# The essentials of a good headache history

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# Disclosure

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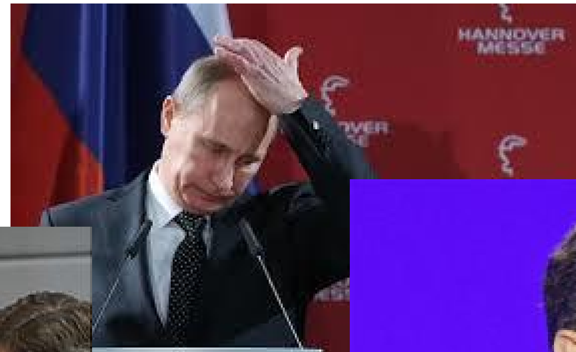
# Headache is very common
# Many patients never consult doctors



# Facts about headache

- >90% people have at least one headache in their lifetime
- 10% people have migraine, 30-50% tension-type headache and 3-5% chronic daily headache
- Headache is one of the top 10 chief complaints in PCP clinics.
- A long list of differential diagnoses of headache involving almost all medical specialties

# Facts about headache

- Primary headache constitutes the majority of patients presenting with headache in clinics.
- <1% patients presenting with headache suffer from serious illnesses.
- Patients with headache constitute up to 4.5 percent of emergency department visits
  - "First and worst headache"
  - "Last straw syndrome"
  - Breakthrough headache

Cutrer FM. UptoDate 2013
Ali AL-Memar 2010

# Basics of Headache Disorders

# The International Classification of Headache Disorders, 3rd edition (ICHD-3, beta version)

**Part one: the primary headaches**

1. Migraine
2. Tension-type headache
3. Trigeminal autonomic cephalalgias
4. Other primary headache disorders

Background knowledge is important for headache diagnoses!!

**Part two: the secondary headaches**

Introduction

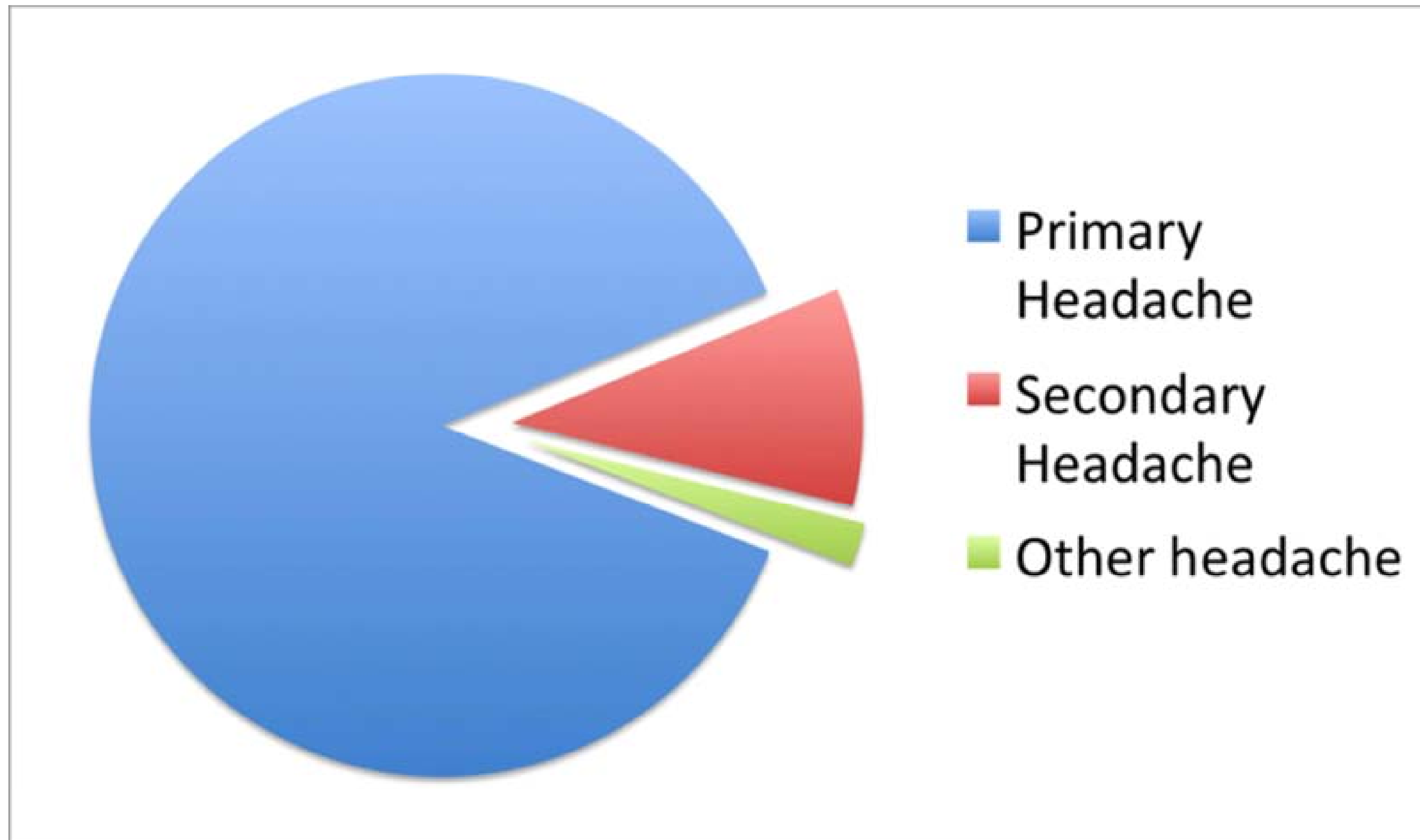
5. Headache attributed to trauma or injury to the head and/or neck
6. Headache attributed to cranial or cervical vascular disorder
7. Headache attributed to non-vascular intracranial disorder
8. Headache attributed to a substance or its withdrawal
9. Headache attributed to infection
10. Headache attributed to disorder of homoeostasis
11. Headache or facial pain attributed to disorder of the cranium, neck, eyes, ears, nose, sinuses, teeth, mouth or other facial or cervical structure
12. Headache attributed to psychiatric disorder

**Part three: painful cranial neuropathies, other facial pains and other headaches**

13. Painful cranial neuropathies and other facial pains
14. Other headache disorders

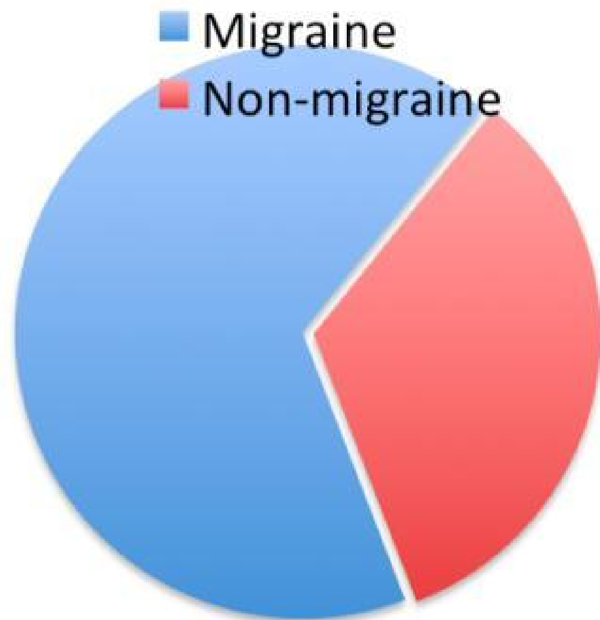
The International Classification of Headache Disorders, 3rd edition (beta version). Cephalalgia. 2013 Jun 14;33(9):629–808.

# Headache Disorders at clinics




Ravishankar K. The art of history-taking in a headache patient. Ann Indian Acad Neurol. 2012;15(5):7.

# Primary Headache Disorders at Clinics




Eight Asia countries

Western study (US)

Most are migraine or probable migraine

Wang et al. Migraine Disability Awareness Campaign in Asia: Migraine Assessment for Prophylaxis. Headache: 2008 Oct;48(9):1356–65.

Tepper et al. Prevalence and diagnosis of migraine in patients consulting their physician with a complaint of headache: data from the Landmark Study. Headache. 2004 Oct;44(9):856–64.

# History taking is the most important for disease diagnosis, especially headache disorders.

For most headache disorders:

- No objective biomarkers
- Neurological exam and neuroimaging studies are usually normal

# The art in history taking

- Build rapport
  -patients in pain and usually depressed
- Let the patients express their symptomology
- Evaluate the neurological / systemic / psychiatric conditions
- Focus on the temporal profile and associated features
- Be patient to the headache patients
- Be positive

Ravishankar K. The art of history-taking in a headache patient. Ann Indian Acad Neurol. 2012;15(5):7.

# Information gathering

- Let the patient talk “first”
- However
  - Limit unnecessary information
  - Do not direct the patients with your questions
  - Obtain useful and correct information
    - “ I have 10 kinds of headache?”
  - Have to gather certain essential information
    - “I do not know the headache duration”
    - “The duration varies, I can not give you a definite answer”
- * Headache diary
  - Diagnosis and follow-up

*Listen to the Patient, quite often he is telling you the Diagnosis!*

**-Sir William Osler**

# Key Elements in Headache History

# Sociodemographics

- Demographics
  - Age
  - Gender: menstruation history, hormonal use
  - Occupation
- Social history
  - Stressors (alcohol and drugs, sleep, eating and exercise habits )
- Past history
  - Systemic illness
- Family history of headache
  - Migraine (40-60% in 1$^{st}$ degree relatives)

# History Taking of Pain- OPPQRST AAA

- Onset
- Palliative/Provocative/Periodicity
- Quality
- Region/Radiation
- Severity
- Time (history, course)
- AAA
  - associated symptoms
  - aggravating/alleviating factors
  - attributions/adaptations

From Wikipedia

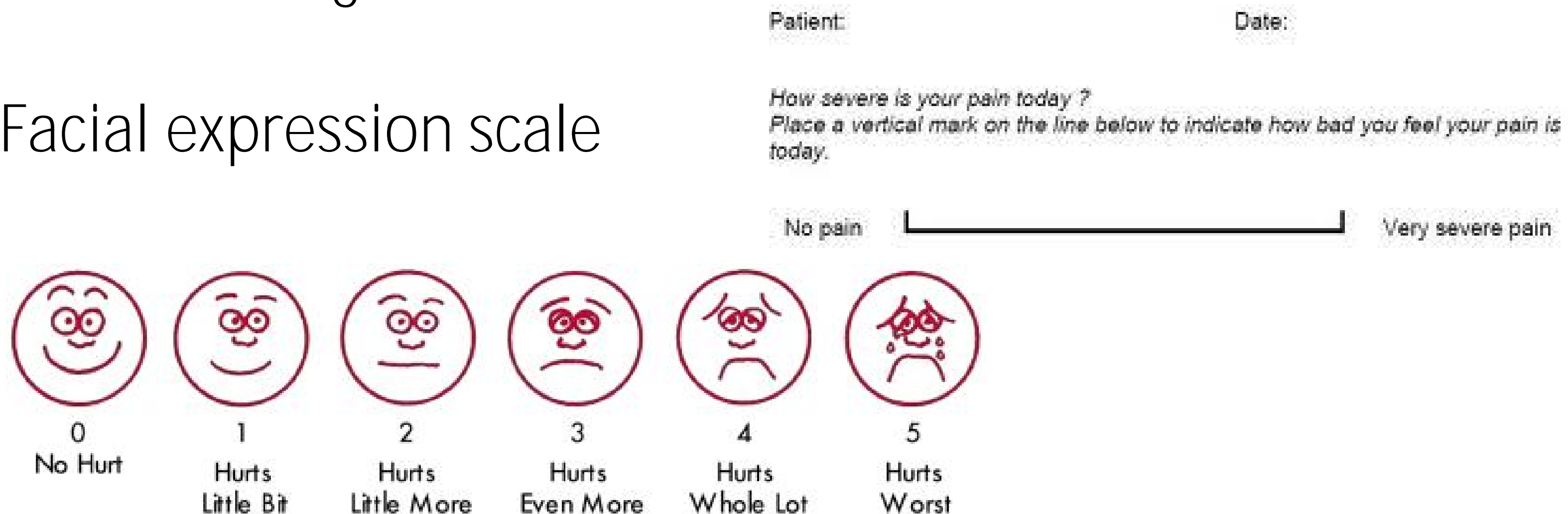
# Headache profile
# migraine vs. other headache disorders

