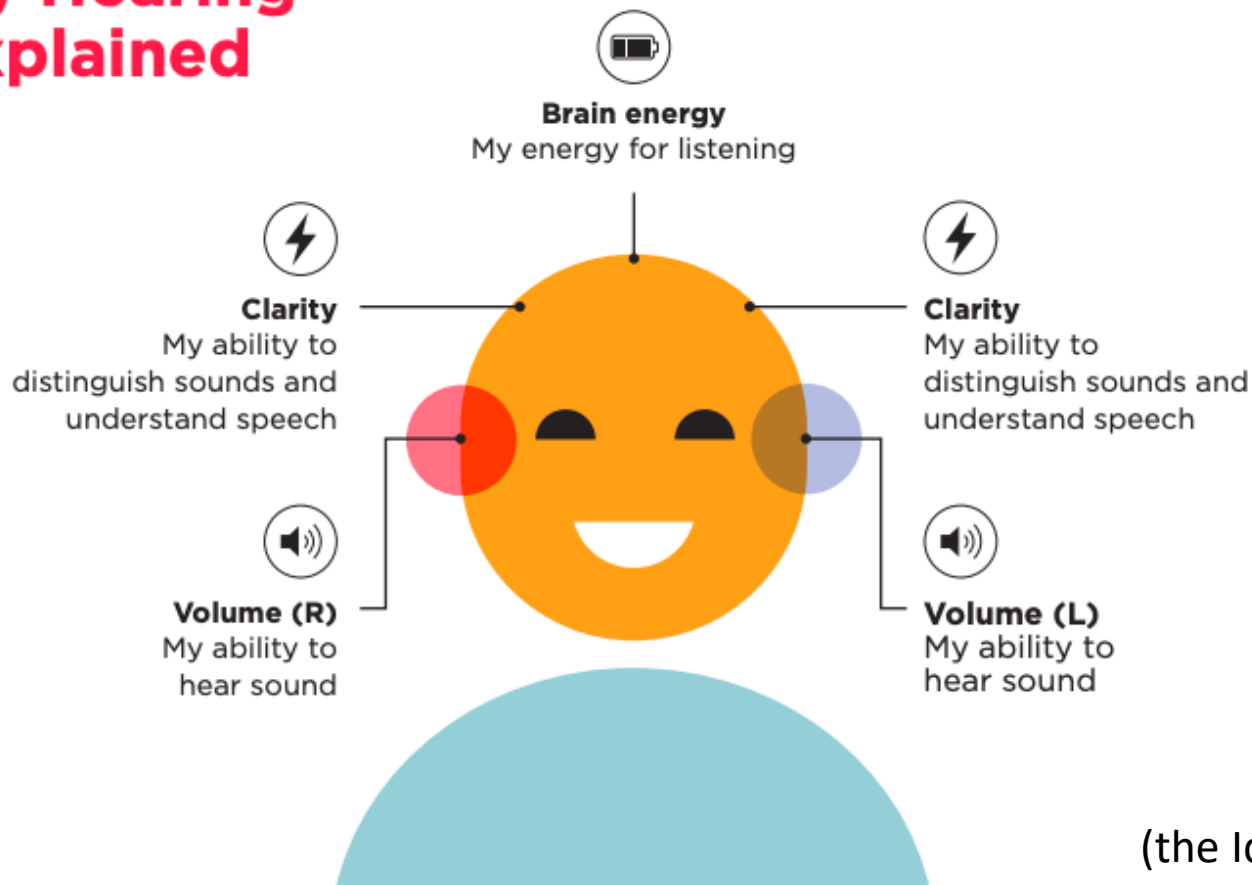
What else should you know?



