From EAR to Eternity:

Hearing Loss & Tinnitus in the Geriatric Patient Population

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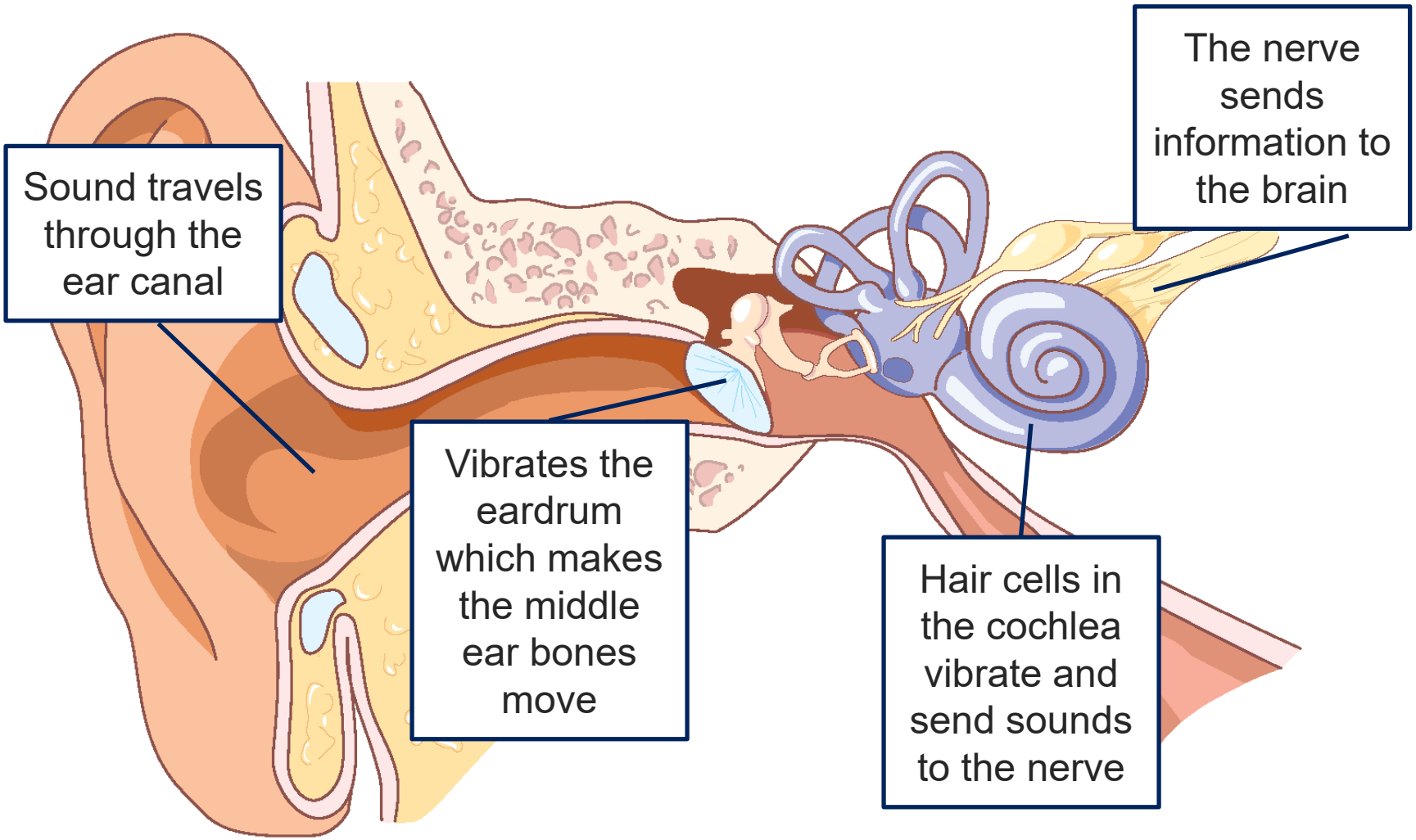
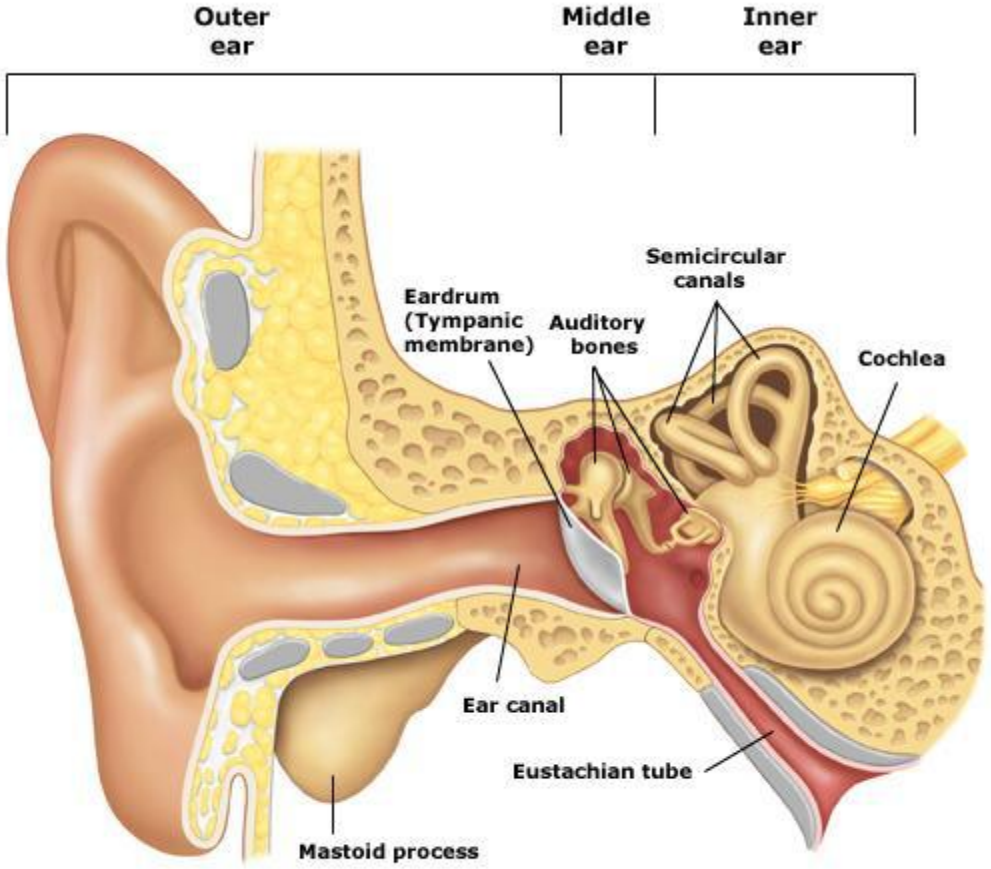
Overview

