Vestibular Review: for the Acute Care Therapist

Instructors: Marcelo Altemar, Elaine Bouwens, Bradley Connell, Terrance Edwards, and Courtney Van Norden

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Course Description

This course navigates a condensed and simplified overview of the Vestibular system focused on identifying common BPPV and available treatment methods appropriate to the general Acute Care Therapist. Identification of some possible differentials and when to stop and refer out/back during hospital stay.

This course will help review a step wise approach to an Evaluation of a patient with limited time remaining on Observation Hospital stay. Instructions on when to report findings and recommend physician follow up. Ensure treatment is provided as appropriate. Review the importance of proper referral channels.

Help the patient navigate the outpatient referral system to reach a Vestibular Certified Physical Therapist in a timely manner. Ensure discharge planning includes any equipment needs or additional support based on functional limitations.

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Disclaimer to PTAs

- We hope you take from the vestibular class the background knowledge of what is happening in patients with Vertigo and the reasoning behind some of the symptoms and residual functional deficits you might see.
- As you now know evaluation, assessment, and reassessment, is the name of the game with Vestibular testing, so that is not something a PTA would perform.
- BUT the hope of you having a better understanding of vestibular related signs/symptoms and patient's histories would help you to treat the patient on day 2 or more significantly recognizing some changing symptoms or complaints in a patient who was originally admitted for something else entirely. Or a patient who is coming out of ICU with new levels of mobility can come emerging symptoms.
- We hope that you would refer back to your PT noting a change in status and the potential need of re-assessment.

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Vestibular System Anatomy[1]

- The vestibular system is a complex system with an important role in postural control along with the visual and proprioceptive systems.
- The peripheral vestibular system is located within the inner ear and consists of the bony labyrinth (three semicircular canals and the vestibule) and the membrane labyrinth (membranous inside semicircular canals, utricle, and saccule).

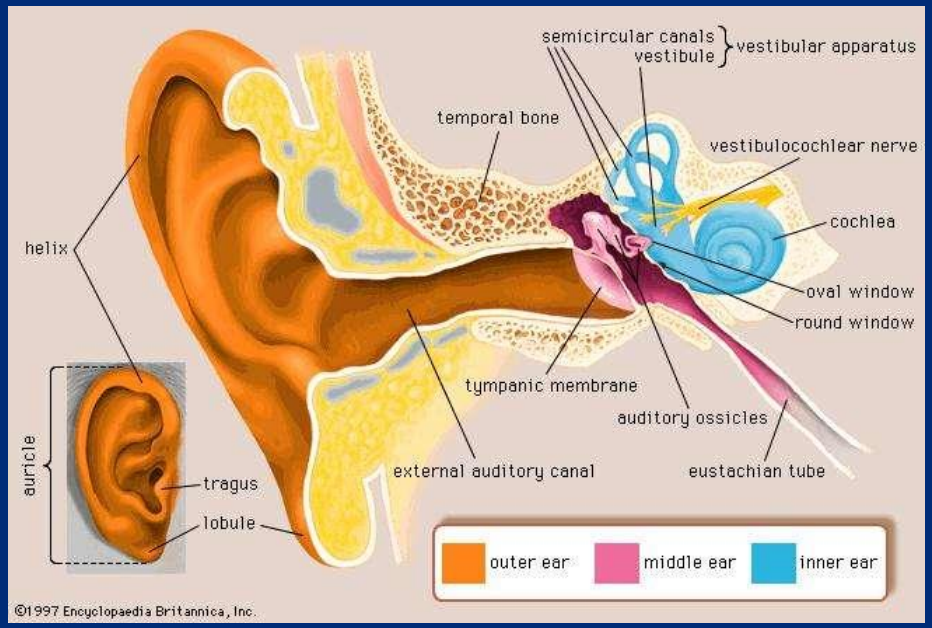

Image: Encyclopedia Britannica. (1997). *human ear | Structure, Function, & Parts*. [online] Available at: https://www.britannica.com/science/ear [Accessed 4 Jan. 2019].

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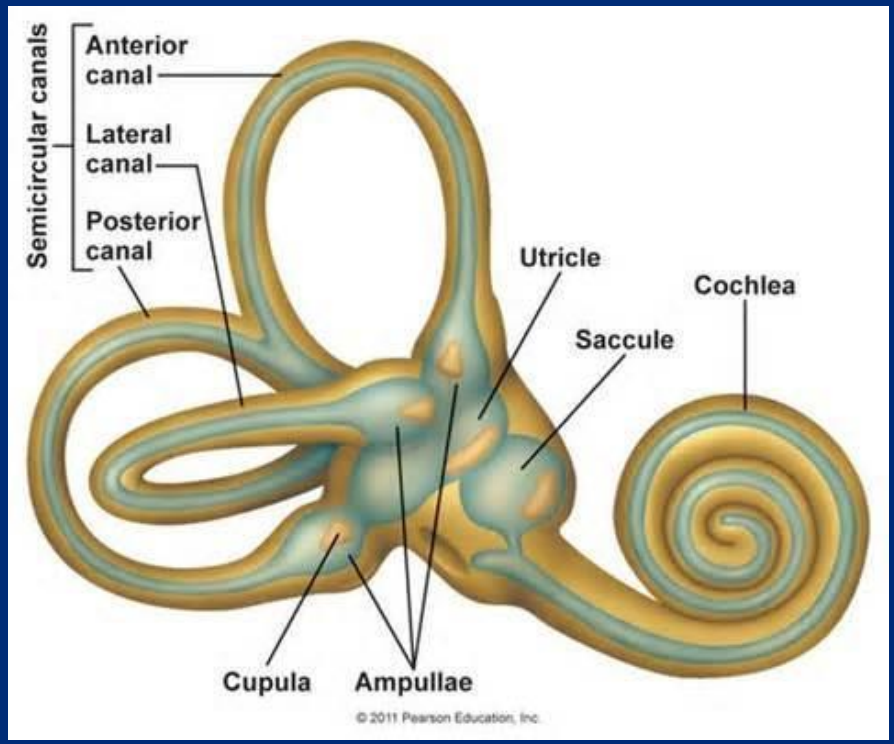
Vestibular System Anatomy[1]

- The membranous labyrinth is filled with endolymphatic fluid (high K:Na ratio). This system gathers angular and linear information of the head which is sent to the vestibular nucleus and the cerebellum in the Central Nervous System (CNS).
- The CNS process this information to estimate body and head motion and position during functional activities.



