Approach to Dizziness in Primary Care

Objectives

The objectives of this lecture are to discuss the following:

- Definition of dizziness and vertigo
- Describe a systematic approach in history taking and PE in a dizzy patient
- Classify patients with dizziness using the TiTrATE approach
- Differential diagnosis in patients presenting with dizziness
- Management in primary care setting

Dizziness and Vertigo

Dizziness

- Common and challenging symptom often encountered by family physicians
  - Half of these are due to vertigo
- Lifetime prevalence: 17 - 30%
- Complex term difficult to define
  - Can include a wide array of medical disorders
  - Important to use a stepwise approach to differentiate between causes

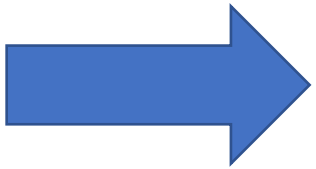
Murdin L, Schilder AG. Epidemiology of balance symptoms and disorders in the community: a systematic review. *Otol Neurotol*. 2015;36(3):387-392.
Wipperman J. Dizziness and vertigo. *Prim Care*. 2014;41(1):115-131.

Approach to patient with dizziness

TRADITIONAL

- Four categories based on symptom quality / 'type'
  - **Vertigo** (spinning sensation/disruption in the vestibular pathway)
  - **Pre-syncope** ** (sensation of feeling faint/transient reduction in cerebral perfusion)
  - **Disequilibrium** (feeling of imbalance)
  - **Light-headedness**** (sensation of giddiness)

**Current approaches do not include / use these



NEW

- Timing and Triggers
  - New approach: TiTrATE
  - **Ti**ming of the symptom
    - Onset
    - Duration
    - Evolution of dizziness
  - **Tr**iggers that provoke the symptom
    - Actions
    - Movements
    - Situations
  - **A**nd a **T**argeted **E**xamination

Muncie HL et. al. Dizziness: Approach to Evaluation and Management. *Am Fam Physician.* 2017 Feb 1;95(3):154-162.
Newman-Toker DE, Edlow JA. TiTrATE: A Novel, Evidence-Based Approach to Diagnosing Acute Dizziness and Vertigo. *Neurol Clin*. 2015;33(3):577-viii.

Vertigo

- Common and distressing presentation in general practice
- Constitutes approximately 54% of cases of dizziness
- Lifetime prevalence: 3 – 10%

- Presents as a sensation of movement of the environment around the patient.
- Often described as ‘spinning’ sensation of either their body or their surroundings

Dommaraju S, Perera E. An approach to vertigo in general practice. *Aust Fam Physician*. 2016;45(4):190-194.
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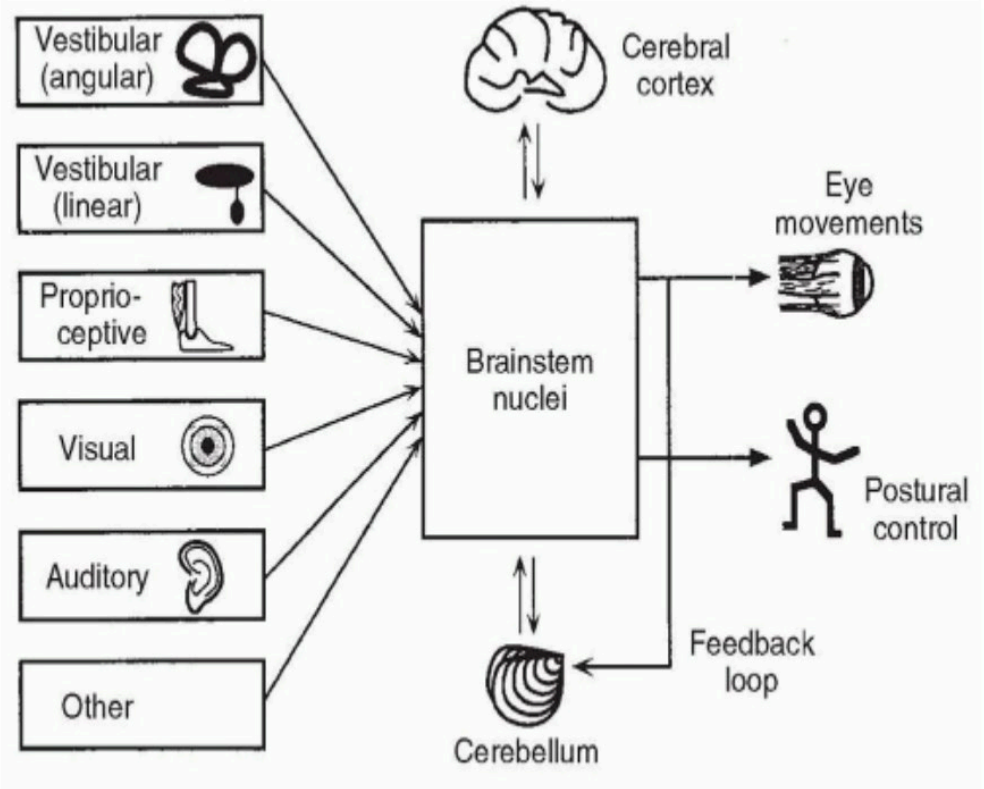
Physiology of Dizziness / Vertigo



- Postural stability involves integration of visual, proprioceptive, somatosensory and vestibular signals
- Any discrepancy of the senses, slow or inaccurate central integration, or abnormal motor function may lead to mismatch in input causing dizziness/imbalance

Hughes GB, Pensak ML, eds. *Clinical otology*, 2nd ed. New York: Thieme Medical Publishers, 1997:44.
A delicate balance: Managing vertigo in general practice. Best Practice Journal 2012;46(Sep):30–37.

