

Finding Balance: Understanding Vestibular Disorders

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Key Takeaways

Key Takeaway	Clinical Implication
BPPV is diagnosed with positional testing and treated with canalith repositioning.	The Dix-Hallpike test identifies the affected canal; the Epley maneuver or BBQ roll can resolve symptoms in a single office visit.
Hearing loss is independently associated with poorer postural balance.	Every 10 dB of hearing loss corresponds to a measurable increase in postural sway path length and daily sedentary time.
Peripheral and central vestibular findings on VNG present differently.	Peripheral lesions show nystagmus suppressible with visual fixation and reduced caloric response; central lesions show non-suppressible nystagmus and caloric hyperresponsiveness.
Most fall risk factors are modifiable.	Screening with tools such as STEADI's three key questions identifies most high-risk patients and guides targeted intervention.
Vestibular rehabilitation addresses the functional consequences of vestibular disorders.	Gaze stabilization, habituation, and balance training exercises reduce vertigo, dizziness, imbalance, and fall risk.
Meniere's Disease and Secondary Endolymphatic Hydrops share overlapping features but differ in workup.	Distinguishing them relies on MRI with contrast, bloodwork and serology, and medical history rather than audiologic testing alone.

Learner Outcomes

- Participants will be able to apply basic assessment techniques to evaluate vestibular function in a clinical setting
- Participants will be able to develop patient-centered management plans and referral strategies
- Participants will be able to identify key symptoms of a vestibular disorder or postural instability

Anatomy of the Auditory and Vestibular System

Auditory System Anatomy

The auditory system is organized into the outer ear, middle ear, and inner ear, including the pinna, ear canal, eardrum, ossicles (malleus, incus, stapes), Eustachian tube, cochlea, and the auditory and vestibular nerves.

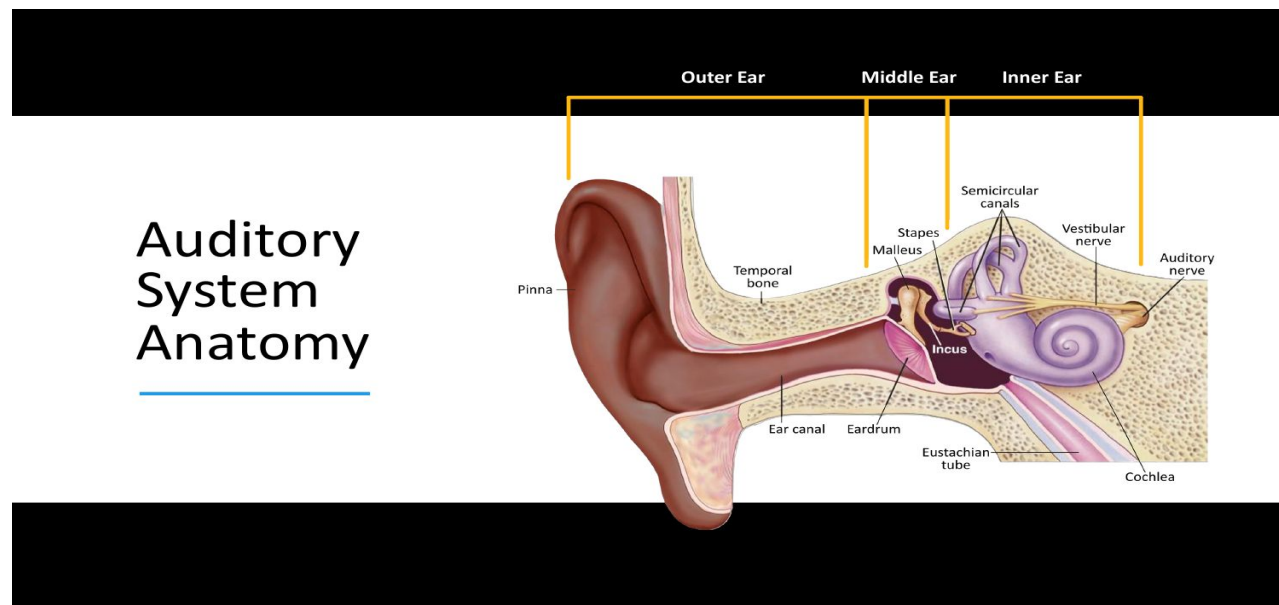


Figure 1. Cross-section of the outer, middle, and inner ear.

Vestibular System Anatomy

The vestibular system includes the semicircular canals, membranous ampullae, utricle, and saccule, situated alongside the cochlea.

- Semicircular canals — rotational movement
- Utricle — horizontal movement
- Saccule — vertical movement

Vestibular System Anatomy

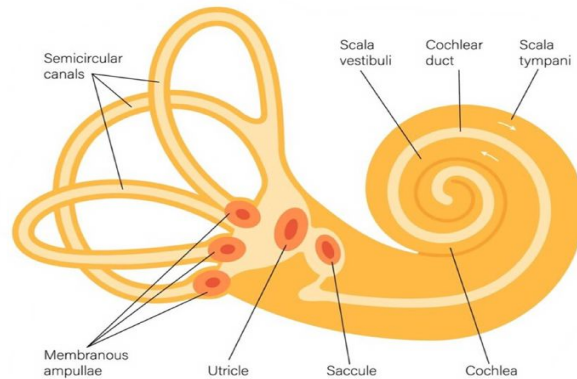


Figure 2. Labeled anatomy of the vestibular system.