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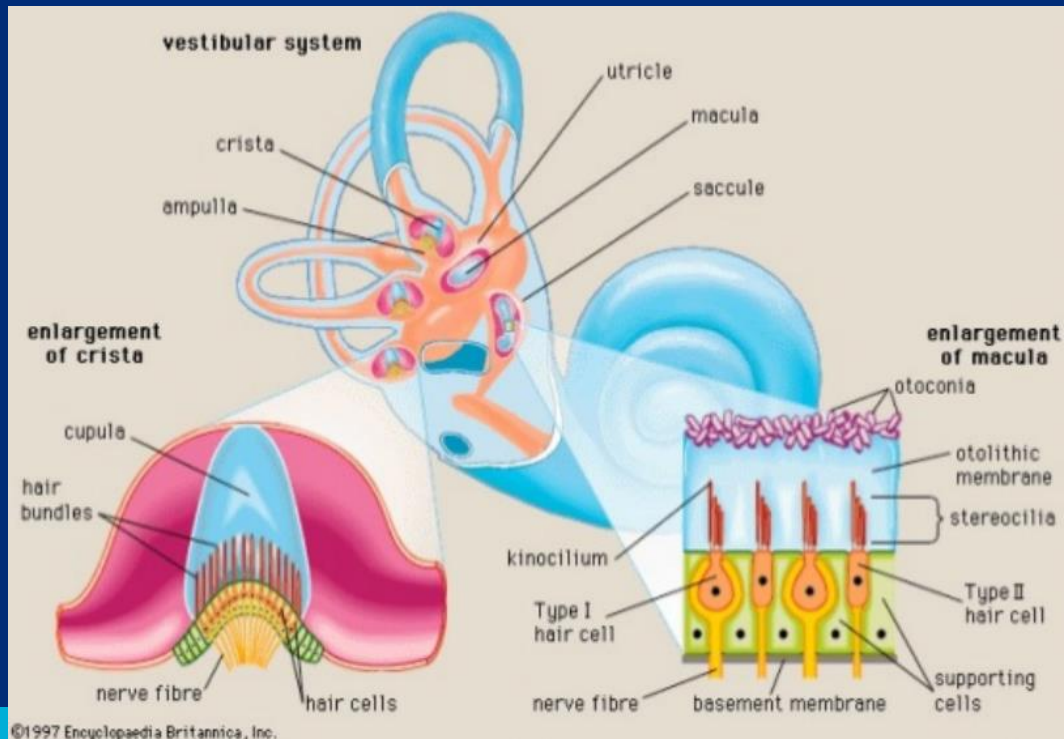
The Vestibular System[1]

- Vestibular system estimates body position and motion. It was known that motion inputs to the vestibular systems includes inner ear signals, proprioception , visual and motor commands.
- The main component of peripheral vestibular system in the inner ear is called labyrinth which is subdivided into 2 parts:

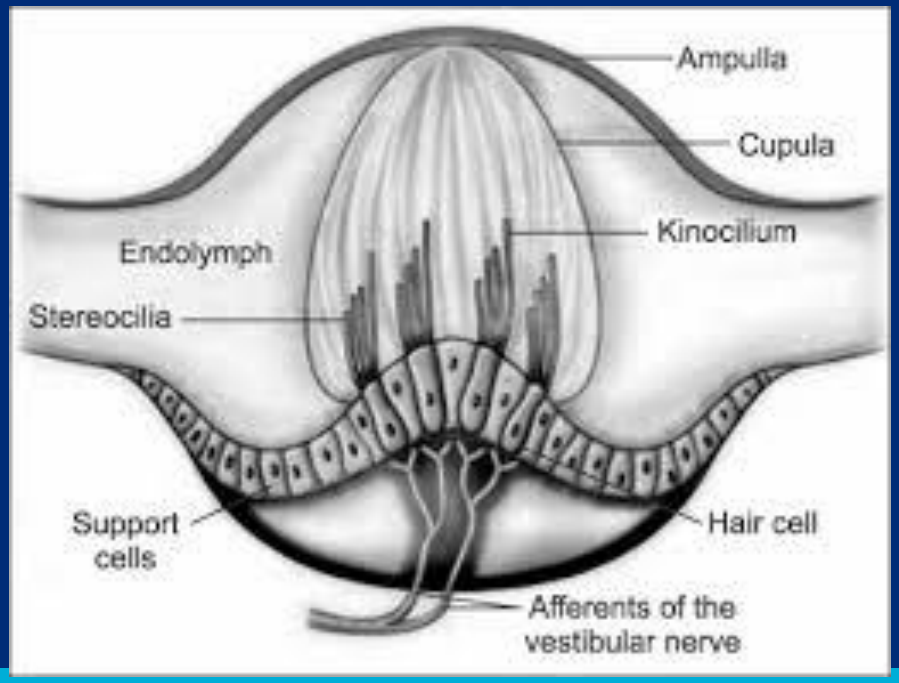
  1)bony labyrinth which consists of 3 semicircular canals, the cochlea and vestibule

  2) membranous labyrinth which is suspended within the bony labyrinth by perilymphatic fluid and connective tissue. This membranous labyrinth contains 5 sensory organs which includes 3 membranous portions of 3 SCCs and 2 otolith organs utricle and saccule.



Ampulla[1]

- Each ampulla of the SCCs and otolith organs has “hair cells” which is responsible in converting displacement of head motion to neural firing. Each hair cell is known to be innervated by afferent neuron whose cell body lies in vestibular ganglion, which is located near the ampulla.



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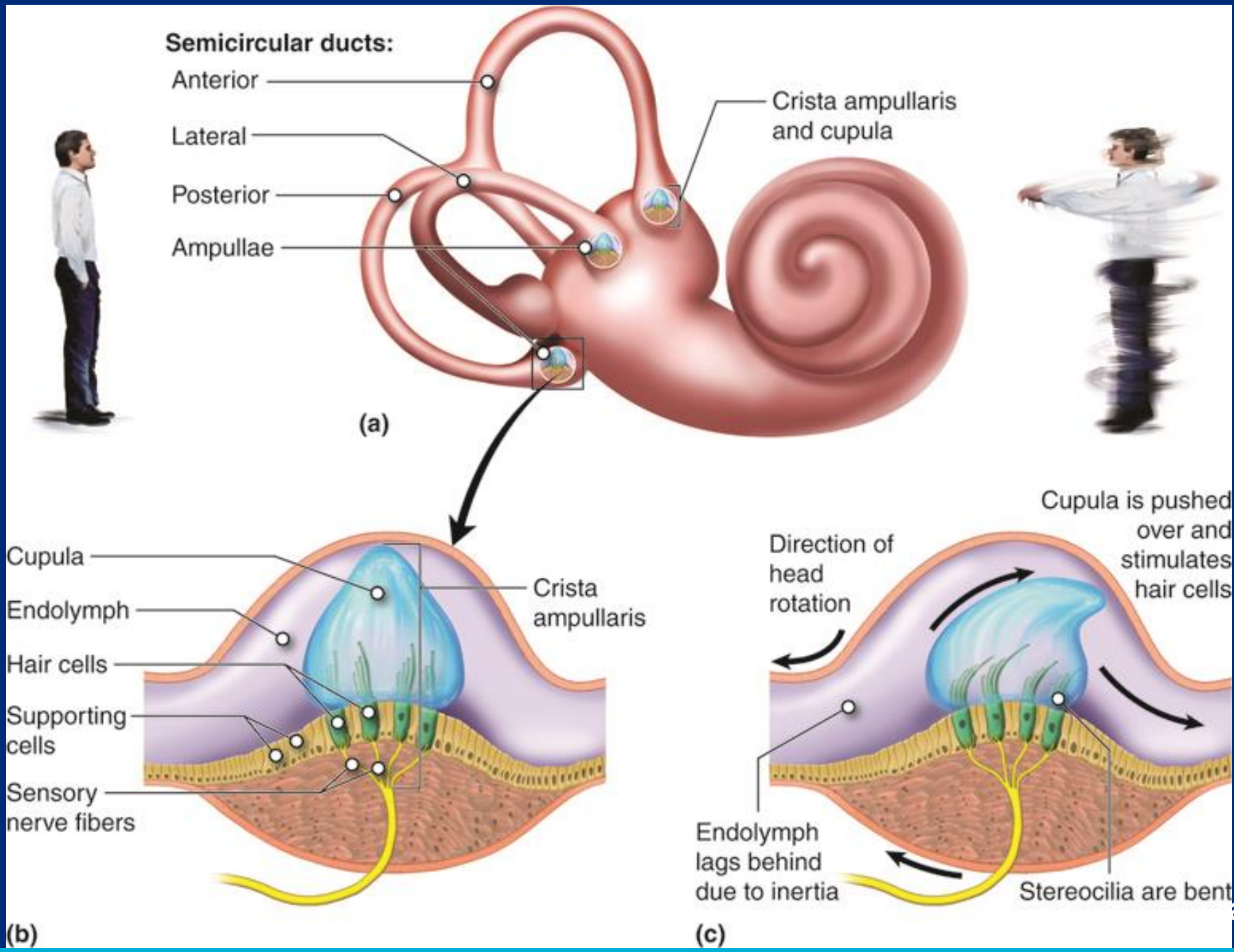
Semicircular ducts:
Anterior
Lateral
Posterior
Ampullae
Crista ampullaris and cupula
(a)
Cupula
Endolymph
Hair cells
Supporting cells
Sensory nerve fibers
Crista ampullaris
(b)
Direction of head rotation
Cupula is pushed over and stimulates hair cells
Endolymph lags behind due to inertia
Stereocilia are bent
(c)

