

## WHAT IS

# DIZZINESS AND MOTION SICKNESS

Feeling unsteady or dizzy can be caused by many factors such as poor circulation, inner ear disease, medication usage, injury, infection, allergies, and/or neurological disease. Dizziness is treatable, but it is important for your doctor to help you determine the cause so that the correct treatment is implemented. While each person will be affected differently, symptoms that warrant a visit to the doctor include a high fever, severe headache, convulsions, ongoing vomiting, chest pain, heart palpitations, shortness of breath, inability to move an arm or leg, a change in vision or speech, or hearing loss.



### WHAT IS DIZZINESS?

Dizziness can be described in many ways, such as feeling lightheaded, unsteady, giddy, or feeling a floating sensation. Vertigo is a specific type of dizziness experienced as an illusion of movement of one's self or the environment. Some experience dizziness in the form of motion sickness, a nauseating feeling brought on by the motion of riding in an airplane, a roller coaster, or a boat. Dizziness, vertigo, and motion sickness all relate to the sense of balance and equilibrium. Your sense of balance is maintained by a complex interaction of the following parts of the nervous system:

- The inner ear (also called the labyrinth), which monitors the directions of motion, such as turning, rolling, as well as forward-backward, side-to-side, and up-and-down motions.
- The eyes, which monitor where the body is in space (i.e., upside down, right side up, etc.) and also directions of motion.
- The pressure receptors in the joints of the lower extremities and the spine, which tell what part of the body is down and touching the ground.
- The muscle and joint sensory receptors (also called proprioception) tell what parts of the body are moving.
- The central nervous system (the brain and spinal cord), which processes all the information from the four other systems to maintain balance and equilibrium.

The symptoms of motion sickness and dizziness appear when the central nervous system receives conflicting messages from the other four systems.

### WHAT CAUSES DIZZINESS?

**Circulation:** If your brain does not get enough blood flow, you feel lightheaded. Almost everyone has experienced this on occasion when standing up quickly from a lying-down position. But some people have light-headedness from poor circulation on a frequent or chronic basis. This could be caused by arteriosclerosis or hardening of the arteries, and it is commonly seen in patients who have high blood pressure, diabetes, or high levels of blood fats (cholesterol). It is sometimes seen in patients with inadequate cardiac (heart) function, hypoglycemia (low blood sugar), or anemia (low iron).

Certain drugs also decrease the blood flow to the brain, especially stimulants such as nicotine and caffeine. Excess salt in the diet also leads to poor circulation. Sometimes circulation is impaired by spasms in the arteries caused by emotional stress, anxiety, and tension.

If the inner ear fails to receive enough blood flow, the more specific type of dizziness called vertigo occurs. The inner ear is very sensitive to minor alterations of blood flow and all of the causes mentioned for poor circulation to the brain also apply specifically to the inner ear.

**Neurological diseases:** A number of diseases of the nerves can affect balance, such as multiple sclerosis, syphilis, tumors, etc. These are uncommon causes, but your doctor may perform certain tests to evaluate these.

**Anxiety:** Anxiety can be a cause of dizziness and lightheadedness. Unconscious over-breathing (hyperventilation) can be experienced as overt panic or just mild dizziness with tingling in the hands, feet, or face. Instruction on correct breathing technique may be required.

**Vertigo:** Vertigo, an unpleasant sensation of the world rotating, usually associated with nausea and vomiting, is usually due to an issue with the inner ear. The common causes of vertigo are, in order:

- **Benign positional vertigo (BPV):** BPV is the most common cause of dizziness after (even a mild) head injury, which is experienced after a change in head position such as lying down, turning in bed, looking up, or stooping. It lasts about 30 seconds and ceases when the head is still. It is due to a dislodged otolith crystal entering one of the semi-circular balance canals. It can last for days, weeks, or months. The Epley "repositioning" treatment by an otolaryngologist is usually curative.
- **Meniere's disease:** An inner ear disorder with attacks of vertigo (lasting hours), nausea, or vomiting, and tinnitus (loud noise) in the ear, which often feels blocked or full. There is usually a decrease in hearing as well.

**Migraine:** Some individuals with a prior classical migraine headache history can experience vertigo attacks similar to Meniere's disease. Usually there is an accompanying headache, but it can also occur without the headache.

**Infection:** Viruses can attack the inner ear, but usually it's nerve connections to the brain, causing acute vertigo (lasting days) without hearing loss (termed vestibular neuronitis). However, a bacterial infection such as mastoiditis that extends into the inner ear can completely destroy both the hearing and equilibrium function of that ear. This process is called labyrinthitis.

**Injury:** A skull fracture that damages the inner ear produces a profound and incapacitating vertigo with nausea and hearing loss. The dizziness will last for several weeks and slowly improve as the other (normal) side takes over. BPV commonly occurs after head injury.

**Allergy:** Some people experience dizziness and/or vertigo attacks when they are exposed to foods or airborne particles (such as dust, molds, pollens, dander, etc.) to which they are allergic.

### WHEN SHOULD I SEEK MEDICAL ATTENTION?

**Call 911 or go to an emergency room if you experience:**

- Dizziness after a head injury,
- Fever over 101°F, headache, or very stiff neck,
- Convulsions or ongoing vomiting,
- Chest pain, heart palpitations, shortness of breath, weakness, a severe headache, inability to move an arm or leg, change in vision or speech, or
- Fainting and/or loss of consciousness.

**Consult your doctor if you:** have never experienced dizziness before, experience a difference in symptoms you have had in the past, suspect that medication is causing your symptoms, or experience hearing loss.

### HOW WILL MY DIZZINESS BE TREATED?

The doctor will ask you to describe your dizziness and answer questions about your general health. Along with these questions, your doctor will examine your ears, nose, and throat. Some routine tests will be performed to check your blood pressure, nerve and balance function, and hearing. Possible additional tests may include a CT or MRI scan of your head, electronystagmography (ENG) or videonystagmography (VNG)—special tests of eye motion after warm or cold water or air is used to stimulate the inner ear—and in some cases, blood tests or a cardiology (heart) evaluation. Balance testing may also include rotational chair testing and posturography. Your doctor will determine the best treatment based on your symptoms and their causes. Treatments may include medications and balance exercises.

### PREVENTION TIPS

- Avoid rapid changes in position
  - Avoid rapid head motion (especially turning or twisting)
  - Eliminate or decrease use of products that impair circulation, e.g., tobacco, alcohol, caffeine, and salt
  - Minimize stress and avoid substances to which you are allergic
  - Get enough fluids
  - Treat infections, including ear infections, colds, flu, sinus congestion, and other respiratory infections
- Remember: Most cases of dizziness and motion sickness are mild and self-treatable. But severe cases and those that become progressively worse deserve the attention of a doctor with specialized skills in diseases of the ear, nose, throat, equilibrium, and neurological systems.

