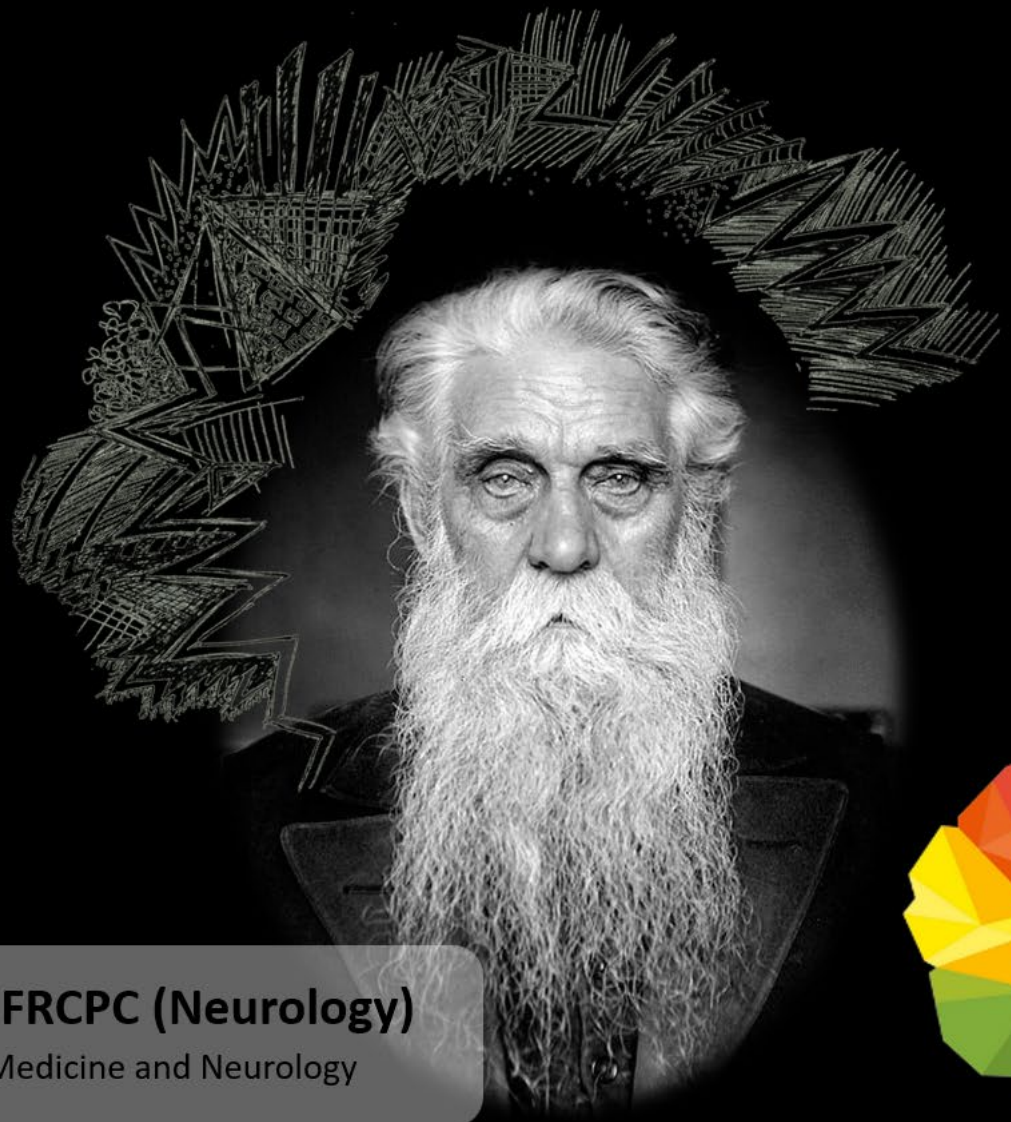
TREATMENT OF HEADACHE IN THE OLDER PATIENT

September 27, 2025



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Disclosure

Speaker: Alexander Melinyshyn, BSc, MD, FRCPC (Neurology)

Associations / Committees:

- **Canadian Headache Society:** Board Member (Director), Advocacy Committee (Chair)
- **Migraine Canada:** Scientific Advisory Committee (Medical Advisor)

Relationships with financial interests:

- **Grants/Research Support:**
  - Primary Investigator on Industry-led Study: Lundbeck, APEX Pharmaceuticals, Abbvie, Merz
- **Participation in Advisory Board:** Teva, Novartis, Lilly, Abbvie, Lundbeck, Miravo, LinPharma, Organon, Idorsia
- **Speakers Bureau/Honoraria:** Teva, Novartis, Lilly, Abbvie, Lundbeck, Organon, Idorsia, Migraine Canada, Canadian Pain Society.
- **Equity ownership/stock options:** None

Learning Objectives

By the end of this session, attendees will be better equipped to:

- **Recognize the epidemiology and clinical spectrum** of primary and secondary headache disorders in older adults.
- **Differentiate between typical migraine and new-onset headache in late life**, emphasizing red flags and secondary causes.
- **Identify common secondary headache etiologies** in the late life (e.g., temporal arteritis, intracranial mass, vascular disorders, medication overuse, sleep apnea).
- **Apply appropriate diagnostic strategies,** including when to order neuroimaging, vascular imaging, or laboratory investigations.
- **Evaluate safety and tolerability profiles of acute and preventive headache medications** in older adults, including drug–drug interactions and polypharmacy concerns.

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Meet Prudence Abernathy

Mrs. Abernathy, an 80-year-old woman, was brought to clinic with a three-month history of steadily worsening headaches. She described the pain as a dull, heavy pressure, bifrontotemporal, and often most pronounced at night and when lying down.

Alongside the headaches, she noted occasional blurred vision and chronic fatigue.

Meet Prudence Abernathy

PMHX

Hypertension
Hyperlipidemia
Coronary artery disease
Type 2 diabetes mellitus
Hypothyroidism
Depression / anxiety
Osteoarthritis
  Chronic pain
Osteoporosis
GERD
Peptic ulcer prophylaxis

Rx

Amlodipine 5–10 mg daily

Lisinopril 10–40 mg daily

Furosemide 20–40 mg daily

Atorvastatin 10–40 mg nightly

Aspirin 81 mg daily

Metformin 500–1000 mg BID

Levothyroxine 50–100 µg

Sertraline 100 mg daily

Acetaminophen 500–1000 mg q6h PRN

Pantoprazole 40 mg daily

Alendronate 70 mg once weekly

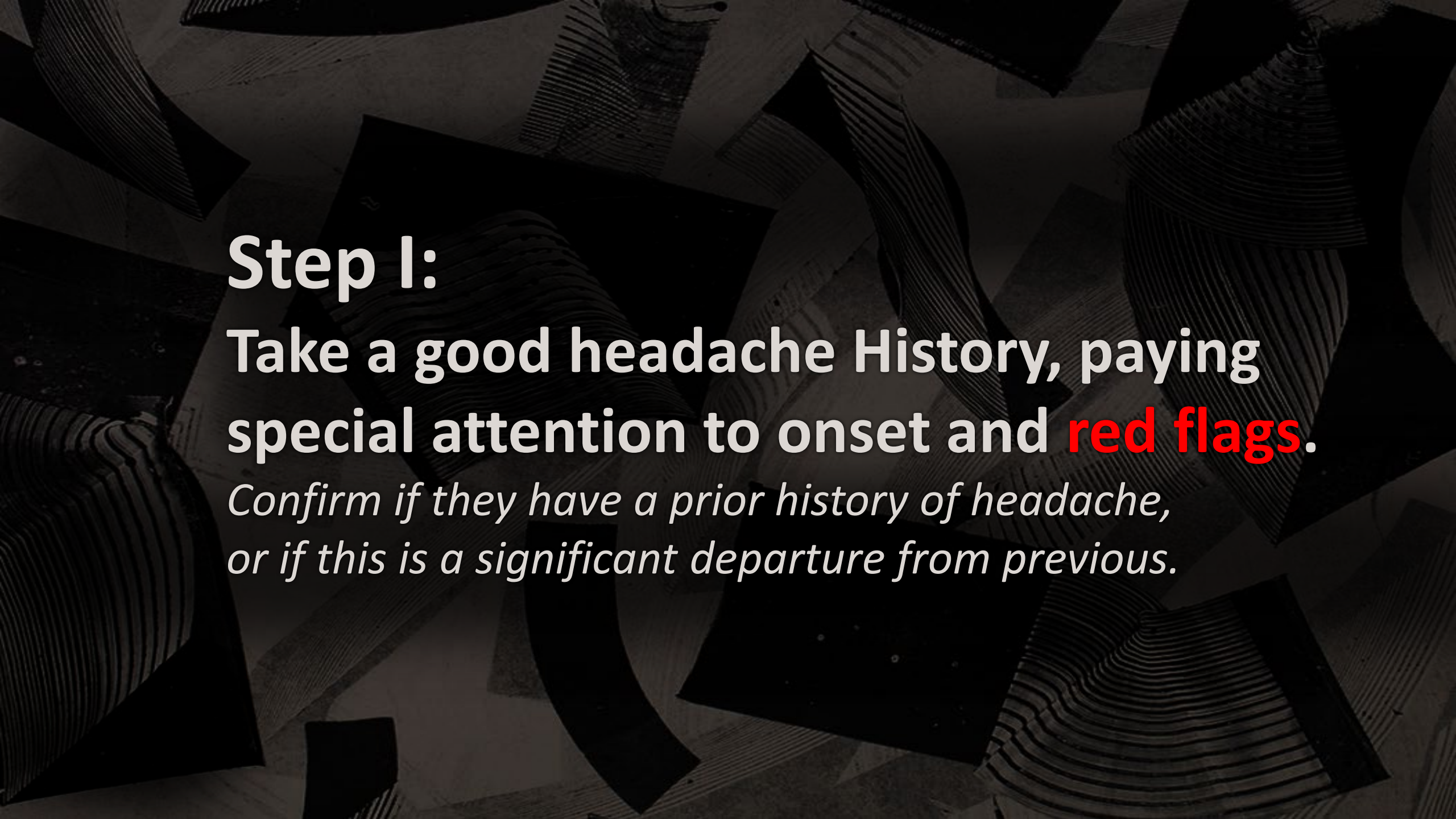
Meet Prudence Abernathy

She had migraine back in her early working years (20-30s), but they had quieted down “over the past number of years (She can’t recall exactly when).

