Barts Health NHS
NHS Trust

CDU Guidelines: VERTIGO

TRUST CORE/LOCAL GUIDELINES	
REVIEWED	2010
APPROVAL/ADOPTED	
DISTRIBUTION	Emergency Department – all staff, all areas
RELATED POLICIES	Syncope
AUTHOR/FURTHER INFORMATION	TH
THIS DOCUMENT REPLACES	First document

1. APPLICATION

Emergency Department - CDU protocol for patients with vertigo requiring further evaluation or ongoing fluids and anti-emetics, who are likely to be discharged in 12-24 hours or who have central causes and hence are awaiting specialist review.

Differential – pre-syncope, disequilibrium

2. GUIDELINE FLOW CHART (tick box to indicate diagnosis)

In Streaming and majors
Initial assessment – the differentials are syncope, presycope and disequilibrium):

History
Examination
incl. detailed assessment of CNS/PNS/ENT systems
Ix – VBG

Further tests (may require pre-treatment with stemetil + hydration, if so transfer to CDU prior to below):
Dix- Hallpike (explained below)
Head Thrusts test (explained below)

Red flags – central or middle ear disease (rare, < 5% all ED presentations) – senior input, ?referral
1. **Central causes** - key pointers include:
New headache
Long tract, cerebellar or cranial nerve signs
Vertical or bidirectional nystagmus (L looking L, R looking R)
Inability to walk rather than unsteady
– DW senior re diagnosis, consider CT/MRI & obtain neurology or stroke opinion (usu require IP or CDU)
2. Middle or inner ear causes – DW senior ? ENT opinion (Usu OP)
Deafness, tinnitus, sx with pressure on ext auditory meatus, abnormal ear examn

No red flags – peripheral causes (> 95% ED presentations vertigo)
No further Ix, pt to majors or CDU
Dx is usually one of below:

Acute vestibular neuritis (previously called vestibular labyrinthitis)
Sustained nystagmus
Usually positive head thrust test (see below)

Mx - IV stemetil, IV fluids, IV antihistamine if not settled, CDU if not

BPPV
Sudden onset, age usu > 40, onset assoc change in head position
Dix-Hallpike - Rotational fatiguing nystagmus (see below)

Mx - IV fluids, IV stemetil, Epley manoeuvre on CDU

Migraine
Typical recurrent headache with no CNS PNS findings

Mx - IV stemetil and fluids, usu require CDU – if first episode d/w neurology

Menieres disease (rare)
Known Dx
Tinnitus, deafness, vertigo

Mx -IV fluids and stemetil, home if settled, CDU if > 4 hour treatment, ENT f/u, d/w ENT if not settled in 12 hours

Likely to be discharged in < 12 hrs		☐
CDU transfer form & drug chart completed		☐
Imaging required	(if yes tick and name CT/ MRI)	☐
Specialist referral	(if yes tick and name stroke / neurology / ENT)	☐

3. SUMMARY NOTES

Vertigo is an alarming symptom often associated with vomiting and immobility, thus it commonly brings patients to the ED. It needs to be differentiated from syncope – pre-syncope and disequilibrium of the elderly. Vertigo is an illusion of movement while pre-syncope is a sensation of faintness or light-headedness. Pre-yncope is consequent upon cerebral hypoperfusion, vertigo on pathology of either the VIIIth cranial nerve or brain stem. The important distinction is whether the pathology is central (rare) or peripheral (common). Central causes *usually* associate vertigo with other CN signs – diplopia, facial weakness, dysphasia, and dysphonia; and / or long tract signs – limb weakness/paraesthesia. Peripheral does not.

Nystagmus is a term used to describe alternating fast and slow movements of the eye.

Peripheral – BPPV, acute vestibular neuritis (labyrinthitis), Meniere's disease, middle ear infection, perilymphatic fistula, drugs (carbmazepine, phenytoin, cardiovascular and anti HT)

Central – Migraine, cerebellar/lateral medullary infarct/bleed, CPA or cerebellar SOL, brainstem demyelination, degenerative ataxia, Chiari malformation

Assessment:

History - Ask about the following: – rapid or slow onset; association with head movement / position; duration; positional or sustained symptoms; headache; deafness/ or tinnitus; previous episodes.

Headache is suggests vestibular migraine or, more rarely SOL, arterial dissection or cerebral bleed but is also well described in posterior circulation stroke. TIA rarely causes vertigo as an isolated symptom – look for other CN signs.

