

## Questions?

Your questions are important. Call your doctor or health care provider if you have questions or concerns.

- UWMC  
Otolaryngology –  
Head and Neck  
Surgery Center:  
206-598-4022.
- HMC  
Otolaryngology –  
Head and Neck  
Surgery Center:  
206-744-3229

## If You Have Tinnitus

If you have tinnitus, it is important that you see an ear doctor (*otolaryngologist*) to have your hearing checked and your ears examined.

To schedule a visit to UWMC's Otolaryngology Department, please call 206-598-4022.

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## Patient Education

UWMC Otolaryngology – Head and Neck  
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# Tinnitus

*Ringing in the ears*

**Tinnitus (tin-eye-tuss) is noise or a ringing sound in the ear. Most times, the sounds are high-pitched and bell-like. The word tinnitus comes from the Latin word *tinnire*, which means “to tinkle or ring like a bell.”**

**Tinnitus is a symptom, not a disease. It may occur off and on or all the time, and it may be mild or severe. It may also vary from a low sound to a high-pitched sound. In 99% of people with tinnitus (99 out of 100), it is heard only by the person who has it. In 1% of people (1 out of 100), others can also hear it.**

**This handout explains how hearing works and what causes the different types of tinnitus. It also gives tips to help you deal with your tinnitus.**

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Tinnitus is a very common symptom that most often is linked with hearing loss. Many times, it is the first sign of hearing loss.

Tinnitus is similar to *phantom pain*, which is a feeling of discomfort in a missing part of the body. In the case of the ear, tinnitus is sound that is “heard” from the damaged part of the ear. Tinnitus is the result, not the cause, of hearing loss. The ringing sound is produced in the brain, not the ear.

Usually, if hearing loss gets worse, the tinnitus gets louder. If the hearing problem can be corrected, the tinnitus usually improves. Some hearing conditions can be fixed with surgery or drugs, and others are helped by hearing aids.

There is no treatment to cure tinnitus. But, there are treatments that help make the tinnitus easier to live with.

### **Tinnitus Features**

Some of the features of tinnitus are:

- It will vary in loudness. It may even be absent for long periods.
- It can increase when you pay attention to it, and decrease when you ignore it.
- Rarely, it can be increased by eye movement or jaw clenching.
- There is not a direct relationship between the hearing loss and the timing or the loudness of tinnitus. Some people can have mild hearing loss for years before tinnitus starts.

- Use sounds in your room, such as a radio you can set to turn off after you are asleep. The sounds will cover up the tinnitus and make it less annoying. This works well for people who find that their tinnitus gets louder in quiet surroundings.
- Sleep with your head raised on pillows. This will help reduce head congestion and may make the tinnitus less noticeable.

Talk to your health care provider about using sedatives. They are not a long-term treatment option, but they may give short-term relief.

### **Dealing with Your Tinnitus**

There is help for people with tinnitus who are very bothered or even depressed by it. To help people cope with their symptoms, one or more of these therapies are used:

- Behavioral and cognitive therapy, a type of therapy that focuses on problem-solving
- Antidepressant medicines
- Habituation training, to learn how to tolerate your tinnitus
- Counseling and psychotherapy

Beware of any over-the-counter treatment that claims to stop tinnitus. There is no such treatment. If there were, it would be widely known and used.

- Sudden exposure to a loud sound
- Long exposure to very loud noises
- Reaction to a drug
- Aging
- Tiny changes in the blood supply to your ear
- Anything that affects the fluid pressure in the inner ear

### **Brain Tinnitus**

Damage to the ear interferes with how well the nerve to the brain works. When damage occurs, the brain produces its own sensations to make up for what is lost. “Hearing” does not happen until the brain processes the incoming signals and identifies them as sounds or words.

It is not possible to directly treat the part of the brain that allows you to hear. This would interfere with brain function. But, it is possible to use medicines to treat other parts of the brain that affect the tinnitus.

### **Treatment**

If the cause of the tinnitus is found, treatment often helps. If treatment of the cause is not possible, try to:

- Avoid stress as much as you can. Stress causes physical changes that can make tinnitus worse.
- Get enough rest, and avoid getting too tired.
- Avoid nerve stimulants such as coffee (caffeine) and smoking (nicotine).
- Accept that tinnitus is annoying and ignore it as much as you can.

- Some people with very mild hearing loss have severe problems with tinnitus. Other people with severe hearing loss may hardly be bothered by tinnitus.
- About 95% of people (95 out of 100) are not bothered by their tinnitus. But, in 5% of people (5 out of 100), it becomes very annoying and distracting.
- Tinnitus will not cause you to go deaf. It will not make you lose your mind. It is a very common symptom of hearing loss.

### **How Your Hearing Works**

Understanding how you hear may help you understand the possible causes of tinnitus. Hearing depends on 5 main parts of the body: the outer ear, the middle ear, the inner ear, the nerve pathway, and the brain.

#### **Outer Ear**

Your outer ear is made up of the *auricle* and the outer *ear canal*. These are structures that collect sound waves and transit them to your eardrum.

#### **Middle Ear**

Your middle ear is a chamber between the ear canal and the inner ear. The middle ear is made up of the eardrum and 3 *ossicles* (tiny bones): the *malleus*, the *incus*, and the *stapes* (hammer, anvil, and stirrup).

Vibrations of the eardrum are carried across the middle ear by these 3 small bones. The third bone (stapes or stirrups) moves like a piston, causing waves of fluid in your inner ear.

The middle ear chamber is lined with a type of membrane similar to the lining of the nose. It contains mucous glands and blood vessels. This chamber connects with the back of your nose by a small tube called the *Eustachian* tube. This tube equalizes the pressure between your middle ear and the outside air. You feel this when your ears “pop” when you travel up or down in altitude.

### ***Inner Ear (Cochlea)***

The inner ear is inside a bony capsule that contains fluid and over 30,000 tiny hair cells. It is lined by a clear, delicate membrane. Tiny blood vessels bring blood to the inner ear.

In this small capsule, fluid waves from movement of the stapes bend the hair cells. This transforms the sound waves into electrical signals, and then into nerve impulses.

### ***Nerve Pathways***

The nerve impulses created in the hair cells of the inner ear are carried to the brain by the hearing nerve. This nerve pathway that leads to the brain is inside a small, bony canal that also contains nerves that control balance and move the muscles in your face. These nerve pathways connect to nerve centers in the brain.

### ***Brain***

The hearing nerve pathways divide as they reach the brain. The brain detects these signals and interprets them as speech, music, noise, etc.

## **Causes of Tinnitus**

### ***Outer Ear Tinnitus***

Tinnitus in the outer ear can be caused by a blockage in the ear canal. Wax, a foreign body, or an infection might cause the blockage.

Blood vessels in the skin of the ear canal or eardrum can also become *dilated* (enlarged) or *constricted* (narrowed), causing an irritation in the hearing nerve.

These causes of tinnitus can be treated.

### ***Middle Ear Tinnitus***

Any problem in the middle ear may cause tinnitus. These problems include swelling of the lining membranes due to allergy, infection, injury, or *vascular* (blood vessel) abnormalities. Fluid from allergy, infection, or Eustachian tube blockage may cause pressure, hearing loss, and tinnitus.

Infection, injury, and *otosclerosis* (a type of hearing loss) affect the motion of the 3 bones of the middle ear and may also cause tinnitus.

### ***Inner Ear Tinnitus***

The hair cells are the most delicate structures of the ear. Even a very small swelling or interference can cause tinnitus. Inner ear tinnitus may be caused by:

- Infection
- An inherited condition
- *Systemic* disease (a disease that affects other parts of your body)