Common Causes of Dizziness

PERIPHERAL	CENTRAL	OTHERS
• Benign paroxysmal positional vertigo • Vestibular neuritis • Meniere disease • Otosclerosis • Acoustic Neuroma • Ramsay Hunt Syndrome (Herpes zoster oticus)	• Vestibular migraine • Cerebrovascular disease • Cerebellopontine angle and posterior fossa meningiomas • Multiple Sclerosis	• Psychiatric • Medication induced • Cardiovascular / metabolic • Orthostatic

Muncie HL et. al. Dizziness: Approach to Evaluation and Management. *Am Fam Physician*. 2017 Feb 1;95(3):154-162.

History

Ask the patient regarding the character of dizziness / vertigo

- Describe the sensory disturbances
- Timing (duration, episodic vs continuous)
- Triggers (change in position, trauma, coughing, weight lifting, bowel movement)
- Associated symptoms
  - Hearing loss, tinnitus
  - Headache, photophobia
  - Eye pain / rednesss
  - Other concurrent or prior neurologic symptoms

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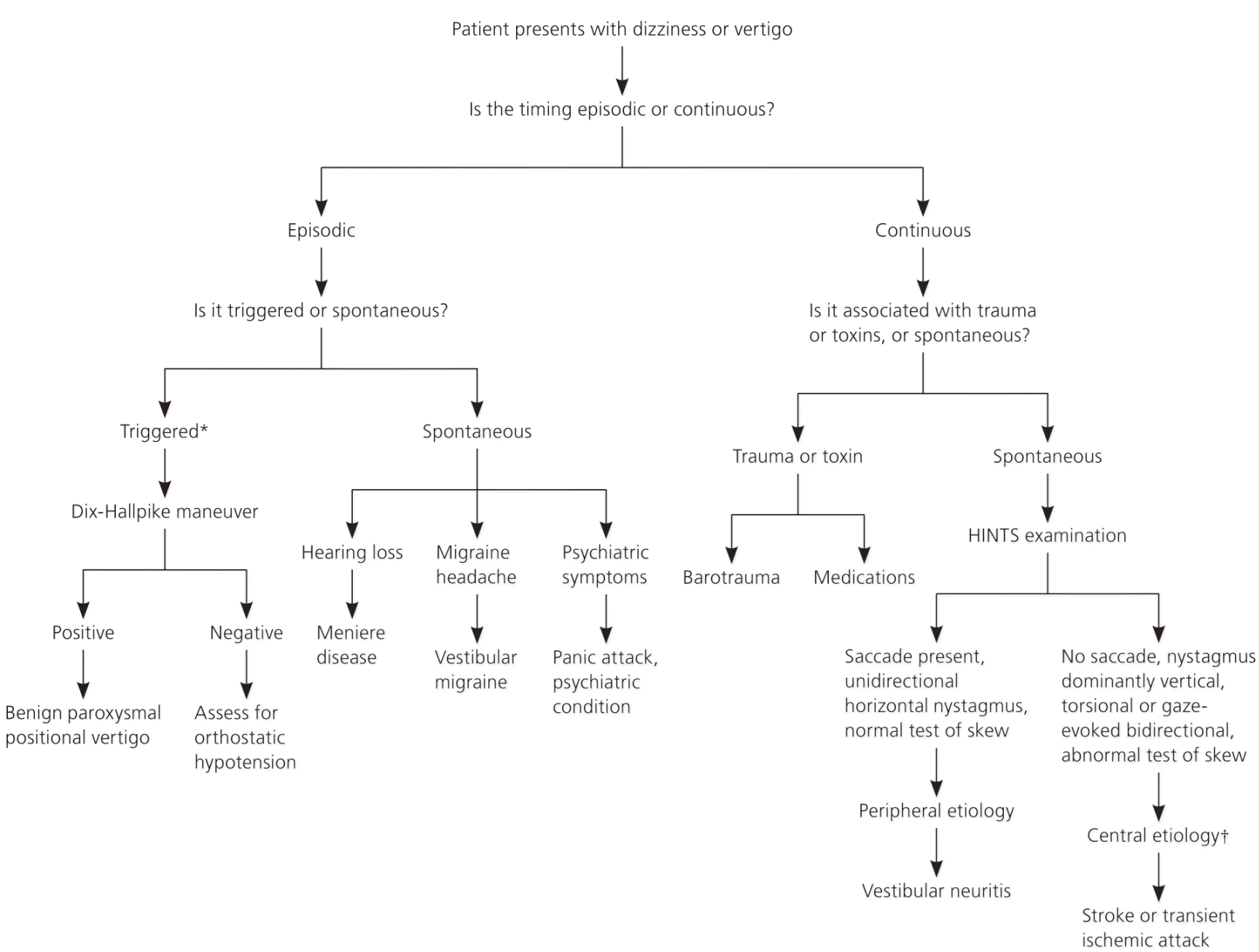
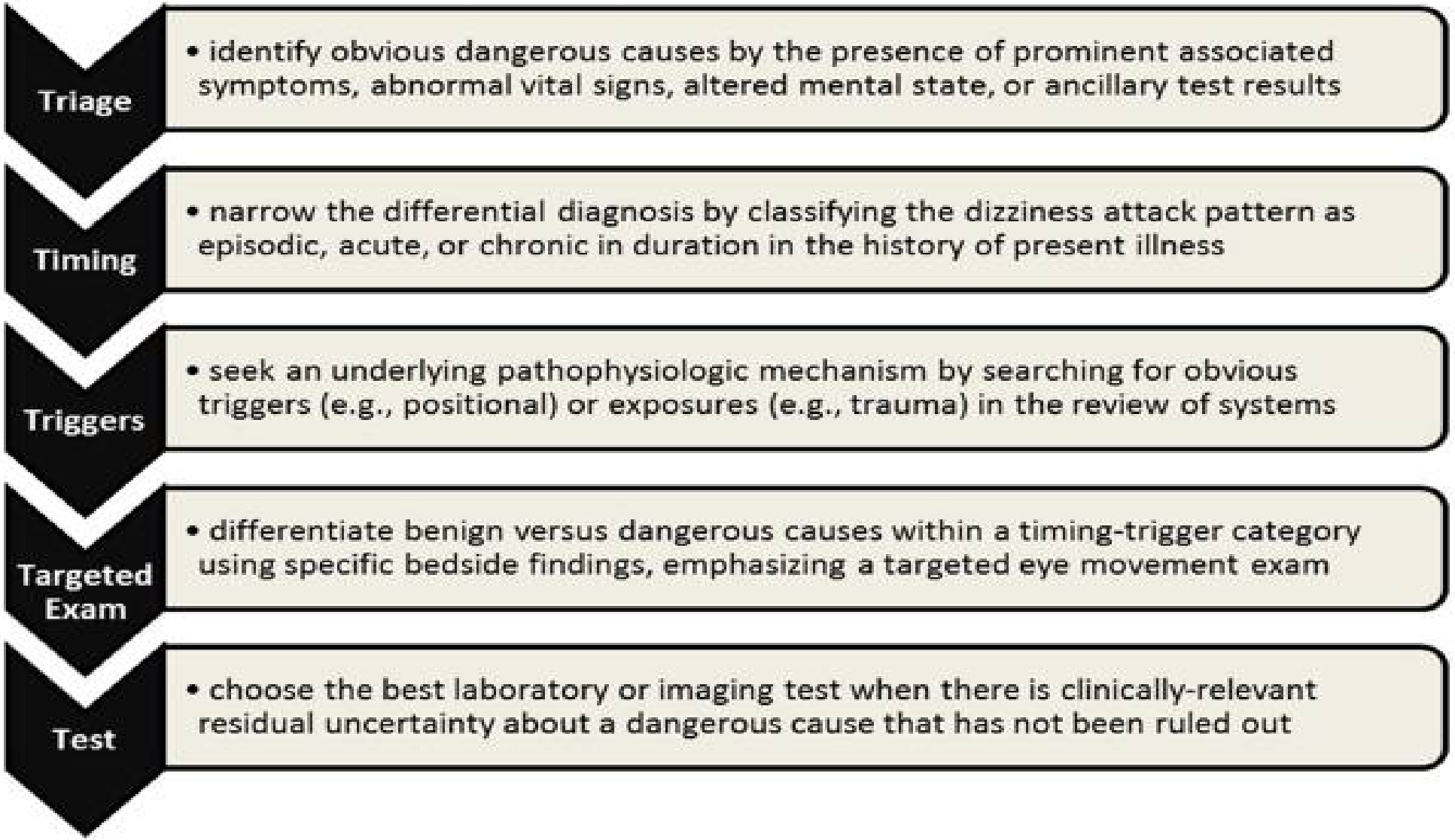
Wu V, Beyea MM, Simpson MT, Beyea JA. Standardizing your approach to dizziness and vertigo. *J Fam Pract*. 2018;67(8):490-498.



