



DigiCare® Monograph Series

Understanding Hearing Loss Effects on Human Health

Max Stanley Chartrand, Ph.D.
DigiCare® Behavioral Research

Introduction: More than 40 million

Americans suffer from various degrees of hearing loss. Unknown by many people, though, is that there are more people with hearing loss under the age of 60 than there are over the age of 60, albeit the per capita concentration of hearing loss is higher in the over 65 age group. Hearing loss occurs as a result of congenital stressors, delayed development, and early ear infections, acoustic trauma, medications, environmental toxicity, and chronic diseases such as diabetes, neuropathy, osteoarthritis, and cardiovascular disease. What's even lesser known is that when hearing loss is corrected remarkable improvements are likewise noted. Children perform better in school, possess more in control of emotions, sleep better, and develop faster. Those of working age are more productive, make higher wages, and are promoted more often. Older adults with optimal hearing are healthier, take fewer medications, and retain memory and mental acuity. This monograph summarizes recent research findings in hearing loss effects on health, cognition, and quality of life. For those in denial, the cat's out of the bag: Better hearing means a better you in every way!

Humans are 4,000 Hz Species

The most important frequency in human hearing is the high pitch tone of 4000 Hz. Healthy humans hear at that frequency better than any other species. When they lose their high frequency range of hearing: the heart's pericardial sac becomes stressed, blood pressure elevates, and sleep disorders occur at varying levels of concern. **Tinnitus**, or that noise described as a "high pitch ring" heard by millions of people, invariably means the degeneration of the frequencies around 4000 Hz. It just happens that that is also the same pitch as your heart's sinus node tone. It is usually caused by an advancing high frequency loss that needs attention, without which the irritating noise just gets louder and more bothersome as other health problems increase. Also, without hearing at 4000 Hz, one cannot hear the consonant speech sounds well in noise or at distances, and many psychological and psychosocial tendencies set in place. Consequently, it is vital that the correction of high frequency loss through amplification be considered important for your lifestyle and communicative well-being.

Recent research shows hearing loss sufferers...

- Utilize medical services five times as much as normal hearing individuals (DigiCare, 2008; VA 1997, 2004).
- Suffer cardiovascular events and hypertension from two to three times as often as their normal hearing counterparts (Various sources).
- <92% of older adults that were diagnosed with Alzheimer's disease also had uncorrected hearing loss (University of Pittsburgh, 1999).
- Mild hearing loss increases Alzheimer's risk 2x, moderate hearing loss 3x, and severe loss 5x (Johns Hopkins, 2011)
- Uncorrected hearing loss causes the brain to shrink over time, bringing dementias and memory loss (Johns Hopkins, 2014)

Other significant health/hearing loss associations:

- **Brandeis University Study (2006)** in a PETT scan/glucose study on short-term memory found that hearing loss causes the brain of hearing impaired individuals to burn so much glucose that simple tasks like responding in conversation or in classrooms become challenging.
- **National Council on Aging Study (2014)** found that uncorrected hearing loss "significantly and negatively impacted quality of life for older

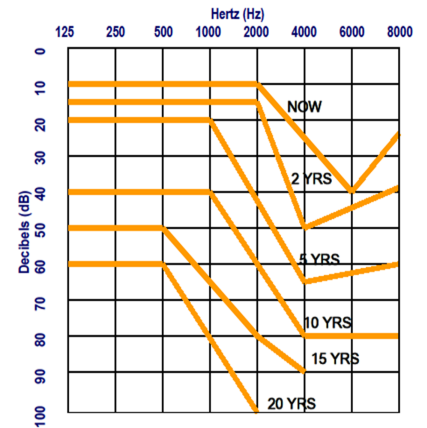
adults."

- **Better Hearing Institute Study (2012)** found that working age hearing loss sufferers make an average of \$12,000 less in annual wages than workers with normal hearing in the United States.
- **Brandeis University Study (2012)** on tinnitus found that serious tinnitus can burn as much brain glucose during sleep as reading a book while awake, causing chronic fatigue syndrome-like symptoms.

