

# Challenging Cases in Dizziness

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# ILOs

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1

Describe the approach to evaluate vertigo

2

Describe the steps of a complete cerebellar exam

3

Differentiate trigger vs exacerbating factors in vertigo

4

Explain the HINTS and the controversy



# Dizzy #1

- 56F DM, HTN, migraines, hospital chaplain, p/w HA, n/v, vertigo in setting of putting her head down to wash her feet.
  - Had difficult family meeting late at night
  - 1am started having HA
  - Walked to the ED at 7am
- PE: L horizontal nystagmus (resident), trouble ambulating (attending)

# Dizzy #2

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65M PMHx HTN, T2DM, HL, bilateral hip replacement. p/w dizziness after teaching zoom class. Felt dizzy when standing up. Denies room spinning. Lasted several hours and now is improved. No weakness, no trouble talking, no HA, no vision changes

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PE: 5/5 strength UE and LE, normal FTN, HTS. Some difficulty with tandem per patient some difficulty at baseline with hip replacements.



## Dizzy #3

- 27F with Wilms tumor, DUB, 5d of heavy periods, feeling fatigued, lightheaded feels like "passing out" (denies vertigo), n/v, intermittent HAx3d, passed out once, went to work but felt worse at 1:30pm, walked to ED
- PE: 100/80, 112, bilateral dysmetria, mild dysarthria





## Dizzy #4

- 30sM PMHx, recent dental procedure, BIBS w/ 3 weeks intermittent L HA, today woke up w/ balance issues and difficulty speaking for 15 min. Resolved upon presentation
- PE: normal neuro exam, normal FTN, normal HTS, normal tandem gait
- Labs WNL
- NCHCT WNL



## Dizzy #5

76M HTN, HL, MI in 2016, vertigo/dysequilibrium x24 hrs, after falling and hitting head in bathtub the day before. Today feels worse.

PE: ambulates while holding the bed, otherwise FTN, HTS normal.



Which one(s) were  
CVA?





# Dizziness

3-5% ED CC (3)





# Dizziness

3-5% ED CC (3)

4% are strokes (4)



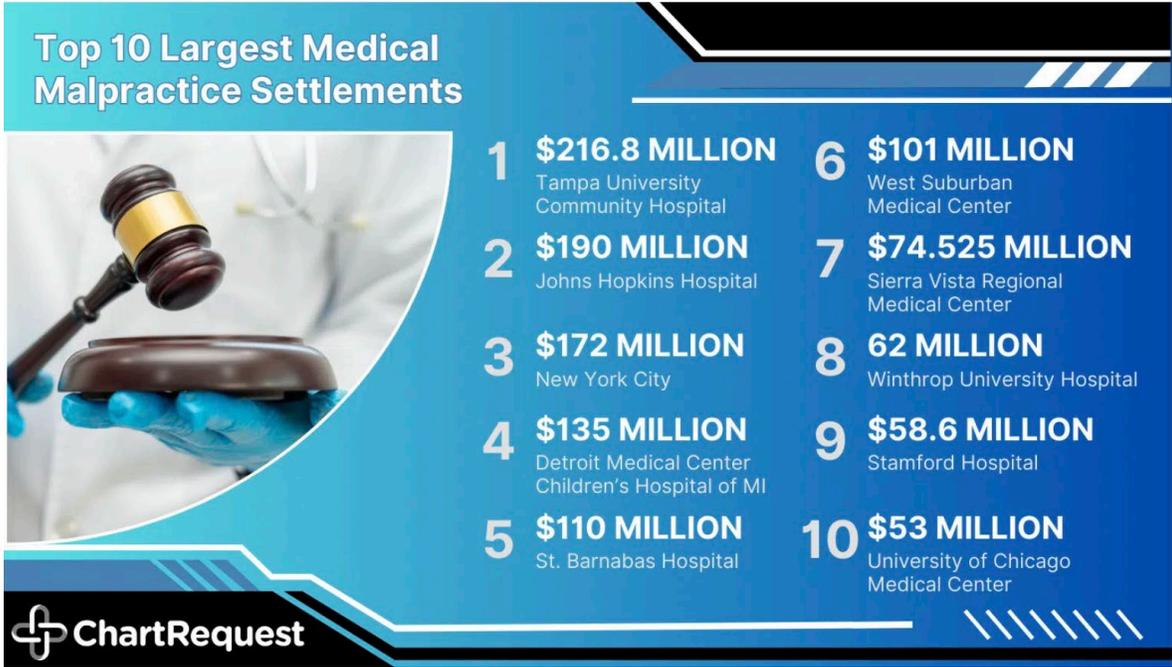
# Dizziness

3-5% ED CC (3)

4% are strokes (4)

40% misdiagnosed (6)





The New York Times

## *E.R. Doctors Misdiagnose Patients With Unusual Symptoms*

Doctors fail to recognize serious conditions like stroke and sepsis in tens of thousands of patients each year, according to a new study.

