

Hearing Loss

by **Seth Rosenberg**
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If you have a hearing loss you are not alone. The number of people with hearing loss is a staggering 28 million in the United States and 300 million worldwide. And there are more than 2.5 million cases of hearing loss reported each year in the United States. Approximately 30% of people over age 65 and 70-80% over 75 years of age have significant hearing impairment. And baby boomers (40-60 years of age) are showing increased hearing loss at earlier ages due to repeated exposure to noise at hazardous levels like noise from firearms, rock music, MP3 and CD players with headphones, jet airplanes, lawn mowers, power tools and many others. Hearing loss can affect the quality of life. Elderly people with a hearing impairment experience reduced mobility, reduced involvement in social activities, and loneliness. Add those together and it equals a diminished quality of life. Thanks to modern technology, however, most people can now benefit from medical treatment, surgery, or hearing aids.

Hear disorders are divided into two basic categories, conductive and sensorineural. Conductive hearing loss means there is blockage of sound wave conduction in the outer or middle ear. Sensorineural hearing loss occurs when the hair cells in inner ear or the hearing nerve are damaged.



How do we hear? The ear is divided up into three sections: outer, middle, and inner ear. Sound waves are first collected by the outer ear and channeled along the ear canal to the eardrum. When the sound wave hits the eardrum it is amplified and creates vibrations that cause three bones in the middle ear to move. The smallest, the stirrup or stapes, fits into an opening between the middle and inner ear. When the stapes vibrates, fluid in the inner ear transmits the vibrations to tens of thousands of microscopic hair cells that are bent by the wavelike action of fluid inside the inner ear. The bending of these hairs sets off nerve impulses that are then passed through the hearing nerve to the hearing center of the brain. This center interprets the meaning of the nerve impulses.

Hear disorders are divided into two basic categories, conductive and sensorineural. Conductive hearing loss means there is blockage of sound wave conduction in the outer or middle ear. Sounds become "blocked" and are not carried to the inner ear. Conductive hearing losses are most commonly treatable with medicine or surgery.

The most common causes of conductive hearing loss are fluid behind the eardrum or wax buildup in the ear canal. By the way, use of Q-tips prodding device should be strictly avoided since they may actually push earwax inward or worse, damage the ear drum or middle ear structures. Conductive hearing loss also can occur when there is a hole in the eardrum or if the bones of the middle ear are disrupted or stiffened. An outpatient surgical procedure can cure both of these problems. Normally, when fluid builds up, it drains through the eustachian tube, which opens to the throat. The eustachian tube is normally opened by swallowing, yawning and chewing. An inflammation of the tube due to sinus disease may keep it closed, causing fluid to build up in the middle ear. This problem can usually be corrected with medication or a simple office procedure.

Sensorineural hearing loss occurs when the hair cells in inner ear or the hearing



nerve are damaged. The most common causes are aging, inner-ear infection, medications, and noise exposure. When the neural impulses that travel through the hearing nerve to the brain are impaired it becomes more and more diffi-

cult for the brain to interpret these signals. That is why it can be difficult to understand what a person is saying, especially when there is background noise when you have this type of hearing loss. The gradual (over years) onset of sensorineural hearing loss is usually not medically or surgically treatable. Most people with a sensory hearing loss find that hearing aids are most beneficial. However, when sensorineural hearing loss occurs rapidly (over minutes to days) medical or surgical intervention is needed as soon as possible.

In summary, the first step to better hearing is to get a full ear exam and hearing test. Protect your ears when around a noisy environment. See a doctor soon if you have persistent ear pain or sudden onset of hearing loss. There are ways that everyone can be made to hear using advanced surgical techniques or hearing devices. And finally remember what you Mom told you “Don't put anything in your ear smaller than your elbow!”



About the Author

Seth I. Rosenberg, MD, FACS - A specialist in hearing and balance disorders.

A native of Poughkeepsie, New York, he completed a BS in chemistry, cum laude, at Rensselaer Polytechnic Institute prior to obtaining his MD at State University of New York (SUNY) Upstate Medical Center in Syracuse. His surgical and otolaryngology residencies were also served at SUNY.

A postgraduate fellowship in otology and neurotology at the Ear Research Foundation brought Dr. Rosenberg to Sarasota to practice and conduct research. Subsequently, he joined the teaching staff at the University of Pennsylvania, Department of Otorhinolaryngology Head and Neck Surgery. Here he developed new surgical techniques and gained a national reputation in ear surgery. In 1991, he returned to Sarasota to join the Florida Ear and Sinus Center at the Silverstein Institute.

He serves as Vice President and Education Director for the Ear Research Foundation, and has co-authored over 70 scientific publications. He is a clinical assistant professor at University of Pennsylvania and at University of South Florida Medical Schools.