How do I know my patient has a migraine?

Migraine is a type of primary headache disorder[1]

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Steps to diagnosing migraine and other primary headache types:

1 Patient history and physical examination

A thorough **headache history** is the **most** important tool in diagnosing **migraine**[2]

To aid **accurate diagnosis**, it is necessary to ask patients a series of **questions** on **symptoms** experienced and **severity** of migraine attacks[3]

A **physical examination** can determine other factors that may **exacerbate migraine** and include fundoscopy, palpation of head and neck, cardiovascular screening, and neurologic examination[3]

Example questions when conducting a patient history of suspected migraine[3,4]

Pain pattern
- When and how do headaches begin?
- Are they continuous or episodic?
- How long do headaches last?
- How frequent is headache pain?
- Are there factors that trigger an attack?

Treatment history
- What previous and current treatments have been taken and when?
- To exclude medication overuse headache,[a] what acute headache medications have been taken?
- What non-headache treatments been taken?
- If treatment was discontinued, why?

Medical history
- Has there been any experience of depression, anxiety and/or sleep disorders?
- Are there any comorbidities such as asthma, hypothyroidism, hypertension?

Family and social history
- Is there a family history of migraine?
- How have the headaches impacted your lifestyle?
- Have there been any sleep disturbances?

Associated symptoms
- Do other symptoms precede the attack?
- Are there any symptoms that accompany the attack (e.g., nausea, photophobia, phonophobia)?

Nature of pain
- What is the location of the pain?
- How severe is the pain?

2 SNOOP is a red flag detection tool used to identify secondary headaches that warrant further investigation[2,5,6]

Red flags can be interpreted like screening tests identifying patients whose headache diagnosis is not known yet as having an elevated risk of a secondary headache;[7] if a primary headache diagnosis cannot be confirmed, particularly if secondary headache is suspected, patients should be referred to headache specialists.[2]

Red flag sign or symptom	History and examination findings	Secondary headache causes		Diagnostic workup
Systemic	• Signs of infection (e.g., fever, chills, weight loss) • History of HIV, immunosuppression, or malignancy[2,5]	• Infection • Malignancy	• Rheumatic disease • Giant cell arteritis	• Neuroimaging • Lumbar puncture
Neurologic	• Abnormal neurologic examination • Change in behavior or personality	• Malignancy • Infection	• Inflammatory disorder	
Onset (sudden)	• Headache reaching peak intensity in <1 minute (thunderclap[8])	• Subarachnoid hemorrhage • Stroke	• RCVS	• Head CT • Lumbar puncture (if CT negative)
Older age at onset	• New onset headache at age >50 years	• Malignancy • Infection	• Giant cell arteritis	• MRI
Pattern change	• Change in headache pattern or characteristics • Progressive headache, loss of headache-free periods	• Malignancy • Inflammatory or vascular disorder		
Precipitated by Valsalva maneuver	• Headache precipitated by Valsalva manoeuvre, sneezing, coughing, or exercise	• Chiari malformation type 1 • Posterior fossa lesions • Malignancy	• Arachnoid cysts • Subdural hematoma • Intracranial hypertension or hypotension	• Neuroimaging
Postural	• Headache precipitated or aggravated by postural change	• Intracranial hypertension • Intracranial hypotension		• Neuroimaging • Lumbar puncture • MRI with gadolinium
Papilledema	• Papilledema, visual obscurations, diplopia, or field defects	• Intracranial hypertension • Malignancy	• Inflammatory disorder	• Thorough funduscopic examination

Consider neuroimaging only when a secondary headache disorder is indicated as a red flag[9]

- **MRI** is preferred to CT as it provides a **higher resolution** and avoids harmful **exposure** to ionizing **radiation**; however, it can also detect **clinically insignificant findings** (such as white matter lesions) which can alarm patients and lead to further unnecessary evaluations

[a]Medication overuse: ≥15 days/month use of simple (non-opioid) analgesics for >3 months; ≥10 days/month use of opioids, triptans, ergotamines, or their combination analgesics for >3 months.[1]

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3 3-item ID Migraine™ is one of several screening tools for migraine diagnosis[10]

- The **ID Migraine** diagnostic aid is a **validated, reliable** tool that is helpful to assess **pain** and **functional activity** in previously undiagnosed individuals[10,11]
- It consists of **3 core questions** regarding headache-associated **disability, nausea, and photophobia**, and can aid with migraine recognition[10]

Has a headache limited your activities for a day or more in the last 3 months?

