Introduction

Whilst dizziness, vertigo and imbalance may be due to systemic disease, they commonly originate from the vestibular system. The presence of vertigo (defined as an illusion of movement, not just rotation), in particular, implies vestibular involvement. These guidelines will mainly address the diagnosis and management of vestibular dysfunction (in adults) and will assume that cardiovascular and metabolic causes have been excluded. They may be used together with Dr West’s symptom-based flow-chart.

For the purpose of management, vertigo divides conveniently into three categories:
1. Spontaneous (no provoking movement: can occur whilst patient is sitting still).
2. Movement provoked. (Transient vertigo; imbalance may be more persistent).
3. Positional (provoked by movement into or away from certain specific positions, or whilst those positions are maintained).

In any case of dizziness, the two key questions to be addressed are:
1. Is this vestibular, or something else?
2. If vestibular, is it peripheral (ear or VIIIth nerve) or central (brainstem / cerebellum)?

A: SPONTANEOUS VERTIGO

SINGLE EPISODE

- **Acute Vestibular Failure**
  Vestibular neuritis: prolonged vertigo +/- nausea and vomiting. Marked imbalance. Absent auditory and neurological symptoms and signs. Spontaneous horizontal nystagmus seen in the first 24 hours (but may be apparent to the examiner for longer if visual fixation is abolished using Frenzel glasses or an ophthalmoscope). Slow recovery: may take weeks or months.

  Labyrinthitis: The preferred term if acute sensorineural hearing loss is a feature.

  Labyrinthine infarction: Selective occlusion of labyrinthine artery. Less common. Consider in older patients or those with vascular risk factors. Presentation otherwise similar to above.

- **Neurological event**
  Rare as a cause of acute vertigo. If nystagmus has central features, persists more than 48 hours or if there are other neurological symptoms or signs, consider possibility of posterior circulation CVA, or MS which may present initially with acute vertigo.
Vestibular sedatives and anti-emetics useful in the acute phase only: may delay full recovery. Vestibular exercises enhance central compensation. Consider treating vascular risk factors.

Refer if:
- Associated auditory and/or neurological symptoms and signs.
- Nystagmus has central features (see below).
- Spontaneous nystagmus persists after 48 hrs.
- Symptoms persist after a month.

RECURRENT EPISODES

- **Migrainous vertigo**

  The most common cause of recurrent spontaneous vertigo. Variable duration (from minutes to several days) and severity ± headache, photophobia / phonophobia. May be triggered by diet, hormones and stress. Usually asymptomatic between attacks. Ask for past (or family) history of migraine. (The nature of migraine attacks may change during individual’s lifetime from headache to vertigo or (eg Benign Paroxysmal Vertigo of Childhood) vice-versa. Such changes may be hormone related.) Hearing loss and tinnitus, if present, are usually bilateral. Neurological symptoms and signs are absent. Migrainous vertigo is often misdiagnosed as:

- **Menière’s disease**

  Vertigo lasts from 20 minutes to several hours with unilateral aural fullness, tinnitus and fluctuating hearing loss which becomes permanent and progressive with repeated attacks.

- **Vestibular neuritis**

  Do not consider if more than three attacks a year: more likely to be due to migrainous vertigo.

- **Posterior circulation TIAs**

  Only consider if other posterior circulation symptoms (facial numbness, dysarthria, diplopia etc).

- **Hyperventilation syndrome**

  Can cause recurrent attacks or ‘constant dizziness’.

- **Other causes (rare)**

  Autoimmune inner ear disease (vertigo + bilateral progressive hearing loss - other autoimmune disorders may be present); oto-syphilis; vestibular epilepsy.

For infrequent attacks, treat symptomatically with vestibular sedatives. For frequent attacks, dietary advice is essential. (Low salt for Menière’s, usual migraine triggers). Consider prophylaxis. Migraine: beta blockers – propranolol 40-160mg/d; amitriptyline 25-150mg/d; pizotifen 0.5 – 1.5mg/d; Menière’s: betahistine (16mg tds) ± bendroflumethiazide. Motion induced dizziness and associated imbalance between attacks will require vestibular exercises.
Refer if: - Unilateral tinnitus / hearing loss or otorrhoea. (Vestibular Schwannomas rarely present with acute vertigo but audiometry [and possibly MRI] is mandatory).
- Frequent severe attacks not responding to the above.

