DIZZINESS IN THE OLDER PATIENT

AN APPROACH

D Lelli, MD, FRCPC
Apr 2017

DISCLOSURES

- None

OBJECTIVES

- At the end of this talk, you will be able to:
  - Contrast presbystasis with other disorders of balance
  - Describe the various presentations of dizziness including the acute vestibular syndrome, episodic vestibular syndrome, and chronic vestibular syndrome
  - Diagnose patients with common causes of dizziness according to the timing and triggers of their symptoms and specific examination techniques
  - Evaluate patients with acute vestibular syndrome and be able to separate central from peripheral causes at the bedside

DIZZINESS IN THE ELDERLY

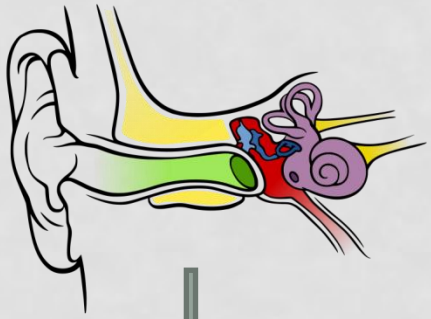
- Very common[1]
  - 20% prevalence > 60y
  - 50% prevalence > 80y
- Similar causes of pathology as younger patients[2]
- Symptoms are due to interaction between aging and pathology

1 - Jonsson et al, J VestibRes (2004)
2 – Lo et al, ClinGeriatrMed (2013)

PHYSIOLOGY OF BALANCE

Visual

Vestibular



Proprioceptive

Internal representation of orientation/motion

Conscious Perception

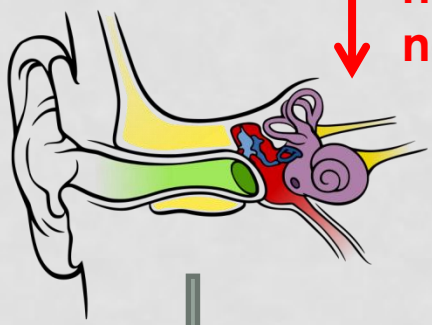
Eye Movements

Body Movements

Autonomic

Bronstein, A. M., & Pavlou, M. (2013). Balance. *Handbook of Clinical Neurology*, *110*(0), 189–208.

PRESBYSTASIS



Internal representation of orientation/motion

CNS neuron density (vestibular, cerebellar)

Smooth pursuit

Muscle bulk

Conscious Perception

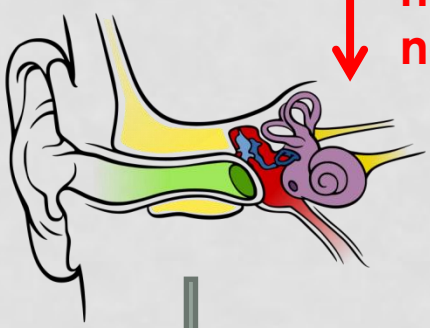
Eye Movements

Body Movements

Autonomic

Fernandez et al, Frontiers in Neurology (2015)

PRESBYSTASIS + PATHOLOGY



CNS neuron density
(vestibular,
cerebellar)

Internal
representation of
orientation/motion

STROKE

Smooth pursuit

Muscle bulk

Conscious
Perception

Eye
Movements

Body
Movements

Autonomic

A WORD ON MEDICATIONS

- Apart from vestibular pathology, leading cause of dizziness in the elderly
  - 16 – 23%[1]
- Main mechanisms:
  - Orthostasis – antihypertensives, AEDs, anti-depressants, dopaminergic meds, et.
  - CNS depression – benzodiazepines, hypnotics, AEDs, narcotics, muscle relaxants, GI anti-spasmodics
  - Cardiac arrhythmias - ACh-esterase inhibitors, anti-arrhythmics, stimulants

1 – Shoair et al, Otolaryngologic Clinics of North America (2011)

AN APPROACH TO DIZZINESS IN THE ELDERLY

- Understand the contribution of presbystasis ✓
- Review medications ✓
- Determine if any balance pathology present:
  - Visual
  - Vestibular
  - Neurologic (central, peripheral)
- Target treatments:
  - Etiology specific (BPPV, neuropathy, Meniere's, etc.)
  - Deficit specific:
    - Targeted physiotherapy (balance, vestibular, strengthening, etc.)
    - Aids (gait, visual etc.)

CLASSIC APPROACH TO DIZZINESS

- What do you mean, "dizzy"?
  - Pre-Syncope = Cardiac / hypotensive
  - Vertigo = Vestibular
  - Disequilibrium = Neurological
  - Ill-defined = Psychiatric / Metabolic

- What this requires:
  - Patients can reliably differentiate types of dizziness
  - Patients have only one type of dizziness
  - Dizzy type truly correlates with a subset of diagnoses

- Up to 70% of physicians stop pursuing other diagnoses based on dizziness type (Stanton et al, 2007)

CLASSIC APPROACH TO DIZZINESS

- Actual patient answers to "What do you mean, "dizzy"?
  - "Yes, like your head is becoming empty,"
  - "I think the general meaning would be the point where that woozy feeling; now I don't know how you want to describe the adjective for that; I guess woozy at that point."
- Like saying: what do you mean, "chest pain"?
- This is especially true for older patients – symptoms are often more vague

THE TOGETHER/ TIMING / TRIGGERS APPROACH

- This is what we do for all other presenting complaints…

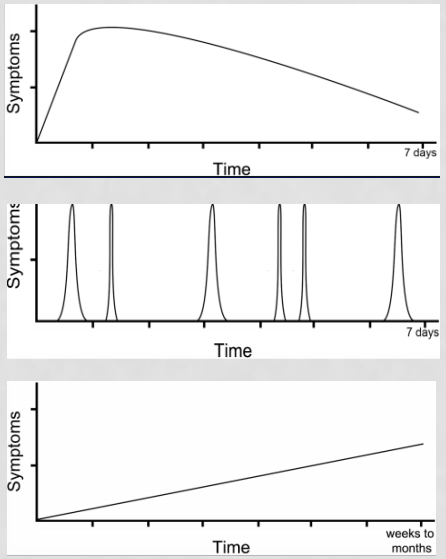
- E.g.: Chest Pain
  - Associations = fever/cough?, leg pain/swelling? hemoptysis?
  - Timing = intermittent or persistent?
  - Triggers = eating? Exertion? Chest wall movement?
  - Exam Signs = crackles RML?, unilateral decreased breath sounds? deviated trachea / distended neck veins?
  - Testing = CXR with LLL consolidation? ST elevation? Troponin?

Newman-Toker, D. E., & Edlow, J. A. (2015). TiTrATE. *Neurologic Clinics*, *33*(3), 577–599.

TIMING / TRIGGERS APPROACH TO DIZZINESS

- Much more consistent responses from patients
  - especially in acute scenarios and in the elderly

- Timing Patterns:
  - Acute Vestibular Syndrome:
    - Single episode, sudden onset vestibular sxs/signs
  - Episodic Vestibular Syndrome:
    - Multiple episodes of vestibular sxs/signs, normal in between
  - Chronic Vestibular syndrome
    - Chronic vestibular symptoms over an extended period



- Triggers:
  - Positional (must be true trigger…)
  - Exposures – e.g.: trauma, gentamicin, etc.

Newman-Toker, D. E., & Edlow, J. A. (2015). TiTrATE. *Neurologic Clinics*, *33*(3), 577–599.

THE TIMING / TRIGGERS APPROACH

- E.g.: Dizziness
  - Associations = e.g.: hearing loss, H/A, neck pain, chest pain, etc.
  - Timing = intermittent or persistent, acute or chronic
  - Triggers = positional, exposure (trauma, toxin)
  - Exam Signs = nystagmus, skew, head impulse, Dix-Hallpike, neurological exam, orthostatic vitals
  - Testing = depending on above

THE TIMING / TRIGGERS APPROACH

- Let's try it! – non-dizziness first…

- 34F with "tearing/ripping" chest/back pain
  - Onset + worsening over days, productive cough, fever, unilateral crackles, RML consolidation on CXR

~~**Aortic Dissection**~~

Pneumonia

- So can we now apply this to dizziness?