Examination

Hydration state; systemic illness
CNS – look for quality of nystagmus - vertical, bidirectional, pure torsional nystagmus suggests central causes. Rotatory – torsional – nystagmus on movement suggests BPPV. Acute vestibular neuritis usually produces horizontal unidirectional nystagmus; CN signs & Horner's (miosis with ptosis) (central causes);
Cerebellar signs (suggest central cause)
PNS; long tract signs, gait (suggest central causes)
ENT - tympanic membrane, ext auditory meatus (cholesteatoma, vesicles, otitis media), deafness /tinnitus. Pressure on the ext auditory meatus producing vertigo / nystagmus suggests perilymphatic fistula.

Diagnostic Bedside Tests:

Dix - Hallpike – most useful to 'rule in' BPPV. The patient is transferred from sitting up, with their head rotated 45 degrees to the left (then right), to lying with their head at 45

degrees over the bed. Pts eyes are open and fixed on examiners forehead. The head is held in this position for 1 minute. The ear tested is under most.

The test is not performed in cases of cervical bony or vascular disease.
The following results may occur:

- Posterior canal BPPV : rotatory (torsional) nystagmus with a latency of a 5-20 seconds and which fatigues in < 1 minute (rule in test). If the test is repeated then the intensity of nystagmus/vertigo is reduced (fatigability). The top of the eye rotates to the (under most) affected ear. Left ear down – clockwise nystagmus; right ear down – anticlockwise nystagmus.
- Horizontal canal BPPV – purely horizontal nystagmus
- Down beating, vertical or sustained nystagmus suggest central causes (rarely anterior canal BPPV)

The Head Thrust Test
This assesses the vestibulo-ocular reflex and tests for peripheral VIII disease. It helps diagnose acute vestibular neuritis. The patient sits in front of the doctor and fixes on a point in front – e.g. dr's nose. The patient's head is turned 45 degrees to left (tests left horizontal canal) or right.

Normal – the eyes remain fixed on point of focus – i.e. move away from head turn position.
Pathological state – reflex movement is lost and a catch up saccade is required to return eyes fix to examiners nose. Turning head to left tests left canal. *Abnormal in acute vestibular neuritis but normal in central vertigo.*

Treatment
Hydration – oral preferred, IV if failed response antiemtics
Symptomatic treatment is with two classes of medication – antiemetic, most commonly prochlorperazine and vestibular suppressants such as benzodiazepines, antihistamines and anticholinergics.
Epley's manoeuvre treats BPPV.

4. COMMON DIAGNOSES
BPPV and Epley manoeuvre
The most common ED cause of vertigo (lifetime prevalence 1:50), suggested by sudden onset related to posture – looking to side or up, or turning over in bed. Vertigo usually reduces with cessation of head movement in < 1 minute. Deafness, ear / mastoid pain and other neurological symptoms are not a feature. Minor trauma is a common precipitant. The cause is most commonly crystal debris released when otoconia detaches from sensory hair cells, usually in the posterior canal (90%). Symptoms last over a week in around 50%. The disease is often recurrent.

Most effective treatment of posterior canal disease is the Sermont manoever, if this fails on both sides move to Epley manoeuvre. See BMJ.com for video and appendix. See pictures in appendinxTo perform this.

Other treatment includes home exercises (Brandt-Daroff: see appendix; lateral occiput on bed, nose up to stimulate nystagmus, wait till symptoms subside then sit up, then opposite head down-nose up position and sit up again repeated 3 hourly until 2 days symptom free), medication and surgical treatment.
Horizontal canal disease requires different manoeuvres.
Antiemetics are not useful in altering the natural history of BPPV and are used in the ED only for symptom control.

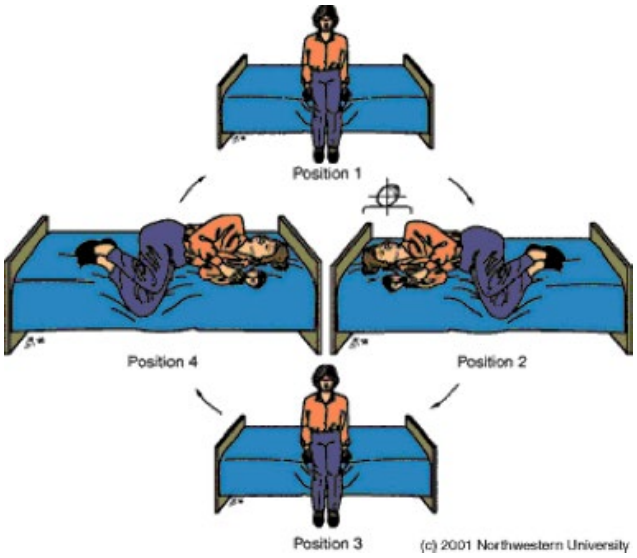
Acute Vestibular neuritis (AVN), (previously termed labyrinthitis)
Hallmark is sustained non-positional unidirectional, horizontal, sustained nystagmus, usually with no other findings. Onset is often abrupt and it is 'never' recurrent. Left sided disease produces right beating nystagmus and a positive left sided head thrust. The patient can usually walk – albeit with a very unsteady gait. The aetiology is not known and the evidence for the oft stated viral infection is limited. The similarity to Bells palsy has seen some doctors treat with steroids – but there is no clinical outcome data to support this. Stemetil provides symptom relieve but does not alter the natural history of illness.