Dizziness malpractice cases: 29% found negligence





# Dizziness

3-5% ED CC (3)

4% are strokes (4)

40% misdiagnosed (6)

Posterior Circulation

50% CT





# Overtesting or WRONG testing

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- DC'ed w/ Dx of B9 Dizziness
  - If CT -> 2x more likely to return w/ stroke w/in 30d
  - Correctly in Identifying
    - BUT WRONG TEST!





# Dizziness

3-5% ED CC (3)

4% are strokes (4)

40% misdiagnosed (6)

Posterior Circulation

>50% CT, 3-23% MRI (7), 15-20% MISS rate





# Dizziness

3-5% ED CC (3)

4% are strokes (4)

40% misdiagnosed (6)

Posterior Circulation

50x increased risk of stroke hospitalization  
in 7 days (5)

# Cerebellar Exam- DANISH



Dysdiadochokinesia: Rapid Alternating Movements of hands/feet

Ataxia- check tandem gait

- Truncal- vermis or flocculonodular lobe/midline lesion

Nystagmus towards lesion (fast phase)

Intention tremor/dysmetria on FTN

- ELBOWS UP!
- ALiEM Michelle Lin: <https://www.aliem.com/trick-of-trade-improve-cerebellar-exam/>

Speech: scanning/staccato

- *Baby hippopotamus*

Hypotonia/?HINTs?

Rebound phenomenon

Romberg?

Ocular Lateral Deviation (OLD) or Bucket Test?

# Algorithms...

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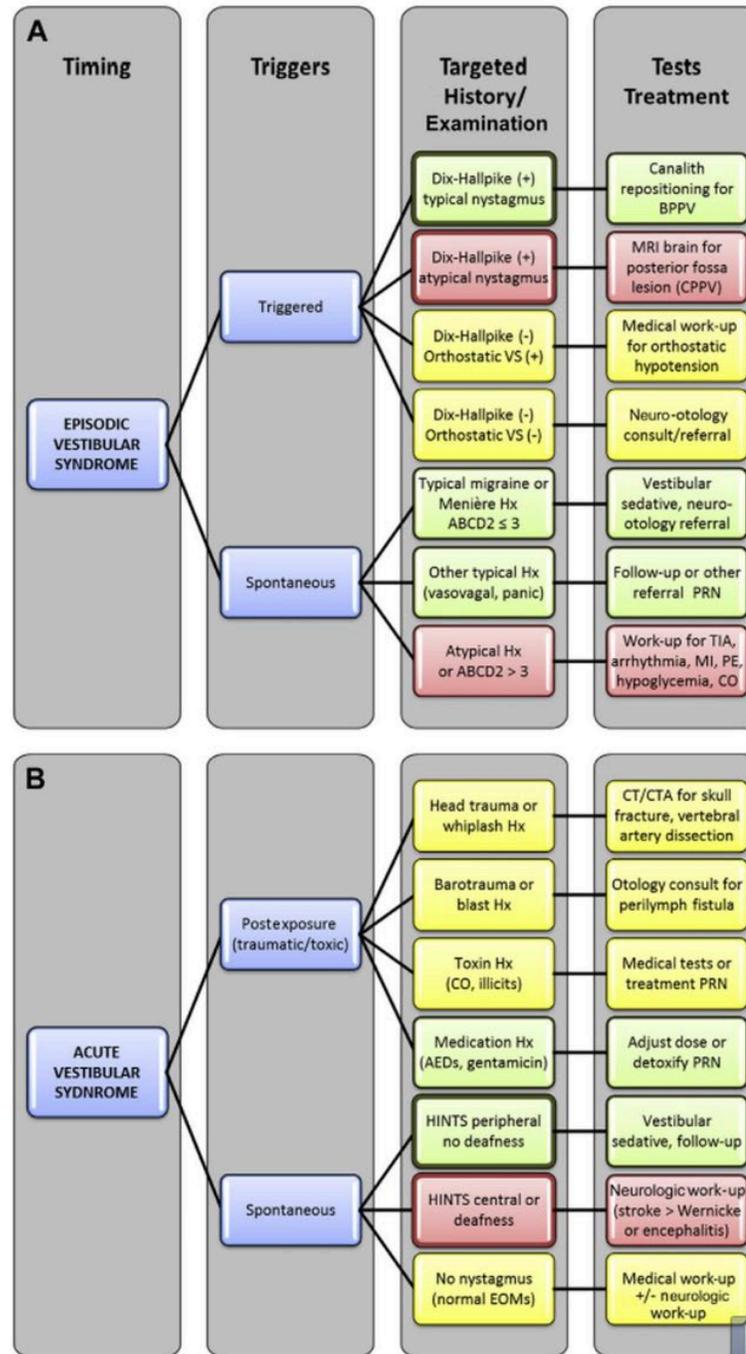
- TITRATE
  - Timing, TRiggers, And Targeted Exams
- ATTEST
  - A, associated symptoms; TT, timing and triggers; ES, examination signs; and T, additional testing as needed
- STANDING
  - SponTaneous Nystagmus, Direction, head Impulse test, standiNG
- HINTs