*—*Exacerbation of symptoms with movement does not aid in determining whether the etiology is peripheral vs. central.*

†—*Central causes can also occur with patterns triggered by movement.*

Triage – TITRATE – Test



Common causes of dizziness timing & triggers

Table 9. Common Causes of Acute Dizziness: Differential Diagnosis by Timing and Triggers Category.

Acute Vestibular Syndrome[a]	Triggered Episodic Vestibular Syndrome[b]	Spontaneous Episodic Vestibular Syndrome[c]	Chronic Vestibular Syndrome[d]
Vestibular neuritis	Benign paroxysmal positional vertigo	Vestibular migraine	Anxiety or panic disorder
Labyrinthitis	Postural hypotension	Ménière's disease	Medication side effects
Posterior circulation stroke	Perilymph fistula	Posterior circulation transient ischemic attack	Posttraumatic vertigo
Demyelinating diseases	Superior canal dehiscence syndrome	Medication side effects	Posterior fossa mass lesions
Posttraumatic vertigo	Vertebrobasilar insufficiency	Anxiety or panic disorder	Cervicogenic vertigo (variable)
	Central paroxysmal positional vertigo		

[a]Acute vestibular syndrome: acute persistent continuous dizziness lasting days to weeks and usually associated with nausea, vomiting, and intolerance to head motion.
[b]Triggered episodic vestibular syndrome: episodic dizziness triggered by specific and obligate actions, usually a change in head or body position. Episodes generally last <1 minute.
[c]Spontaneous episodic vestibular syndrome: episodic dizziness that is *not* triggered and that can last minutes to hours.
[d]Chronic vestibular syndrome: dizziness lasting weeks to months or longer.

Bhattacharyya N, Gubbels SP, Schwartz SR, et al. Clinical Practice Guideline: Benign Paroxysmal Positional Vertigo (Update). *Otolaryngol Head Neck Surg*. 2017;156(3_suppl):S1-S47.

History

OTHER RISK FACTORS / PAST MEDICAL HISTORY

- Vascular diseases
- Smoking
- Diabetes
- Obesity
- Hypertension
- Hypercholesterolemia
- Recent respiratory tract infection
- Stress
- Trauma
- Anxiety / panic attacks
- Exposure to loud noises
- Medications
- Head injury