The vestibular system and balance function operate through three stages:

- Input: sense/see/feel
- Integration: data processing
- Output: eye and muscle movement

Normal Vestibular Function

Normal vestibular function supports four key processes:

- Gaze stabilization
- Postural control
- Spatial orientation
- Sensory integration

Diagnostic Procedures

A comprehensive vestibular workup combines three categories of assessment:

- Diagnostic testing
- Bedside/physical exam
- Functional and self-report scales

Diagnostic Testing



Figure 3. Common vestibular diagnostic testing equipment: VNG/ENG, VEMPs, posturography, and rotary chair.

Ocular Motor Testing

- Saccades
- Smooth Pursuit
- Gaze Testing
- Optokinetic Nystagmus Testing

Positional Testing

Static positional: supine, head turns, body turns.

Dynamic positional: Dix-Hallpike Maneuver, Supine Roll Test.

Caloric Testing

Warm and cool air (or water) is gently introduced into each ear canal. The temperature change stimulates the balance organs in the inner ear. A healthy vestibular system will briefly trigger a feeling of dizziness and cause the eyes to move in a specific, predictable pattern.

COWS mnemonic: Cold = opposite; Warm = same (in relation to the direction of nystagmus).

Peripheral vs. Central VNG Results

Finding	Peripheral vs. Central
Nystagmus latency	Peripheral: nystagmus occurs after a brief delay but can be suppressed

Finding	Peripheral vs. Central
and suppression	with visual fixation
Caloric response	Peripheral: reduced or absent response to temperature changes in the affected ear
Gaze testing	Central: vertical or persistent nystagmus on gaze testing
Ocular test pattern	Central: abnormal results on other ocular tests
Nystagmus suppression	Central: immediate nystagmus that cannot be suppressed
Caloric response pattern	Central: caloric hyperresponsiveness or a strong directional preponderance, with failure of visual fixation

Q3

Quiz Hint: Diagnostic procedures such as VNG/ENG, VEMPs, posturography, and rotary chair testing are used specifically to assess vestibular function in a clinical setting.

Rotary Chair Testing

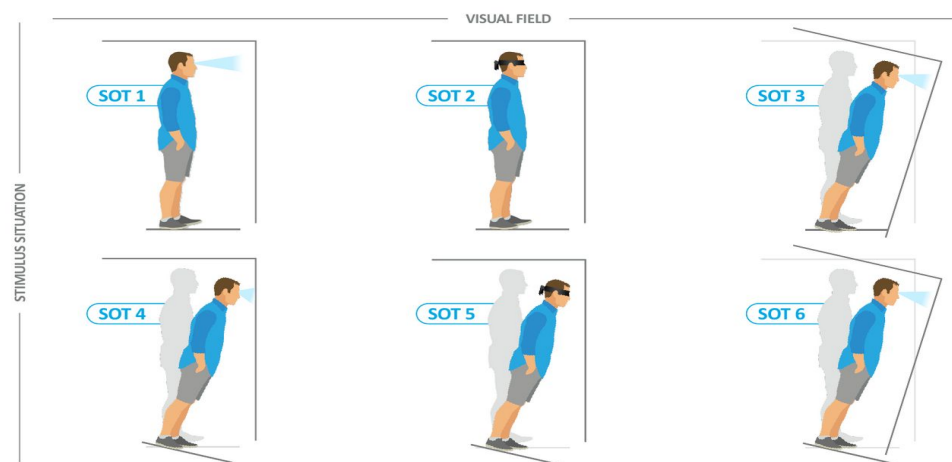
Rotary chair components: Sinusoidal Harmonic Acceleration (SHA), Vestibulo-Ocular Response suppression, Velocity Step Test, and Visual-Vestibular interaction.

Results identified: bilateral vestibular loss/hypofunction, unilateral vestibular loss, cerebellar ocular motor abnormalities, and vestibular compensation.

Posturography

Posturography components: Computerized Dynamic Posturography, Sensory Organization Test, and Motor Control Test.

Vestibular results identified include Meniere's Disease, Vestibular Neuritis/Labyrinthitis, and BPPV. Central results can help identify central processing deficits and monitor progression of balance deficits from certain central disorders. Other applications include fall risk assessment and identifying musculoskeletal/proprioceptive issues.



Horowitz, G., Ungar, O. J., Levit, Y., Himmelstorf, M., & Handzel, O. (2020). The impact of conductive hearing loss on balance. *Clinical Otolaryngology*, 45(1), 106–110.

Figure 4. The six Sensory Organization Test (SOT) conditions used in posturography.

Vestibular Evoked Myogenic Potential (VEMP)

cVEMP (Cervical): measures the saccule and inferior vestibular nerve, with electrodes placed on the sternocleidomastoid muscle.

oVEMP (Ocular): measures the utricle and superior vestibular nerve, with electrodes placed around the eyes.

Common diagnostic results include Superior Semicircular Canal Dehiscence, Meniere's Disease, Vestibular Neuritis, Vestibular Schwannoma, and bilateral vestibular loss.

