



SoundNEWS

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If you have diabetes, there's more reason than ever before to make sure you are regularly monitoring your hearing health.

Diabetes AND YOUR HEARING

A recent study from the National Institutes of Health has combined the results of 13 earlier diabetes studies and found that impaired hearing was twice as common among people with diabetes — yet many individuals with diabetes are still unaware of the link.

It's still not known exactly how these conditions are related, but it appears that the high blood-glucose levels associated with diabetes can damage the small blood vessels of the inner ear.

This nationally representative study of 11,405 adults showed that diabetes and hearing loss are linked as early as age 30. And the link between diabetes and hearing loss was actually stronger in individuals 60 or younger. According to the results of the study, those under the age of 60 were over 2.5 times more likely to have some level of hearing loss.

About 95 percent of diabetes cases are type 2 diabetes, meaning they're the result of a defect in the way the body

produces or uses insulin. Type 2 diabetes typically occurs after age 40 and is far more common in people who are overweight, inactive, and have a genetic predisposition to the disease. According to the American Diabetes Association, nearly 30 million Americans have diabetes, and a startling 86 million Americans have prediabetes — as well as a rate of hearing loss 30 percent higher than those with normal blood-glucose levels.

If you have diabetes and have yet to discuss your condition with an audiologist, please contact our office for more information. Hearing loss caused by damage to the inner ear is irreversible. With regular checkups, however, you can make sure that you do not also suffer the adverse effects of slowly developing hearing loss, including struggles communicating at work, trouble hearing in crowded settings, or difficulties communicating with your friends and loved ones.

FREE HEARING SCREENING ONLINE

If you or a friend or family member has been diagnosed with diabetes, you can screen your hearing at home via our website. Go to www.lafayettehearingcenter.com and click on the link for "Hearing Resources" and select "Free Online Hearing Test." If the screening shows a potential issue, please come and see us for a full diagnostic evaluation. Your referrals count more than you know!

Take Advantage of Our COMMUNITY APPRECIATION OFFERS

Battery SPECIAL
Buy one pack, get one free.
Offer expires 12/31/14.

FREE Clean & Check
of your current hearing devices.
Offer expires 12/31/14.

Look who is looping now!

Have you been following our Loop Lafayette initiative? It's hard to believe that in 2010 we had NO looped facilities in Greater Lafayette — today over 13 facilities are looped, with 7 more measured for installation! The Lafayette Lions Club paid for a hearing loop for Edgelea Elementary School, so be sure to thank a Lafayette Lion if you know one!

Here's a list of the most recent looped additions: Christ United Methodist Church, St. Ann's Catholic Church, Westminster Village, University Place, Beck Agricultural Center, Our Savior's Lutheran Church, and Redeemer Lutheran Church. Keep dropping off our Share the Gift of Hearing cards. Let's get the Eastside 9 looped next!

Come on! Let's *loop* Greater Lafayette!

HOW YOUR BRAIN UNDERSTANDS *or misunderstands* WHAT YOU HEAR



Unlike our other senses — all of which rely on chemical processes — hearing is completely mechanical. Your ear translates sound waves into movement through the eardrum and tiny bones in the middle ear, and then electrical nerve impulses are sent to the brain.

Simple, right? Mostly, it is . . . until you get to the brain. Here, the processing of auditory signals becomes extremely complex. It's through the brain's interpretation of auditory signals that we receive intelligible communication through sound — and for the one in six adults who has trouble interpreting sounds, it's usually something in this part of the process that breaks down, which is why auditory difficulties usually require much more than a quick fix.

How do the brains of individuals who misinterpret sounds work differently from those without hearing difficulties? For that matter, how do our brains interpret sounds in the first place?



Auditory Nerve Receptors: The cochlea contains between 15,000 and 20,000 auditory nerve receptors, with each receptor connected to its own hair cell that detects sounds.



Electrical Impulses: Each time a hair cell is activated, a burst of electrical impulses is sent to an area of the brain stem known as the cochlear nucleus, where the brain starts to make sense of these sounds.



Neurons: Groups of neurons in the brain determine the pitch of the sound based on the position of the hair cells that sent the electrical impulses.



Vibration: Louder volumes cause greater vibration in the cochlea, meaning more hairs are stimulated and move with greater force.



Synapses: New research is uncovering more about how language gets decoded in the brain, with different groups of synapses processing different types of sounds. One area, for instance, processes plosive sounds like p, t, k, b, and d, and another area processes fricative sounds like z, v, and s.

— TROUBLE INTERPRETING SOUNDS? —

SENSORINEURAL
HEARING LOSS

If a sound is loud enough, hair cells in the cochlea will break, leading to permanent damage. This means the brain doesn't receive the signal it should (or it detects a much softer version of that signal). These interferences are the most common cause of hearing loss.

Damage to the sensory hair cells is permanent, but amplification with hearing aids tuned specifically to the wearer's hearing loss can vastly improve sound perception and ability to understand speech clearly.

TINNITUS

Tinnitus is the perception of sound in the absence of external noise. There are many causes, but it is often brought about by hearing loss, with the brain trying to replace sounds that aren't being received through the cochlear nerve. The result is the ringing, whistling, and hissing that are common complaints of sufferers.

There are several types of treatment for tinnitus, ranging from counseling to devices designed to mask the tinnitus with other sounds. Many patients, however, see significant benefit from treating the hearing loss that is leading to their symptoms.

HYPERACUSIS

An oversensitivity to certain frequencies and volume ranges, hyperacusis makes some sounds seem unpleasant or painfully loud. The auditory nerves are selectively damaged, while the hair cells that pick up those tones remain intact, resulting in the brain's inability to regulate sounds. Many with hyperacusis also complain of tinnitus, and vice versa.

Counseling can help a patient retrain their reaction to overly loud sounds. Acoustic therapy can also help decrease a patient's sensitivity to sounds over time.

AUDITORY
PROCESSING
DISORDER

An auditory processing disorder is the inability to process information the same way others do, sometimes leading to difficulties recognizing or interpreting sounds and speech. It is thought that a dysfunction of the central auditory nervous system can cause an inability to correctly comprehend sound. A disruption during a sensitive period in auditory development may be the primary cause.

Effective solutions for APD must be highly individualized to address the specific deficit. Altering the communication environment, one-on-one training with a therapist, or assistive electronic devices can all help to improve speech comprehension.

DEFINITION

TREATMENT