

LABYRINTHITIS

This handout is intended as a general introduction to the topic. As each person is affected differently, speak with your health care professional for individual advice.

Key points

- An inflammation of the inner ear, most often caused by a viral infection.
- Brings on a sudden, acute attack of debilitating vertigo (spinning sensation), usually with nausea and vomiting as well as hearing loss or distorted hearing.
- Other more dangerous causes of sudden vertigo, such as a stroke, must be ruled out.
- Acute phase generally lasts 2 or 3 days with supportive treatment and normally goes away on its own.
- Daily life, including work, can usually restart within 2 weeks.
- Vestibular rehabilitation (an exercise-based therapy) can help if dizziness and imbalance linger after several months.
- Some patients have permanent hearing loss – a hearing aid or, in some cases, cochlear implantation, may help.

What is labyrinthitis?

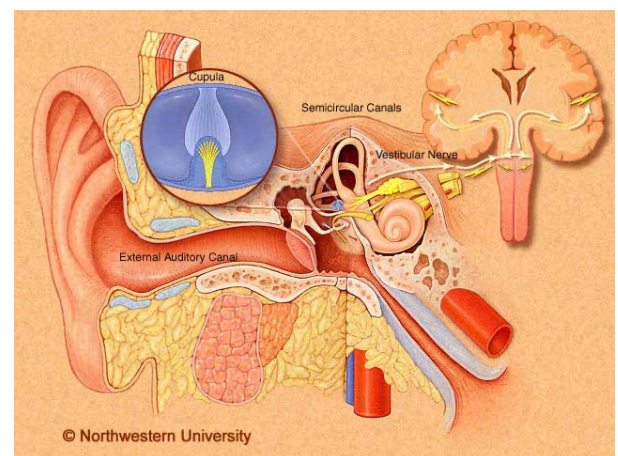
Labyrinthitis is an inflammation of the inner ear. It causes a sudden, severe attack of dizziness, usually with nausea, vomiting, and some degree of hearing loss. This attack may last for hours or days.

Labyrinthitis is usually caused by an infection. In most cases, people recover completely from labyrinthitis. But depending on the cause of the infection, labyrinthitis can sometimes cause permanent hearing loss and damage to the vestibular system.

Labyrinthitis is similar to vestibular neuritis, but there are some differences:

- Vestibular neuritis affects the vestibular nerve, which carries signals from the inner ear to the brain; labyrinthitis affects the inner ear itself.
- Vestibular neuritis usually does not cause hearing problems, but labyrinthitis often causes hearing loss or distorted hearing.

Labyrinthitis is sometimes called otitis interna.



Cutaway of the inner ear. Movement of the head is detected by the semicircular canals and sent to the brain by the vestibular nerve.

What are the causes?

The labyrinth of the inner ear contains organs that are important for balance and hearing. These include:

* the semicircular canals, which sense when your head tilts and turns; the brain uses these signals to help you keep your balance

* the cochlea, which turns sound waves into nerve impulses so you can hear

With labyrinthitis, the lining of these organs is inflamed (irritated). This interferes with the nerve signals that they produce and causes problems with balance and hearing.

Inflammation is usually caused by an infection. Many different infections can cause labyrinthitis:

- Viral infections are the most common cause of labyrinthitis. They include colds, influenza (flu), herpes, measles, mumps, rubella, polio, and varicella (chickenpox).
- Less often, bacterial infections such as middle ear infections or bacterial meningitis can spread to the inner ear and cause labyrinthitis. The most common bacteria are *Haemophilus influenzae* or *Streptococcus pneumoniae*. However, both of these are now rare in Canada thanks to routine childhood immunization.

Rarely, autoimmune disorders can also cause labyrinthitis. In these disorders, the immune system sees the body's organs and tissues as invaders and attacks them.

Bacterial labyrinthitis sometimes causes permanent changes in the inner ear, where bone grows inside the cochlea and can cause permanent hearing loss. This is a serious complication of bacterial meningitis. It is more common in children.

What are the symptoms?