- Disease onset/duration
- Headache onset
- Headache duration
- Headache frequency ( per year, per month, per day)
- Core symptoms ("PUMA")
  - Pulsatile or Not
  - Unilateral or Not
  - Moderate or severe VS. Mild intensity
  - Activities (daily) exacerbation
- Associated symptoms
  - Aura
  - nausea, vomiting, photophobia, phonophobia
  - Cranial autonomic symptom
- Treatment response

# How Severe is the Pain?

- Verbal scale
  - Mild, moderate, severe
- Numeric Rating Scale (NRS)

  - 0-10, 0 is no pain and 10 being the worst
- Visual Analogue Scale
- Facial expression scale




- Pain severity correlate “BADLY” with headache diagnosis

# Pain Nature

- Characteristics

  -Throbbing/ pulsating: i.e. migraine

  -Dull/Tightness: i.e. TTH

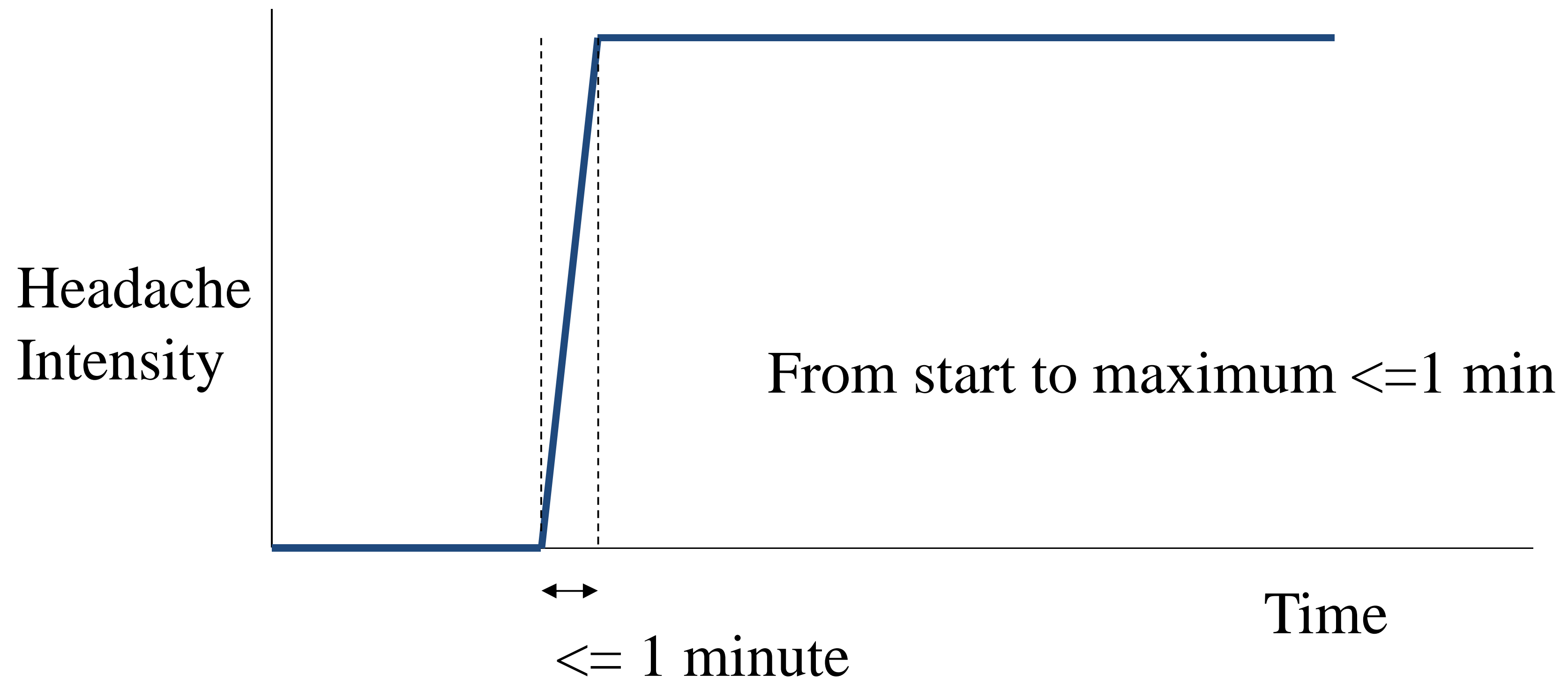
  -Sharp and short lasting: i.e. icepick headache, neuralgia

- Evolving

  -gradually: i.e. migraine, tension-type headache

  -rapid in seconds: thunderclap headache

# Thunderclap headache

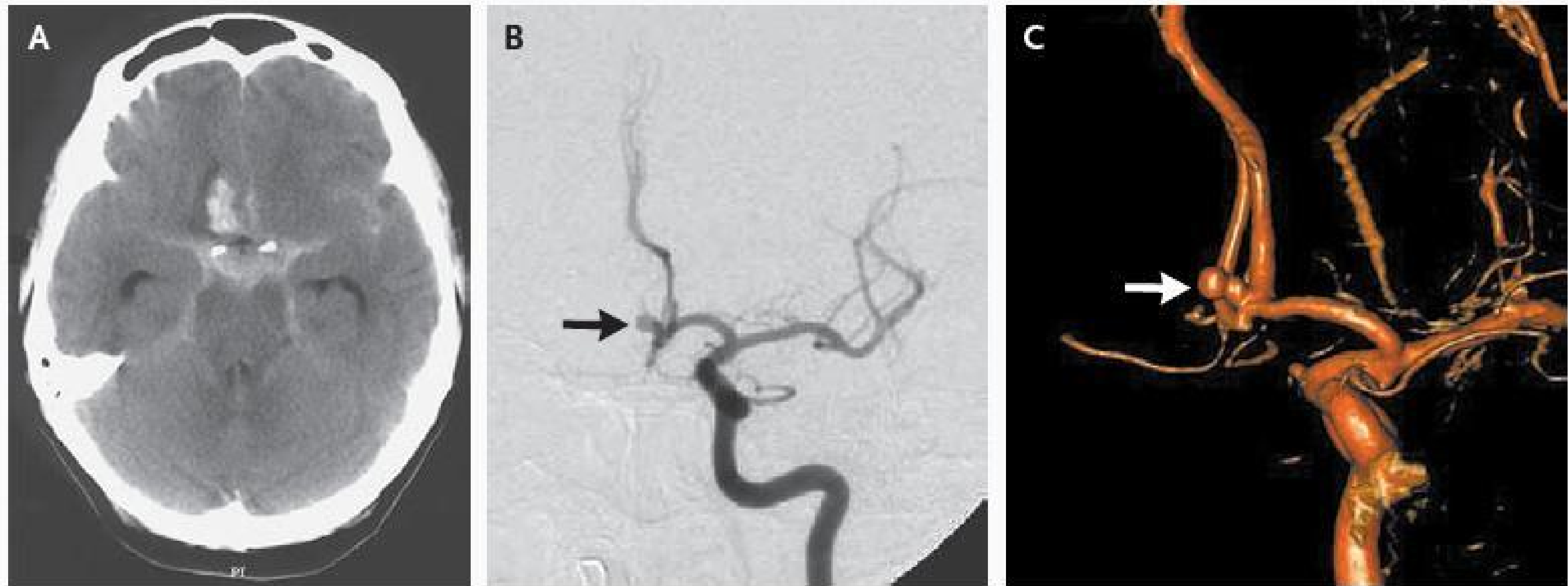


# Consider 2nd headache!
# Causes of thunderclap headache

- Subarachnoid hemorrhage/ Sentinel headache
- Reversible cerebral vasoconstriction syndrome
- Cerebral venous sinus thrombosis
- Cervical artery dissection
- Spontaneous intracranial hypotension
- Pituitary apoplexy
- Retroclival hematoma
- Ischemic stroke
- Acute hypertensive crisis
- Third ventricle colloid cyst
- Intracranial infection
- Primary thunderclap headache
- Primary cough, sexual, and exertional headache

Schwedt et al. Thunderclap headache.
Lancet Neurol. 2002;7:1–11.

# Abrupt Severe Headache => SAH should be considered first

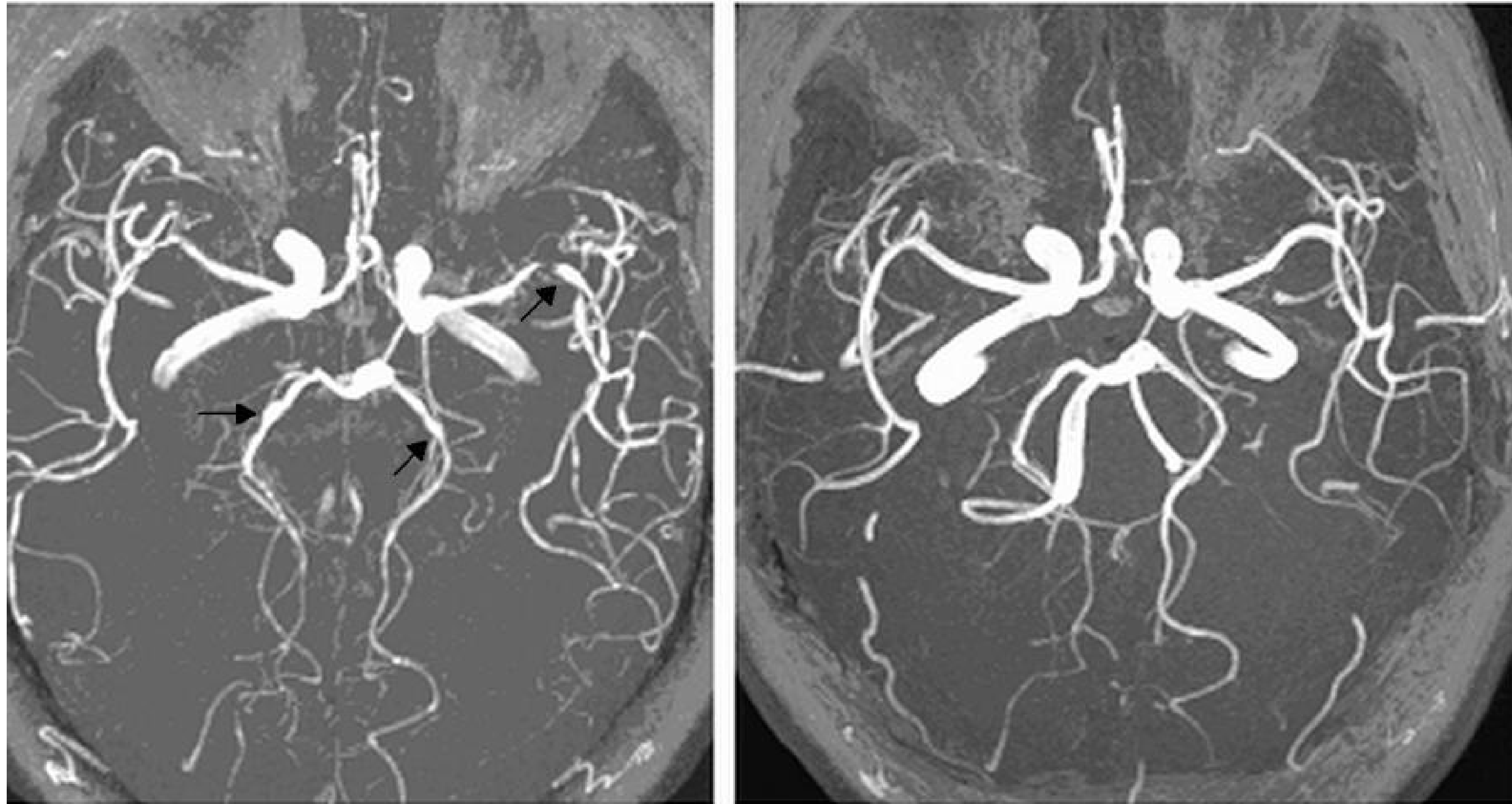



Neck rigidity due to blood in the CSF

N Engl J Med 2006;354:387-96.