THE TIMING / TRIGGERS APPROACH

- Let's try it! – Dizziness!

- 78M, recurrent vertigo ("head is spinning") x seconds
  - Recurrent for weeks, triggers = exercise, going up stairs, associated chest pain, O/E: delayed carotid pulse, crescendo-descrescendo systolic murmur (Gr IV)

~~BPPV~~

Aortic Stenosis

THE TIMING / TRIGGERS APPROACH

- Let's try it! – Dizziness!

- 78M, recurrent lightheadedness x seconds when getting up from bed
  - Recurrent for months, triggers = standing, bending over, rolling over in bed, O/E: delayed upbeat + torsional nystagmus with right Dix-Hallpike maneuver, no postural BP drop / HR rise

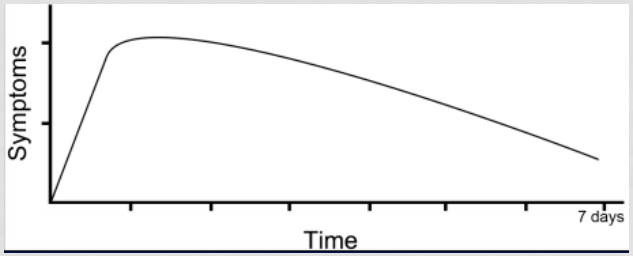
~~**Postural Hypotension**~~

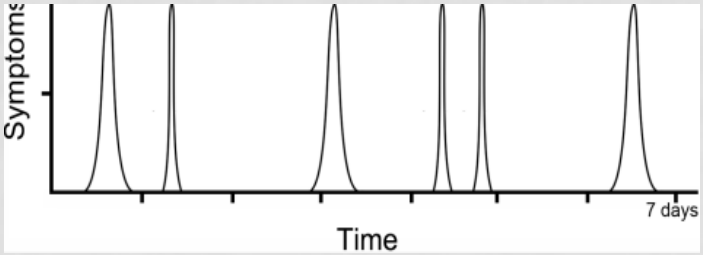
BPPV

PRACTICAL TIPS FOR HISTORY TAKING

- External vertigo or oscillopsia usually means a vestibular problem
  - Reverse is not true (i.e: timing / triggers much more reliable)
  - Vestibular ≠ peripheral (can be central vestibular)

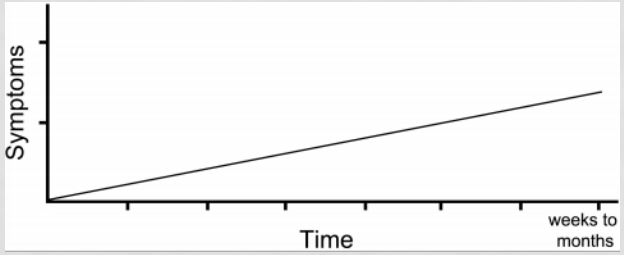
- When eliciting the duration of symptoms for dizziness < 1 month:
  - Be careful of frequent episodes with intervening "crummy" feeling
  - Helpful to ask how long was the "actual spinning / dizziness"
  - "How would you feel if you stayed perfectly still"

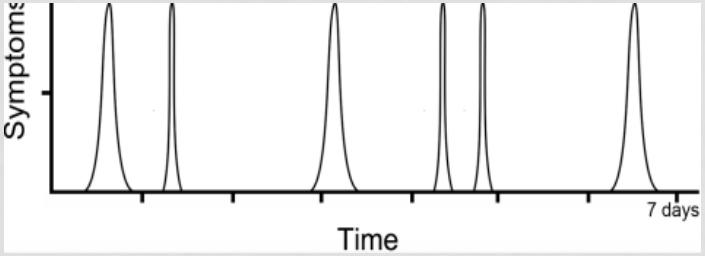




PRACTICAL TIPS FOR HISTORY TAKING

- For symptoms > 1 month:
  - Patients often describe exacerbations (motion, environment) – important to ask how they feel in-between
    - "Do you ever feel normal?"
    - "How many days of the month are you dizzy?"
    - Exacerbations often last hours past the initiating factor
  - Gait vs. vestibular cause - "Is it your legs or your head?"



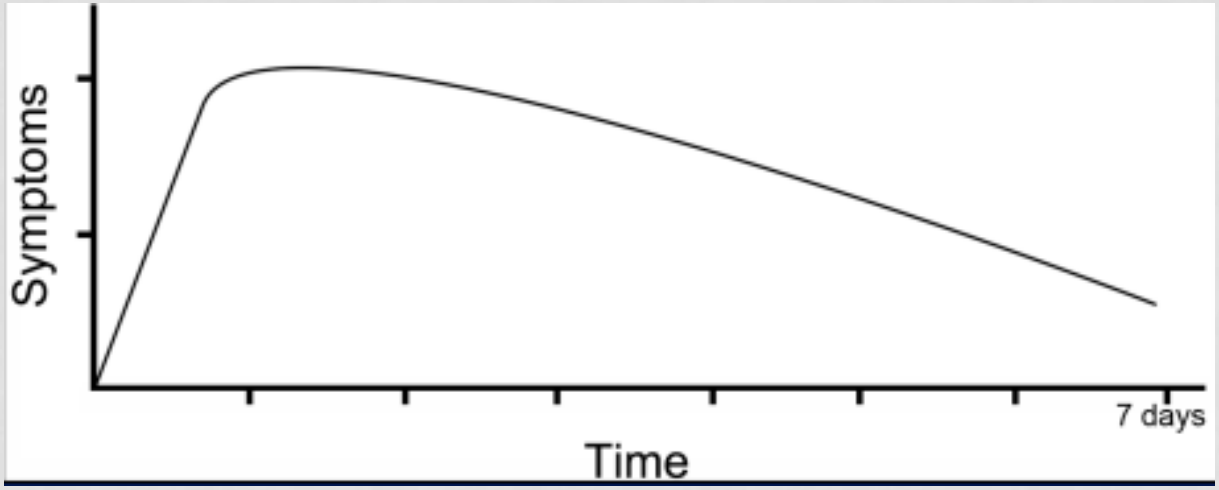


PRACTICAL TIPS FOR HISTORY TAKING

- Histories are often vague in the elderly:
  - Memory difficulty
  - Loss of percept
- When all else fails – stop talking and examine