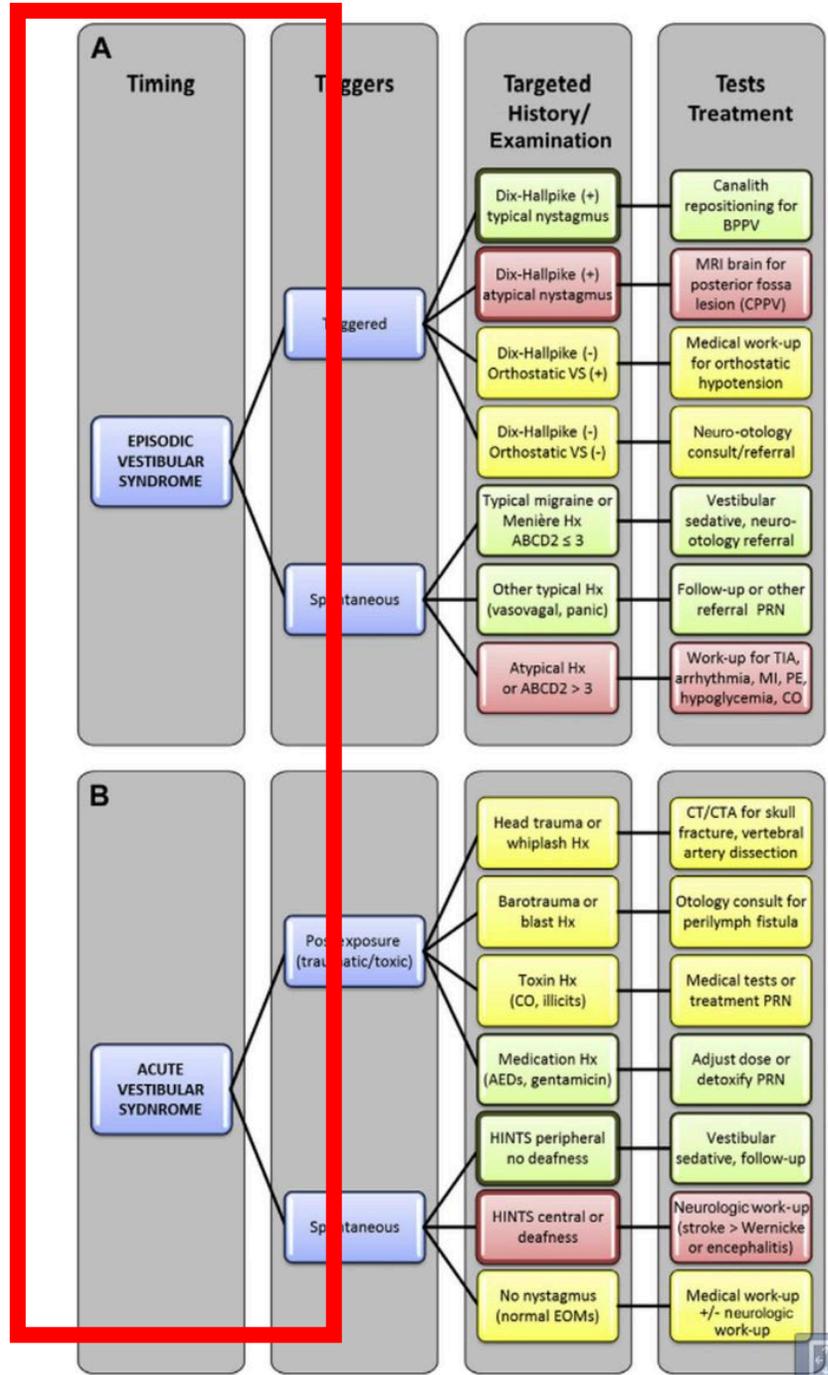
# Types of Vestibular Syndrome

- Episodic VS
  - Transient, triggered or spontaneous
  - Seconds->hours->?days
- Acute VS
  - Continuous
  - Days->weeks
- Differentiate trigger vs exacerbating factors