B: POSITIONAL VERTIGO

- **Benign paroxysmal positional vertigo (BPPV)**
  
  **BY FAR the most common cause.** Brief attacks (< 1 min) precipitated by looking up, bending, turning over in bed, sitting up from lying and neck extension. General sense of imbalance affects 50% and may be main complaint. **NOTE THAT patients with BPPV may deny positional symptoms as they become adept at avoidance.** Diagnostic findings on Hallpike test *(refer to Epley attachment)*. For posterior semicircular canal BPPV (more than 90% of BPPV): upbeat and torsional nystagmus beating to undermost ear, latent period of 2 – 40 sec, fatigues in <30 sec, reduced or absent on repeating test. The horizontal and anterior semicircular canals can be affected but the diagnostic test and the nystagmus are different.

- **Central (neurological) positional vertigo**
  Positional vertigo not fitting description above; direction-changing, vertical (usually downbeat) nystagmus. **Note that central positional nystagmus may be asymptomatic.**

- **Cervicogenic vertigo**
  An overstated ‘condition’. May not exist at all! Often other causes of positional and movement induced vertigo/dizziness can be found, especially BPPV.

- **Migrainous vertigo**
  See above. Central positional nystagmus (+/- vertigo) is a common feature. May mimic BPPV.

- **Vertebrobasilar ischaemia**
  Grossly over/mis-diagnosed. Many of these patients actually have BPPV. Only consider if other posterior circulation symptoms/signs (facial numbness, dysarthria, diplopia etc).

Treat BPPV with appropriate particle re-positioning manoeuvres (Epley, Semont etc - see attached instructions).

Refer if: - *Not confident to carry out above treatments.*
- *Symptoms persist after 3-4 weeks. (50% resolve spontaneously).*
- *Treatment not successful.*
- *Positional vertigo/nystagmus does not have all features of posterior SCC BPPV (to exclude central disorder).*
C: MOVEMENT PROVOKED VERTIGO / IMBALANCE

- Incompletely/poorly compensated or decompensated peripheral vestibular impairment

Patients with persistent (unilateral or asymmetrical) peripheral vestibular impairment recover normal balance (given time and exercise) because the central vestibular system compensates. If this compensation fails to occur, or breaks down, patients experience imbalance with momentary vertigo induced by head movement. Often described as “feeling constantly drunk”. Ask about a past history of vertigo. Patients tend to avoid symptoms by avoiding movement, therefore preventing compensation and recovery, which is also impeded by prolonged use of vestibular sedatives, anxiety, panic attacks, depression and any associated visual and proprioceptive abnormalities.

- Bilateral vestibular hypofunction/failure

Causes imbalance and oscillopsia (an illusion that the world moves as the patient moves, eg bobs up and down as the patient walks) rather than vertigo. Much worse in the dark. Reduced dynamic visual acuity (blurred vision on head movement): in severe cases, even reading is difficult. Causes include meningitis, ototoxic drugs, autoimmune disease, head trauma, bilateral “burnt-out” Menière’s and idiopathic.

- Visual vertigo

Triggered by movement in the surroundings eg: crowds, traffic, busy supermarket, disco lights etc, or by looking at repetitive patterns eg: striped shirts, patterned floors and fences, supermarket aisle etc, or by flickering light and computer screen. Caused by “visuo-vestibular conflict”, visual dependence or visual substitution often following an acute vestibular event.

- Central (brainstem / cerebellar) disorder

Often cerebellar: look for central, especially downbeat, spontaneous or positional nystagmus. Imbalance is usually more prominent than vertigo.

Stop all vestibular sedatives. Treat with vestibular rehabilitation exercises: (Gaze stabilization exercises, acting on the vestibulo-ocular reflex, are probably better tolerated and more effective than traditional Cawthorne-Cooksey which are more akin to aversion therapy.)

Web links:-


Look for and treat underlying anxiety/depression that delay central vestibular compensation.
Refer if:
- Any suspicion of central disorder.
- Still significantly symptomatic after a month, for confirmation of the diagnosis. More specific or “customized” exercises may be needed, preferably supervised by a specialist physiotherapist.