She has tried amitriptyline and topiramate in the past, but these were not useful after 2-3 months.

On examination, her temporal arteries felt somewhat tender to pressure and the vessels were not particularly firm or palpable. You’re not quite sure if pulsation is diminished locally.

Her neurological exam is intact without any concerning abnormality otherwise.



Step I:

Take a good headache History, paying special attention to onset and red flags.

Confirm if they have a prior history of headache, or if this is a significant departure from previous.

Assess for Red Flags

In primary care, and if patients are presenting with headache, 90% chance it is migraine

- **S**ystemic sxs / signs (fever, wt loss, rash/arthralgia, HIV, CA)
- **N**eurologic sxs/signs
- **O**nset: Crescendo, Thunderclap (peak <1 min)
- **O**lder age of onset (>50yo) (jaw claudication / temporal tenderness / TVO)
- **P**attern Δ :
  - Phenotype type Δ
  - Progressive
  - Provoked (manipulation)
  - Postural aggravation

Dodick DW. Adv Stud Med. 2003;3:87-92.
Do TP et al. Neurology. 2019;92:134-144

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(Dodick, 2003)

Assess for Red Flags

A new headache in anyone over 50 is considered a red flag.

Age is a risk factor for secondary headache disorders.

- ≥65yo: 10x risk of worrisome / potentially life-threatening secondary headache
- In cohort of patients with sudden death who presented with headache, 55% were older than 50 years.[1]
  - Most of the sudden deaths were secondary to vascular events, including aneurysmal rupture, intracranial hemorrhage, and cervical artery dissection.
- Series of new-onset headache cases:
  - 15% of those 65 years or older had a secondary headache
  - 1.6% of patients younger than 65 years.[2]

1. Lynch KM, Brett F. Cephalalgia. 2012;32(13):972-978.
2. Pascual J, Berciano J. J Neurol Neurosurg Psychiatry. 1994;57(10):1255-1257.

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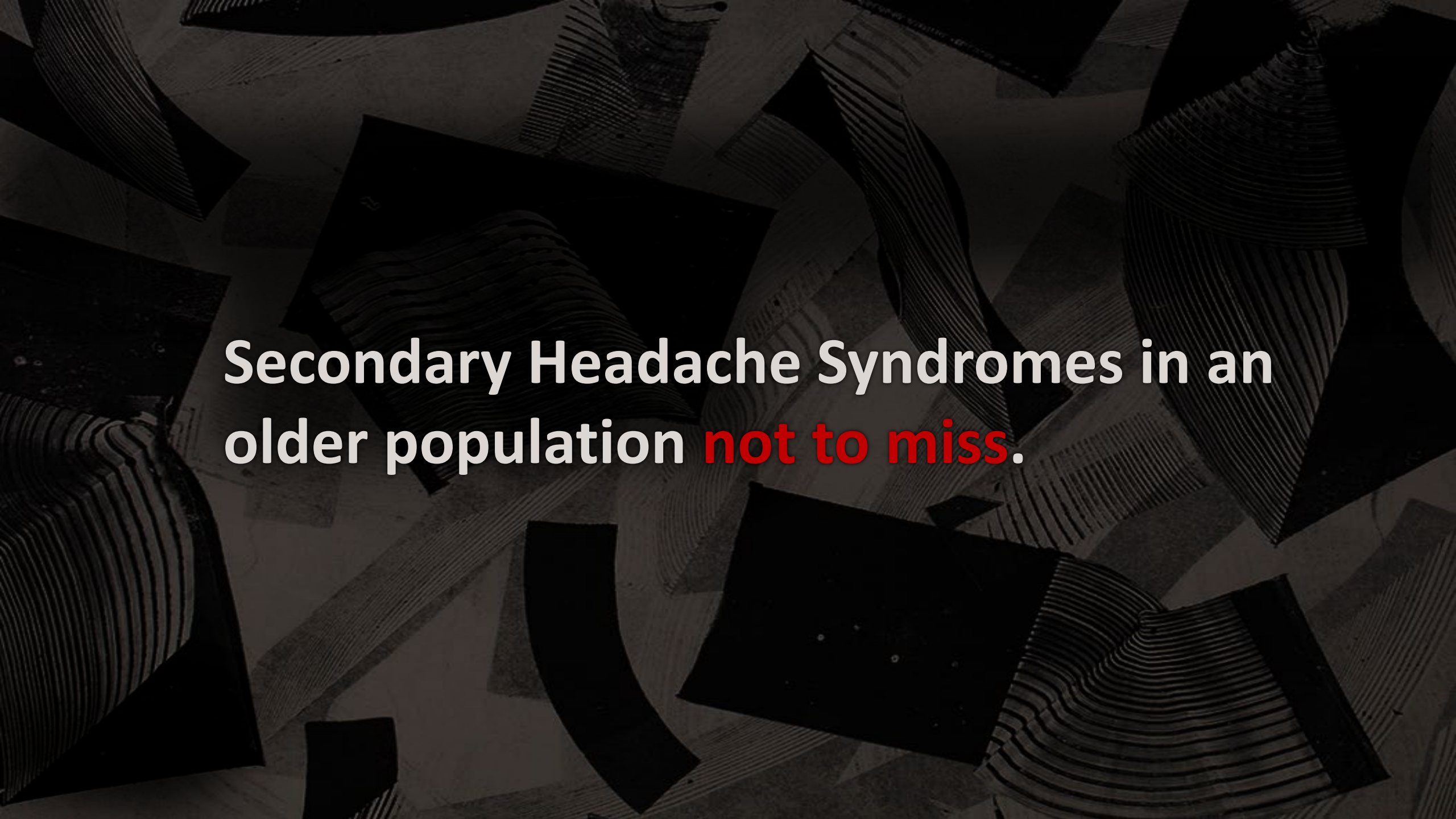
Secondary Headache Syndromes in an older population not to miss.

TABLE 2. Secondary Headache Disorders in Older Adults

Secondary headache disorder	Red flag
Cerebrovascular ischemic event (stroke)	Sudden onset of focal neurologic deficits; headache is more common for strokes in the posterior vs anterior circulation
Intracranial hemorrhage (epidural, subdural, subarachnoid, or parenchymal)	Thunderclap headache, "worst headache of life"; focal neurologic deficits; depressed level of consciousness; presence of anticoagulation
Cerebral neoplasm	Typically, subacute onset of focal neurologic deficits; papilledema
Posttraumatic headache	Head trauma
Giant cell arteritis	Systemic symptoms; scalp tenderness; jaw claudication; visual changes; associated with polymyalgia rheumatica
Cardiac cephalagia	Headache precipitated by exertion
Headache attributable to sleep apnea	Morning headache; history of sleep apnea
Headache attributed to subacute glaucoma	Headache in dimly lit conditions
Cervicogenic headache	Headache exacerbated by neck movement
Medication overuse headache	Polypharmacy

Starling AJ. Mayo Clin Proc. 2018 Feb;93(2):252-262.

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Giant Cell Arteritis (GCA)

- Giant cell arteritis (GCA) is a systemic vasculitis of medium and large vessels, although it is more predominant in the cranial arteries.[1]
- Headache is the most commonly reported symptom of GCA.
- **In one study, headache was reported in 73% of cases and was the presenting symptom in 35% of biopsy-confirmed cases of GCA.[2]**

1. Smith JH, Swanson JW. Headache. 2014; 54(8):1273-1289.
2. Caselli RJ, et al. Neurology. 1988; 38(3):352-359.

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Giant Cell Arteritis (GCA): Clinical Features

- **Jaw claudication**
- **Temporal tenderness, hard vessels**
- **Transient visual loss (painless), blurring, diplopia**
- Stroke

- Cough
- Neck pain
- Tongue pain - lingual claudication
- Dysphagia / odynophagia
- Hoarseness or change in voice
- Limb claudication

- Systemic: fever, malaise, rash, arthralgia, weight loss, poor appetite (PMR).
- History of cardiac issues or myocarditis.

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2022 ACR/EULAR Classification Criteria for GCA

ABSOLUTE REQUIREMENT	
Age ≥ 50 years at time of diagnosis	
ADDITIONAL CLINICAL CRITERIA	
Morning stiffness in shoulders/neck	+2
Sudden visual loss	+3
Jaw or tongue claudication	+2
New temporal headache	+2
Scalp tenderness	+2
Abnormal examination of the temporal artery[1]	+2
LABORATORY, IMAGING, AND BIOPSY CRITERIA	
Maximum ESR ≥ 50 mm/hour or maximum CRP ≥ 10 mg/liter[2]	+3
Positive temporal artery biopsy or halo sign on temporal artery ultrasound[3]	+5
Bilateral axillary involvement[4]	+2
FDG-PET activity throughout aorta[5]	+2

Sensitivity: 87% (CI: 82–91%)

Specificity: 94.8% (CI: 91–97.4%)

Sum the scores for 10 items, if present. A score of ≥ 6 points is needed for the classification of GIANT CELL ARTERITIS.