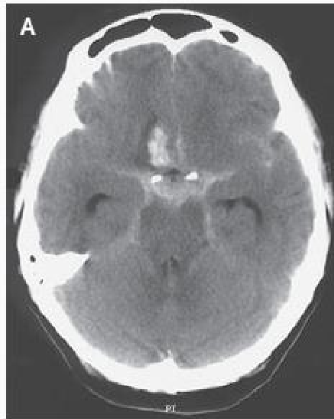
# Reversible cerebral vasoconstriction syndrome (RCVS)

## MRA vasoconstrictions and reversibility

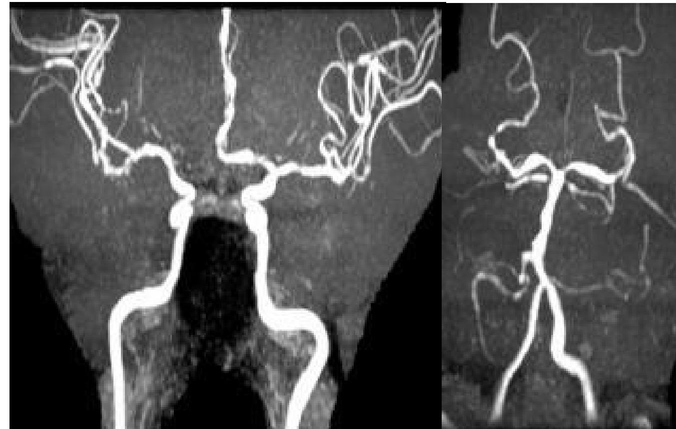


Arrows indicates post-stenotic dilatation.

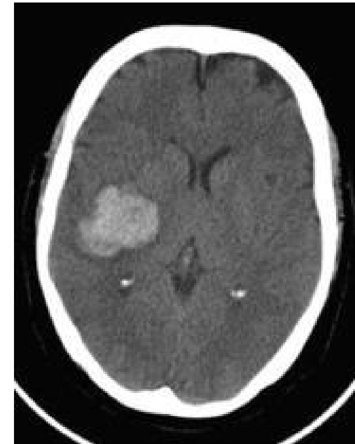
# Etiologies of thunderclap headaches: vascular disorders




SAH



RCVS



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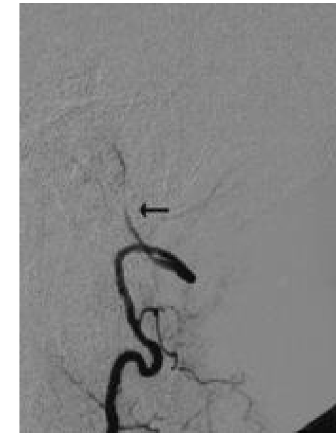
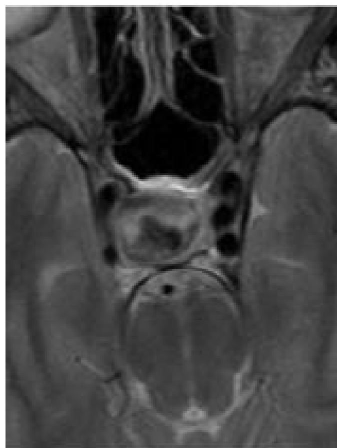
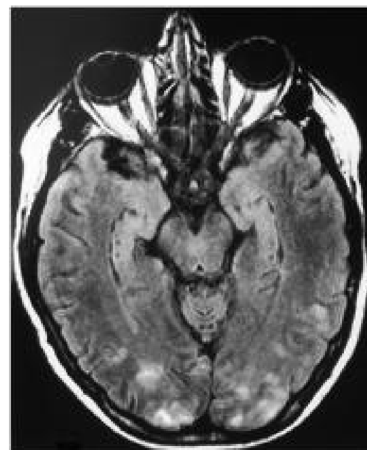


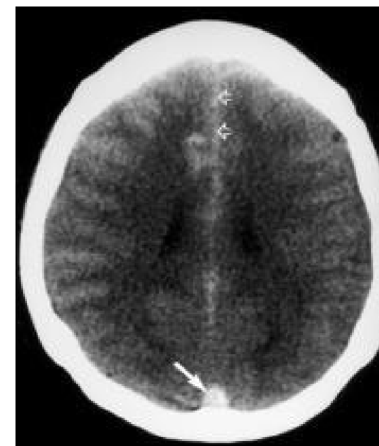
Dissection



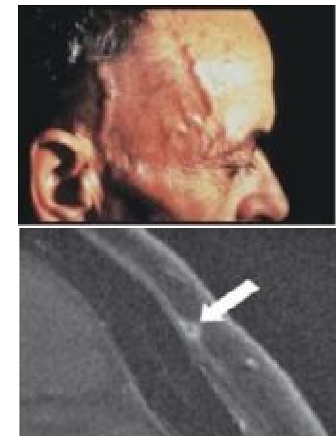
Pituitary apoplexy



PRES

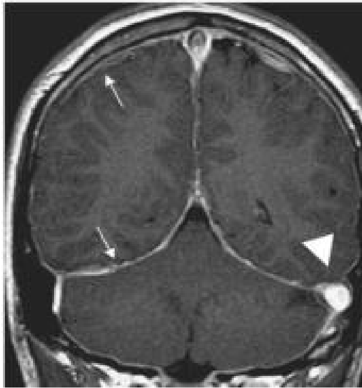


Sinus thrombosis

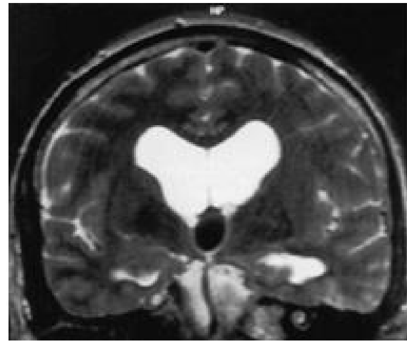


Temporal arteritis

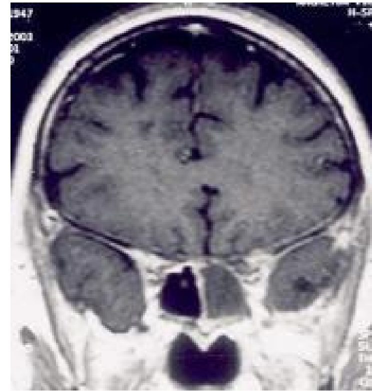
# Etiologies of thunderclap headache
# : Non-vascular disorders



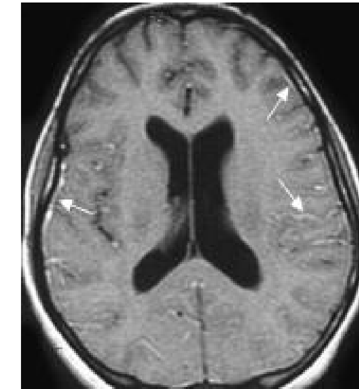
Spontaneous intracranial hypotension



3rd ventricle choroid cyst



Sphenoid sinusitis



Meningitis

# Pain duration

- Frequently underestimated
- Ask the headache duration without treatment
- Migraine
  - 4-72 hours in adults
  - >2 hours in pediatric patients (ICHD-3 beta version)
- Tension-type headache
  - 30 minutes to 7 days
- Cluster headache
  - 15 minutes to 180 minutes
- Primary stabbing headache/neuralgia
  - Seconds to 2 minutes

Leone and Bussone. Pathophysiology of trigeminal autonomic cephalalgias. Lancet Neurol. 2009;1;8(8):755–64.

# Associated symptoms

- Aura (DD with TIA and epilepsy)
- Nausea/Vomit

  -migraine, intracranial hypertension
- Photo/phono/osmophobia

  -migraine

  -meningeal irritation (infection, blood)
- Cranial autonomic symptoms (CAS)

  -cluster headache, migraine

# Associated symptoms

- Visual aura
  - -gradual onset
  - -followed by or accompanied with headache (migraine)
- Visual aura mimics
  - -TIA
  - -seizure
  - -transient visual phenomenon of uncertain nature

http://mrwriteon.wordpress.com/2012/04/14/since-i-have-a-migraine-i-generously-thought-id-share-it-with-you-all/

# Migraine aura DD

**Differential diagnosis of focal paroxysmal neurological symptoms**

| Feature | TIA | Epilepsy | Migraine |
|---|---|---|---|
| Onset | Sudden | Sudden | Progressive |
| Progression rate | None | Fast | Slow |
| Different symptoms | Simultaneous | In succession | In succession |
| Type of visual symptoms | Negative | Positive coloured | Negative or positive, uncoloured |
| Territory | Vascular | Cortical | Cortical |
| Duration | Short (10–15 min) | Short (min) | Long (30–60 min) |

Jean Schoenen and Peter S Sandor
Lancet Neurol 2004; 3: 237–45

# Visual Aura Rating Scale (VARS)

| Visual symptom characteristic | Risk score |
|---|---|
| Duration 5–60 mins | 3 |
| Develops gradually ≥ 5 mins | 2 |
| Scotoma | 2 |
| Zig-zag line (fortificaiton) | 2 |
| Unilateral (homonymous) | 1 |
| Maximum VARS score | 10 |
| Migraine with aura diagnosis | ≥5 |

Sensitivity: 91%-96%, specificity: 96%-98%

Eriksen et al. *Cephalalgia* 2005; 25: 801-10

# Cranial autonomic symptoms
-- typical for but not limited to trigeminal autonomic cephalalgia, such as cluster headache

Watery eye, drooping eyelid, runny nose

© 2009 Nucleus Medical Art, Inc.
http://www.empowher.com/files/ebsco/images/si1261.jpg

# Cranial autonomic symptoms (CAS) ICHD-3 beta version

- a) conjunctival injection and/or lacrimation
- b) nasal congestion and/or rhinorrhea
- c) eyelid edema
- d) forehead and facial sweating
- e) forehead and facial flushing
- f) sensation of fullness in the ear
- g) miosis and/or ptosis

The International Classification of Headache Disorders, 3rd edition (beta version). Cephalalgia. 2013 Jun 14;33(9):629–808.

# CAS between cluster HA and migraine

| | Migraine (n = 437) | CH (n = 95) | p Value |
|---|---|---|---|
| Conjunctival injection and/or lacrimation (n (%)) | 247 (56.5) | 90 | <0.001 |
| Conjunctival injection | 104 (23.8) | 59 | <0.001 |
| Lacrimation | 193 (44.2) | 90 | <0.001 |
| Nasal congestion and/or rhinorrhoea (n (%)) | 157 (35.9) | 73 | <0.001 |
| Nasal congestion | 110 (25.2) | 43 | <0.001 |
| Rhinorrhoea | 94 (21.5) | 62 | <0.001 |
| Eyelid oedema (n (%)) | 68 (15.6) | 20 | 0.192 |
| Forehead/facial sweating (n (%)) | 226 (51.7) | 54 | 0.364 |
| Presence of more than one item of CAS (n (%)) | 210 (48.1) | 86 | <0.001 |
| No of CAS items (mean (SD)) | 1.8 (1.1) | 3.5 (1.4) | <0.001 |

CAS, cranial autonomic symptoms; CH, cluster headache.

Lai et al. Cranial autonomic symptoms in migraine: characteristics and comparison with cluster headache. J Neurol Neurosurg Psychiatr. 2009;80(10):1116–9.

# Cranial autonomic signs (CAS) in migraine and cluster headache

| | Migraine | Cluster Headache |
|---|---|---|
| Proportion of CAS | 56% | 100% |
| Laterality | Bilateral (OR 5.8-23) | Unilateral |
| Intensity | mild to moderate | moderate to severe |
| CAS on headache side | Less restricted (OR 5.0-20.4) | Restricted |
| CAS during headache | Less consistent (OR 2.8-6.7) | More consistent |

Lai et al. Cranial autonomic symptoms in migraine: characteristics and comparison with cluster headache. J Neurol Neurosurg Psychiatr. 2009;80(10):1116–9.

