

Hearing loss and dementia

Rachel Allen

HIS, BS

Connect Hearing

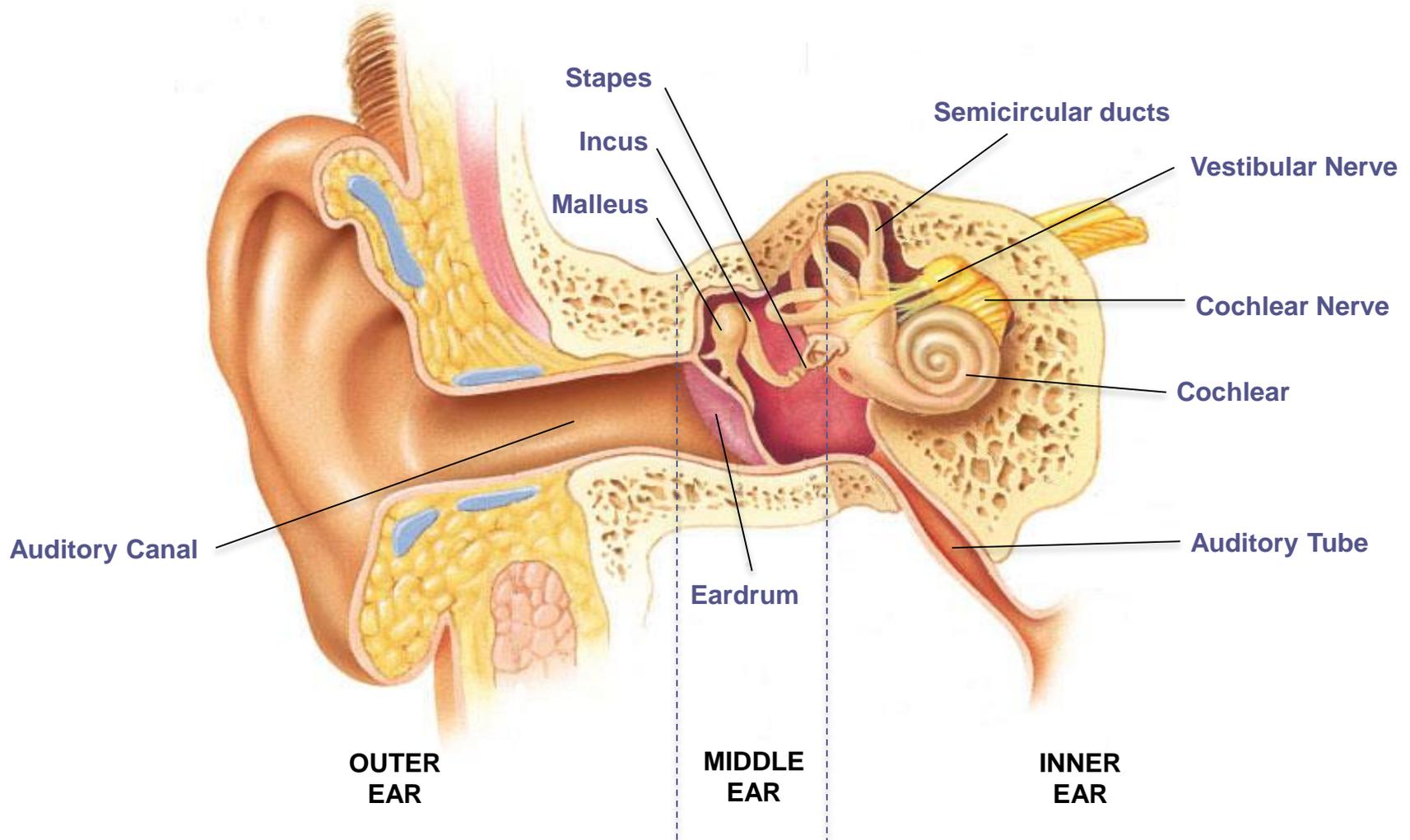
Do you know?

There are more than **48 million people in the US** with some form of hearing loss – that's one in five of us.

That number **rises to one in three** past the age of 65

Only about one in seven uses a hearing aid.

How our ears work



Common causes of hearing loss

Medically Treatable (Conductive)	Non-Medically Treatable (Sensorineural)
Earwax build-up	Excessive noise exposure
Ear infection	Genetics
Ruptured eardrum	Aging

Long term effects of untreated hearing loss

- Decline in speech recognition
 - Distortion of sound
- Mental fatigue
- Lack of participation
- Social isolation
- Depression
- Loneliness

Hearing loss & Dementia

A Johns Hopkins study by Dr. Frank Lin indicated a link between untreated hearing loss and cognitive problems including dementia.