Electrocochleography (EcoG)

EcoG measures electrical activity in the ear to detect abnormal fluid pressure. Common diagnostic results include Superior Semicircular Canal Dehiscence, Meniere's Disease, and Perilymphatic Fistula.

Bedside Testing

Bedside testing includes the Head Impulse Test (HIT), Dix-Hallpike, and the Stepping Fukuda Test.

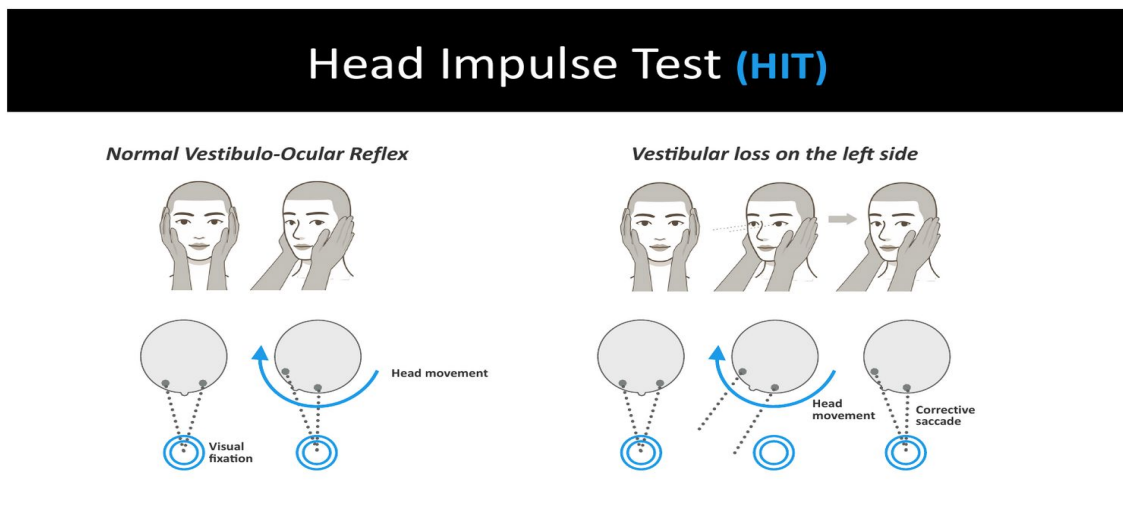


Figure 5. Head Impulse Test findings in normal function versus left-sided vestibular loss.

In a normal vestibulo-ocular reflex, the eyes maintain visual fixation during head movement. With vestibular loss on one side, head movement produces a corrective saccade after the eyes drift off target.

Dix-Hallpike Test

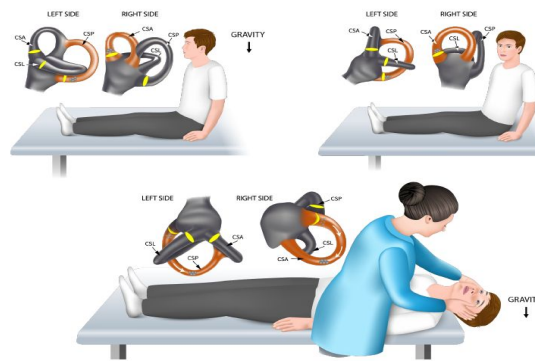


Figure 6. Positioning sequence for the Dix-Hallpike Test.

Stepping Fukuda Test: rotation of 30° to 45°+ during stepping in place indicates a unilateral vestibular weakness.

Self-Report Scales

Commonly used metrics include frequency (rated from "never" to "very often," more than once a week), intensity (often measured by visual analogue scales), and functional limitations (assessed by how dizziness affects daily activities).

Common Vestibular Symptoms and Pathologies

Common Vestibular Symptoms

- Spatial disorientation
- Vertigo
- Dizziness/lightheadedness
- Imbalance/disequilibrium
- Visual disturbance
- Nausea and vomiting
- Hearing changes
- Fatigue
- Cognitive dysfunction
- Head/neck pain
- Anxiety and panic

Q2 Quiz Hint: Common vestibular symptoms include dizziness/lightheadedness and imbalance/disequilibrium, along with spatial disorientation, visual disturbance, and nausea and

Common Vestibular Pathologies

- Secondary Endolymphatic Hydrops
- BPPV
- Autoimmune Inner Ear Disease
- Acoustic Neuroma
- CANVAS Syndrome
- TBI
- Labyrinthitis/Vestibular Neuritis
- Mal de Débarquement
- Meniere's Disease
- Perilymph Fistula
- Vascular Vertigo
- Vestibular Migraine

Types of Nystagmus

- Horizontal Nystagmus
- Vertical Nystagmus
- Torsional (Rotary) Nystagmus

Benign Paroxysmal Positional Vertigo (BPPV)

Symptoms

- Vertigo
- Dizziness or lightheadedness
- Loss of balance
- Nausea and/or vomiting

Diagnosis

Diagnosis relies on visualization of nystagmus with specific head movements: Dix-Hallpike, Roll Test, and Supine Head-Hanging.

