



# the Trumpeteer

An Ear- Responsible Publication of Central Carolina ENT, PA

## Sudden Idiopathic Sensorineural Hearing loss (SIHL)

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You awake one morning and something doesn't seem quite right. It may take you awhile to discern what the problem is. You realize that one of your ears seems blocked or stopped up and as you attempt to use the telephone on that ear, realize you are not hearing anything clearly. You may hear pronounced distortion, garbled speech, or hear nothing at all. This may or may not be accompanied by tinnitus (ringing or roaring in the affected ear) and/or imbalance, dizziness, or actual vertigo.

**Sudden sensorineural hearing loss is a medical emergency.** Sudden is defined by an onset of 3 days or less. While varying degrees of hearing loss are reported in the literature, at least a 30 dB deficit or decline from previous hearing threshold levels across 3 octaves is the general definition. In most cases, it is a unilateral (one ear) phenomenon, but about 2% of cases are bilateral (both ears). There are no true gender differences. Medical consultation is imperative to rule out potentially life threatening conditions and rule out treatable entities, but in some cases, the cause of the hearing loss cannot be determined, therefore deemed "idiopathic". Idiopathic means "without explanation". For many patients, this diagnosis is hard to take. If this happened so suddenly, there has to be a reason. While viral infections, autoimmune/immunologic conditions, vascular compromise, neurological entities, cochlear leaks/rupture and neoplasms (tumors) have been attributed, oftentimes, it is impossible to pinpoint precisely what lead to this event. Whole chapters have been written on each of these categories, but less has been written on the nature of "idiopathic" hearing loss. Furthermore, sensorineural means just that, affecting the sensory hair cells in the cochlea or the neural fibers of the 8th nerve (cochlear nerve). This may be/become a permanent hearing loss.

Bloodwork, endocrine studies, and radiologic/nuclear imaging are performed to rule out threatening medical conditions such as stroke or tumor formation. A complete audiological evaluation is necessary to determine type, degree, and prognosis of the hearing loss. Shotgun therapies (several systemic medications taken simultaneously) address decreasing inflammation, fighting possible viruses, improving vascular circulation, and re-establishing the cochlear potentials in the endolymph, a fluid filling the inner ear. There seems to be a time window to the success of shotgun therapeutic approaches, therefore, it is imperative to get to an ear, nose and throat doctor immediately, not waiting weeks to see if it comes back. While spontaneous recovery is possible, this is not the general rule with severe/profound SIHL. Seeking prompt medical care, ruling out other pathologies, beginning therapy, and monitoring by serial audiograms is important to ascertain if this is a temporary or permanent condition.

Possible outcomes are full recovery, partial recovery, or sustained hearing loss of varying degrees. With full recovery, it might be prudent to recheck the hearing in six months and a year just to be certain of stable hearing thresholds. If there is partial recovery, hearing aid amplification may be beneficial to improve hearing in that ear. If the hearing loss is severe/profound and total, there are rehabilitative options: 1) CROS (contralateral routing of signal) hearing aid amplification - a hearing aid that transmits by a microphone worn on the deaf ear wirelessly to the good ear or 2) BAHA (bone anchored hearing aid) for single sided deafness - a surgically implanted bone conduction device that transmits sound through the skull to the good ear. These options will only be discussed after all medical concerns are addressed and proper time allotted for recovery.



## Custom Earmold Services

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The audiology department at Central Carolina ENT offers many services including hearing and balance testing, hearing aid evaluations, and custom earmold products. We typically use Westone Labs for our specialty custom molds for motorcyclists, swimmers, hunters, musicians, and those individuals exposed to loud noise at work or play. The field of custom ear products has become quite specialized as there is a great deal of engineering that goes into the design and making of these custom products. The prices can vary from \$90 for a pair of swim molds to \$900 for a pair to musician ear pieces (ES5) depending upon the electronics and drivers.

### How Loud is Too Loud?

Both the amount of noise and the length of time you are exposed to it determine its potential to damage your hearing. Noise levels are measured in decibels (dB). The higher the decibel level the louder the noise.

Standards set by OSHA (Occupational Safety and Health Administration) indicate that continued exposure of unprotected ears to noise over 85 dB has potential to cause a gradual hearing loss in a significant number of individuals. Louder noises will accelerate this damage. The allowed exposure time decreases by ONE - HALF for each 5 dB increase in the average noise level.

Safe exposure times are displayed in figure 1. Riding a motorcycle or operating a chain saw more than 2 hours without ear protection could possibly cause permanent hearing loss. Ear protection can come in many different styles, designs, and colors. A description of some of the most popular custom products are listed below.

Safe Exposure Times dB*		
Instantaneous permanent damage	140+	Shotgun, rifle, jetplane takeoff
Less than one second	130	Jackhammer, heavy industry
Less than ten seconds	120	Rock concert
Threshold of pain		
1.5 minutes	110	Power tools, snowmobile
15 minutes	100	Chainsaw, motorcycle
2.5 hours	90	Lawn mower
Eight hours	85	<b>Beginning of Danger Zone</b>
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Prolonged exposure to noise levels 85 dB and higher can result in permanent hearing loss	80	City Traffic
	70	Vacuum cleaner, hair dryer
	60	Office, sewing machine
	50	Normal conversation
	40	Refrigerator
	30	Whisper
	20	Rustling leaves
Common noise levels (dB), and their effect upon hearing	10	Breathing
	0	Threshold of normal hearing

\*Exposure time based on NIOSH occupational noise exposure standards

Figure 1



Designed for hunting and other high-level impact noise environments, this full shell earpiece features a valve that closes in the presence of impact noise. This allows hunters to hear clearly until the weapon is fired and still have some hear-



The earpiece of choice for performing musicians and concert attendees. The style 49 is also a great option for anyone who needs to hear accurately in high noise environments. Popular with music teachers, DJs, flight attendants, bartenders, waitresses, dentists and dental workers, the style 49 is a canal-style earplug that is virtually unnoticeable. The flat attenuation characteristics allow the wearer to hear accurately - but at a safer volume. Can be ordered with a choice of either 9, 15, OR 25 dB filters.

