What is tinnitus?

Tinnitus takes many different forms. The sound, the intensity and the level of annoyance can all vary. Tinnitus is often described as “ringing in the brain.” People report everything from random episodes that do not bother them to a constant noise that affects their daily life. A person may hear ringing, chirping, whooshing or clicking sounds. It can occur a few times a month or many times in one day. It can last for a few moments or several hours, or it can be constant – even while sleeping. For some, tinnitus has a pulsing or repeating pattern.

There are three traits that define tinnitus: First, it is a sound heard by the person. Second, it is involuntary; the person cannot make it happen. Third, it comes from inside the head.

You are not alone

Most people have tinnitus at some point, even those with normal hearing. It can occur when exposed to loud noise, such as a rock concert. After a few hours or the next morning, it may go away. It can occur suddenly, and then disappear just as suddenly. Many experts think this is a part of normal hearing. But when tinnitus starts to impact one’s day-to-day routine, medical help is needed.

About 10 to 15 out of 100 people report that they often have tinnitus. About a quarter of these suffer enough to seek medical treatment. These numbers are likely to grow: Tinnitus affects about one third of people over age 65.
What causes tinnitus?

We don’t really know the causes. It may be related to the nervous system or psychological effects. We need to consider both of these aspects when trying to find relief from your tinnitus.

A common cause is inner-ear cell damage. Tiny, delicate hairs in your inner ear move from the pressure of sound waves. This triggers the release of electrical signal to your brain. Your brain interprets these signals as sound. If the hairs inside your inner ear are damaged, the signals change. The brain may misinterpret the signals, causing the perception of tinnitus.

Other causes include other ear problems, chronic health conditions, and injuries that affect the nerves in your ear or the hearing center in your brain. In many cases, an exact cause is never found.

Common causes of tinnitus

• **Hearing loss due to age.** Hearing gets worse with age, usually starting around age 60.

• **Exposure to loud noise.** Heavy equipment, chain saws and firearms are common sources of noise-related hearing loss. Music devices can cause hearing loss if played loudly for long periods. Tinnitus caused by short-term exposure, such as attending a loud concert, usually goes away.

• **Earwax blocking the eardrum.** Too much earwax can cause hearing loss or irritate the eardrum.

• **Ear bone changes.** Stiffening of the bones in your middle ear may cause tinnitus.

Medicines

A number of medicines may cause tinnitus or make it worse. Often the noise goes away when you stop the drugs. These medicines are:

• Antibiotics: polymyxin B, erythromycin, vancomycin and neomycin

• Chemotherapy: mechlorethamine and vincristine

• Water pills (diuretics): bumetanide, ethacrynic acid or furosemide

• Quinine medicines used for malaria or other health conditions

• Certain antidepressants

• Aspirin taken in very high doses (12 or more a day)

Other causes of tinnitus

• **Meniere’s disease.** Tinnitus can be an early sign of Meniere’s disease, an inner ear disorder.

• **TMJ disorders.** Problems with the joint where your lower jawbone meets your skull.

• **Head injuries or neck injuries.** Injury to the head or neck can affect the inner ear, nerves or brain function linked to hearing. These injuries tend to cause tinnitus in only one ear.

• **Acoustic neuroma.** This is a tumor (non-cancerous) that grows on a nerve in the inner ear. The inner ear controls balance and hearing. This condition generally causes tinnitus in one ear.

• **Blood vessel disorder.** This is a rare cause of tinnitus.
Is tinnitus real?

Tinnitus is very real. It is a “sound” heard by the person who experiences it, whether or not someone else can hear it. In fact, brain scans show brain activity typical of hearing sounds through the auditory system (organs of the ear).

Tinnitus is a symptom and not a disease – just as arm pain could be a symptom of a fracture or break. And since tinnitus may signal certain medical conditions, it should never be dismissed.

Most cases of tinnitus are harmless. See a hearing care provider if you have tinnitus that:

- is constant.
- is heard only in one ear.
- includes dizziness or balance problems.
- affects your day-to-day activities.

Can my tinnitus be cured?

In some cases, when the cause of tinnitus is known (such as a side effect of medicine), it is possible to manage or even reduce the tinnitus.

For most patients, there is no known cure, but there are many ways to help you manage it and get relief.

Always talk to a hearing care expert before trying any vitamins or herbal remedies. There is little proof that these work.

A hearing provider can tell you about ways to manage tinnitus. It is important to find the plan that works best for you.

What is hyperacusis?

Hyperacusis is often found along with tinnitus and is treated with some of the same methods. People with this disorder cannot tolerate sounds that do not seem loud to others. Examples are the noise from a running faucet, riding in a car, walking on leaves, a fan on the refrigerator and the shuffling of papers. High frequency sounds may be most annoying.