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There is more to hearing than detection of sound

My Hearing Explained



(the Ida Institute)



Treatment for hearing loss

- Hearing aids
 - Historical problems
 - Current devices



New technology

- Bluetooth
- Phone apps
- Health trackers
- Rechargeability



Bluetooth

- Several manufacturers carry ITE and BTE models with Bluetooth connectivity.
- In most cases, Bluetooth connection is wireless
- However, small ITE devices and rechargeable BTEs require the use of a streamer (worn around neck or placed in a pocket)



Some HA models with bluetooth connectivity

- Oticon Opn IIC
- ReSound LiNX
- Signia Insio
- Starkey Halo



Smartphone connectivity

- Adjust settings
- Change programs
- *myCall-to-text* app from Phonak
- More control!



Smaller, sleeker designs

- ITE
- CIC
- IIC
- Factors: size of ear canal, degree of hearing loss
- BTEs becoming sleeker



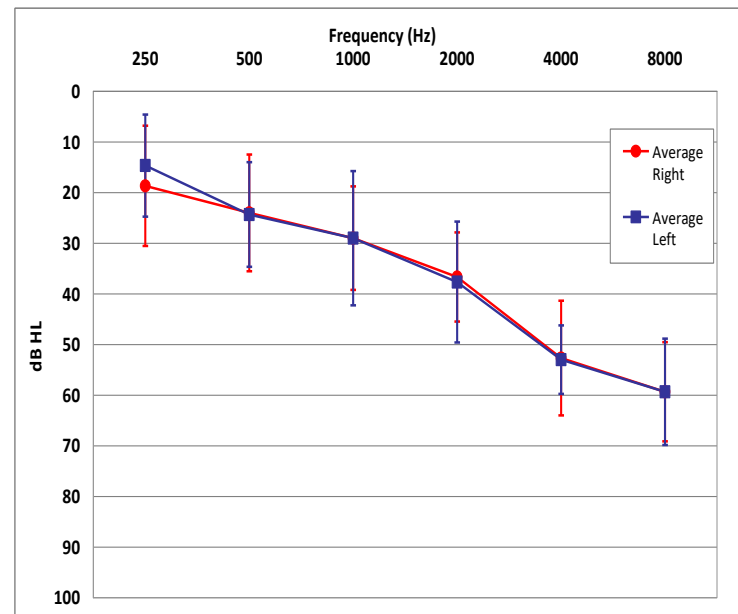
Other functionality

- *Livio AI* from Starkey
 - On-Board *Sensors*: track brain and body activity, including fall detection
 - *Translation*: The smartphone app can translate speech from different languages, then send the translation to the hearing aids
 - Customizable *sound settings*



How are hearing aids selected and adjusted for an individual?

- Prescriptive targets, based on audiogram
- May provide different programs for different listening environments
- *Assumes audiologist knows best!*



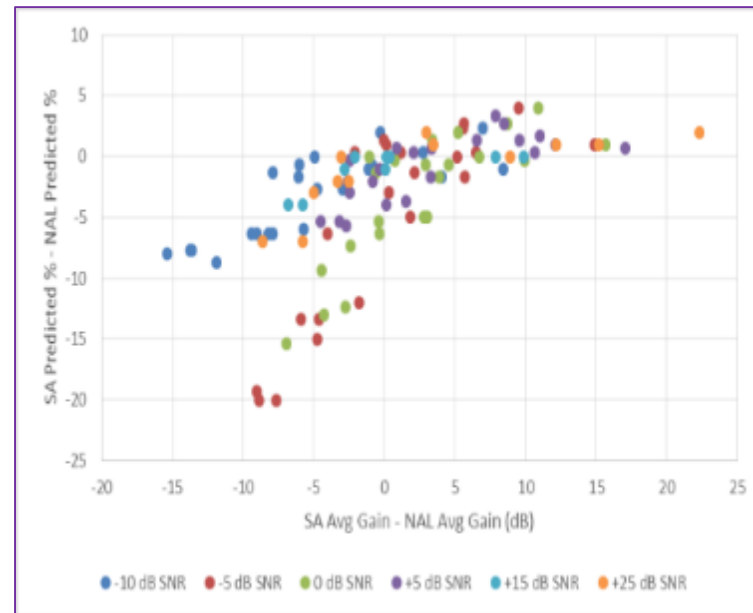
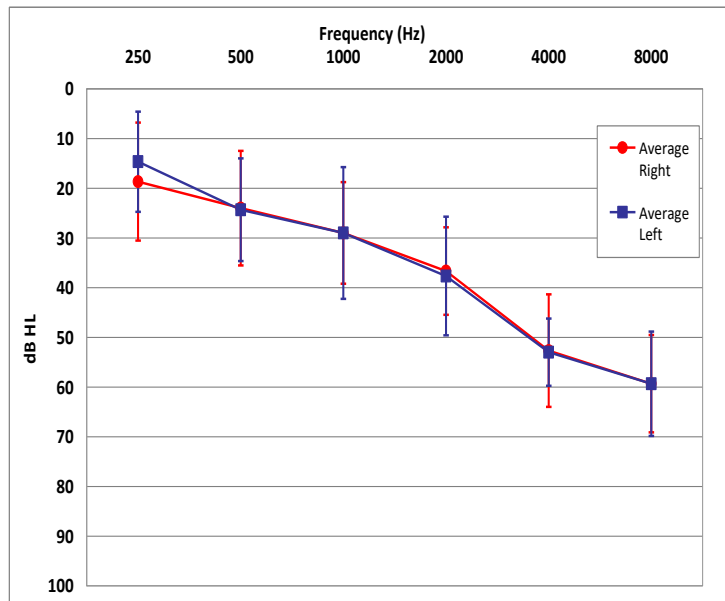
What else should you know?