THE ACUTE VESTIBULAR SYNDROME

- Acute onset of dizziness, nausea +/- vomiting, gait ataxia



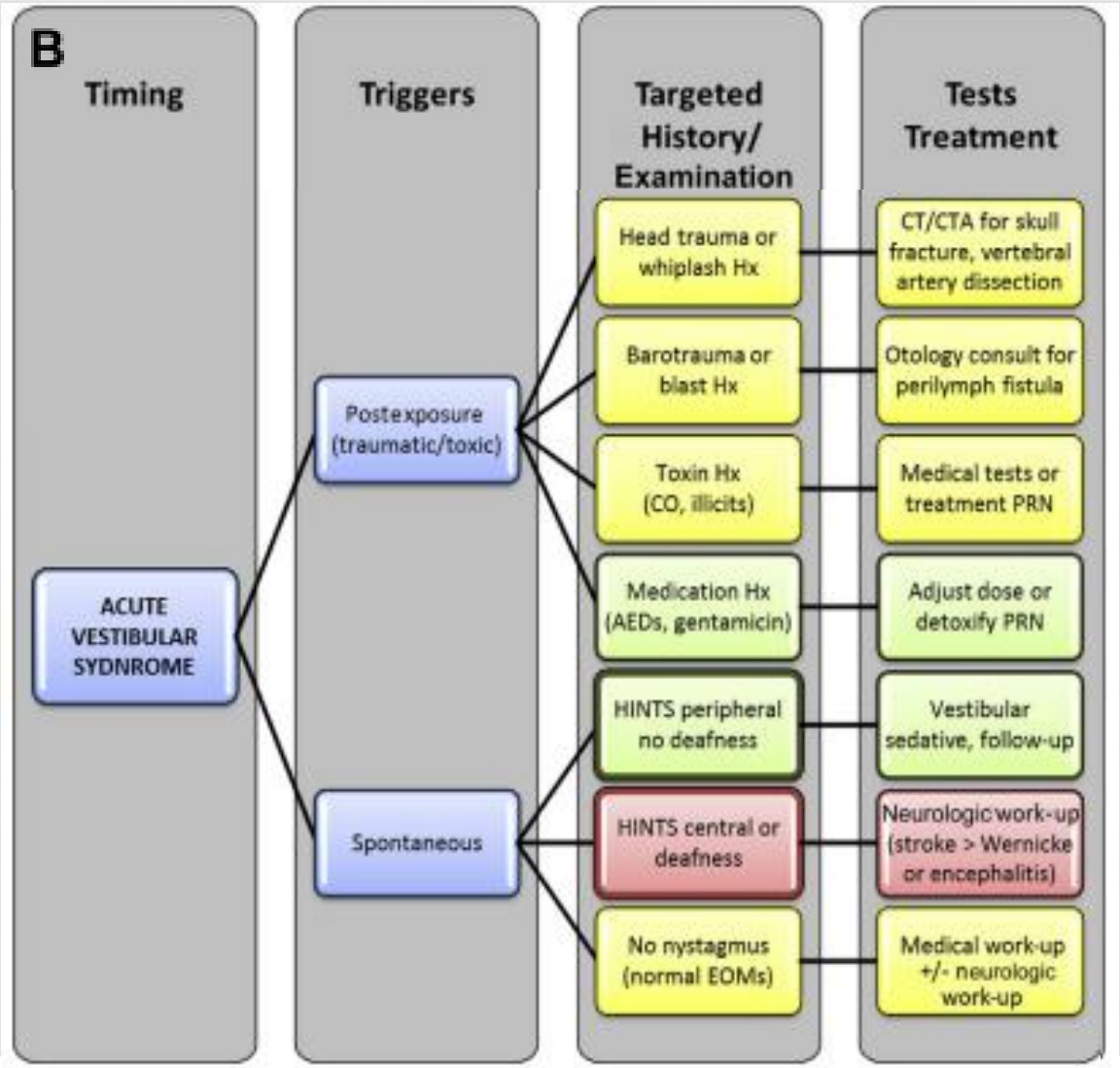
DDX -ACUTE VESTIBULAR SYNDROME

Box 1
Differential diagnosis of AVS

Benign[a] or Less Urgent Causes	Dangerous[a] and More Urgent Causes
Common causes (>1% of AVS)	Common causes (>1% of AVS)
• Vestibular neuritis	• Brainstem or cerebellar infarction
• Multiple sclerosis	• Brainstem or cerebellar hemorrhage
Uncommon (<1%) or unknown frequency	Uncommon (<1%) or unknown frequency
• Viral labyrinthitis	• Labyrinthine stroke[b]
• Herpes zoster oticus (Ramsay Hunt syndrome)	• Bacterial labyrinthitis/mastoiditis
• Acute traumatic vestibulopathy	• Autoimmune vestibulopathy (eg, Cogan syndrome)
• Medication ototoxicity (eg, aminoglycosides)	• Wernicke syndrome (B_1 deficiency)
• Acute disseminated encephalomyelitis	• Miller Fisher syndrome
• CNS side effects (eg, antiepileptics)	• Brainstem encephalitis or cerebellitis (eg, *Listeria*, herpes simplex/zoster, paraneoplastic, Creutzfeldt-Jakob disease)
• Prolonged Meniere syndrome attack	Presumed possible causes[c]
• Prolonged vestibular migraine attack	• Cerebral infarction or hemorrhage
• Episodic ataxia syndrome attack	• Subarachnoid hemorrhage/aneurysm
• Cerebellopontine angle neoplasm (eg, vestibular schwannoma, metastases)	• Severe anemia or hypoxia
Presumed possible causes[c]	• Carbon monoxide toxicity
• Atypical infection (otosyphilis, Lyme disease)	• Electrolyte (eg, hyponatremia, hyperglycemia)
• Degenerative cerebellar ataxia	• Endocrine (eg, hypothyroidism)
• Drug intoxication (eg, alcohol, illicit substances)	• Decompression sickness
	• Mountain sickness
	• Hypertensive encephalopathy
	• CNS medication toxicity (eg, lithium)
	• Ciguatera poisoning

Tarnutzer, A. Aet al (2011). Does my dizzy patient have a stroke? A systematic review of bedside diagnosis in acute vestibular syndrome. *CMAJ, 183*(9).

TIMING TRIGGERS APPROACH ACUTE VESTIBULAR SYNDROME



Newman-Toker, D. E., & Edlow, J. A. (2015). TiTrATE. *Neurologic Clinics*, *33*(3), 577–599.

I DON'T GET THE HINT(S)…

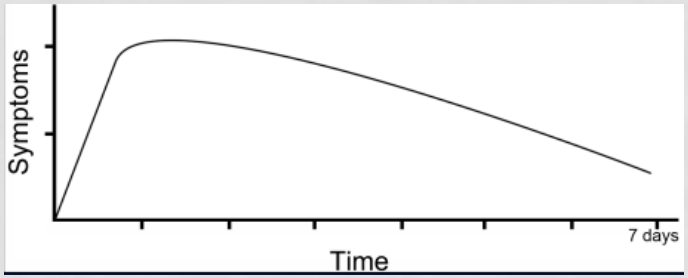
- HINTS – battery of tests designed to separate stroke from vestibular neuritis

- **H**ead **I**mpulse
- **N**ystagmus
- **T**ests of **S**kew

- When applied to the correct patients:
  - 96.5% sensitive and 84.4% specific in detecting stroke[1]
  - Better than acute MRI! (delayed 24 hr MRI as gold standard)

1 - Newman-Toker DE, Kerber KA, Hsieh YH, et al. HINTS outperforms ABCD2 to screen for stroke in acute continuous vertigo and dizziness. Acad Emerg Med 2013;20: 986–996

SO, WHEN TO USE IT?



(Acute vestibular syndrome)

+ NYSTAGMUS

* And no obvious signs of stroke

SO WHAT DOES IT MEAN?

- If you have a patient with AVS + nystagmus and **ALL** of:
  - A Positive head impulse test
  - Direction fixed horizontal/torsional nystagmus
  - No skew deviation

Reassure
Symptomatic Rx / VRT
(it's vestibular neuritis)

- If you have a patient with AVS + nystagmus and **ANY** of:
  - Negative head impulse test
  - Any nystagmus except direction fixed horizontal/torsional
  - Skew deviation

Stroke workup (clinic or ED)

- If you have a patient with AVS and no nystagmus:
  - Make sure there isn't any (remove fixation)
  - Look for other causes

Clinical Judgement
Medical/psych/neuro causes

YOU TRY IT!

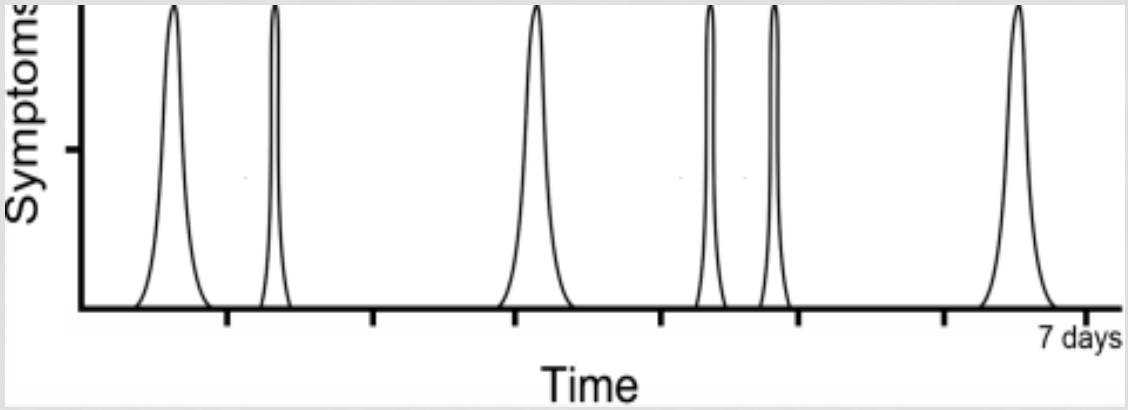
- 64F, presents with 18 hours of vertigo, dizziness, nausea, vomiting, and unsteadiness on her feet
- No focal neurologic symptoms
- No change in medications / exposures