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Giant Cell Arteritis (GCA): Treatment

- **If diagnosis likely, start Prednisone 60 mg daily + ASA 81mg PO daily**
- Don't delay for Biopsy or U/S
- Treat early to avoid ischemic complications (stroke, vision loss)
- Send for Ophthalmology / Rheumatology consults

ASA 81mg PO daily

(-) visual loss: **Prednisone 1 mg/kg, not to exceed 60 mg**, given in a single daily dose

(+) visual loss: **MethylPred 1g IV x3d, then prednisone**

Taper: prednisone 60 →50 mg/d after 2wks →40 mg/d after another 2 wks

Then, reduce by 5mg q2wks to 20 mg/day

Then taper even more slowly, tailor to the individual patient's clinical course

Methotrexate

Tocalizumab

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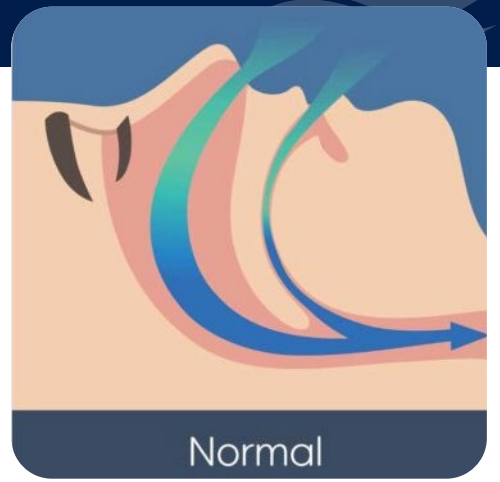
Sleep Apnea Headache

- Sleep apnea headache occurs in ~12-18% of patients with sleep apnea.[1]
- Prevalence of sleep apnea increases with age[2]
- Older patients with new morning headache should be screened for sleep apnea and sent for PSG with a low index of suspicion.
- In observational studies, treatment with CPAP resolves headache in 49%-90% of patients.[3,4]
- Untreated OSA remains a risk factor for cognitive decline / dementia[5], heart attack[6] and stroke[7].



1. Russell MB, et al. Cephalalgia. 2014;34(10):752-755.
2. Kristiansen HA, et al. Cephalalgia. 2012;32(6):451-458.
3. Johnson KG, et al. Headache. 2013;53(2):333-343.
4. Goksan B, et al. Cephalalgia. 2009;29(6):635-641.
5. Ungvari Z, et al. GeroScience. 2025;47:4899-4920.
6. Yao X, et al. Hypertension. 2024.
7. Dharmakulaseelan L, et al. Chest. 2024.

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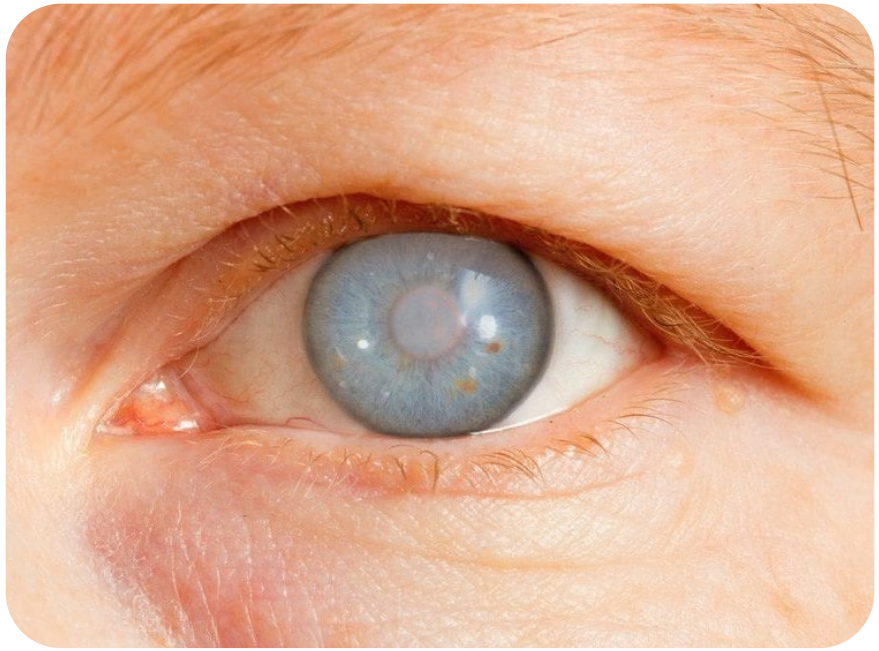
Headache Attributed to Subacute Glaucoma



- Mean age of onset: 60 years.[1]
  Suspect in older patients with brief headache (<4h) and visual blurring triggered by low-light conditions.
- Low light → mydriasis → transiently increase IOP
- Diagnosis can be confirmed with a **referral to an optometrist / ophthalmologist** to measure intraocular pressures (IOPs).
- Unrecognized subacute glaucoma can result in optic nerve damage and progressive visual loss.
- Treatment: peripheral iridotomy is effective treatment for both IOP and headache.[1,2]

1. Nesher R, et al. Headache. 2005;45(2):172-176.
2. Shindler KS, et al. 2005;65(5):757-758.

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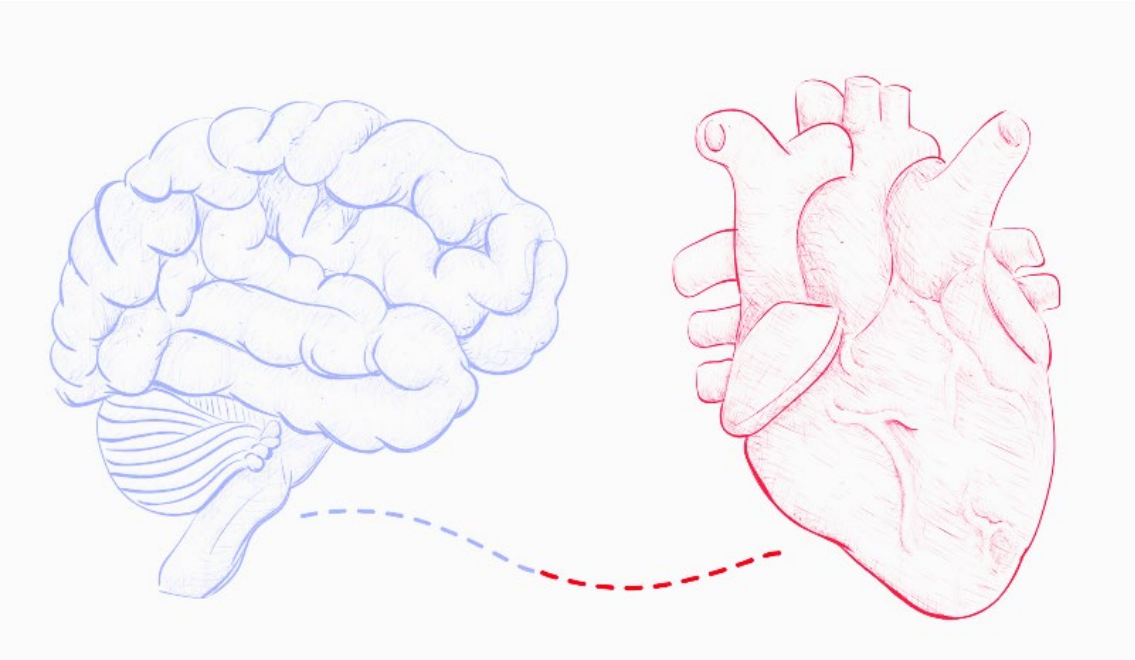
Cardiac Cephalalgia

- Headache precipitated by exertion, especially in context of vascular risk factors, may be a symptom of cardiac cephalalgia.[1]
- Headache is a symptom of ischemia and may be the sole manifestation.[2]
- The mean age of patients with cardiac cephalalgia is 62 years.[3]
- **Triggered immediately by exertion and relieved by rest.**
- Beside rapid onset and exertional trigger, **phenotype variable**.
- **Relieved by nitroglycerin** (unique v. other headache types)
- A stress test is diagnostic.[4]
- Coronary revascularization resolves cardiac cephalalgia.[3]



1. The International Classification of Headache Disorders, 3rd edition (beta version). Cephalalgia. 2013; 33(9):629-808.
2. Lipton RB, et al. Neurology. 1997;49(3): 813-816.
3. Wei JH, Wang HF. Cephalalgia. 2008;28(8):892-896.
4. Bini A, et al. J Headache Pain. 2009;10(1):3-9.

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Hypnic Headache

- Onset typically after 50 years.
- Attacks occur only during sleep and will cause the person to awaken.
- Headache must occur 15 or more days per month.[1]
- Secondary causes of headache must be ruled out before diagnosis.
- Treatments: caffeine, melatonin, and lithium.[2]
- Caffeine, melatonin, or both are generally effective[2,3]
- Lithium may be problematic for older patients because of toxicity, altered pharmacokinetics, ↓ renal function, drug-drug interactions, and adverse effects that can affect mental status, balance, etc.

1. The International Classification of Headache Disorders, 3rd edition (beta version). Cephalalgia. 2013; 33(9):629-808.
2. Tariq N, et al. Headache. 2016;56(4):717-724.
3. Lanteri-Minet M. Headache. 2014;54(9): 1556-1559.

