

# A Severe Health Problem Triggered by Your Inner Ear

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## STORY AT-A-GLANCE

- › Vertigo is a form of dizziness that makes you feel as though you're moving or spinning even when you're stationary. It's a symptom of an underlying condition involving either your inner ear (peripheral vertigo) or your central nervous system (central vertigo)
- › The most common cause of peripheral vertigo is benign paroxysmal positional vertigo, which occurs when crystal deposits in your inner ear become dislodged and end up in your ear canal. As you move, the crystals disrupt the flow of the fluids, confusing your balance organs, resulting in dizziness
- › Other ailments that can contribute to peripheral vertigo include Meniere's disease (abnormal production of fluid inside your inner ear), inner ear inflammation and acoustic neuritis (nonmalignant tumor in the cranial nerve of your inner ear)
- › Common underlying causes for central vertigo include traumatic brain injury or concussion, stroke, multiple sclerosis, brain and/or spinal cord tumors and vestibular migraines
- › Conventional and alternative treatment strategies for vertigo are addressed, including self-treatment options at home and helpful supplements and essential oils

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Vertigo is a form of dizziness that makes you feel as though you're moving or spinning even when you're stationary. As noted by the National Health Service of England, vertigo

is a symptom of an underlying condition involving either your inner ear (peripheral vertigo) or your central nervous system (central vertigo), it's not a condition in its own right.<sup>1</sup>

In severe cases of vertigo, you may find it difficult to maintain your balance sufficiently to carry out everyday tasks. It can also be accompanied by other symptoms, such as nausea, vomiting, abnormal eye movements, headache, sweating, tinnitus double vision and lack of coordination.

## Common Underlying Causes of Peripheral Vertigo

While your outer ear canal, eardrum, middle ear and cochlea are involved in the transmission and interpretation of sound, your vestibular system is not directly involved in hearing.

The balance organs in your inner ear act as a gyroscope that sends messages to your brain about your body's position in space, and coordinate with your brain to balance your body as you move.<sup>2</sup> Ailments that can contribute to peripheral vertigo, where the problem originates in your inner ear, include:<sup>3</sup>

- **Benign paroxysmal positional vertigo (BPPV)** – One of the most common forms of peripheral vertigo, BPPV occurs when crystal deposits in your vestibular system become dislodged and end up in your semicircular canal. As you move, the crystals disrupt the flow of the fluids, confusing your balance organs, resulting in dizziness.<sup>4</sup>
- **Meniere's disease** – Characterized by an abnormal production of fluid inside your inner ear, causing pressure to build up and result in vertigo. Your hearing may be affected as well.<sup>5</sup>
- **Labyrinthitis** – This condition is mainly defined by inflammation in the labyrinth of your inner ear,<sup>6</sup> often caused by a viral infection.<sup>7</sup> Since the labyrinth contains both the balance and hearing organs, not only do you get vertigo, but hearing problems as well.

- **Vestibular neuritis** – Similar to labyrinthitis, vestibular neuritis refers to an inner ear infection, in this case affecting the nerves connecting your inner ear and brain, thereby disrupting the normal flow of sensory information.<sup>8</sup>
- **Acoustic neuroma** – Acoustic neuroma occurs when a nonmalignant tumor grows in the cranial nerve of your inner ear. As the tumor gets bigger, it pushes against adjacent nerves, causing vertigo, hearing loss, headaches and even facial numbness.

## Common Underlying Causes of Central Vertigo

Your central nervous system (CNS, which includes your brain and spinal cord) is responsible for controlling your muscle movement and the transmission of sensory stimuli to your brain. In central vertigo, damage or dysfunction in your cerebellum, the balance center of your brain, tends to be at play.<sup>9</sup> Common underlying causes for central vertigo include:

- **Traumatic brain injury (TBI) or concussion** – Vertigo is a common symptom following a concussion or TBI<sup>10</sup>
- **Stroke** – As noted in one 2014 study<sup>11</sup> in Neurology, even a small stroke, if it affects your central vestibular projections, can cause severe vertigo
- **Multiple sclerosis (MS)** – MS is a condition that causes inflammation in your myelin, the protective layer of your nerve cells, causing your body to experience problems in muscle coordination and maintaining equilibrium, which may lead to vertigo
- **Vestibular migraines** – Migraine known as vestibular migraine,<sup>12</sup> which unlike traditional migraines may not always involve a painful headache, can cause vertigo, accompanied with vomiting and nausea
- **Brain and/or spinal cord tumors**

## The Link Between Stress, Anxiety and Vertigo

In addition to these underlying conditions, stress and anxiety may also play a role. Research has shown those suffering vertigo related to Meniere's disease and/or migraines also have higher rates of anxiety than people with other forms of vertigo.<sup>13</sup>

On the other hand, anxiety or stress may also cause dizziness in and of itself. As noted in a fact sheet by the Academy of Neurologic Physical Therapy:<sup>14</sup>