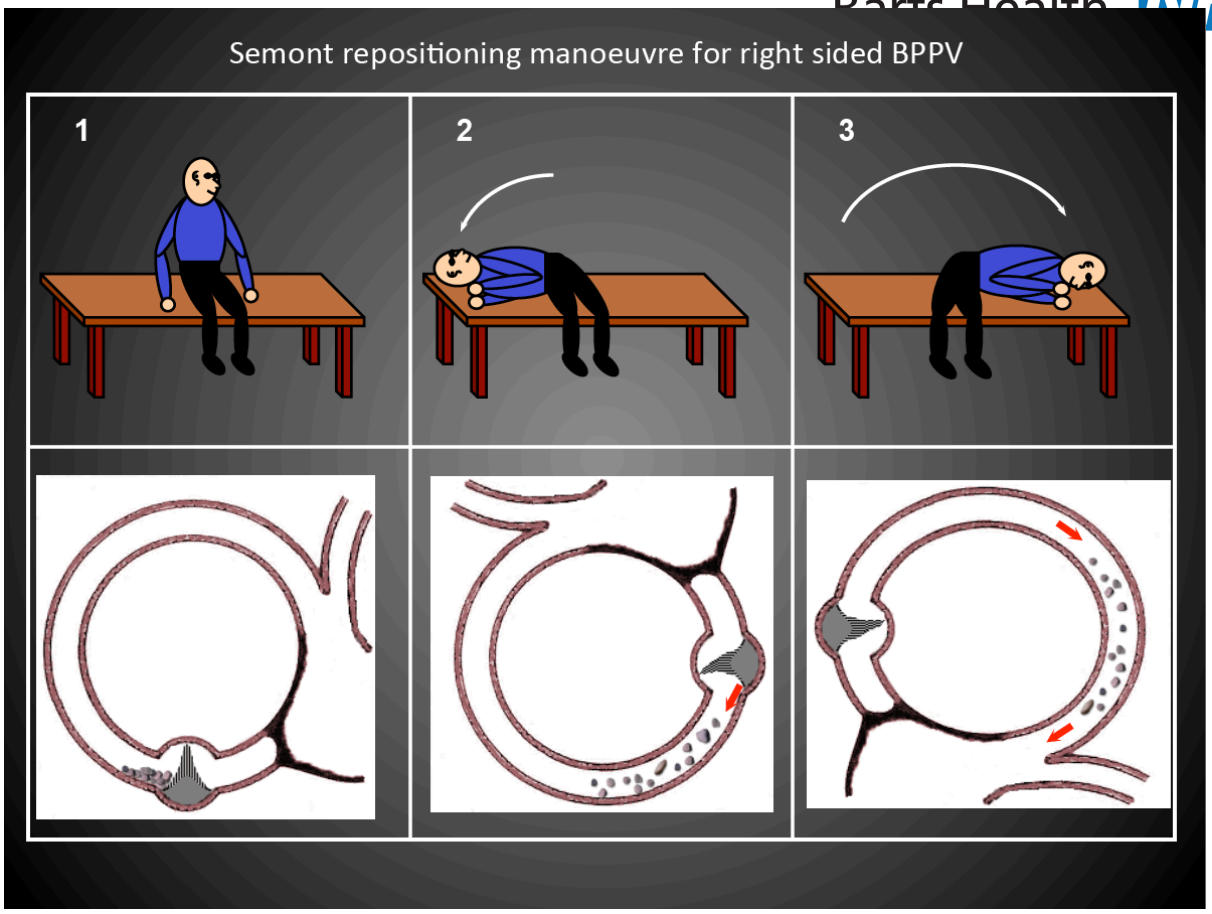
Stroke
Usually vertigo is accompanied by other CNS PNS signs most commonly focal weakness, focal numbness, and slurred speech. Diplopia is not a reliable sign. The nystagmus is usually downbeating, bi-directional or more rarely torsional but may very rarely be unidirectional and so appear as an AVN. The head thrust test is normal and this helps differentiate from acute vestibular neuritis.