- Types of hearing loss
- Hearing loss technologies
  - Hearing aids, cochlear implants, ALDs
- Communicating with patients who have hearing loss
- Tinnitus
- Local resources

How Does the Ear Work?



Outer, Middle and Inner Ear



3 kinds of hearing loss: Conductive, Sensorineural, & Mixed

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http://www.science.education.nih.gov/supplements/nih3/Hearing/guide/info-hearing.htm

Hearing Loss

18% of American adults 45-64 years old

30% of adults 65-74 years old

47% of adults 75 years old or older

(National Institute on Deafness and Other Communication Disorders, 2014. http://www.nidcd.nih.gov/health/statistics/Pages/quick.aspx)

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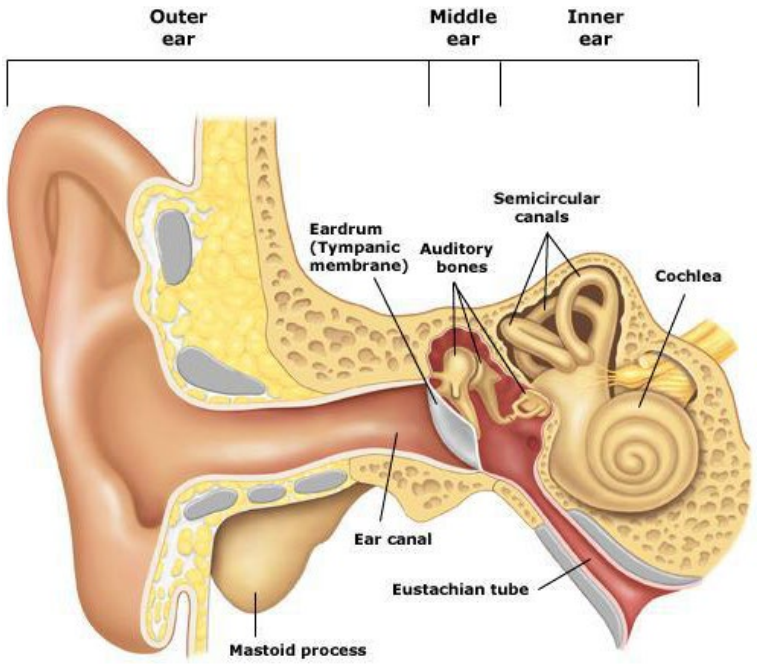
Conductive Hearing Loss

- Occurs from problems with outer or middle ear

- A few potential causes:
  - Cerumen
  - Tympanic membrane perforation
  - Otitis media
  - Otosclerosis
- Can often be treated with medication or surgery



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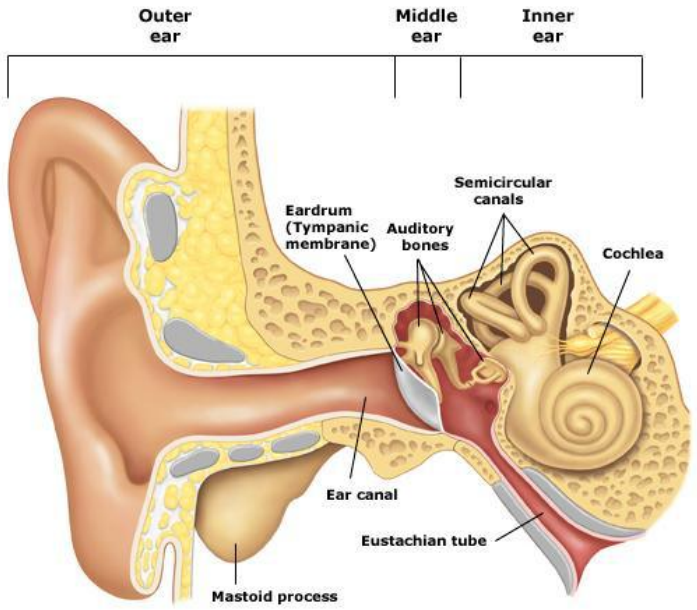
Sensorineural Hearing Loss

- Problems with the inner ear (cochlea) or hearing nerve

- A few potential causes:
  - Noise exposure
  - Some medications
  - Genetics
  - Aging (presbycusis)