Are you nauseated or sick to your stomach when you have a headache?

Does light bother you when you have a headache?

A **migraine diagnosis** is likely if patients respond affirmatively to **≥2 items**

Testing positive for ≥2 items yields a sensitivity of 0.81 (95% confidence interval 0.77–0.85)[10]

4 Differential diagnoses: characteristics of primary headache disorders (headache duration/features/frequency)[9,12]

Migraine[2,9,12]

Headache characteristics:

Usually unilateral in location (can be bilateral)

4–72 hours

Moderate or severe intensity

Usually pulsating/ throbbing pain

Accompanying symptoms:

Photophobia, phonophobia, nausea, vomiting

May be aggravated by or cause avoidance of routine physical activity

- **EPISODIC: <15** headache days/month
- **CHRONIC: ≥15** headache days/month for more than 3 months

Tension-type headache[9]

Headache characteristics:

Typically bilateral or circumferential

Hours to days[a]

Mild or moderate intensity

Usually pressing or tightening pain

Accompanying symptoms:

Often none; sometimes photophobia or phonophobia (but not both) and mild nausea in chronic tension-type headache

Not aggravated by routine physical activity

Cluster headache[1,2,9,13]

Headache characteristics:

Strictly unilateral and orbital, supraorbital, and/or temporal

15–180 minutes

Severe or very severe intensity

Overwhelming, sharp/stabbing pain

Accompanying symptoms:

Ipsilateral to the headache: cranial autonomic symptoms, e.g., conjunctival injection,[b] lacrimation and nasal congestion

Associated with restlessness or agitation

- **EPISODIC:** ≥2 cluster periods[c] lasting from **7 days to 1 year** (when untreated) separated by **pain-free remission periods of ≥3 months**
- **CHRONIC:** headache attacks occurring **without a remission period,** or with **remissions lasting <3 months, for ≥1 year**

Summary: overarching algorithm for diagnosing migraine[2]

1. Conduct a thorough history and physical exam
2. Are there any **red flags (SNOOP4)** present? → No / Yes → Consider referral if secondary headache is suspected
3. Can you identify migraine as the primary headache disorder using ID-Migraine™? → No / Yes → **Diagnose and treat migraine**
4. Diagnose other common primary headache types
   - **Cluster headache;** consider referral[14]
   - **Tension-type headache;** diagnose and treat[14]

[a]Or unremitting; [b]Increased redness of the eye due to enlargement of conjunctival vessels[15]; [c]Cluster headache attacks occur in series lasting for weeks or months (so-called cluster periods) separated by remission periods usually lasting months or years.[1]

Abbreviations: CT, computed tomography; HIV, human immunodeficiency virus; ID, identification; MRI, magnetic resonance imaging; RCVS, reversible cerebral vasoconstriction syndrome.

References: 1. Headache Classification Committee of the International Headache Society. The International Classification of Headache Disorders, 3rd edition. *Cephalalgia* 2018;38:1–211; **2.** Martin VT, et al. *Ann Med*;2021:53:1979–90; **3.** Weatherall MW. *Ther Adv Chronic Dis*;2015:6:115–23; **4.** Ravishhankar K. *Ann Indian Acad Neurol* 2012;15:7–14; **5.** Dodick DW. *Semin Neurol* 2010;30:74–81; **6.** Do TP, et al. *Neurology* 2019;92:134–44; **7.** Pohl H. *Headache* 2022;62:534–5; **8.** Schwedt TJ. *Continuum (Minneap Minn)* 2015;21:1058–71; **9.** Eigenbrodt AK, et al. *Nat Rev Neurol* 2021;17:501–14; **10.** Lipton RB, et al. *Neurology* 2003;61:375–82; **11.** de Mattos ECM, et al. *Arq Neuro-Psiquiatr*. 2017;75:446–50; **12.** Lew C, Punnapuzha S. Migraine medications. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023; **13.** Lambru G, et al. *J Headache Pain* 2017;18:49; **14.** Lee VME, et al. *Singapore Med J* 2018;59:399–406; **15.** Park IK, et al. *Invest Ophthalmol Vis Sci* 2013;54:5249–57.

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