*"The vestibular system is responsible for sensing body position and movement in our surroundings. The vestibular system is made up of an inner ear on each side, specific areas of the brain, and the nerves that connect them. This system is responsible for the sense of dizziness when things go wrong.*

*Scientists believe that the areas in the brain responsible for dizziness interact with the areas responsible for anxiety, and cause both symptoms. The dizziness that accompanies anxiety is often described as a sense of light-headedness or wooziness. There may be a feeling of motion or spinning inside rather than in the environment.*

*Sometimes there is a sense of swaying even though you are standing still. Environments like grocery stores, crowded malls or wide-open spaces may cause a sense of imbalance and disequilibrium. These symptoms are caused by legitimate physiologic changes within the brain.*

*If there is an abnormality in the vestibular system, the symptom of dizziness can be the result. If one already has a tendency toward anxiety, dizziness from the vestibular system and anxiety can interact, making symptoms worse. Often the anxiety and the dizziness must be treated together in order for improvement to be made."*

## **Physical Therapy for BPPV-Related Vertigo**

In order to determine which treatment you might need, it's important to identify the underlying cause. As you might expect, treatment for peripheral vertigo will be different

from central vertigo, as the problem originates in a completely different area of your body (ears opposed to CNS).

Most cases of vertigo will spontaneously resolve in a short amount of time, but if the problem persists for days or is chronic, seek medical help. In the case of BPPV, physical therapy is commonly recommended.

A physical therapist will perform a series of head movements to shift the crystal deposits in your inner ear into a location that won't affect your balance. There are several different particle repositioning procedures that can accomplish this, including the Epley, Semont, Foster and Brandt-Daroff maneuvers (although the Brandt-Daroff maneuver is not considered a first-line treatment).<sup>15</sup>

In mild, temporary cases, you can also try these at home to achieve relief. As detailed by Johns Hopkins Medicine, the Epley maneuver is performed as follows:<sup>16</sup>

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Start by sitting on a bed

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Turn your head 45 degrees to the right

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Quickly lie back, keeping your head turned. Your shoulders should now be on the pillow, and your head should be reclined. Wait 30 seconds

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Turn your head 90 degrees to the left, without raising it. Your head will now be looking 45 degrees to the left. Wait another 30 seconds

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Turn your head and body another 90 degrees to the left, into the bed. Wait another 30 seconds

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Sit up on the left side

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Some find the Foster maneuver easier to perform, as you don't have to lie in bed. The video above demonstrates how to perform it. Here's a summary:

- Kneeling on all fours, raise your head and look at the ceiling for a few seconds
- Tuck your chin toward your knees, allowing the top of your head to rest on the floor. Wait for the vertigo to stop, typically about 30 seconds
- Turn your head about 45 degrees toward the side causing the vertigo. Wait 30 seconds
- Quickly raise up on all fours so that your head is level with your back (tabletop position), still at a 45-degree angle toward the affected side. Wait 30 seconds
- Quickly sit upright, with your head angled at 45 degrees toward the affected side, then slowly stand up and straighten your head. If needed, repeat the sequence after resting for 15 minutes

You can also find instructions for another, similar particle repositioning procedure, accompanied by drawings showing the body position, on the Cleveland Clinic's website.<sup>17</sup>

## **Other Conventional Treatments for Vertigo**

If an inner ear infection is at fault, treatment will need to address the infection. Since most inner ear infections are caused by viruses and not bacteria, antibiotics are typically not recommended, as they do not work on viruses. A number of natural dietary remedies may be helpful, however, such as garlic, coconut oil or onion.

Similarly, with TBI-related vertigo, you may need to look at concussion treatment, and if the vertigo is related to a stroke, you'll want to look at stroke rehabilitation. Naturally, in cases where your vertigo is caused by a more serious chronic disease, such as MS or tumors, the treatment will need to address those conditions as well.

Ditto for anxiety and/or stress-related vertigo, in which case cognitive-behavioral therapy can be helpful.<sup>18</sup> If your vertigo is caused by a vestibular or balance disorder originating in your CNS, vestibular rehabilitation therapy may be recommended. As explained by Vestibular.org:<sup>19</sup>

*"[A]fter vestibular system damage, people can feel better and function can return through compensation. This occurs because the brain learns to use other senses (vision and somatosensory, i.e. body sense) to substitute for the deficient vestibular system.*

*The health of particular parts of the nervous system (brainstem and cerebellum, visual, and somatosensory sensations) is important in determining the extent of recovery that can be gained through compensation.*

*For many, compensation occurs naturally over time, but for people whose symptoms do not reduce and who continue to have difficulty returning to daily activities, VRT can help with recovery by promoting compensation.*

*The goal of VRT is to use a problem-oriented approach to promote compensation. This is achieved by customizing exercises to address each person's specific problem(s).*

