

## Acute Vestibular Syndrome (AVS) Evaluation

### HINTS: Head Impulse, Nystagmus, Test of Skew

A bedside battery to differentiate peripheral vs central lesions in acute vestibular syndrome (AVS)

HINTS positive-normal HIT, direction-changing nystagmus, skew deviation (**central**)

HINTS positive plus unilateral hearing loss (**central**)

HINTS negative-abnormal HIT, direction-fixed mixed horizontal/torsional nystagmus, no skew deviation (peripheral)

### INFARCT – Central lesions:

Impulse **N**egative

East phase **A**lternating nystagmus

Vertical **R**efixation on **C**over **T**est (skew)

Unilateral change in hearing

Inability to walk

### PICA–Ocular motor findings:

- Ipsipulsion of the eyes toward the lesion side in darkness, under closed lids, or with a blink
- Saccades: Hypermetric *Ipsilateral* to the lesion side and *hypometric* contralateral to the lesion side
- Smooth pursuit: Impaired contralateral to the lesion side
- Spontaneous nystagmus: Often mixed horizontal-torsional with slow phases toward or away from the lesion side
- Ocular tilt reaction: Skew deviation with ipsilateral HYPOTropia, head tilt toward the lesion side, ipsilateral cyclodeviation (top poles of eyes rolled ipsilaterally), and ipsilateral deviation of subjective visual vertical

### AICA– Ocular motor findings:

- Abnormal head impulse (usually ipsilesional)
- Spontaneous nystagmus with slow phases towards the lesion side
- Gaze-evoked nystagmus
- Impaired smooth pursuit
- Perverted (cross-coupled) head shaking nystagmus: Vertical nystagmus with horizontal head shaking)

### MLF- Ocular motor findings:

- Internuclear ophthalmoplegia: Limited adduction in the eye ipsilateral to the lesion
- Horizontal nystagmus greater in the contralesional eye
- Skew deviation/Ocular tilt reaction with ipsilateral HYPERTropia
- Dissociated vertical or torsional nystagmus

### SEND HIM ON HOME SAFE- Peripheral lesions:

Straight **E**yes- **N**o New **D**eafness

Head Impulse **M**isses

**O**ne-way **N**ystagmus

Healthy **O**tic and **M**astoid **E**xam

Stands **A**lone-**F**ace **E**ven

## TeleHealth Dizzy Template

### Key History Components

#### 1- Symptoms

- Dizziness:** Sensation of impaired spatial orientation without a false or distorted sense of motion.
- Vertigo:** Sensation of self-motion when no self-motion is occurring, or distorted self-motion during normal head movement

2-Timing: Occurrence (Acute/Chronic/ Recurrent), Duration (Seconds/Hours/Days), Frequency (Transient/ Intermittent/ Persistent)

3-Triggers: Spontaneous or Triggered (e.g., Positional/Visual induced/ Head-motion induced/ Valsalva induced/Sound induced/ Orthostatic)

4- Risk Factors (e.g., Age/Gender/Vascular/ Recent head trauma)

### Key Findings

Diagnosis	History	Virtual Exam
Vestibular neuritis	Spontaneous Vertigo No hearing symptoms	Spontaneous mixed horizontal-torsional nystagmus that increases with fixation removal  Contralaterally directed corrective saccades with HIT
Stroke	Spontaneous Vertigo/Dizziness Associated neurological symptoms Acute unilateral hearing loss/tinnitus Vascular risk factors	Direction-changing, gaze-evoked or pure vertical or pure torsional nystagmus Skew deviation or head tilt Normal/Abnormal HIT Unilateral hearing loss
Vestibular Migraine	Episodic vertigo/dizziness (spontaneous or triggered) Headache plus migrainous features Aural symptoms	Normal exam Persistent positional nystagmus
Ménière's Disease	Spontaneous recurrent vertigo Fluctuating hearing loss +/- other aural symptoms Lermoyez syndrome (hearing improves as vertigo begins) Drop attacks	Mixed spontaneous horizontal-torsional nystagmus that may change direction over time (excitation, inhibition, recovery phases)

