U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES • National Institutes of Health

NIH National Institute on Deafness and Other Communication Disorders

NIDCD Fact Sheet | **Hearing and Balance**

Sudden Deafness

What is sudden deafness?

Sudden sensorineural hearing loss (SSHL), commonly known as sudden deafness, occurs as an unexplained, rapid loss of hearing—usually in one ear—either at once or over several days. It should be considered a medical emergency. Anyone who experiences SSHL should visit a doctor immediately because the chance of recovery is greater if the hearing loss is treated early. Sometimes, people with SSHL put off seeing a doctor because they think their hearing loss is due to allergies, a sinus infection, earwax plugging the ear canal, or other common conditions. However, delaying SSHL diagnosis and treatment may decrease the effectiveness of treatment.

Hearing loss of 30 decibels would make conversational speech sound more like a whisper.

Nine out of 10 people with SSHL lose hearing in only one ear. SSHL is diagnosed by conducting a hearing test. If the test shows a loss of at least 30 decibels (decibels are a measure of sound) in three connected frequencies (frequency is a measure of pitch—high to low), the hearing loss is diagnosed as SSHL. As an example, a hearing loss of 30 decibels would make conversational speech sound more like a whisper.

Many people notice that they have SSHL when they wake up in the morning. Others first notice it when they try to use the deafened ear, such as when they use a phone. Still others notice a loud, alarming "pop" just before their hearing disappears. People with sudden deafness often become dizzy, have ringing in their ears (tinnitus), or both.

About half of people with SSHL will recover some or all of their hearing spontaneously, usually within one to two weeks from onset. Eighty-five percent of those who receive treatment from an otolaryngologist (a doctor, sometimes called an ENT, who specializes in diseases of the ears, nose, throat, and neck) will recover some of their hearing.

Experts estimate that SSHL strikes one person per 5,000 every year, typically adults in their 40s and 50s. The actual number of new cases of SSHL each year could be much higher because the condition often goes undiagnosed. Many people recover quickly and never seek medical help.

What causes sudden deafness?

Only 10 to 15 percent of the people diagnosed with SSHL have an identifiable cause. The most common causes are:

- Infectious diseases
- Trauma, such as a head injury
- Autoimmune diseases, such as Cogan's syndrome
- Ototoxic drugs (drugs that harm the sensory cells in the inner ear)
- Blood circulation problems
- A tumor on the nerve that connects the ear to the brain
- Neurologic diseases and disorders, such as multiple sclerosis
- Disorders of the inner ear, such as Ménière's disease.

How is sudden deafness diagnosed?

To diagnose SSHL, a doctor will use a hearing test called pure tone audiometry. This test helps him or her to determine if the hearing loss is caused by sound not reaching the inner ear (because of an obstruction such as fluid or ear wax) or by a sensorineural deficit (because the ear isn't processing the sound that reaches it). Pure tone audiometry can also show the range of hearing that's been lost.

If you are diagnosed with sudden deafness, your doctor will probably order other tests to try to determine an underlying cause for your SSHL. These tests may include blood tests, imaging (usually magnetic resonance imaging, or MRI), and balance tests.

How is sudden deafness treated?

The most common treatment for sudden deafness, especially in cases where the cause is unknown, is corticosteroids. Steroids are used to treat many different disorders and usually work by reducing inflammation, decreasing swelling, and helping the body fight illness. Steroids are usually prescribed in pill form. In recent years, direct injection of steroids behind the eardrum into the middle ear (from here the steroids travel into the inner ear), called intratympanic corticosteroid therapy, has grown in popularity. In 2011, a clinical trial supported by the National Institute on Deafness and Other Communication Disorders (NIDCD) showed that intratympanic steroids were no less effective than oral steroids, but were less comfortable overall for patients. They remain an option for people who can't take oral steroids.

Additional treatments may be needed if your doctor discovers an actual underlying cause of SSHL. For example, if your SSHL is caused by an infection, your doctor may prescribe antibiotics. If you're taking drugs known to be toxic to the ear, your doctor may tell you to stop or switch to another drug. If you have an autoimmune condition that causes your immune system to attack the inner ear, you may need to take drugs to suppress your immune system.

How is sound measured?

Sound is measured in units called decibels. Decibel levels begin at zero, which is near total silence and the weakest sound our ears can hear. By comparison, a whisper is 30 decibels and a normal conversation is 60 decibels. An increase of 10 means that a sound is 10 times more intense, or powerful. To your ears, it sounds twice as loud. The sound of an ambulance siren at 120 decibels is about 1 trillion times more intense than the weakest sound our ears can hear. Sounds that reach 120 decibels are painful to our ears at close distances.

