



# Foundations Frameworks

## Approach to the Vertigo

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### Step 1: Consider non-neurologic causes of ‘dizziness’

- Clinicians must have a broad differential when approaching the ‘dizzy’ patient. Are they dizzy because they are hypotensive or bradycardic? Are they dizzy from aspirin toxicity or another toxicologic etiology? What about infectious causes such as a UTI or encephalitis? Below is a list of common, non-neurologic etiologies of vertigo, but many more exist:

Cardiac	ACS, PE, hemodynamic shock, arrhythmia, orthostatic hypotension
Toxicologic/Metabolic	Hypoglycemia, CO poisoning, aspirin toxicity, illicit drugs/EtOH, medication effects
Infection	PNA, UTI, meningitis, encephalitis
Psych	Panic/anxiety disorder

- Clinicians must take a careful history and allow time for patients to describe their ‘dizziness’ in a detailed manner. It can be very difficult to describe a sensory symptom like vertigo and as such, patients’ descriptions tend to be unreliable. Maintain a high index of suspicion for non-neurologic causes of dizziness when appropriate.
- Avoid labeling all patients who have a ‘room spinning’ sensation as suffering from peripheral vertigo. While ‘disequilibrium’ or the ‘on a boat’ sensation are the classic symptoms of central etiologies, all types of vertigo could be induced by a central cause.

### Step 1b: Consider CT/CTA

- Beware of headache and neck pain -> could be a sign of ICH or dissection
- Dissections can easily be mistaken for migraines, dizziness is a common presenting symptom for vertebral dissections

### Step 2: Evaluate the timing and triggers of vertigo

- Evaluate the timing, triggers, evolution, and context of the patient’s vertigo to place them in one of the following groups:
  - Acute Vestibular Syndrome
    - PERSISTENT dizziness that is does not terminate and is ongoing
    - The differential diagnosis includes benign peripheral causes: vestibular neuritis and labyrinthitis (dizziness with tinnitus); and dangerous central causes: posterior circulation ischemic strokes
    - General Neurologic Exam:
      - Perform a detailed neurologic exam looking for CN abnormalities and assess for a patient’s ability to sit, stand, and walk
        - Patients who are unable to sit/stand/walk are typically not safe for discharge and have higher rates of central etiologies
    - Use the HINTS exam, in combination with a general neurologic exam, to help distinguish between these two groups

- HINTS Exam
  - *Head Impulse:*
    - ‘Abnormal’ test: corrective saccade present with head motion -> suggests a **peripheral cause** as the vestibular nerve is not working correctly
    - ‘Normal’ test: no corrective saccade present -> patient able to maintain focus with eyes on your nose, suggests a **central etiology** as vestibular nerve is working correctly (neurologic reflex pathway does not go through cerebellum)
  - *Nystagmus:* vertical, purely rotary, or multidirectional nystagmus is concerning for central etiology. Unidirectional nystagmus is consistent with peripheral disease
  - *Test of Skew:* vertical skew of eyes with alternative covering is concerning for central etiology. Focus on one eye as correcting movement of eye can be subtle (1-2 mm)
  - When correctly performed in appropriate populations, the HINTS exam can be more sensitive than initial MRI in diagnosing posterior stroke – 100% versus 88%, in one study
- Episodic Vestibular Syndrome (EVS)
  - Triggered EVS- Benign Etiologies
    - Benign Positional Paroxysmal Vertigo (BPPV)
      - BPPV causes a room spinning sensation, lasting < 1 min, triggered by head movement (not just exacerbated by head movement)
      - Dix-Hallpike and Supine Roll Test: perform to confirm suspected BPPV
        - Look for latent (~10 s) horizontal/rotational nystagmus, resolves after 30-45 seconds
        - Patients with central etiology will also feel worse with Dix-Hallpike/Supine Roll, make sure symptoms are triggered, not just exacerbated by test
        - Don’t perform in patients with ongoing vertigo/nystagmus or a time course not consistent with BPPV
  - Triggered EVS- Dangerous Etiologies
    - Consider evaluation for posterior pathology (with MRI) if patient has headache, diplopia, dysarthria, dysphagia, CN deficits, vertical/multidirectional nystagmus, or nystagmus without sensation of vertigo
  - Spontaneous EVS
    - Recurrent, spontaneous episodic spells of dizziness lasting seconds to days
    - Benign Etiology: vestibular migraines (HA often absent), Meniere disease
    - Dangerous Etiology: posterior circulation TIA
      - Dizziness is the most common symptom of vestibulobasilar insufficiency and occurs without other neurologic deficits 20% of the time

### Step 3: Obtain MRI if concerned for posterior pathology

- AVS: MRI if HINTS positive, neurologic deficit present, or unable to sit/stand/walk
- EVS: MRI if neurologic deficit present, or unable to sit/stand/walk
- AVS & EVS: for patients with significant stroke risk factors, consider obtaining MRI

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