- Can often be helped by hearing aids or cochlear implants



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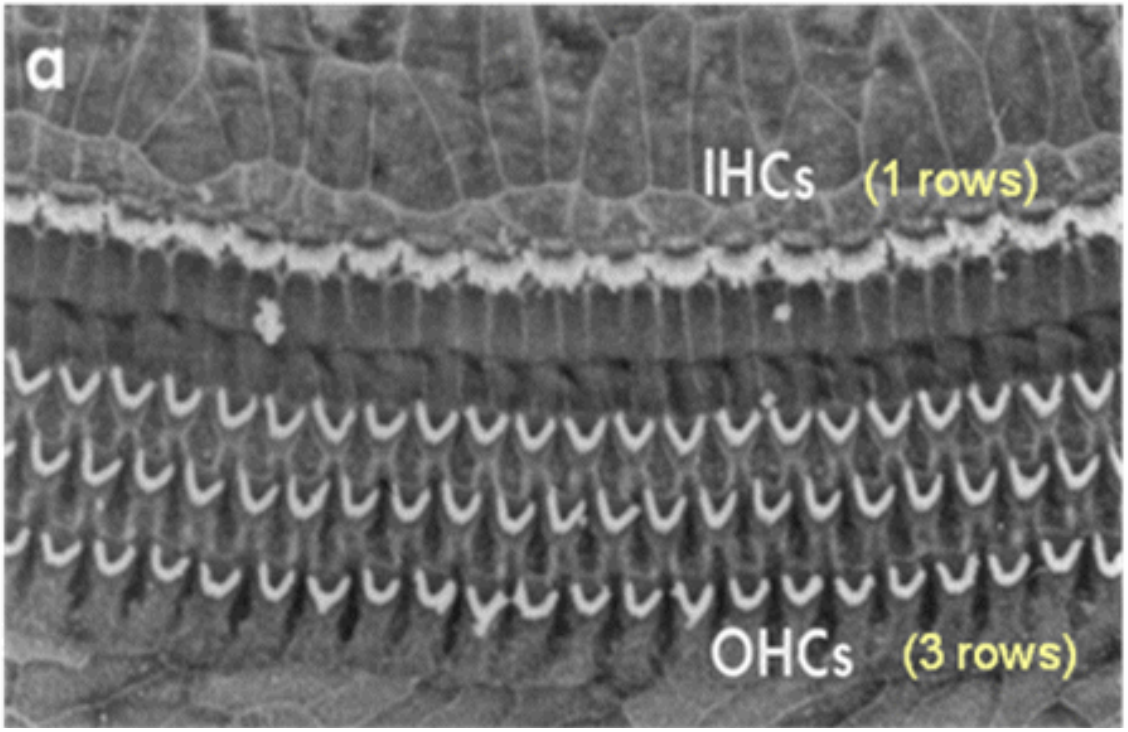

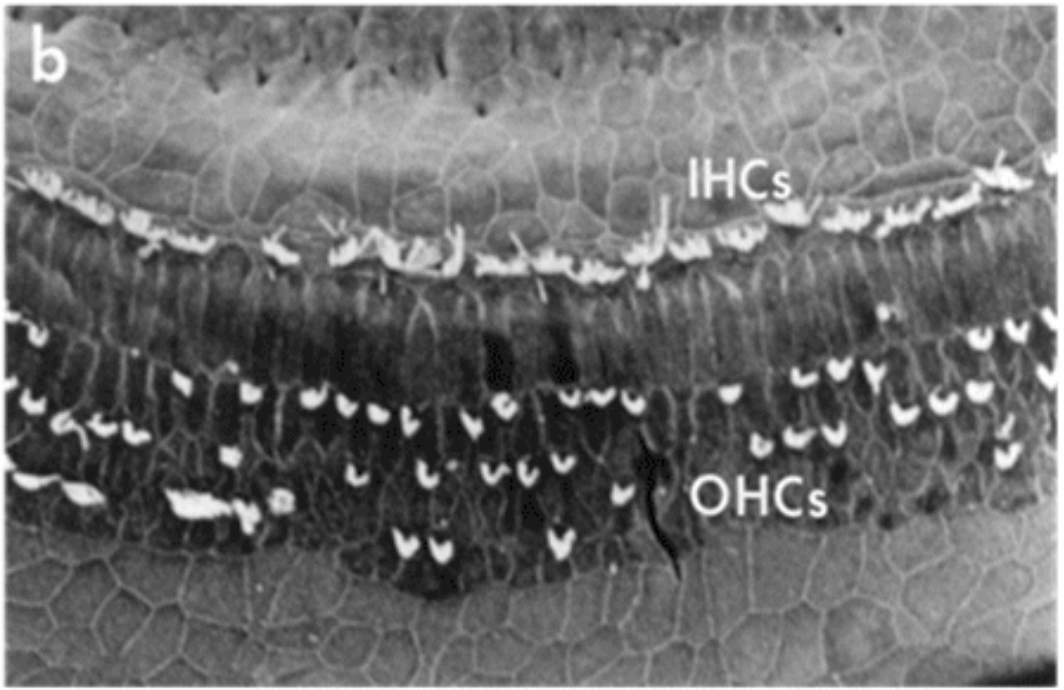

Ryan, A.F. Protection of auditory receptors and neurons: Evidence for interactive damage *PNAS 2000 97 (13) 6939-6940; doi:10.1073/pnas.97.13.6939*

Common Signs of Hearing Loss in Adults
(Patient may not always disclose they have a hearing loss!)

