

Dizziness and the Heart
Mended Hearts Inservice
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Balance

We maintain balance with input from our eyes, inner ears, and muscle and joint receptors in our bodies. This input is processed in a part of the brain called the cerebellum, which uses this information to tell us where we are in space. If any of these inputs becomes damaged, we may become unsteady or dizzy.

Reasons for Dizziness:

Inner ear problems (Vestibular Imbalance)

- Ototoxicity
- Post-acute Labyrinthitis
- Post-acute Neuronitis
- Chronic Meniere's disease
- Endolymphatic hydrops
- Acoustic neuroma s/p removal
- BPPV (Crystals)- 50% of people over 65 y/o with dizziness will have this as main reason for dizziness

Central conditions

- Stroke- cerebral vascular accident in the posterior brain or brainstem often result in dizziness and imbalance as the main presentation
- Demyelinating diseases- multiple sclerosis
- Seizure disorder
- Trauma/ head injury
- Cerebellar atrophy
- Migraine- dizziness from a migraine can occur without any pain or other auras
- Mal de Debarquement Syndrome

Other reasons for dizziness

- Medication side effects
- Complications post surgery, such as heart surgery
- Fluctuations in INR
- Orthostatic hypotension

Reasons for Imbalance include all of the above plus:

- Lower extremity conditions
- Injuries/ surgery
- Peripheral neuropathy
- Generalized weakness
- Multifactorial disequilibrium of elderly

Describing symptoms to your medical provider

- Important to describe the quality of the dizziness.
- Describe in way that does not use the word dizzy:
lightheaded, wozzy, spinning, swimmy feeling, room moving, moving inside of head, feeling of passing out
- Describe other symptoms associated with dizziness:
imbalance, blurry vision, hearing changes, ringing or pressure in the ears, headaches, weakness, falling.

Vestibular neuritis

- Sudden, severe vertigo as a spinning or significant swaying sensation, room looks like it is moving vs moving inside the head
- Significant imbalance, but are able to walk with assistance
- Nausea and vomiting
- Concentration difficulties
- Severe spinning and vomiting may last 2-3 days and most symptoms typically resolve in 1-2 weeks. People who do not compensate on their own benefit from vestibular therapy to assist in compensation. The goal of vestibular therapy is to retrain the brain to adapt to the changes in balance that a patient experiences.
- Roughly 80% of people with vestibular deficits improve by 80-90% with 8 weeks of therapy and most improve the rest of the way with continued home program.

BPPV

- Spinning sensations with transitional movements such as sitting up in bed or lying down in bed, looking up, bending over.
- Usually lasts 10-20 seconds
- Does not occur with sitting in place
- May have nausea and vomiting
- Imbalance with gait common, but not 100% of time
- Therapy involves turning the head in certain positions to clear the canal of the calcium deposits (crystals). May take 1-3 visits.
- 40% recurrence rate and no current research to prevent recurrence.

Stroke in posterior brain

- Sudden severe dizziness
- Unable to stand, even with assistance
- Confusion or incoherent
- May or not have weakness on one side of body
- Recovery after stroke involves 8-12 weeks or more of therapy to assist in central brain plasticity to aid in recovery of balance and dizziness.

Orthostatic hypotension

- Feeling lightheaded or dizzy after standing up
- Blurry vision
- Weakness
- Fainting (syncope)
- Confusion
- Nausea
- Feeling lightheaded occasionally upon standing up may be normal, but if it occurs daily it may indicate a problem.

Complications from orthostatic hypotension:

- Falling down as a result of fainting (syncope) is a common complication in people with orthostatic hypotension.
- Reduced blood flow to brain may lead to central symptoms
- May signify another process such as heart complications which can be treated when found.

Reasons for orthostatic hypotension

- We have special cells in the heart and neck arteries called baroreceptors which regulate blood pressure. If these cells are working too slowly due to age, heart problems, or medication, you may experience a drop in blood pressure upon standing.
- Dehydration will reduce blood volume causing symptoms of orthostatic hypotension.
- Some heart conditions that can lead to low blood pressure including extremely low heart rate (bradycardia), heart valve problems, heart attack and heart failure. Orthostatic hypotension may result if the body is not able to respond quickly enough to pump blood to the brain upon standing, leading to symptoms as above.
- Endocrine problems such as diabetes can trigger low blood pressure. Diabetes can also damage the nerves (baroreceptors) that help send signals regulating blood pressure.
- Central nervous system disorders such as Parkinson's disease, Lewy body dementia, or other forms of atrophy can disrupt normal blood pressure regulation.
- Postprandial hypotension occurs as low blood pressure after eating a meal and is more common in older adults.
- Prolonged bed rest or inactivity may contribute to orthostatic hypotension feelings.
- Alcohol. Drinking alcohol can increase your risk of orthostatic hypotension.
- Certain medications have a greater risk of contributing to orthostatic hypotension. If patients are experiencing this symptom with a medication change, alerting the physician is important to find the medication contributing to the problem.