- Study from National Institute of Aging data
- The study found that when compared with normal hearing:
 - Those with **mild loss** were **twice** as likely to develop dementia
 - Those with a **severe loss** were **5 times** as likely to develop dementia
 - And, for every **10 decibels** of hearing loss, the risk of developing dementia **grew by 20%**.
- The study also indicated that treating hearing loss more aggressively may help stave off cognitive decline and dementia.

4 possible ways hearing loss is linked to cognitive decline

- Common Factors
- Cognitive Load Theory
- Social Isolation
- Brain Structure

- Possible common factors
 - ie diabetes, high blood pressure, age, sex and race; least likely theory
 - Even after taking into account other factors that are associated with risk of dementia, there was still a strong correlation.

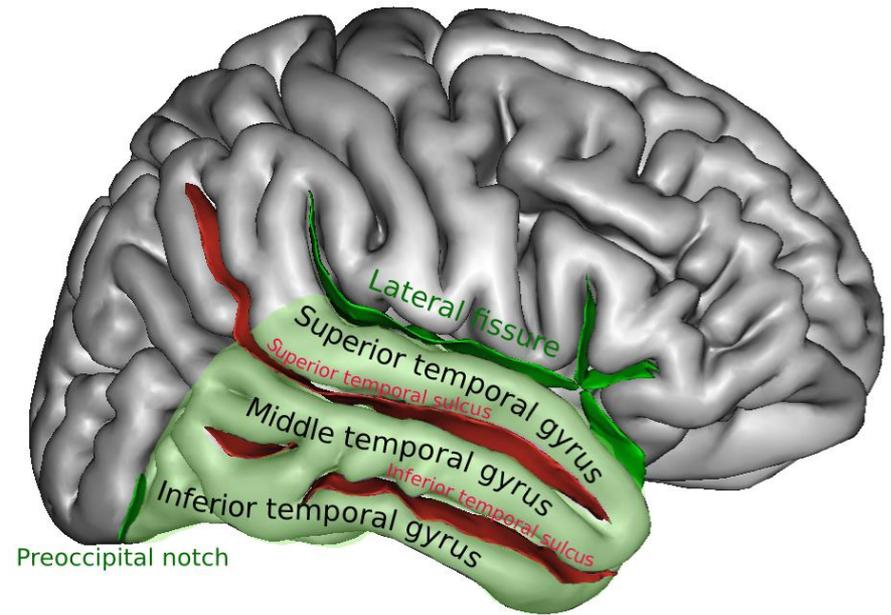
Cognitive Load Theory

- Cognitive load-
 - The effort of constantly straining to understand speech stresses the brain, and resources are not available for coding what you hear into memory
- Hearing loss is also linked to falling
 - Patients with a mild loss were 3x more likely to have a history of falling.
 - "Gait and balance are things most people take for granted, but they are actually very cognitively demanding," Lin says. "If hearing loss imposes a cognitive load, there may be fewer cognitive resources to help with maintaining balance and gait."

Brain Structure

- Hearing loss may affect brain structure in a way that contributes to cognitive problems.
- In another study, Frank Lin also linked hearing loss to brain tissue loss.
 - Those with impaired hearing lost more than an **additional cubic centimeter** of brain tissue each year
 - Shrinkage in those areas might simply be a consequence of a deprived auditory cortex, which could become atrophied from lack of stimulation.

- Localized in particular regions: temporal gyri
 - Responsible for processing sound and speech
 - Play roles in memory and sensory integration and have been shown to be involved in the early stages of cognitive impairment and Alzheimer's disease.



Social Isolation

- Long recognized as a risk factor for cognitive decline
- Hearing loss can lead to isolation with depression and sedentary lifestyle, all of which are factors in dementia.

Sensory Loss as Shared Experience

- Emotional toll of sensory loss impacts spouses and families
- Research and services focusing solely on the individual diagnosed with sensory loss are missing half the picture.
- **Spouses** of people with hearing loss reported:
 - Marital Distress
 - Psychological distress
 - Communication difficulties
 - Depression
 - Loneliness
 - **Lower levels of social activity**

New research

- Lin is currently planning a study to see if early treatment of hearing loss can reduce the risk of other associated problems.

New Developments

- In 2015, French researcher Isabelle Mosnier examined the effects of cochlear implants on elderly patients with severe to profound hearing loss.
 - 80% of those with the lowest cognitive scores before implantation showed improvement a year after receiving the device.
 - **“The benefits of correcting hearing loss on cognition are twice as large as the benefits from any cognitive-enhancing drug on the market.”**

- “Every doctor knows that hearing loss can result in cognitive problems, but they still don’t focus on it as a priority when they evaluate someone with suspected dementia – which is a big missed opportunity.”

Treating Hearing Loss





The thing about hearing loss is that no one can see it. You simply can't look at a person and tell if they have a loss. Most people are so impatient and they just assume that the person with hearing loss is being rude, or they may even think that the person is slow witted, when in fact they simply can't hear!

- MARION ROSS (FROM HAPPY DAYS)

Do I need a hearing test?

