ED OBSERVATION UNIT:
NEUROLOGY ISOLATED VERTIGO PROTOCOL
NYC H+H KINGS COUNTY HOSPITAL CENTER

General Observation Guidelines apply for all ED observation patients

Please Note: These patients will be observed under the ED team and the General Neurology service will guide management as consultants. The ED team will follow standard documentation procedures as outlined in the SOP.

The General Neurology Service will:

1. Clearly outline the management plan before the patient is accepted to the OBS unit
2. Remain on the case as consultants throughout the entire observation stay
3. Document clearance to discharge upon treatment completion

INCLUSION CRITERIA	***EXCLUSION CRITERIA***
● Stable Vital Signs and normal serum glucose ● Non-contrast head CT displays no evidence of acute findings (ICH, acute infarct, mass lesion, etc.)	● New focal neurological deficits, including: ○ Loss of consciousness ○ Lethargy / altered mental status ○ Headache ○ Pupil abnormalities, Ophthalmoplegia, dysconjugate gaze, head tilt, vertical nystagmus, blurred vision ○ Horner's syndrome ○ Dysarthria, dysphagia ○ Unilateral facial or limb weakness / sensory deficit ○ Dysmetria ○ Truncal ataxia ○ Hiccups ○ Other cranial nerve abnormalities ● Debilitated status: ○ Pre morbid mRS $\geq$ 3 ● Risk of Embolic Disease: ○ Newly found AFIB ○ Mechanical heart valves

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INTERVENTIONS

- Management to be outlined by General Neurology team prior to placing patient on OBS status
    - IV hydration
    - Medications: anticholinergics (meclizine, diphenhydramine), antiemetics, benzodiazepines,
- Reinitiate home antihypertensive and diabetes medications
- MRI head/brain without contrast and MRA head and neck without contrast
    - Safety sheet to be performed by primary team
- Physical Therapy assessment performed
- Advance diet and ambulate as tolerated
- Q4 hour neuro checks / vital signs, performed by RN staff

DISPOSITION

Home:

- Stable vital signs (SBP<160mmHg)
- Neurological status returned to baseline or improved enough for safe discharge
- Documented clearance by General Neurology Service
- Documented clearance by Physical Therapy
- E-referral ENT Clinic upon discharge

Admission:

- Evidence of Acute ischemic stroke, brain tumor, or other pertinent pathology on brain MRI
- Worsening neurological symptoms
- Unstable Vital Signs despite treatment
- Newly found arrhythmia on telemetry monitoring
- Unable to ambulate
- Persistent symptoms with unsafe discharge at 24 hours, admit to General Neurology

Sources

Searls DE, Pazdera L, Korbel E, Vysata O, Caplan LR. Symptoms and signs of posterior circulation ischemia in the New England Medical Center Posterior Circulation Registry. Arch Neurology 2012; 69: 346-351.

Vertigo Care Pathway.
https://www.qmul.ac.uk/blizard/ceg/media/blizard/images/documents/Vertigo,-Care-Pathway,-January-2012.pdf

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Isolated Vertigo Pathway

Background:
Vertigo is a form of dizziness with an illusion or hallucination of movement. The broader term dizziness includes unsteadiness, light-headedness, motion intolerance, imbalance, floating, or a tilting sensation.
Balance is maintained by information from the vestibular apparatus (15%), vision (70%) and proprioception (15%) being processed by the brain. Vertigo is caused by peripheral causes in 80% of cases. Central causes are more common in elderly.
A full-time GP may expect to encounter 10-20 cases of vertigo each year.

History:
• Is there a rotatory element? Constant or episodic?
• Duration of episode: seconds, minutes, hours and days
• Otological symptoms (e.g. hearing impairment, tinnitus, otorrhoea)
• Associated symptoms (e.g., nausea or vomiting)
• Neurological symptoms (including diplopia, dysarthria, dysphagia, focal weakness, autonomic symptoms, headache)
• Triggers for vertigo (change of head position, menstrual cycle)
• Past medical history, Drug history, Social history

Examination:
Otological examination: for signs of infection or inflammation
Hallpike test should be performed if vertigo is positional (see below for details)
Tuning fork test for hearing to ascertain whether hearing loss is conductive or sensorineural (SNHL)
Neurological examination: neck movements, eye movements and nystagmus, stance and gait (Romberg's test, heel to toe walking), cerebellar signs, cranial nerves and PNS as required
Systemic examination: Vital signs including supine and standing blood pressure if syncope is suspected, cardiovascular and respiratory system assessment

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Red Flags: headache, neurological symptoms and signs, irregular pulse (consider cardiac arrhythmia), history of cervical spine or head trauma.
Refer to neurology if central cause is suspected: e.g. CVA, Tumour, Multiple sclerosis (MS). Such cases will almost invariable have more symptoms than just vertigo and will usually have neurological signs.
Elderly (>75) – Patients often have multiple pathologies. Visual and proprioceptive abnormalities can lead to de-compensation from previous vestibular failure. The elderly are often taking several medications. Chronic vertigo should not be treated with vestibular sedative such as prochlorperazine as this impairs compensation. This group may need assessment in the **Falls Clinic** if they fit the criteria (see local guidelines for referral criteria)
Is there any associated Deafness with the Vertigo?

Yes		**No**		
Meniere's: Lasting hours with tinnitus AND deafness. Typically first symptoms occur between ages 20-40 years.	**Acute Labyrinthitis:** Acute onset of vertigo lasting days or weeks WITH deafness. Due to inflammation of the labyrinth which includes the cochlea and the semicircular canals.	**Vestibular neuronitis:** Acute onset lasting days or weeks WITHOUT hearing loss. Thought to be caused by viral infection of the vestibular nerve	**Benign Paroxysmal Positional Vertigo (BPPV):** Vertigo in certain head positions, lasting seconds only. 15% may have history of relatively minor head trauma.	**Unexplained episodic vertigo**
Clinical features include vertigo (<24hours), hearing loss (reversible sensorineural), Tinnitus (fluctuating). Aura of fullness or pressure in the ear or side of the head Abnormal homeostasis of inner ear fluid. Also known as primary endolymphatic hydrops. Over diagnosed in General Practice.	Acute episode from bacterial or viral infections associated with hearing loss, nausea and vomiting. Can be associated with bacterial processes such as otitis media or meningitis. Useful to establish if conductive or sensory nerve hearing loss. If tuning fork test is not conclusive then needs an audiogram.	Abrupt onset of severe debilitating vertigo with unsteadiness and nausea and vomiting. Should NOT have hearing loss, multi-directional non-fatiguing nystagmus (suggesting central cause), high fever, or mastoid tenderness Common in 4th and 5th decades. Affects men and women equally. Preceded often by an URTI.	Observing nystagmus during a provoked maneuver confirms BPPV in typical history. Hallpike's Positional Test – provoke vertigo with geotropic (towards the ground) torsional nystagmus which habituates on repeated tests (see below).	Migraine with or without aura is the most common cause of otherwise unexplained episodic vertigo lasting hours: - it may or may not be associated with headache - look for a family history and phonophobia or photophobia. Other causes: Labyrinthine fistula, cervical vertigo (cervical spine OA related), Autoimmune inner ear disease.

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