Vascular Supply[1]

- Labyrinthine artery supplies that vestibular system. Most often originates from a branch of anterior cerebellar artery (AICA), but on occasion, it could be a direct branch from basilar artery.
- The labyrinthine artery divides into the anterior vestibular artery and cochlear artery upon entry to inner ear.
- Vestibular artery supplies the utricle , ampullae of the lateral and anterior SCCs (SemiCircular Canals) while, the main cochlear artery supplies the cochlea
- Cochlear artery - another branch called vestibulocochlear artery which supplies posterior SCC and inferior part of the saccule.

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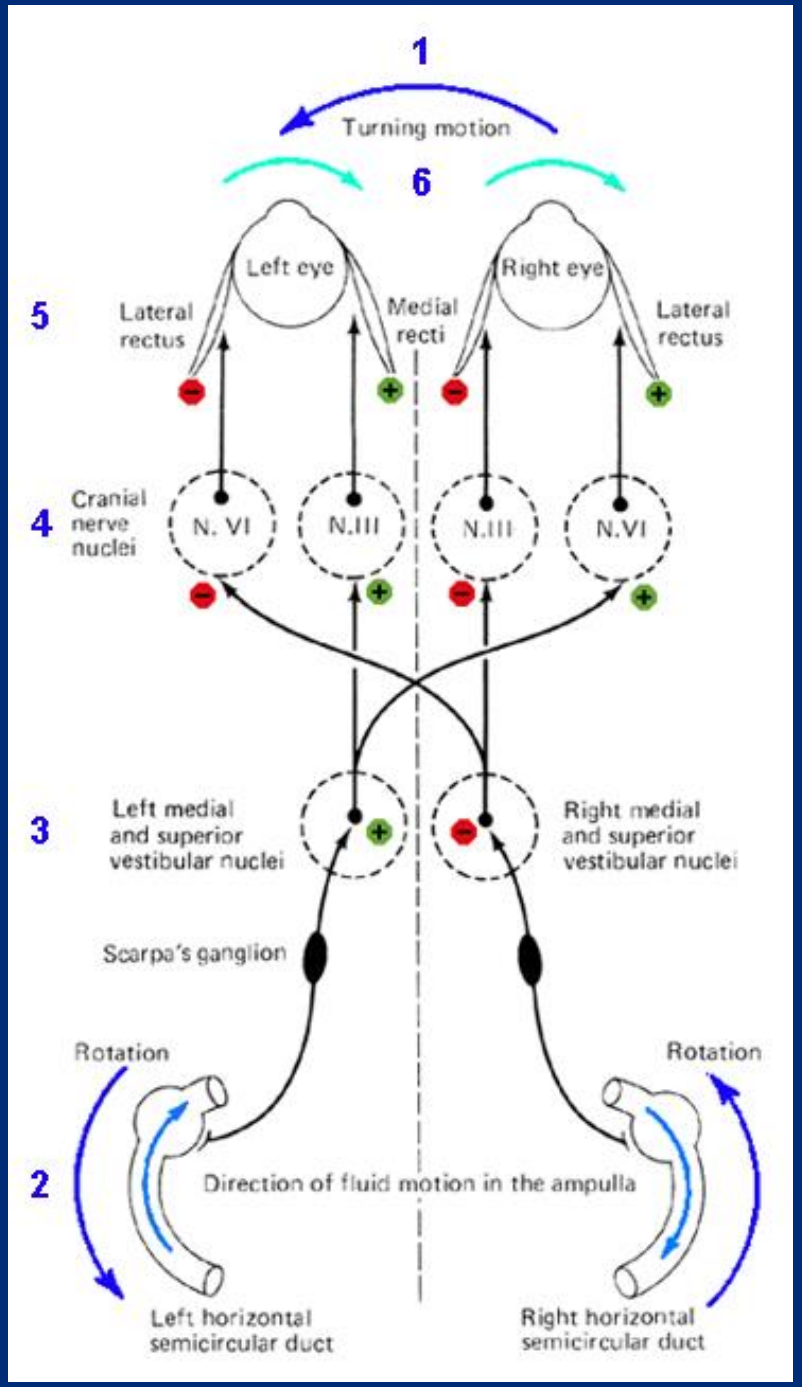
Peripheral processing of the vestibular system:[1]

- The SCCs provide sensory input with head velocity which enables the VOR (Vestibular Ocular Reflex) to activate an eye movement that equals the velocity of the head motion .
- It was known that SCC respond to angular velocity.
- The Otoliths input forces related to linear acceleration and respond to both linear head motion and static tilt.

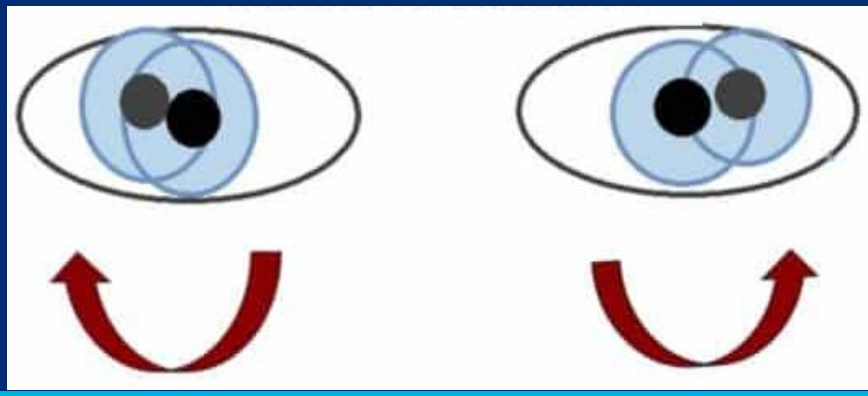
VOR


1
Turning motion
6
Left eye
Right eye
5
Lateral rectus
Medial recti
Lateral rectus
4
Cranial nerve nuclei
N. VI
N.III
N.III
N.VI
3
Left medial and superior vestibular nuclei
Right medial and superior vestibular nuclei
Scarpa's ganglion
Rotation
Rotation
2
Direction of fluid motion in the ampulla
Left horizontal semicircular duct
Right horizontal semicircular duct

Pathology: Peripheral Vestibular dysfunction affecting mostly vestibular organs end and vestibular nerve, which generate range of signs and symptoms.[1]

1) BPPV (Benign Paroxysmal Positional Vertigo)[1]

- most common cause of vertigo
- Is typically attributed to debris /“ear rocks” called otoconia which has collected within part of the inner ear. It was known that otoconia are small crystals of calcium carbonate derived from a structure in the ear called utricle.
- Pt. c/o brief episodes of vertigo brought on by rapid changes of head posture
- Pt c/o mild postural instability between attacks
- Vertigo usually lasts up to 2minutes (typically less than 1 minute)
- Women are more commonly affected than men 2:1
- Dix - Hallpike positioning test commonly performed to diagnose common posterior canal BPPV, upon this maneuver, vertigo and nystagmus start immediately to few seconds and increased in intensity within 10 secs and gradually diminish after 10 to 40 secs.
- Nystagmus appears torsional and direction corresponds to the plane close to the affected SCC.