### ADDITIONAL DIAGNOSTIC CLUES

- **Dizziness/Vertigo/Imbalance in the elderly** is usually multi-sensory and multifactorial. BUT there is a very high prevalence of peripheral vestibular impairment and especially BPPV in the over 65s. Treating BPPV in particular may prevent falls.

- **Do Hallpike positional test on ALL patients with vertigo OR imbalance** because:
  - Patients with BPPV may deny positional symptoms as they become adept at avoidance.
  - Central positional nystagmus may be asymptomatic.

- Orthostatic hypotension, arrhythmias and drugs are common causes of recurrent and chronic dizziness.

- **Anti-vertiginous medication** is a major cause of imbalance. Prochlorperazine is the worst.

- Vestibular dysfunction does not cause loss of (or altered) consciousness. Transient vertigo commonly precedes syncope and may (rarely) be a feature of Complex Partial Seizures.

- Always enquire about and exclude neurological conditions. Look for central nystagmus.

- **Peripheral nystagmus:**
  - Is always accompanied by vertigo
  - Usually disappears within 2 days (a week at most) of an acute vestibular episode.
  - Does not change direction with direction of gaze.
  - Is never vertical.
  - Is never disconjugate.
  - Is enhanced by removing optic fixation (use ophthalmoscope with other eye covered).
SUMMARY OF “RED FLAGS” WHICH SHOULD ALWAYS PROMPT REFERRAL

- Unilateral tinnitus and/or hearing loss/dysacusis.
- Unilateral otorrhoea. Refer to Audiovestibular Medicine (if balance is main problem) or ENT.
- Neurological symptoms or signs. (Consider referral to Neurology as well / instead).
- Nystagmus has central features.
- Spontaneous nystagmus persists after 48 hrs.
- Positional vertigo/nystagmus which does not have all the features of posterior SCC BPPV.
- Significant vertigo/imbalance persist after a month.

HOW TO REFER

- Audiovestibular Medicine is now on the “Choose-and-Book” system. Rather confusingly, it will be found under “Ear, Nose & Throat” and then under “Balance/Dizziness”

- Referral letters should be sent to St Richard’s, Chichester, or to Queen Alexandra, Portsmouth.
  - Dr West also has a fortnightly clinic at Bognor Regis War Memorial Hospital.
  - Dr Osei-Lah has clinics at Gosport War Memorial Hospital and Fareham Community Hospital. Referrals are processed via Queen Alexandra Hospital.

- Soon / urgent referrals may be faxed: details below.

- We are always happy to discuss cases on the phone. Please contact via the appropriate secretary.

- There are NO emergency admissions in Audiovestibular Medicine. Emergencies are admitted under ENT (or General Internal Medicine) and an Audiovestibular Medicine opinion may then be sought as appropriate.

CONTACT DETAILS

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<tr>
<th>Secretaries</th>
<th>St Richard’s Hospital</th>
<th>Queen Alexandra Hospital</th>
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</thead>
<tbody>
<tr>
<td>Telephone</td>
<td>01243 831535</td>
<td>02392 286766</td>
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<tr>
<td>Fax</td>
<td>01243 831775</td>
<td>02392 286986</td>
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RECOMMENDED FURTHER READING

References:
• Nazareth I, Yardley L, Owen N, Luxon L. Outcome of symptoms of dizziness in general practice community sample. Family Practice 1999 16(6): 616-618
• Lawson J, Johnson I, Bamiou DE, Newton JL. BPPV: Clinical characteristics of dizzy patients referred to a falls and syncope unit. QJM 2005; 98(5): 357-8

Guideline Authors: Dr Peter West and Dr Victor Osei-Lah, Consultant Audiovestibular Physicians.

Others Involved: Local Referral and Management Guidelines Committee, Western Sussex Hospitals NHS Trust

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Semont Liberatory Manoeuvre
(Shown for RIGHT Ear, Posterior SCC BPPV)

A. Sit on side of bed (firm mattress with no head or foot-board), so that you can lie on either side without risking hitting your head. Turn your head 45 deg. to LEFT.

B. Lie rapidly onto RIGHT side, so that your head is down (ideally 30 deg.) relative to your body and pointing 45 deg. up. This should bring on your vertigo. (You may close your eyes if that is more comfortable.) Wait for vertigo / nystagmus to subside.