MEDICAL CAUSES OF AVS

- Usually these will be apparent from the associated signs / symptoms:
  - Drug intoxications / exposures (carbon monoxide)
  - CNS Medication side effect
  - Severe anemia / hypoxia
  - Electrolyte abnormalities (hyponatremia, hyperglycemia, etc.)
  - Endocrine (hypothyroid, hypocortisolism)
  - Environmental – decompression sickness, mountain sickness

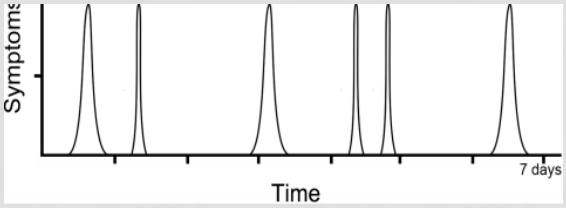
THE EPISODIC VESTIBULAR SYNDROME

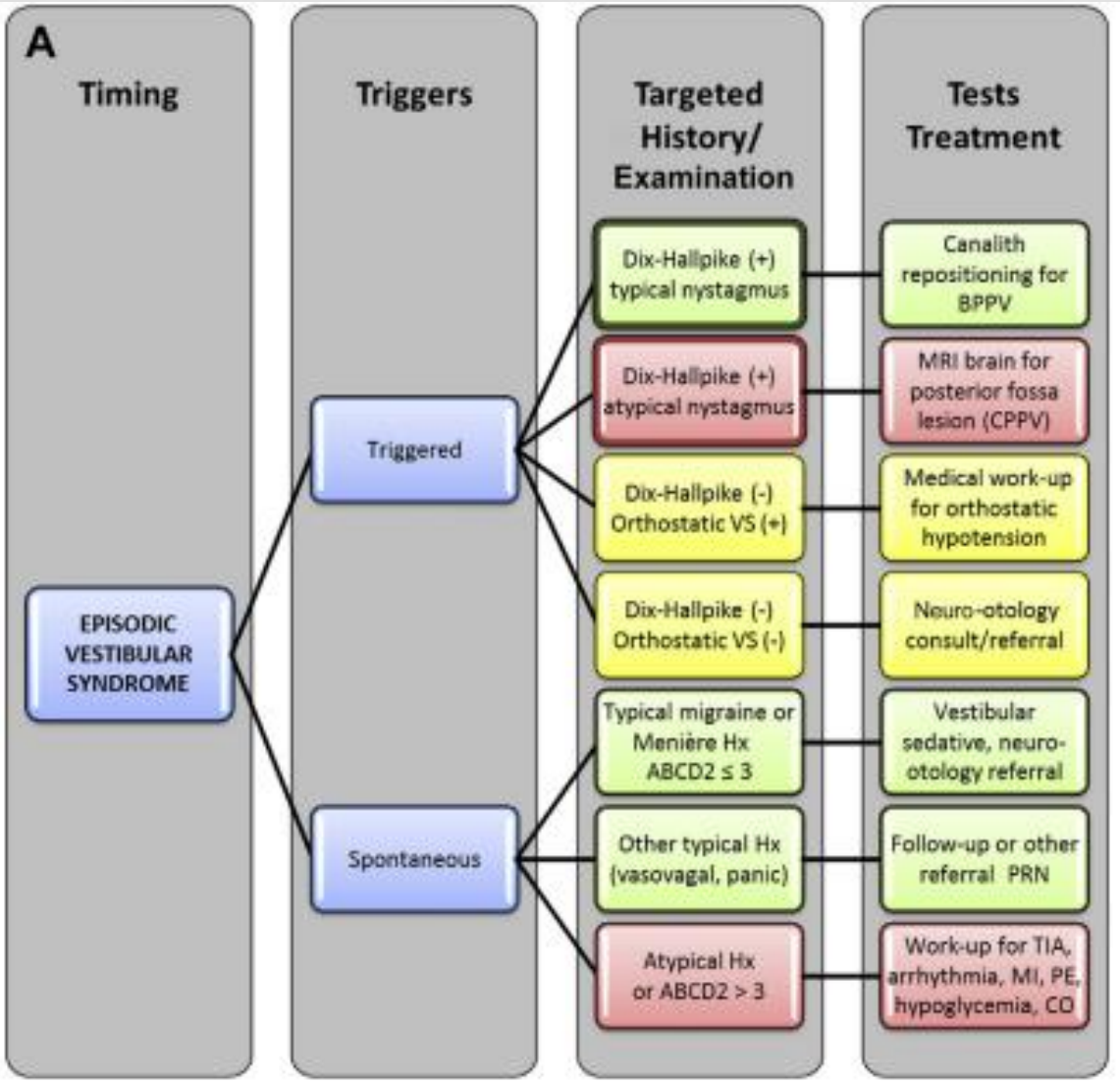
- Episodes of dizziness lasting seconds to minutes to hours to days – but NORMAL in between



- Timing and triggers are VERY important

TIMING TRIGGERS APPROACH EPISODIC VESTIBULAR SYNDROME

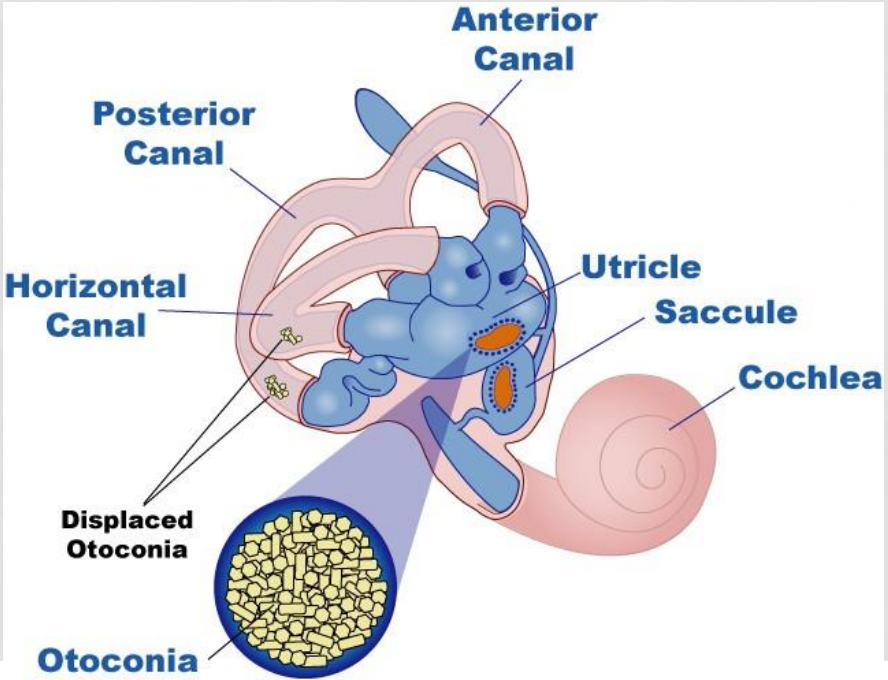




Newman-Toker, D. E., & Edlow, J. A. (2015). TiTrATE. *Neurologic Clinics*, *33*(3), 577–599.