Heart Disorders and Dizziness

- Symptoms which sometimes occur with heart disorders include feeling faint or lightheaded, which may be due to a reduction in blood flow to the brain.
- When there is a sudden loss of consciousness due to heart disorders, usually this means the blood supply to the brain is seriously reduced.

Reasons for reduce blood flow to the brain leading to dizziness:

- Heart rate or rhythm is abnormal, either too slow or fast
- Heart palpitations
- Heart attack
- Heart cannot pump blood sufficiently because blood flow is blocked as from narrowing of a valve
- Heart failure

Dizziness may be caused from medications used to treat heart conditions including:

- Diuretics
- ACE inhibitors
- ARB (Angiotensin receptor blockers) and beta blockers
- These medications reduce blood pressure and improve heart function, but the reduction in blood pressure sometimes contributes to dizziness, especially with sitting up or standing up. The difference with dizziness from these medications vs vestibular deficits is that usually people do not report spinning sensations with transitional movements but more of a lightheaded feeling.

Dizziness after heart surgery

Some people experience problems after heart surgery including dizziness as a woozy and imbalanced sensation, difficulty thinking clearly, vision problems, short term memory loss, slower thought processes, difficulty making decisions or solving problems.

Exact reason is not known, but there are theories:

- Post-perfusion syndrome refers to the heart-lung machine used to support blood flow during surgery which may not fully simulate blood flow to the brain. Changes in cerebral functioning have been found post exposure to the bypass machine. Usually reversible when it occurs and most people improve within a few months.
- Plaques breaking off into the blood stream during or after surgery and causing small strokes. Rates vary depending on the heart procedure but bypass typically is 5% or less risk.
- Cognitive impairment due to age prior to surgery may contribute to greater risk after surgery.
- There are some genetic factors which have been linked to impairment after bypass surgery, but researchers have not found conclusive factors to date.
- Coronary artery disease (CAD) may contribute to cognitive decline similar to that resulting post bypass surgery.

Treatment for cognitive impairment, dizziness, or imbalance post heart surgery:

- Talk to you doctor so they can help decide what tests or treatment will be needed.

- Balance and Vestibular Physical therapy: Symptoms presenting to therapy include imbalance as a general unsteadiness, falling, dizziness as lightheadedness, blurry or double vision, and cognitive changes.
- Some medications can help resolve symptoms.
- Cardiac rehabilitation will help recover strength and ability to tolerate aerobic activity which is essential to improve blood flow to the brain.

INR fluctuations and dizziness

- INR (International Normalized Ratio) is a measure of the clotting ability of blood. A low INR means the blood is less thin and high INR means the blood is more thin and less likely to form clots.
- Physicians will determine the ideal INR for a patient after heart surgery, stroke, blood clots, or other disorders.
- Fluctuations with INR can sometimes lead to these symptoms:
dizziness as lightheadedness, fuzzy feeling, achy feeling in head, fatigued

Avoid fluctuations in INR by:

- Follow your doctor's orders regarding the dosing. Do not miss a dose without approval of your doctor.
- Attend all required INR checks.
- Keep diet regular. Too much Vitamin K can effect the INR value, but is a vital nutrient needed for other functions in the body. Therefore, most doctors will adjust the dose around your diet vs adjusting your diet around the dose. Keeping your diet regular will assist the doctor.
- Keep active. Prolonged sitting or bed rest will contribute to fluctuations. Stop and walk around on long car or plane rides.
- Regulate health. Diabetes, high cholesterol, smoking, obesity, high blood pressure, heart failure, atrial fibrillation can all contribute to fluctuations in INR. Take steps to keep these under control.

Symptoms treated with Balance and Vestibular Rehabilitation

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| ● Dizziness/ Vertigo | ● Trunk or lower extremity weakness/ |
| ● Balance instability | neuropathy |
| ● Gait abnormalities | ● Visual perception changes |

Treatment is individualized for every patient depending on cause of dizziness/ imbalance. The aim of treatment may be to regain function of the affected system or to teach a patient compensatory strategies when the affected system will not improve.

Balance and Vestibular exercises

- Static and dynamic balance exercises
- Gait activities
- Range of motion and strengthening exercises of the trunk and lower extremities
- Aerobic exercise to improve blood flow