The quality of life for these people can be greatly affected. It is difficult and sometimes impossible for them to function with all the background noise. This can lead to social isolation, fear of normal sounds and depression.

Our goal is to reduce the patient’s sensitivity to sounds and to enable them to take part in everyday life without discomfort.
Habituation

We all filter out sound every moment of every day. Sound passes into the ear and up to the hearing center of the brain. If a sound is new, we will hear it because the autonomic nervous system (ANS) thinks it’s important. If the ANS judges a sound to be unimportant (such as a new refrigerator), it will soon filter it out. We will no longer hear it. This is the basic concept of habituation. This is why millions of people are not bothered by their tinnitus. They filter out their tinnitus because their ANS tells them it’s meaningless.

For some people, the ANS judges the tinnitus as something to be concerned about. When concern, stress, anxiety or fear develops, the tinnitus now has meaning. This keeps the tinnitus at a high level of perception because the ANS has decided this is a sound that needs to be tracked.

Sound therapy and education are used to manage tinnitus. We cannot get rid of tinnitus, but we can help you change your reaction to the tinnitus. We can lower the strength of the tinnitus signal by adding sound to your environment. This is much like reducing the strength of candle light by adding more light to a dark room. We don’t actually change the tinnitus, but one is less aware of it with added sound.

What are the options for managing tinnitus?

There are a number of devices for sound therapy. When developing a plan to manage your tinnitus, it is important to think about your needs and lifestyle.

Tinnitus sound generator

- A TSG is a device like a hearing aid that sends sound to the ear to “mix with” the tinnitus.
- It comes in a variety of shapes and sizes.
- You are able to alter the noise from the device.

Combination hearing devices

- These consist of a TSG and hearing aid combined in the same device.
- You may choose different levels of technology.

Sound pillow

- Two stereo speakers are buried within a comfortable hypoallergenic pillow that connects to an MP3 player.
- Plays slow music with no sudden tempo changes or loud volume to disrupt sleep.
- Pre-loaded with 18 one-hour tracks of sounds and music.

The contrast between the frog and its background makes the frog easy to see. The same frog on a background it has adapted to blends in and is harder to see. The aim of sound therapy is to teach the brain to think of tinnitus as an unimportant sound that blends into the background.
**Do it yourself**

Independent therapy is used to embed your tinnitus in sound, 24 hours a day. You notice the tinnitus less and it is less disturbing.

- Patients select the music or sound that gives the greatest benefit for them during daytime hours.
- At night or when sleeping, many patients find it more restful to use a sleep sounds machine to lessen tinnitus.

**Will I always have to use the TSG?**

The goal of a TSG is to lessen the strength of the tinnitus signal by “covering it up” with the noise from the device. This filters out the tinnitus like other unimportant sounds. Learning to cope with tinnitus is a process. It should be handled carefully and treated over a period of time.

**Health psychology**

Health psychology is a specialty that helps people cope with the stress and anxiety that often come with illness or injury. We focus on serving people with sudden, ongoing and life-changing medical conditions.

**We are here to serve you**

University of Minnesota Physicians has licensed health psychologists who can help you take an active role in your health care. We offer practical steps to deal with illness, medical treatment, self-care programs, emotional issues and healthy behaviors. We provide psychological assessment and treatment for a broad range of concerns. Our health psychologists use a wide range of approaches, including cognitive-behavioral therapy.

**How we can help**

- **Coping** – We help you with the emotional issues of your illness.
- **Challenges** – Difficult challenges seem to increase during illness. We can teach you steps and strategies for managing stressful situations.
- **Feelings** – We help you deal with anger, anxiety, confusion, depression, fear, frustration, grief, loss of control, sadness, uncertainty and motivation.
- **Behaviors** – When you are ill, it can be harder to take care of yourself. We can help you manage your weight, learn how to relax and quit smoking.
- **Counseling** – We offer several types of counseling and can build a plan that meets your needs. Our practice works with individuals, couples, or families.
Your Management Plan

Sound Therapy ____________________________

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Music and Relaxation ____________________________

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Other ____________________________

__________________________

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Follow-up

Your follow-up visit is scheduled for:

Date _______________ Time _______________

Where ____________________________________
University of Minnesota Medical Center  
516 Delaware Street SE, MMC 283  
Minneapolis, MN 55455  
612-626-5775

Fairview Lakes Medical Center  
5200 Fairview Boulevard  
Wyoming, MN 55092  
651-982-7650

Lino Lakes Medical Center  
7455 Village Drive  
Lino Lakes, MN 55014  
651-717-3400