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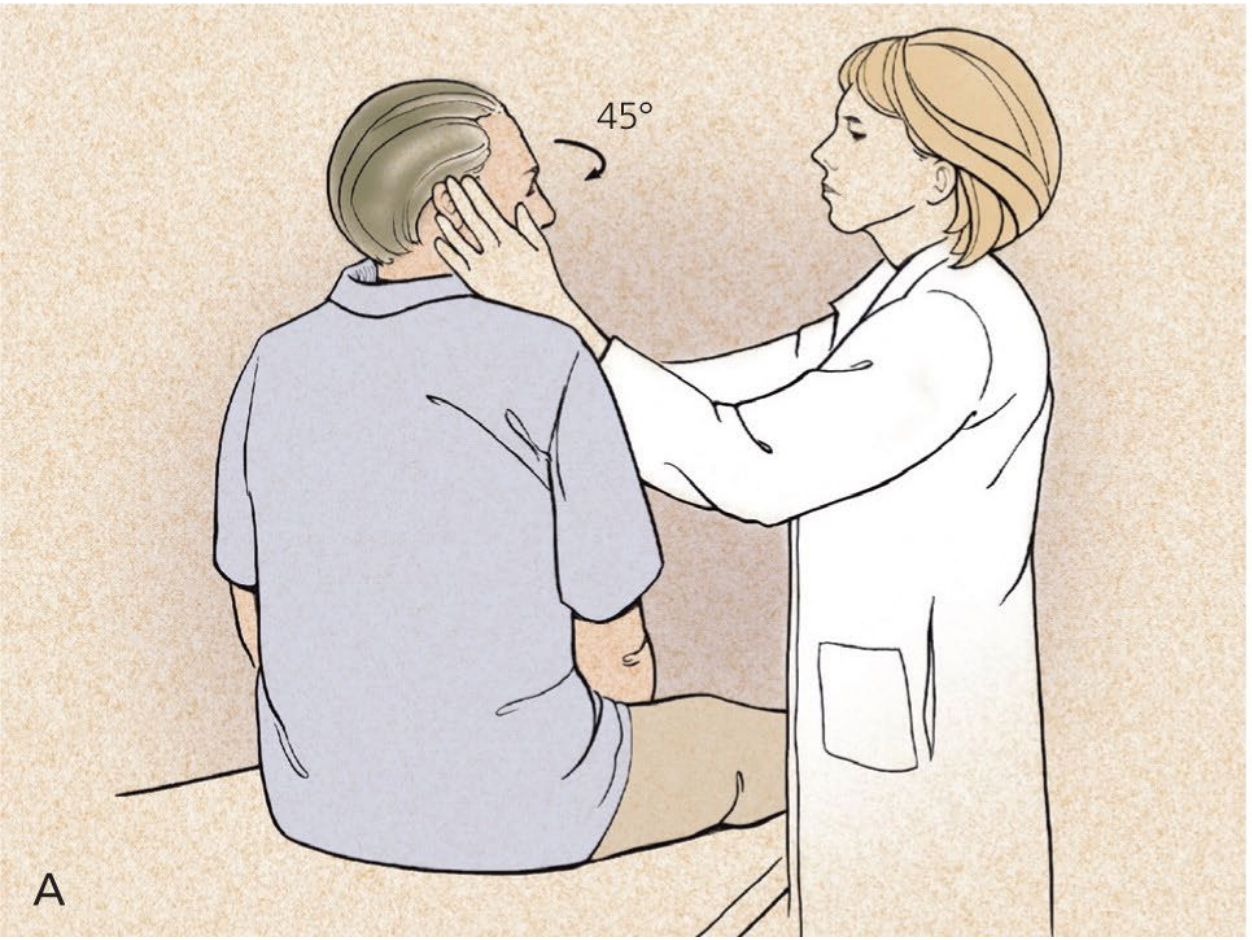
Wu V, Beyea MM, Simpson MT, Beyea JA. Standardizing your approach to dizziness and vertigo. *J Fam Pract*. 2018;67(8):490-498.

