

Three Cheers for Ears!



Jake pulled a portable CD player from his backpack and settled in for the long bus ride to the science museum. "You're lucky," Sam said as he plunked himself down on the seat beside him. "My mom won't let me listen to music with headphones. She says if it's too loud, it can make you go deaf."

"I sure hope not," said Jake. "My grandpa is losing his hearing. Now he has to wear a hearing aid."

At the museum, Jake and Sam decided to find out if Sam's mom was right. They headed over to the human body exhibit and stood in front of a gigantic model of an ear. A museum guide was explaining how ears help you hear. "That flap on the side of your head is only a part of your whole ear," she said. "Tiny, complicated structures inside your ear do the main job of hearing."

Jake and Sam moved closer to the model. "Hey, look, it says there's a drum," said Sam.

"And a hammer," added Jake.

"That's right," the guide explained. "The eardrum is a thin piece of skin that's stretched tight like a drum. It vibrates or moves very fast when sound waves hit it. These vibrations are carried to three tiny bones called the hammer, anvil, and stirrup. They conduct, or pass, the vibrations to your inner ear, where they are changed into nerve signals and sent to your brain. Your brain makes sense of the sounds you hear."

What Is Hearing Loss?

"What happens when you can't hear?" Jake asked.

"That depends," the guide replied. "If something like wax, for example, gets stuck in your ear canal, it can block sound waves from getting to your eardrum. This type of problem is called conductive hearing loss."

"Ew-w-w! Earwax is gross," said Sam.

"Actually, earwax protects your ears," the guide explained. "It contains special chemicals that fight infections and prevent dust and dirt from getting inside. Plug your ears with your fingers, and you'll know what conductive hearing loss is like."

"The sounds outside are soft, but my own voice sounds really loud," said Sam.

"Has anyone ever had an ear infection?" the guide asked.

Most of the kids nodded.

"Well, an infection can also make you lose your hearing for a while." The guide continued, "If the tube that goes from your middle ear to the back of your throat gets blocked, germs can get trapped inside. Your ear will hurt and feel like it's ready to burst. When the doctor looks with a special flashlight, the eardrum appears red and doesn't move in and out as it should. If you have an ear infection, you may have to take medicine for it. Sometimes doctors have to operate to open up blocked tubes or put in new tubes to keep the middle ear from getting infected.

"*Sensory* (SEN-suh-ree) hearing loss means part of the inner ear is not working. A person may hear some sounds but not others, or sounds may be muffled. Sensory hearing loss can be caused by a number of things. Sometimes the ears don't develop properly before a baby is born. There are also some serious infections that can cause sensory hearing loss in kids. Sensory hearing loss is usually permanent. Kids with sensory hearing loss may need to wear hearing aids."

Did You Know?

Your ears are amazing structures. Here are some fascinating facts about ears and hearing.

- The three bones in your ear that help you hear are the smallest bones in your body.
- The famous composer Ludwig van Beethoven (1770-1827) started to lose his hearing when he was just 26. He wrote some of his greatest music without being able to hear it.
- Hearing tests tell how well your ears work. To take the test, you wear headphones and sit in a special room so you don't hear any stray noise. A machine makes different tones. You listen first with one ear and then the other and raise your hand each time you hear a sound. The tones start loud and get softer and softer until you can't hear them anymore. That tells the doctor how well you can hear.
- Ever wonder why your ears feel funny in a tunnel or on an airplane? There is air both inside and outside your eardrum. To balance the air pressure, you need to let more air into the inside of your

ear. Yawning, chewing, swallowing, or blowing your nose until your ears "pop" helps you hear normally again.

Now Hear This

"What about loud music?" Sam wanted to know. "Can that make you lose your hearing?"

"Any kind of loud noise can damage your hearing if it goes on for a while," the guide explained. "If the music is so loud that your ears start hurting or you have to yell to be heard over it, there's a good chance your ears could be injured."

"What if you listen with headphones?" asked Jake. "Sam's mom says they're bad for your ears."

"She's partly right. If someone standing near you can hear music coming through earphones you are wearing, the music is too loud." The guide went on, "Listening to loud noise can cause *tinnitus* (TIN-uh-tus), which is the term for ringing in your ears. If the noise isn't too loud and you don't listen too long, your hearing can return to normal. But you can damage your hearing permanently if the noise is too loud or you are exposed to it too long. That's why construction workers wear ear protection. Their equipment can be extremely loud.

"Using headphones can be dangerous if the volume is too high. Don't crank it up, and you should be fine as long as you give your ears a rest once in a while."