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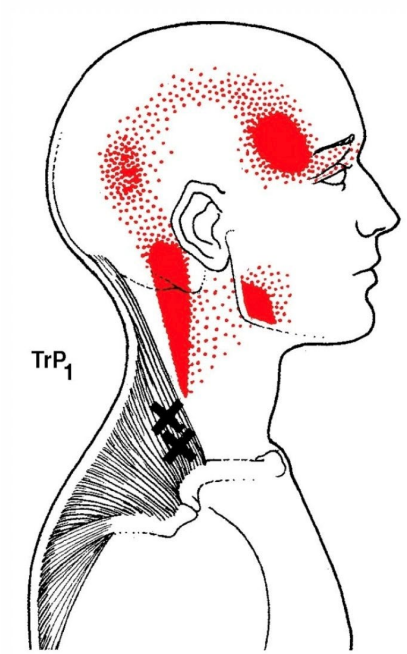
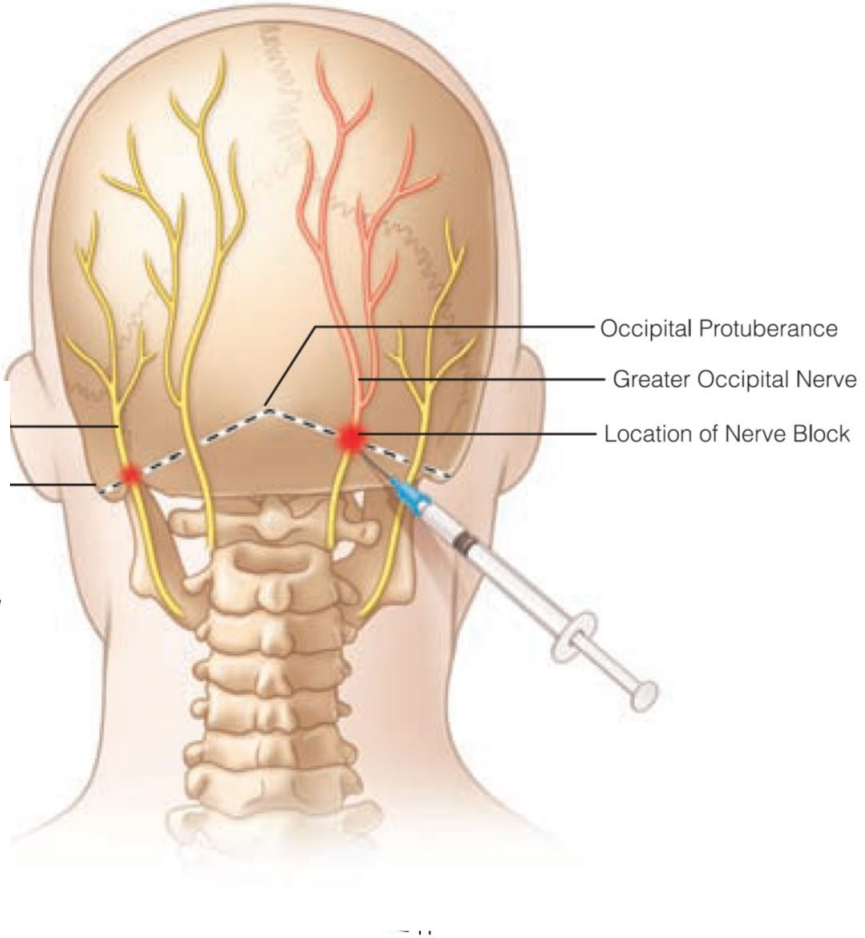
Cervicogenic Headache, Occipital Neuralgia

- Cervical DDD increases with age
- MRI of the C-spine can assess for upper cervical root impingement
- Usually unilateral, ?-shaped, provoked by head / neck posture / position
- Management:
  - NSAIDs
  - ? NPP Medications: Amitriptyline, Gabapentin, Duloxetine
  - Physical Therapy
  - Nerve Blocks
  - Facet Injections… ?ablation



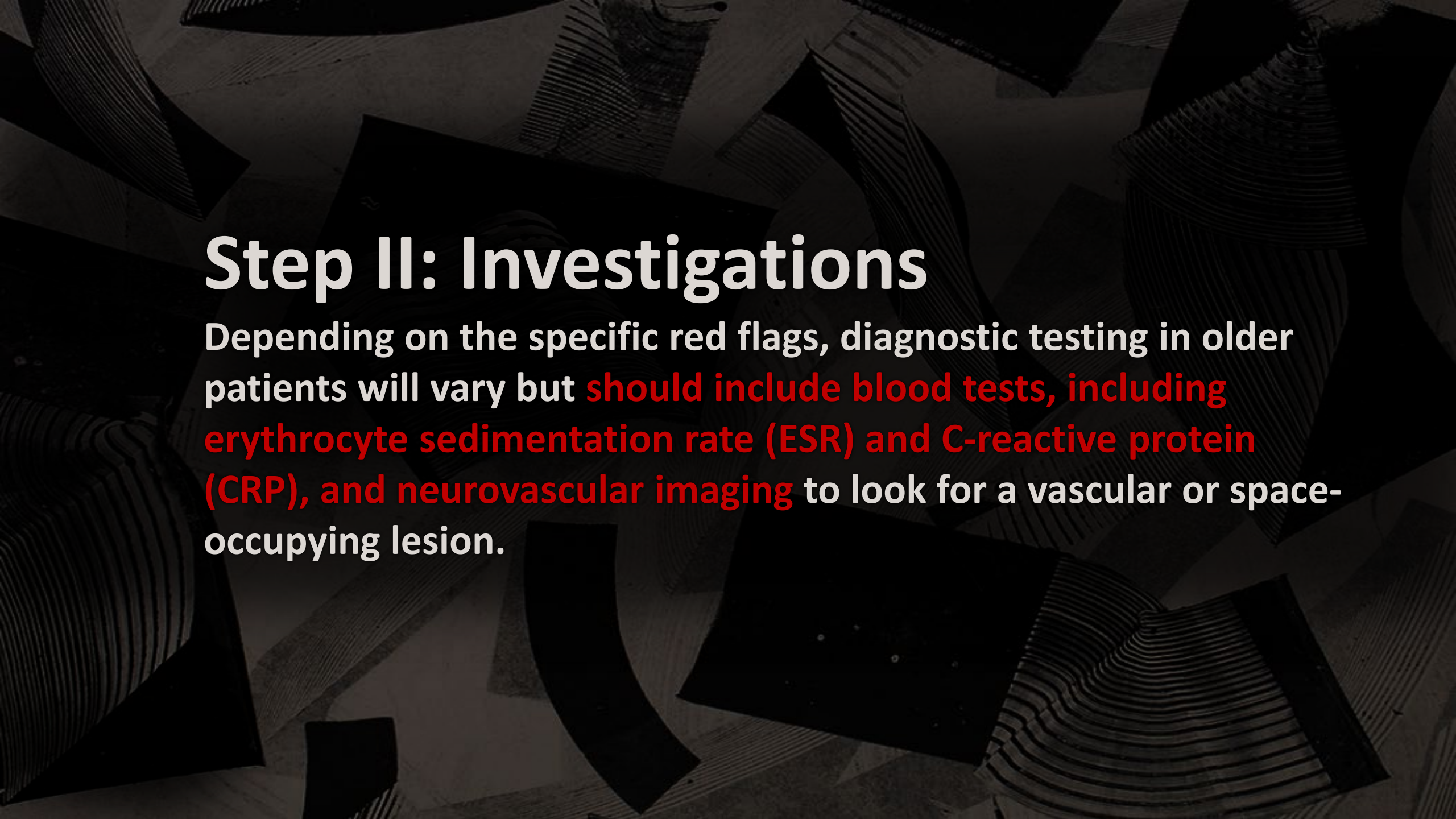


1. The International Classification of Headache Disorders, 3rd edition (beta version). Cephalalgia. 2013; 33(9):629-808.
2. Tariq N, et al. Headache. 2016;56(4):717-724.
3. Lanteri-Minet M. Headache. 2014;54(9): 1556-1559.

Proceeding with Prudence…

“My second cousin had a brain tumour, and I had a cousin on the other side that had an aneurysm – do you think it’s that?

The doctor I saw in the walk-in clinic and the emergency room told me MRI doesn’t show anything useful for headaches, but I think we need an MRI. ***Can you order an MRI?”***



Step II: Investigations

Depending on the specific red flags, diagnostic testing in older patients will vary but should include blood tests, including erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP), and neurovascular imaging to look for a vascular or space-occupying lesion.

Investigations for Headache in the Older Patient

Baseline ("first-line") work-up:

- **MRI Brain** (non-contrast initially)
  - Exclude secondary causes (mass, stroke, white matter disease, Chiari, hydrocephalus, etc.).
- **Bloodwork: ESR, CRP** (screen for giant cell arteritis / systemic inflammation).

- **Medication review:**
  - Screen for MOH (medication overuse headache).
- **Optometric assessment:**
  - Evaluate for glaucoma or other ocular causes.
- **Sleep assessment:**
  - Consider polysomnography if OSA suspected.
- **Neck/cervical screen:**
  - Evaluate for cervicogenic headache
  - Trial occipital nerve block (GONB)
  - Refer for cervical injections under fluoro if supportive features present.

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Investigations for Headache in the Older Patient

Start with MRI Brain (non-contrast):

Add gadolinium (contrast-enhanced MRI) if:

- New, progressive, or atypical headache pattern
- Concern for malignancy or metastasis
- Suspected infection, inflammation, or demyelination
- Suspected CSF leak (SIH) (also MRV, spine *en bloc*)

Add MRA (arterial imaging) if:

- Thunderclap headache / vascular suspicion
- New focal neurological deficits or TIA-like symptoms
- Suspected aneurysm, arterial dissection, or vasculitis
- History or exam suggesting stroke

Acute: CT Angio ± CT Venogram

Add cervical/neck vessel imaging (MRA/CTA Neck, carotid Doppler) if:

- Concern for cervical arterial dissection
  - (especially neck pain, Horner's, ischemic sxs)
- Vascular RFs suggesting carotid / vertebral disease
- Headache with TIA/stroke symptoms
- ?Cervicogenic HA → MR C-spine only

Add MRV (venous imaging) if:

- Headache worse with Valsalva / posture
- New daily persistent headache
- Papilledema, raised ICP suspicion
- Pro-thrombotic risk factors or cancer
- Concern for cerebral venous sinus thrombosis
- Concern for IIH or SIH

Investigations for Headache in the Older Patient

Start with MRI Brain (non-contrast):

Add gadolinium (contrast-enhanced MRI) if:

- New, progressive, or atypical headache pattern

Add MRA (arterial imaging) if:

- Thunderclap headache / vascular suspicion

There are no available studies that allow for definitive recommendations on neuroimaging in headache patients.
These recommendations are intended as guidance rather than definitive standards.
Clinicians should exercise judgment and tailor imaging decisions to the specifics of each presenting case.

A Good Review: Micieli A, Kingston W. An approach to identifying headache patients that require neuroimaging. Front Public Health 2019;7:52.

