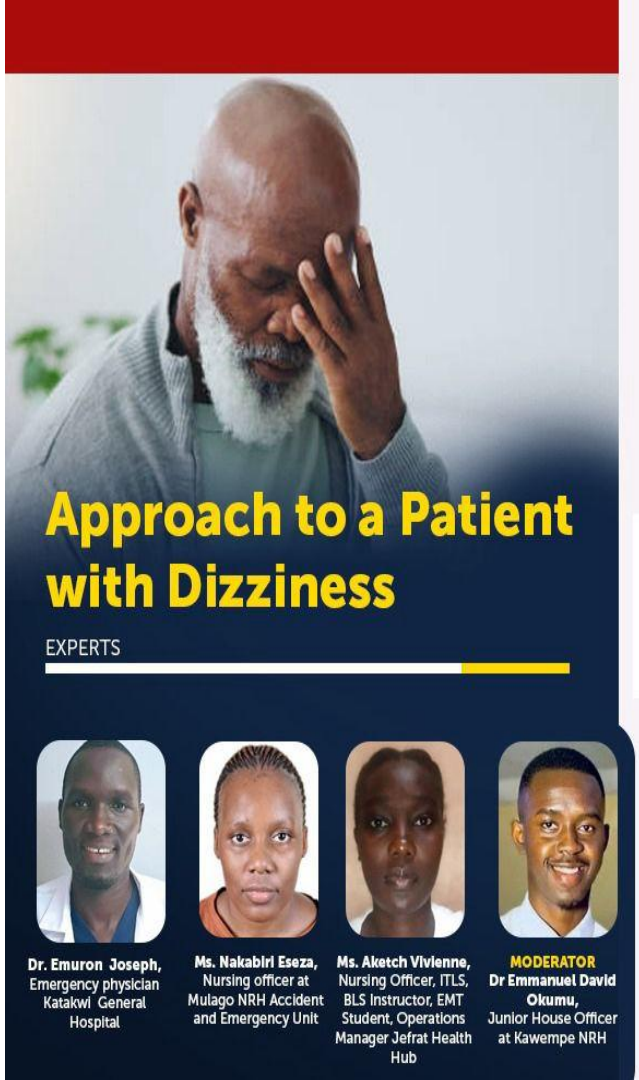
EMS ECHO 106



THE REPUBLIC OF UGANDA MINISTRY OF HEALTH

Seed GLOBAL HEALTH

Project ECHO

This session will delve into areas such as;

1. Key history in a patient with acute dizziness
2. Pre-hospital care and inter-facility transfer for a patient with dizziness
3. Emergency assessment of a patient with acute dizziness
4. ED management for a patient with acute dizziness
5. Dizziness in special patient categories
6. ED disposition plan for a patient with acute dizziness

scan to register

FRIDAY
05th December 2025
2-4pm EAT

Use link;
https://shorturl.at/8KEeT

Case Presenter
Dr. Rebecca Asiimire
EM Resident MakCHS

ECAU EMERGENCY CARE ASSOCIATION OF UGANDA

Chat Questions
Dr Tenaya Wilson-Charles,
MD, DTM&H, Emergency Medicine Physician, Physician Educator Seed Global Health Uganda

Brief History

A 20-year-old female with no known past medical history (PMH) presents with a gradual onset of nausea, non-bloody, non-bilious vomiting, and dizziness.

Primary Survey (Emergency Assessment)

A	Abe to vocalize , speaks full sentences
B	Chest symmetrical moving with respiration, not in distress, RR=18bpm, SPO2= 97% on RA, equal air entry bilaterally, chest clear on auscultation

Primary Survey (Emergency Assessment)

C	Warm peripheral, CRT<2s, distal pulses palpable in all extremities, PR-110bpm, strong & regular BP-120/65mmHg, no murmur
D	Alert, GCS 15/15 PEARL Moves all extremities, no facial droop, no dysarthria or aphasia, RBS-5.3mmo/l
E	Afebrile to touch, temp- 37.5, dry mucous membranes, no deformity, rash, ecchymosis

What are the emergency Conditions?