Key Characteristics

- Latency: the nystagmus typically develops with a brief delay of several seconds
- Duration: the paroxysm usually subsides within 30 to 60 seconds
- Reversal: the nystagmus often reverses direction when returning to a sitting position
- Fatigue: the intensity decreases upon repeated, identical testing

Benign Paroxysmal Positional Vertigo (BPPV)

Diagnosis

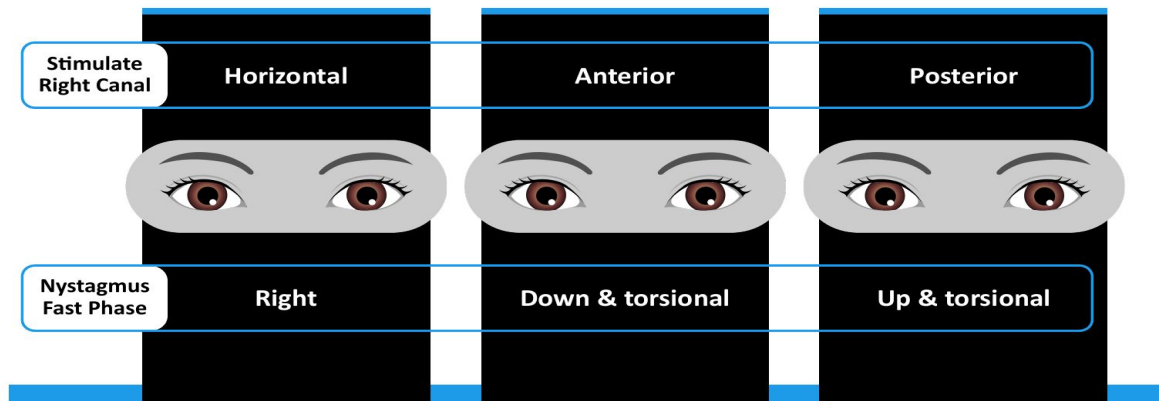


Figure 7. Nystagmus fast-phase direction by affected semicircular canal in BPPV.

Canal	Appearance / Test / Treatment
Posterior Canal (most common)	Appearance: vertical upbeatting (toward the forehead) and torsional, with fast phase beating toward the downward ear. Test: Dix-Hallpike Maneuver. Treatment: Epley Maneuver.
Horizontal Canal	Appearance: purely horizontal, typically horizontal geotropic (fast phase beats toward the ground); variant is apogeotropic (fast phase beats toward the ceiling). Test: Supine Roll Test. Treatment: BBQ roll.
Anterior Canal (least common)	Appearance: downbeating (toward the nose) with or without torsion. Test: Supine Head Hang. Treatment: Semont Maneuver.

BPPV Posterior Canal

Posterior Canal BPPV: Most common

Appearance: Vertical upbeating (toward the forehead) and torsional (fast phase beating toward the downward ear)

Test: Dix-Hallpike Maneuver

Treatment: Epley Maneuver

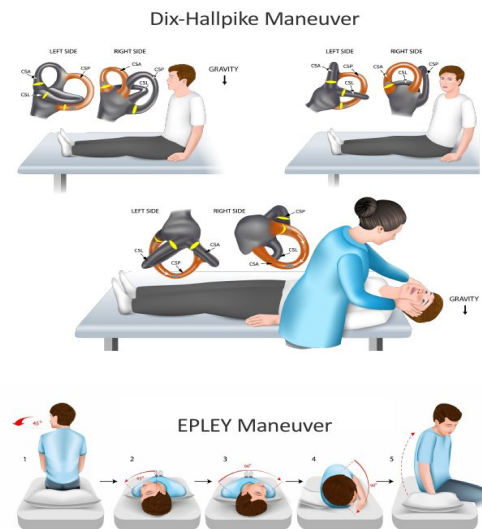


Figure 8. Dix-Hallpike diagnostic maneuver and five-step Epley treatment maneuver for posterior canal BPPV.

Q1

Quiz Hint: BPPV is characterized by brief episodes of vertigo triggered by head movements such as rolling over in bed or looking up, and is confirmed through positional tests like the Dix-Hallpike Maneuver.

Acoustic Neuroma

Symptoms

- Asymmetric hearing loss
- Asymmetric tinnitus

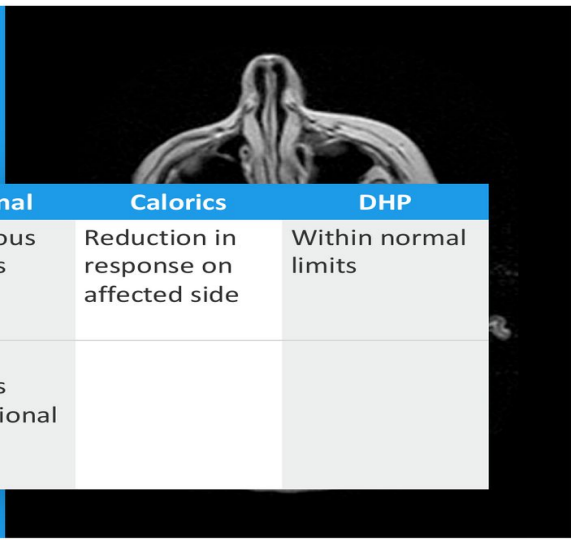
Diagnosis

Comprehensive audiologic assessment: Air/Bone/Speech, Tympanograms, Acoustic Reflexes, OAEs.

Comprehensive vestibular assessment: VNG, VEMPs. Also, MRI with contrast.