# Disease course

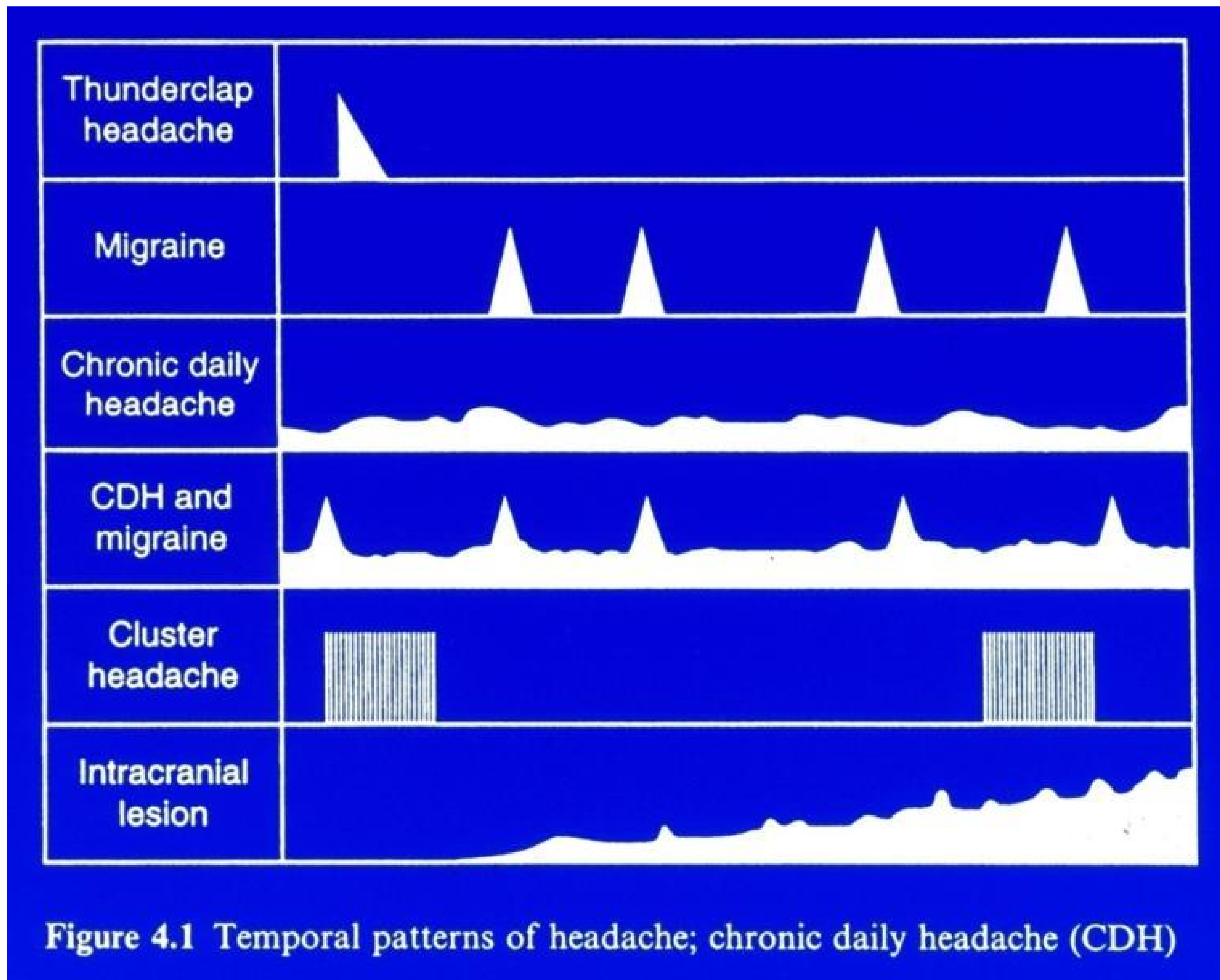



**Figure 4.1** Temporal patterns of headache; chronic daily headache (CDH)

# Drugs/Medications

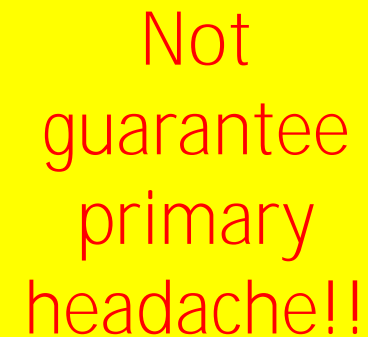
- Relevant drug history
  - -painkillers, types and frequency
  - - OTC
  - -drugs that induce headache
  - -drugs that relieve the pain

# Drug-induced headaches

- Hormones (i.e. estrogen replacement, OCP)
- Nitrates
- Erectile disturbance (ED) treatment
- Proton pump inhibitor
- Trazodone
- .......

# Headache disorders responsive to Indomethacin

- Trigeminal autonomic cephalalgia
  - paroxysmal hemicrania
  - hemicrania continua
- Other primary headache
  - Primary stabbing headache
  - Primary cough headache
  - Primary exercise headache
  - Primary headache associated with sexual activity



# Medication Overuse Headache (MOH)

## Diagnostic Criteria of ICHD-3 criteria

A. Headache occurring on ≥15 days per month in a patient with a pre-existing headache disorder
B. Regular overuse for >3 months of one or more drugs that can be taken for acute and/or symptomatic treatment of headache[1]
C. Not better accounted for by another ICHD-3 diagnosis.

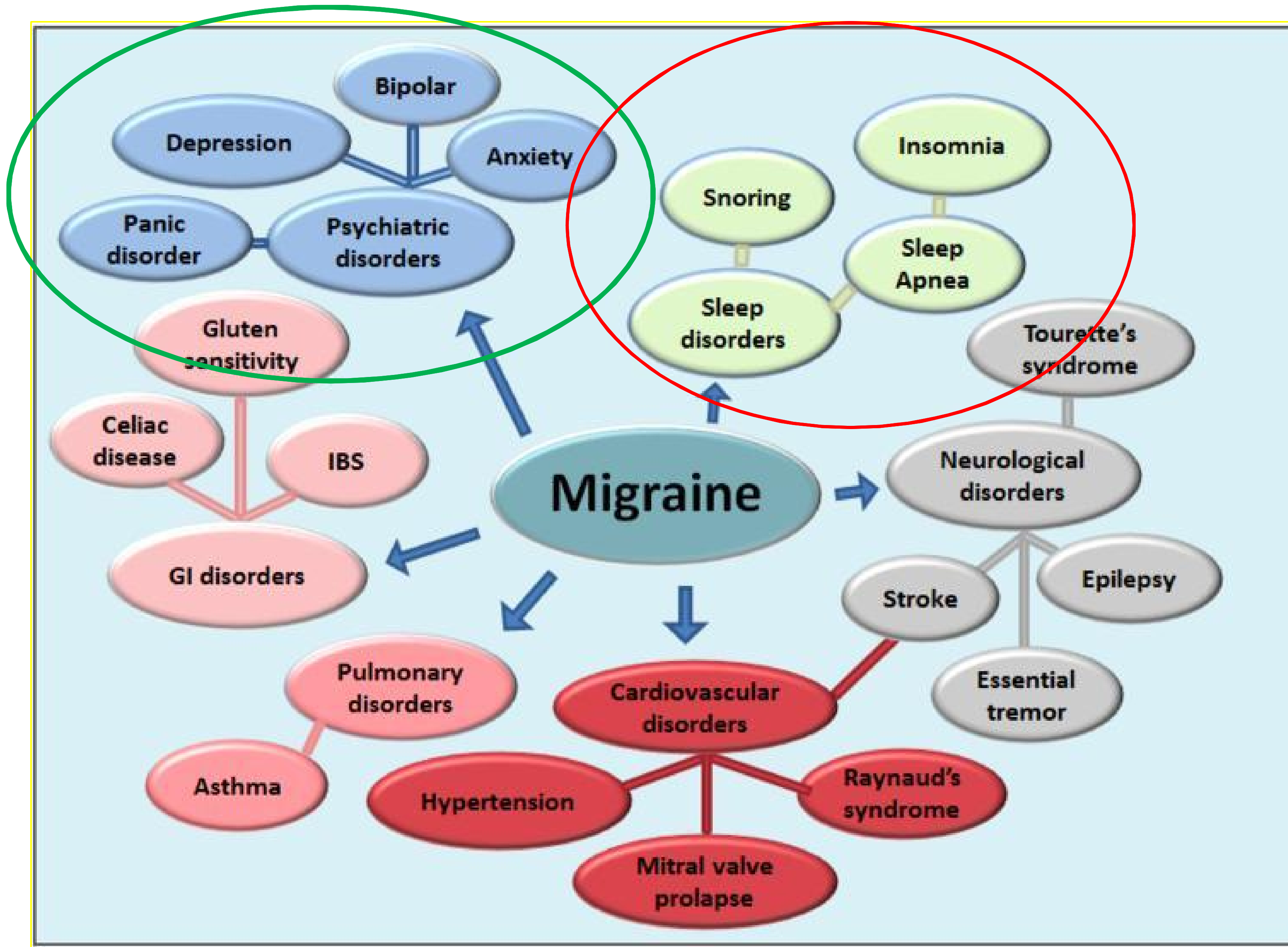
Check if MOH in any patients with chronic daily headache

The International Classification of Headache Disorders, 3rd edition (beta version). Cephalalgia. 2013 Jun 14;33(9):629–808.

# Overused (abortive) medications

- >=15 days per month
  - Simple analgesics
- >=10 days per month
  - Ergotamine
  - Triptans
  - Narcotics
  - Combined analgesics

# Comorbidities of headache




http://commons.wikimedia.org/wiki/File:Migraine_Comorbidities.PNG

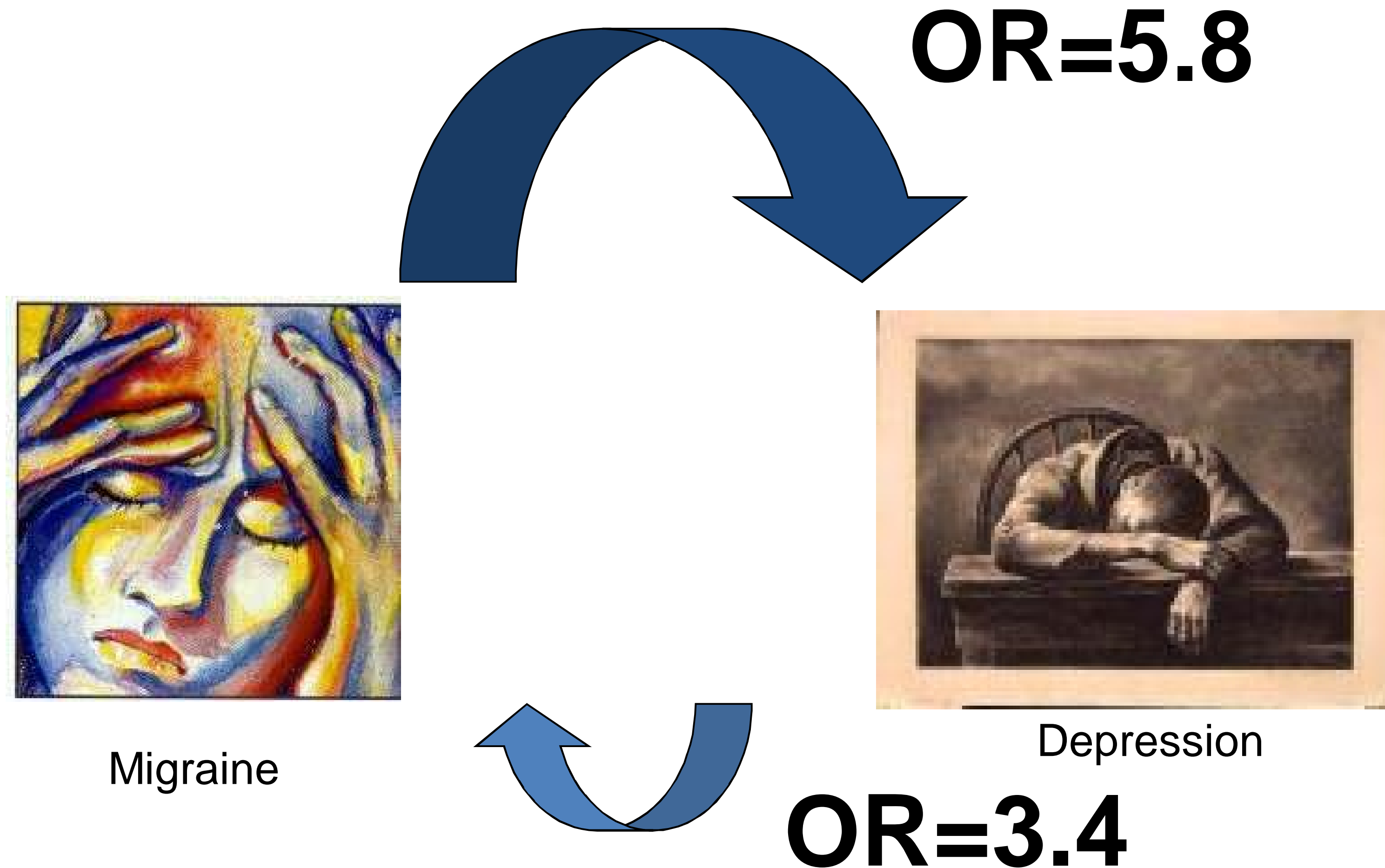
# Comorbid Psychiatric Diseases in Migraineurs

| Psychiatric disorders | Odds Ratio |
|---|---|
| Major depression | 2.2-3.14 |
| Bipolar spectrum | 2.9-7.3 |
| Any anxiety | 2.7 |
| Panic disorder | 3.0-5.09 |
| General anxiety disorder | 3.9-5.3 |
| Agoraphobia | 2.4 |
| Social phobia | 3.4 |
| Suicide attempt* | 4.3 |
| Suicide ideation* | 1.79-2.4 |

**migraine with aura only.*

Wang et al. *Front. Neur*. 2010; 1(16): 1-9

# Bidirectional relationship: Migraine and depression




Breslau N et al, *Neurology* 2003;60:1308–1312

# Why psychiatric comorbidity is important?

- A bidirectional association between migraine and depression

  Breslau et al., 1994, 2000, 2003

- Depression predicts a poor outcome of headache

  Lu et al., 2000.