THREATS	*PRIORITY*	*Findings*	*Associated Risk*	*Immediate Action Taken*
C	Dehydration	Tachycardia Dry mucous membranes associated with nausea and vomiting	Hypovolemia and shock	• A large bore IV insertion • Connect to cardiac Monitor and pulse oximeter • Obtain blood for RBS, CBC, LFT, RFT, electrolytes • Urine – urinalysis & HCG • Obtain ECG • Ondansetron 8mg start • Give 1L of Normal saline (NS) to start

And always reassess to monitor response to treatments

SAMPLE History

Signs & Symptoms	Acute onset of intermittent dizziness x2/7, worse on turning the neck to the left, with associated N/V, tinnitus,
Allergies	**None**
Medications	None

SAMPLE History

PMH	No hx of chronic illness
Last Oral Intake	Breakfast however didn't finish her meal
Events Leading Up to Presentation	Denies double vision, neck pain, head trauma, or LOC. Reports a recent URTI with nasal congestion, no fever, chills, chest pain, SOB, throat pain. No focal neurological deficits, slurred speech, dysphagia, ataxia, or falls. Her last menstrual period was one week ago

Secondary Survey (Head-to-toe examination)

RELEVANT POSITIVES	RELEVANT NEGATIVES
Abdomen: soft, mild suprapubic tenderness, no distension, no rebound or guarding, no masses or hernias, rectal and urogenital exam deferred **HINTS Exam**: horizontal nystagmus towards the right, delayed saccades with head impulse test to the left, no skew deviations. **Dix Hall Pike Test** was normal	General: Well-appearing **Head & Neck:** atraumatic, normocephalic, non-icteric, no pallor, nasal discharge, oral lesions with moist mucous membranes, normal TM bilaterally, supple neck, with full ROM **Back**: non-tender, no deformity, no rash, no ecchymosis **Extremities**: No clubbing, no oedema, full range of motion **Skin**: No rash, no lesions

Differential diagnoses

- Vestibular neuritis
- Benign paroxysmal positional vertigo (BPPV)
- Posterior circulation stroke
- Disequilibrium Syndrome
- Syncope
- Medication/toxicologic causes
- Meniere's disease
- Cardiac dysarrhythmia
- Pregnancy-related causes

Investigations

WBC	7.49	4.3-11X103/uL
RBC	5.4	4.6-6.2X106/uL
Hgb	15.6	14-18g/dL
HCT	49.0	40-54%
MCV	90.7	80-94fL
MCH	28.9	26-33pg
MCHC	31.8	31-36g/dL
RDW	12.7	12.5-16.5%
PLT	249	150-450X103/uL
MPV	9.9	8-10fL
Neutrophil	75.3	50-65%
Lymphocyte	18.0	25-40%
Monocyte	5.6	4-10%
Eosinophil	0.7	0-5%
Basophil	0.3	0-1%

Investigations

Liver Function Test		Reference Range
AST (SGOT)	20	0-40 (U/L)
ALT (SGPT)	24	0-41 (U/L)
Alk Phosphatase	50	40-129 (U/L)
Total Bilirubin	0.5	0.0-1.2 (mg/dL)
Direct Bilirubin	<0.2	0.0-0.3 (mg/dL)
Total Protein	8.6	6.6-8.7 (g/dL)
Albumin	3.8	3.5-5.2 (mg/dL)
Pancreatic Panel		Reference Range
Lipase	34	13-60 U/L
Acetaminophen Level	15	15-30 ug/mL
Salicylate level	<0.3	3.0-10 mg/dL
Alcohol Level	0	0-10 mg/dL
Lactate	0.5	0.5-2 mmol/L
Inflammatory Markers		Reference Range
ESR	11	0-15 mm/hr
C-Reactive Protein	4	0-5 mg/L