Acoustic Neuroma

Diagnosics Testing and Results



Audiogram	Ocular motor	Positional	Calorics	DHP
Asymmetrical hearing loss	Abnormal saccades	Spontaneous nystagmus	Reduction in response on affected side	Within normal limits
Tinnitus	Smooth pursuit abnormalities	Vertical nystagmus with positional testing		

Figure 9. Acoustic neuroma diagnostic testing and results.

Treatment

Treatment varies patient to patient and requires a highly individualized treatment plan.

Vestibular Neuritis and Labyrinthitis

Symptoms

- Vertigo
- Nystagmus
- Nausea
- Vomiting

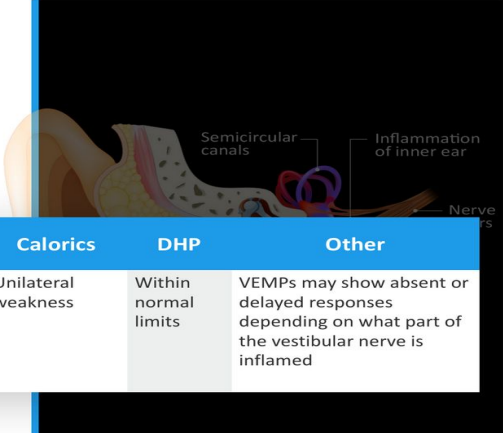
Hearing loss is indicative of labyrinthitis and helps distinguish it from vestibular neuritis.

Diagnosis

A full vestibular workup: ENG/VNG, vHIT, VEMPs, and Ocular Tilt Reaction.

Vestibular Neuritis & Labyrinthitis

Diagnostic Test Results



Audiogram	Ocular motor	Positional	Calorics	DHP	Other
Loss present with labyrinthitis only	Reduced VOR; catchup saccades	Within normal limits	Unilateral weakness	Within normal limits	VEMPs may show absent or delayed responses depending on what part of the vestibular nerve is inflamed

Figure 10. Vestibular neuritis and labyrinthitis diagnostic test results.

Treatment

Medications to reduce nausea and vomiting, and vestibular rehabilitation.

Meniere's Disease

Symptoms

Early symptoms: balance disturbance, dizziness or lightheadedness; headache and increased ear pressure; worsening hearing loss or tinnitus; sound sensitivity; general uneasiness.

Symptoms during an attack: sudden, severe vertigo; fluctuating hearing loss; ear fullness and/or tinnitus.

Diagnosis

Two or more vertigo episodes; documented low-to-mid frequency hearing loss; tinnitus or aural fullness.

Treatment

Reduced sodium diet, medications, and vestibular rehab.

Secondary Endolymphatic Hydrops

Symptoms

- Aural pressure/fullness
- Tinnitus
- Hearing loss (low frequency SNHL)
- Dizziness and imbalance
- Episodic vertigo

Diagnosis

Physician observation, patient history, and symptom pattern.

Treatment

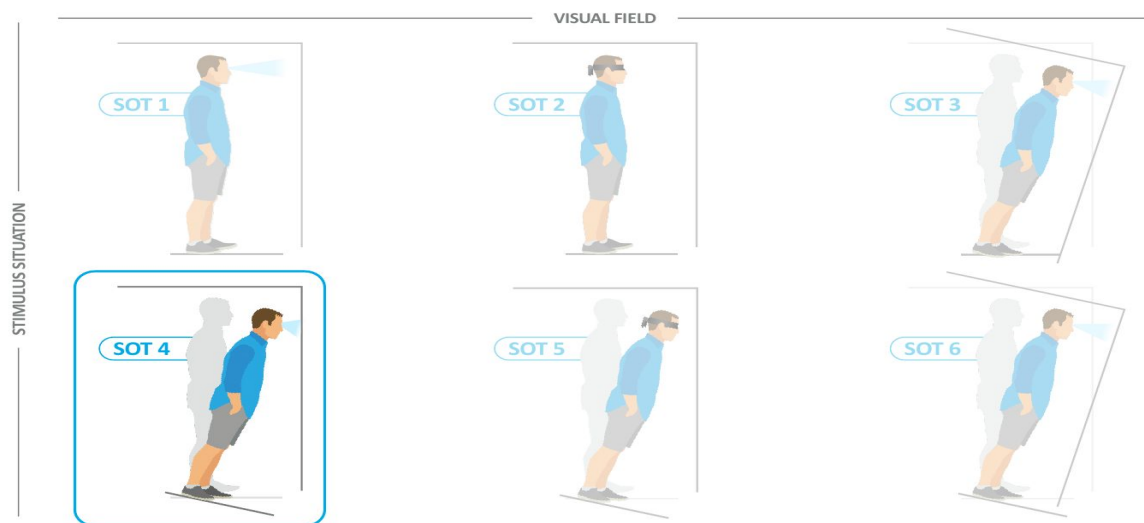
Stabilize fluid and electrolyte levels, identify and treat the underlying condition, improve daily symptoms, manage persistent symptoms, and maintain quality of life.

Comparing Meniere's and Secondary Hydrops

Category	Findings
Common to both	Low frequency SNHL is common; abnormal results on EcoG; caloric weakness in the affected ear; abnormal results on VEMP.
Key differences	MRI with contrast results; bloodwork and serology results; medical history.

