# Dizziness-lets not get into a spin. A pragmatic approach to dizzy patients in the Primary Care setting

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MUST...RETURN...SHOPPING...

# I feel dizzy, Doctor

- “Heart sink”
- Vague symptoms
- Malingering
- Repeat attendances
- Interacting psychosocial problems with secondary gain
- Impossible to unpick
- Too little time
- Fear of missing serious pathology
- Quick fix

# Aims

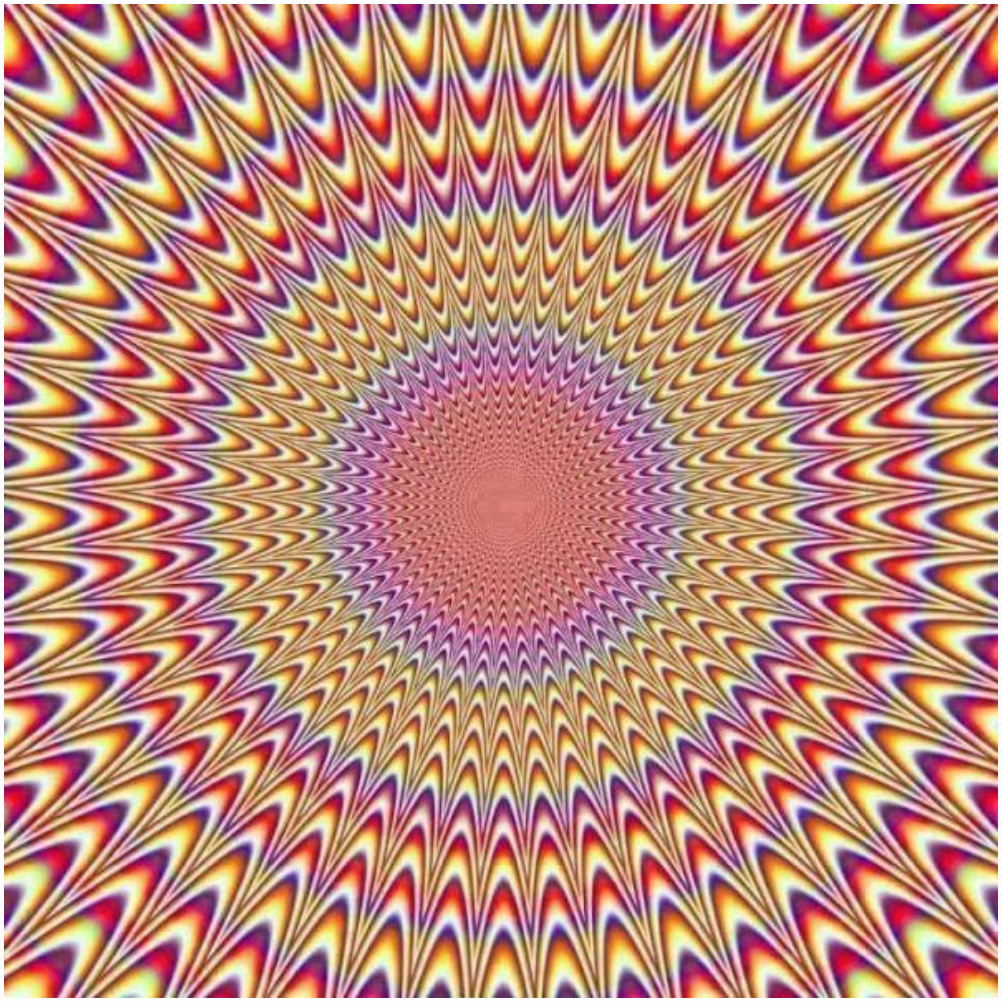
- Basic understanding of the peripheral vestibular system
- Appreciate the signs and  symptoms patients may present with
- Awareness of acute peripheral vestibular problems
- When to worry and who to refer to
- Discuss treatment options and simple rehabilitation techniques

# Objectives

- Re-cap the anatomy and physiology of the peripheral vestibular system
- What questions to ask to aid possible diagnosis
- Describe the 6 most common peripheral problems
- Discuss central pathology
- Highlight red flag symptoms and who to refer for inpatient intervention
- Discuss medical and therapeutic intervention for peripheral problem
- Pitfalls
- DVLA referral

# Definition of Dizziness

- Vertigo/spinning
- Imbalance
- Lightheaded
- Disequilibrium
- Off balance
- Stumbling
- Faint
- Detached
- Brain fog