Investigations

Basic Metabolic Panel		**Reference Range**
Sodium	140	136-145 m
Potassium	4.5	3.5-5.1 mEq/L
Chloride	102	98-107 mEq/L
CO2	27	22-29 mmol/l
BUN	15	6-20 mg/dL
Creatinine	0.7	0.7-1.2 mg/dL
Glucose	91	74-109 mg/dL
Calcium	10.1	8.6-10 mg/dL
Anion Gap	11	<15
Osmolality Calc	290	275-295 mOsm/L
eGFR (cr)	143	>=60 ml/min/1.73m2
Magnesium	2.0	1.4-2.6 mg/dL
Phosphorus	4.0	2.5-4.5 mg/dL

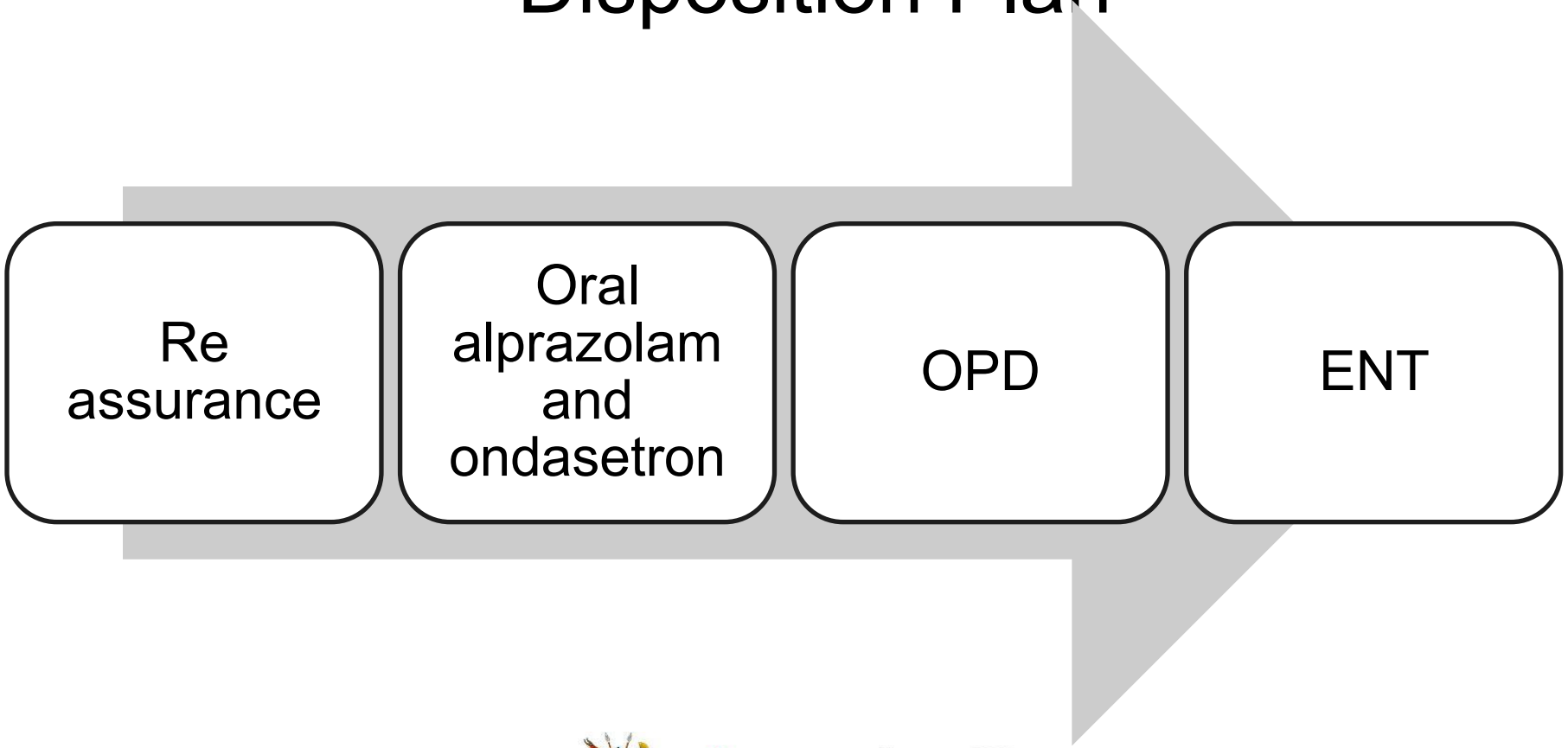
Other Investigations

Investigation	Result		
Brain CT scan	Normal findings		
ECG and ECHO	**Normal findings**		
Urine Toxicology	Normal		
Coagulation profile	**PT**	11.9	(9.4-12.5 Sec)
	aPTT	39.6	(25.1-36.5 Sec)
	INR	0.9	0.9-1.1
Urinalysis	Normal		