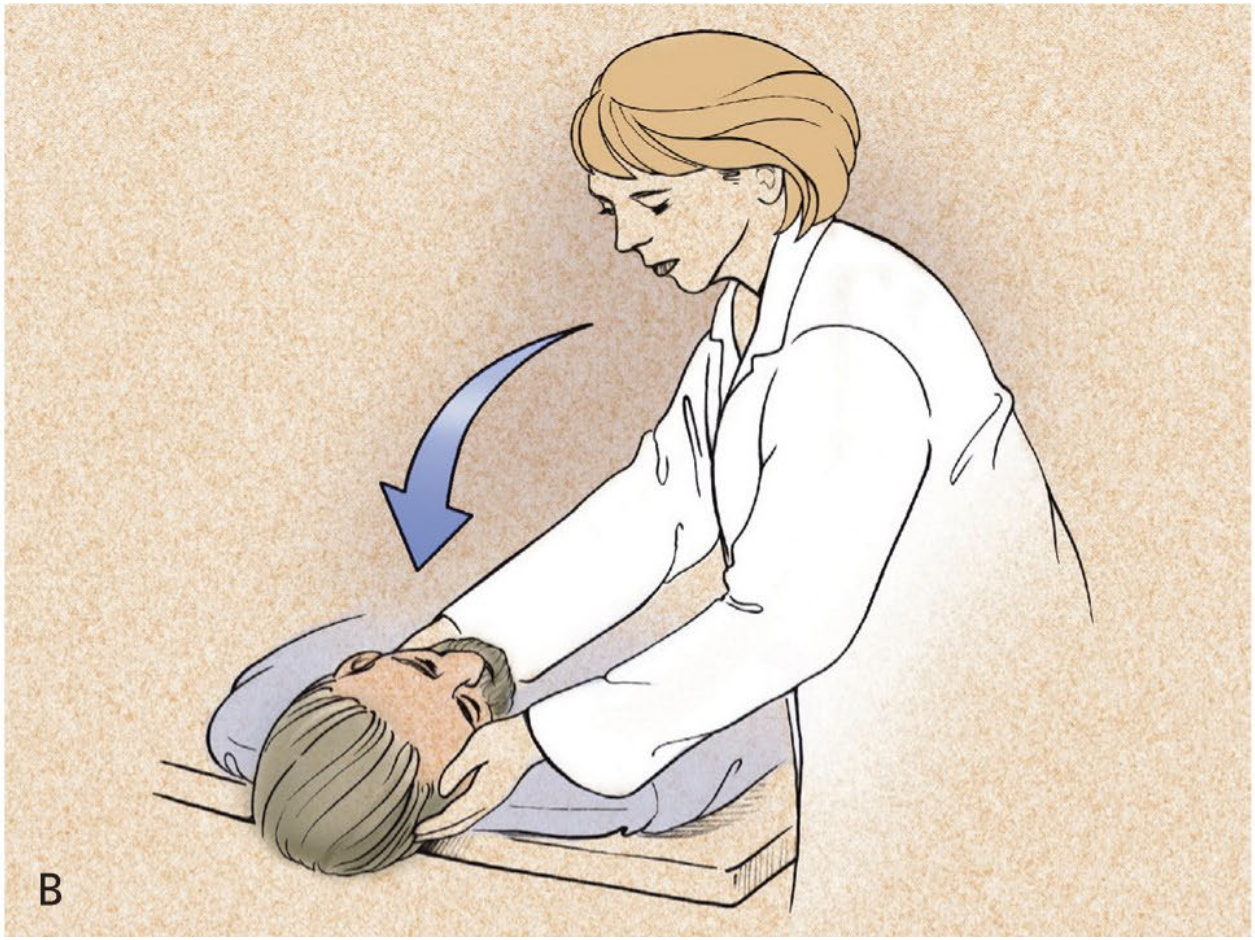
Physical Examination

- HEENT
  - Ear examination: otoscopy and hearing assessment
  - Eye examination: nystagmus and papilledema
- Cardiovascular
  - Pulse, heart rate, rhythm, blood pressure (orthostatic blood pressure testing), carotid bruits
- Neurologic
  - Gait and balance assessment (Romberg's sign and heel-toe test)
  - Cerebellars
- Specialized tests
  - HINTS (head-impulse, nystagmus, test of skew) examination
  - Dix-Hallpike – gold standard for the diagnosis of posterior canal BPPV

Dommaraju S, Perera E. An approach to vertigo in general practice. *Aust Fam Physician*. 2016;45(4):190-194.
Philippine Society of Otolaryngology Head and Neck Surgery. Clinical Practice Guidelines Vertigo in Adults. 2011.

Dix-Hallpike





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Swartz R, Longwell P. Treatment of vertigo. Am Fam Physician . *2005;71(6):1117.*

HINTS EXAMINATION

Head Impuse test - Nystagmus - Test of Skew

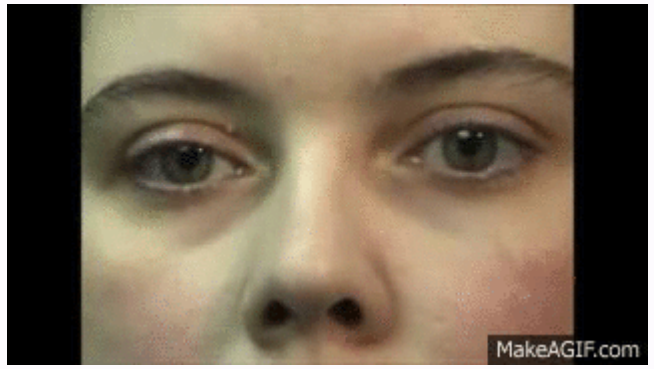
HEAD IMPULSE TEST

Peripheral Vertigo	Central Vertigo
Loss of Eye Fixation with Head Impulse;	Intact Vestibulo-ocular reflex
Positive or Abnormal	Negative or Normal

Approach to Vertigo by Eric Strong; 2019
https://www.youtube.com/watch?v=28CZLdjIAlc

https://youtu.be/JD75Ulas9Y8?feature=shared

NYSTAGMUS



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Peripheral Vertigo	Central Vertigo
None Horizontal Unidirectional	Vertical Rotatory of Horizontal Bidirectional

Approach to Vertigo by Eric Strong; 2019
https://www.youtube.com/watch?v=28CZLdjIA

TEST OF SKEW

Test of Skew

https://youtu.be/KGR6VKRrfGI?feature=shared

Peripheral Vertigo	Central Vertigo
No Skew; Negative	Skew; Positive

Approach to Vertigo by Eric Strong; 2019
https://www.youtube.com/watch?v=28CZLdjIA

HINTS (head-impulse, nystagmus, test of skew) examination

HINTS exam component	Peripheral Vertigo	Central vertigo
Head Impulse Test (HIT)	Loss of eye fixation with head impulse; "positive" or "abnormal"	Intact vestibulo-ocular reflex; "negative" or "normal"
Nystagmus (N)	None or horizontal unidirectional	Vertical, rotatory, or horizontal bidirectional
Test of Skew (TS)	No skew; "negative"	Skew; "positive"

Quimby, A.E., Kwok, E.S., Lelli, D., Johns, P., & Tse, D. (2018). Usage of the HINTS exam and neuroimaging in the assessment of peripheral vertigo in the emergency department. *Journal of Otolaryngology - Head & Neck Surgery, 47*.

Laboratory Testing and Imaging

- Most patients do not require laboratory testing.
- Chronic diseases – may check for electrolyte and blood glucose measurements
- Cardiac diseases – electrocardiography, Holter monitoring, carotid Doppler testing

- Routine imaging is not indicated.
- Presence of abnormal neurologic finding - computed tomography or magnetic resonance imaging

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Peripheral vs Central Vertigo

Feature	Peripheral	Central
Nystagmus	Horizontal and torsional Inhibited by fixation Does not change with gaze	Purely vertical or horizontal or torsional Not inhibited by fixation Direction changing with gaze
Latency after provocation	Longer (>15 sec)	Short
Fatigability	Yes	No
Duration	Variable	Long
Onset	Tends to be acute	Less defined
Otologic symptoms	Hearing loss or tinnitus common	Uncommon
Neurologic symptoms	No	Yes
Loss of consciousness	No	Possible