- Asking for repetition
- Misunderstanding information
- Increasing TV/radio volume
- Difficulty understanding on the telephone
- Increased volume of own voice
- Feeling that “everyone else mumbles”
- Increased reliance on visual cues
- Tinnitus

Possible Effects of Hearing Loss

- Compromised awareness & safety
- Increased fatigue, irritability, tension, & stress
- Decreased ability to process, retain, & act on information
- Lower self-esteem
- Sense of isolation
- Increased risk of depression and cognitive decline
- Decreased quality of life

Hearing Aids

- Make sound louder
  - Help with speech understanding
  - Help with environmental sound awareness
  - Minimize listening effort/stress
- Individually programmed for pt's specific hearing needs
- Sometimes covered by insurance
- Only 1 in 5 people who could benefit from a hearing aid actually wears one
  (National Institute on Deafness and Other Communication Disorders, 2014. http://www.nidcd.nih.gov/health/statistics/Pages/quick.aspx)

- California law: patients entitled to minimum 45-day trial period

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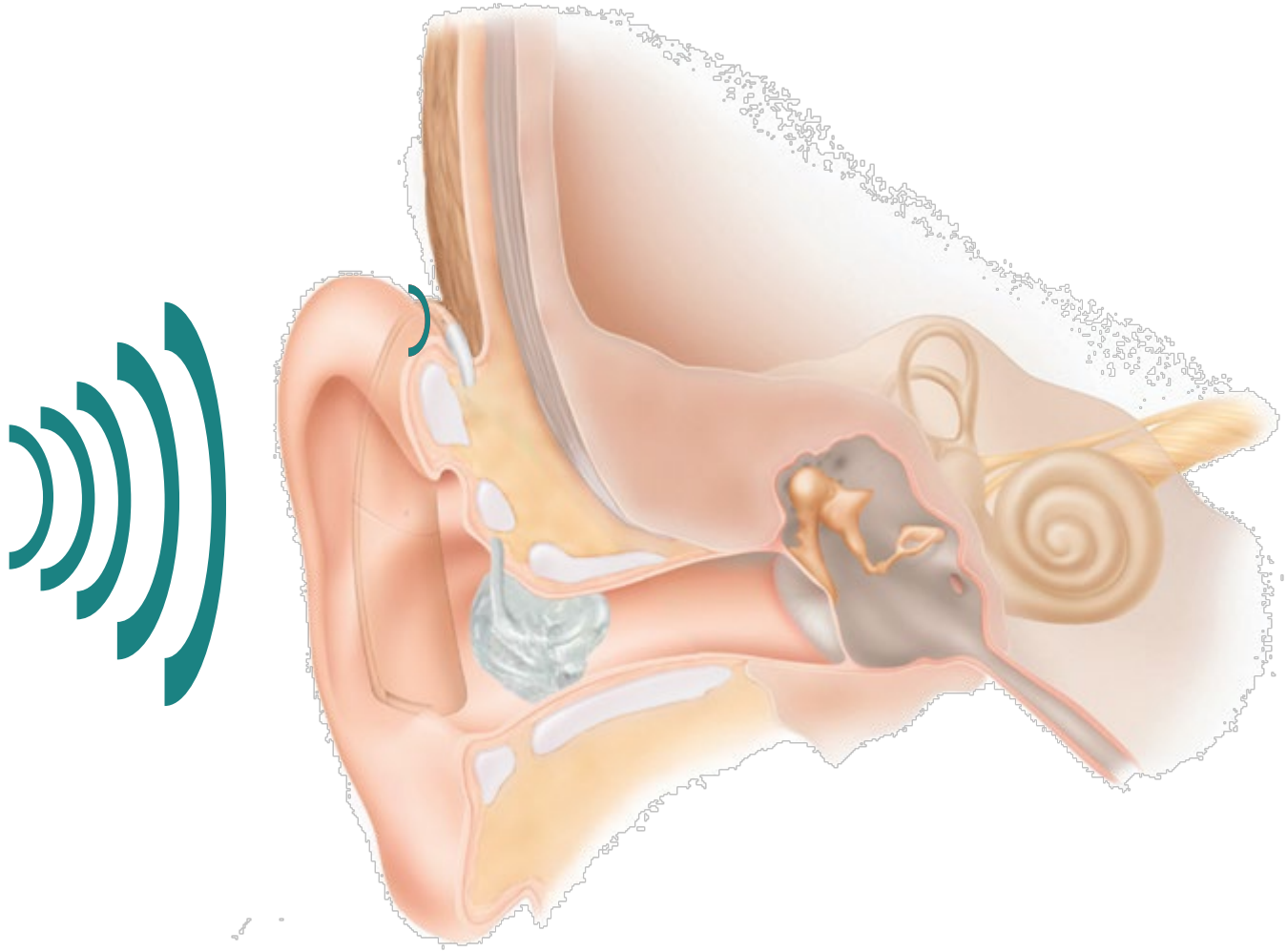
How a Hearing Aid Works



