Vertigo Assessment

It is important to differentiate vertigo into one of three distinct Syndromes:

1. Spontaneous – Acute Vestibular Syndrome (S-AVS)

- Episodes generally last days to weeks and have an abrupt onset. Generally monophasic – worst at the beginning and slowly improve. Often severe nausea and vomiting with gait impairment (veering to the affected side). Vertigo/oscillopsia present with head still.

Key is to differentiate Peripheral vs Central AVS with the HINTs plus exam (**H**ead **I**mpulse, **N**ystagmus, **T**est of **S**kew **+** hearing loss).

A. Peripheral AVS -

Most common etiology is Vestibular Neuritis which is often ascribed to a viral infection.

Head Impulse: Positive to affected side (presence of a re-fixating saccade back to the examiner's nose when the head stops - indicative of peripheral vestibular weakness)

Nystagmus: It is unidirectional horizontal or horizontal/torsional with fast phase beating away from affected ear. Can be spontaneous but worsens with gaze towards affected ear. It is reduced by visual fixation. It is never bidirectional or purely vertical.

Test of skew – Nil vertical deviation

Hearing loss – No abrupt hearing loss. Tinnitus can however occur in Vestibular labyrinthitis

B. Central AVS

Most commonly from strokes affecting PICA or AICA territories. It is often accompanied by other signs/symptoms – diplopia, dysphagia, sensory loss, facial droop and limb ataxia.

Head Impulse: Negative head impulse test – nil corrective saccade

Nystagmus: Typically purely vertical or horizontal + direction changing. It is generally not suppressed by fixation.

Test of Skew: Skew deviation with vertical diplopia

Hearing loss – Sudden new hearing loss could indicate vascular phenomenon affecting vestibulocochlear nerve

*A Peripheral HINTs plus exam must have **ALL** of:

- ‘Abnormal’ Head Impulse, Unidirectional Nystagmus, No skew **and** No new hearing loss

*A Central HINTs plus exam can have **ANY** of:

- ‘Normal’ Head Impulse, Bi-directional /Vertical nystagmus, Abnormal Skew **or** new hearing loss.

Management

- Central AVS exam: Refer to neurology
- Peripheral AVS exam: Anti-emetics, bed rest and referral to vestibular physio (CCT) after acute period for vestibular exercises to facilitate habituation.

2. Toxic/Traumatic – Acute Vestibular Syndrome

- Very uncommon and episodes generally last days to weeks. Usually clear history pointing towards diagnosis (e.g. trauma). More frequently associated with disequilibrium, ataxia, oscillopsia and hearing impairment.

- Investigations and management tailored to the suspected pathology

Typical differentials

- **Traumatic**: vertebral artery dissection from neck manipulation/whiplash. Head injury (ICH/ Base of skull fracture causing disruption to inner ear), barotrauma

- **Toxins**: Anticonvulsants, Aminoglycosides, Carbon monoxide, Alcohol intoxication

3. Triggered – Episodic Vestibular Syndrome (T-EVS)

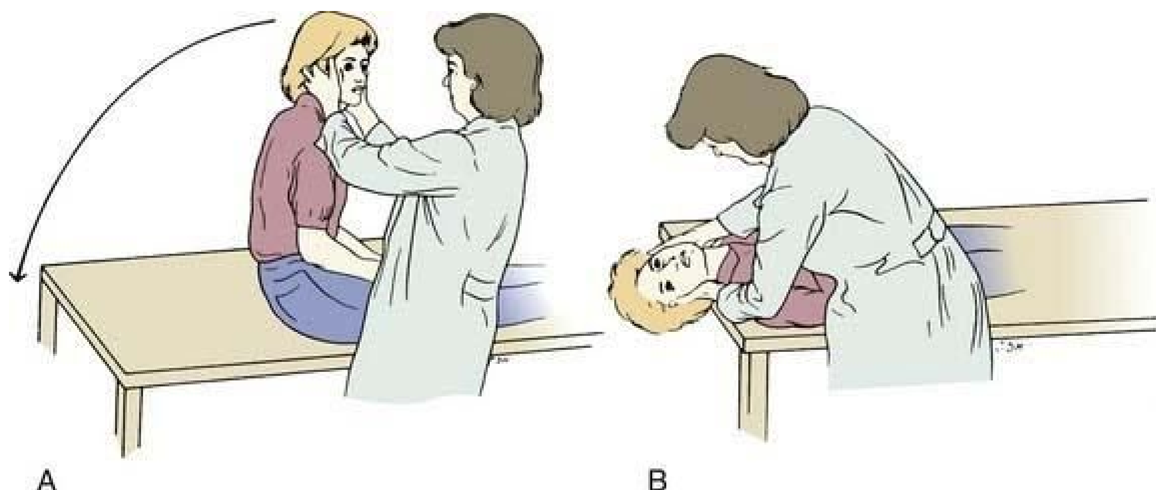
- Attacks will usually last seconds to minutes. Between episodes patients will have no vertigo but may remain nauseous or complain of disequilibrium.