*Therefore, before an exercise program can be designed, a comprehensive clinical examination is needed to identify problems related to the vestibular disorder. Depending on the vestibular-related problem(s) identified, three principal methods of exercise can be prescribed: 1) Habituation, 2) Gaze Stabilization, and/or 3) Balance Training."*

## **At-Home Treatments for Vertigo**

At home, the following strategies may offer relief from vertigo:<sup>20</sup>

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Perform the Epley or Foster maneuver (see instructions above)

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Sleep with your head slightly raised

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Upon waking, move slowly when getting out of bed and sit on the edge of the bed for a minute or two before standing

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Avoid bending down to pick up items

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Avoid movements involving neck extension, such as reaching up to a high shelf

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Avoid rapid head movements during daily tasks

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Habituation training, i.e., perform exercises that typically trigger vertigo to train your brain to get used to it, thereby reducing your symptoms. Make sure you're in a safe place and have the necessary support to avoid falling

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Pacing training, i.e., performing tasks that trigger anxiety or stress-related vertigo. As explained by the Academy of Neurologic Physical Therapy,<sup>21</sup> "Pacing is doing symptom-provoking activities in small doses with rest in between, so that your symptoms do not get out of control. By understanding ... what situations or movements may cause your symptoms, you will learn to manage your situation much better"

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## Supplements to Help Relieve Vertigo

Certain supplements and essential oils may also be helpful against vertigo and general dizziness, including:<sup>22</sup>

**Ginkgo biloba** – This Chinese herb is commonly used to treat vertigo as it helps regulate blood flow to your brain. According to one study,<sup>23</sup> ginkgo biloba is just as effective as the drug betahistine.

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**Ginger tea** – Ginger, a folk remedy with a long history of use for nausea and motion sickness, may also help relieve vertigo.

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**Ginger moxibustion** – In one study,<sup>24</sup> ginger-partitioned moxibustion at the acupuncture point known as Tinggong (SI 19) was found to more effectively improve vertigo than particle repositioning procedures alone.



Ginger-partitioned moxibustion involves placing a thin slice of raw ginger on the skin (at the appropriate acupuncture point location) and then placing a burning piece of moxa on top. This treatment will necessitate a visit to a qualified acupuncturist unless you have the necessary medical training to do it yourself.

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**Magnesium** – Making sure you're getting enough magnesium from either food or a supplement may help prevent or relieve vertigo. According to [Vertigotreatment.org](http://Vertigotreatment.org), vestibular disorders are rare in "parts of the world where the magnesium is represented in a diet in large quantities."<sup>25</sup>

You can also find more information on the "vertigo diet" used in the treatment of Meniere's disease and vestibular migraine on [vertigotreatment.org](http://vertigotreatment.org).<sup>26</sup>

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**Water** – Even mild dehydration can cause vertigo, so be sure to stay well hydrated by drinking enough clean, pure water.

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**Apple cider vinegar and honey** – A simple home remedy that may help prevent and treat vertigo is two parts raw honey to one part apple cider vinegar. Stir and drink as a shot.

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**Essential oils** – Essential oils known to address nausea and dizziness associated with vertigo include peppermint, ginger, lavender and lemon.

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## Sources and References

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- <sup>1, 20</sup> [NHS Vertigo](#)
- <sup>2, 3, 9</sup> [Medicinenet.com Vertigo Overview](#)
- <sup>4</sup> [MedlinePlus, Benign Positional Vertigo](#)
- <sup>5</sup> [Dizziness-and-Balance.com, Meniere's Disease](#)
- <sup>6</sup> [NHS Labyrinthitis](#)
- <sup>7</sup> [Menieres.org.uk Labyrinthitis](#)
- <sup>8</sup> [Vestibular.org, Labyrinthitis and Vestibular Neuritis](#)
- <sup>10</sup> [Completeconcussions.com, May 11, 2017](#)
- <sup>11</sup> [Neurology 2014 Jul 8; 83\(2\): 169–173](#)
- <sup>12</sup> [Vestibular.or, Vestibular Migraine](#)

- <sup>13</sup> [Medicine 2015 Feb; 94\(5\): e453](#)
- <sup>14, 18, 21</sup> [Academy of Neurologic Physical Therapy, Dizziness Related to Anxiety and Stress \(PDF\)](#)
- <sup>15</sup> [Journal of Otology 2017 Dec; 12\(4\): 165–173](#)
- <sup>16</sup> [Johns Hopkins Medicine Home Epley Maneuver](#)
- <sup>17</sup> [Cleveland Clinic, BPPV Management and Treatment](#)
- <sup>19</sup> [Vestibular.org, Vestibular Rehabilitation Therapy](#)
- <sup>22</sup> [Medical News Today January 2, 2018](#)
- <sup>23</sup> [International Journal of Otolaryngology 2014; 2014: 682439](#)
- <sup>24</sup> [Journal of Acupuncture and Tuina Science February 2016; 14\(1\): 31-35](#)
- <sup>25, 26</sup> [Vertigotreatment.org January 21, 2019](#)