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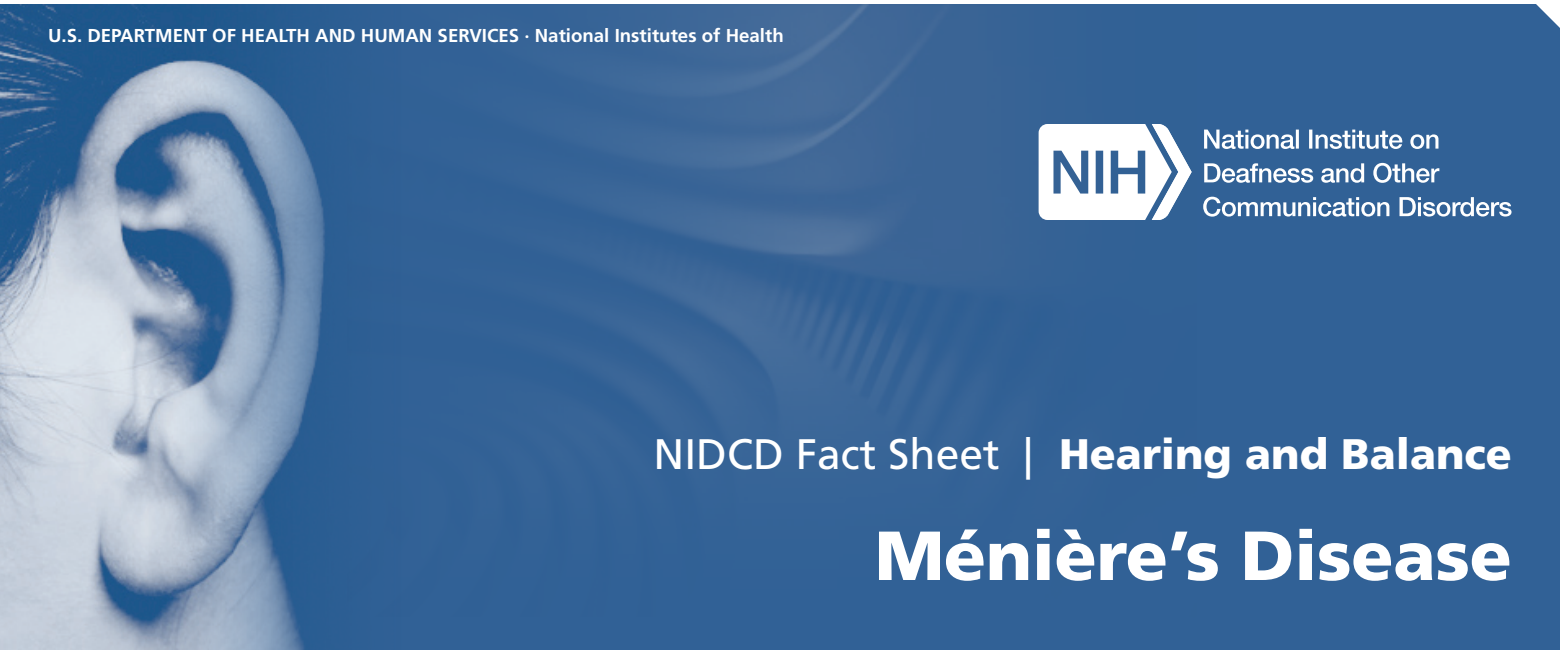

National Institute on Deafness and Other Communication Disorders

NIDCD Fact Sheet | **Hearing and Balance**

Ménière's Disease

What is Ménière's disease?

Ménière's disease is a disorder of the inner ear that causes severe dizziness (vertigo), ringing in the ears (tinnitus), hearing loss, and a feeling of fullness or congestion in the ear. Ménière's disease usually affects only one ear, but in 15% to 25% of people with the disorder, both ears may be affected.

Attacks of dizziness may come on suddenly or after a short period of tinnitus or muffled hearing. Some people have single attacks of dizziness separated by long periods of time. Others may experience many attacks close together over several days. Some people with Ménière's disease have vertigo so extreme that they lose their balance and fall. These episodes are called "drop attacks."