C. THROW yourself, AS RAPIDLY AS POSSIBLE onto your LEFT shoulder, WITHOUT turning your head (ending up 45 deg. head DOWN). If this movement is not very rapid, the manoeuvre will not work. You will go dizzy again. Wait for TWO MINUTES.

D. Sit up gently. You MAY go dizzy and may want to fall backwards. Have someone behind, to support you.

AFTER TREATMENT: Keep head absolutely upright for one hour.
Treatment may be repeated, if unsuccessful, after two days.
EPLEY Canalith Repositioning Manoeuvre

*(Shown for LEFT Ear, Posterior SCC BPPV)*

1. Left Hallpike: turn head 45 deg. to (L) and lie patient rapidly flat, head 30 deg. below horizontal. Wait 30 sec or until vertigo / nystagmus subside, whichever longer.

2. Turn head through 90 deg. to (R) WITHOUT raising it. Wait (and in EACH subsequent position) for the sum of the duration of the initial latent period and vertigo / nystagmus. (Generally about half a minute.)

3. Roll patient onto (R) side maintaining head position relative to body, ending up with head pointing 45 deg. down, neck still slightly extended.

4. Sit patient up, maintaining head turned position.

5. Face front and flex neck 30 deg.

6. **Tell patient to keep head upright for one hour.**
Dr Peter West
Consultant Audiovestibular Physician
Queen Alexandra Hospital
Portsmouth

**Doctor, I get these dizzy spells**

Do you feel that you or the world is moving?

**YES**

**NO**

**NB: These distinctions are not absolute.**

eg: vestibular symptoms can result in vaso-vagal attacks and vice-versa.

Do you feel that you or the world is moving?

**YES**

**NO**

Implies middle ear disease

Examine for:
- discharge
- perforation
- cholesteatoma
- conductive hearing loss (use tuning forks)

Do you feel faint (as though about to pass out)?

**YES**

**NO**

Implies cardiovascular disease (pan-cerebral ischaemia)

Do you get a painful or discharging ear?

**NO**

Do you get deafness or tinnitus in one ear?

**YES**

**NO**

Implies inner ear disease

Sudden deafness: vascular or auto-immune cause or viral labyrinthitis. Exclude vestibular schwannoma (acoustic neuroma)

Progressive deafness: MUST be referred for scan to exclude vestibular schwannoma.

Fluctuating deafness with episodic vertigo (1/2 to 6 hours): likely to be Meniere’s.

Do you ever lose consciousness?

**Consider:**
- Neurological disorder
- Multisensory dizziness
- Bilateral vestibular failure
- Psychological overlay

**NO**

Do you feel off-balance or clumsy?

**YES**

**NO**

Consider Epilepsy

There may be a vertiginous aura (or other sensory auras) in complex partial seizures

What do you mean by “DIZZY”? Start again!

Is the VERTIGO...?

Ask about:
- Neurological symptoms including ataxia / incoordination
- Oscillopsia: neurological, or symptom of bilateral vestibular failure
- Symptoms of Hyperventilation syndrome: shortness of breath, chronic exhaustion, pins & needles, sense of unreality, panic attacks
- Other sensory impairment, (eg visual, tactile, joint position sense)
- Diabetes
**Vertigo** is an illusion of movement. It does **not** have to be rotational.

Vertigo is much more commonly due to **inner ear** than to neurological disorders.

**Unilateral hearing loss** implies an **inner ear** disorder.

It is not always possible to distinguish **inner ear** from neurological problems from history alone. **Multiple Sclerosis** may present like **vestibular neuritis**. Always examine for **Nystagmus**. **Peripheral nystagmus:**

- is always accompanied by vertigo
- usually disappears within two days (a week at most) of an acute vestibular episode
- does not change direction (with direction of gaze)
- is never vertical
- is never disconjugate
- is enhanced by removing optic fixation (use ophthalmoscope in the dark).

**Migrainous vertigo** is often misdiagnosed as **Meniere’s Disease**.

Vertigo on neck extension is usually **BPPV**, **not vertebro-basilar ischaemia**.

**Many drugs** either cause or exacerbate dizziness. The commonest offenders are:

- **Prochlorperazine** (!), Hypotensives and Antidepressants.

Dizziness may be due to systemic disease: think about **haematological disorders**, **hypothyroidism**, **diabetes**.

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**Diagnostic clues and pitfalls**

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