Assessment and Management of Vertigo

Medscape Primary Care Hacks

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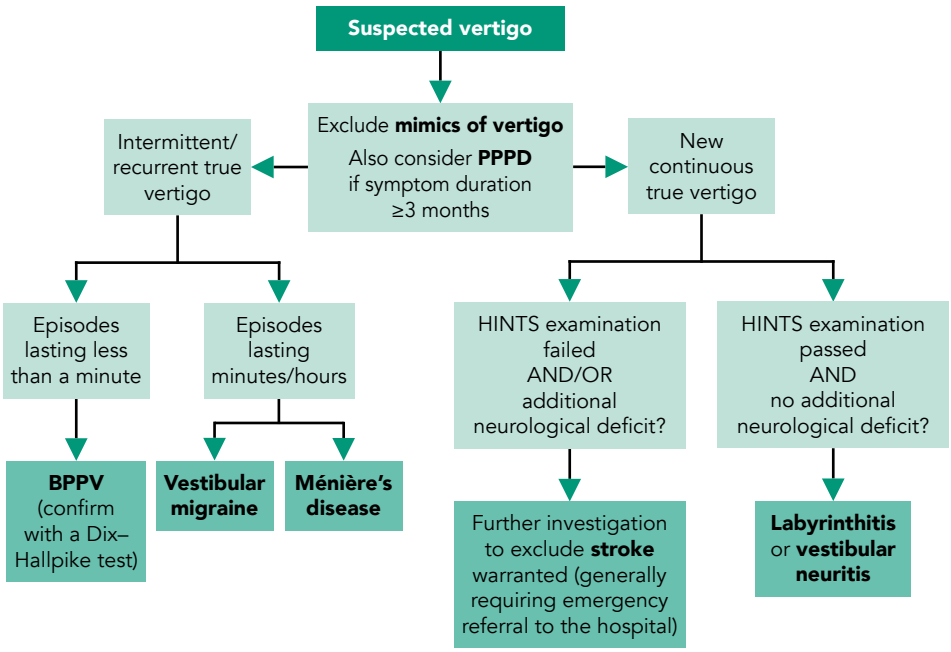
Vertigo is defined as the false sensation of movement of an individual and/or the environment around them.[1] It is a common presentation in general practice.[2–4] The following Primary Care Hack begins with a flowchart outlining a suggested approach to diagnosis, followed by individual discussion of the most common causes. Clinicians should note that other rarer causes do exist, such as Lyme disease or multiple sclerosis, and should consider these if an individual does not fit into one of the below presentations.

Diagnostic Approach to Suspected Vertigo[2][3][5–7]



Mimics of Vertigo

- **Presyncope**—the feeling that one is about to faint, often described as 'light-headedness'; commonly accompanied by blurred or tunnel vision[13][14]
  - presyncope has a wide range of aetiologies, including **postural hypotension**, **arrhythmia**, **hypovolaemia**, and a neurally mediated reflex response (**vasovagal syncope**)[13][14]
  - if in doubt about possible presyncope, it may be useful to check HR, BP (both lying and standing), and an ECG[13–15]
- **Disequilibrium**—a loosely defined term encompassing feelings of **unsteadiness**, **imbalance**, or **spatial disorientation** (distinct from the false sense of motion specific to vertigo)[15]
  - disequilibrium is often multifactorial, stemming from a combination of various pathologies such as peripheral neuropathy, poor eyesight, musculoskeletal degeneration, medication side effects, electrolyte abnormalities, or intercurrent infection[15][16]
  - disequilibrium is particularly prevalent in older patients with frailty[16]
- **Hypoglycaemia**—especially in those with diabetes.[9]

HINTS Examination

- **For individuals presenting with acute-onset continuous vertigo, it is important to distinguish peripheral causes** (involving the inner ear or vestibular nerve) **from central causes** (involving the brainstem or cerebellum).[4–6][8] **If vertigo is centrally caused, it is likely to be the result of infarct or haemorrhage**[4][6][8]
- The HINTS exam is an easy-to-use clinical test for distinguishing central and peripheral vertigo. It comprises three components, to be performed on an individual **currently experiencing continuous vertigo**[6][8]
  - passing all three components makes a central cause unlikely[8][9]
  - a Cochrane review reported 94.0% sensitivity for identifying central causes, with 86.9% specificity (with important variation depending on level of clinician training and experience).[8] **Although highly useful, HINTS should therefore not be used in isolation when deciding whether to request further investigation.** Underlying risk factors, history, and any additional neurological deficits on examination should also be incorporated into decision making
  - HINTS is a unidirectional test—**failing one or more components does not necessarily mean there is a central cause, but does mean that further radiological investigation is required to exclude it.**[6][9]

The components of HINTS are as follows (watch this video for a detailed demonstration):

