

## Overview of Sensory Loss & the Older Adult

Education Health Care Professionals

### Part 2: Hearing Loss



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## Age-Related Changes in the Ear

### The Aging Ear



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- Age related hearing loss can be caused by physical changes in the ear, the auditory nerve, or in the ability of your brain to process sound. Sometimes, all three might be involved.
- With aging the outer part of the ear canal thins and the eardrum thickens and earwax gets drier and stickier increasing the risk of impacted wax.
- In the cochlea there can be a loss of sensory cells and degenerative changes in the nerve fibers that carry information from the sensory cells to the brain.
- CONDUCTIVE and SENSORINEURAL hearing loss will be described further.

(HealthinAging.org 2016)



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## Canadian Statistics

Hearing loss is one of the most common conditions affecting older adults. It is one of the most unrecognized and under treated health concerns.

Canadian statistics 2012 to 2015:

- Adults aged 60 to 79 were significantly more likely to have hearing loss (78%) compared with younger adults aged 40 to 59 (40%) and 20 to 39 (15%). Males (47%) were significantly more likely to have hearing loss compared with females (32%).
- The majority of Canadians with measured hearing loss were not aware they had any hearing problems.
- 30% of older adults have dual sensory impairment such as, vision and hearing loss at the same time.

[\(Statistics Canada, 2016\)](#)



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## Conductive Hearing Loss

- The cause of conductive hearing loss may be earwax build-up, fluid, or a punctured eardrum.
  - medical treatment for removal of the earwax or surgery can usually restore conductive hearing loss
- Other causes of conductive hearing loss include:
  - infections in the skin lining the ear canal
  - fluid in the middle ear
  - arthritis that affects the bones of the ear
  - a hole in the eardrum
  - Paget's disease of bone can cause loss of hearing in one or both ears may occur when the disease affects the skull and the bone that surrounds the inner ear. Treating Paget's disease may slow or stop hearing loss. Hearing aids also may help

[\(HealthinAging.org 2016\)](#)



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## Sensorineural Hearing Loss

- The main cause of sensorineural hearing loss is aging and may also be caused by:
  - excessive noise exposure and **OTOTOXICITY**
  - genetics or blood vessel problems (including those related to diabetes).
  - occupational and environmental factors such as chemical exposures
  - certain autoimmune diseases
  - nerve tumors
  - infections such as herpes and influenza
  - cigarette smoking
- Older adults with the following conditions are more likely to experience hearing loss:
  - dementia
  - diabetes
  - cerebrovascular disease

([HealthinAging.org](http://HealthinAging.org) 2016)



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## Signs & Symptoms of Hearing Loss



Signs and symptoms of hearing loss may include:

- muffling of speech and other sounds
- difficulty understanding words, especially against background noise or in a crowd of people
- trouble hearing consonants
- frequently asking others to speak more slowly, clearly and loudly
- needing to turn up the volume of the television or radio
- withdrawal from conversations
- avoidance of some social settings which can lead to social isolation

([Mayo Clinic](http://MayoClinic.com) 2015)



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## Factors that Contribute to Hearing Loss

- Aging:
  - degeneration of delicate inner ear structures occurs over time.
- Occupational & Recreational noises:
  - loud noise is a regular part of the working environment, such as farming, construction or factory work, snowmobiling, motorcycling or listening to loud music and can lead to damage
- Drugs:
  - antibiotics such as gentamicin and certain chemotherapy drugs can damage the inner ear
  - temporary hearing loss can occur when very high doses of aspirin, other pain relievers, antimalarial drugs or loop diuretics are taken and often present as ringing in the ear
- Illness or Disease:
  - some illnesses or diseases such as meningitis where a high fever is present can damage the cochlea
- Heredity:
  - genetic makeup may make an individual more susceptible to ear damage from sound or deterioration from aging.