- Improvement of psychological well-being predicts an improvement in quality of life

  Wang et al., 2001

# How to detect psychiatric comorbidity

- Direct questioning
  - How's your mood?
  - Are you anxious?
- Simple and useful instruments
  - Hospital Anxiety and Depression Scale (HADS)
  - Beck depression/anxiety inventory (BDI/BAI)
  - Patient Health Questionnaire-4 or 9 (PHQ 4/9)
  - Only screeners, not psychiatric interview
- Psychiatric consultation

# Sleep disturbance

- Insomnia
  - Comorbidity with psychiatric disorders
- Snoring
  - Sleep apnea syndrome
  - Morning headache
- Restless legs syndrome
  - Comorbidity of migraine

# Disability

- Some headache disorders are disabling, such as chronic migraine
- Physicians should enquire the disability caused by the headache disorders
- Suggested Instruments
  - *MIDAS
  - HIT-6

# Migraine disability scale (MIDAS)

1. On how many days in the last 3 months did you miss work or school because of your headaches? ☐☐ days
2. How many days in the last 3 months was your productivity at work or school reduced by half or more because of your headaches? (Do not include days you counted in question 1 where you missed work or school.) ☐☐ days
3. On how many days in the last 3 months did you not do household work because of your headaches? ☐☐ days
4. How many days in the last 3 months was your productivity in household work reduced by half or more because of your headaches? (Do not include days you counted in question 3 where you did not do household work.) ☐☐ days
5. On how many days in the last 3 months did you miss family, social, or leisure activities because of your headaches? ☐☐ days

A. On how many days in the last 3 months did you have a headache? (If a headache lasted more than one day, count each day.) ☐☐ days

B. On a scale of 0–10, on average how painful were these headaches (where 0=no pain at all, and 10=pain as bad as it can be)? ☐☐

Stewart et al. *Cephalalgia* 1999;19:107-14.

# Migraine Disability Assessment Questionnaires (MIDAS)

- Compositions:

  -5-item questionnaire to evaluate disability within recent 3 months

- Coverage

  -work / school (0-90)

  -household work (0-90)

  -family / social activities (0-90)

- Total Score: 0-270

Stewart et al. *Cephalalgia* 1999;19:107-14.

# Grading of MIDAS Score (0-270)

- Grade I: 0-5
  - Minimal
- Grade II: 6-10
  - Mild
- Grade III: 11-20
  - Moderate
- Grade IV: >=21
  - Severe

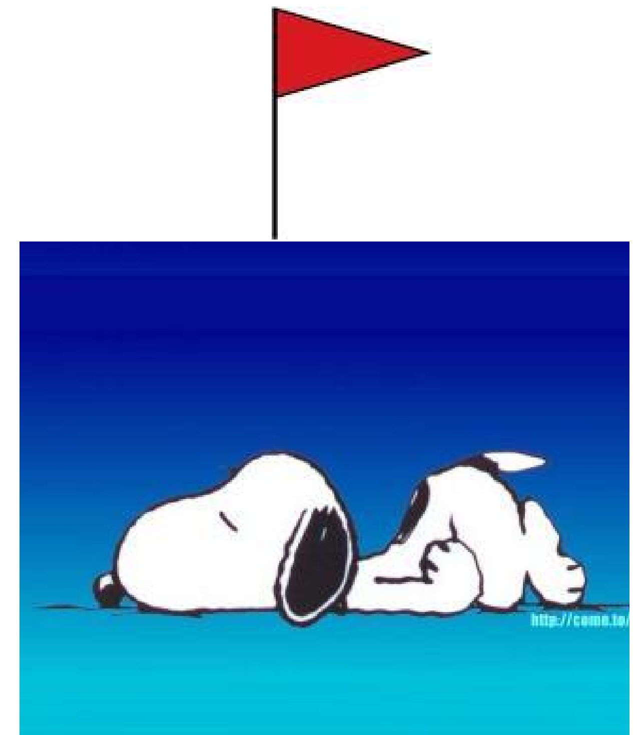
Stewart et al. *Cephalalgia* 1999;19:107-14.

# Neurological examination in headache

- Complete neurological examination
  - consciousness level
  - meningeal signs
  - cranial nerves, motor, sensory, tender reflex, coordination and gait
- Specific examinations
  - vascular (temporal artery, carotid and orbital bruits)
  - palpation of head and neck regions (sinus headache)
  - fundus examination

# Red flags for 2nd headaches: SNOOP4

- Systemic symptoms and signs (wt loss, fever/cancer, HIV)
- Neurologic symptoms or signs
- Onset: peak at onset or <1 minute
- Older: after age 50 years
- Previous headache: pattern change
- Postural, positional aggravation
- Precipitated by Valsalva, exertion, etc.
- Papilledema




Silberstein SD et al. Wolff's Headache and Other Head Pain. 8th ed. New York: Oxford University Press; 2008:315-377

Dodick D. *N Engl J Med*. 2006;354:158-165

Bigal ME et al. *J Headache Pain*. 2007;8:263-272

# Primary vs. Secondary Headache Disorders

| | Primary Headache Disorder | Secondary Headache Disorder |
|---|---|---|
| | | |
| Pain severity | Variable | Variable |
| | | |
| Disease outcome | Relatively benign | Potential severe complication |

# Neuroimaging for non-acute headache

| Historical or physical findings | Likelihood ratio (LR) of significant image findings, LR (95% CI) |
|---|---|
| Abnormal neurological examination | 3.0 (2.3-4.0) |
| Any neurological signs or symptoms | 6.0 (4.7-7.8); 1.1 (1.05-1.2); |
| Rapid increasing headache frequency | 12 (3.1-48) |
| Awaking headache | 98 (10-960); 1.7 (0.81 to 3.7) |
| Dizziness / incoordination | 49 (3.4 to 710) |
| Numbness or tingling | 49 (3.4 to 710) |
| Headache worsening by Valsalva maneuver | 2.3 (1.1-4.6) |

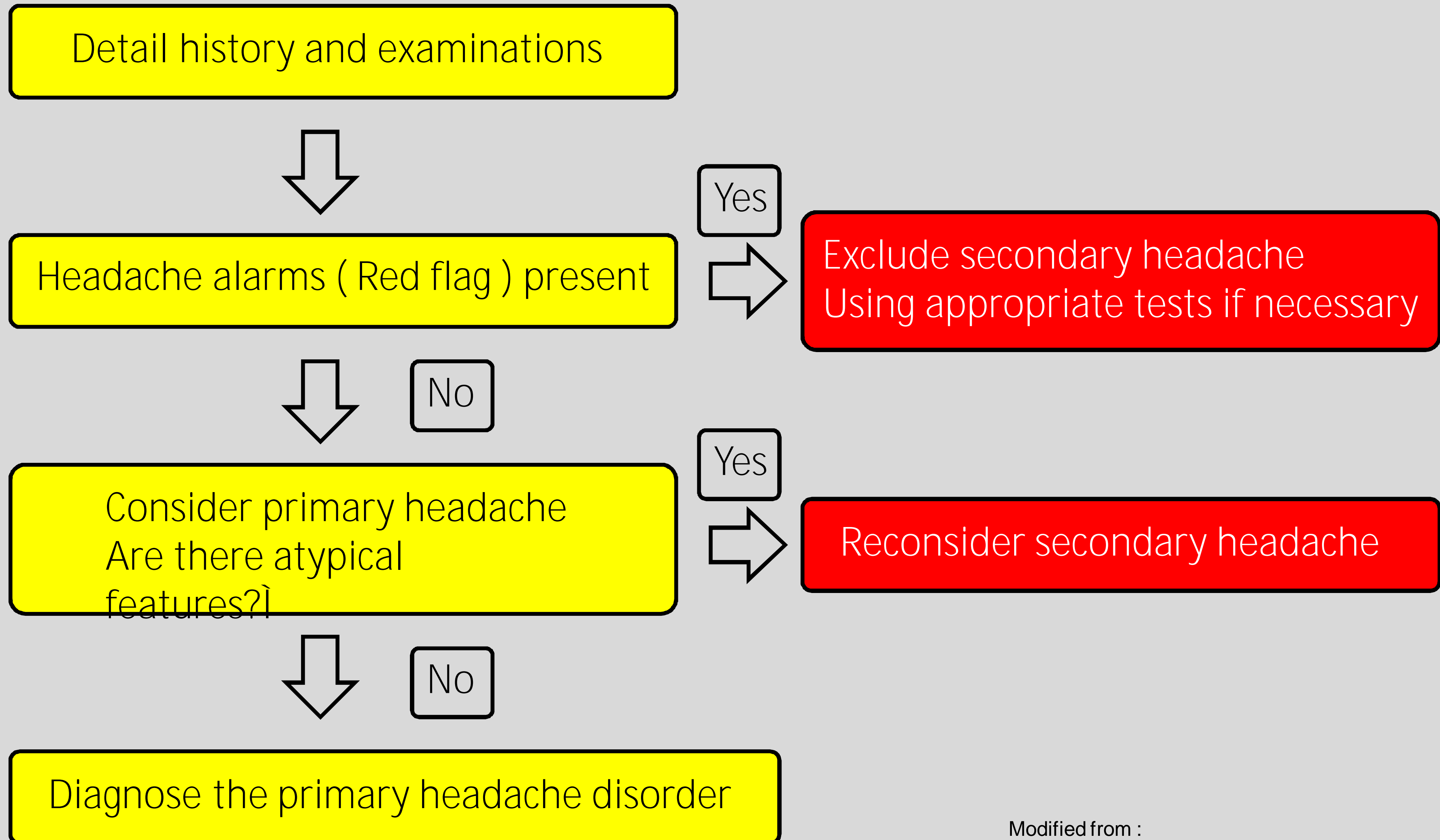
Frishberg et al. Evidence-based guidelines in the primary care setting: neuroimaging in patients with nonacute headache. URL: http://www. aan. com/public/practiceguidelines. 2000.