Remediation and Treatment

Here are some guidelines for remediation and treatment of hearing loss:

- Tell your doctor about your hearing loss, so that possible medical issues such as ongoing disease, infections, injuries, impactions, and/or medication toxicity can be remedied.
- Have your hearing tested annually, starting with a baseline audiogram and note than when it reaches the type of audiogram noted at year 2 to 5 (illustration to the right) ask for a trial of amplification to see if it improves your communication, health, and overall well-being.
- If your hearing loss is quite significant (like year 10 above), inquire about assistive technologies & coping strategies that can assist in critical and large area listening situations.
- If you develop ringing of the ears (tinnitus), inquire about available solutions, such as special digital hearing aid programming, dietary and medication changes, and necessary ear protection to try to make the tinnitus softer and less bothersome.
- Do not accept a mental health diagnoses for Alzheimer's/dementia as conclusive without addressing possible hearing loss first.
- Locate a reputable hearing health clinic that knows you and respects your need to maintain your best hearing health and stick with them!



Resources for Further Study

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Larsen, V. D. et al. (2009). Efficacy of 3 commonly used hearing aid circuits: a crossover trial. *Journal of the American Medical Association*, 284(14): 1806-1813.

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Saunders, et al. (2009). Expectations, Pre-Fitting Counseling, and Hearing Aid Outcome. *Journal of the American Academy of Audiology*, 20(5):320-34. <http://www.ncbi.nlm.nih.gov/pubmed/19585963>.

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DigiCare® Behavioral Research

820 W. Cottonwood Ln, Ste #6—Casa Grande, AZ 85122
(520)509-6380 — chartrandmax@aol.com

Seminar Reports

From Dr. Chartrand's Hearing Instrument Counseling Textbook, 2nd Edition(1999), Livonia, MI:NIHIS

Report #1

Mild Hearing Loss (20-40dB PTA) is the most transparent stage. Behavioral changes occurring so subtly that the now and then misunderstandings and flaring emotions appear to be more rooted to situations and individuals rather than in actual communicative breakdown. Persons in this category are often accused of hearing when they want to, or not paying attention (Shimon, 1992). Furthermore, this is the stage where resistance to hearing help begins to build and reliance on significant "others" as a safety net occurs.

In most cases, the mildly impaired person may externally compensate well in even difficult situations, but the toll, left unchecked for a period of time, begins to progress internally without reprieve. It at all possible, this person should be persuaded to have their hearing tested and to receive amplification and/or medical attention, whichever is applicable (Newman et al, 1997).

Report #2

Moderate Hearing Loss (40-70dB PTA) is the stage where frustration and depression set in. Even in cases where one has compensated well for social survival, the internal turmoil and insecurities caused from a moderate impairment become an integral facet of his/her responses to life around them. Notably are the strained social relationships, the "pulling in" of ambitious plans such as travel, educational, and vocational pursuits, and gradual withdrawal from joining in at organizational functions, leisure activities, and creative hobbies.

Dependency upon another person, an almost alter ego, begins to set in at this stage taking away some of the self-confidence necessary to lead a productive and independent life. While some will respond at this level with resignation, others will take the aggressive-depressive route. Indeed, at this stage, amplification and counseling are needed, as much for the benefit of close loved ones as for the individual with the impairment.

Report #3

Severe Hearing Loss (70-90dB) Without previous amplification, this stage of progressive loss has taken a great toll on the sufferer's life, isolating them from the world they once knew. Feelings of resentment are commonplace, accompanied by frustration and uncertainty. For instance, they may harbor feelings of abandonment by those on which they depend, if their every request and desire is not catered to.

This is a natural reaction because often feel trapped in a hostile world with no way to fend for themselves against those that would disrespect, ridicule, or ignore them. Within group settings, the severely hearing impaired person often becomes invisible--and disconnected from spontaneous and open conversation.

Contact Info: Max Stanley Chartrand, Ph.D., 820 West Cottonwood Lane, Suite #6, Casa Grande, AZ 85122, (520)509-6380, chartrandmax@aol.com