Vestibular Migraine
Suggested by migrainous headache with vertigo, recurrent episodes.
Treat as SOP for migraine. If any doubt re Dx D/W neurology.

5. REFERENCES
Kerber KA, Vertigo and dizziness in the ED Emerg Med Clin N Am 2009 27 39-50
The Management of BPPV DTB special issue Sept 2009
Barraclough K, Bronstein A. Vertigo. BMJ Sept 2009 339 749-52

APPENDIX
The Brandt – Darof exercises – variably succesful




Semont repositioning manoeuvre for right sided BPPV
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2
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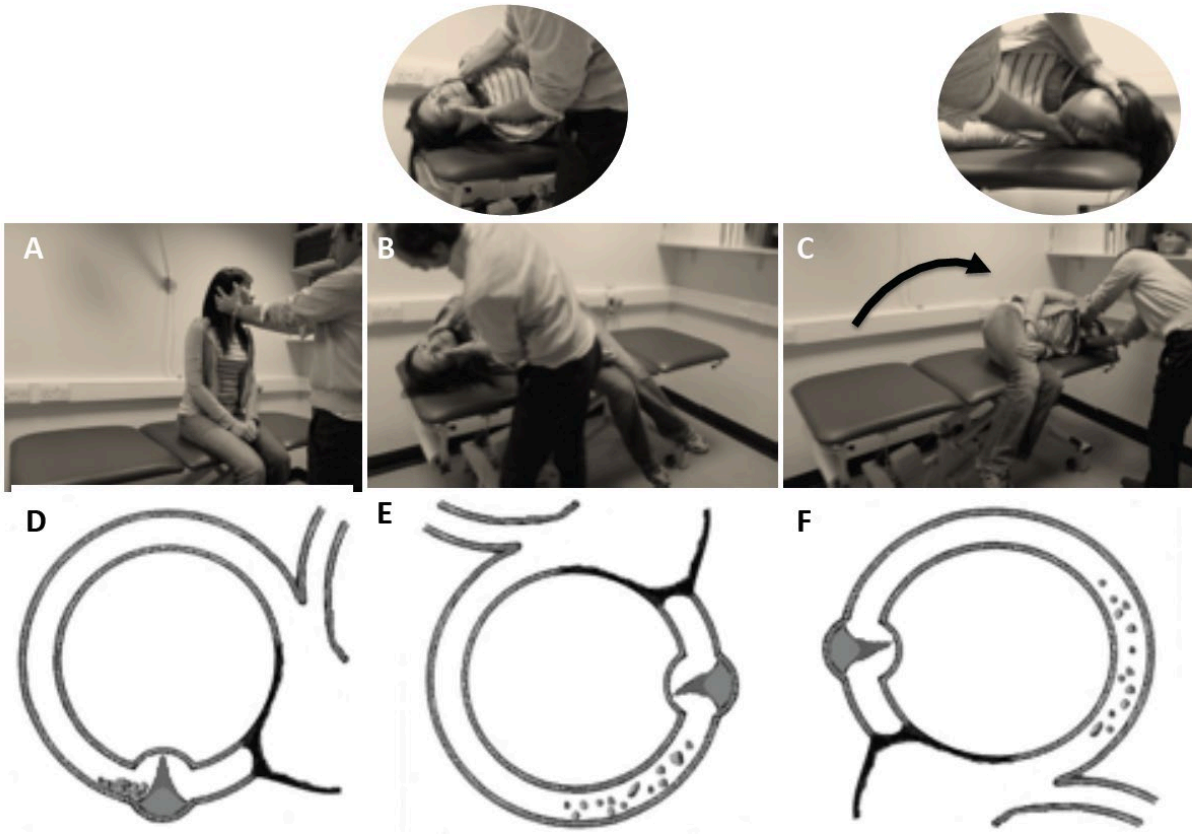

The Epley Manoeuvre

1.Sit on bed. Turn head 45° to L. Place pillow so it will be under yr shoulders
2.Lie back quickly and head reclined as before. Wait 30 sec
3.Turn head 90° to R (without raising it). Wait 30 sec
4.Turn body and head another 90° (without raising head) and wait another 30 sec
5.Sit up on the R side

May be developed from Dix Hallpike:

- move pt from sitting to reclining with head 45 degrees laterally and extended (as Dix – Hallpike)
- turn head 90 degrees to opposite side

- turn body to side to follow head so head now looks to floor
- sit patient up
- tilt head to chin down 45 degrees
- then keep head upright for 2 days!!