BENIGN PAROXYSMAL POSITIONAL VERTIGO

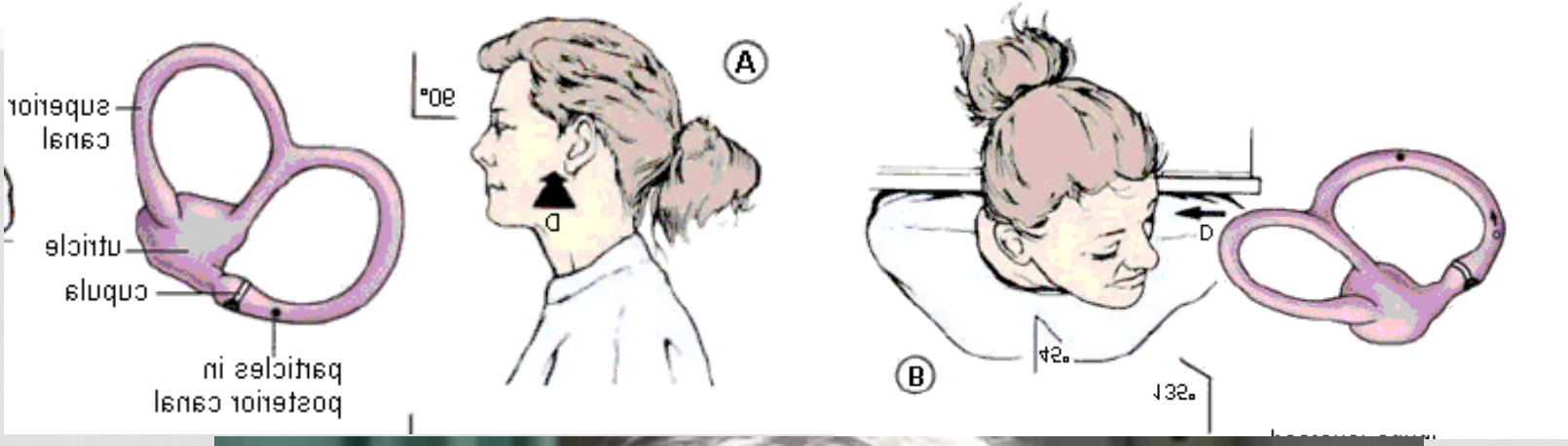
- A disorder of the inner ear, caused by otoconia that are loose in the semicircular canals
  - Many causes (degenerative, trauma, post- inner ear disease i.e.: vestibular neuritis, etc.), idiopathic
  - Prevalence up to 10% in older individuals



BPPV - EXAMINATION

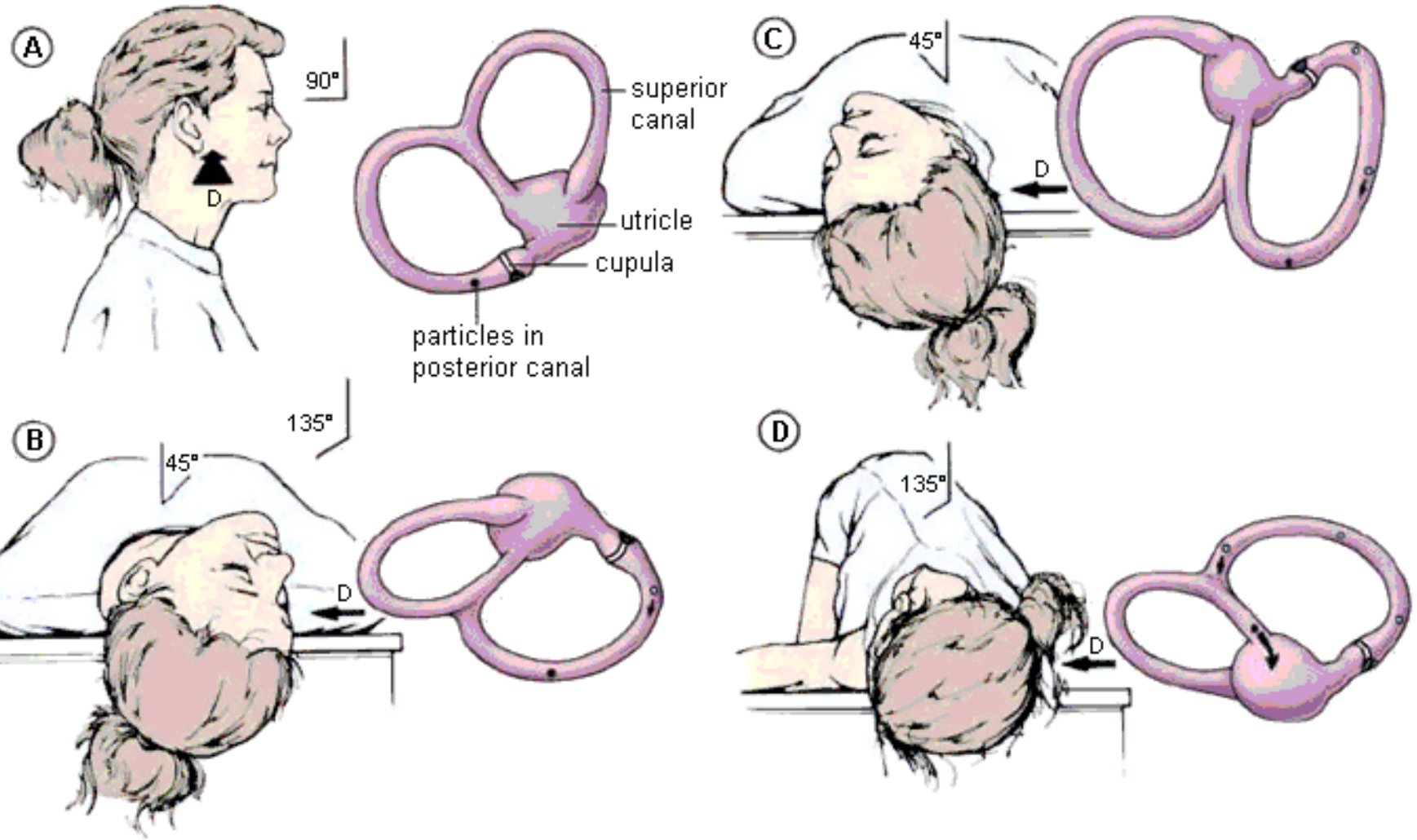
- Examination should be normal unless provocative maneuvers are done
- In other words:
  - If they are dizzy AND there is nystagmus spontaneously – DON'T think BPPV (rare exceptions)
  - If the exam is normal and they have episodic dizziness
    - TEST for BPPV (pre-test probability very high in this age group)
    - Even worth testing if history is vague