Bennett M, 2008

Common Differential Diagnoses of Vertigo

Differential diagnosis	Onset and duration	Provoking factors	Special features	Physical exam findings
Labyrinthitis	Few seconds to minutes	Change in the head position	Tinnitus	Hearing loss present
Vestibular neuronitis	Seconds to minutes	Recent upper respiratory tract infection	Imbalance, while nystagmus is horizontal or rotational, the direction of the fast component is away from the side of the lesion	Absence of hearing loss
Benign paroxysmal positional vertigo	Seconds	Change in the head position	Positional	Positive Dix–Hallpike
Ménière's disease	Hours	Spontaneous	Hearing loss and tinnitus	Hearing assessment for sensorineural hearing loss

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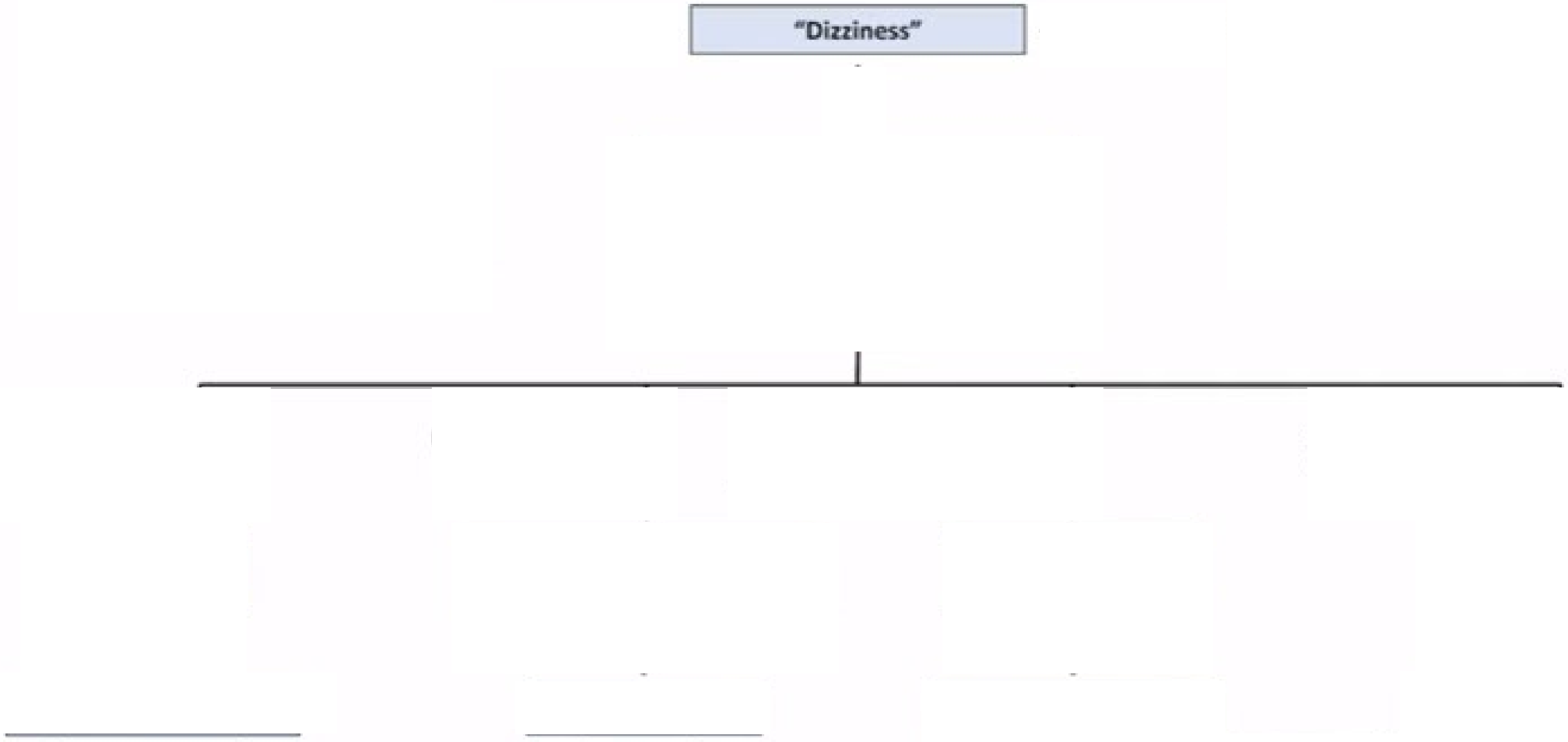
"Dizziness"

Benign Paroxysmal Positional Vertigo (BPPV)

Benign Paroxysmal Positional Vertigo (BPPV)

- Most common cause of vertigo in clinical practice
- Occurs when loose otoconia (canaliths) become dislodged and enter the semicircular canals (usually the posterior canal)
- Can occur at any age, most common: 50 - 70 years old (increasing incidence, with increasing age)

- 3 anatomic forms:
  - Posterior BPPV (90%)
  - Horizontal BPPV (5-10%)
  - Anterior BPPV (<5%)

Strupp M, Dieterich M, Brandt T. The treatment and natural course of peripheral and central vertigo. *Dtsch Arztebl Int*. 2013;110(29-30):505-516.
Dommaraju S, Perera E. An approach to vertigo in general practice. *Aust Fam Physician*. 2016;45(4):190-194.
Muncie HL et. al. Dizziness: Approach to Evaluation and Management. *Am Fam Physician.* 2017 Feb 1;95(3):154-162.

When to refer?

- A patient suspected of having BPPV should be referred if:
  - the Dix-Hallpike test is negative despite repeated testing in the recurrently symptomatic patient
  - the nystagmus seen in Dix-Hallpike test is atypical (not torsional, ageotropic)
  - remains symptomatic despite treatment
  - with other otologic or neurologic symptoms

Philippine Society of Otolaryngology Head and Neck Surgery. Clinical Practice Guidelines Vertigo in Adults. 2011.