# Abnormal imaging findings in common headache disorders

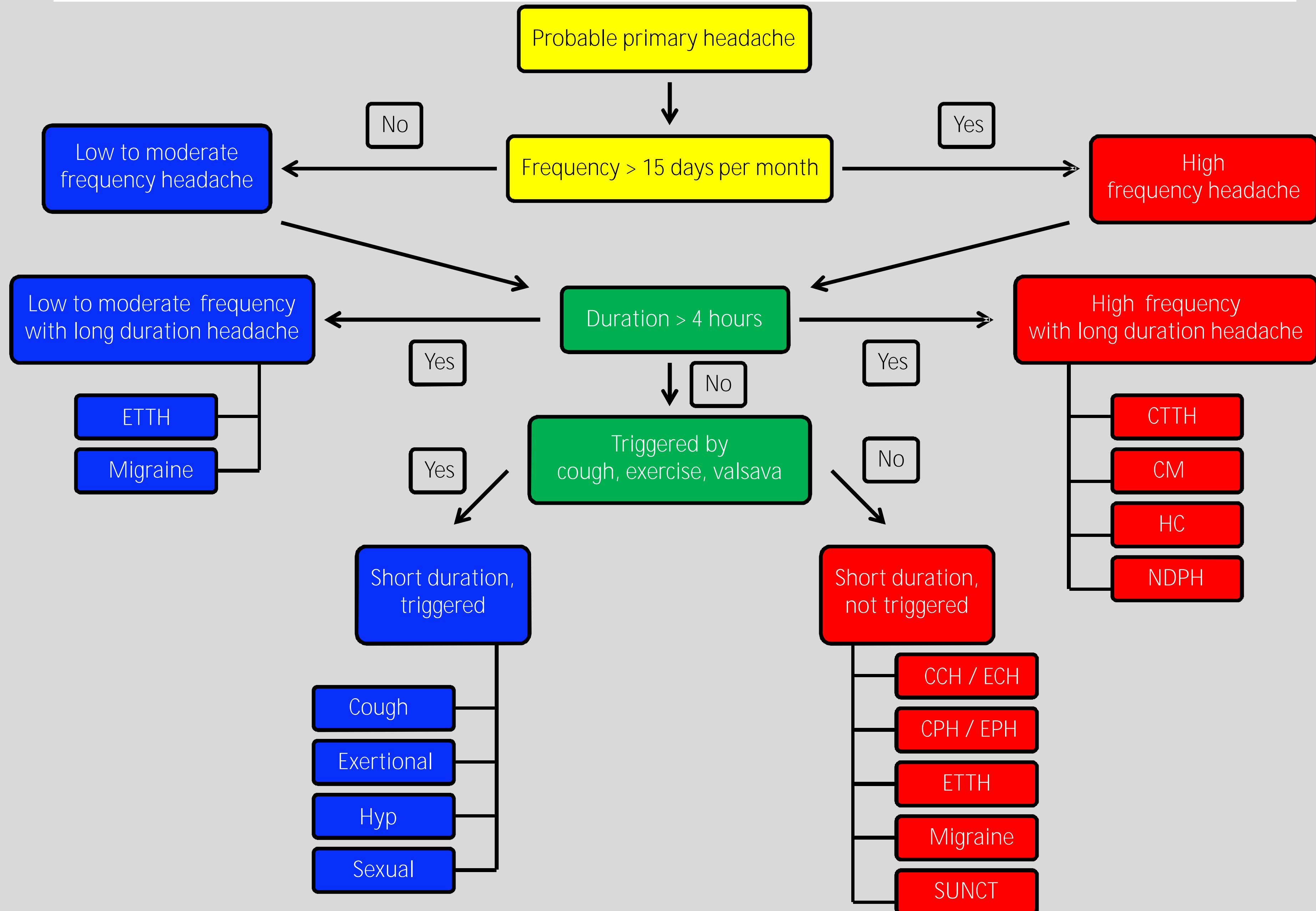
| Types of individuals included | Number with serious abnormality/number scanned | % (95% CI) |
|---|---|---|
| Migraine† [2–12] | 2/1086 | 0.2 (0.02 to 0.7) |
| Tension type headache† [2 7] | 0/83 | 0 (0 to 4.4) |
| Chronic headache (not further defined)†‡ [13–17] | 7/1445 | 0.5 (0.2 to 1.0) |
| Asymptomatic volunteers¶ [18] | 4/1000 | 0.4 (0.1 to 0.8) |

Sudlow C. US guidelines on neuroimaging in patients with non-acute headache: a commentary. J Neurol Neurosurg Psychiatr. 2002 Jun;72 Suppl 2:ii16–8.

# Diagnostic algorithm

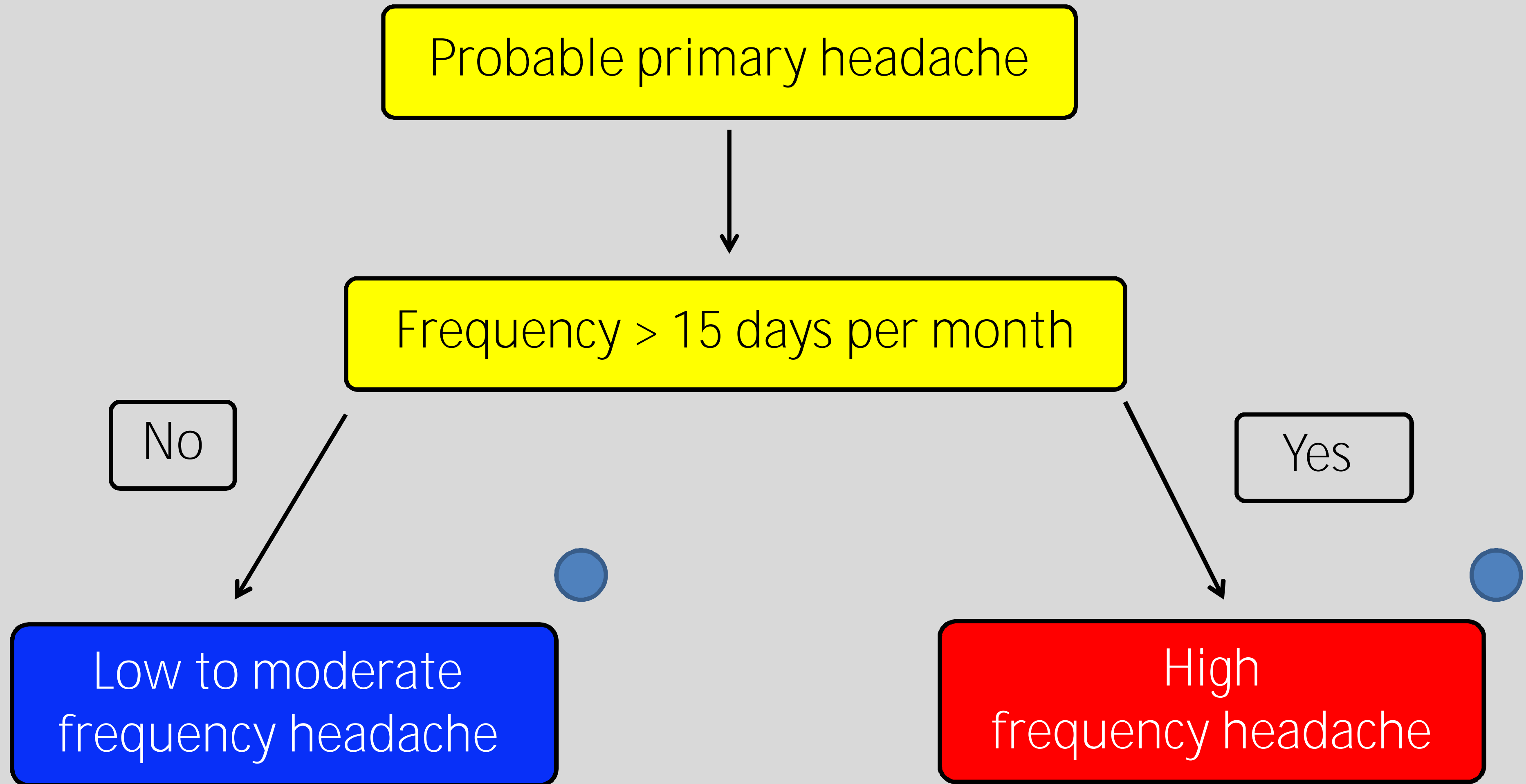

Algorithm in headache diagnosis
Detail history and examinations
Headache alarms ( Red flag ) present
Yes
Exclude secondary headache
Using appropriate tests if necessary
No
Consider primary headache
Are there atypical
features?]
Yes
Reconsider secondary headache
No
Diagnose the primary headache disorder
Modified from :
Lipton et al. Classification of primary headaches.
Neurology. 2004 Aug 10;63(3):427–35.

# Algorithm in primary headache diagnosis



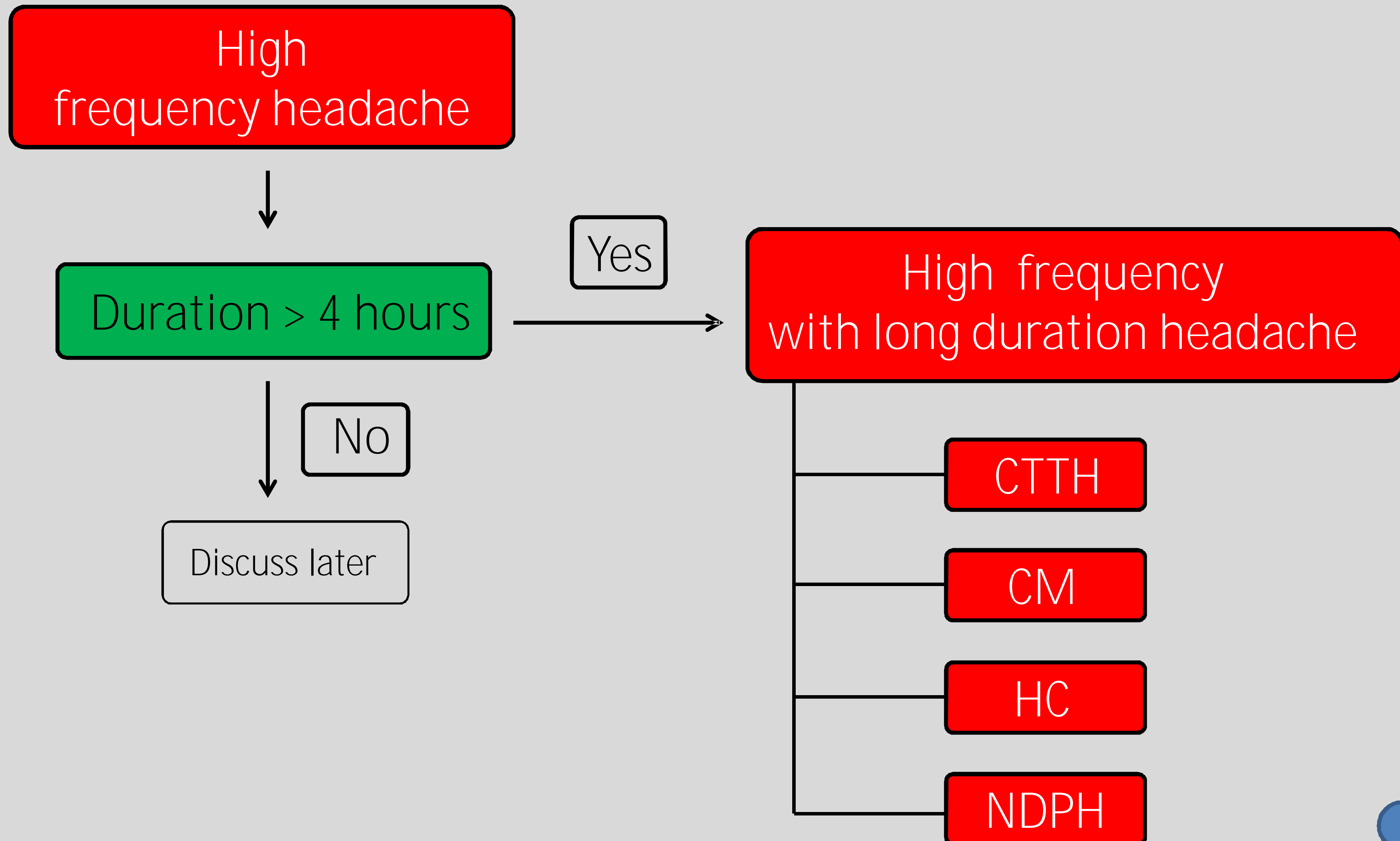

Modified from : Lipton et al. Classification of primary headaches. Neurology. 2004 Aug 10;63(3):427–35.