Pathology: Peripheral Vestibular Dysfunction[1]

2) Vestibular Neuritis:[1]

- Second most common cause of vertigo
- Unknown etiology, however, some evidence attributing this disorder to “viral etiology “
- Onset is frequently after pt suffered from viral infection of upper respiratory and GI tracts
- Pt’s main c/o is prolonged severe rotational vertigo and worst with head movement, nausea
- Pt c/o postural imbalance and mostly tendency to fall toward the affected side
- 30-60 years are mostly the affected ages, peak for women in 40’s and men in 60s
- If evaluated in early onset, pt typically demonstrate nystagmus
- Symptoms usually lessen within 48 to 72 hours, however, rapid head movement can still result in slight oscillopsia (jumping/double vision) and imbalance for brief period.
- Results of HINTS (head impulse, nystagmus, and test for skew) will tell you more details.
- Treatment includes use vestibular suppressants such as antihistamine dimenhydrinate , anticholinergic scoplolamine

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How common is this?

- Dizziness is the most common reason to see a doctor for patients over the age of 75.[2]
- Fall are the leading cause of TBI and bone fractures.[3]
- Falls are the 6th leading cause of death for the elderly.[3]
- 30% of patients with BPPV will suffer a fall.[2]
- 50% of individuals over age 70 will report BPPV symptoms in their life.[3]

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Incidence/Prevalence.

- 85% Vertigo and balance dysfunction may be inner ear related.[3]
- BPPV is the most common cause of vertigo.[2]
- 70% of patients that report dizziness will not have resolution of symptoms within 2 weeks from onset.[2]
- Patients with persistent dizziness, 63% reported symptoms last beyond 3 months.[3]
- Vestibular function decreases with age with neuronal loss in the vestibular nuclei occurring at a rate of 3% per decade from age 40.[2]

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Common Causes

- 15%- 20% of patients have bilateral BPPV.[3]
- Head trauma #1 reason for bilateral BPPV[3]
- Most common causes of Unilateral vestibular hypofunction are viral insults, trauma and vascular events.[4]
- Infection is the 2nd most common cause of vertigo.[4]

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Chart Review for the Acute Hospital Based Therapist.

- Has stroke been ruled out?
- Review results if available: CT, MRI, MRA, carotid US, Orthostatics.
- Review Neuro Consult if available.
- Note if Dixhallpike or Epley's has already been performed.
- Has the patient been given medications that could impact symptoms?
- Recent URI? Ear infection? Feeling "plugged"?
- Medication review → continued.

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Key medications to look out for as possible contributors.[5,6]

Medication list review -part of history taking:

- Note any recent medication changes
- alcohol or drug use/dependency (nystagmus/dizziness can be present with intoxication)
- Is the patient on any of the following:
  - Anti-depressants, ie. Prozac
  - Antihistamines, benzodiazepines, or anticholinergics can suppress the vestibular system
  - Aminoglycosides, (some antibiotics) such as gentamicin or tobramycin, can have a toxic effect on the inner ear, can lead to permanent vertigo

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Describe Your Dizziness?

- Vertigo: Is the illusion of movement
- Lightheadedness: is the feeling of fainting is about to occur
- Dysequilibrium: Sensation of being off balance
- Oscillopsia(“jumping image”): subjective experience of motion of objects in the visual field that are known to be stationary

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Include these recommended Acute Care Evaluation Interview Questions[7]

Describe your dizziness?*

1. How was this episode triggered?
2. How long did it last?
3. Was this the first time? How frequent?
4. Ringing of ear? Hearing changes?

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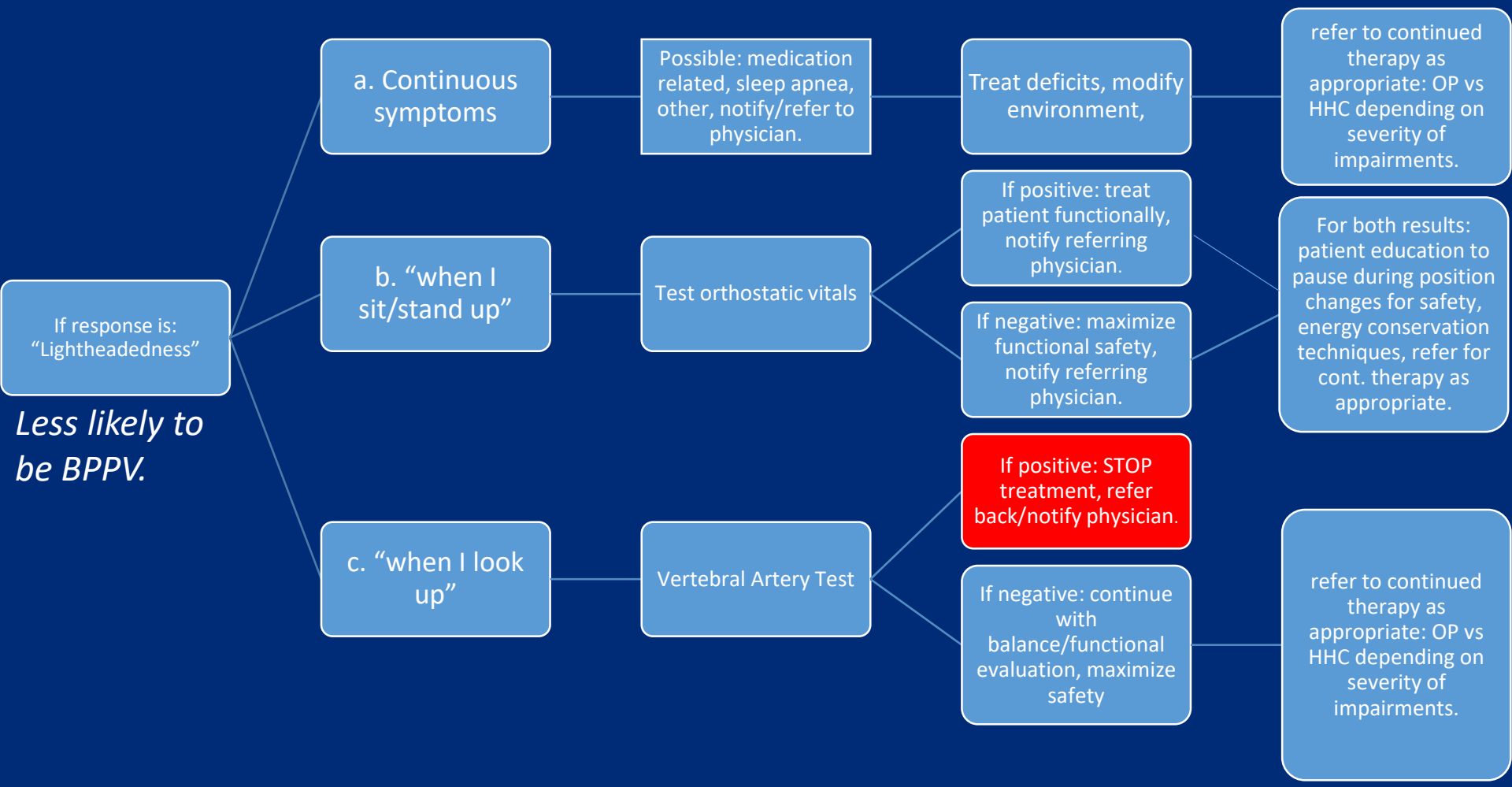
Flow Chart Summary[1]: "Describe your dizziness."