Treatment

- Initial treatment: Repositioning Procedures
  - **Posterior canal BPPV**
    - **Epley maneuver**
      - Success rate: 70% on initial attempt and 100% on successive attempts
      - Patients who manifested sever nausea and/or vomiting with Dix-Hallpike maneuver: should be given **antiemetics** 30-60 minutes prior to Epley maneuver
    - **Semont / Liberatory maneuver (LM)**
  - **Lateral / Horizontal canal BPPV**
    - **Lempert 360º Roll / barbecue roll maneuver** – geotropic type
      - Response rate: 50 – 100%
    - Gufoni maneuver – both geotropic and apogeotropic type
  - **Self-administered CRP**
    - Modified Epley and LM - more effective
    - Brandt-Daroff home exercises – not recommended as primary treatment

Hilton MP, Pinder DK. The Epley (canalith repositioning) manoeuvre for benign paroxysmal positional vertigo. *Cochrane Database Syst Rev*. 2014;(12):CD003162.
Bhattacharyya N, Gubbels SP, Schwartz SR, et al. Clinical Practice Guideline: Benign Paroxysmal Positional Vertigo (Update). *Otolaryngol Head Neck Surg*. 2017;156(3_suppl):S1-S47.
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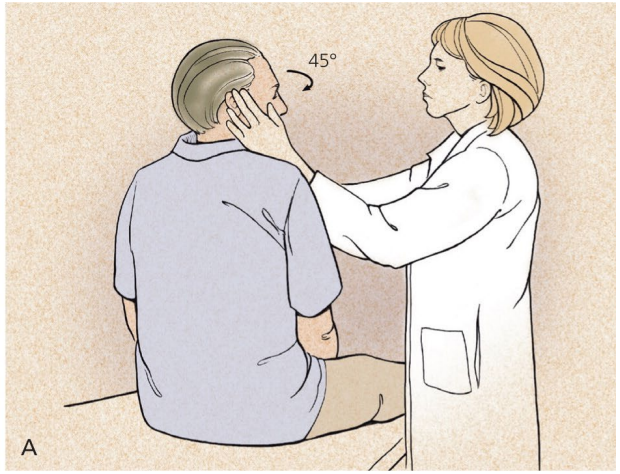
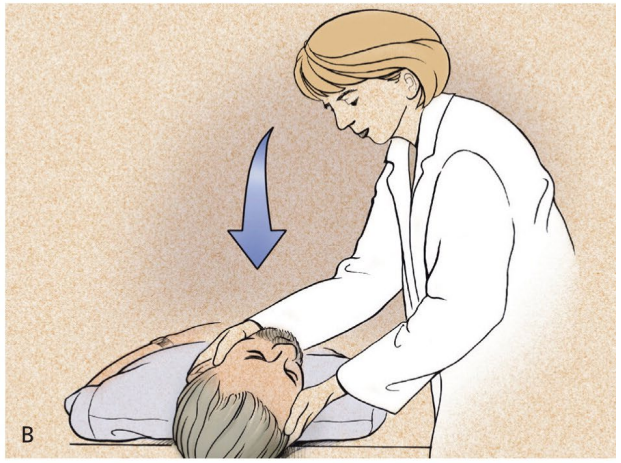
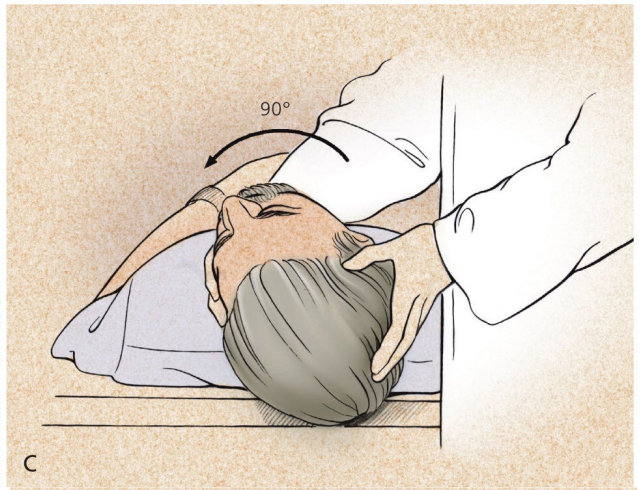
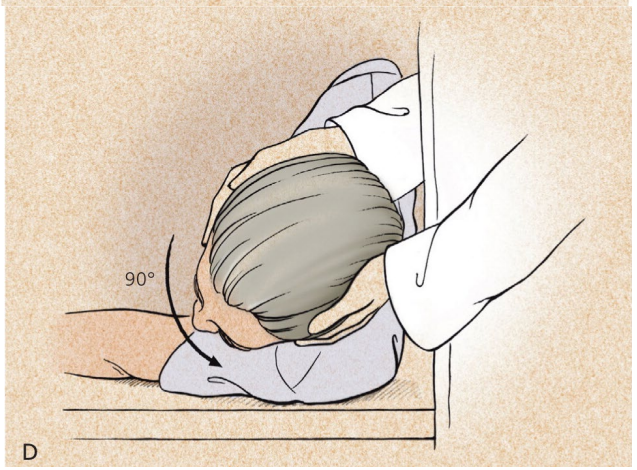
Epley maneuver

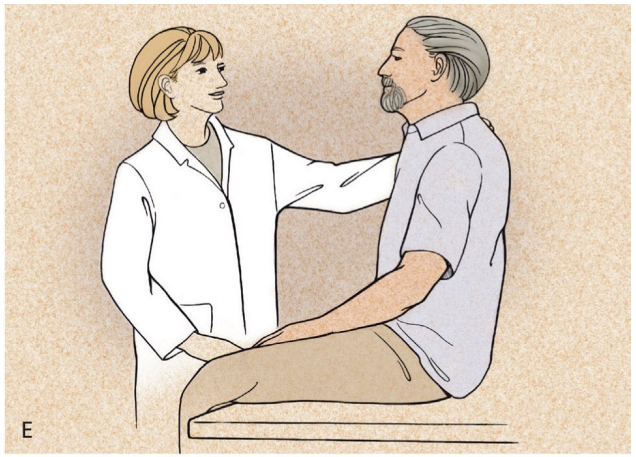








ILLUSTRATIONS BY MARCIA HARTSOCK



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Swartz R, Longwell P. Treatment of vertigo. Am Fam Physician . *2005;71(6):1119*.