Safety and Balance

Balance and fall risk are closely associated with hearing loss.



Horowitz, G., Ungar, O. J., Levit, Y., Himmelfarb, M., & Handzel, O. (2020). The impact of conductive hearing loss on balance. *Clinical Otolaryngology*, 45(1), 106–110.

Figure 11. Sensory Organization Test condition 4 (SOT 4), examined in relation to hearing loss and balance.

Hearing Loss is Associated with Postural Imbalance

6% increase in path length
for every 10 dB of measured hearing loss in better hearing ear

Berge JE, Nordahl SHG, Aarstad HJ, Goplen FK. Hearing as an Independent Predictor of Postural Balance in 1075 Patients Evaluated for Dizziness. *Otolaryngology-Head and Neck Surgery*. 2019; 161(3): 478-484. <https://doi.org/10.1093/otom/161.3.478>

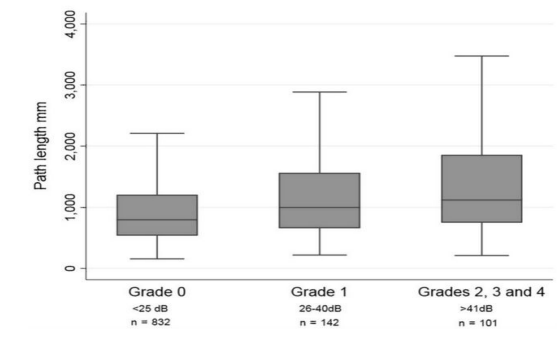


Figure 12. Postural sway path length by hearing loss grade.

Hearing loss is associated with postural imbalance: a 6% increase in path length for every 10 dB of measured hearing loss in the better hearing ear.
For every 10 dB increase in hearing loss, people spend 8.5 more minutes per day being sedentary.



Figure 13. The downward spiral of consequences following a fall.

Common Fall Risk Factors

Fall risk increases as the number of risk factors increases.



Figure 14. Modifiable versus non-modifiable fall risk factors.

Q5

Quiz Hint: The STEADI framework calls on providers to screen for fall risk, assess modifiable risk factors, and intervene using effective clinical and community strategies — that is, to build out a full management plan.

Visual Observations

- Frailty
- Slowed walking speed
- Easily fatigued or winded
- Use of walking aids, including relying on a companion
- Shuffling of feet or short strides
- Reliance on using hands when getting out of a chair
- Reaching out to furniture or walls for stability or confidence when walking
- Bruises or other injuries

Falls Are Preventable — STEADI

The Stopping Elderly Accidents, Deaths, and Injuries (STEADI) initiative was developed by the U.S. Centers for Disease Control and Prevention (CDC), based on the American and British Geriatrics Societies' Clinical Practice Guideline for Prevention of Falls in Older Persons, and designed with input from healthcare providers.

STEADI offers tools and resources to help providers Screen patients for fall risk, Assess modifiable risk factors, and Intervene using effective strategies.

The Stay Independent Questionnaire includes three key questions: Have you fallen in the past year? Do you feel unsteady when standing or walking? Do you worry about falling? Analysis has shown that using only these three key questions identified 95% of high-risk patients, potentially reducing the time needed to screen patients.

STEADI tools and resources for both clinicians and patients are available at cdc.gov/steady.

Referrals and Recommendations

Primary care/gerontology: Pharmacy review is warranted for use of four or more medications, sleep aids, diuretics, or antidepressants. Pharmacists can review and coordinate prescriptions from a patient's multiple providers.

Community-based programs: Otago Exercise Program, Silver Sneakers, Tai chi, Stepping On, Stay Active & Independent for Life (SAIL), and the Home Hazard Removal Program (HARP).

Vestibular Rehabilitation

Vestibular rehabilitation is an exercise-based program designed to reduce vertigo, dizziness, imbalance, and fall risk that are a consequence of a vestibular disorder.

- Gaze stabilization
- Habituation
- Balance training

Q4

Quiz Hint: One of the course's learning outcomes emphasizes developing patient-centered management plans and referral strategies tailored to the individual patient's symptoms and goals.

Case Studies

Mary T

Chief complaint: "Every time I roll over in bed or look up, the room spins for a few seconds."

Case history: Reports sudden episodes of spinning dizziness that began 5 days ago after gardening. Symptoms last less than 30 seconds. Denies hearing loss, tinnitus, ear fullness, neurological symptoms, and recent illness. Reports mild nausea during episodes but feels normal between attacks.

Workup: Otoscopy clear bilaterally. Audiogram shows bilateral hearing loss. Dix-Hallpike positive on the right side, with up-beating torsional nystagmus lasting approximately 15 seconds, negative on the left. VNG: caloric testing normal, oculomotor testing normal.

Management: Diagnosis of right posterior canal BPPV. Performed the Epley Maneuver in clinic, provided patient education on BPPV, and advised follow-up if symptoms persist.

James C

Chief complaint: "I constantly feel off balance, like I'm swaying or walking on a boat."

Case history: Reports a 3-week history of imbalance that began suddenly after a severe cold. Denies true spinning vertigo but reports unsteady feeling when walking. Denies hearing changes, tinnitus, ear pain, and neurological symptoms. Reports one fall while turning quickly in the kitchen.