Supportive Management

- 1L N/s was given
- IV Ondansetron 8mg
- Oral Alprazolam 0.5mg tds
- She reportedly felt much better after the above treatment; vitals improved, no vomiting. Dizziness significantly improved, ambulatory without assistance.

Disposition Plan



Thank you

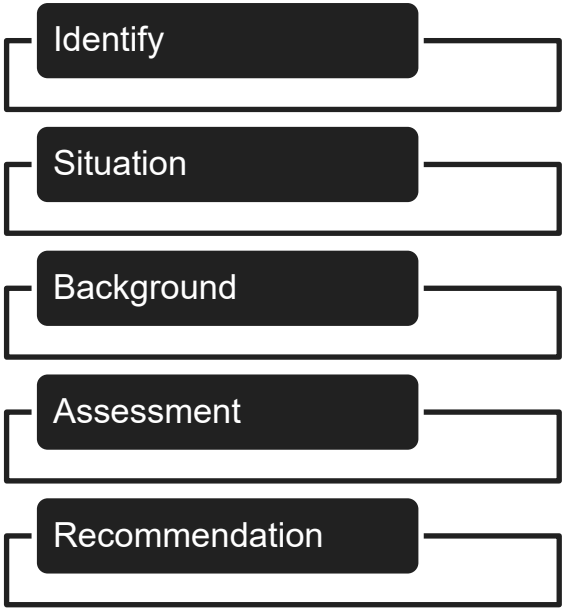
And now for the nursing perspective…

Prehospital team:

What do you need to prepare for pre-hospital care for this patient?

- Staff
- Patient
- Equipment / Medications
- Mode of transport
- Documentation/Handover

Ms. Aketch Vivienne, EMT Student at Rubaga Hospital, Operations Manager Jefrat Health Hub



Staff on Ambulance

- A physician,
- A qualified EMT with the capability to offer Advanced Life Support
- If you can’t get the physician physically, you should at least work under their medical direction on call

Equipment / Medications

Some of the most important ambulance equipment and medications that may be used for a patient with dizziness

- B- O_2 tank & delivery system (e.g., nasal cannula, NRMs), BVM device, Pulse oximeter for SPO2
- C - Cardiac monitor ECG (at least 6 leads), defibrillator (Manual or AED), BP monitor, mechanical CPR machine, IV fluids and accessories
- D - Penlight torch, Glucometer
- E- Thermometer, Blanket

Key Medications

- oxygen
- Antihistamine
- Benzodiazepines(diazepam, loraepam) vertigo
- steriods or antibiotics - infection or inflamation
- promethazine - nausea, vomiting, vertigo

- NB: Prehospital providers should follow local protocols and medical direction for specific medication administration

On-scene Care

Initial Assessment and Stabilisation (ABCs):

- **Airway:** Assess for the ability to verbalise
- **Breathing**: Assess respiratory effort & rate, Tidal volume, provide supplemental O_2 if needed and consider respiratory support
- **Circulation**: Monitor CRT, HR, BP, ECG monitoring, establish IV access, & consider IVF resuscitation if hypotensive, medications under MD
- **Disability**: Check for LOC (GCS or AVPU), Pupillary reaction, RBS
- **Exposure**: Maintain Temperature

History

- Timing of the symptoms
- Triggers that provoke symptoms
- Targeted exam

- Response determines classification of dizziness as episodic triggered, spontaneous episodic or continuous vestibular

Mode of Transport

- The best ambulance option depends on the patient's stability and the distance to the receiving facility
- For stable patients, ground ambulance with ALS capabilities
- For critically ill patients or those needing specialized care, an air ambulance (fixed-wing or helicopter)

Care in Transit

Continuous assessment & Monitoring for hemodynamic Stability

- Closely monitor vitals (HR, BP, RR, SPO_2) throughout
- Oxygenation: supplemental O_2 as needed
- Cardiac Monitoring: ECG monitoring to detect any arrhythmias or changes in heart rhythm.
- Neurological Status: Monitor for any changes in mental status or neurological function. RECORD & REPORT ANY CHANGES!!!