# First step : Frequency



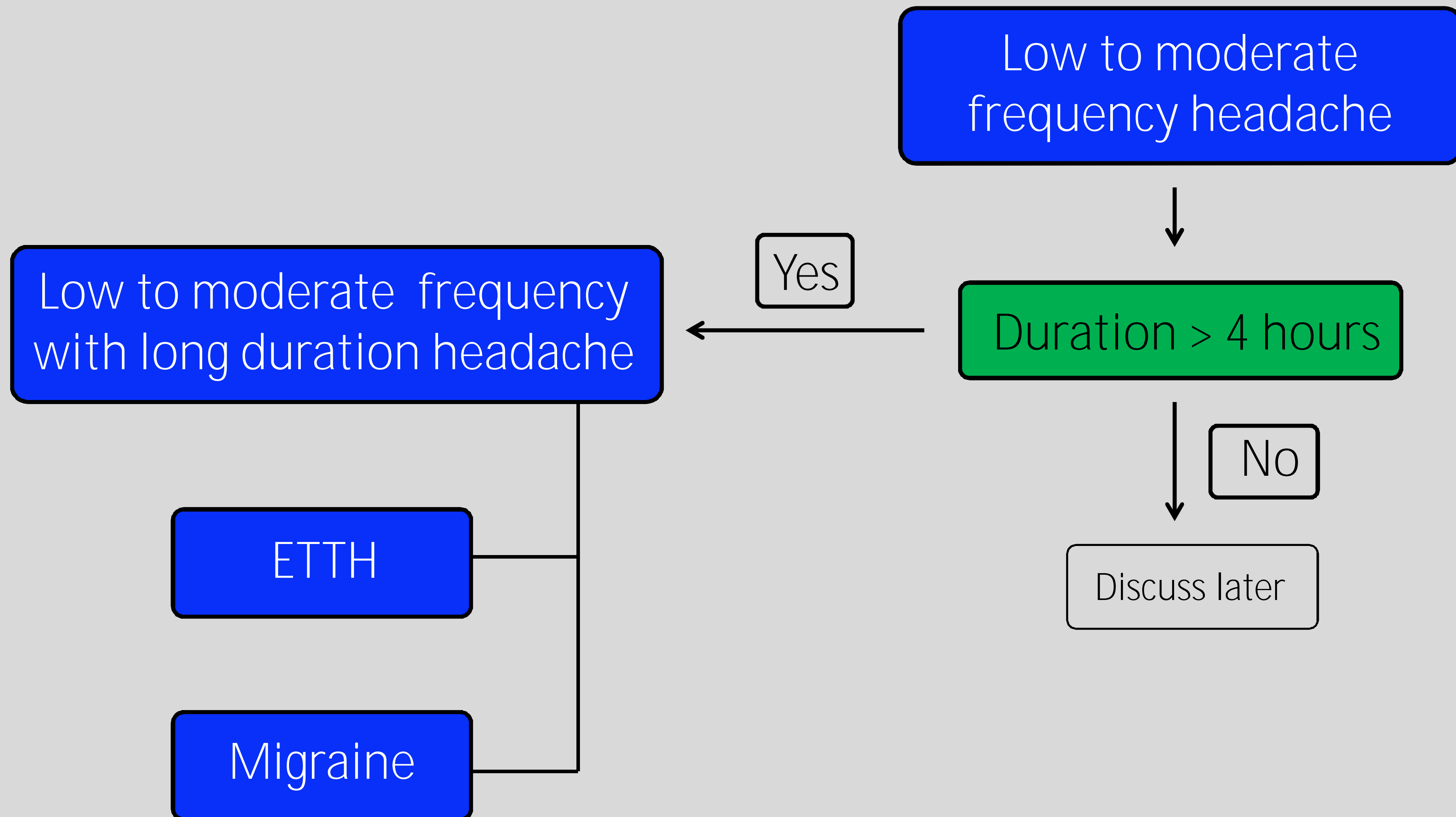

Modified from : Lipton et al. Classification of primary headaches. Neurology. 2004 Aug 10;63(3):427–35.

# Second step : Duration
# [ Long duration part - 1 ]



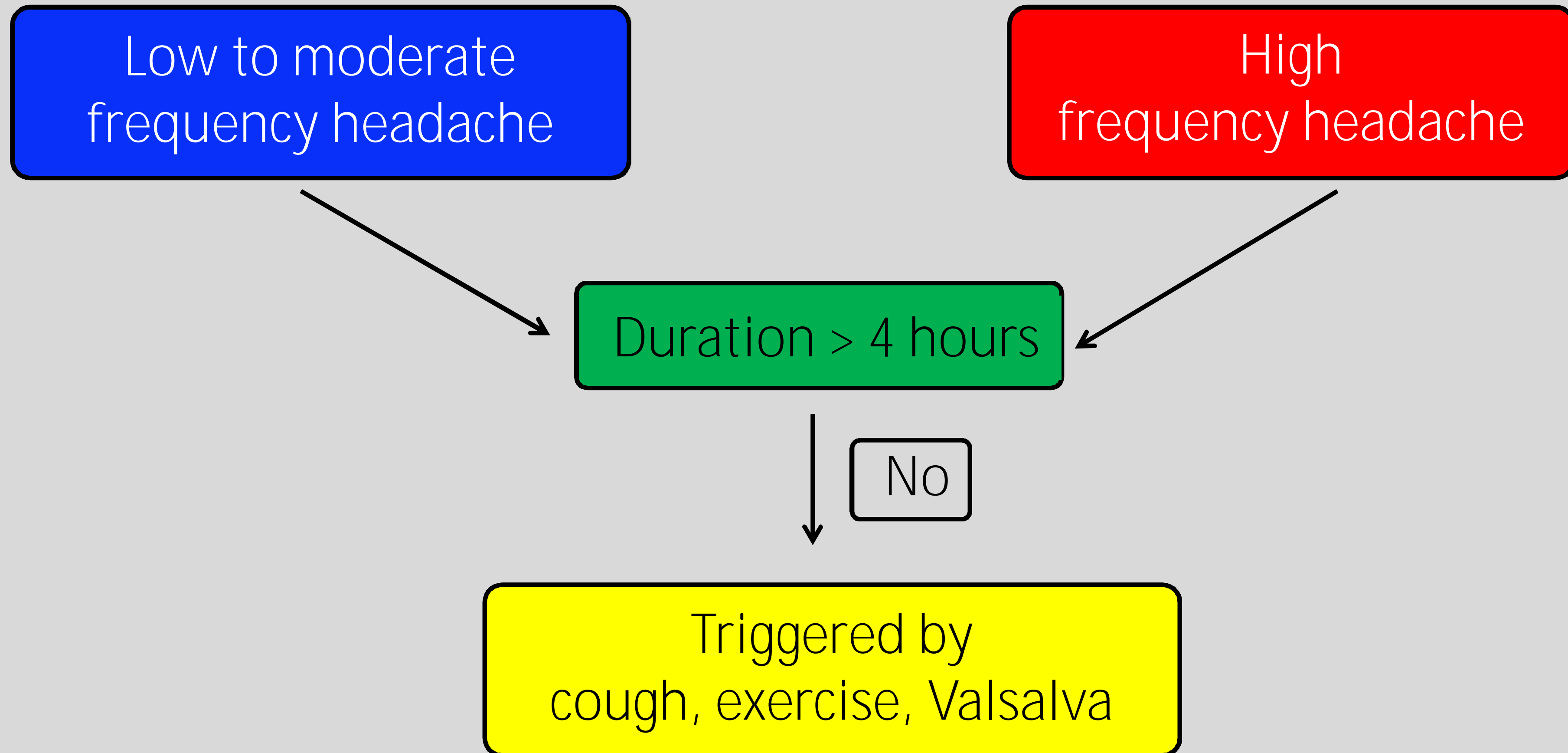

Modified from : Lipton et al. Classification of primary headaches. Neurology. 2004 Aug 10;63(3):427–35.

# Second step : Duration
# [ Long duration part - 2 ]



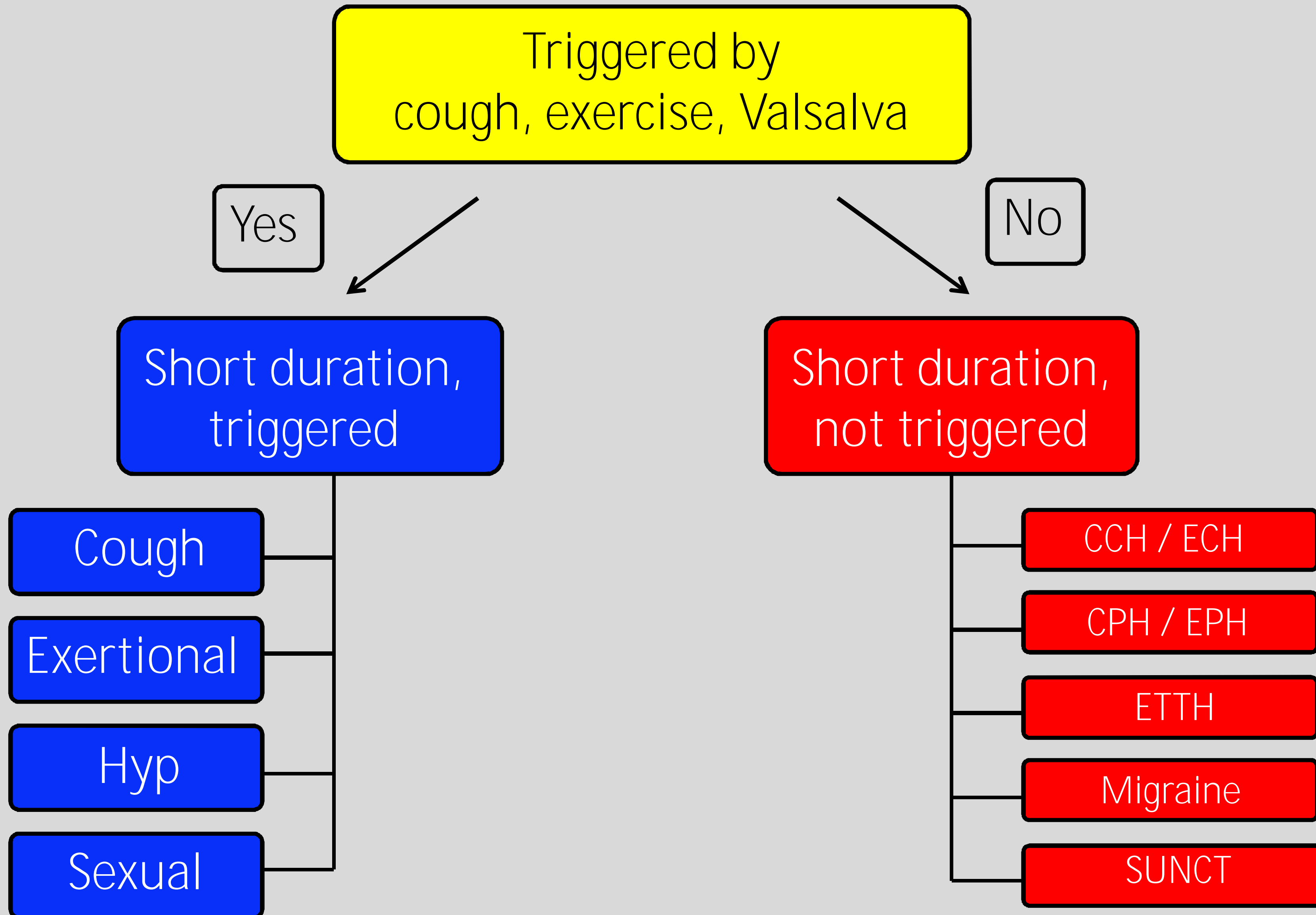

Modified from : Lipton et al. Classification of primary headaches. Neurology. 2004 Aug 10;63(3):427–35.