- Concern for cervical arterial dissection
  - (especially neck pain, Horner's, ischemic sxs)
- Vascular RFs suggesting carotid / vertebral disease
- Headache with TIA/stroke symptoms
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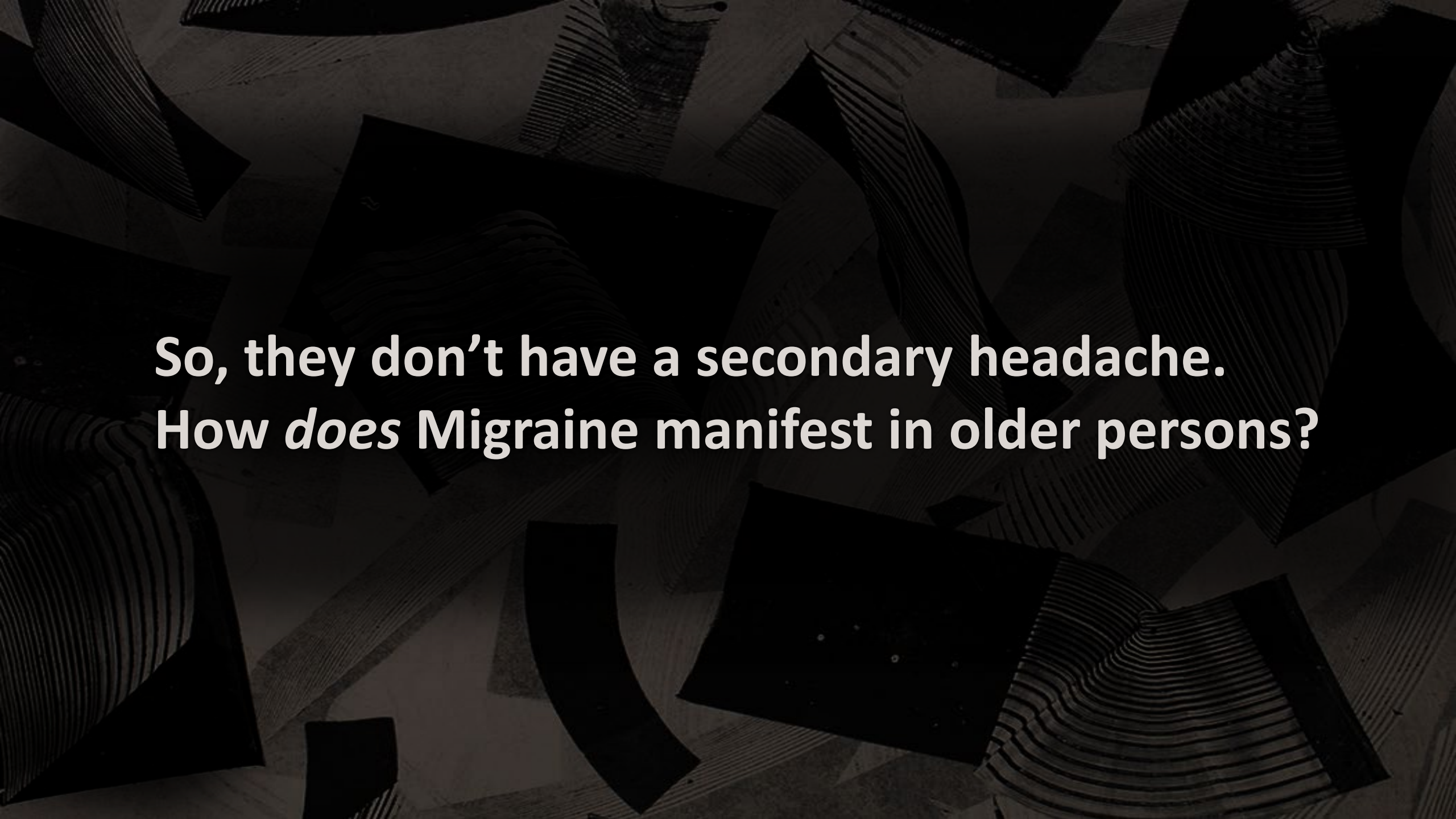
- New daily persistent headache
- Papilledema, raised ICP suspicion
- Pro-thrombotic risk factors or cancer
- Concern for cerebral venous sinus thrombosis
- Concern for IIH or SIH

Proceeding with Prudence...

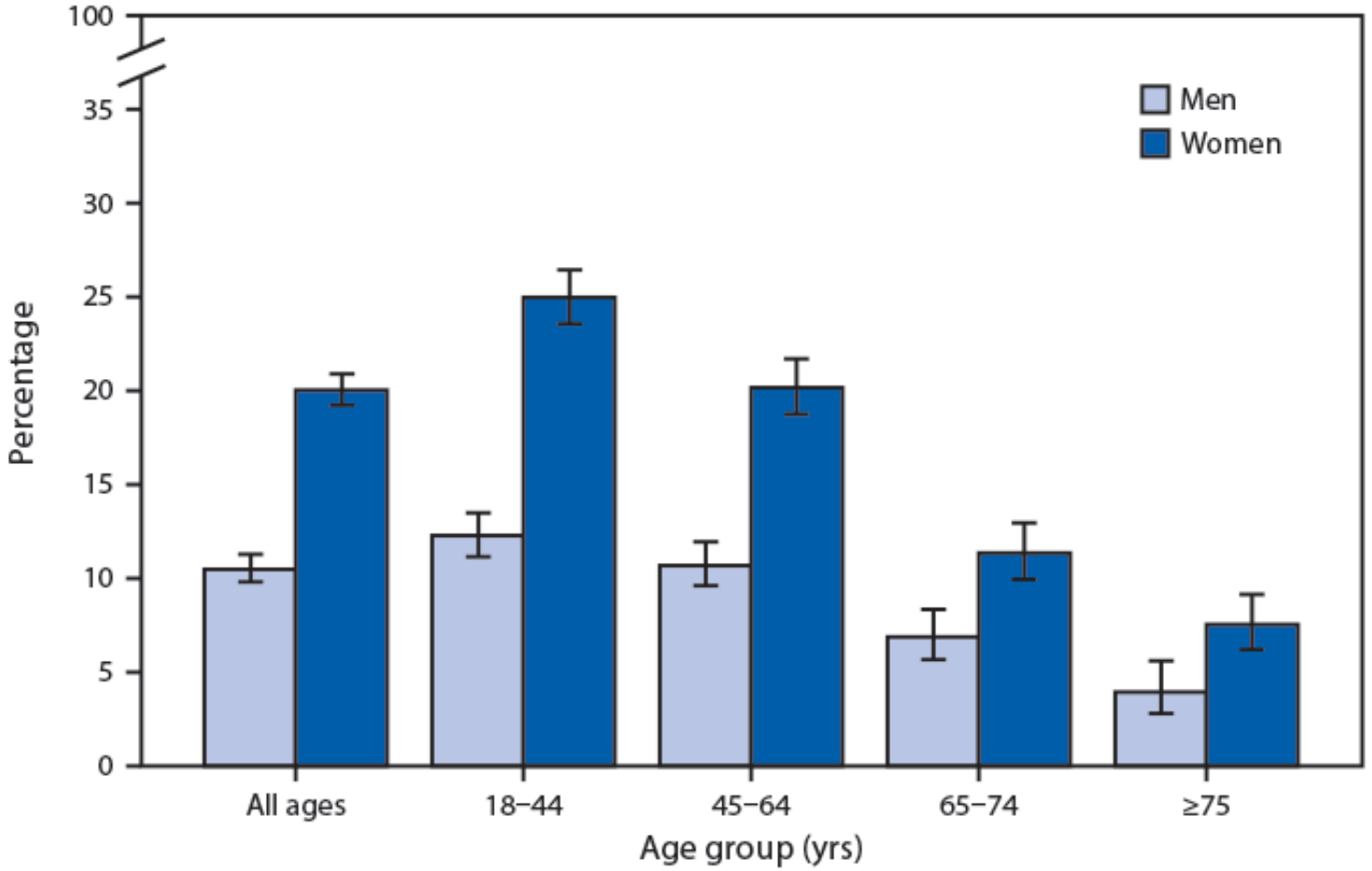
“Thank God I don’t have a brain tumour.
I’m glad I had the MRI.
But what do we do now?”

“My doctor back in the day always told me to just wait and that the migraine would go away with menopause or getting older. They might be a little less, but I am getting a lot of sparkles and the zig-zag aura these days.
Should I be worried?”


So, they don’t have a secondary headache.
How *does* Migraine manifest in older persons?

Migraine Aura Without Headache

% With Severe Headache or Migraine in the Past 3 Months, by Age, Sex



Source: National Health Interview Survey, 2018 data. https://www.cdc.gov/nchs/nhis.htm.

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Why Does Migraine "Burn out" with Age?

↓ Cortical excitability with aging → higher attack threshold

- TMS-EEG demonstrates age-related reductions in cortical excitability/connectivity in healthy adults.[1]

↓ Dopamine (DA) system activity with age

- Human PET/SPECT meta-analysis: significant ↓ in DA receptors + transporters across adulthood.[2]
- DA is implicated in migraine prodrome/attack modulation[3]

↓ Noradrenergic (LC) modulation with aging

- Age-linked locus coeruleus changes (a key pain/arousal modulator)[4]
- *In vivo* electrophysiological evidence that disrupting LC function[4]:
  - Inhibits trigeminovascular nociceptive responses (dural-evoked neuronal activation in TCC)
  - ↑ susceptibility to cortical spreading depression (CSD)

Post-menopausal hormonal stabilization removes a major trigger[5]

1. Ferreri F, et al. Neuroscience. 2017;357:255–263.
2. Karrer TM, et al. Neurobiol Aging. 2017;57:36–46.
3. Akerman S, Goadsby PJ. Cephalalgia. 2007 Nov;27(11):1308-14.
4. Vila-Pueyo M, et al. Pain. 2019 Feb;160(2):385-394.
5. MacGregor EA. Post Reprod Health. 2018;24(1):11–18.

Migraine Aura Without Headache

Older adults are more likely to have migraine aura without headache.