Workup: Otoscopy unremarkable. Audiogram within normal limits. Dix-Hallpike negative bilaterally. VNG: caloric testing shows greater than 25% left unilateral weakness, oculomotor testing normal, positional testing shows mild persistent right-beating horizontal nystagmus.

Management: Diagnosis of left unilateral vestibular hypofunction, likely secondary to vestibular neuritis. Referred for Vestibular Rehabilitation Therapy (VRT), educated the patient on compensation and fall prevention, and encouraged gradual movement and activity versus avoidance.

Susan M

Chief complaint: "I get these sudden attacks where the room spins and my left ear feels clogged."

Case history: Reports episodic vertigo attacks occurring over the past 8 months. Episodes occur unpredictably and can last hours, accompanied by nausea and vomiting. Fluctuating symptoms in the left ear include tinnitus, aural fullness, and hearing that "comes and goes."

Workup: Otoscopy unremarkable. Audiogram shows fluctuating low-frequency sensorineural hearing loss in the left ear. Dix-Hallpike negative. VNG: mild left unilateral weakness on caloric testing, oculomotor testing normal. EcoG: elevated SP/AP ratio in the left ear. VEMP testing: cVEMP shows reduced amplitude on the left side.

Management: Diagnosis of left-sided Ménière's Disease. Referred to ENT for medical management, counseled on a low-sodium diet and hydration, discussed limiting caffeine and alcohol, and educated the patient on symptom tracking and attack triggers.

Technology and Wellness Tools

Wellness features at patients' fingertips include Fall Detection, Balance Assessment, and Balance Builder.

Fall detection relies on Inertial Measurement Units (IMUs): the accelerometer detects velocity changes, and the gyroscope detects rotation.

Fall Alert detects falls and sends an alert to selected contacts, either automatically or manually, and two-way alerts can be sent.

Balance Assessment uses exercises based on the CDC's STEADI Program to quickly assess elements of balance, performed as needed. Balance Builder uses exercises like those from the Otago Exercise Program to help strengthen elements of balance, performed regularly.

Conclusion

- Vestibular disorders present with overlapping but distinguishable symptom patterns.
- A systematic bedside and diagnostic workup — combining case history, positional testing, VNG, VEMPs, posturography, and imaging where indicated — enables accurate differentiation between peripheral and central causes.
- Patient-centered management, vestibular rehabilitation, and fall-risk screening (such as STEADI) work together to improve outcomes and everyday safety for patients with vestibular disorders.

Interactive Worksheet

Finding Balance: Understanding Vestibular Disorders

Presenter: Keeley Layfield, Au.D. | Event ID: 42390 | Profession: Audiology

This worksheet accompanies the CE handout. Use it to actively apply what you've learned — write, analyze, and reflect at each step.

Learning Objectives

- Participants will be able to apply basic assessment techniques to evaluate vestibular function in a clinical setting
- Participants will be able to develop patient-centered management plans and referral strategies
- Participants will be able to identify key symptoms of a vestibular disorder or postural instability

Module 1: Vestibular Anatomy and Diagnostic Testing

Key Terms

Term	Your Definition
BPPV	Click here to enter text.
Nystagmus	Click here to enter text.
Caloric Testing	Click here to enter text.
VEMP	Click here to enter text.

Guided Notes

The three stages of vestibular processing are Input, Integration, and Output. Briefly describe what happens at each stage:

Click here to enter text.

Compare the nystagmus pattern of a peripheral vestibular lesion to that of a central lesion:

Click here to enter text.

Pause and Apply

If a patient reports brief vertigo triggered by rolling over in bed or looking up, then I will...

Click here to enter text.

Module 2: Vestibular Pathologies and Patient Safety

Key Terms

Term	Your Definition
Meniere's Disease	Click here to enter text.
Secondary Endolymphatic Hydrops	Click here to enter text.
STEADI	Click here to enter text.

Guided Notes

List three modifiable fall risk factors discussed in this course:

Click here to enter text.

Quick Check: Hearing loss is associated with an increase in postural sway path length.

☐ True

☐ False

Pause and Apply

If I identify a patient as a fall risk, then I will...

Click here to enter text.

Clinical Case: Unfolding Scenario

Part 1 — Introduction

A 68-year-old patient reports that the room spins for a few seconds every time she rolls over in bed or looks up. What clinical data would you want to gather first?

Click here to enter text.

Part 2 — Assessment Data

Dix-Hallpike testing is positive on the right side with up-beating torsional nystagmus lasting about 15 seconds; negative on the left. What does this pattern indicate?

Click here to enter text.

Part 3 — Complicating Factor

The patient also reports a 6-month history of progressive one-sided hearing loss and tinnitus. How does this change your interpretation or plan?

Click here to enter text.

Part 4 — Application

What is your recommended management plan, and what referral criteria (if any) apply?

Click here to enter text.

Clinical Toolkit: BPPV Diagnostic Checklist

This tool is for clinical reference only. Always follow your facility's protocols.

Identify affected canal (positional testing / Dix-Hallpike / Supine Roll Test)	Click here to enter text.
Confirm nystagmus direction and duration	Click here to enter text.
Select repositioning maneuver (Epley / BBQ Roll / Semont)	Click here to enter text.
Provide patient education and follow-up plan	Click here to enter text.