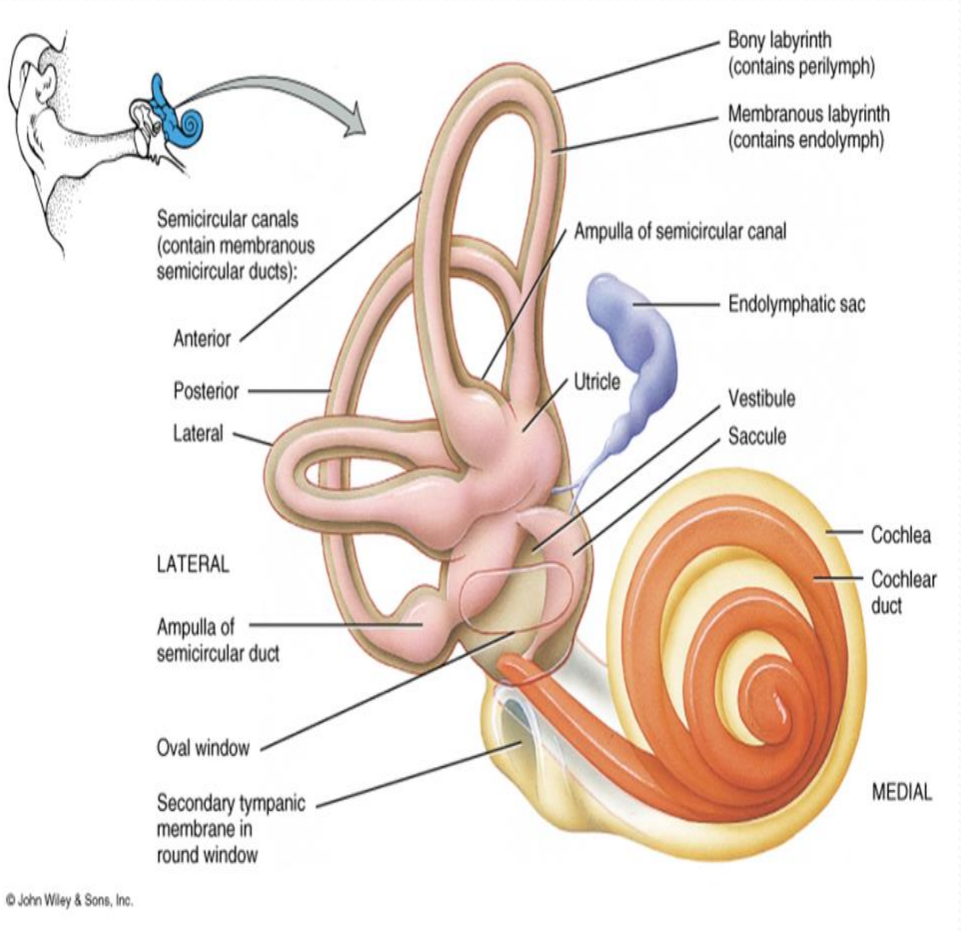


# Dizziness in my world

- Vertigo: the illusion of movement around oneself or oneself moving around an object in a horizontal or vertical plane. Often associated with feeling nauseous, sweating, paleness and GI complaints
- Imbalance/disequilibrium: inability to move a steady fashion without needing to steady oneself-poor vision, proprioception, MSK exacerbated by mood and possible ear conditions
- Faint or pre-syncopal: particularly on standing or on exertion- low BP, hypoxia, cardiovascular conditions, medications, vascular disease
- Lightheaded/detached/brain fog: related mostly to mood and anxiety and maladaptive behaviour

# Anatomy and physiology

- Labyrinth = cochlea and vestibule
- Vestibule = semicircular canal (superior, lateral and posterior) + otolithic organs (utricle and saccule)
- Semicircular canals = gaze stability on angular acceleration/deceleration (Vestibulo ocular reflex VOR)
- Otolithic organs = stability on acceleration/deceleration X;Y;Z axis and ocular tilt (VOR/vestibulo spinal reflex-VSR)

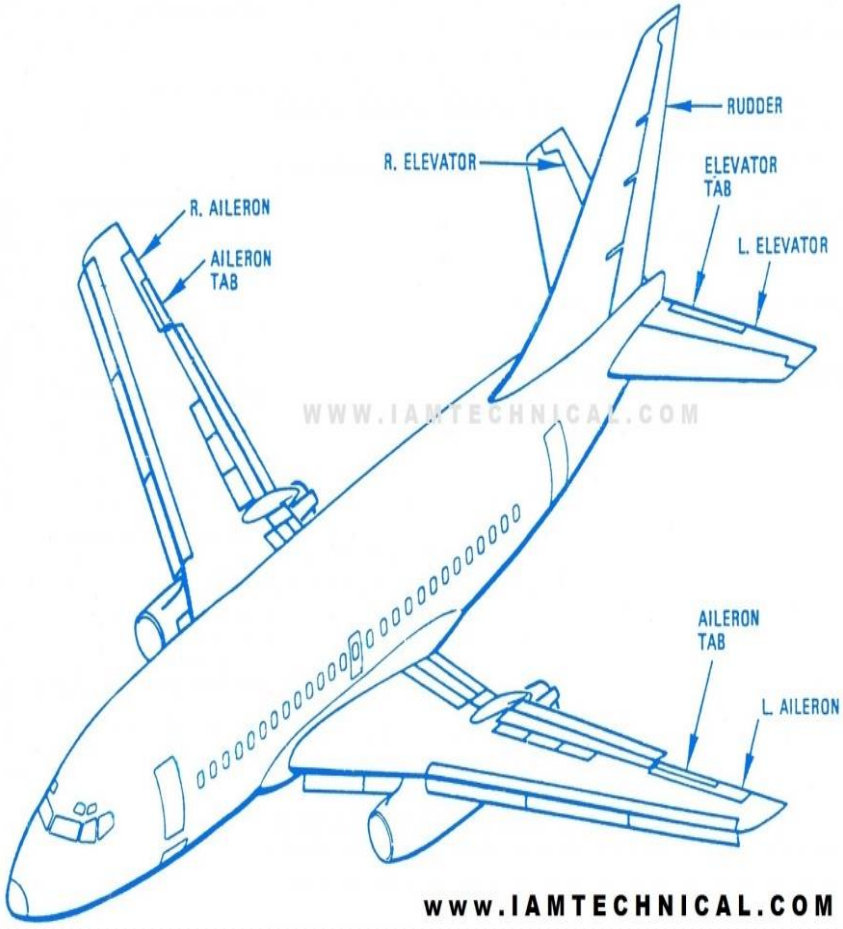


# Components of balance

- Balance is not just the ear!
  - 15% vestibule
  - 15% MSK/proprioception/feeling sole of feet
  - 70% vision
- All of these need to be working in conjunction with the balance centres in the brain to maintain gait and visual stability