ISBAR Report

- I am A.V, handing over 20/F, currently stable, no known medical illness other than URTI a week prior, with h/o gradual onset of intermittent dizziness x2/7 aggravated by turning her head towards the left side with associated N/V, tinnitus in the left ear and blurred vision when looking towards the right side.
- She has stable vitals, fully conscious, alert, with no focal neurological deficits. Administered IVF 1L NS, and IV ondansetron 8mg
- Recommend EM physician, ENT and neuro-physician review

Thank you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Nursing team:

Is there anything else you would like to know now?

What are the **nursing priorities** for this patient in the ED?

Ms. Nakabiri Eseza, a Nursing officer at Mulago NRH Accident and Emergency Unit

Introduction

Nursing management of dizziness in the ER focuses on carrying out a comprehensive initial assessment using the ABCDE approach and performing timely interventions to improve the signs and symptoms. Nurses play a crucial role in ongoing monitoring and early detection of any complications that may arise.

Assessment	Nursing Diagnosis	Goal/Desired Outcome	Intervention	Rationale	Evaluation
Subjective data. Patient reported nausea and vomiting for 2 days. **Objective data.** Tachycardia of 120bpm with dry mucous membranes. BP: 114/56mmHg. HR: 120bpm. SPO2: 96% on RA	Deficient fluid volume related to gastrointestinal fluid loss secondary to vomiting evidenced by dry mucous membranes	Patient will demonstrate no signs of dehydration.	Assess patient's vital signs including RBS.	This provides the baseline data for evaluation of the patient's condition.	After 3 hours, the patient's hydration status improved.
			Establish two large-bore Intravenous line and administer 1L of IV fluids bolus within the first hour and maintain the patient on fluids at 25-30ml/kg rate.	IV fluids restore intravascular volume and also improve on the cardiac output.	
			Maintain accurate Input and output records. Administer IV Ondasetron 8mg.	This helps evaluate fluid balance status This suppresses nausea and vomiting by blocking the action of serotonin.	
			Monitor skin turgor and mucous membranes.	Provides immediate indicator of the hydration status	

Assessment	Nursing Diagnosis	Goal/Desired Outcome	Intervention	Rationale	Evaluation
Subjective data. Blurred vision and tinnitus in the left ear. **Objective data.** Patient has horizontal nystagmus towards the right.	Disturbed sensory perception related to inflammation of the vestibular nerve evidenced by reported ringing sensation in the left ear and blurred vision.	Patient will report a reduction in the severity of tinnitus.	Assess the patient's visual acuity.	Establishes the baseline and helps monitor the progress of visual changes.	After 8 hours, the patient reported a reduction in tinnitus.
			Encourage the patient to change positions slowly and avoid sudden head movements.	This reduces exacerbation of vestibular symptoms.	
			Administer prescribed medications.	This helps manage underlying conditions contributing to the sensory disturbances	
			Provide a calm and quite environment.	Reduces sensory overload that can worsen the dizziness.	

Assessment	Nursing Diagnosis	Goal/Desired Outcome	Intervention	Rationale	Evaluation
Subjective data. Dizziness which worsens when she turns her head to the left side.	Risk for falls related to impaired balance.	The patient will remain free from falls.	Perform a fall risk assessment using the Morse fall scale.	This helps to identify patients at high risk of falls.	Patient remained free from harm during her hospital stay.
			Transfer the patient to a room near the nurse's station.	This provides room for constant observation and quick response to the patient need	
			Maintain fall precautions such as utilizing bed alarms, keeping the side rails up, utilizing fall risk bracelets, keeping the bed locked and in a low position.	This reduces the risk of injuries during an acute vertigo episode.	