CLASSIC POSTERIOR CANAL BPPV

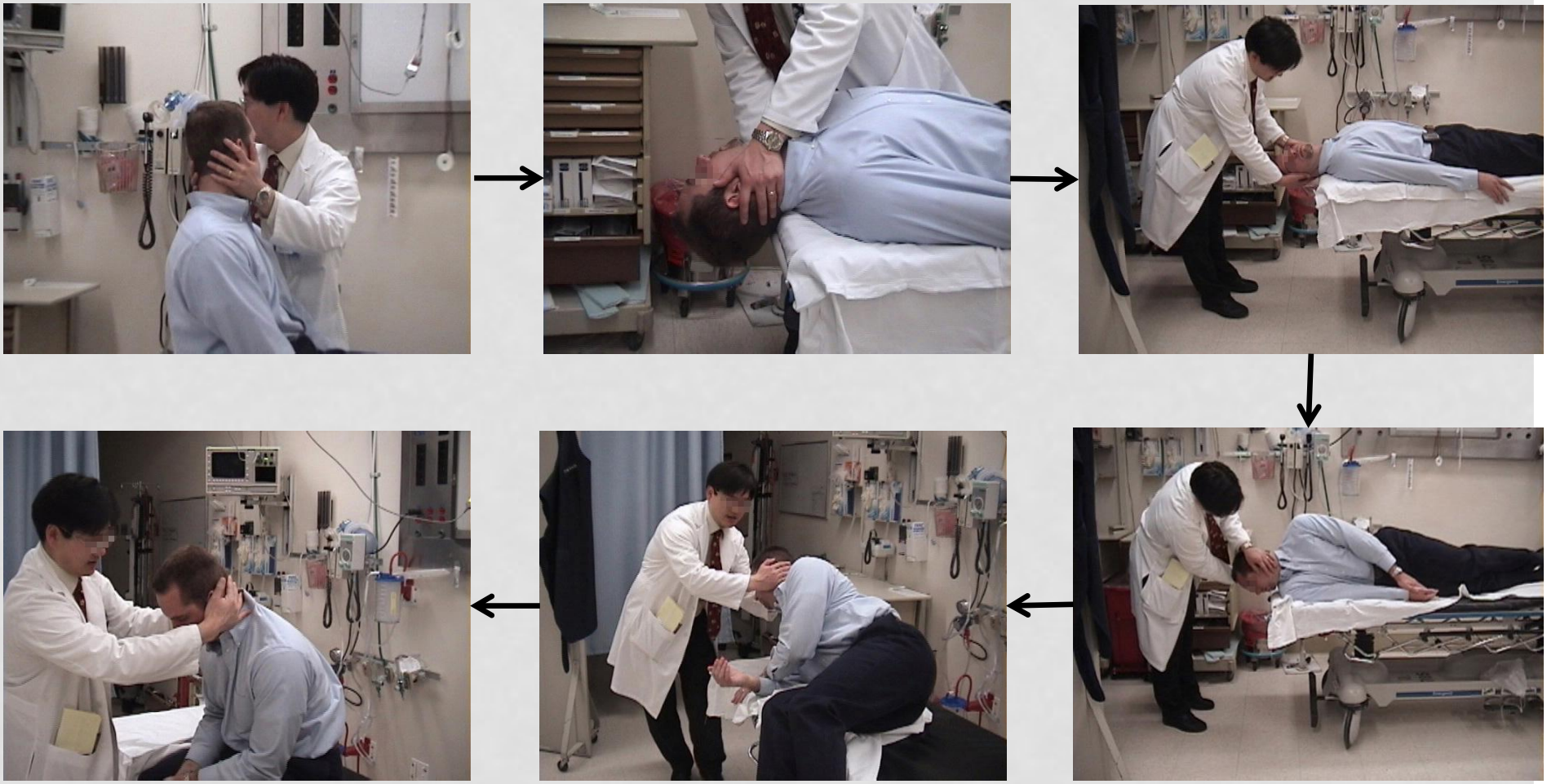


https://www.youtube.com/watch?v=cZlXvRlxrRE

PC BPPV – EPLEY MANEUVER



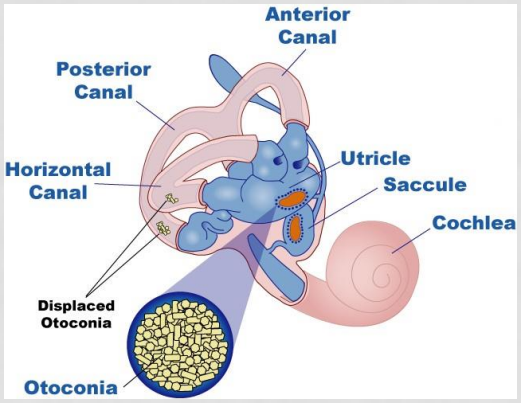
PC BPPV – EPLEY MANEUVER



MEDSCAPE online – BPV in ED Treatment & Management - http://emedicine.medscape.com/article/791414-treatment; Accessed Dec 6, 2015

OTHER BPPV VARIANTS

- Horizontal canal ~3-12% of cases
- Anterior canal ~2% of cases



- Different triggering movements, nystagmus and repositioning maneuvers for these
- If you suspect this:
  - Read up online re: the maneuvers
  - Refer to vestibular physiotherapy
  - Refer to neuro-otology

SPONTANEOUS EPISODIC VESTIBULAR SYNDROME

- Episodes of dizziness, well in between, no clear trigger
- Exam is generally less helpful
  - Exceptions:
    - stroke RFs (BP, arrhythmias, bruits, etc.)
    - Residual neurologic exam findings (asymptomatic minor stroke deficits)
    - Hearing loss (Meniere's disease)
- Must rely on history

DIFFERENTIAL DIAGNOSIS OF S-EVS

- TIA
- Cardiac arrhythmia
- Hypoglycemia
- PE

- Vestibular Migraine
- Meniere's Disease
- Reflex Syncope
- Panic Disorder

DIFFERENTIAL DIAGNOSIS OF S-EVS

- TIA
- Cardiac arrhythmia
- Hypoglycemia
- PE

Focal motor symptoms (dysarthria, hemiparesis)

- Vestibular Migraine
- Meniere's Disease
- Reflex Syncope
- Panic Disorder

Recurrent episodes for years

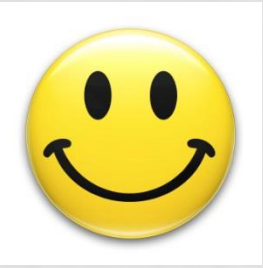
DIFFERENTIAL DIAGNOSIS OF S-EVS

- TIA
- Cardiac arrhythmia
- Hypoglycemia
- PE

Focal motor symptoms (dysarthria, hemiparesis)

$ABCD_2 > 3$

- Vestibular Migraine
- Meniere's Disease
- Reflex Syncope
- Panic Disorder



Recurrent episodes for years

$ABCD_2 \leq 3$

DIFFERENTIAL DIAGNOSIS OF S-EVS

- TIA
- Cardiac arrhythmia
- Hypoglycemia
- PE

Focal motor symptoms (dysarthria, hemiparesis)

$ABCD_2 > 3$

- Vestibular Migraine
- Meniere's Disease
- Reflex Syncope
- Panic Disorder

Recurrent episodes for years

$ABCD_2 \leq 3$

Visual symptoms

DIFFERENTIAL DIAGNOSIS OF S-EVS

- TIA
- Cardiac arrhythmia
- Hypoglycemia
- PE

Focal motor symptoms (dysarthria, hemiparesis)

$ABCD_2 > 3$

Sudden hemianopsia, diplopia

Visual symptoms

- Vestibular Migraine
- Meniere's Disease
- Reflex Syncope
- Panic Disorder

Recurrent episodes for years

$ABCD_2 \leq 3$

Classic migraine aura

DIFFERENTIAL DIAGNOSIS OF S-EVS

- TIA
- Cardiac arrhythmia
- Hypoglycemia
- PE

- Vestibular Migraine
- Meniere's Disease
- Reflex Syncope
- Panic Disorder

Focal motor symptoms (dysarthria, hemiparesis)		Recurrent episodes for years
$ABCD_2 > 3$		$ABCD_2 \leq 3$
Sudden hemianopsia, diplopia	Visual symptoms	Classic migraine aura
Exertion trigger, chest pain	Cardiorespiratory sxs	Anxiety/visceral trigger

DIFFERENTIAL DIAGNOSIS OF S-EVS

- TIA
- Cardiac arrhythmia
- Hypoglycemia
- PE

- Vestibular Migraine
- Meniere's Disease
- Reflex Syncope
- Panic Disorder

Focal motor symptoms (dysarthria, hemiparesis)		Recurrent episodes for years
$ABCD_2 > 3$		$ABCD_2 \leq 3$
Sudden hemianopsia, diplopia	Visual symptoms	Classic migraine aura
Exertion trigger, chest pain	Cardiorespiratory sxs	Anxiety/visceral trigger
Rapid onset neck pain	Pain	Gradual headache

DIFFERENTIAL DIAGNOSIS OF S-EVS

- TIA
- Cardiac arrhythmia
- Hypoglycemia
- PE

- Vestibular Migraine
- Meniere's Disease
- Reflex Syncope
- Panic Disorder

Focal motor symptoms (dysarthria, hemiparesis)		Recurrent episodes for years
$ABCD_2 > 3$		$ABCD_2 \leq 3$
Sudden hemianopsia, diplopia	Visual symptoms	Classic migraine aura
Exertion trigger, chest pain	Cardiorespiratory sxs	Anxiety/visceral trigger
Rapid onset neck pain	Pain	Gradual headache
Sudden, lasting sec/min	Hearing change	Gradual, over hours

DIFFERENTIAL DIAGNOSIS OF S-EVS

- TIA
- Cardiac arrhythmia
- Hypoglycemia
- PE

- Vestibular Migraine
- Meniere's Disease
- Reflex Syncope
- Panic Disorder

Focal motor symptoms (dysarthria, hemiparesis)		Recurrent episodes for years
$ABCD_2 > 3$		$ABCD_2 \leq 3$
Sudden hemianopsia, diplopia	Visual symptoms	Classic migraine aura
Exertion trigger, chest pain	Cardiorespiratory sxs	Anxiety/visceral trigger
Rapid onset neck pain	Pain	Gradual headache
Sudden, lasting sec/min	Hearing change	Gradual, over hours
	Nausea/vomiting	
	Gait disturbance	