The first attack of labyrinthitis, known as the acute phase, usually includes the following symptoms:

- vertigo (spinning sensation)
- balance problems
- nausea and vomiting

- hearing loss or distorted hearing

Other possible symptoms include:

- tinnitus (ringing in the ears)
- a feeling of pressure in the ears
- fever
- trouble focusing or concentrating
- uncontrolled eye movements from side to side (nystagmus)
- blurred or double vision

Pain is usually not a symptom of labyrinthitis. If there is pain, it may be a sign of a treatable infection, such as herpes or a bacterial infection.

The acute phase usually lasts for two or three days, but it can last for a week or longer. It is often severe and disabling. People in the acute phase of labyrinthitis often cannot stand up or walk and may have uncontrollable vomiting.

After the acute phase, people with labyrinthitis may still have balance problems, unsteadiness, hearing loss, tinnitus, and trouble focusing or concentrating. Sudden head movements may trigger dizziness. This phase may continue for weeks or months.

How is it diagnosed?

Your doctor will ask about your symptoms and your medical history, including any infections, headaches, or migraines you have had in the past. Your doctor will also do a thorough physical and neurological exam.

Labyrinthitis has some of the same symptoms as a stroke, a tumour on the vestibulocochlear nerve (8th cranial nerve) or other inner ear diseases, so your doctor needs to carefully rule out more serious conditions. Your doctor will also try to find out what type of infection is causing the symptoms.

You may have some of the following diagnostic tests:

- hearing tests
- balance tests
- otoscopic exam (using a device called an otoscope to look into your ears)
- imaging (CT or MRI scans)
- blood tests

How is it treated and managed?

The acute phase of labyrinthitis normally clears up on its own. Treatment during this phase is aimed at reducing the symptoms and making you as comfortable as possible. But in more serious cases of infection, surgery may be needed.

For many people, symptoms go away within a few weeks. But if your symptoms last for a long time, you may need extra treatment to help you get back to normal. This usually involves a type of therapy called vestibular rehabilitation.

Supportive treatment during the acute phase

For the first few days, while you have acute symptoms, you will need to rest in bed and drink plenty of water and other liquids.

If you have vomiting that cannot be controlled, this could cause dehydration. You may need to be admitted to a hospital for a short time.

Other treatment during the acute phase may include:

- medication to reduce dizziness, either by mouth, with an injection or through an intravenous (IV) line, such as dimenhydrinate (dahy-men-HAHY-druh-neyt), trade name Gravol[®], or ondansetron (on-DAN-se- tron), trade name Zofran[®]
- IV fluids to replace the fluids lost through vomiting
- steroids to reduce inflammation

You may also be given medication to treat the infection that is causing labyrinthitis. For example, if a bacterial infection is suspected, you may be given antibiotics.

You should feel better within a few days. Most people can go back to work within 2 weeks, and do not notice symptoms after a few months.

Vestibular rehabilitation

Sometimes the symptoms of labyrinthitis do not go away completely and you may still have dizziness and balance trouble for months or years. If this happens, vestibular rehabilitation may help.

Vestibular rehabilitation is a type of exercise-based therapy. Its goal is to help your brain relearn how to balance and how to respond to signals from the vestibular and visual systems. You may do these exercises on your own, or you may work with a vestibular therapist.

Vestibular rehabilitation may include:

- balance training, first while standing still and then while moving
- walking and other aerobic activities
- exercises to help improve the vestibulo-ocular reflex, which keeps your vision stable while your head is moving

Remember that vestibular rehabilitation takes time and effort. Your therapist will teach you the exercises you need to do, but you are the one who needs to do them on schedule.

What to expect in the future

Most people recover fully from labyrinthitis, but for some people it takes longer than others.

Some people develop permanent hearing loss after labyrinthitis. This is especially common in children who have bacterial meningitis that turns into labyrinthitis. The hearing loss can be partial or complete. People who have permanent hearing loss as a result of labyrinthitis may find a hearing aid useful. Or, in some cases, they may be able to get a cochlear implant to help them hear. This is a

device that bypasses the cochlea to send electrical signals to the brain.

It is rare for someone to have more than one attack of labyrinthitis. If the symptoms do come back, it is important to consult a specialist. The symptoms may be caused by a different inner ear condition, such as Ménière's disease. The symptoms of the two conditions are similar.

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In addition, find information about how the balance system works, the journey from diagnosis to treatment, building a wellness toolkit, and more.

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