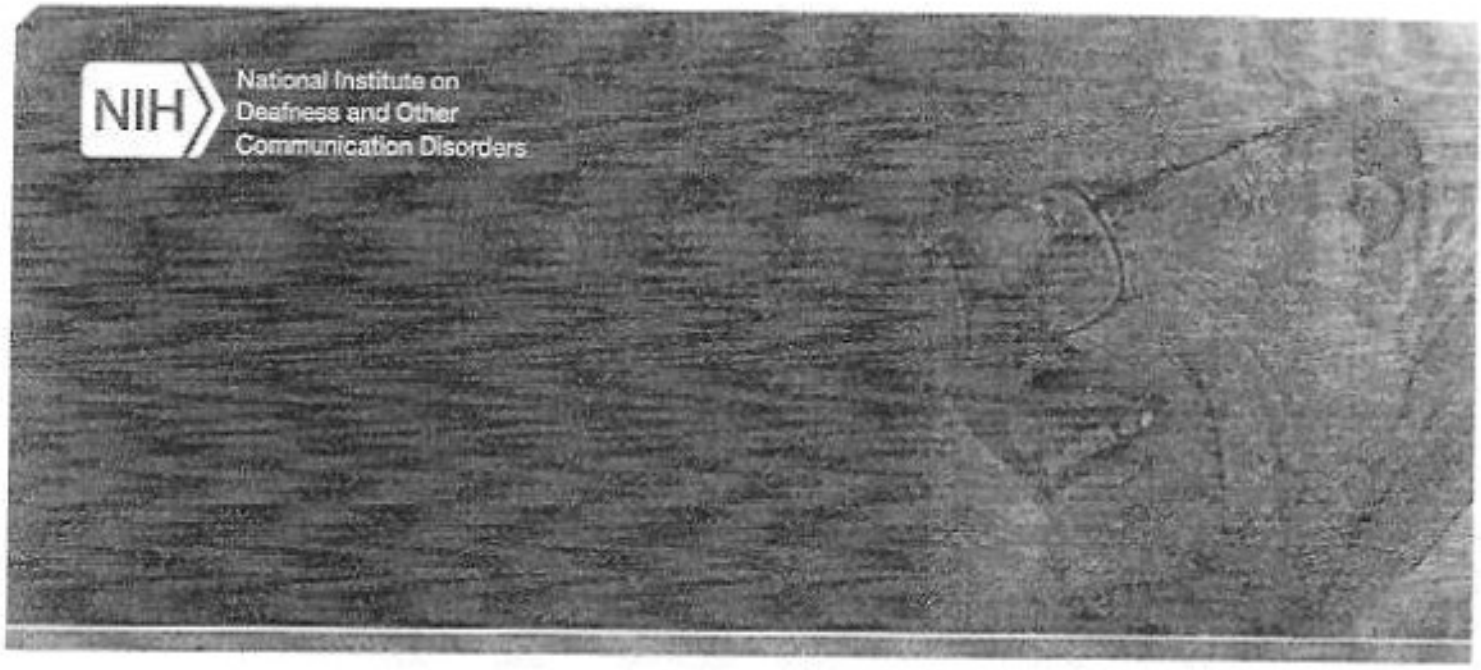
Here are the average decibel ratings of some other familiar sounds:

- The humming of a refrigerator — 45 decibels
- Noise from heavy city traffic — 85 decibels
- Motorcyles — 95 decibels
- An MP3 player at maximum volume — 105 decibels
- Firecrackers and guns — 150 decibels

Scientists believe that, depending upon the type of sound, the pure force of its vibrations at high decibel levels can cause hearing loss. Recent studies also show that exposure to sounds at harmful decibel levels triggers the formation of molecules inside the ear that damage hair cells. These destructive molecules play an important role in hearing loss in children and adults who listen to loud noise for too long.

What research does the NIDCD support on sudden deafness?

Since so little is known about the causes of most cases of SSHL, researchers are studying how changes in the inner ear, such as disrupted blood flow or inflammation, may contribute to hearing loss. Researchers are also testing new ways to use imaging to help diagnose SSHL and potentially detect its causes.



Where can I find additional information about SSHL?

The NIDCD maintains a directory of organizations that provide information on the normal and disordered processes of hearing, balance, taste, smell, voice, speech, and language. Visit the NIDCD website at *http://www.nidcd.nih.gov* to see the directory.

Use the following keywords to help you search for organizations that can answer questions and provide information on SSHL:

- Late-deafened adults
- Brain injury
- Noise-induced hearing loss

More NIDCD fact sheets on hearing loss:

- Ménière's Disease
- Noise-Induced Hearing Loss
- Ten Ways to Recognize Hearing Loss
- Tinnitus

Visit the NIDCD website at *http://www.nidcd.nih.gov* to read, print, or download fact sheets.

For more information, additional addresses and phone numbers, or a printed list of organizations, contact us at:

NIDCD Information Clearinghouse
1 Communication Avenue
Bethesda, MD 20892-3456
Toll-free Voice: (800) 241-1044
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The NIDCD supports and conducts research and research training on the normal and disordered processes of hearing, balance, taste, smell, voice, speech, and language and provides health information, based upon scientific discovery, to the public.

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