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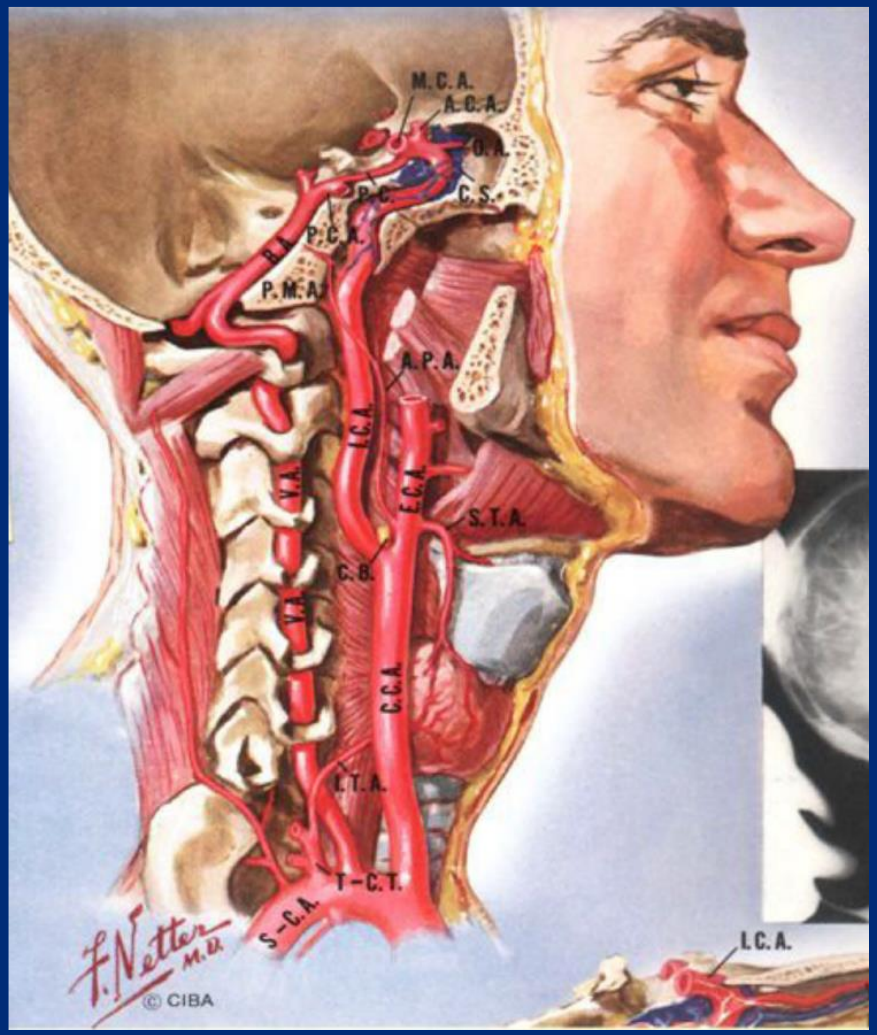
Vertebral Artery Test

Steps

1. In sitting, rotate, then extend to end range. (cue: “try to look behind your shoulder”)
2. Provide gentle overpressure.
3. Wait at least 5 seconds, ask them to count.
4. Monitor for symptoms.
5. Test both sides.



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Vertebral Artery Insufficiency[9]

5**D**'s **A**nd 3**N**'s

- Dizziness, dysphagia, diplopia, drop attack, dysarthria
- Ataxia
- Nystagmus, Nausea, numbness.

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“Describe your dizziness”[1,2]

If response is:

“Room Spinning” “Head Spinning”

More likely to be BPPV

Perform these in order: 1-5

1. With positional change?
   - note the change eliciting symptoms
   - How long does it last?
     - “less than 1 min”
     - “more than 1 min”
2. Cervical Screen, ROM
   - Note deficits
   - Full range and no pain
     - No modifications needed for testing, r/o cervicogenic
3. Clear Vertebral Artery
   - VBI testing
     - Positive: Hard stop, report symptoms to referring physician
     - Negative: continue to #4
4. Oculomotor Assessment, looking for nystagmus
   - +nystagmus at rest
     - Note nystagmus direction, reach out for help.
   - Gaze holding.
     - Note nystagmus direction and what elicited symptoms.
   - Smooth pursuit and saccades
     - Normal: continue
     - Abnormal – report back to nurse/referring physician
5. Head Impulse Test (VOR)
   - if positive: Additional gaze stabilization indicated.

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5. Head Impulse Test[1]

Assesses the efficiency of the VOR (Vestibular Ocular Reflex)

- The hand that pushes, saccade, looking for eyes “catching up”.
- Note saccades for “catch up”, to identify which side has hypofunction
- Implement gaze stabilization exercises and/or habituation exercises. [2]

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Head Impulse Test

Steps:

1. Maintain 30 degrees of cervical flexion
2. Have pt maintain gaze at PT's nose
3. Perform a high velocity head rotation back to neutral (120 fps)

Positive test example: head thrust to left (impaired ear) produces a corrective saccade to the right (stronger ear)

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Let's Practice

- Cervical screen/ROM
- Vertebral a
- Smooth pursuit, saccades, gaze hold.
- Head thrust (VOR).

"Describe your dizziness"[1,2]

If response is:

"Room Spinning" "Head Spinning"

Perform these in order: 1-5

1. With positional change?
   - note the change eliciting symptoms
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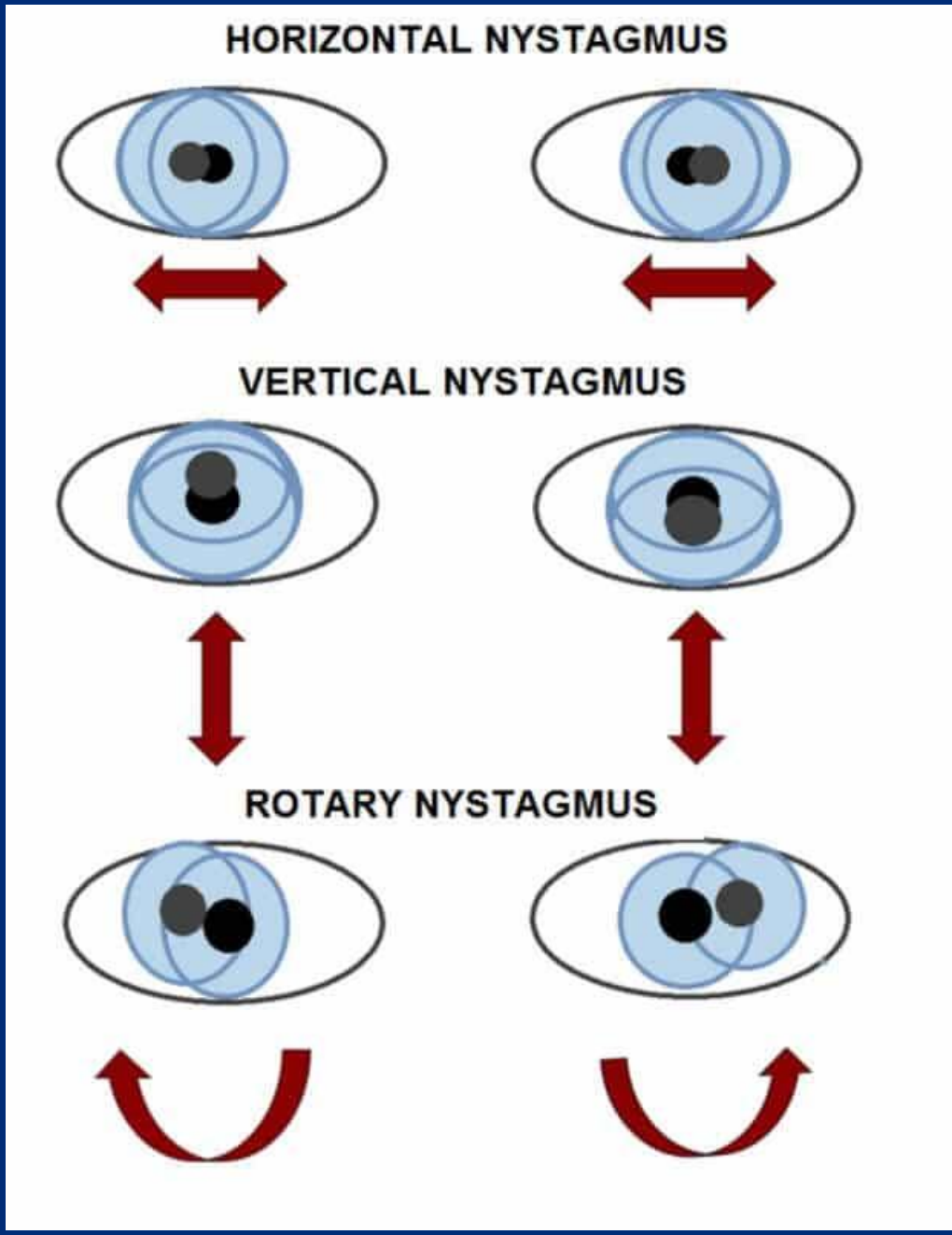
Nystagmus