1. Have you noticed that you **don't hear as well** as you used to?
2. Does your family tell you that you **turn up the volume** of the **television or radio** very loudly?
3. When you're talking to someone, do you have to ask the person to **repeat what they're saying** various times?
4. Can you hear when someone is speaking to you in a **noisy setting such as a pub or restaurant**?
5. Can you hold a **conversation in a group setting** when several people are speaking at the same time?
6. Are you **over 55** and have **never had a hearing test**?

If you answered **YES** to most of these questions then you could benefit from getting your hearing checked.

Styles of hearing aids

ITE
(In-the-Ear)



- Mild to profound hearing loss
- More powerful
- Longer battery life
- Convenient for people with low dexterity

ITC
(In-the-canal)



- Mild to profound hearing loss
- Discreet
- More powerful
- Houses more features

CIC
(Completely-in-canal)



- Mild to severe hearing loss
- Highly Discreet

IIC
(Invisible-in-canal)



- Mild to moderate hearing loss
- Invisible when worn
- High comfort

RIC
(Receiver-in-canal)



- Mild to severe hearing loss
- Small yet powerful
- More resistant to dirt and debris
- Available in multiple colors
- More natural sound

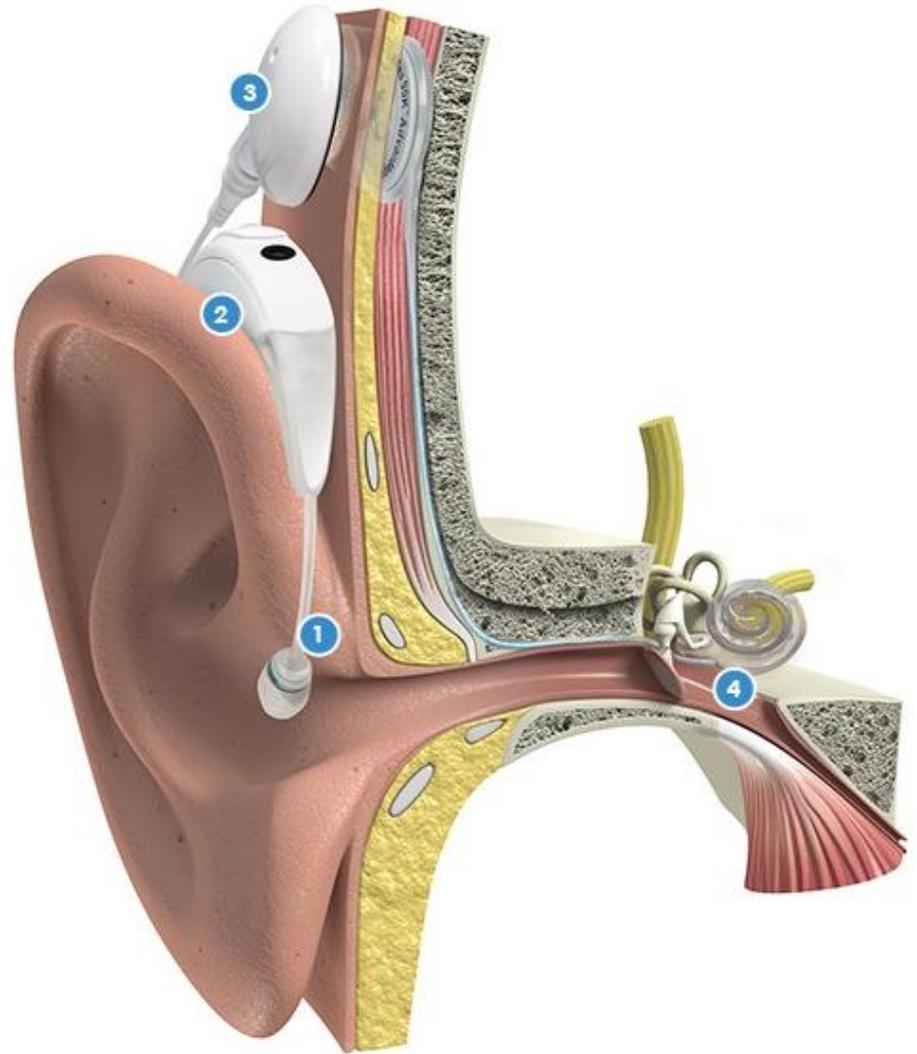
BTE
(Behind-the-ear)



- Mild to severe hearing loss
- Discreet
- More resistant to dirt and debris
- Available in multiple colors
- Comfortable

Cochlear Implants

- Severe to Profound loss
- Surgical Procedure



Better Hearing Strategies

- Get the listener's attention before you speak
- Minimize distractions
 - TV off or down
 - Get in the same room
- Face the listener
- Speak slowly but naturally, in a low tone.

Support for Spouses and Families

- Encourage them to speak openly about their experiences of the sensory loss.
- Use assistive devices to ease the burden.