Advances in Hearing Aids

They’re not what they used to be!

- Feedback control
- Compression
- Bluetooth connectivity & MFi
- Directional microphones & noise management
- Smaller and smarter
- Rechargeable

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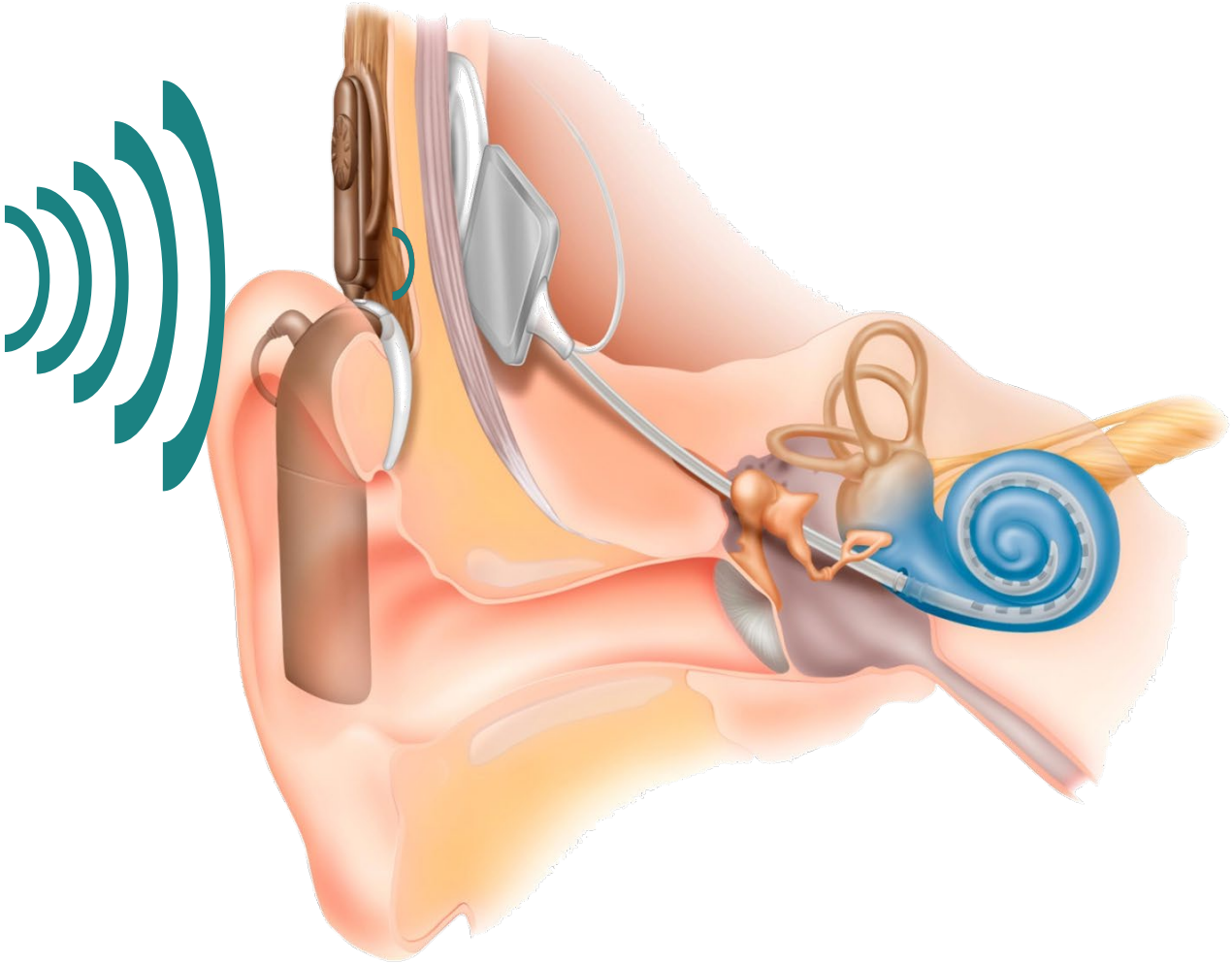
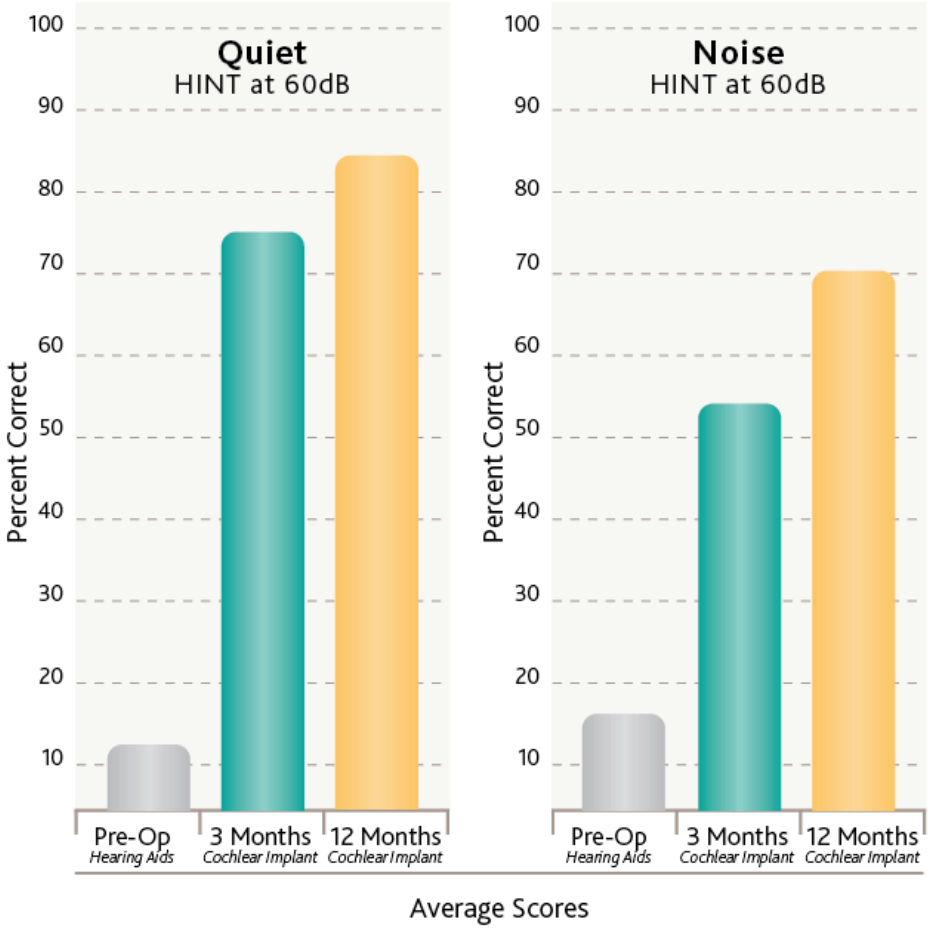
Cochlear Implants