- Most common cause is BPPV. One must also do a proper history and exam to delineate whether postural hypotension is to blame for the patient’s symptoms.

- Rare but serious causes include central paroxysmal positional vertigo (CPPV) and vertebrobasilar insufficiency.

- Evaluated using Dix-Hallpike and postural blood pressures

1. Dix-Hallpike:



1. Sit patient upright. Head positioned 45 degrees off midline towards ear being tested. Then quickly lay the patient flat with their head down 30 degrees off the end of the bed.
2. Watch the patient's eyes for torsional and up-beating nystagmus, which should start after a brief delay and persist for no more than one minute.
3. If nil symptoms/signs elicited, allow patient to briefly rest and test again with head pointed 45 degrees of midline towards the other ear

If **Atypical nystagmus** is seen, patients should be referred to CCT (vestibular physio) for further differentiation. Atypical features:

- Down beating or horizontal nystagmus, no latent period, failure to habituate, spontaneous

Typical nystagmus features in BPPV (Posterior Semicircular Canal variant):

- Upward beating **vertical/torsional** nystagmus toward the affected ear
- **Latency** period between Dix-Hallpike movement and onset of nystagmus
- **Rapid Habituation/Fatigability** of nystagmus & vertigo on repeated exams
- **Crescendo-decrescendo** nature on nystagmus (usual onset <15 sec and offset <60 sec)
- *Horizontal Semicircular Canal BPPV results in horizontal geotropic or apogeotropic nystagmus. Often evoked with Dix-Hallpike on both sides. Fatigues and habituates more slowly than Posterior SCC BPPV

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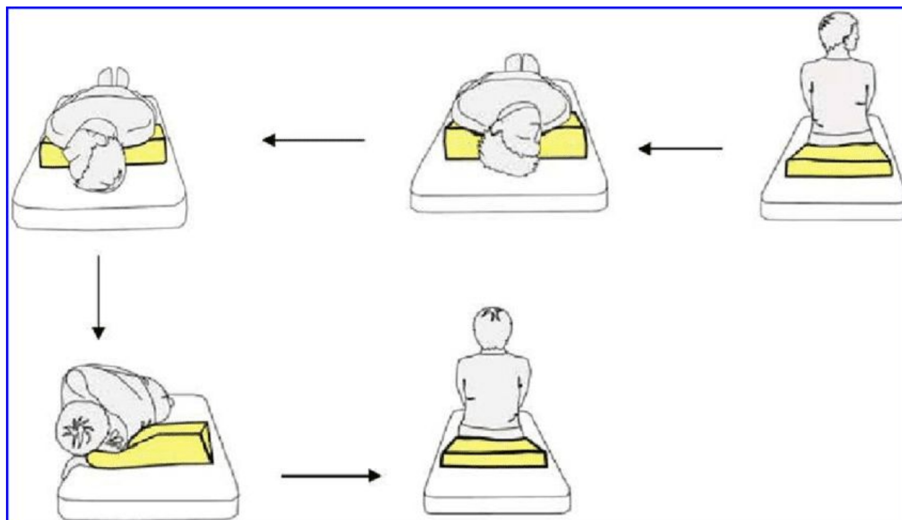
2. Orthostatic Hypotension is diagnosed when, within two to five minutes of standing, one or both of the following is present:

- At least a 20 mmHg fall in systolic pressure
- At least a 10 mmHg fall in diastolic pressure

Reproduction of the patient's symptoms is necessary for diagnosis as orthostatic hypotension may be incidental and misleading.

Treatment of Posterior SCC BPPV:

Modified Epley's Maneuver



1. Start sitting up with head turned 45 degrees from midline in direction of affected ear.
2. Lie patient down again with head off-centre towards affected ear. Wait 30 seconds
3. Turn head 90 degrees to the opposite side and wait 30 seconds.
4. Turn head another 90 degrees so head is now looking diagonally towards floor. Wait 30 seconds
5. Sit up on that side

CCT Physio

- CCT Physio Referrals 8AM - 8PM 7days/week
- Refer for assessment/ treatment of patients with suspected peripheral vertigo or comprehensive assessment in patients with atypical vertigo
- Physio Assessment:
    - Subjective assessment – detailed history of symptoms
    - Objective assessment - cerebellar tests, oculomotor exam (tracking, saccades, ROM, head impulse), gait assessment, Dix Hallpike/ horizontal canal testing and balance Ax
- Management usually includes
    - Repositioning manoeuvres (Epleys, BBQ Roll), vestibular rehabilitation exercises, education (handouts available) and referral to neuro physio outpatients if symptoms not fully resolved (eReferral, self-refer privately)
- If physiotherapist not on shift and patient deemed safe for discharge
    - E:referral to Neuro outpatient physio
        - SCGH-> Physiotherapy ->Neurological
        - Include: HPC, PMHx, central risk factors, neuro exam, oculomotor exam, vestibular Ax findings, mobility status, differential Dx, management in ED, any medical referrals made on discharge