Rapid Involuntary Eye Movement

- Right/Up torsional
- Left/Up torsional
- Right/Down torsional
- Left/Down torsional
- Horizontal
- Vertical



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Testing[1,9,10]

Test	Canal	Nystagmus Parameters		Indicates:	Treatment
Hallpike-Dix	Ant/ posterior	<60 secs		Canalithiasis	Epley
		>60 secs		Cupulolithiasis or central	Libratory
Roll Test	Horizontal	Geotropic	<60secs	HC Canalithiasis	Horizontal Hybrid Or BBQ
			>60secs	Not BPPV	
		Ageotropic	<60 secs	Not BPPV	
			>60secs	HC cupulolithiasis	Horizontal Hybrid

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Testing[1,9,10]

Test	Canal	Nystagmus Parameters		Indicates:	Treatment
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		Ageotropic	<60 secs	Not BPPV	
			>60secs	HC cupulolithiasis	Horizontal Hybrid

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Positional Nystagmus Noted[9,11]

Nystagmus Direction	Corresponding Canal Indicated	Treatment Indicated	
		Less than 1 min	More than 1 min
Right/Up torsional	Right Posterior	Epley	Liberatory
Left/Up torsional	Left Posterior		
Right/Down torsional	Right Anterior		
Left/Down torsional	Left Anterior		
Horizontal	Left Horizontal	"Horizontal Hybrid" or BBQ	
Horizontal	Right Horizontal		
Vertical	Down beating: Indicative of a brainstem stroke, notify physician immediately.		

*if nystagmus directions are changing, **it will not be BPPV**, could be medication related or CNS involvement, consult Vestibular Certified therapist and report findings to referring physician.

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Diagnostic Test: Dix-Hallpike Test

Steps

1. Explain to patient. Instructs to keep eyes open at all times if possible.
2. Long sitting, turn head 45degs toward testing side. (the side you think is most likely negative first)
3. Lay back quickly, ensuring 20-30 degs cervical extension .
4. Observe for nystagmus/symptoms. Maintain this position at least 1 min. (note how long)
5. Assist patient to sitting.
6. Observe for nystagmus/symptoms recurring.
7. Repeat to opposite side.

Diagnostic Test: Roll Test

Steps

1. Patient in supine, 20-30 degs cervical flexion.
2. Turning head toward first testing side.
3. Observe for nystagmus/symptoms, at least 1 min. Note direction of nystagmus.
4. Turn head toward other testing side.
5. Observe for nystagmus/symptoms, at least 1 min. Note direction of nystagmus.

Post/Anterior Canal Treatment: Epley[2]

Epley maneuver

(if Left is bad ear per Dix-Hallpike, start with bad ear down)

1. Start in long sitting.
2. Turn head 45degs **TOWARD** L and 20degs ext.
3. Quickly to supine, watch for symptoms.
4. Turn head 90degs to R, wait/watch for symptoms.
5. Turn head and body on R side, patient looking to floor, wait.
6. Return to sitting.

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Post/Anterior Canal Treatment: Semont (Liberatory)[12]

(Bad ear always starts down)

1. Turn head **AWAY** from “bad” ear while sitting to approx 45°
2. Have pt move to side lying “bad” ear down, assess symptoms, wait 1 min after symptoms resolved.
3. In a quick movement, have pt return to sitting, then continue to sidelying of other shoulder with face pointing down, wait 1 min after symptoms resolve. (like a rainbow)
4. Return to sitting with head tilted down.

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Nystagmus Noted[9,11]

Nystagmus Direction	Corresponding Canal Indicated	Treatment Indicated	
		Less than 1 min	More than 1 min
Right/Up torsional	Right Posterior	Epley	Liberatory
Left/Up torsional	Left Posterior		
Right/Down torsional	Right Anterior		
Left/Down torsional	Left Anterior		
Horizontal	Left Horizontal	"Horizontal Hybrid" or BBQ	
Horizontal	Right Horizontal		
Vertical	Down beating: Indicative of a brainstem stroke, notify physician immediately.		

*if nystagmus directions are changing, it will not be BPPV, could be medication related or CNS involvement, consult Vestibular Certified therapist and report findings to referring physician.

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Horizontal Treatment: Horizontal Hybrid[11]

1. Sitting with head rotated right, lay on left side with 30 degs of neck flexion. (hold 1 min)
2. Head is rotated nose-down with 30degs of flexion. (hold 1 min)
3. Pt turns nose back up with 30 degs of neck flexion and rotates the lower torso to the other side. (If there is any nystagmus, the patient is kept in this position for one minute after it subsides)
4. Rotates the head nose-down with 30degs of flexion. (hold 1 min)

Horizontal Hybrid = “Kurtzer Hybrid Maneuver”

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Horizontal Treatment: BBQ[13]

1. Lie on your back
2. Turn the head 90 degrees to the affected side (right side)
3. Turn the head 90 degrees facing up
4. turn the head 90 degrees towards the left
5. Turn the head 90 degrees (facing the ground in prone)
6. Turn the head 90 degrees (patient now right sidelying)
7. Roll back to supine with head facing up

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Testing[1,9,10]

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Hallpike-Dix	Ant/ posterior	<60 secs		Canalithiasis	Epley
		>60 secs		Cupulolithiasis or central	Libratory
Roll Test	Horizontal	Geotropic	<60secs	HC Canalithiasis	Horizontal Hybrid Or BBQ
			>60secs	Not BPPV	
		Ageotropic	<60 secs	Not BPPV	
			>60secs	HC cupulolithiasis	Horizontal Hybrid

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Re-Test

If patient is still showing symptoms.