References

- Herdman, T. H., Kamitsuru, S., & Takáo Lopes, C. (Eds.). (2024). NANDA International nursing diagnoses: Definitions and classification, 2024-2026 (13th ed.). Thieme

THANK YOU

Now, let's dive into the Acute Care Management of this Patient's condition

Dr. Emuron Joseph, Emergency physician Katakwi General Hospital

How should you approach this patient as ED doctor?

Discussion outline

- Categorize the 4 main types of dizziness based on Hx
- Recognize immediate life-threatening causes of dizziness.
- Perform and interpret bedside exam HINTS & maneuvers
- Investigating a dizzy patient
- Formulate a targeted management and disposition plan

The First Critical Step

"What Do You Mean By Dizzy?

"Don't Accept "Dizzy" as a Diagnosis - Qualify It! Ask:

"Describe what you feel WITHOUT using the word 'dizzy'

Dizziness in perspective

Vertigo
strong sense of motion or spinning

Disequilibrium
feeling off-balance, unsteady or wobbly

Syncope/Presyncopy

Lightheadedness
woozy or disconnected from environment

Non of the above

- Feeling “brain fog, floating"
- Feeling "high" or "disconnected from my body"
- Feeling weakness or fatigue

More likely metabolic or psychiatric

Causes of dizziness

Peripheral vestibular	BPPV Vestibular neuritis Labyrinthitis Late-onset Meniere's disease Bilateral deafferentation Perilymphatic fistula Vestibular schwannoma
Central nervous system	Stroke or transient ischemic attack Vertebrobasilar insufficiency Vestibular migraine Neoplastic Neurodegenerative disease (Parkinson's disease, cerebellar ataxia, degenerative dementias) (Normal pressure) hydrocephalus Multiple sclerosis Posttraumatic Neurosyphilis
Somatosensory	Peripheral neuropathy (diabetes, vitamin deficiency) Cervicogenic vertigo Arthritis
Vision	Cataracts Use of bifocals/multifocals
Cardiovascular and orthostatic	Arrhythmia Heart failure Postural hypotension Postprandial hypotension Hypovolemia
Other systemic	Alcohol Heavy metal exposure Hypothyroidism Hypoglycemia, metabolic imbalance Medications, polypharmacy Psychophysiologic

Immediate actions: Initial Triage - Is This a Crash? Assess ABCDE

Breathing: check: hypoxia, distress, air entry

Circulation: Check: Hypotension, arrhythmia, active bleeding

Disability: AVPU, pupil size, RBS , focal neurological deficits

Exposure: check for fever, evidence of trauma, intoxication

Red Flags Requiring Immediate Action:·

Cardiac: Chest pain, palpitations, syncope·

Neurologic: Sudden severe headache, diplopia, dysarthria, dysphagia, ataxia·

Systemic: Fever with neck stiffness, significant hemorrhage

Focused History

- **Sudden vs. Gradual onset**? (Sudden = vascular concern)·
- **Triggers**? Position change? Head/neck movement? (Dissection risk)·
- **Duration**? CRITICAL: Seconds: BPPV Minutes: TIA, Migraine · Hours: Meniere's · Days: Vestibular Neuritis·
- **Associated Symptoms**? Otologic: Hearing loss, tinnitus → Peripheral · Neurologic: Any focal deficit → Central ·Autonomic: Nausea/vomiting (non-specific)
- **Past Medical History**: Migraines, CVD, diabetes, cervical spine issues **Medications Review:** New antihypertensive? Ototoxic drugs?

Focused physical exam: Core components

- Vital Signs & General· Orthostatic BP/HR (If safe)·
- **Cardiac Exam** (murmurs, rhythm)·
- **ENT** (hearing check).
- **Neurologic Exam** - NON-NEGOTIABLE· Cranial Nerves (II-XII thoroughly)·
- **Cerebellar Function**: Finger-nose, heel-shin, rapid alternating movements·
- **Gait Assessment**: Never omit if patient can walk. Tandem gait.