# TITRATE



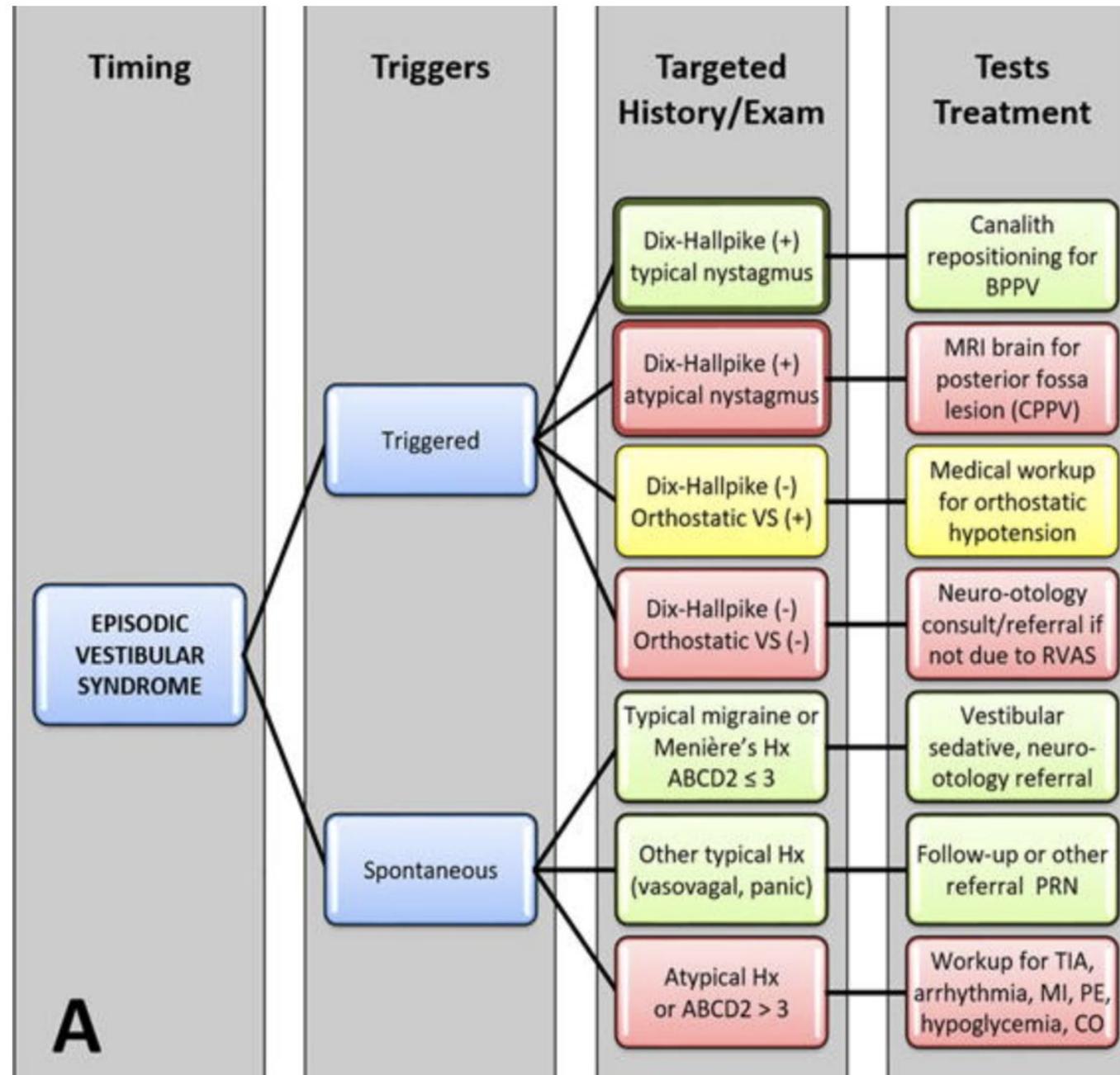
# TITRATE



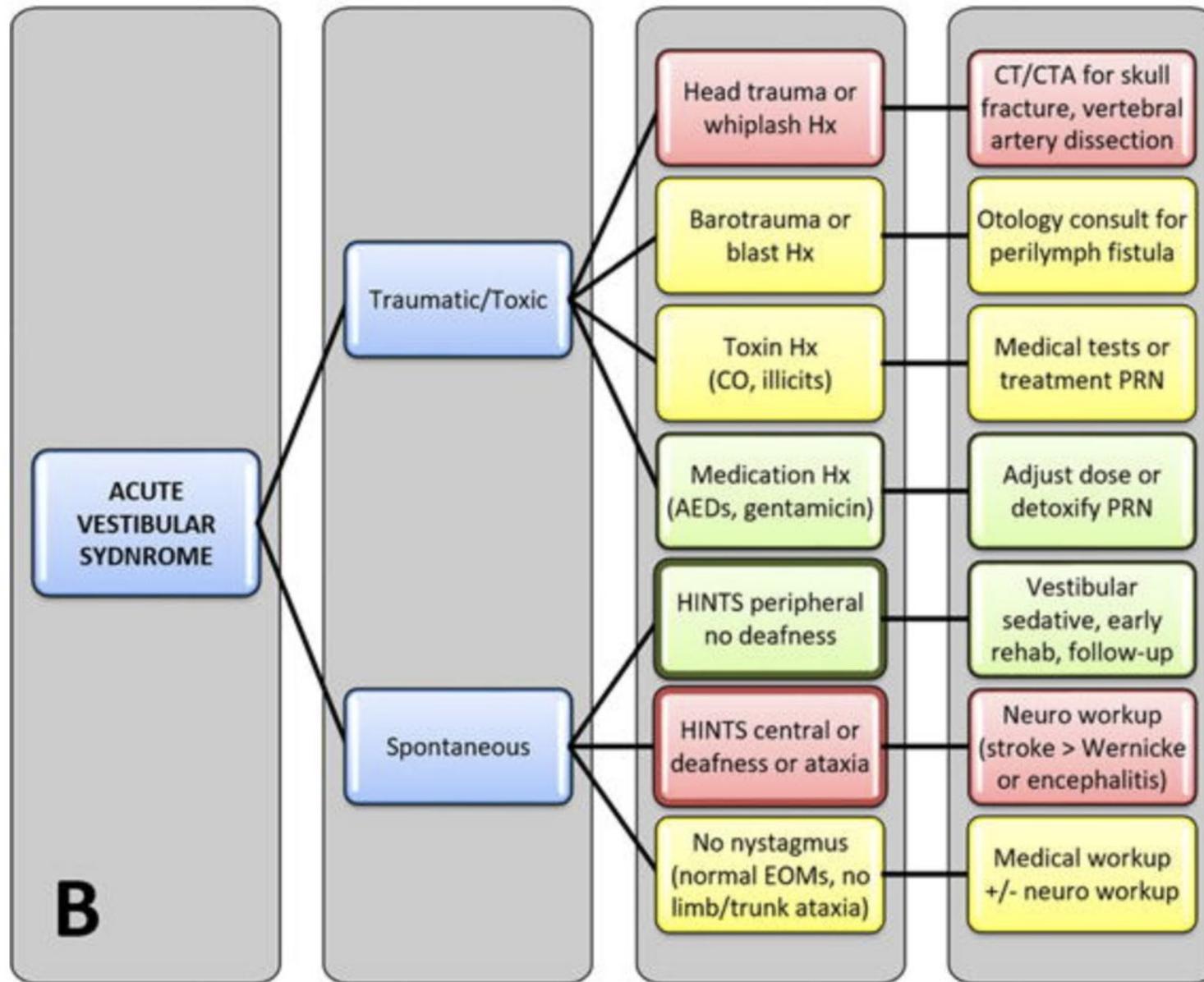
EPISODIC  
VESTIBULAR  
SYNDROME

**B**

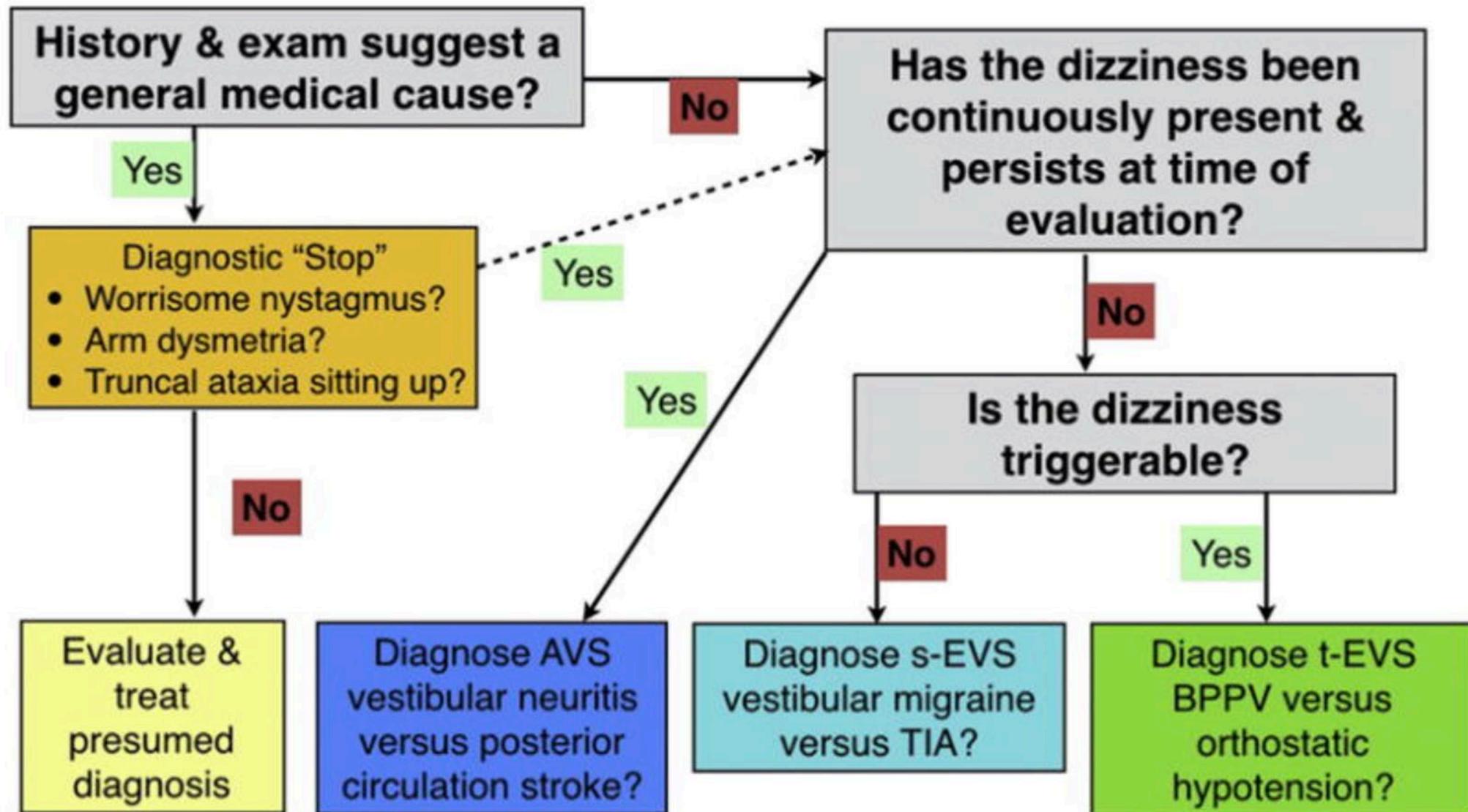
