

The ageing ear: Why is everyone mumbling?

Presbycusis or age-related hearing loss results from progressive, complex changes along the auditory pathway. Older adults with presbycusis often describe an inability to understand speech clearly rather than an inability to hear.

Effects of presbycusis are measurable from the age of 30, as illustrated in Figure 1 which shows average hearing levels across age groups. High frequency hearing is affected first and most severely, although lower frequencies become involved with increasing age. This pattern leads to a perception of speech that is loud enough but indistinct because of reduced hearing of high frequency consonants, primarily /s/, /f/, /th/, /t/, /ch/ and /sh/.



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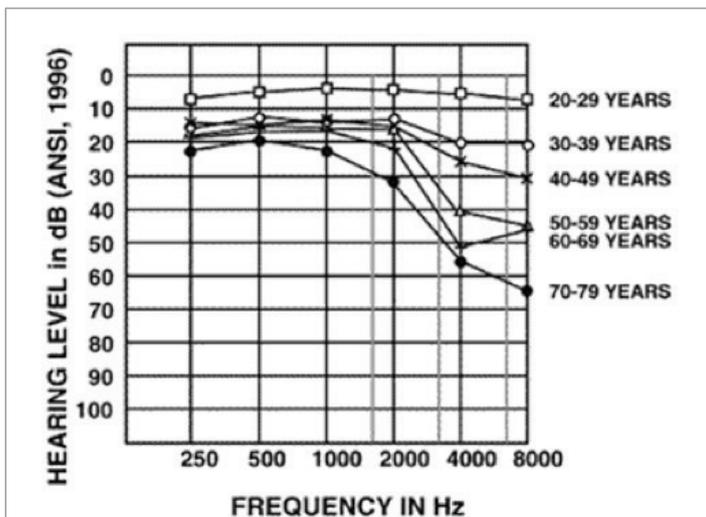


Figure 1. Average hearing levels as a function of age.
From Wilson & Strouse (2002). Northwestern University Auditory
Test No. 6 in multi-talker babble: A preliminary report.

A loss of hair cells and supporting structures within the cochlea is the main physiological change in presbycusis. Other important changes are a metabolic disruption after degeneration of the stria vascularis, and reduction in the size and number of auditory nerve fibres. Degenerative changes in the auditory brainstem and cortical areas, termed central presbycusis, are thought to exaggerate hearing difficulties in situations with competing speech and background noise. Reduced tissue elasticity, ossification and stiffening of outer and middle ear structures with ageing are well documented, although they rarely cause significant reduction in hearing levels.

There is no clear-cut aetiology; noise exposure, cardiovascular disease, inflammations, genetics, pollutants and medications have all been implicated as contributing causes of damage over a person's lifetime.

Presbycusis causes a permanent, progressive hearing loss which is best addressed with early intervention to prevent social isolation, improve quality of life, harness optimal neural plasticity and reduce the risk of deprivation in central auditory structures. Further, there is growing research in reducing the risk of hearing loss related dementia with timely intervention.

Evidence-based fitting of behind-the-ear hearing aids, combined with communication training and a structured rehabilitation program are required for comfortable acclimatisation to new sounds, and good long-term acceptance.

References available on request