HINTS- PLUS EXAM

Acute vestibular syndrome Use when: Acute, persistent vertigo + nystagmus + nausea/vomiting.
Goal: Distinguish Peripheral (ear) from Central (brain) causes.

HI

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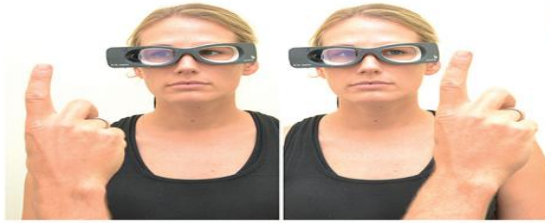
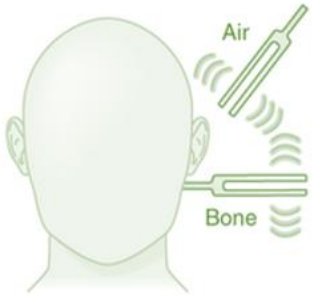
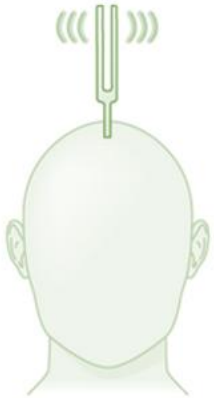




Rinne test


Weber test

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HINTS PLUS Exam

Test	Central Origin	Peripheral Origin
Head Impulse Test	Normal test result -patient keeps visual focus with quick head movement	Abnormal test result - patient loses focus with quick head movement indicating VOR is not intact
Nystagmus	Bidirectional or vertical	None or unidirectional
Test of Skew	Abnormal correction (98% specific[3])	Normal, no skew

A positive HINTS (suggesting central) is MORE sensitive for stroke than early MRI DWI. Any Central finding = EMERGENT neuroimaging/consult.

Peripheral findings = Benign cause.

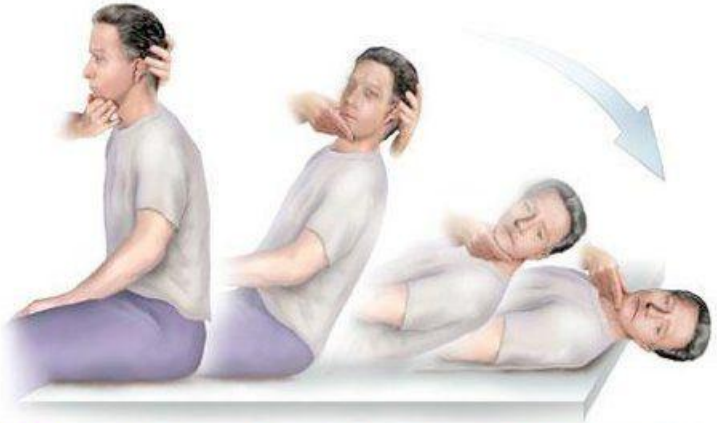
HINTS INTERPRETATION

Test	Central Origin	Peripheral Origin
Head Impulse Test	Normal test result -patient keeps visual focus with quick head movement	Abnormal test result - patient loses focus with quick head movement indicating VOR is not intact
Nystagmus	Bidirectional or vertical	None or unidirectional
Test of Skew	Abnormal correction (98% specific[3])	Normal, no skew