(Mayo Clinic 2015)



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## Diagnosing for Hearing Loss

- Physical Examination
  - a healthcare provider will examine the ear canal for wax, foreign material, inflammation, or other causes of conductive hearing loss and remove any wax or other debris
  - the health care provider or audiologist may ask for completion a questionnaire designed to assess communication function in various settings.
    - These questions can help measure the perception of the impact that hearing loss on daily activities.
- Your HCP may recommend other consultants
  - **Ear, Nose and Throat specialist (ENT)** for further evaluation of structural issues
  - **Audiologists** who will conduct hearing loss testing.

(HealthInAging.org 2016)



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## Tests



- The gold standard test is pure-tone audiometry. This is a simple and painless test. It assesses different pitches and volumes sent to one or both ears.
- Audiometric testing which is used to determine how much hearing has been lost. Such testing can determine the causes of hearing loss, and help with treatment options like hearing aids or a cochlear implant.

([HealthinAging.org](http://HealthinAging.org))

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## Supportive Devices for Hearing Loss

- Hearing Assistance Technologies include:
  - microphones and transmitters
  - personal pocket devices
  - telephone ringers
  - closed-caption televisions
  - vibrating and flashing devices such as alarm clocks and timers, smoke alarms, doorbell alerts, and motion sensors
  - hearing aids
- Many purchase hearing aids and don't use them for many reasons, some are because:
  - problems manipulating the tiny devices with their hands (especially those with arthritis)
  - amplification of background noise
  - thinking the aid is not needed
  - memory loss
  - cost concerns

([HealthinAging.org](http://HealthinAging.org))

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## Cochlear Implants

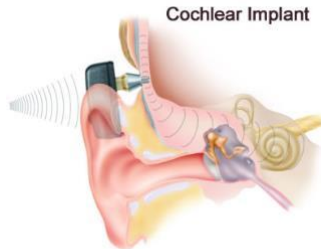


Image: University of Southampton

Image: [Southampton University](http://Southampton University)

- Is an electronic device surgically implanted in the ear that bypasses the damaged cochlear hair cells and transmits sensory impulses directly to the cochlear nerves.
- Used in people with severe to profound hearing loss whose hearing doesn't improve with hearing aids.
- General health, rather than age, is an important predictor of health outcomes after cochlear implantation.

([HealthinAging.org](http://HealthinAging.org), 2016)

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## Hearing Loss & Cognition



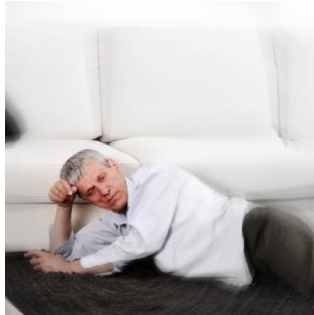
- There is evidence linking hearing loss to changes in cognitive ability, particularly when listeners are faced with the task of understanding speech that is acoustically or linguistically challenging.
- Hearing loss can lead to social isolation and being socially isolated has long been recognized as a risk factor for cognitive decline and dementia.

([Griffin.nd](http://Griffin.nd))

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## Balance & Falls Risk



- Balance (equilibrium) is controlled in the inner ear. Fluid and small hairs in the inner ear stimulate the auditory nerve. This helps the brain maintain balance.
- With aging, structures inside the ear start to change and their functions decline.
  - the ability to pick up sounds decreases
  - this may create problems maintaining balance when sitting, standing, and walking
  - the person may be at risk for falling

[\(Wingfield 2012\)](#)

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## Hearing Loss and Quality of Life

- Progressive hearing loss is a growing problem that has been reported to reduce quality of life.
- Hearing loss can impair the exchange of information, thus significantly impacting everyday life, causing loneliness, isolation, dependence, and frustration, as well as communication disorders.
- The emotional effects of hearing loss on quality of life further exacerbate these feelings :
  - loneliness, isolation, dependence, depression, anxiety, anger, embarrassment, frustration, and guilt
  - behavioral reactions, such as bluffing, withdrawing, blaming, and demanding
  - cognitive reactions, such as confusion, difficulty focusing, distracting thoughts, decreased self-esteem, and communication disorders

[\(Ciobra 2012\)](#)

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