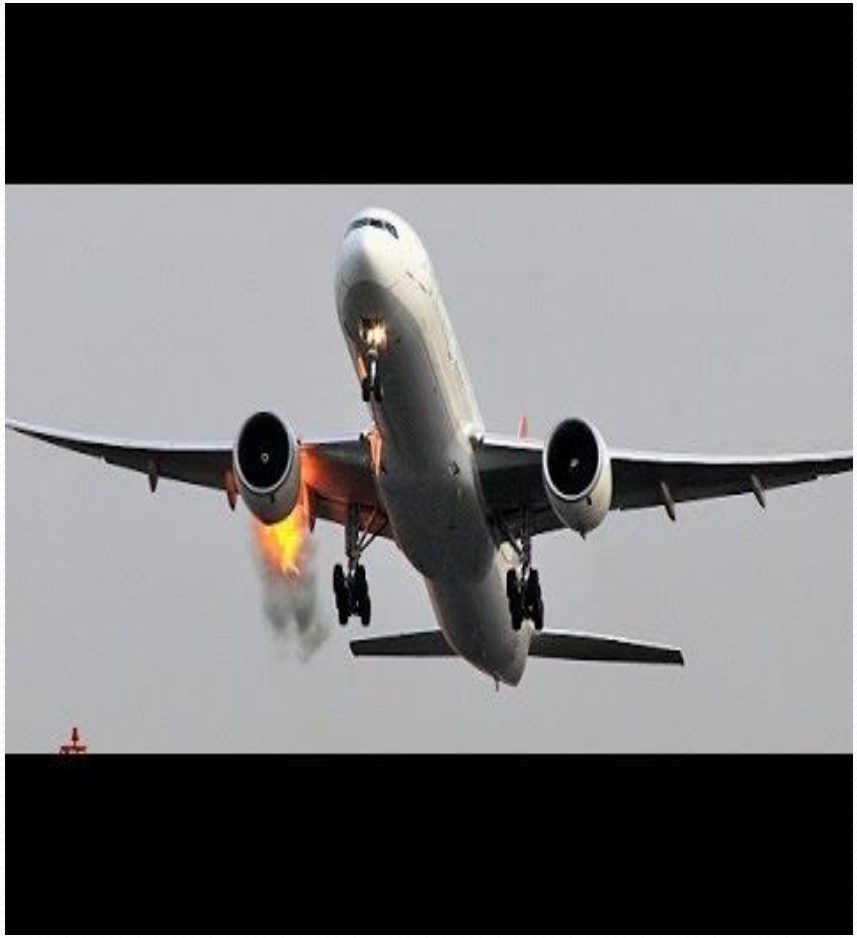
# Aircraft Analogy

- For an aircraft to fly from point A-B in a steady comfortable and controlled fashion:
  - Wings/fuselage/stabilizers = MSK/Proprioception
  - Engines = balance organs
  - Cockpit window = eyes
  - Pilot = brain
  - Pilot needs food and water = glucose and oxygen
  - Pilot needs to be calm and collected = No GAD/mental health problems



# Engine failure

- Engine failure = Vestibular event/labyrinthitis/Meniere's Disease
- Patient will experience vertigo as the ears are no longer balanced.
- Working engine is pushing the aircraft in circles!
- The eyes drift in the head (slow phase) as the good ear is pushing them towards the bad side.
- The brain corrects this drift (fast corrective phase) = nystagmus
- Alexander's law: horizontal, one direction and speeds up when looking in the corrective direction
- If it does not obey this law it is more likely to be a central event!



# Engine failure Cont

- Cant fly in circles forever!
- The brain (pilot) compensates: up-regulation of firing of the vestibular nuclei on bad side
- Breaks come on, on the good side
- Ultimately over time the brain adapts to abnormal signalling
- Lean on vision whilst doing so can lead to maladaptive persistent perceptual postural dizziness (visual vertigo)
- Stemetil switches the nuclei off therefore reducing spin nausea and vomiting!
- **BEWARE**: Long term stemetil never allows for adaptation and causes serious problems with psychological addiction, maladaptive behaviour and rehabilitation.
- A gliding plane will eventually hit the ground!

# Other engine problems

- BPPV = dirt in the fuel line
- Vestibular migraines = over revving engine
- Meniere's Disease = faulty fuel mix with eventual engine failure
- Superior Canal dehiscence syndrome = turbo charge sound/pressure changes – spin and hear all internal sounds including eye balls moving!!

# What about the other parts of the plane?

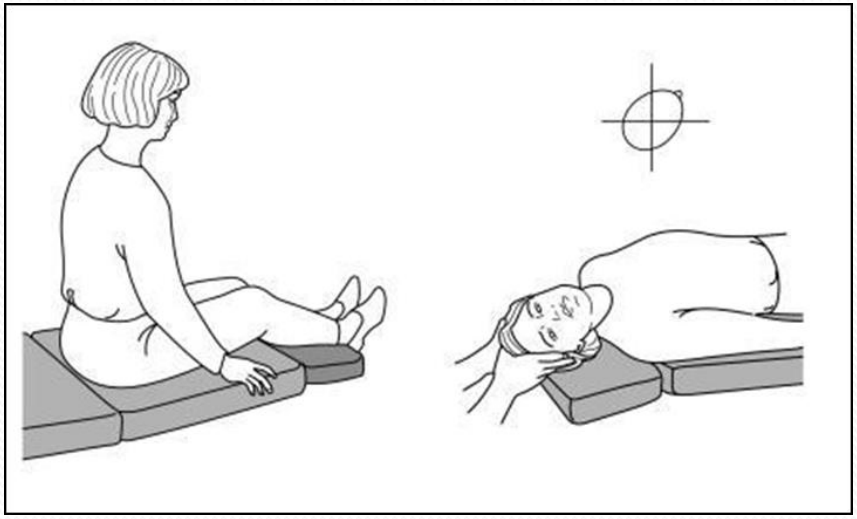
- Dirty/cracked window= visual problems, varifocal, bifocal, squint, cataracts – struggle keeping balance in dark, unfamiliar uneven, soft surfaces
- Rusty fuselage with damaged wings = MSK, joint replacement, poor core strength, peripheral neuropathies – general imbalance and a tendency to veer or fall over when challenged
- Damaged pilot = central pathology –imbalance, ataxia, poor co-ordination, LOC and extrapyramidal signs
- Unfed pilot (glucose and oxygen)= cardiac, pulmonary problems, anaemia, diabetes, fad diets, vasculopathy/central acting medication – pre-syncopal, postural problems, LOC
- Twitchy pilot = anxiety, stress, mental health problems-detached floating, lightheaded, brain fog, running through treacle

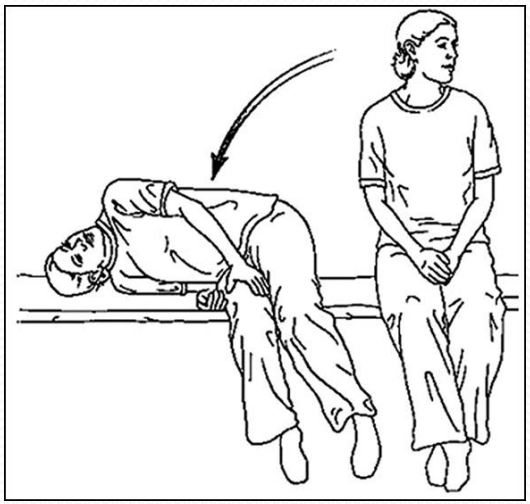
# History-you set the pace

- Is it spin, imbalance, light headedness or faintness
- When did it start
- Was there any warnings- change in hearing, tinnitus, pressure, auras
- How long did it last- seconds, minutes, hours or days
- Autonomic upset- sweating, N&V, upset stomach
- Recent URTI or ear infection with discharge
- Is it related to head position
- Is it made worse by head motion
- Is there a headache with it with light sound or smell sensitivity (background of motion intolerance)
- Autophony
- Background medical conditions: Neurological, respiratory, cardiogenic, vascular, MSK, migraine
- Polypharmacy with recent weight change
- GAD/mental health/Controlling personality/Type A with poor coping mechanisms and support
- What medication have been used to date
- Known to ENT