ACUTE  
VESTIBULAR  
SYNDROME



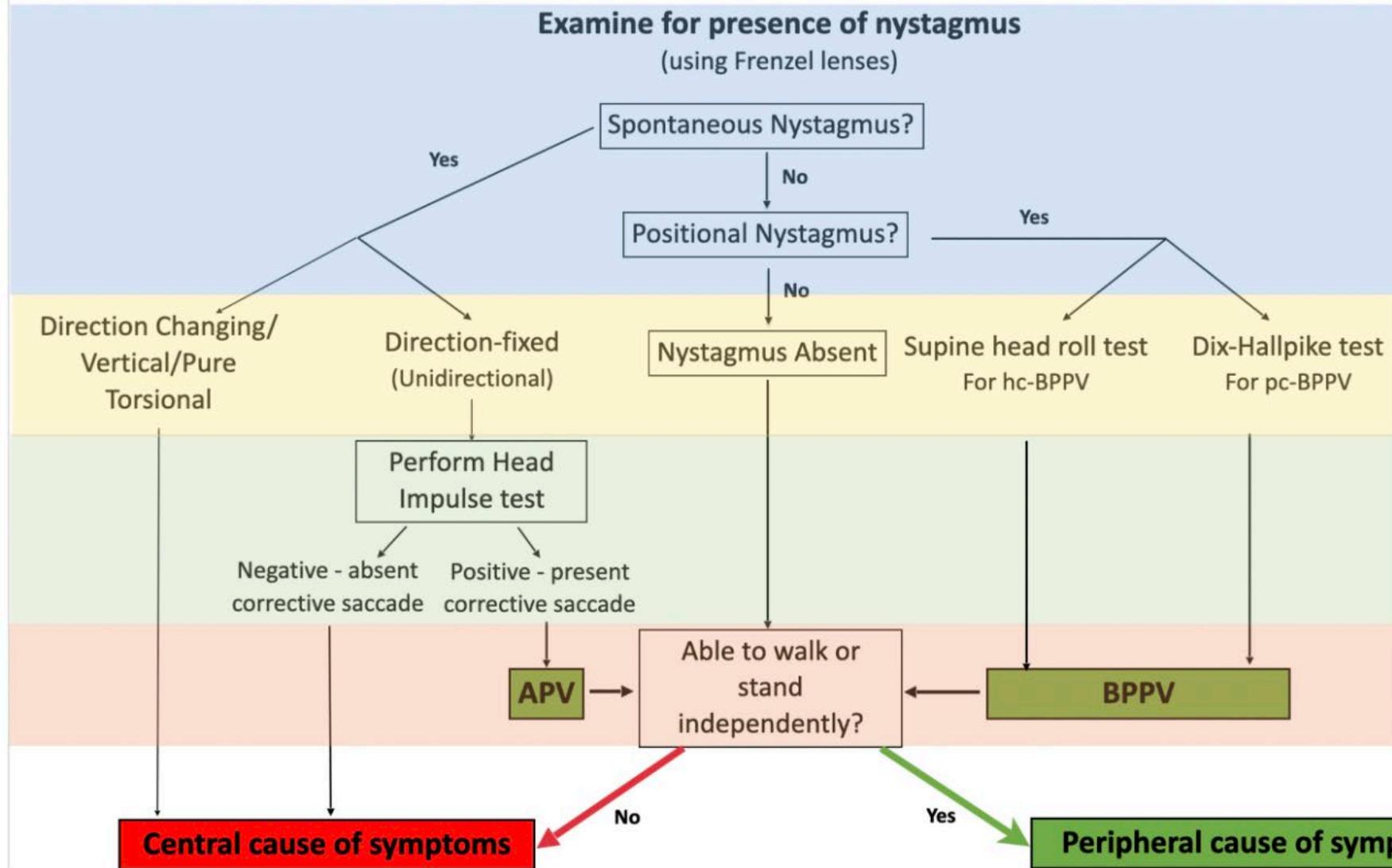
**A**



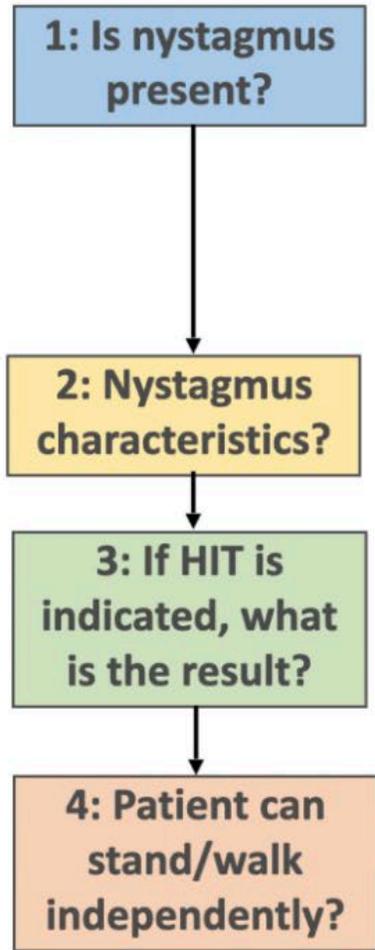
# ATTEST: Diagnostic Approach to the Acutely Dizzy Patient



# STANDING algorithm for patients with dizziness, vertigo, or instability



## Sequential Steps



**FIGURE 6** STANDING Algorithm. APV, acute peripheral vestibulopathy (usually vestibular neuritis); BPPV, benign paroxysmal positional vertigo; hc-BPPV, horizontal canal BPPV; HIT, head impulse test; pc-BPPV, posterior canal BPPV. Figure 6 is adapted from Vanni et al.<sup>3,149</sup>