Retest to patient's tolerance:

- if you see lateral nystagmus then you have converted to Horizontal, now need to treat for Horizontal Canal. (it is possible to turn posterior into horizontal canal)

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5. *If positive:* Head Impulse Test[1]

- The hand that pushes, saccade, looking for eyes "catching up".
- Note saccades for "catch up", to identify which side has hypofunction
- Implement gaze stabilization exercises and/or habituation exercises. [2]

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Documentation

- If you are not sure…… BPPV or Other?

Simply describe symptoms….

- “Positive nystagmus elicited with R Dix-Hallpike.”
- “torsional R upbeat nystagmus”
- “lasting less than 1 min”
- “Performed Epley maneuver, tolerated well vs vomited”

Vs “no nystagmus elicited with Dix-Hallpike nor Roll Test.”

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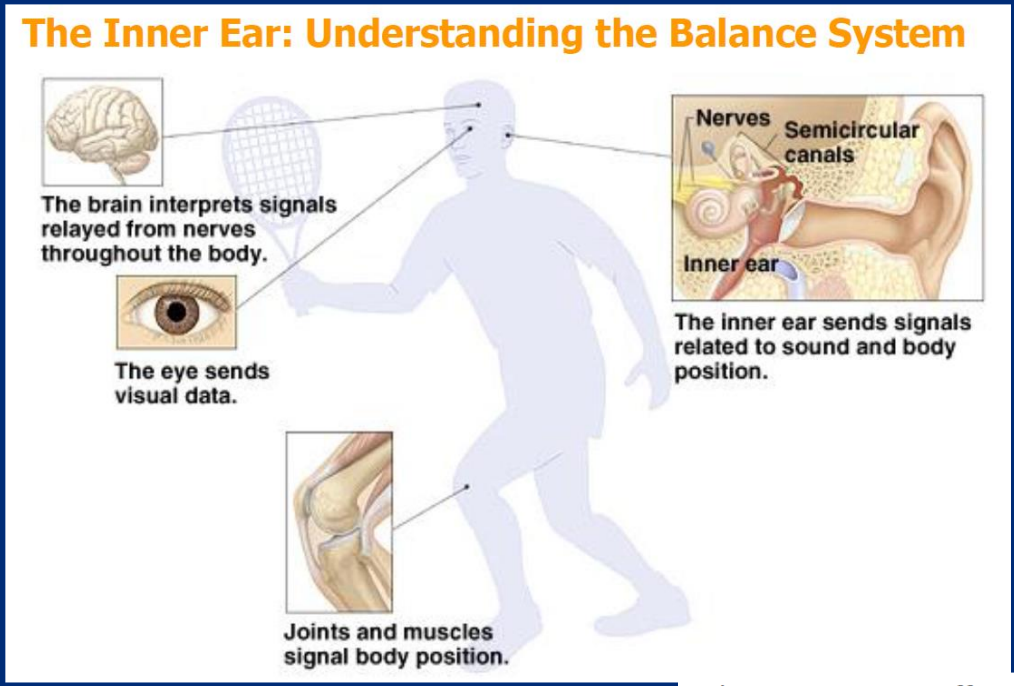
Krames: PATIENT EDUCATION



Balance is a group effort of your eyes, inner ear, joints, and muscles. They each send signals to the brain about body position and head movement. The brain uses this information to balance the body. When you have an inner ear problem, the brain may get conflicting signals. This can cause symptoms such as the feeling of spinning (vertigo).

The inner ear sends signals

Inside the inner ear are 3 semicircular canals. Each canal contains tiny hairs, crystals, and fluid. These structures help the canals sense up-and-down, forward and backward, and side-to-side motion. Nerves carry the signals from the canals to the brain.

The brain interprets signals

Signals from throughout your body travel to the brain. Once the signals arrive, the brain decides what they mean. Sometimes signals conflict. Have you ever sat on a stopped train and watched a moving train go by? When that happens, your eyes signal that you're moving. But your inner ear and body signal that you're still. The brain weighs conflicting data such as this and decides what is true. The result is balance.

Testing[1,9,10]

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Self Assessment: Functional Impairment

-tool for use, good pre/progression/ post comparator.

(BayCare has permission for use, barcoded)

Adobe Acrobat Document

BPPV Functional Impairment Scale

Please answer each question as it relates to your dizziness problem in your daily life.

0 = no difficulty

1 = mild difficulty

2 = moderate difficulty

3= maximal difficulty

4= unable to perform

1. I can look up for activities such as putting dishes away into overhead cabinets or to change a light bulb?

   0 1 2 3 4

2. Do you have difficulty (dizziness) getting into and out of bed?

   0 1 2 3 4

3. I can perform more ambitious activities like sports, dancing or household chores such as sweeping/vacuuming?

   0 1 2 3 4

4. Do you have difficulty (dizziness) turning over in bed?

   0 1 2 3 4

5. I can bend over to pick up an item off the floor of put on socks and shoes?

   0 1 2 3 4

CN=20 CM=16-19 CL=12-18 CK=8-11 CJ=4-7 CI=1-3 CH=0

1957

PHYSICAL THERAPY – BPPV FUNCTIONAL IMPAIRMENT SCALE

BC 5125 9/18

PATIENT

Another Outcome Tool

PHYSICAL THERAPY - THE DIZZINESS HANDICAP INVENTORY (DHI)

P1.	Does looking up increase your problem?	O O O	Yes Sometimes No
E2.	Because of your problem, do you feel frustrated?	O O O	Yes Sometimes No
F3.	Because of your problem, do you restrict your travel for business or recreation?	O O O	Yes Sometimes No
P4.	Does walking down the aisle of a supermarket increase your problems?	O O O	Yes Sometimes No
F5.	Because of your problem, do you have difficulty getting into or out of bed?	O O O	Yes Sometimes No
F6.	Does your problem significantly restrict your participation in social activities, such as going out to dinner, going to movies, dancing or going to parties?	O O O	Yes Sometimes No
F7.	Because of your problem, do you have difficulty reading?	O O O	Yes Sometimes No
P8.	Does performing more ambitious activities such as sports, dancing, household chores (sweeping or putting dishes away) increase your problems?	O O O	Yes Sometimes No
E9.	Because of your problem, are you afraid to leave your home without having someone accompany you?	O O O	Yes Sometimes No
E10.	Because of your problem have you been embarrassed in front of others?	O O O	Yes Sometimes No
P11.	Do quick movements of your head increase your problem?	O O O	Yes Sometimes No
F12.	Because of your problem, do you avoid heights?	O O O	Yes Sometimes No
P13.	Does turning over in bed increase your problem?	O O O	Yes Sometimes No
F14.	Because of your problem, is it difficult for you to do strenuous homework or yard work?	O O O	Yes Sometimes No
E15.	Because of your problem, are you afraid people may think you are intoxicated?	O O O	Yes Sometimes No
F16.	Because of your problem, is it difficult for you to go for a walk by yourself?	O O O	Yes Sometimes No

P17.	Does walking down a sidewalk increase your problem?	O O O	Yes Sometimes No
E18.	Because of your problem, is it difficult for you to concentrate	O O O	Yes Sometimes No
F19.	Because of your problem, is it difficult for you to walk around your house in the dark?	O O O	Yes Sometimes No
E20.	Because of your problem, are you afraid to stay home alone?	O O O	Yes Sometimes No
E21.	Because of your problem, do you feel handicapped?	O O O	Yes Sometimes No
E22.	Has the problem placed stress on your relationship with members of your family or friends?	O O O	Yes Sometimes No
E23.	Because of your problem, are you depressed?	O O O	Yes Sometimes No
F24.	Does your problem interfere with your job or household responsibilities?	O O O	Yes Sometimes No
P25.	Does bending over increase your problem?	O O O	Yes Sometimes No

Used with permission from GP Jackson

Jacobson GP, Newman CW: The development of the Dizziness Handicap Inventory. Arch Otolaryngol Head Neck Surg 1990;116; 424-427

DHI Scoring Instructions

The patient is asked to answer each question as it pertains to dizziness or unsteadiness problems, specifically considering their condition during the last month. Questions are designed to incorporate functional (F), physical (P), and emotional (E) impacts on disability.