- Technology itself is not enough
- Communication tips, strategies
- **Sense of agency**, self-efficacy correlates with successful hearing aid use
- **Supportive communication partners** also correlate with successful hearing aid use



Sense of agency: What if we give control back to the hearing aid user?

- Ongoing research in CATSS, comparing audiologist's fit versus self-fit



Another locus of control: *Communication strategies*

(from ACHIEVE Toolkit for Self-Management)

Communication behaviors/tips/strategies to optimize conversational success...

- Face the person you are talking to
- Don't bluff if you didn't understand something
- Be specific about what you don't understand



When in noise...be proactive!

- Move closer to person you want to hear
- Move conversation somewhere further from noise source



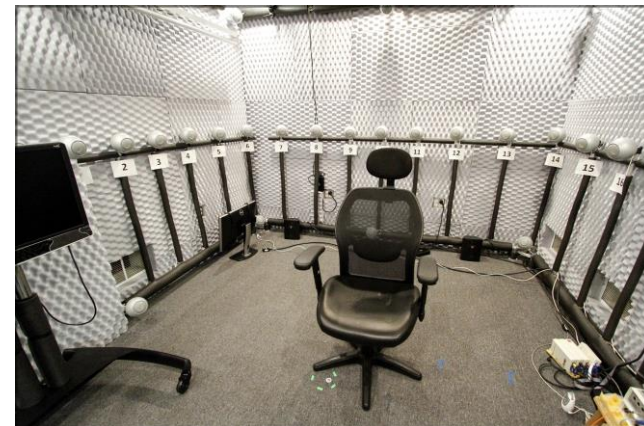
Role of communication partner

- Sensory impairment →
difficulty in interpersonal interactions →
reluctance to engage in subsequent
interactions →
social isolation
- *Primary communication partner may be
key*



Another study...

- Multiple pairs (clients plus partners) complete hearing-related questionnaires and virtual social scenario testing.



Early results

- In most cases, the partners ***overestimated*** the client's perceived understanding and ***underestimated*** the client's self-reported effort.



Upshot



- Results may help refine methods of directly measuring social engagement, to test whether emerging technologies have a beneficial effect on social isolation caused by hearing loss.