Originally designed for use while surface swimming or showering to prevent moisture from entering the ear canal, the AQ is also a superb sound attenuator. Available in a variety of colors and color combinations, with a Noise Reduction Rating of 27 dB.



The Premier custom in-ear musicians' monitor for any performing artist!

The ES5 was designed to deliver sound quality, clarity and response comparable to monitors with more drivers - at a much more affordable price. With 25dB of ambient noise reduction and the long-wearing comfort only a custom earpiece can provide, the ES5 is the clear choice for the most discriminating listener looking for a high-end, well-balanced custom earphone.

(Some graphics and earmold information from [www.westone.com](http://www.westone.com))



## Five Reasons to Use Sunscreen

### Aging:

Ultraviolet A (UVA) rays are not absorbed by the ozone layer and will penetrate deep into the skin, causing premature aging. **90% of premature aging is caused by sun exposure.** UVB rays are the primary cause of sunburns and mostly affect the surface of the skin.

### Skin Cancer:

According to the American Cancer Society, **1 in 5 Americans will develop some type of skin cancer in their lifetime.** If you are a Caucasian, your odds of skin cancer increase to 1 in 3.

### Prime time To Burn:

The National Weather Service issues the UV index, a daily forecast of UV rays. The higher the UV index the stronger the sun will be. **The UV index is at its peak from 10 a.m. to 4 p.m. on summer days.**

### Skiers Beware:

**Sand reflects 17% of UV rays but snow reflects 80%.** UV rays increase 4% for every 1,000-foot climb in altitude.

### Daily Application:

**80% of the sun's UV rays can pass through clouds,** making sunscreen a daily requirement, even on overcast days.



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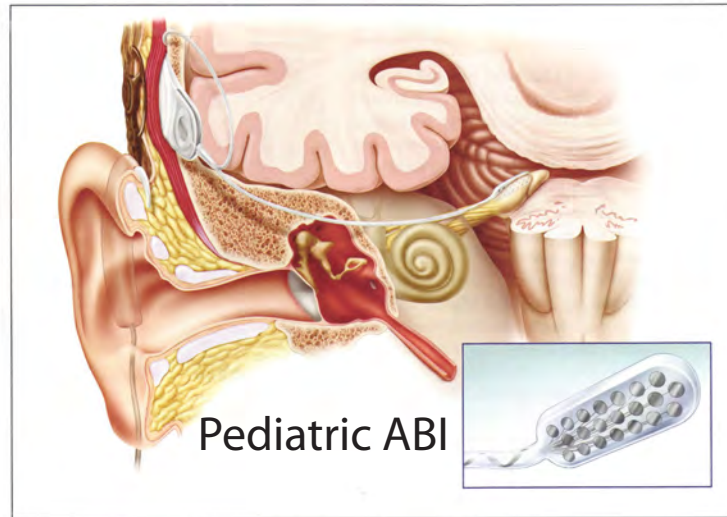


## Bypassing the Ear to Deliver Sound - Auditory Brainstem Implant

(Article - Permission House Ear Institute, July 2011, [www.hei.org](http://www.hei.org))

**Imagine that your child** is born with hearing loss or deafened by childhood disease. Most parents would leave no stone unturned in their effort to bring the world of sound to their child. There is urgency. The first five years are critical in developing the communications skills needed for a lifetime. Newborn hearing screening now provides early detection and the opportunity for early intervention. Advanced hearing aid technology offers a solution for many children with auditory nerves. A cochlear implant can be the answer when the cochlea and auditory nerves are present and other elements of the auditory system aren't functioning. However, there are some children who, through genetic abnormalities, are born without cochlea or auditory nerves, denying their brains access to sound. These children are not candidates for hearing aids or cochlear implants.

Fortunately, the auditory brainstem implant (ABI) is a device that can help these children. Originally developed at House Research Institute to provide access to sound for people who lost their auditory nerves due to acoustic tumors, ABIs have been implanted in over 1,000 adults worldwide, nearly 300 by House Clinic physicians. Several physicians in Europe, including Dr. Vittorio Colletti



of the University of Verona, Italy, have successfully implanted the ABI in children as young as 6 months old. Unfortunately, in the United States the ABI is not yet approved by the Food and Drug Administration (FDA) for implantation in children under 12 years of age.

To remedy this, Institute researchers plan a clinical trial to gain FDA approval. The initial trial will focus on toddlers between ages two and three – the crucial auditory development period. House Research Institute is well positioned to become the first pediatric ABI implantation center in the U.S. The House ABI research group has more experience in adult ABI placement and programming than any other organization in the world. Institute pediatric experts are equally well qualified in cochlear

implantation, programming, testing and monitoring. Implanting ABIs in children presents some special surgical challenges, and team members will be working with Children's Hospital in Los Angeles. House Clinic neurosurgeon Marc Schwartz, who has experience in placing the ABI, will be working with a pediatric neurosurgeon and surgical support team at Children's Hospital.

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