

Would you believe that 25% of Americans older than age 65 have some degree of hearing loss? The real tragedy is that much of that hearing loss could have been easily prevented if they had just been aware of the potential for damage from loud noises.

The ear is divided into three main parts; the external ear includes that flap of tissue attached to the side of your head (the auricle) and the ear canal up to the ear drum. The middle ear is the chamber behind the ear drum, the "hammer", "anvil", and "stirrup" bones are contained in this chamber. It communicates with the sinuses by way of the Eustachian tube. This cavity can become infected when the Eustachian tube is clogged for whatever reason--head colds are frequent causes of this. Finally, the inner ear is where sound waves are transmitted into nervous impulses that go to the brain. This is also where your organs of balance are located.

Hearing can be impaired by numerous drugs, including aspirin, alcohol, nicotine, certain infections and antibiotics and anti-cancer drugs are common causes. Trauma can also cause damage. The temporal bone of the skull contains most of the delicate inner structures of the ear--these microscopically fine membranes would obviously be severely damaged if the temporal bone was broken by whatever cause.

Noise from whatever cause is the most common cause of damage to the ear and to hearing. Occupational exposures such as jet engine noise, jackhammers and heavy equipment are the most commonly thought of. Explosives and firearms also cause a lot of damage. Even "pleasurable" noise such as music that is played to loud at a concert can damage the ear. The degree of damage depends on the duration of the exposure, the pitch or frequency of the noise, the frequency of exposure to the noise, and most importantly of all, to the degree of loudness. The degree of loudness is measured in decibels (dB). OSHA requires that hearing protection be worn by anybody in an occupation that involves exposure to 85 dB for 8 or more hours a day. This is at the upper limits of what would be expected in a busy office or an airplane cabin--it's not that noisy.

Hearing loss from exposure to noise excess is rarely painful, there may be a vague fullness to the ear, sounds may seem muffled or farther away than they actually are, and a ringing sound (tinnitus) may be noticed when the source of the noise is removed. These symptoms generally go away hours to days after the exposure. Most people think that no lasting harm has been done. Unfortunately, this is not so, small amounts of damage will add up over time to produce profound effects. High frequency loss can go on for the longest time undetected. The reason for this is that most conversational frequencies are much lower than the normal ear can perceive. The individual doesn't realize there is loss since there is little exposure to very high frequencies in daily life. The first sign of high-frequency hearing loss may be difficulty in understanding the

conversation of small children and some women with higher pitched voices. Bird calls may not be appreciated either.

How do you know if you are endangering your hearing? If you have to shout to be heard above background noise, or cannot understand somebody speaking to you from 2 feet away (and your hearing is not already severely impaired), you are in trouble. Likewise, if you are listening to a stereo headset and somebody standing next to you can also hear it--your tunes are too loud.

What can you do to prevent hearing loss? First, if your job requires constant exposure to a noisy environment, choose a quiet hobby or avocation. Riflery or using handguns for sport wouldn't be wise (guns can generate sounds exceeding 130 dB--always use hearing protection if you anticipate being around gunfire). Disposable earplugs can reduce noise exposure by 25 dB and are useful when mowing the lawn, riding a motorcycle or other loud motor vehicle, or using power tools. Sound absorbing materials can be used at work or home. Rubber mats, carpeting, curtains, foam rubber panels can be used around computer printers, noisy kitchen appliances and other noisemakers. Don't listen to several noisy machines at once, don't play the stereo and the TV while the vacuum is running. The message here is to not try to drown one sound out with another. Don't crank up your car stereo to drown out the sound of the big truck driving next to your car. Get your hearing checked periodically. All children should get routine tests while in school. If you have a baby that is slow in developing speech, consider a hearing test to make sure that the child is getting proper stimulation to understand and learn to speak.

What should you do if you think your hearing is already damaged? Probably the best place to start would be with your local physician. The cause could be anything from an ear canal plugged with ear wax to a brain tumor. A physical examination is a must. Once your doctor has determined what the cause of hearing loss is, appropriate treatment can be prescribed. This can be anything from medications, to cleaning the ears out, possibly a hearing aid or even surgery--from a simple office procedure to something requiring hospital care.

Above all, don't take your ears for granted and don't take chances with your hearing. If you have a loss, see your doctor for a proper evaluation--the appropriate therapy for a condition depends on the exact reason that the loss is present. Surgical problems won't be resolved with a hearing aid, just like a tumor won't disappear with antibiotic therapy. Best of all, protect what you do have, remember that any loss can be cumulative, if your hearing is already poor, don't abuse your ears any more!