Treatment

- Initial therapy (continued)
  - Post procedural restrictions is **not recommended**
    - Sleeping without elevation of the head
    - Sleeping with the treated ear in a dependent position
    - Vertical head movement
    - Use of soft cervical collars

Bhattacharyya N, Gubbels SP, Schwartz SR, et al. Clinical Practice Guideline: Benign Paroxysmal Positional Vertigo (Update). *Otolaryngol Head Neck Surg*. 2017;156(3_suppl):S1-S47.
Strupp M, Dieterich M, Brandt T. The treatment and natural course of peripheral and central vertigo. *Dtsch Arztebl Int*. 2013;110(29-30):505-516. doi:10.3238/arztebl.2013.0505

Pharmacologic Treatment

- Vestibular suppressants and antivertigo drugs may be given **for symptomatic relief of patients with BPPV**.
  - These are usually given to:
    - Reduce the spinning sensations of vertigo
    - Reduce accompanying motion sickness symptoms (nausea / vomiting / diarrhea)

BENZODIAZEPINES	ANTIHISTAMINE
Lorazepam Clonazepam Diazepam	Meclizine Dimenhydrinate Betahistine Cinnarizine

- **Not advisable** to routinely treat with vestibular suppressants
  - But no evidence available to suggest that these medications are effective as definitive / primary treatment for BPPV or as substitute for repositioning maneuvers
  - If prescribed – physicians should provide counseling for the side effects and increase risk for falls and accidents

Philippine Society of Otolaryngology Head and Neck Surgery. Clinical Practice Guidelines Vertigo in Adults. 2011.
Bhattacharyya N, Gubbels SP, Schwartz SR, et al. Clinical Practice Guideline: Benign Paroxysmal Positional Vertigo (Update). *Otolaryngol Head Neck Surg*. 2017;156(3_suppl):S1-S47.
Strupp M, Dieterich M, Brandt T. The treatment and natural course of peripheral and central vertigo. *Dtsch Arztebl Int*. 2013;110(29-30):505-516. doi:10.3238/arztebl.2013.0505

Prevention

- Avoid potential triggers
  - Caffeine, heat, standing quickly, high sodium foods, alcohol
- Maintain healthy lifestyle
  - Well-balanced diet
  - Regular exercise
- Smoking cessation
- Balance maintenance
  - Physiotherapy (VRT)

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Education and Counselling

- Educate about the disease, treatment options and risk of recurrence
- Importance of follow-up
- Counsel patients and their families regarding safety and risk of falls / accidents

Wu V, Beyea MM, Simpson MT, Beyea JA. Standardizing your approach to dizziness and vertigo. *J Fam Pract*. 2018;67(8):490-498.
Jilla AM, Roberts RA, Johnson CE. Teaching Patient-Centered Counseling Skills for Assessment, Diagnosis, and Management of Benign Paroxysmal Positional Vertigo. *Semin Hear*. 2018;39(1):52-66.

Patient Education

Goals	Tools	Counseling Skills
• Explaining the condition and its functional impact on daily activities • Relating rates of recurrence and comorbidities that cause higher rates of recurrence • Providing information on fall risk associated with BPPV • Emphasizing the importance of follow-up during and after management • Educating patients on symptoms that indicate a disorder other than BPPV, and referring for additional medical attention when indicated • Providing recommendations against continuation of vestibular suppressant medications and postprocedural activity restrictions for common presentation of BPPV	• Tangible supports to aid in comprehension and retention of information o Patient education handouts o List of websites for more information o Anatomical model or illustration	• Individualized disclosure model • Integration of patient story and dizziness-related quality of life impact into the explanation of the vestibular disorder • Succinct explanation of the condition, functional impacts, and implications • Personal adjustment counseling to address fears or anxiety about the pathology or diagnosis • Identification of motivation levels to assure adherence to treatment and appropriate follow-up procedures

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Counseling on Diagnosis and Treatment

Diagnosis and Treatment Approach

Goals	Tools	Counseling Skills
• Providing the diagnosis of benign paroxysmal positional vertigo to the patient in a sensitive and patient-centric manner • Allowing opportunities for the patient to ask questions • Collaborating in shared decision making for exploring treatment options • Discussion of treatment options in a patient-centric manner	• Anatomical model for explaining the diagnosis and management approaches • Dizziness-related quality of life measures to relate personal impact to diagnosis and treatment options • Decisional balance matrix (formal or informal)	• Individualized disclosure model • Shared decision making • Realistic expectations and associated risks o Success, recurrence, and spontaneous resolution rates o Fall risk o Activity limitations during observation • Appropriate description and explanation during informational counseling that avoids clinical jargon

Jilla AM, Roberts RA, Johnson CE. Teaching Patient-Centered Counseling Skills for Assessment, Diagnosis, and Management of Benign Paroxysmal Positional Vertigo. *Semin Hear*. 2018;39(1):52-66.

Key Points

- Vertigo is a common symptom encountered by family physicians
- A careful history (specifically the timing and triggers) is required to elicit features of central or peripheral causes of vertigo.
- Focused physical examination involves a neurological, cardiovascular, eye and ear examination.
- Benign paroxysmal positional vertigo can be treated with a canalith repositioning procedure and other maneuvers.
- It is important to provide health education and counseling to the patients, families and caregivers about the disease, treatment options, safety and risk of recurrence.

Thank you!