# Examination

- Ears- otorrhoea or evidence of middle ear disease
- Nystagmus may not be present (Alexander's law)
- Eye movements and lower cranial nerves
- Head shake
- Romberg's/Unterberger's
- Gait
- Dix-Hallpike





# Peripheral disorders

- Vestibular migraine
- BPPV (posterior and lateral canal)
- Vestibular weakness/neuronitis
- Labyrinthitis-viral, bacterial, vascular, inflammatory
- Meniere's Disease
- Superior Canal Dehiscence Syndrome
- Other: fistula, fracture, iatrogenic

# Vestibular migraine “great mimicker”: Over-revving the engine

- New kid on the block Barany Society/International Headache society 2012
- Neural misfiring on the vestibule and supporting neural structures
- Female more prone due to hormonal fluctuation
- Triggers stress dehydration, poor sleep hygiene, Barometric changes, caffeine, MSG, chocolate, wine, cheese, sweeteners

# International Headache Society

1. **Vestibular migraine**

   A. At least 5 episodes with vestibular symptoms of moderate or severe intensity, lasting 5 min to 72 hours.
   B. Current or previous history of migraine with or without aura according to the International Classification of Headache Disorders (ICHD)[9]
   C. One or more migraine features with at least 50% of the vestibular episodes:
      - o headache with at least two of the following characteristics: one sided location, pulsating quality, moderate or severe pain intensity, aggravation by routine physical activity
      - o photophobia and phonophobia,
      - o visual aura
   D. Not better accounted for by another vestibular or ICHD diagnosis[9]

2. **Probable vestibular migraine**

   A. At least 5 episodes with vestibular symptoms of moderate or severe intensity, lasting 5 min to 72 hours
   B. Only one of the criteria B and C for vestibular migraine
   C. Not better accounted for by another vestibular or ICHD diagnosis[9]

https://ichd-3.org/appendix/a1-migraine/a1-6-episodic-syndromes-that-may-be-associated-with-migraine/a1-6-6-vestibular-migraine/

# VM Presentation

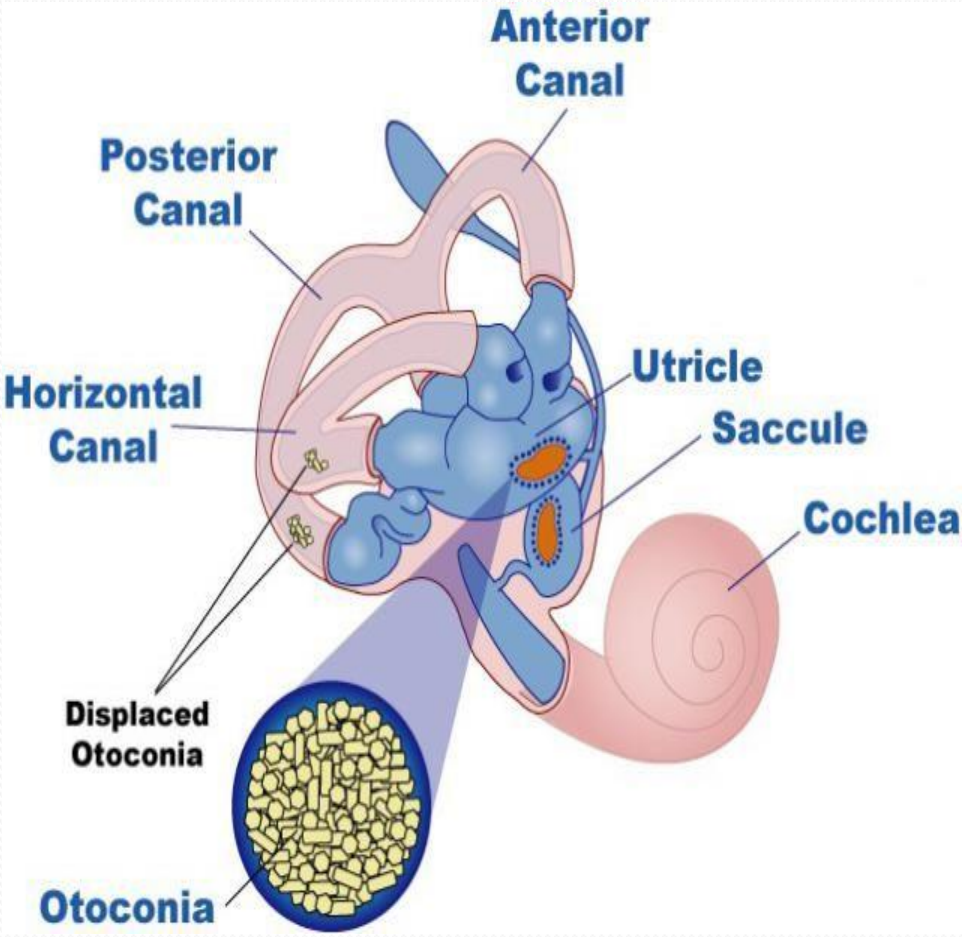
- Vertigo lasting seconds to days
- Can be associated with fluctuating hearing and tinnitus no change on audio (easily confuse with Meniere's Disease)
- Patient may complain of separate headache (pounding unilateral worse on exertion) up to 50% attacks
- Dislike to sounds, light and smells.
- Feel hung-over after attack
- Head motion intolerant
- Background history of motion sickness dislike of fairground rides or spinning in circles

# VM treatment

- Lifestyle modification
  - Stress and anxiety/mood management
  - Dietary avoiding potential triggers
  - Magnesium  Vit B2
  - TMD?
- Stemetil/cyclizine/cinnarizine for acute vertiginous episode
- Abortive medication does not work
- Prophylatic: Amitriptyline 10mg, nortriptyline 10mg, B blockers (80mg), topiramate (25mg), venlafaxine (37.5 mg)
- VOR exercises
- Watch for maladaptive behaviour and exacerbation of anxiety or mood disorders

# BPPV: “Dirt in the fuel line”

- Relatively common
- Occur in all age groups and can exacerbate balance problems in the elderly
- Related to head position-will avoid looking up down or turning in bed
- Also dislike of dental chairs and hair dressers
- Associated with head trauma, inner ear disorders (MD, VN, labyrinthitis)
- Can be recurrent with higher incidence in females may be linked to Vit. D deficiency