DIX- Hallpike Manuver vs Epley Manuver: suspected BPPV

Dix-Hallpike Maneuver

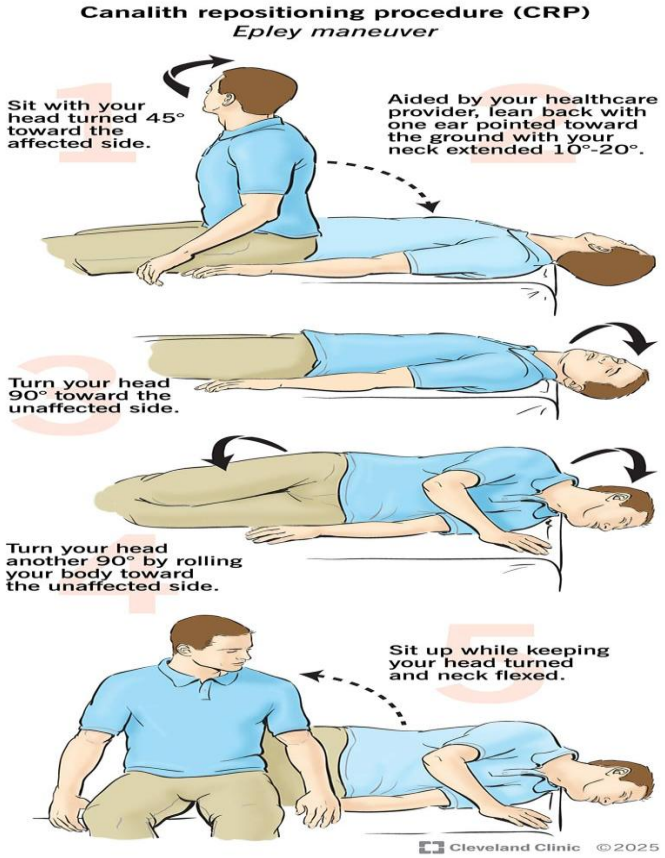
Tests for **canalithiasis** of the **posterior semicircular canal**, which is the **most common cause of benign paroxysmal positional vertigo (BPPV)**



1. With the patient sitting up, turn the head 45 degrees to one side
2. Lie the patient down with head overhanging the edge of the bed and look for nystagmus
3. Repeat on the contralateral side

Repeated leads to Fatigue

Positive if the maneuver **provokes paroxysmal vertigo and nystagmus**



Targeted Investigations

- ECG ALL patients with presyncope, palpitations, or cardiac risk factors.
- Labs Not routine. If indicated: Glucose, BMP (dehydration), CBC (anemia), TSH.
- CT Head Poor for posterior fossa stroke. Use if suspecting hemorrhage or if MRI unavailable.
- MRI Brain with DWI GOLD STANDARD for acute ischemic stroke in cerebellum/brainstem. Obtain if: Red flags, abnormal HINTS, focal neurologic deficits.---

Treatment

- Posterior Stroke/TIA: Neurology consult, consider thrombolysis.
- Vertebral Dissection: CTA/MRA, anticoagulation/antiplatelet.·
- Arrhythmia/MI: Cardiology, ACLS protocols.·
- Sepsis/Shock: IV fluids, antibiotics, vasopressors.
- Peripheral Vestibular (Often Discharge)· Vestibular Neuritis: Supportive care (antiemetics, short-term medizine). Consider steroids.
- BPPV: Perform Epley maneuver at bedside. Provide home exercises.· Meniere's: Symptomatic care, ENT referral.
- Other· Presyncope: Treat cause (fluids, adjust meds, cardiac workup).· Medication-induced: Discontinue/adjust drug.

Disposition: Admit vs. Discharge

DISCHARGE Criteria (Peripheral/Benign)·

- Symptoms controlled·
- Able to ambulate safely·
- Tolerating oral fluids·
- Clear follow-up (ENT, Neurology, physician within 1-2 weeks)·

Safety precautions given: No driving, avoid heights.

ADMIT Criteria·

- Any central cause (stroke, dissection)·
- Intractable vomiting/dehydration·
- Significant cardiac findings·
- Inability to ambulate safely at home·
- Diagnostic uncertainty with concerning features-

Take Home message

- **ASK WHAT THE MEANS BY DIZZY**
- "Vertigo" ≠ Benign. Sudden onset vertigo can be a cerebellar stroke.
- The HINTS exam is your best friend in AVS. Learn it. Use it.3.
- Gait exam is mandatory.
- CT scans miss most acute posterior strokes. MRI DWI is the study of choice.
- Avoid long-term vestibular suppressants (e.g., medizine) as they delay compensation.

References

1.Newman-Toker et al., HINTS to diagnose stroke in acute vestibular syndrome·

2. Edlow et al., Diagnosing Dizziness in the Emergency Department· Clinical Practice Guidelines, ACEP

Thank you