Ménière's disease is rare in children younger than 18. According to the American Academy of Otolaryngology-Head and Neck Surgery, Ménière's disease can develop at any age, but it is more likely to occur in adults between 40 and 60 years of age. Approximately 615,000 individuals in the United States have Ménière's disease, and about 45,500 cases are newly diagnosed each year, according to the American Hearing Research Foundation.

What causes Ménière's disease?

Theories vary about the causes of Ménière's disease. Some researchers believe it may develop from constricted blood vessels, which also occur with migraine headaches. Other theories suggest viral infections, allergies, or autoimmune reactions as possible causes. Genetic variations could also play a role, since Ménière's disease sometimes affects more than one family member.

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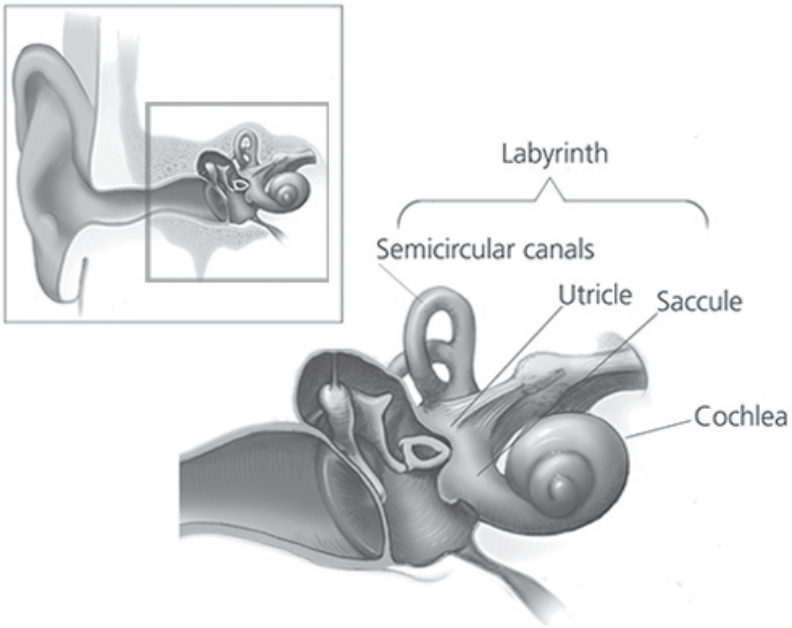

The labyrinth of the inner ear

The labyrinth contains the organs of hearing and balance. It is composed of a bony outer casing (bony labyrinth) inside of which are thin pliable tubes and sacs including the semicircular canals, the otolith organs (utricle and saccule), and the cochlea, collectively known as the membranous labyrinth. This labyrinth is filled with a fluid called endolymph that stimulates receptors in the balance organs as the body moves.

Source: NIH/NIDCD

What causes the symptoms of Ménière's disease?

Although the causes of Ménière's disease remain unclear, the symptoms of Ménière's disease are associated with a fluid imbalance in a part of the inner ear called the labyrinth.

The labyrinth contains the organs of balance (the semicircular canals and otolithic organs) and hearing (the cochlea) and has two sections: the bony labyrinth and the membranous labyrinth. The membranous labyrinth is filled with a fluid called endolymph that stimulates receptors in the balance organs as the body moves. The receptors then send signals to the brain about the body's position and movement. In the cochlea, the fluid is compressed in response to sound vibrations. This stimulates sensory cells that send signals to the brain.

In people with Ménière's disease, a buildup of endolymph in the labyrinth called endolymphatic hydrops disrupts normal balance and hearing signals between the inner ear and the brain. This disruption is also associated with vertigo and other Ménière's disease symptoms, which can vary widely.

How is Ménière's disease diagnosed?

Ménière's disease is most often diagnosed and treated by an otolaryngologist (commonly called an ear, nose, and throat doctor, or ENT). There is no definitive test or single symptom that a doctor can use to make a diagnosis. Your doctor may suggest a hearing screening to identify any hearing loss. To rule out other diseases, magnetic resonance imaging (MRI) or computed tomography (CT) scans of the brain may be recommended.

A diagnosis of definite Ménière's disease is based on your medical history and on the presence of:

- Two or more spontaneous episodes of vertigo lasting 20 minutes to 12 hours.
- Hearing loss in one or both ears for low to medium frequency sounds, documented by a hearing test before, during, or after one of the episodes of vertigo.
- Hearing-related symptoms that occur irregularly, e.g., *tinnitus* (*https://www.nidcd.nih.gov/health/tinnitus*), hearing loss, or a feeling of fullness in the affected ear.
- Symptoms not accounted for by another diagnosed balance-related condition.