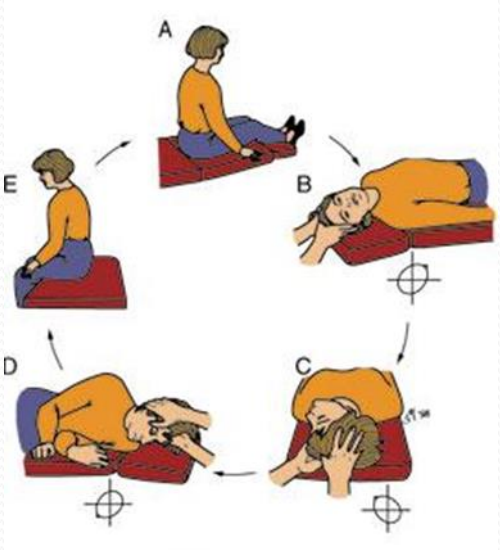
# BPPV signs

- Posterior canal- Dix-Hallpike, latency then geotropic nystagmus towards downward ear which fatigues
- Lateral canal -Head at 30 Degree and turning lateral beat nystagmus

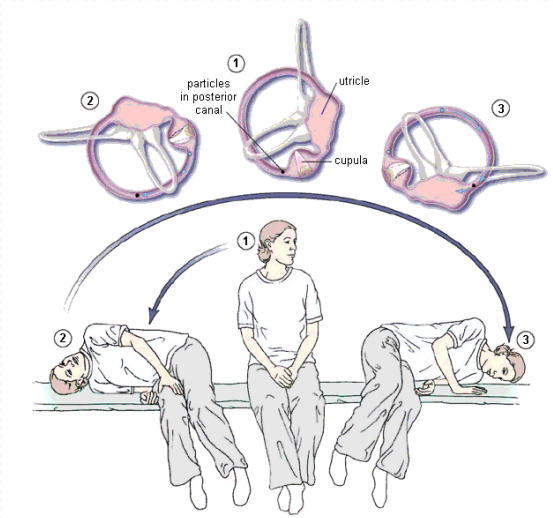
# BPPV treatment

- Only if confident and can deal with potential complications
- Epley's/Semont's manoeuvre
- BBQ roll for lateral canal
- Can convert posterior canal to lateral canal
- If not sure check Vit. D
- Brandt-Daroff more habituation?

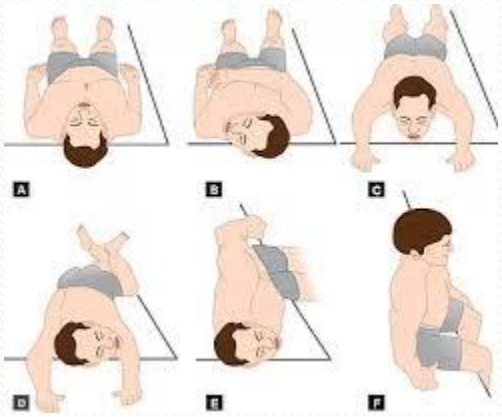
# BPPV Treatment



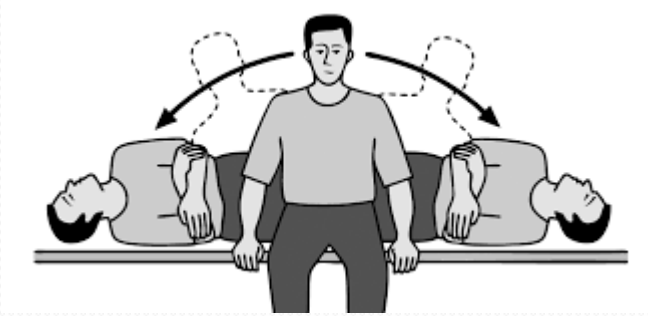

Epley




Semont



BBQ Roll



Brandt Darroff

# BBPV coming up!

# Vestibular Neuronitis/Vestibulopathy: "partial engine failure"

- May have preceding URTI
- Violent onset of spinning with marked N&V and autonomic upset