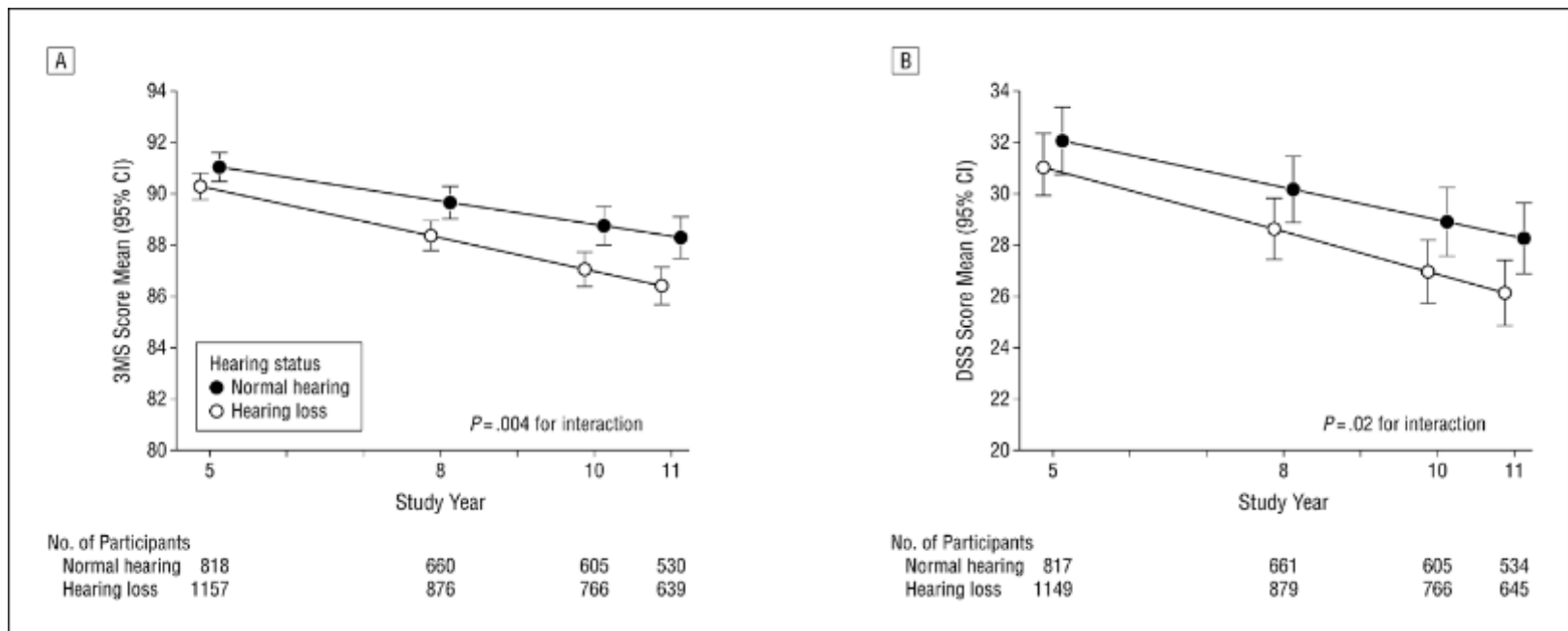
What about OTC hearing aids?

- New class of hearing aids
- The FDA is still weighing in; it should be soon
- The sticker shock will be better
- The need for personal investment will be high
- The role of audiologists will change but will be important. Hearing health care is a partnership.