- **Head impulse test** (see the figure, *Head Impulse Test*)[6][9–11]
  - the patient fixates on the clinician's nose (or a camera) and the clinician moves the patient's head from side to side, slowly then briskly
  - a pass is the presence of a lag in corrective saccades in one direction in the horizontal plane (meaning there is a delay in the rapid eye movement that brings the eye back to the target)
  - a fail is the absence of any lag (that is, eyes remain fixed on the target), a lag in both directions in the horizontal plane, or any lag in the vertical plane
  - **the head impulse test is counterintuitive in that an abnormal finding is considered a 'pass', suggesting that the pathology is most likely a peripheral problem with the vestibulocochlear nerve**
- **Nystagmus** (rapid, involuntary eye movements)[6][8][12]
  - this is assessed in both primary gaze (looking ahead) and lateral gaze (looking left and right), without fixation
  - a pass is the presence of horizontal, unidirectional (that is, the fast phase always occurs in the **same** direction) nystagmus; it will usually be more pronounced when the individual looks in the direction of the fast phase
  - a fail is the absence of the above, or presence of any vertical or torsional (rotary or spinning) nystagmus
- **Test of skew**[6][8][12]
  - usually assessed by means of the **alternate cover test**
  - a pass is the absence of any skew deviation (misalignment of the eyes) on a vertical or diagonal axis
  - a fail is the presence of either of the above.

Persistent Postural–Perceptual Dizziness

- **PPPD is a recently defined chronic functional vestibular disorder and a common cause of chronic nonvertiginous dizziness**[17]
- PPPD is characterised by dizziness, unsteadiness, and/or nonspinning vertigo present on most days for ≥3 months[18]
  - symptoms can vary in severity and are exacerbated by standing upright, active or passive motion, and exposure to moving or complex visual stimuli[18]
  - neurological and vestibular examination are usually normal
- PPPD typically follows an acute vestibular event such as vestibular neuritis, BPPV, or vestibular migraine, but may also occur after psychological distress, neurological illness, or a nonvestibular illness or injury[17–19]
- Psychological factors contribute towards the development and persistence of PPPD, and symptoms can cause significant distress and/or functional impairment[17][18]
- Individuals often develop secondary functional gait disorders, anxiety, and avoidance behaviour[18][20]
- There is no single intervention for managing PPPD.[17][20] Vestibular rehabilitation, serotonergic medications, and CBT can all be used.[17][20]

Benign Paroxysmal Positional Vertigo

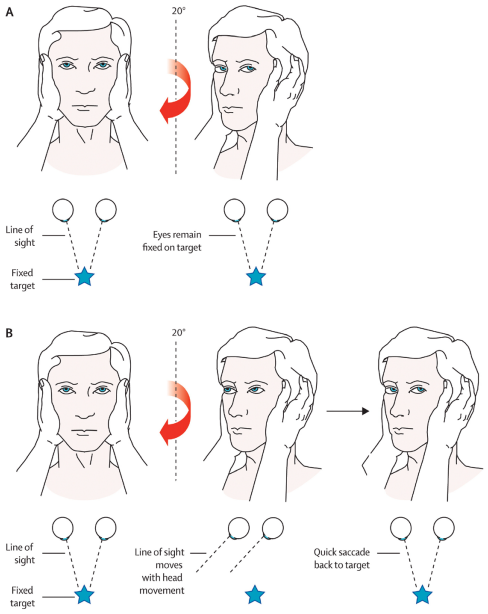
- BPPV is a debilitating but harmless and usually self-limiting disorder caused by the dislodgement of otoliths (small calcium carbonate crystals) from the utricle into the semicircular canals[1][4][15][21]
- **BPPV is the most common cause of acute vertigo**[2]
- **Presentation is of paroxysms of vertigo lasting less than a minute, typically triggered by head movement.**[1][2] There may be a more continuous vague feeling of imbalance in between these episodes[1]
- Confirm a suspected BPPV diagnosis with the Dix–Hallpike manoeuvre (which identifies torsional nystagmus),[1–3] as demonstrated in this video
- Treatment is best done by completing the Epley manoeuvre,[1][5] as demonstrated in this video
  - most cases of BPPV involve the **posterior** semicircular canal—different manoeuvres may be required for rarer cases involving the other canals.[1][4]

Ménière's Disease

- Ménière's disease is a **rare** disorder (with only around 13.1 new cases per 100,000 person-years[22]); many patients referred with suspected Ménière's disease have a more common alternative cause of vertigo
- The precise aetiology is unknown, but it is possibly associated with elevated pressure within the labyrinth[23]
- Ménière's disease presents with recurrent attacks of vertigo, each lasting minutes to hours.[4][23] The vertigo attacks are accompanied by unilateral hearing loss, tinnitus, and sometimes a feeling of aural fullness[23]
- Diagnosis should generally only be made by a neuro-ontologist[5][21]
- While awaiting ENT review, patients can try following a diet low in salt, caffeine, and alcohol[4][7][23]
- If symptoms are severe, vestibular suppressants (such as prochlorperazine, cinnarizine, or cyclizine) can be considered during acute attacks[7][23]
- Betahistine can also be considered to reduce the frequency of attacks; however, there is a conflicting evidence base on its efficacy.[7][23]