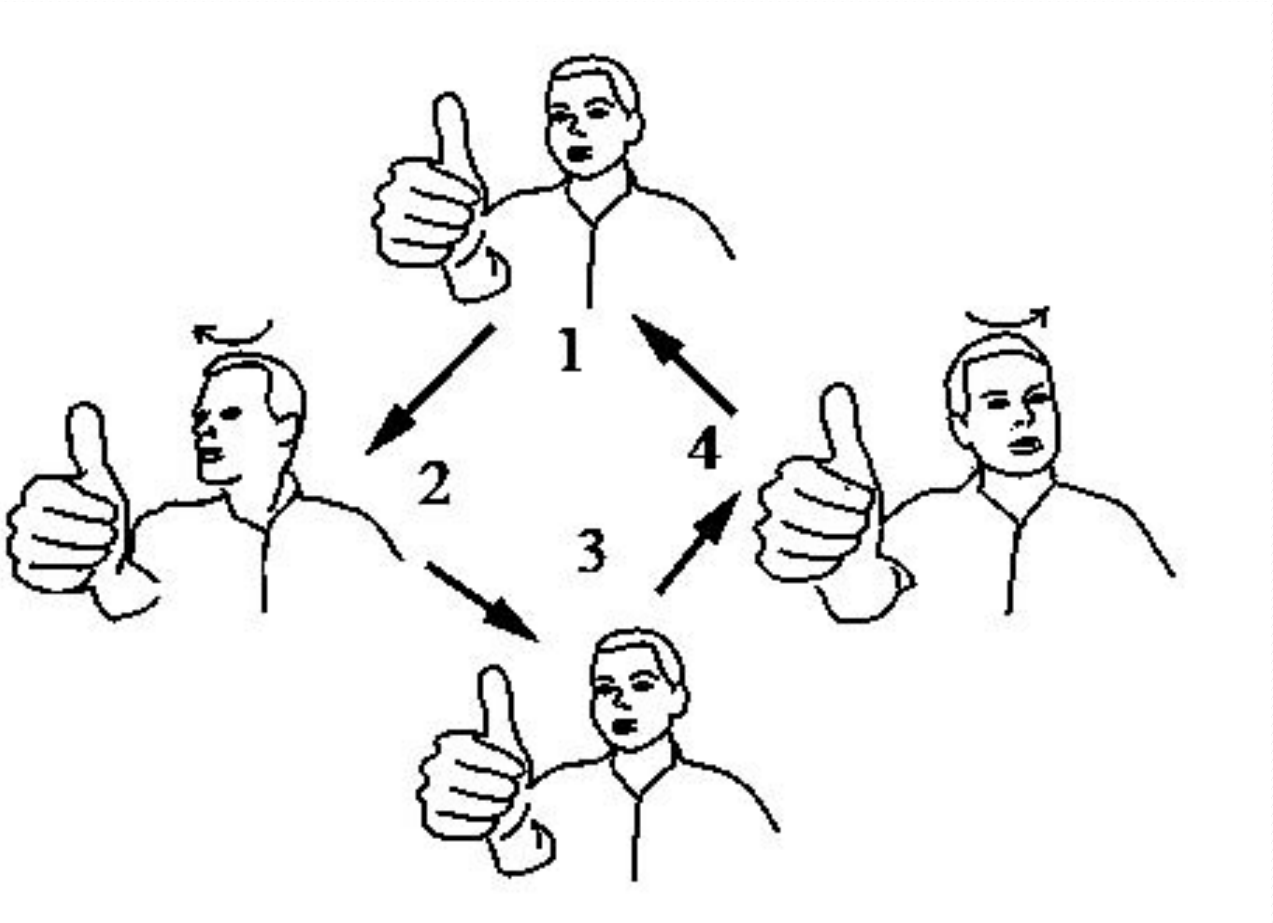
# VN signs

- Lateral beat nystagmus towards the better ear obeying Alexander's law
- Head shake will enhance fast corrective phase beating
- **No hearing loss**
- **No other cranial nerve or long tract signs**
- **Patient can weight bear (reluctantly)**
- Ears look normal or may be injected

# VN Treatment

- Mild to moderate symptoms consider antiemetic prochlorperizine, cyclizine, cinnarizine or promethazine
- Steroids, antivirals and sedatives not advised
- If severe with marked N&V and dehydration or any worrying middle ear signs discuss with ENT
- If associated with any other neurological findings and headaches discuss with medical team
- Watch driving operating machinery during acute attack
- Do not consume alcohol if possible
- Encourage normal activities once acute event settles
- Consider VOR exercises
- May have periods of imbalance initially as well as head motion intolerance particularly if unwell, fatigued or stressed

# VOR exercises



# Labyrinthitis: “complete engine failure”

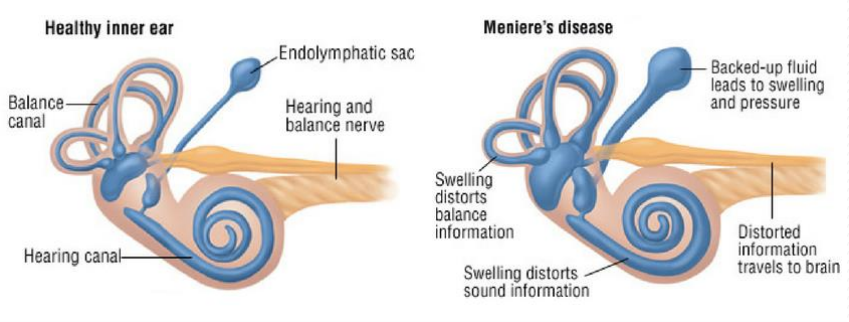
- Similar to VN but with hearing loss
- Inflammatory/destructive middle ear/skull base process or posterior circulation problem
- DO NOT MISS POSTERIOR CIRCULATION INFARCT
- If spinning with hearing loss cannot weight bear or has any obvious other neurological signs-urgent referral to medical team
- HINTS+ Head thrust normal, bidirectional nystagmus, test skew + hearing loss
- Let the medics exclude it and then ENT can deal with the ear

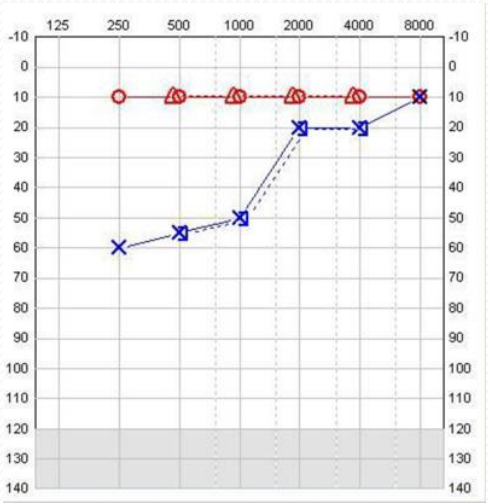
# Treatment

- Mild to moderate symptoms consider antiemetic prochlorperizine, cyclizine, cinnarizine or promethazine
- Steroids, antivirals and sedatives not advised
- If severe with marked N&V and dehydration or any worrying middle ear signs discuss with ENT
- If associated with any other neurological findings and headaches discuss with medical team
- Watch driving operating machinery during acute attack
- Do not consume alcohol if possible
- Encourage normal activities once acute event settles
- Consider VOR exercises
- May have periods of imbalance initially as well as head motion intolerance particularly if unwell, fatigued or stressed
- Address hearing loss and potential tinnitus

# Menieres Disease: “poor fuel mix ultimately leading to slow engine failure”

- Grossly over diagnosed in the past
- Familial history
- Females more prone
- Disease of 30,40 and 50s



# MD

- Cluster of symptoms preceding aural fullness, change in tinnitus with loss of hearing and vertigo
- Need to demonstrate fluctuating hearing particularly at low-mid frequency
- Vertigo lasts 20 minutes up to 12 hours
- After attack hearing and patient returns to normal
- Unusual to have aura, headache, brain fog or hung over feeling
- Can occasional run hand in hand with VM and BPPV
- Ultimately hearing deteriorates and the attacks “burn out”

2015 Equilibrium Committee: Amendment to the 1995 AAO-HNS Guidelines for the Definition of Meniere’s Disease

https://pdfs.semanticscholar.org/6e84/3db82023b3fd3d68c40df6c933211d80c7b8.pdf

# Treatment

- Supportive during attacks: prochlorperizine/cyclizine/cinnarizine/buccastem
- Betahistine 8-16mg TDS can go up to 32-64mg
- Consider diuretic Bendroflumethiazide
    - Grommet
    - Meniet's device
    - Intratympanic steroids
    - Intratympanic gentamycin
    - Surgical intervention

# Prochlorperizine-dopamine blocker

- Do not prescribe prochlorperazine to people with:
- ◦Hypersensitivity to prochlorperazine or its excipients.
- ◦Agranulocytosis.
- ◦A history of angle closure glaucoma.
- ◦Prostate hypertrophy.
- ◦Myasthenia gravis.
- ◦Heart failure.
- ◦Hypothyroidism.
- ◦Parkinson's disease.
- ◦History of jaundice.
- ◦Liver or renal dysfunction.
- ◦Phaeochromocytoma.