Probable Ménière's disease is typically diagnosed when you have all the symptoms listed above except hearing loss confirmed by a hearing test before, during, or after an episode of vertigo.

How is Ménière's disease treated?

There isn't a cure yet for Ménière's disease, and because symptoms can vary widely, the benefit of treatment options can be hard to gauge. Your doctor may recommend one or more of these management options to help you cope with your symptoms:

- **Dietary and behavioral changes.** Limiting dietary salt to 1,500-2,000 milligrams per day and taking a diuretic ("water pill") may help control symptoms of Ménière's disease. Quitting smoking may also reduce symptoms.
- **Medications.** The most disabling symptom of an attack of Ménière's disease is dizziness. Prescription drugs can help relieve dizziness and shorten the attack, particularly when taken soon after the dizziness starts.
- **Vestibular rehabilitation/physical therapy.** A doctor may recommend vestibular rehabilitation and/or physical therapy if you have chronic balance issues.
- **Injections.** Injecting the antibiotic gentamicin into the middle ear helps to control vertigo but significantly raises the risk of hearing loss because gentamicin can damage the microscopic hair cells in the inner ear that help us hear. Corticosteroid injections are an alternative because they often reduce dizziness and have little to no risk of hearing loss.
- **Surgery.** Surgery may be recommended when all other treatments have failed to relieve dizziness. One surgical procedure decompresses the endolymphatic sac. Another surgical approach, used less frequently, cuts the vestibular nerve.

Although scientists have studied using alternative therapies for Ménière's disease, there is no evidence to show the effectiveness of acupuncture or acupressure, tai chi, or herbal supplements, including ginkgo biloba, niacin, or ginger root. Be sure to tell your doctor if you are using alternative therapies since they can sometimes influence the effectiveness or safety of conventional medicines.

If you have hearing loss associated with Ménière's disease, consider discussing *hearing aid* options (*https://www.nidcd.nih.gov/health/hearing-aids*) with your doctor.

What research is NIDCD supporting on Ménière's disease?

Insights into the mechanisms in the inner ear that trigger symptoms of Ménière's disease will guide scientists as they develop preventive strategies and more effective treatment. NIDCD is supporting scientific research that seeks to:

- Improve our ability to diagnose balance disorders by developing new tests, including:
  - Using new measurements to assess how much motion a person can perceive instead of the standard assessment of balance reflexes, which often provides inconclusive or negative results.
  - A technique called auditory nerve overlapped waveform, which is being used to detect symptoms in the earliest stages of Ménière's disease, before the disease progresses and can be detected with conventional measures.
- Examine chemical compounds in earwax that may help distinguish Ménière's disease from other balance disorders with similar symptoms.
- Better understand the structures of the inner ear and the mechanisms that determine normal endolymphatic sac pressure. This research may help determine the causes of the endolymph buildup in the labyrinth that interferes with normal balance and hearing signals between the inner ear and the brain in individuals with Ménière's disease.
- Determine why some common antibiotics damage inner ear hair cells, vital for balance and hearing, in some people but not in others. This damage may result in symptoms such as those seen in Ménière's disease.

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Where can I find additional information about Ménière's disease?

NIDCD maintains an online directory of organizations providing information on the normal and disordered processes of hearing, balance, taste, smell, voice, speech, and language. Visit the NIDCD website at *https://www.nidcd.nih.gov/directory* to search the directory.

To read more about topics related to Ménière's disease, visit:

- Balance Disorders at *https://www.nidcd.nih.gov/health/balance-disorders*
- Tinnitus at *https://www.nidcd.nih.gov/health/tinnitus*
- Adult Hearing Health Care at *https://www.nidcd.nih.gov/health/adult-hearing-health-care*

Visit the NIDCD website at *https://www.nidcd.nih.gov* to read, print, or download fact sheets.

For more information, contact us at:

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NIDCD supports and conducts research and research training on the normal and disordered processes of hearing, balance, taste, smell, voice, speech, and language and provides health information, based upon scientific discovery, to the public.

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