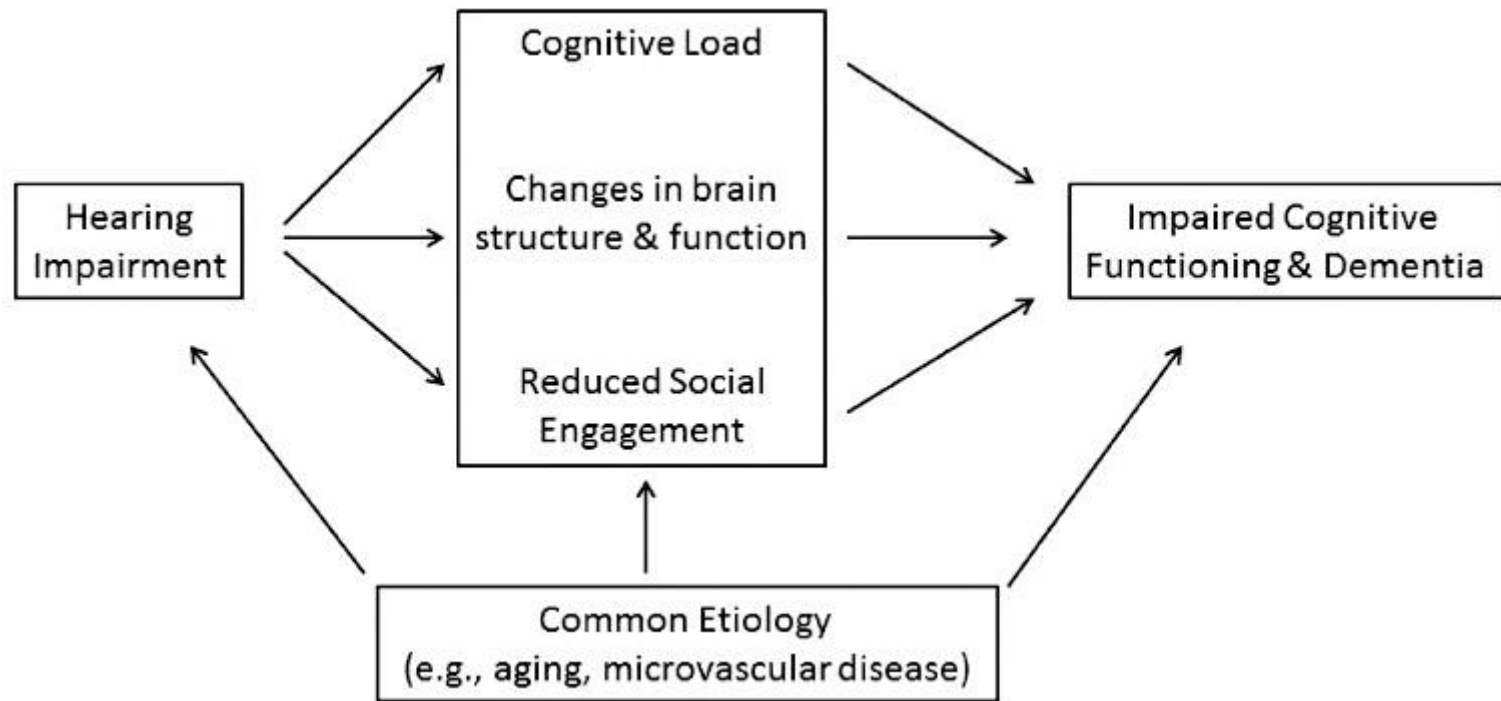


Evidence for link between hearing loss and cognitive decline

Lin et al 2013 JAMA Internal Medicine



Dr. Frank Lin: hearing loss and dementia (2014)



Will hearing aids help prevent cognitive decline?

- *Aging and Cognitive Health Evaluation in Elders: ACHIEVE*
- First study of its kind to examine the effect of treatment of hearing loss on cognitive health in older adults
- Study is under the direction of Frank Lin, MD, PHD and Josef Coresh, MD, PHD, both of Johns Hopkins
- Multi-center study



ACHIEVE

- Primary Objective:
 - To determine the effect of hearing rehabilitative intervention versus a “successful aging” control intervention on rates of global cognitive decline and other functioning over 3 years in 70-84 year-old, cognitively normal adults with hearing loss
- Randomized, controlled trial. Participants randomly assigned to one of two groups and followed for 3 years
- Study Sites: Baltimore, MD; Jackson, MS; Forsyth County, NC, Minneapolis Suburbs, MN



- Following intervention, testing at 6 month intervals over 3 years
- Measures such as memory, executive function, language, communicative function, social relationships, loneliness, health-related QoL
- Also falls, hospitalizations, adjudicated dementia



Status

- Currently have followed our first participants through 2 years, and finished enrolling two months ago
- No findings to report yet!



Questions?



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