- •Prescribe prochlorperazine with caution to:◦People with epilepsy or a history of seizures
- ◦Elderly people — use with caution, especially during very hot or cold weather due to the risk of hyper- or hypothermia.
- ◦People with cardiovascular disease or family history of QT prolongation —
- ▪ Cardiac disease; metabolic abnormalities such as hypokalaemia, hypocalcaemia, or hypomagnesaemia; starvation; alcohol misuse; and concurrent treatment with other drugs known to prolong the QT interval may predispose people to ventricular arrhythmias.

# Cyclizine-histamine and muscarinic blocker (vomit centre)

- Do not prescribe cyclizine to people with:
- ◦Hypersensitivity to cyclizine or its excipients.
- ◦Severe liver disease — increased risk of coma.
- ◦Porphyria.

- •Prescribe cyclizine with caution to people with:
- ◦Prostatic hypertrophy, urinary retention, susceptibility to angle-closure glaucoma, and pyloroduodenal obstruction.
- ◦Hepatic disease.
- ◦Epilepsy.
- ◦Severe heart failure or acute myocardial infarction — cyclizine may cause a fall in cardiac output associated with increases in heart rate, mean arterial pressure, and pulmonary wedge pressure.
- ◦Phaeochromocytoma

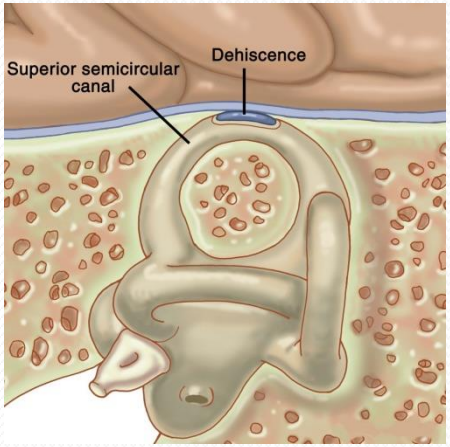
# Cinnarizine histamine blocker

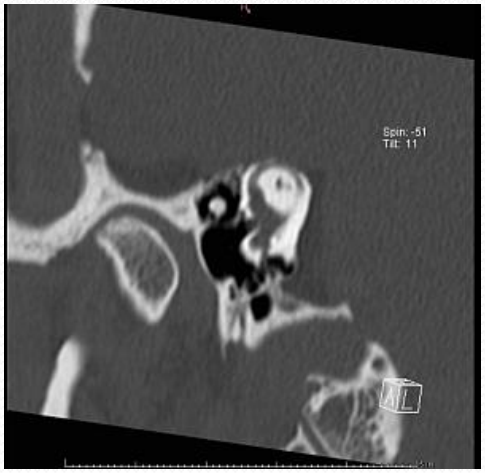
- •Do not prescribe cinnarizine if the person:
- ◦Is hypersensitive to cinnarizine or any of its excipients.
- ◦Has porphyria.
- ◦Has severe liver disease (there is an increased risk of coma).

- •Prescribe cinnarizine with caution if the person has:
- ◦Parkinson's disease – give only if the advantages outweigh the risk of disease exacerbation.
- ◦Hepatic or renal impairment.
- ◦Epilepsy.
- ◦Prostatic hypertrophy.
- ◦Pyloroduodenal obstruction.
- ◦Susceptibility to angle closure glaucoma.
- ◦Urinary retention.

# Superior Canal Dehiscence Syndrome: Turbocharge”

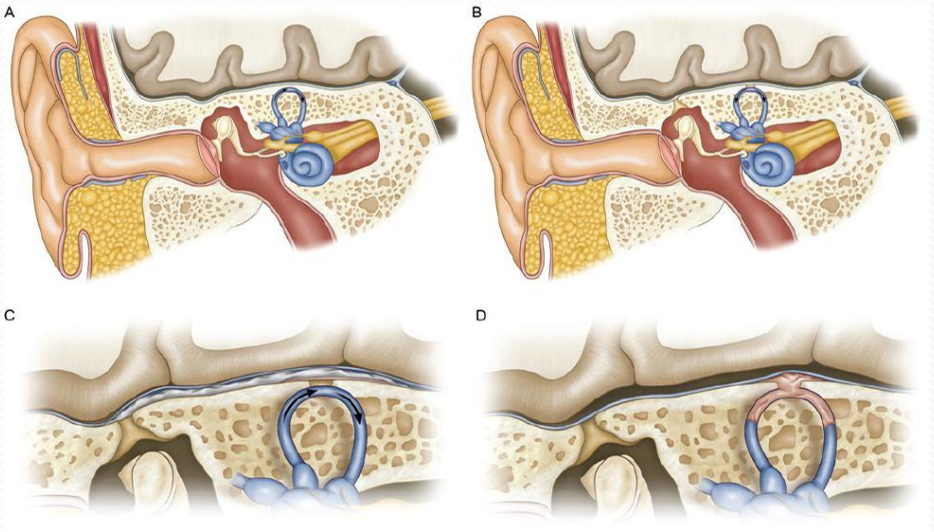
- Only described in 1998
- Odd sensations of imbalance when exposed to loud noises and pressure changes
- Often complain of hearing internal noises breathing, joints creaking, food digesting and eye balls scratching
- Aural fullness
- Pulsatile tinnitus



# SCDS

- Very little to see in clinic
- If patient valsalva you may see eye movement
- Needs CT scan of the temporal bone and specialized balance testing
- Transmastoid obliteration or resurfacing via middle cranial fossa



# Imbalance
# “Faulty windows/wings/underfed pilot”

- More common in the elderly
- Polypharmacy
- Multiple health related problems
- Ask about eye condition and what environments are most challenging
- MSK weak muscles joints and core weakness
- Peripheral neuropathies with numb feet and poor joint proprioception
- Refer to geriatrician with an interest in falls-we will then gladly see them to exclude an exacerbating ear condition BPPV persbystasis

# Orthostatic hypotension: "pilot starved of food and water"

- Diabetics-autonomic neuropathy
- BP medication watch those patients who have lost weight and their medications too high
- Watch those patients that complain of chest tightness SOB pain on exertion with dizziness light-headedness
- Check BP lying and standing
- ECG to check rate and rhythm
- Consider cardiology referral for on-going investigation
- Good hydration (not over hydration)
- Fad diets!