# Third step : Short duration & Triggers

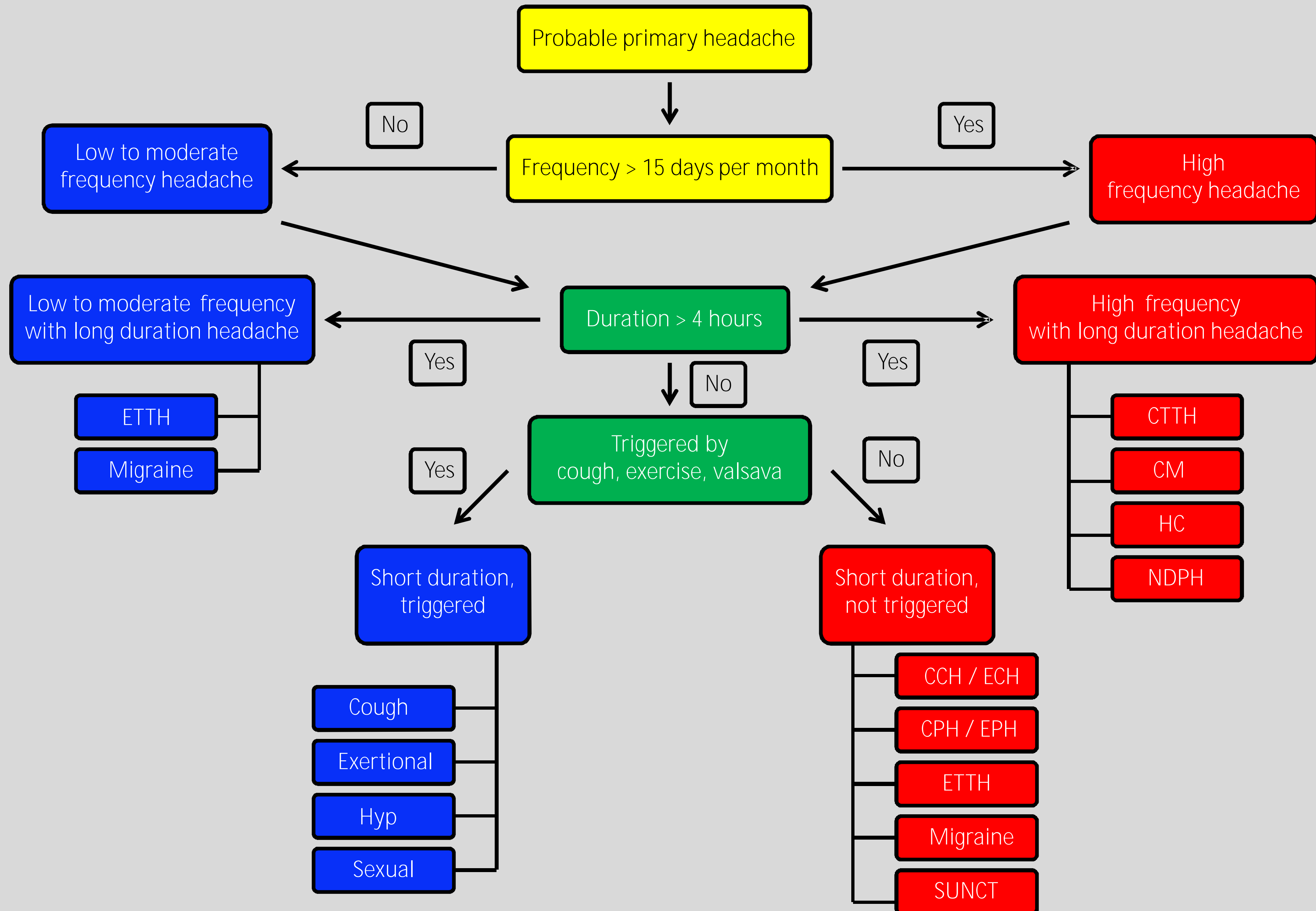



Modified from : Lipton et al. Classification of primary headaches. Neurology. 2004 Aug 10;63(3):427–35.

# Forth step : Triggers




Modified from : Lipton et al. Classification of primary headaches. Neurology. 2004 Aug 10;63(3):427–35.

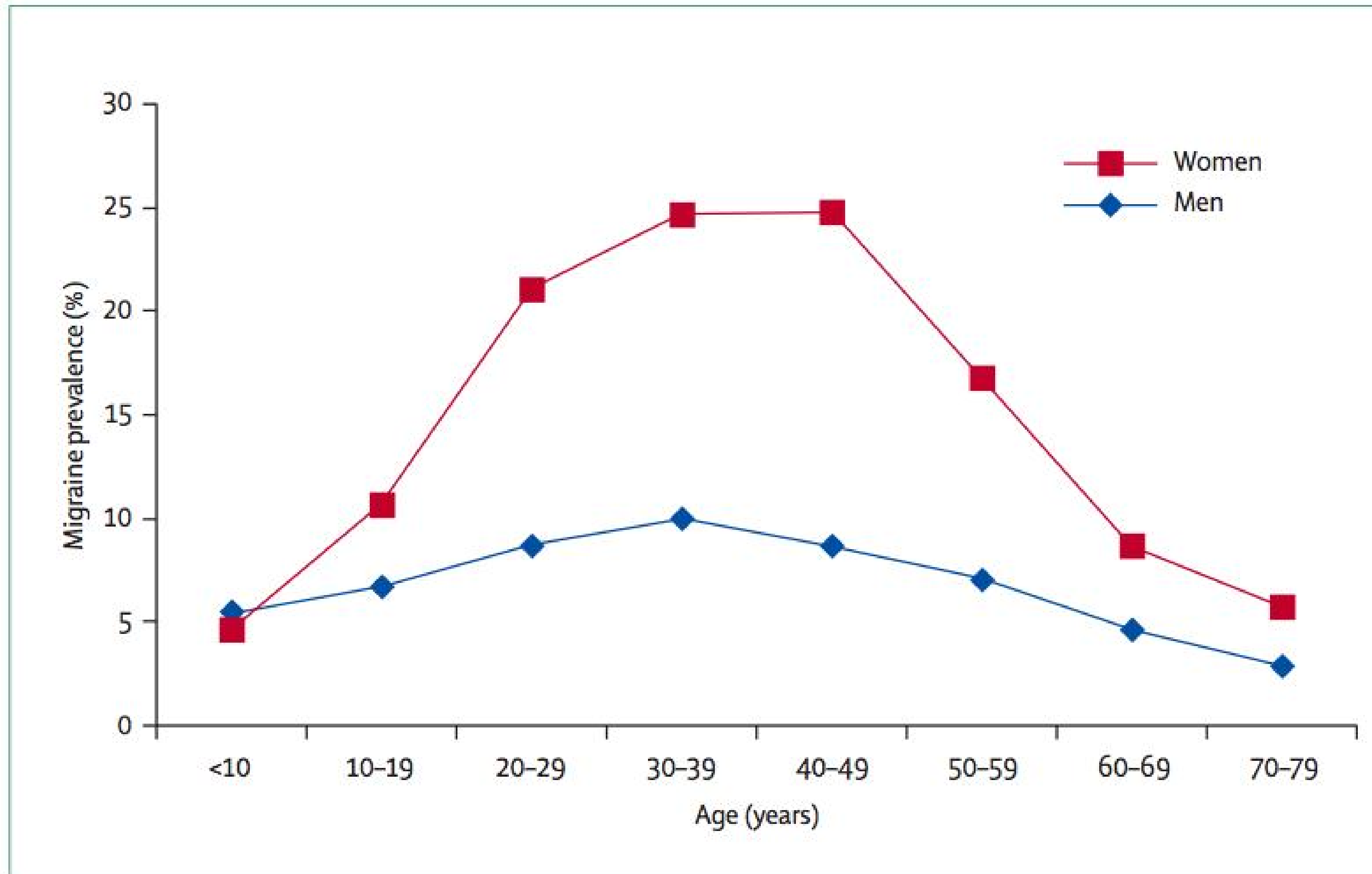

Algorithm in primary headache diagnosis
Probable primary headache
Frequency > 15 days per month
No
Yes
Low to moderate frequency headache
High frequency headache
Duration > 4 hours
Yes
Yes
No
Low to moderate frequency with long duration headache
High frequency with long duration headache
ETTH
Migraine
CTTH
CM
HC
NDPH
Triggered by cough, exercise, valsava
Yes
No
Short duration, triggered
Short duration, not triggered
Cough
Exertional
Hyp
Sexual
CCH / ECH
CPH / EPH
ETTH
Migraine
SUNCT
Modified from : Lipton et al. Classification of primary headaches. Neurology. 2004 Aug 10;63(3):427–35.

# Instruments for psychiatric comorbidities

- Hospital and Anxiety Depression Scale (HADS)
  - for anxiety and depression
- Beck Depression Inventory (BDI)
  - for depression
- Beck Anxiety Inventory (BAI)
  - for anxiety
- 9-item Patient Health Questionnaire (PHQ-9)
  - for depression

For screening, not to replace psychiatrists

# Migraine prevalence and age




Jensen and Stovner. Epidemiology and comorbidity of headache. Lancet Neurol. 2008 Apr;7(4):354–61.

# Headaches in the elderly

- Primary > secondary headache but secondary more common than in younger subjects

  -temporal arteritis

  -hypnic headache

  -drug related headache

  -neoplasm

  -glaucoma

  -stroke

# Headache in the children

- Relatively poor narrator
  - Patient and parents
- Specific migraine variants

-cyclic vomiting

-abdominal migraine

- Migraine symptoms differ

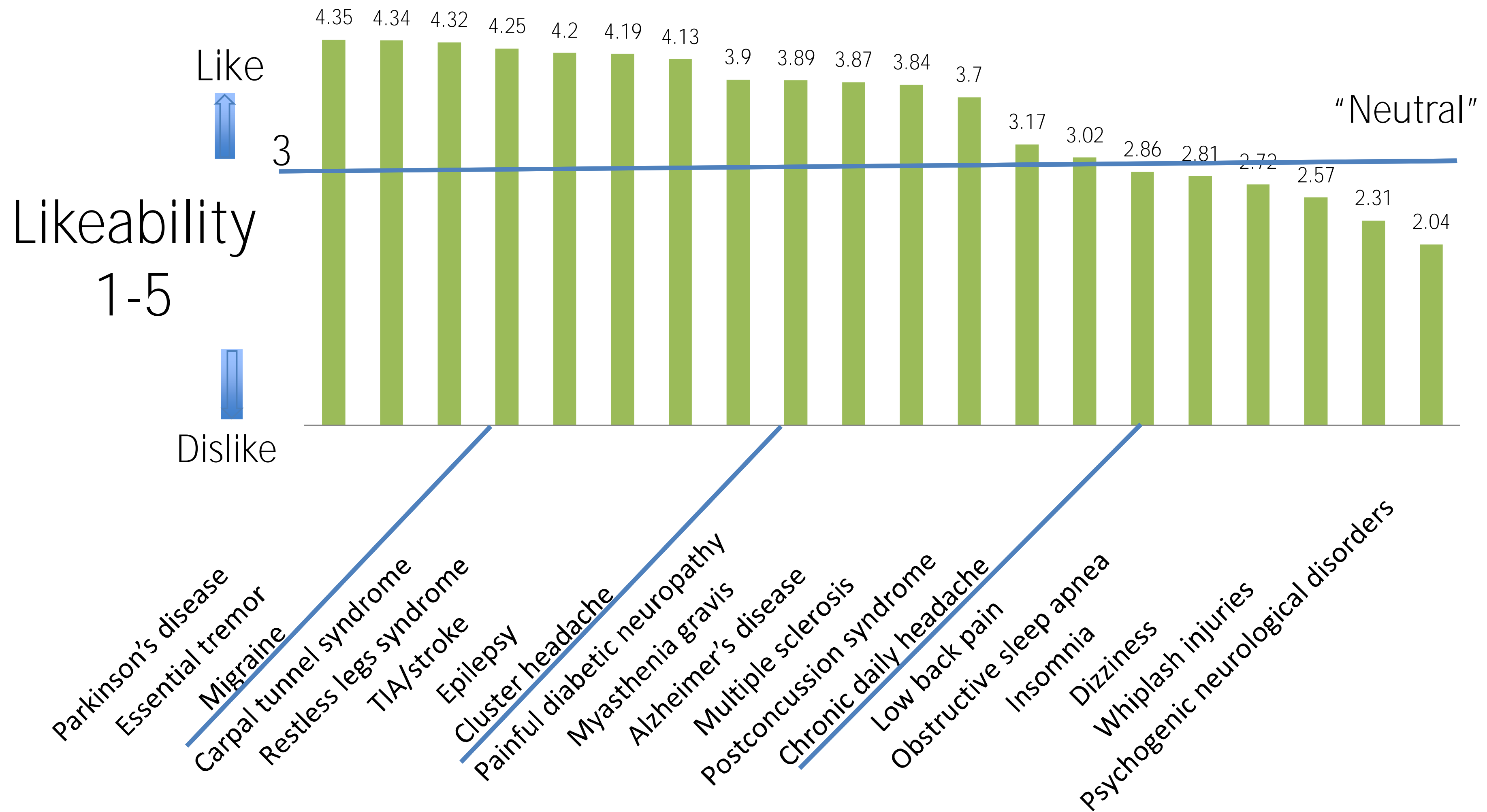
-more bilaterally located

-shorter duration

# Still, a headache history should be individualized

Specific Headache Scenario

# Likeability to treat neurological disorders among neurologists




Evans RW and Evans RE. Headache 2010;50:1126-1129

# Summary

- Let the patient express the symptoms in his own way
- If red flags present, secondary headache should be carefully excluded
- The majority of patients had primary headache disorders, of which most are migraine or probable migraine
- A broad knowledge of various conditions

*The eye sees only what the mind is prepared to comprehend.*

- **Henri Bergson**

**French Philosopher, 1927 Nobel Prize in Literature,**