# Clinical Approach to the Dizzy Patient: A Guide to History and Physical Examination

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Supported in part by an unrestricted educational grant from the American Neurotology Society and the Vestibular Disorders Association

ccdExamination	What to Look For	Interpretation
Alternate Cover Test	Vertical misalignment	Skew deviation – <i>Mostly Central</i> (Brainstem/Cerebellum)
Smooth Pursuit	Motion pattern	Mostly smooth– <i>Peripheral</i> Saccadic – <i>Central</i>
Fixation Suppression of VOR	Fixation on rotation with a head-fixed target	Nystagmus – <i>Central</i>
Saccade	Accuracy	Overshoots – <i>Central</i> (Cerebellum)
	Conjugacy Velocity	Disconjugate – <i>Central</i> (MLF) Slow – <i>Central</i> (Brainstem)
Head Impulse Test	Refixation/ Catch-up Saccades	Present – <i>Mostly Peripheral</i> Absent – <i>Central</i> (AVS) / <i>Non-localizing</i>
Dynamic Visual Acuity	Drop in acuity with 2 Hz headshake	3 or more line drop – <i>Peripheral</i>
Subjective Visual Vertical (SVV bucket test)	> 2° tilt	Ipsiversive – <i>Peripheral</i> Ipsi or contraversive – <i>Central</i>
Spontaneous Nystagmus	Direction	Mixed horizontal torsional – <i>Peripheral</i> Pure vertical or pure torsional – <i>Central</i>
	Visual fixation effect	Suppressed – <i>Mostly Peripheral</i> Not suppressed – <i>Central</i>
Gaze-evoked Nystagmus	Direction	Fast phase alternating with gaze – <i>Central</i> (fast phase in gaze direction) Rebound or direction reversal with gaze back to midline – <i>Central</i> (fast phase in opposite previous gaze direction)

Examination	What to Look For	Interpretation
Positional Nystagmus	Dix-Hallpike maneuver	Paroxysmal upbeat geotropic torsional nystagmus – <i>Peripheral</i> (PC BPPV)
		Pure vertical, especially downbeat – <i>Central</i>
Headshake-induced Nystagmus	Direction	Transient horizontal geotropic or apogeotropic nystagmus – usually <i>Peripheral</i> (HC BPPV)
		Sustained nystagmus – usually <i>Central</i>
Vibration-induced Nystagmus	Direction	Fast phase towards the intact side – <i>Peripheral</i> Vertical with horizontal headshake – <i>Central</i>
Hyperventilation-induced Nystagmus	Direction	Same as headshake-induced nystagmus
Pneumatic Otoscopy	Ocular deviation with positive pressure	Fast phase away (paretic) or towards (excitatory) intact side – <i>Peripheral</i>
		Vertical – <i>Central</i>
Pneumatic Otoscopy	Ocular deviation with positive pressure	Upward deviation – <i>Peripheral</i> (SCD)

Examination	What to Look For	Interpretation
Tuning Fork Exam (128/256/512Hz)	Rinne	256/512 Hz AirConduction>Bone Conduction (Normal)
	Weber	256/512 Hz Midline (Normal)
	Malleolus sign	256 Hz (Superior Canal Dehiscence) Abnormal (128 HZ) (Neuropathy, Myelopathy)
Foot/Hand	Step pattern	Wide base – <i>Peripheral or Central</i> Ataxic, shuffling, poor initiation, or festination – <i>Central</i> Inability to stand – <i>Central</i>
		Gait/Stance
Romberg Test	Balance	Excessive sway or fall – <i>Peripheral or central</i> Inability to stand – <i>Central</i>
Limb Coordination	Accuracy	Dysmetria – <i>Central</i> (Cerebellum)
	Rhythm	Tremor – <i>Central</i> (Cerebellum/Basal Ganglia) Bradykinesia – <i>Central</i> (Basal Ganglia)
REMEMBER: 1) Full cranial nerve examination 2) Evaluate for orthostasis, and 3) Review medications		
AVS: Acute Vestibular Syndrome		
SCD: Superior Canal Dehiscence		
MLF: Medial Longitudinal Fasciculus		
PC BPPV: Posterior Canal BPPV		
HC BPPV: Horizontal Canal BPPV		
HIT: Head Impulse Test		