# GAD/Stress/Mood disorder: "twitchy pilot"

- Exacerbates all balance problems with strong association with maladaptive behaviour
- Needs to be managed before we can get effective patient engagement
- IAPTS
- Medication SSRI, SNRIs
- CBT

# Persistent postural perceptual dizziness

- Visual vertigo, chronic subjective dizziness, psychogenic dizziness
- Maladaptive behaviour to central or peripheral insult
- Lightheaded, floating, detachment
- Not vertiginous
- Worse in visually stimulating environment
- Maladaptive posturing-locked neck gait problems and avoidance
- Treatment retraining, CBT and SSRI/SNRI

# Central

- High index of suspicion if it does not obey Alexander's Law
- If it comes with other cranial nerve involvement including hearing loss
- If the patient cannot stand or has cerebellar signs
- Abnormal gait
- Is complaining of spinning but is not unduly concerned
- Severe headache

# Table 1: Causes of Vertigo

| PERIPHERAL CAUSES OF VERTIGO | CENTRAL CAUSES OF VERTIGO |
|---|---|
| Benign paroxysmal positional vertigo (BPPV) | Migraine headache |
| Ménière's disease | Multiple sclerosis |
| Labyrinthitis | Mal de debarquement syndrome |
| Ototoxicity | Cerebellar hemorrhage and infarct |
| Superior canal dehiscence syndrome | Vertebrobasilar insufficiency |
| | Vertebral artery dissection |
| | Neoplasm |

Peripheral vertigo

| | Central | Peripheral |
|---|---|---|
| Nausea | None/mild | Severe |
| Movement illusion | Less prominent | More prominent |
| Worse with head movement | No | Yes |
| Neurologic signs | Common | Rare |
| Imbalance | Severe | Mild to moderate |
| Hearing loss | Rare | Common |
| Oscillopsia | Severe | Mild |
| Caloric test | Hyperexcitability | Canal paresis |
| Recovery | Months or longer | Days to weeks |

# What not to do

- Panic
- Avoid labelling – “balance problem” Dr Google is dangerous patients will fixate and very difficult to convince otherwise in specialist clinic
- Long term stemetil is a disaster!

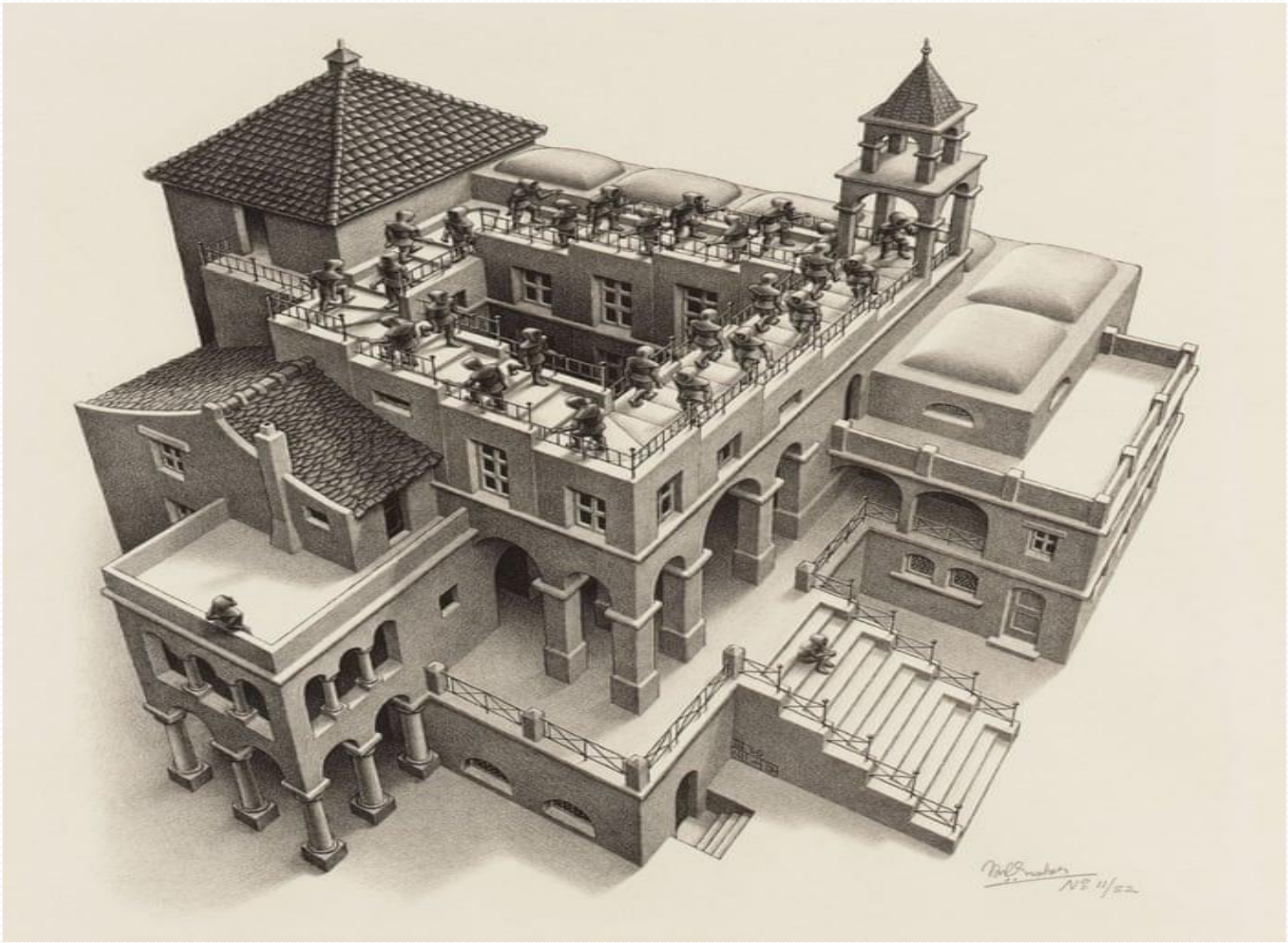
# What to do

- Talk to ENT/medics and admit if concerned or dehydrated
- Treat symptoms-short term anti-emetics, Epley's
- Manage stress and anxiety
- Manage potential triggers and migraines
- VOR exercises
- Change spectacles to reading and distance
- Flat shoes
- Walking stick
- Modify house-railings, stair lift
- Falls risk and refer to geriatrician
- Review medications and alter polypharmacy particularly in the elderly

# DVLA

- Unprovoked and spontaneous attacks- patient needs to inform the DVLA
- https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/709747/dizi-online-confidential-medical-information.pdf

# Questions?



# References:


- https://cks.nice.org.uk/vertigo

# Necrotizing Otitis Externa

- Increasing incidence
- Be aware of elderly diabetics with non resolving otitis externa with severe pain at night and trismus
- Avoid Quinolones