Vestibular Neuritis and Labyrinthitis

- Vestibular neuritis (inflammation of the vestibular nerve) is overdiagnosed and is often misdiagnosed as (the rarer again) labyrinthitis (inflammation of the vestibular nerve and the cochlea)[3]
  - **labyrinthitis causes both vertigo and sensorineural hearing loss, whereas vestibular neuritis only causes vertigo**[21]
- Vestibular neuritis is thought to be viral in aetiology and often follows an upper respiratory tract infection[21][24]
- **Vestibular neuritis is characterised by sudden-onset, severe, continuous, rotational vertigo, which almost always lasts between 24 hours and several days**[2][3][5][24]
  - symptoms of vertigo persist even if keeping still[3][24]
  - there is often associated nausea, vomiting, and unsteadiness, and absence of hearing loss[21][24]
- It is important to differentiate vestibular neuritis from central causes of vertigo, such as stroke.[4][7][21][24] This can be done using the HINTS examination[6][7]—see *HINTS Examination*
- Treatment of vestibular neuritis is largely supportive; symptoms gradually improve over a period of weeks with rest and good hydration[5][7]
- If possible, physical activity is encouraged to aid vestibular compensation[4]
- Vestibular sedatives (such as prochlorperazine or cyclizine) can help to manage symptoms but should only be used in the short term (<3 days);[4][5][7] otherwise, they may delay central vestibular compensation[7]
- Most patients have an uneventful recovery, but some may experience longer-term complications (such as chronic imbalance, PPPD, or secondary BPPV)[4]
- **Vestibular neuritis very rarely recurs**; therefore, if symptoms are recurrent, other diagnoses (such as vestibular migraine or BPPV) should be considered.[3]



Head Impulse Test

A: The right ear has intact peripheral vestibular function. When the head is turned to the right, the vestibulo-ocular reflex moves the eyes to maintain visual fixation.

B: The right ear now has impaired vestibular function. When the head is turned to the right, the eyes move with it, breaking visual fixation, and a refixation saccade is seen as the eyes dart back to the examiner's face. This indicates a peripheral vestibular disorder on the right side.

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Posterior Circulation Stroke

- PCS is characterised by disruption to the blood supply to the brainstem, cerebellum, thalamus, or occipital lobes as a result of either haemorrhage or infarct[25]
- **When vertigo is present in PCS, it will usually be sudden in onset and continuous**[5]
- PCS will often present with other associated neurological symptoms/signs, such as headache, ataxia, focal weakness/sensory deficit, hearing loss, paraesthesia, dysarthria, diplopia, or a visual field defect[5][6][25]
  - the presence of any associated neurological finding should be considered concerning for stroke[5][6][25]
- A proportion of strokes will present with isolated vertigo;[2][6] therefore, the absence of additional neurological deficits does **NOT** exclude stroke[2][6][9]
- **The key benign differential diagnosis for new, continuous, isolated vertigo is vestibular neuritis, which can often be positively ruled in using the HINTS examination** (see *HINTS Examination*)[4][6][9][12]
  - **if the HINTS examination is not 'passed', or if there are associated neurological signs/symptoms, the individual should be admitted to hospital for suspected stroke**[4][6][9][12]
- TIAs (temporary disruption of blood supply but without infarction) present similarly to strokes but last <24 hours. Multiple similar TIAs will occasionally occur over a short space of time, so this should also be considered as a rare cause for recurrent vertigo, particularly if other concerning 'stroke-like' features or risk factors are present.[26]

Vestibular Migraine

- **Vestibular migraine is a clinical diagnosis characterised by episodic vertigo, dizziness, or imbalance occurring in individuals with associated migraine symptoms and/or a history of migraine (with or without aura)**[4][5][23]
- Episodes usually last between 5 minutes and 72 hours[23]
- The presence of headache is variable at the time of vestibular symptoms;[5][7][23] typical migraine symptoms can be absent in up to half of vestibular migraine episodes[7][23]
- Useful diagnostic clues include features of migraine (such as photophobia, phonophobia, or aura) and a history of motion sickness or sensitivity[7][23]
- Consider urgent referral on first presentation to exclude PCS—particularly because, as a 'central' cause of vertigo, vestibular migraine will often fail the HINTS examination[2][27]
- Management strategies include avoidance of triggers (as per regular migraine), vestibular rehabilitation, and pharmacotherapy[4][5][28]
  - although the evidence base is limited, zolmitriptan and rizatriptan may be effective for reducing acute vestibular symptoms[28]
  - antiemetics such as prochlorperazine may be helpful for nausea but should only be used in the short term to avoid long-term vestibular suppression[5][7]
  - individuals may also respond to usual prophylactic medications for migraine, including amitriptyline, propranolol, and candesartan.[5][28–30]

BP=blood pressure; **BPPV**=benign paroxysmal positional vertigo; **CBT**=cognitive behavioural therapy; **ENT**=ear, nose, and throat; **GP**=general practitioner; **HINTS**=head impulse, nystagmus, test of skew; **HR**=heart rate; **PCS**=posterior circulation stroke; **PPPD**=persistent postural–perceptual dizziness; **TIA**=transient ischaemic attack.