D Newman-Toker, NANOS Syllabus 2014 https://content.lib.utah.edu/utils/getfile/collection/ehsl-dent/id/8/filename/6.pdf

VESTIBULAR MIGRAINE

Recurrent Dizziness + Headache

A. At least five episodes fulfilling criteria C and D

B. A current or past history of 1.1 Migraine without aura or 1.2 Migraine with aura[1]

C. Vestibular symptoms[2] of moderate or severe intensity,[3] lasting between 5 minutes and 72 hours[4]

D. At least 50% of episodes are associated with at least one of the following three migrainous features:[5]
   1. headache with at least two of the following four characteristics:
      a) unilateral location
      b) pulsating quality
      c) moderate or severe intensity
      d) aggravation by routine physical activity
   2. photophobia and phonophobia[6]
   3. visual aura[7]

E. Not better accounted for by another ICHD-3 diagnosis or by another vestibular disorder.[8]

VESTIBULAR MIGRAINE

- Treatment – no great studies
  - Acute: triptans, NSAIDs, anti-emetics, +/- vestibular suppressants
  - Prophylaxis: TCAs, B-blockers (propanolol), Ca-blockers, AEDs, SNRIs (venlafaxine)

MENIERE'S DISEASE

- Recurrent episodes of:
  - Vertigo – often severe
  - Aural symptoms (tinnitus, fullness/pressure, fluctuating hearing loss) – usually unilateral initially
  - Lasts minutes to days – typical 2-4 hours
- Often starts in one ear
  - Eventually involves both in 20-50%
- Can start at any age (typical 40-60y)
- Usually associated with progressive low frequency hearing loss

MENIERE'S DISEASE

- Treatment:
  - Non-pharmacologic (low salt, low caffeine)
  - Betahistine (Serc) doesn't work better than placebo (Adrion et al, BMJ 2016)
  - Diuretics (HCTZ, triamterine, etc.)
  - Calcium channel blockers (verapamil, flunarizine, etc.)
  - ENT:
    - intra-aural steroid (Patel et al, LANCET 2016)
    - intra-aural gentamicin
    - labyrinthectomy, vestibular neurectomy

CHRONIC VESTIBULAR SYNDROME

- The "tough ones" – often dizzy for years

- Often a combination of:
  - presbystasis
  - multiple pathologies
  - psychiatric (anxiety/depression)
  - medication side effects

CHRONIC VESTIBULAR SYNDROME

- My suggested approach:
  - Review meds
  - Identify and treat any underlying EVS / AVS:
    - Look especially for low lying fruit -> orthostasis, BPPV
  - Identify any associated static balance pathology:
    - Visual
    - Vestibular pathology
    - Proprioceptive
  - Identify and treat any associated anxiety/depression
  - Consider targeted physiotherapy
  - Consider neurology / neuro-otology referral
- Goal is not necessarily cure, but improvement in symptoms and function

BEDSIDE EXAM IN CHRONIC DIZZINESS (PART 1)

System	Examination	Comments
Vestibular	Dix-Hallpike	May require special accommodations for patients who are frail or have neck or back problems
	Head impulse	When positive, almost always indicates a peripheral vestibular lesion. When negative, does not rule out peripheral lesions
	Spontaneous nystagmus	Use Frenzel lenses to eliminate fixation
	Pneumatic otoscopy/Valsalva	Look for horizontal nystagmus in perilymph fistula or torsional/vertical nystagmus in superior canal dehiscence
	Hearing	Use tuning forks
Vision	Static visual acuity	Check both monocular and binocular vision
	Dynamic visual acuity	Look for significant drop in visual acuity during head movements
Proprioception	Temperature/pain/vibration	Check for neuropathies
Motor (musculoskeletal)	Muscle tone/strength	Lower extremity weakness is a fall risk factor
	Gait	Check tandem walking for different abnormal patterns
	Postural stability/sensory integration	Romberg test with eyes open and closed while standing on a solid surface or foam
	Coordination	Past-pointing, heel-knee, or similar tests

Barin et al, Oto Clinics of NA (2011)

BEDSIDE EXAM IN CHRONIC DIZZINESS (PART 2)

System	Examination	Comments
Oculomotor	Gaze motility/nystagmus	Look for restricted range of motion and nystagmus
	Saccade/tracking	Assess both accuracy and velocity of both slow and fast eye movements
Cardiovascular	Orthostatic drop in blood pressure	Look for drop of greater than 20 mm Hg in systolic blood pressure or drop of greater than 10 mm Hg in diastolic blood pressure on standing
	Irregular heart rhythm	Can be intermittent
Psychogenic	Cognition	Questionnaire-based assessment such as Mini-Mental State Examination
	Anxiety	Questionnaire-based assessment such as Beck Anxiety Inventory. Hyperventilation test can be helpful
	Depression	Questionnaire-based assessment such as Geriatric Depression Scale
	Handicap	Questionnaire-based assessment such as Dizziness Handicap Inventory

Barin et al, Oto Clinics of NA (2011)

VESTIBULAR REHABILITATION THERAPY

- Very useful in most pathologies causing dizziness
- Four major strategies:
  - VOR adaptation:
    - Promote CNS adaptation to change / loss in vestibular input
  - Habituation:
    - Repeated exposure to a provoking stimulus/movement to reduce the response
  - Substitution:
    - Train use of remaining intact sensory systems
  - Canalith Repositioning (Epley, Semont, etc.):
    - For BPPV – not truly rehabilitation, done by vestibular PTs

Alrwaily, M and Whitney S; Otolaryngology Clinics of NA 2011

VESTIBULAR REHABILIATION

- Evidence for efficacy in:
  - Unilateral and bilateral vestibulopathies
  - Anxiety associated with dizziness (habituation)
  - Post-TBI dizziness
  - CNS disorders: Parkinson's, MS, SCAs
- Targeted therapy likely the best (i.e.: diagnose deficits then plan treatment)
- But, even if no specific pathology found, consider VRT:
  - Improve baseline presbystasis (i.e.: postural control, muscle strength, VOR, smooth pursuit, etc.)
  - If compensating systems are improved, symptoms can improve even in undiagnosed pathology

SUMMARY OF APPROACH TO DIZZINESS IN THE ELDERLY

- Understand the contribution of presbystasis
- Review medications

- Determine the clinical syndrome(s):
  - Acute, episodic, or chronic vestibular syndrome
  - If AVS or EVS – use specific approaches to achieve a diagnosis
  - If CVS -> search for visual, vestibular, proprioceptive, CNS, psychiatric contributors

- Target treatments:
  - Etiology specific (BPPV, neuropathy, Meniere's, etc.)
  - Deficit specific:
    - Targeted physiotherapy (balance, vestibular, strengthening, etc.)
    - Aids (gait, visual etc.)

SUMMARY

- Evaluating dizzy patients requires a change in approach from classic teaching
- The timing / triggers approach is used in all other areas of medicine – should apply to dizziness as well
- With specific historical clues and examination maneuvers most causes of dizziness in the elderly can be diagnosed (and many treated!)
- Dizziness in the elderly is often multifactorial – search for treatable contributors and consider VRT

SUMMARY

- We should all care about dizziness!

QUESTIONS?