- Framingham Study data: aura without headache reported in 1–2% of older adults (general population).[1,2]
- In adults > 64 years, 13.4% of those with migraine with aura experienced aura without headache.[3]
- 120 cases of late-life migrainous accompaniments resembling TIA[4]:
  - Headache occurred in only 40% of cases.
  - There was a history of previous recurrent headache in 65%.
  - Migrainous accompaniments account for some cases of imaging-negative TIA

1. Wijman CAC et al. Stroke. 1998;29(8):1539-1543.
2. Riggins N, et al. Curr Pain Headache Rep. 2022;26(5):405–412.
3. Stern JI, et al. Pract Neurol. 2023;22(3):32003.
4. Fisher CM. 1986 Sep-Oct;17(5):1033-42.

Aura vs. Transient Ischemic Attack

Aura can mimic a TIA

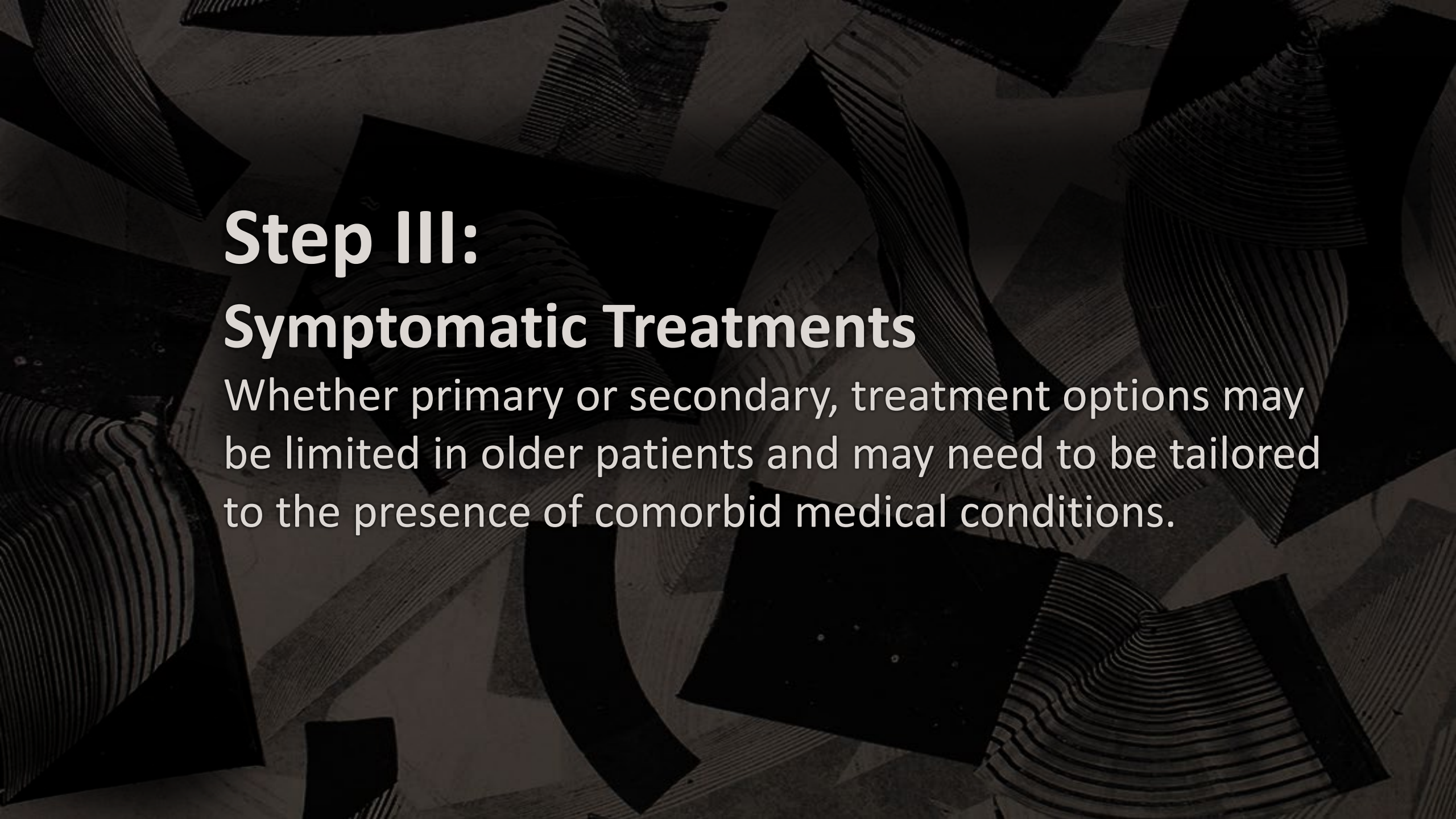
- **Onset and progression are clues to correct diagnosis.**
  - e.g. in sudden onset unilateral arm sensory loss, an ischemic event should be considered; a march or progression of unilateral arm paresthesias, consistent with cortical spreading depression, is more likely migraine aura.[1]
- **Older patients with new acute symptoms should be evaluated immediately for an ischemic event.**
  - → Emergency Dept.
  - Stroke protocol, incl. neuroimaging
- Shifting scotomas or classic teichopsia are likely to be migraine,but **still warrant urgent assessment by optometry / ophthalmology to rule out ophthalmic mimics.**

1. Lauritzen M. Brain. 1994;117(pt 1):199-210.

Proceeding with Prudence…

“That’s all well and fine, but what can I take to help keep these migraine attacks and auras away?

My friend Junice took gabapentin for her feet and it made her go crazy. I don’t want to even risk taking that one.”



Step III:

Symptomatic Treatments

Whether primary or secondary, treatment options may be limited in older patients and may need to be tailored to the presence of comorbid medical conditions.

SIDE EFFECTS, POLYPHARMACY AND INTERACTIONS

Non-Pharmacologic Approaches:

Non-pharmacological treatment options should be optimized to prevent polypharmacy and overuse of medications.

- **Physical therapy** (stretching, posture, strengthening of neck/shoulder muscles).
- **Cognitive-behavioral therapy**, relaxation training, mindfulness.
- **Sleep optimization** (address insomnia, sleep apnea).
- **Lifestyle Counselling** (regular exercise, hydration, avoidance of medication overuse)

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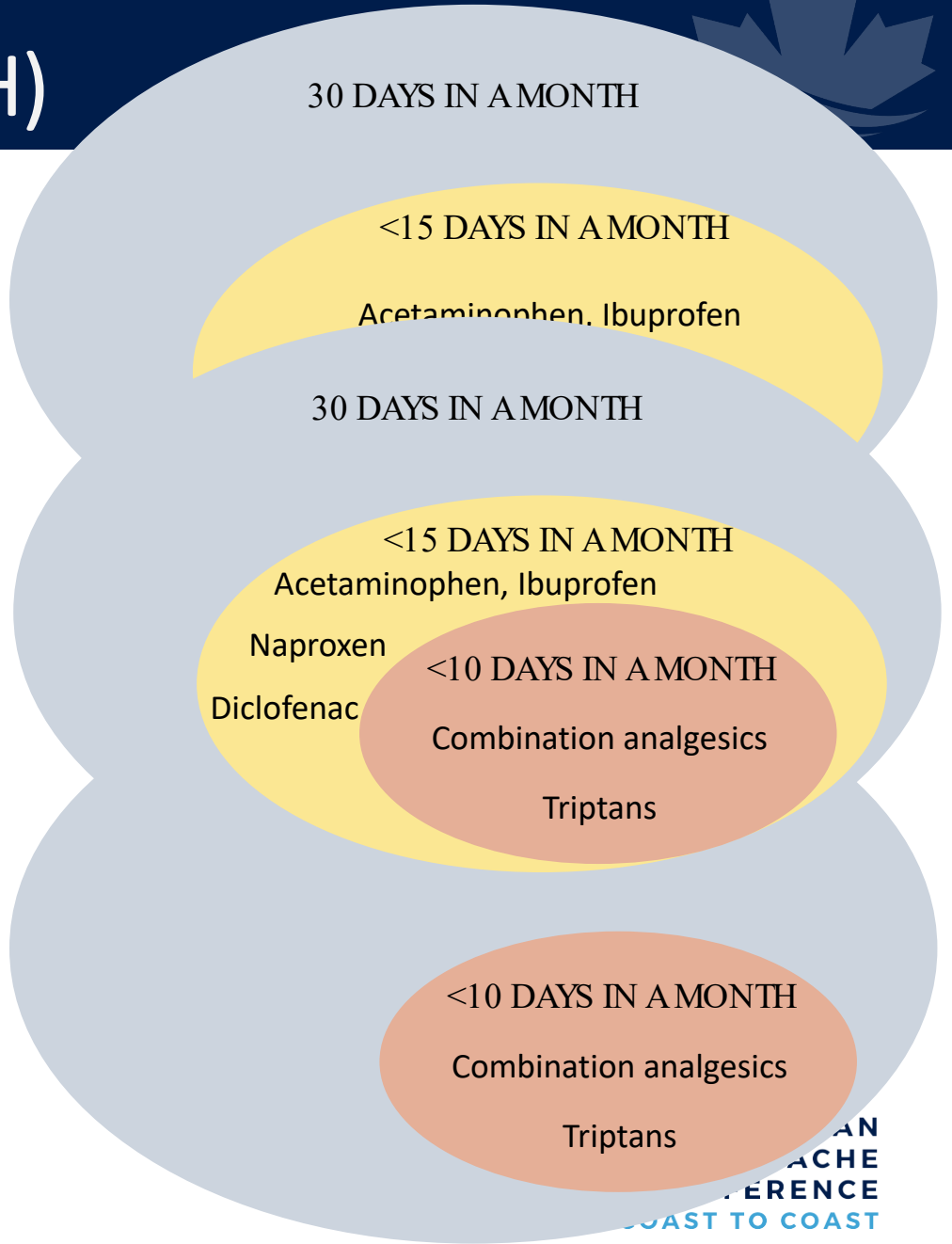
Screen Patients for Medication Overuse Headache (MOH)

Headache may worsen with excess acute medication in excess of the recommended limits:

- *<15 days monthly - simple analgesics (Acetaminophen, Ibuprofen, Naproxen)*
- *<10 days monthly (compound analgesics / triptans / opioids)*
- *Cutoffs do not imply 10 + 15 days for a total of 25 days per month; there are 15 days monthly that acute options can be used within limits, 10 of which could be "harder drugs" like triptans or combination pills.*
- ***Even if they are taking NSAIDs or opioids for another condition, they need to be aware that an unintended consequence of frequent use may be worsening headaches***
- ***Review new meds started for other conditions.***



Traditional Medications for Acute Migraine Management Include Triptans and Simple Analgesics

Drug category	Drug(s)	Canadian Headache Society	
		Level of evidence	Strength of recommendation
Recommended for use in episodic migraine			
Triptans	Almotriptan, eletriptan, frovatriptan, naratriptan, rizatriptan, sumatriptan, zolmitriptan	High	Strong
Acetaminophen and NSAIDs	Acetaminophen, acetylsalicylic acid, diclofenac potassium, ibuprofen, naproxen sodium	High	Strong
Combination analgesics	Naproxen-sumatriptan	High	Strong
Antiemetics (adjunct)	Metoclopramide	Moderate	Strong
	Domperidone	Low	Strong
Ergots	Dihydroergotamine (nasal, subcutaneous)	Moderate	Weak
Not recommended for routine use in episodic migraine			
Ergots	Ergotamine	Moderate	Weak
Opioids and tramadol	Opioids or opioid-containing combination analgesics	Low	Weak
	Tramadol or tramadol-containing combination analgesics	Moderate	Weak
Not recommended for use in episodic migraine			
Synthetic opioids	Butorphanol nasal spray	Low	Strong against
Barbiturates	Butalbital-containing combination analgesics	Low	Strong against

Worthington I, et al. *Can J. CJNS*. 2013;40(S3):S1-S3.

Medications for Acute Migraine Management Include Triptans and Simple Analgesics

Drug category	Drug(s)	Canadian Headache Society	
		Level of evidence	Strength of recommendation
Recommended for use in episodic migraine			
Triptans	**Almotriptan**, eletriptan, frovatriptan, naratriptan, rizatriptan, sumatriptan, zolmitriptan	High	Strong
Acetaminophen and NSAIDs	Acetaminophen, **acetylsalicylic acid**, diclofenac potassium, ibuprofen, naproxen sodium	High	Strong
	Nabumetone		
Combination analgesics	Naproxen-sumatriptan	High	Strong
Antiemetics (adjunct)	Metoclopramide	Moderate	Strong
	Domperidone	Low	Strong
	Ondansetron		
Ergots	Dihydroergotamine (nasal, subcutaneous)	Moderate	Weak
Gepants	**Ubrogepant, Rimegepant**		

Single doses of oral **almotriptan** at the optimal therapeutic dose (12.5mg) had **no statistically or clinically significant effects on blood pressure, heart rate or ECG parameters in young and elderly healthy volunteers.**

Keam, S.J., Goa, K.L. & Figgitt, D.P. Almotriptan. *Drugs* **62**, 387–414 (2002).

Table modified from Worthington I, et al. *Can J. CJNS.* 2013;40(S3):S1-S3.

Triptan Use in Older Individuals

French national database (SNDS):

- 24,774 triptan initiators ≥65 y, 99,096 matched controls.
- Within 90 days, **absolute event rates were low** (0.66% vs 0.53%);
- **Relative risk modestly higher**, more cerebrovascular than cardiac events.

Triptan use is reasonable if pts lack contraindications.

- (Ischemic heart disease, prior stroke/TIA, peripheral vascular disease, uncontrolled hypertension, etc.).

Do a vascular screen first.

- If prominent risks are present, consider **gepants** as non-vasoconstrictive alternatives.

Tran PT et al. 2024. J Headache Pain. 25:68.
Diener, H.-C. 2020. J Headache Pain. 60: 649-653.

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Medications for Acute Migraine Management Include Triptans and Simple Analgesics

Drug category	Drug(s)	Canadian Headache Society	
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Triptans	**Almotriptan**, eletriptan, frovatriptan, naratriptan, rizatriptan, sumatriptan, zolmitriptan	High	Strong
Acetaminophen and NSAIDs	Acetaminophen, **acetylsalicylic acid**, diclofenac potassium, ibuprofen, naproxen sodium	High	Strong
	Nabumetone		
Combination analgesics	Naproxen-sumatriptan	High	Strong
Antiemetics (adjunct)	Metoclopramide	Moderate	Strong
	Domperidone	Low	Strong
	Ondansetron		
Ergots	Dihydroergotamine (nasal, subcutaneous)	Moderate	Weak
Gepants	**Ubrogepant, Rimegepant**		

Among NSAIDs, **nabumetone** is often preferred in older adults d/t a comparatively better GI and hepatic safety profile.

Roth SH et al. 2001. Clin Ther. 23:229-239.
Roth SH et al. 1993. Clin Ther. 15:137-152.
Table modified from Worthington I, et al. *Can J. CJNS.* 2013;40(S3):S1-S3.

Medications for Acute Migraine: Anti-emetics

Drug	EPS Risk	Delirium/Sedation	QT/Cardiac	Overall Safety in Elderly
Ondansetron	None	Low	QT risk (dose-related)	Safest overall
Metoclopramide	**High**	Moderate	Mild	Moderate (short-term only)
Prochlorperazine	**High**	**High (anticholinergic)**	Mild–moderate	Least safe
Domperidone	Low	Low	**High (QT/arrhythmia >60y)**	Conditional (use if EPS risk high but avoid in cardiac risk)

Singh K et al. 2023. Egypt Heart J. 75:56.
Bateman DN et al. 1985. BMJ. 291:930-932.
Tune LE. 2001. J Clin Psychiatry. 62 Suppl 21:11-14.
van Noord C et al. 2010. Drug Saf. 33:1003-1014.
Johannes CB et al. 2010. Pharmacoepidemiol Drug Saf. 19:881-888.
Health Canada. 2015. Domperidone advisory.

Table modified from Worthington I, et al. *Can J. CJNS*. 2013;40(S3):S1-S3.

Medications for Acute Migraine Management Include Triptans and Simple Analgesics

Drug category	Drug(s)	Canadian Headache Society	
		Level of evidence	Strength of recommendation
Recommended for use in episodic migraine			
Triptans	**Almotriptan**, eletriptan, frovatriptan, naratriptan, rizatriptan, sumatriptan, zolmitriptan	High	Strong
Acetaminophen and NSAIDs	Acetaminophen, **acetylsalicylic acid**, diclofenac potassium, ibuprofen, naproxen sodium	High	Strong
	Nabumetone		
Combination analgesics	Naproxen-sumatriptan	High	Strong
Antiemetics (adjunct)	Metoclopramide	Moderate	Strong
	Domperidone	Low	Strong
	Ondansetron		
Ergots	Dihydroergotamine (nasal, subcutaneous)	Moderate	Weak
Gepants	**Ubrogepant, Rimegepant**		

Table modified from Worthington I, et al. *Can J. CJNS*. 2013;40(S3):S1-S3.

Acute Gepant Use in Older Individuals

Gepants do not cause vasoconstriction, but may prevent vasodilatation.

Evidence in ≥65yo is limited but reassuring:

- Current studies include **small elderly samples without new safety signals**.
- U.S. FDA. Ubrogepant NDA medical & clinical reviews[1]:
  - Population PK shows similar PK in 65–80 y vs younger;
  - Pooled efficacy by age suggests reduced efficacy signal in ≥65 y (?due to small n), but no new safety concerns.
- Pooled analysis of ACHIEVE I/II: ubrogepant safety/efficacy for acute treatment[2]:
  - Overall favorable CV/safety profile (includes older adults; age subgroup reported).
- Post-marketing pharmacovigilance of rimegepant: real-world safety profile consistent with trials;
  - No new elderly-specific safety signal detected.

Gepants are reasonable acute options in elders,

especially when triptans are contraindicated

U. S. FDA. 2019. Ubrogepant NDA Medical Review.
Hutchinson S et al. 2021. Adv Ther.
Hu JL et al. 2024. J Headache Pain.

Medications for Acute Migraine Management Include Triptans and Simple Analgesics

Drug category	Drug(s)	Canadian Headache Society	
		Level of evidence	Strength of recommendation
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	Nabumetone		
Combination analgesics	Naproxen-sumatriptan	High	Strong
Antiemetics (adjunct)	Metoclopramide	Moderate	Strong
	Domperidone	Low	Strong
	Ondansetron		
Ergots	Dihydroergotamine (nasal, subcutaneous)	Moderate	Weak
Gepants	**Ubrogepant, Rimegepant**		

Refractory Strategies:

- Timolol Eye Drops
- Cefaly Nerve Stimulator

Table modified from Worthington I, et al. *Can J. CJNS.* 2013;40(S3):S1-S3.