- For severe hearing loss
- Bypasses damaged hair cells and stimulates hearing nerve directly
- Surgery: 2-3 hour outpatient
- Covered by insurance, Medicare, Medicaid

How Does a Cochlear Implant Work?



Hearing With a Cochlear Implant



FDA post-market surveillance study of Nucleus Freedom recipients.[8]

Implant performance as compared to best aided condition

Improved hearing performance over time

- pre-op (with hearing aids)
- 3 months
- 12 months

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Personal Sound Amplifiers

- Increase volume
- Often available over the counter
- Not programmed specifically for patient's hearing loss

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Other Assistive Listening Devices

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Communicating With Patients Who Have Hearing Loss

- **Face-to-face**. (Consider: masks, gum, pen, hands, facial hair, computer)
- Slower, not necessarily louder
- Minimize background noise
- Proximity
- Get attention first
- Consider captioning/typing (or voice-to-text apps)
- ID Badge
- If repeating, rephrase
- Be aware of tendency to agree without comprehending
- Written summary/recommendations

Utilizing ASL Interpreters

- Timing
- Positioning
- Address the patient

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Tinnitus

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Tinnitus

- Hearing ringing or buzzing sounds when no sound is present
- One or both ears
- 33% adults experience tinnitus at some point in their lives

- Many potential causes:
  - Hearing loss
  - Noise exposure
  - Medications
  - Ear wax blockage
  - Migraines
  - Cardiovascular health
  - TMJ disorder
  - Stress

Tinnitus Evaluation

- Determine if there may be a specific underlying cause
  - Evaluation by ENT (ear, nose, & throat doctor)
  - Evaluation by audiologist (hearing testing)
- Considerations
  - When did it start?
  - Have you noticed any times it becomes better or worse?
  - Is it constant, or does it come and go?
  - What does it sound like?
- Address the underlying cause:
  - Related to a specific medication or dosage?
  - Related to a circulatory condition? (High blood pressure, narrowed arteries)
  - Related to TMJ disorder?
  - Related to hearing loss?

Tinnitus Solutions

- Treating underlying cause
- Counseling & stress management
  - Cognitive behavioral therapy, mindfulness-based meditation
- Dietary and lifestyle changes
  - Minimize caffeine
  - Minimize alcohol
  - Quit smoking or using products with nicotine
  - Nutrition & exercise to improve cardiovascular health
- Noise suppression
  - White noise machine
  - Hearing aids
  - Masking devices (ear-level, produce continuous low-level white noise)
  - Tinnitus retraining devices (programmed tonal music to help you get accustomed to the tinnitus)

Tinnitus Masking

Neuromonics

Specialized Hearing Aid

Environmental Sound Generators

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Local Resources

- Hearing Loss Association of America: San Diego Chapter
  - http://www.hearinglosssandiego.org/
  - Meets monthly in Mission Valley

- California Phones
  - http://www.californiaphones.org/
  - Provides free amplified/captioned phones
  - Application form can be signed by MD, PA, AuD, SLP, DoR counselor, HA dispenser, or optometrist

- The Lions Club Hearing Foundation (Ear of the Lion):
  - http://earofthelion.org/
  - Provides hearing aids at reduced cost for patients in need
  - Takes donations of unused hearing aids

UCSD Audiology Clinic

- Hearing tests
- Hearing aids
- Cochlear implants
- Bone conduction devices
- Tinnitus assessment & technologies
- Vestibular testing

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Locations

La Jolla

(Perlman Medical Offices)

9350 Campus Point Drive

858-657-8590

Hillcrest

200 West Arbor Drive

619-543-5683

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