RESOURCES

- Fernandez, L., Breinbauer, H. A., & Delano, P. H. (2015). Vertigo and dizziness in the elderly. *Frontiers in Neurology*, *6*(JUN), 1–6. http://doi.org/10.3389/fneur.2015.00144

- Alrwaily, M., & Whitney, S. L. (2011). Vestibular rehabilitation of older adults with dizziness. *Otolaryngologic Clinics of North America*, *44*(2), 473–496. http://doi.org/10.1016/j.otc.2011.01.015

- Jahn, K., Kressig, R. W., Bridenbaugh, S. A., Brandt, T., & Schniepp, R. (2015). Dizziness and Unstable Gait in Old Age, 387–394. http://doi.org/10.3238/arztebl.2015.0387

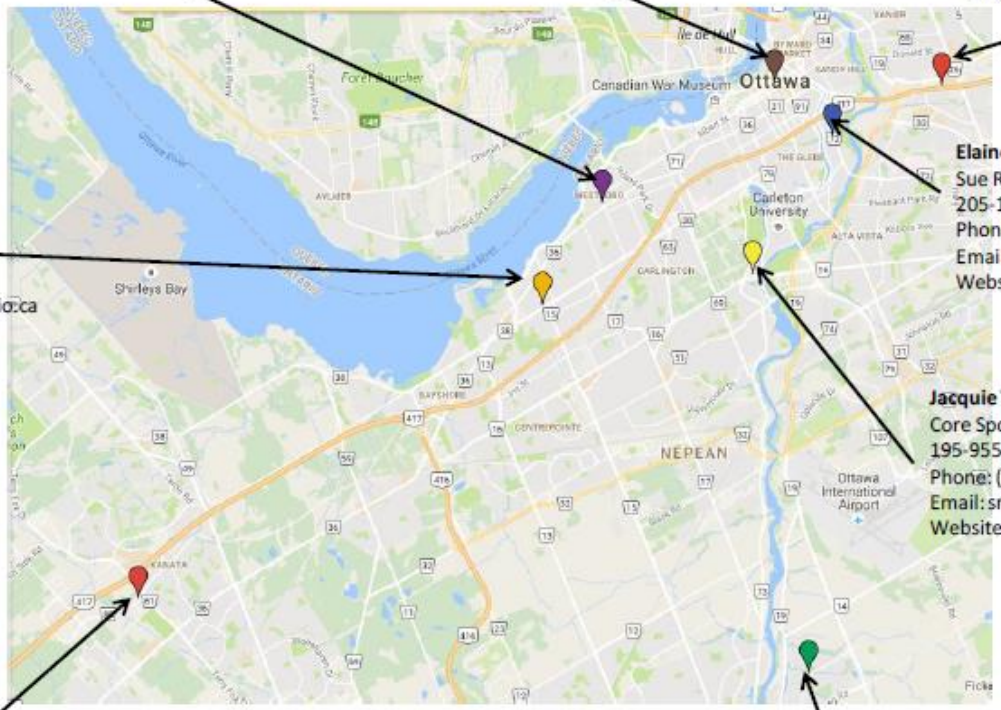
- Bronstein, A., Lempert, T., & Seemungal, B. (2010). Chronic dizziness: a practical approach. *Practical Neurology*, *10*(3), 129. Retrieved from http://171.66.125.86/content/10/3/129.abstract

RESOURCES – NON-EXHAUSTIVE LIST OF VRT IN OTTAWA

Andrew Dings
Ottawa Physiotherapy and Sports Clinic
368 Churchill Ave, Ottawa
Phone: (613) 728-4160
Website: www.optsc.com

Eric Finstad
Killens Reid Physiotherapy
610-130 Albert St, Ottawa
Phone: (613) 594-8512
Website: www.killensreid.com

Kate McIlquham/Rob Karas
CBI Physiotherapy
1400 St. Laurent Blvd – 4th Floor
Phone: (613) 742-6108
Website: www.cbi.ca
Email: kmcilquham@cbi.ca
Email: rkaras@cbi.ca



Nicole Terrier
Lifemark - Carling
2249 Carling Ave, Ottawa
Phone: (613) 721-2120
Website: www.lifemarkphysio.ca

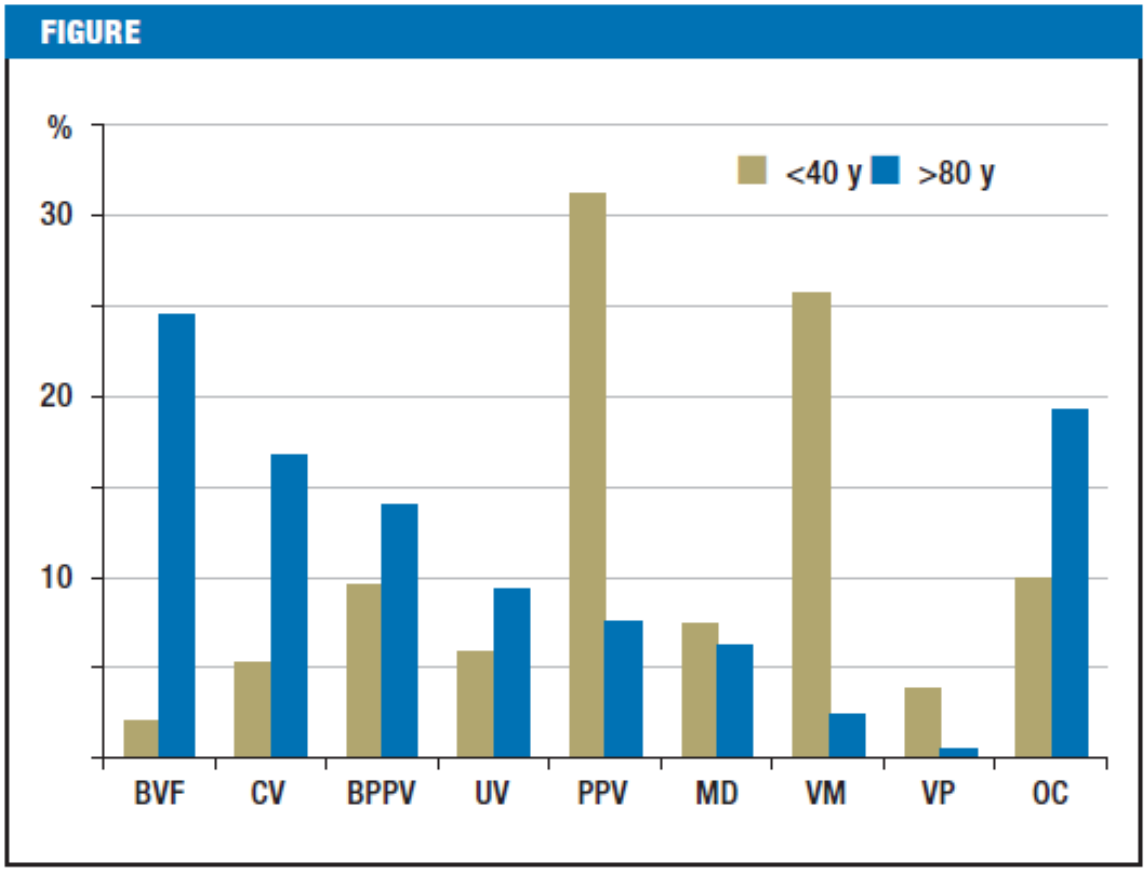
Elaine Doyle
Sue Raven Physiotherapy Clinic
205-194 Main St, Ottawa
Phone: (613) 567-4808
Email: sravenphysio@bellnet.ca
Website: www.sueravenphysio.com

Jacquie Van Ierrsel
Core Sports and Manual Physiotherapy
195-955 Green Valley Cresc, Ottawa
Phone: (613) 228-2673
Email: sravenphysio@bellnet.ca
Website: www.corephysiotherapy.ca

Sandeep Kulkarni
Kanata Physiotherapy Clinic
200-308 Palladium Dr, Kanata
Phone: (613) 599-8132
Email: kopc@bellnet.ca
Website: www.kanataphysiotherapy.com

Angelo Karalekas
Momentum Physiotherapy
4184 Spratt Rd, Ottawa
Phone: (613) 822-0101
Email: sravenph
Website: www.momentumphysiotherapy.ca

SELECT CAUSES OF DIZZINESS



Jahn et al, Dtsch Arztebl Int 2015; 112: 387–93
From tertiary referral centre in Munich

BVF = bilateral vestibular failure

CV = central vertigo

BPPV = benign paroxysmal positional vertigo

UV = unilateral vestibulopathy

PPV = phobic postural vertigo (aka: PPPD)

MD = Meniere's disease

VM = vestibular migraine

VP = vestibular paroxysmia

OC = other causes