Post-Course Reflection

What was the most significant thing you learned today that surprised you or challenged your existing practice?

Click here to enter text.

What knowledge gaps did this course reveal in your own skills or knowledge?

Click here to enter text.

Describe a specific patient or client from your own practice where you would apply something from this course:

Click here to enter text.

Action Plan

Identify at least 2 specific, measurable changes you plan to make to your clinical practice as a direct result of this course. Use the If-Then format where possible.

My Action Plan Goal	Target Date	How I Will Measure Success
Click here to enter text.	Click here to enter text.	Click here to enter text.
Click here to enter text.	Click here to enter text.	Click here to enter text.

Quiz Summary

The following quiz hints appeared throughout the course content. Use this section as a quick study reference.

Q1

Quiz Hint: BPPV is characterized by brief episodes of vertigo triggered by head movements such as rolling over in bed or looking up, and is confirmed through positional tests like the Dix-Hallpike Maneuver.

Q2

Quiz Hint: Common vestibular symptoms include dizziness/lightheadedness and imbalance/disequilibrium, along with spatial disorientation, visual disturbance, and nausea and vomiting.

Q3

Quiz Hint: Diagnostic procedures such as VNG/ENG, VEMPs, posturography, and rotary chair testing are used specifically to assess vestibular function in a clinical setting.

Q4

Quiz Hint: One of the course's learning outcomes emphasizes developing patient-centered management plans and referral strategies tailored to the individual patient's symptoms and goals.

Q5

Quiz Hint: The STEADI framework calls on providers to screen for fall risk, assess modifiable risk factors, and intervene using effective clinical and community strategies — that is, to build out a full management plan.

References

- Ambrose, A. F., Paul, G., & Hausdorff, J. M. (2013). Risk factors for falls among older adults: A review of the literature. *Maturitas*, 75, 51–61. <https://doi.org/10.1016/j.maturitas.2013.02.009>
- Berge, J. E., Nordahl, S. H. G., Aarstad, H. J., & Goplen, F. K. (2019). Hearing as an independent predictor of postural balance in 1075 patients evaluated for dizziness. *Otolaryngology–Head and Neck Surgery*, 161(3), 478–484. <https://doi.org/10.1016/j.otoh.2019.09.008>
- Burns, E., & Kakara, R. (2018). Deaths from falls among persons aged ≥65 years — United States, 2007–2016. *MMWR Morbidity and Mortality Weekly Report*, 67, 509–514. <https://doi.org/10.15585/mmwr.mm6718a1>
- Eckstrom, E., Parker, E. M., Lambert, G. H., Winkler, G., Dowler, D., & Casey, C. M. (2017). Implementing STEADI in academic primary care to address older adult fall risk. *Innovation in Aging*, 1(2), igx028.
- Harvey, J. A., Chastin, S. F. M., & Skelton, D. A. (2015). How sedentary are older people? A systematic review of the amount of sedentary behavior. *Journal of Aging and Physical Activity*, 23(3), 471–487. <https://doi.org/10.1123/japa.2014-0164>
- Horowitz, G., Ungar, O. J., Levit, Y., Himmelfarb, M., & Handzel, O. (2020). The impact of conductive hearing loss on balance. *Clinical Otolaryngology*, 45(1), 106–110.
- Kuo, P.-L., Di, J., Ferrucci, L., & Lin, F. R. (2021). Analysis of hearing loss and physical activity among US adults aged 60–69 years. *JAMA Network Open*, 4(4), e215484. <https://doi.org/10.1001/jamanetworkopen.2021.5484>
- Moreland, B., Kakara, R., & Henry, A. (2020). Trends in nonfatal falls and fall-related injuries among adults aged ≥65 years — United States, 2012–2018. *MMWR Morbidity and Mortality Weekly Report*, 69(27), 875–881. <https://doi.org/10.15585/mmwr.mm6927a5>
- Paganini-Hill, A., Greenia, D. E., Perry, S., et al. (2017). Lower likelihood of falling at age 90+ is associated with daily exercise a quarter of a century earlier: The 90+ Study. *Age and Ageing*, 46(6), 951–957. <https://doi.org/10.1093/ageing/afx039>
- Tinetti, M. E., Speechley, M., & Ginter, S. F. (1988). Risk factors for falls among elderly persons living in the community. *New England Journal of Medicine*, 319(26), 1701–1707. <https://doi.org/10.1056/NEJM198812293192604>

Additional Information

Presenter Bio

Keeley Layfield, Au.D., joined the education and training division of Starkey in early 2022. She received her Au.D. from Louisiana Tech University and has practiced audiology in a variety of ear, nose, and throat offices before joining Starkey in 2019 as part of the sales team. Layfield's current responsibilities include assisting in the development of educational materials, leading training classes, and assisting with course offerings through AudiologyOnline.

Presenter Disclosure

Financial: Keeley Layfield is an employee of Starkey Hearing.

Non-financial: Keeley Layfield has no relevant non-financial relationships to disclose.

Additional Information (continued)

Handout Information

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Social Workers

For additional information regarding standards and indicators for cultural competence, please review the NASW resource: [Standards and Indicators for Cultural Competence in Social Work Practice](#)

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