Recommended for use in Episodic Migraine			
Drug	Recommendation strength	Quality of evidence	2012*
Amitriptyline	Strong	High	X
Erenumab	Strong	High	
Metoprolol	Strong	High	X
Propranolol	Strong	High	X
Atogepant	Strong	Moderate	
Butterbur	Strong	Moderate	X
Candesartan	Strong	Moderate	
Eptinezumab	Strong	Moderate	
Fremanezumab	Strong	Moderate	
Galcanezumab	Strong	Moderate	
Nadolol	Strong	Moderate	X
CoenzymeQ10	Strong	Low	X
Magnesium citrate	Strong	Low	X
Riboflavin	Strong	Low	X
Divalproex	Weak	High	X
Flunarizine	Weak	High	X
Pizotifen	Weak	High	X
Memantine	Weak	Moderate	
Rimegepant	Weak	Moderate	
Topiramate	Weak	Moderate	
Levetiracetam	Weak	Low	
Lisinopril	Weak	Low	X
Venlafaxine	Weak	Low	X
Verapamil	Weak	Low	X
Enalapril	Weak	Very Low	
Melatonin	Weak	Very Low	
NOT recommended for use in episodic migraine (DO NOT USE)			
Onabotulinum toxin type A	Strong	High	X
Ginger	Strong	High	
Feverfew	Strong	Moderate	X
Gabapentin	Weak	Very Low	
Statin alone or add-on	Weak	Very Low	

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Canadian Journal of Neurological Sciences
Journal Canadien des Sciences Neurologiques

Original Article

Updated Canadian Headache Society Migraine Prevention Guideline with Systematic Review and Meta-analysis

Ioana Medrea[1,3], Paul Cooper[2], Marissa Langman[2], Claire H. Sandoe[3], Farnaz Amoozegar[4], Wasif M. Hussain[5], Ana C. Bradi[6], Jessica Dawe[7], Meagan Guay[8], Francois Perreault[9], Stuart Reid[10], Candice Todd[3], Becky Skidmore[11] and Suzanne N. Christie[6]

Recommended for use in Chronic Migraine		
Drug	Recommendation strength	Quality of evidence
Atogepant	Strong	High
Eptinezumab	Strong	High
Erenumab	Strong	High
Fremanezumab	Strong	High
Galcanezumab	Strong	High
OnabotulinumtoxinA	Strong	High
Propranolol	Strong	Moderate
Topiramate	Weak	Very Low

*Previous recommendations for episodic migraine still in effect from 2012 CHS Guidelines

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β-Blockers

Propranolol, Metoprolol
Atenolol

Good for comorbid hypertension and cardiovascular disease

⚠ **CAUTION:** sinus bradycardia, fatigue, exercise intolerance, hypotension, bradycardia, syncope, falls, depression, pulmonary disease, insomnia.

ACEi / ARBs

Candesartan
Lisinopril

Great for hypertension and migraine prevention

⚠ **CHECK** Cr/eGFR & K^+ at baseline + in 1–2 weeks after starting / titrating

Titrate slowly: potential for orthostatic hypotension, falls, fatigue

OnabotulinumtoxinA

CHRONIC MIGRAINE (≥15 MHDs)
No significant systemic absorption,
Few side effects / interactions

⚠ **CAUTION: Brow ptosis / Dermatochalasis exacerbation**
Avoid by reducing or skipping glabellar/frontalis injections

⚠ **CAUTION: neck weakness (cervical paraspinal muscles)**
Avoid by moving injections cephalad

Tricyclics

Amitriptyline has best evidence

Nortriptyline has no formal studies, but has preferable side effect profile

⚠ **CAUTION: Anticholinergic effects** (**cognition**, constipation, urinary retention, dry mouth / eyes). Tachycardia, QT prolongation

SNRIs

Venlafaxine
Good for comorbid mood / anxiety
⚠ **CAUTION**: insomnia, hypertension, HypoNa^+/SIADH

CHECK BP & Na^+ at baseline + in 1–2 weeks after starting / titrating

Mirtazapine $$$
Good for sleep, ↑appetite
⚠ **CAUTION**: sedation, ↑RLS

CGRP Antagonists

Eptinezumab
Erenumab
Fremanezumab
Galcanezumab
Atogepant

No significant Rx interactions
No monograph contraindications
⚠ **PAUSE** after vascular event

Preventive CGRP Antagonist Use in Older Individuals

Largest elder-only cohort[1]: (n=162 patients ≥65) on erenumab/galcanezumab/fremanezumab

- 10 fewer MMDs by month 6 across all three, with good tolerability
- The proportions of responders were 68%, 57%, 33% and 9% for reductions in monthly migraine days ≥ 30%, ≥ 50%, ≥ 75% and 100%, respectively.
- AE profile mostly injection-site reactions/constipation; low discontinuation.

Prospective Elder BP study[2] (n=155 patients ≥60) on erenumab/galcanezumab/fremanezumab

- "New/worsened HTN" ~13%—mostly those with preexisting HTN; baseline BP predicted risk.
- Anti-CGRP mAbs over one year does not significantly affect BP in patients aged ≥60 vs. gen pop

1. Muñoz-Vendrell A. J Headache Pain. 2023;24(1):63.
2.Mascarella D, et al. Neurol Sci. 2024 Nov;45(11):5365-5373.

Preventive CGRP Antagonist Use in Older Individuals

- Minimal drug–drug interactions and renal/hepatic dosing issues favor anti-CGRP mAbs in older patients.
- Very limited ≥75 data; RCTs under-represent older adults and exclude high-risk CV patients
- **Further long-term studies are necessary to fully ascertain the cardiovascular safety of these medications in the elderly**

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Cephalic Nerve Blocks

Fast relief

Bridge/abortive for migraine, ON, cervicogenic headache, PTH

Well tolerated

Minimal systemic exposure

Few drug interactions, elder-friendly with polypharmacy / frailty

Others

Memantine

CAUTION: AEs usually mild–moderate.
Dizziness / falls, confusion / cognition, hallucinations, occasional ↑BP
Renal clearance—must dose-adjust

Pizotifen

CAUTION:Drowsiness, dry eyes, dry mouth, constipation, weight gain and rarely arrhythmia

Topiramate

CAUTION: cognitive adverse effects, language deficits, inattention, poor recall, paresthesias, anorexia, gastrointestinal tract symptoms, sedation, metabolic acidosis, nephrolithiasis, acute angle glaucoma (rare)

Others

Flunarizine

CAUTION: sedation, weight gain, depression, Parkinsonism/EPS

Verapamil

CAUTION: bradycardia/AV block, hypotension/orthostasis (falls), constipation, pedal edema—

MONITOR: Baseline EKG + w/ titration

Gabapentin

Low doses well-tolerated

Could consider in comorbid neuropathic pain / PDN, etc.

CAUTION: Sedation, dizziness, ataxia → falls/hip fracture,
Respiratory depression risk
Delirium/cognitive effects
Peripheral edema/weight
Renal clearance—must dose-adjust

Valproate

CAUTION: weight gain, GI symptoms, tremor, alopecia, ataxia, sedation, transaminitis, hyperammonemia, thrombocytopenia

MONITOR blood counts and liver function periodically

Proceeding with Prudence…

“I’m on too many drugs.
I don’t want to take any, if I don’t have to.
Can I get rid of any of these?
I feel like I’m eating a whole breakfast of pills…”

- Amlodipine 5–10 mg daily
- Lisinopril 10–40 mg daily
- Furosemide 20–40 mg daily
- Atorvastatin 10–40 mg nightly
- Metformin 500–1000 mg BID
- Levothyroxine 50–100 µg
- Sertraline 100 mg daily
- Acetaminophen 500–1000 mg q6h PRN (no overuse)
- Pantoprazole 40 mg daily
- Alendronate 70 mg once weekly

Polypharmacy

Polypharmacy and Falls

- 4 medications = higher risk of injurious falls[1]
- Risk rises with each additional drug, regardless of class
- Number of medications—not drug type—is the key driver of adverse outcomes[2]

Deprescribing[3]

- Does not appear to increase adverse outcomes[4]
- Impact on clinical outcomes is mixed: Quality of life, Falls, Hospitalizations
- Reviews show no effect on all-cause mortality[4-6]

1. Halli-Tierney AD,et al. Am Fam Physician. 2019;100(1):32-38.
2. Leipzig RM et al. *J Am Geriatr Soc.* 1999;47(1):40-50.
3. Delara, M., *et al. BMC Geriatr* **22**, 601 (2022).
4. Page AT, et al. Br J Clin Pharmacol. 2016;82(3):583–623.
5. Johansson T, et al. Br J Clin Pharmacol. 2016;82(2):532–48.
6. Kua C-H, et al. J Am Med Dir Assoc. 2019;20(3):362–372. e311

Polypharmacy: *is less more?*

Polypharmacy is complex:

- It is clear that when many medications mix, they result in increased interactions, side effects, and cascading complications
- What is inappropriate for a healthy older adult may be justified in medically complex patients
- Polypharmacy should be limited and justified, especially in older adults
- Periodic review of the entire drug regimen is essential
- Eliminate unnecessary medications whenever possible

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Proceeding with Prudence…

Amlodipine 5–10 mg daily Δ → Flunarizine
Lisinopril 10–40 mg daily Δ → Candesartan
Furosemide 20–40 mg daily
Atorvastatin 10–40 mg nightly
Metformin 500–1000 mg BID
Levothyroxine 50–100 µg
Sertraline 100 mg daily Δ → Venlafaxine / Mirtazapine
Acetaminophen 500–1000 mg q6h PRN
Pantoprazole 40 mg daily
Alendronate 70 mg once weekly

Proceeding with Prudence…

Other potential options:

OnabotulinumtoxinA

CGRP Antagonist (preventive)

Low dose beta-blocker

- **Monitor BP, EKG with titration**
- **May need to adjust other antihypertensives**

Memantine

Occipital / cephalic nerve blocks

Proceeding with Prudence…

Acute options:

NSAIDs - nabumetone: limited use given h/o PUD

Triptans – could consider almotriptan…

Gepants:
Ubrogepant 100mg PO prn up to bid
Rimegepant 75mg PO prn up to once daily

Prudence in 12 months…

Couldn't tolerate a switch to mirtazapine

Botox trialled next, x2 cycles completed
Already seeing reduction in migraine burden:
3-4 MHDs
1 aura monthly

Acute use:
Nabumetone: sparing use, works well
Ubrogepant 100mg PO prn: works well

Summary: Headache in the Older Patient

- In older adults, headache is **most likely a primary disorder, of secondary causes**, such as giant cell arteritis or intracranial lesions

Higher risk

- **Start with MRI Head + ESR / CRP for any new headache >50yo** and tailor imaging to include MRA / MRV / Gadolinium or neck / vessel imaging as indicated by presentation.

- Most preventive and acute treatment options for the management of headache can be used for older patients; however, **need to consider possible adverse effects, comorbid medical conditions, and altered pharmacokinetics** (renal / hepatic metabolism, drug-drug interactions / polypharmacy)

- Periodically reassess regimen and eliminate unnecessary medications whenever possible

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THANK YOU