To each item, the following scores can be assigned:

No = 0 Sometimes = 2 Yes = 4

Scores:

Scores greater than 10 points should be referred to balance specialists for further evaluation.

16-34 Points (mild handicap)

36-52 Points (moderate handicap)

54 + Points (severe handicap)

Patient Signature **Date** **Time**

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Referral to Outpatient Physical Therapy:

Ensure a Vestibular specific diagnosis is noted in order. This way central scheduling knows to place with correct therapist.

Always recommend Outpatient follow up.

Handout BC 4706

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Consult to Outpatient Physical Therapy

- Dx: Vestibular
- CPU/Scheduling.

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Case Scenario #1

Mr. Jones c/o lightheadedness, happens when I look up.

- Therapist checked vertebral artery…

Case Scenario #1

Hard stop example. Identify safety needs.

Mr. Jones c/o lightheadedness, happens when I look up. Therapists checked vertebral artery, positive.

- Stop with vertigo testing. Notify nurse/referring physician, complete our general PT eval, assess for safety, balance, home modifications/equipment needs etc.

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Case Scenario #2

Mrs. White, ruled out for stroke.

- c/o dizziness, room spinning when washing hair in shower. Symptoms subsided, but symptoms increase with getting OOB.

Case Scenario #2

Common 90% of cases example BPPV.

Mrs. White, ruled out for stroke. c/o dizziness, room spinning when washing hair in shower. Symptoms subsided, but symptoms increase with getting OOB.

- Chart review stated negative orthostatics.
- Clear cervical screen, no neuro signs/symptoms.
- Smooth pursuit normal.
- Head impulse test negative.
- No nystagmus at rest.
- VBI negative.
- Dix hallpike + right ear. Noted up beat/torsional nystagmus. Lasting 10 seconds.
    - +R posterior canal
    - Eply maneuver.
    - Re test via dix hallpike, now negative.
    - Symptoms resolved.
    - Assess for any other safety needs.

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Case Scenario #3

- Got up 2am to go to bathroom, c/o room spinning, c/o long duration (more than 2hrs). Difficult focusing.
  - Negative vertebral artery
  - Cx clear.
  - Ocular motor testing: positive nystagmus at rest. Positive gaze holding. Positive head impulse test.

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Case Scenario #3

Got up 2am to go to bathroom, c/o room spinning, c/o long duration (more than 2hrs). Difficult focusing.

- Negative vertebral artery
- Cx clear.
- Ocular motor testing: positive nystagmus at rest. Positive gaze holding. Positive head impulse test.
- Don’t need positional testing.
- Instruct to gaze stabilization/VOR exercises.
- Usually has gait instability, balance/function.
- Report back findings.

If any findings are not adding up…

- Discuss the patient's case with a vestibular certified therapist, or one with more vestibular expertise.
- Discuss your findings with the referring physician.
- Note all findings/results of testing, reach out for help in deciphering if needed.

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Flow chart summary for diagnosis[1]

BPPV Algorithm

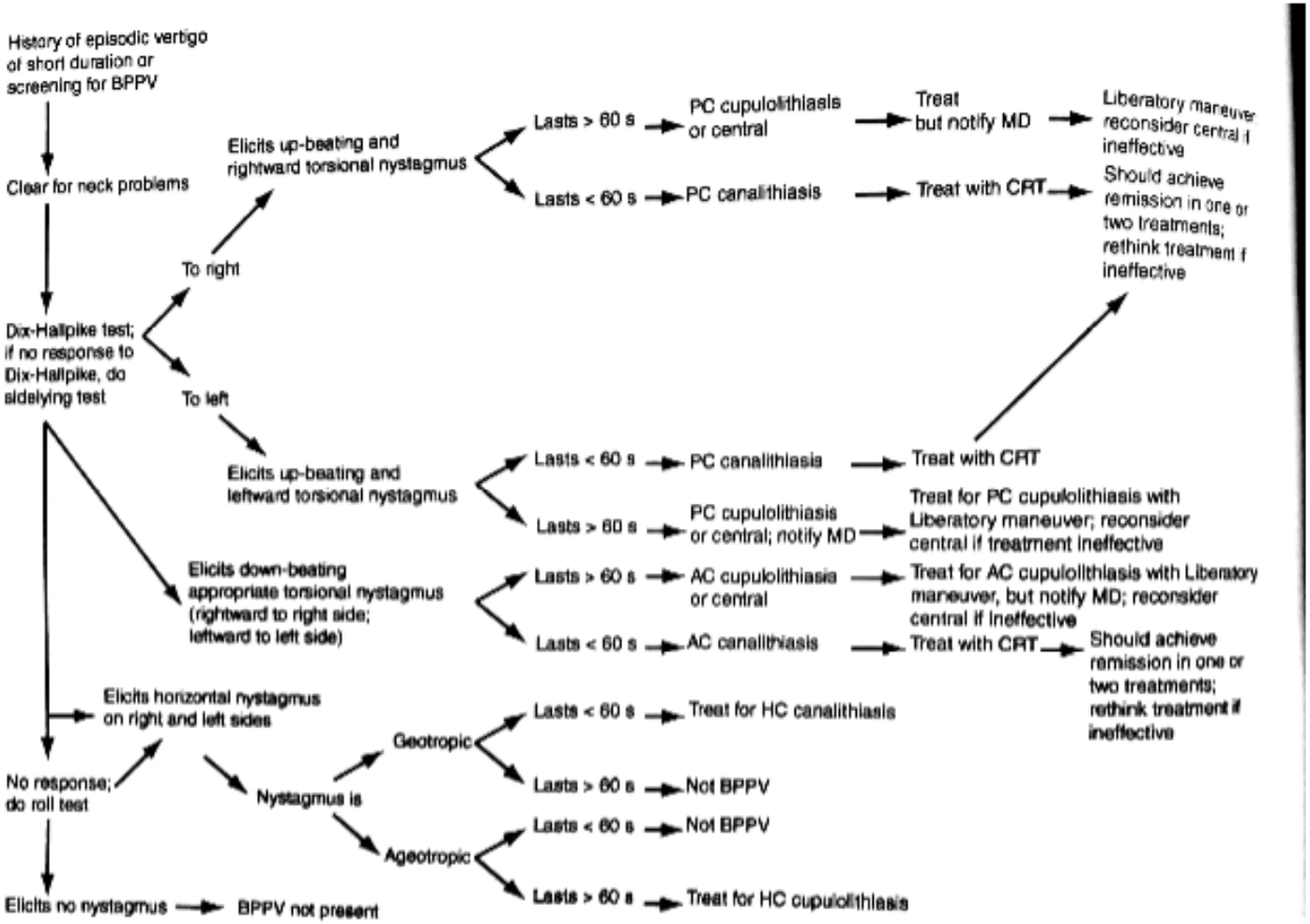

Figure 20.7 Algorithm for assessment leading to treatment of benign paroxysmal positional vertigo (BPPV). Identification of the direction and duration of the nystagmus leads to the determination of the canal involved and whether the BPPV is from canalithiasis or cupulolithiasis. This information directs the appropriate choice of treatment. AC = anterior canal; BPP = benign paroxysmal positional vertigo; CRT = canalith repositioning treatment; MD = medical doctor; PC = posterior canal.

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Thank You

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