# Educating clinicians in diagnosing dizziness

with a mobile phone application

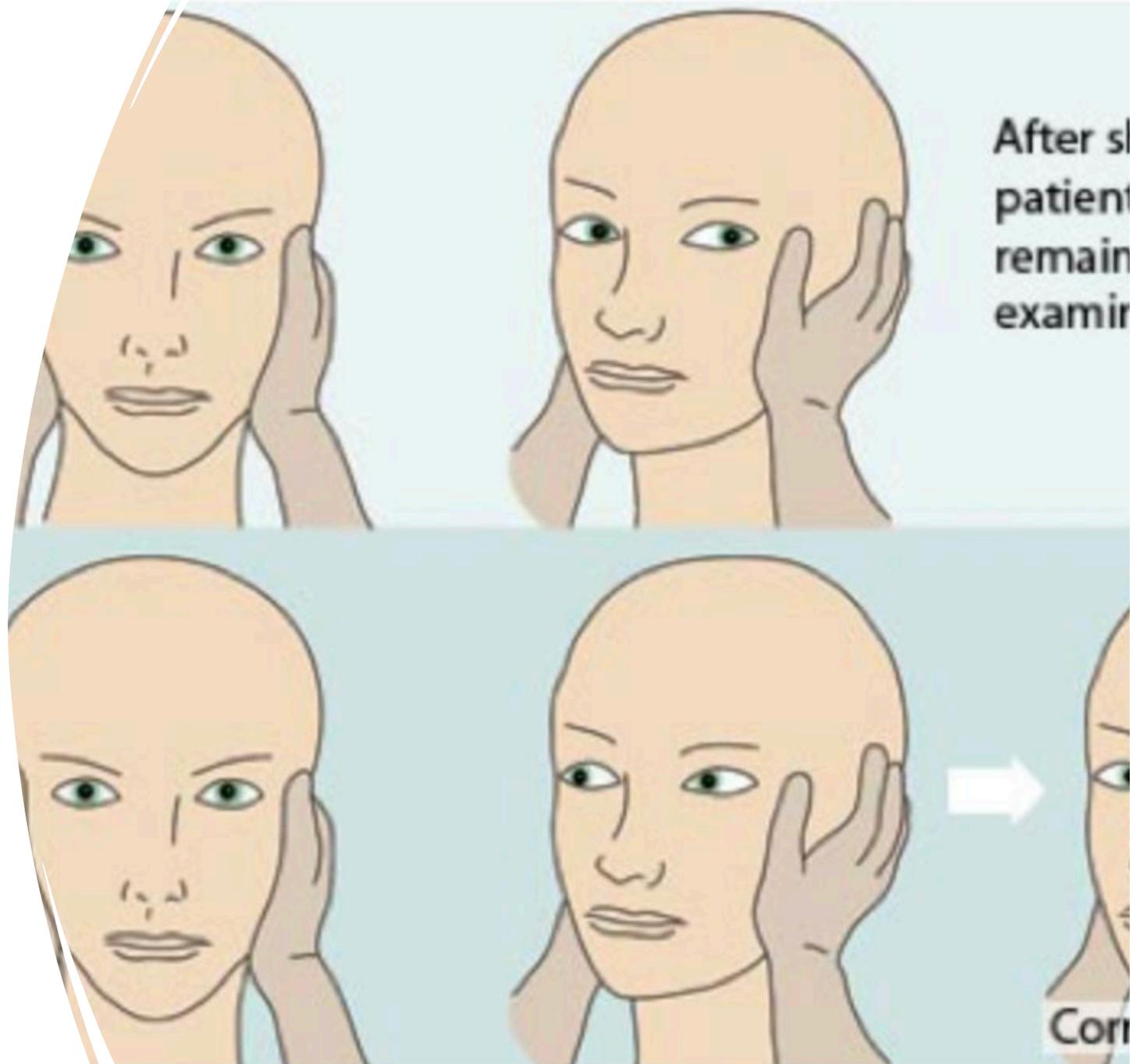


This app was intended as educational only for trained medical providers. This is not intended as medical advice.

# HINTS—Head Impulse, Nystagmus Type, Skew deviation

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- Must be currently DIZZY
- MUST HAVE SPONTANEOUS NYSTAGMUS
  - Either at rest or with eye movement (NO HEAD MOVEMENT)
- <https://www.youtube.com/watch?v=1q-VTKPweuk>
  - Great 8 min video



# HIT

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- Positive HIT (+catch up saccade, i.e move head towards effected ear w vestibular neuritis will have +saccade)
- Negative HIT- no saccade= BAD/Central
- <https://www.youtube.com/watch?v=Wh2ojfgbC3I>



# Test of Skew

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- Positive Test of Skew (rare)
  - Upward/diagonal
- <https://www.youtube.com/watch?v=zgqCXef-qPs>





# HINTS

	<b>Peripheral Vertigo</b>	<b>Central Vertigo</b>
<b>Head Impulse Test</b>	Abnormal; corrective saccade to midline with rotation of head	Normal; no corrective saccade
<b>Nystagmus</b>	Unidirectional; horizontal	Horizontal & direction-changing; vertical; torsional
<b>Test of Skew</b>	No skew deviation	Skew deviation present

# Hints on HINTS



Don't do HINTS if not dizzy/nystagmus

Normal patient/BPPV will have an exam c/w central process



Speed matters w/HIT. Use iPhone SLO-MO



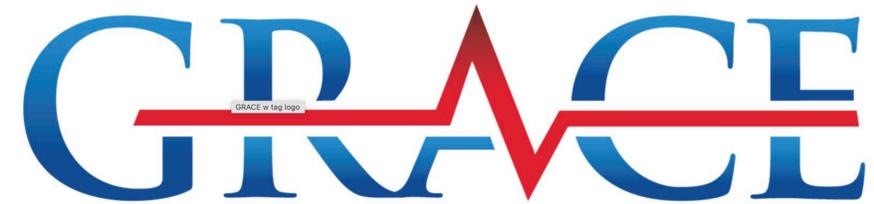
You want ABnormal HIT (nerve problem)



If any of the HINTs is concerning you need to image (MRI)

# HINTS Controversy

- EM vs neuro-optho
  - EM misapply 97% (1, 2021)
  - Better than MRI in first 24hrs (2)
- GRACE3 recommendations on HINTS (2023)
  - Chris Carpenter, Jonathan Edlow (3),
  - Future facing
  - Data based on 6-12 hours of specialized training
- SAEM26 5/21 8amEST Edlow and Madhok
- Future HREM27???



**Guidelines for Reasonable and Appropriate Care  
in the Emergency Department**



# Summary

- Do the DANISH
- Try an algorithm...
- HINTs: must have nystagmus!
- Dizzy + ->image, image, image
- Any of the 6 D's:
  - Dysarthria
  - Dysmetria
  - Dysphagia
  - Diplopia
  - Dysphonia
  - Difficulty ambulating
- Look for future HINTS trainings
  - I am NOT an expert!

