UCSF Benioff Children's Hospitals
Pediatric Brain Center

Pediatric Headache Program

Headaches in Children and Teenagers

UCSF Benioff Children's Hospitals are nationally ranked for pediatric neurology & neurosurgery.

BEST CHILDREN'S HOSPITALS U.S.News & WORLD REPORT NEUROLOGY & NEUROSURGERY 2021-22

SYMPTOMS

Features Suggestive of Migraine

- Sensitivity to lights, sounds and/or smells during headaches (even if mild)
- Nausea/vomiting
- Desire to lie down during headache, thereby interrupting activities
- Duration of at least two hours untreated or unsuccessfully treated
- Family history of migraine (note: some parents may not realize that their regular headaches are migraines; a common example is the mother who has to take ibuprofen and lie down due to headache around her menses)
- Presence of aura (however, absence of aura should not deter a diagnosis of migraine)

Features Suggestive of Tension-Type Headache

- Mild or moderate intensity, generally not severe enough to disrupt activities
- No nausea/vomiting or other sensitivity symptoms
- Bandlike distribution of pain

Warning Signs

- Position: Worse when lying flat, or wakes child out of sleep in middle of the night (particularly with vomiting)
- Diplopia
- Transient visual obscurations
- Pulsatile "whooshing"
- Focal numbness or weakness, or any event concerning for seizure
- Abnormal findings on neurologic exam (including funduscopic exam)

WHEN TO REFER TO A NEUROLOGIST

Refer to a Neurologist

- When there is concern for secondary cause of headache
- When NSAIDs and a triptan trial have been insufficient for acute treatment
- When first-line preventive therapy has failed

How to Refer

To refer your patient to the
UCSF Pediatric Headache Program:
Phone: **(877) UC-CHILD** or **(877) 822-4453**
Website: ucsfbenioffchildrens.org/headache

TREATMENT

Preventive Treatment

- In those experiencing four or more headache days per month, preventive therapy may be indicated.
- It is important to encourage regularity of schedule: meals, hydration, regular sleep and regular exercise.
- Cognitive behavioral therapy combined with amitriptyline has been shown to decrease headache frequency in 10- to 17-year-olds with chronic migraine. Propranolol and topiramate may also decrease migraine frequency in these age groups.
- Placebo response rates in pediatric migraine prevention trials have been high, and active interventions have not always separated from placebo. Therefore, supplements with evidence of efficacy and a favorable side effect profile are reasonable to try before advancing to prescription medications. See the table below for options.
- It generally takes six to eight weeks to determine if a preventive strategy is working. Consider counseling families not to give up too soon on a treatment.

Supplements That May Prevent Migraines

	Dosing	Notes
Riboflavin	<40 kg: 100 mg BID ≥40 kg: 200 mg BID	Take with food for best absorption; colors urine orange
Melatonin	3 mg at bedtime	Immediate release formulation
CoQ10	100 mg BID	
Magnesium	9 mg/kg/day, divided BID	May cause loose stools

Abbreviations: BID, twice a day; CoQ10, coenzyme Q10.

Acute Treatment

- A migraine is easier to treat when the pain is still mild. It is generally best to take acute treatments as early as possible; however, they can still help even if the pain has become moderate or severe.
- "Medication overuse headache," i.e., frequent use of acute medications leading to worsening of headache pattern, is somewhat controversial. However, guideline-based limits are provided in the accompanying table.
- While acute treatments may address all migraine symptoms, some patients may also require an antiemetic (e.g., ondansetron) to help treat nausea or vomiting.
- Non-oral routes of administration may be needed when there is nausea, vomiting or a rapid peak in pain intensity, and in those under the age of 8 who cannot yet swallow pills.

Nonsteroidal Anti-Inflammatory Drugs (NSAIDs)

- Ibuprofen 10 mg/kg is an evidence-based first-line treatment. If ibuprofen is insufficient, consider changing to naproxen 10 mg/kg (available as a liquid at 125 mg/5 mL).
- Guidelines recommend limiting NSAID use to no more than 14 days per month.

Triptans

- Rizatriptan MLT has been studied, and although evidence is strongest in adolescents, the U.S. Food and Drug Administration (FDA) has approved the drug for use in children as young as 6. Sumatriptan nasal spray has also been studied in this age group.
- Contraindications: uncontrolled hypertension, history of stroke, myocardial infarction, peripheral vascular disease, unusual aura – such as motor aura (i.e., hemiplegic migraine).
- A common side effect within the first few uses is feeling a sense of tightening or flushing in the chest, neck or jaw.
- Guidelines recommend limiting triptan use to nine days per month.
- Sumatriptan tablets are typically used first, as available in generic form. They are generally Tier 1 on most insurance plans.
- Adult data suggest that combining an NSAID with a triptan may increase efficacy.

Commonly Used Triptans with Suggested Use and Dosing

Drug	Available Sizes	Dosing	Notes
Sumatriptan tablets	25, 50, 100 mg	<40 kg: 25 mg ≥40 kg: 50 mg	For heavier adolescents, it's OK to increase to 100 mg if needed
Sumatriptan nasal spray	5, 20 mg	<40 kg: 5 mg ≥40 kg: 50 mg	Option for those who can not yet swallow pills
Sumatriptan/ naproxen combined product*	10/60 and 85/100 mg	As above	FDA-approved for 12- to 17-year-olds
Rizatriptan MLT	5, 10 mg	<40 kg: 5 mg ≥40 kg: 10 mg	FDA-approved for 6- to 17-year-olds
Zolmitriptan nasal spray	2.5, 5 mg	<40 kg: 2.5 mg ≥40 kg: 5 mg	FDA-approved for 12- to 17-year-olds
Almotriptan tablets	6.25, 12.5 mg	<40 kg: 6.25 mg ≥40 kg: 12.5 mg	FDA-approved for 12- to 17-year-olds

**Instead of using the combined product, the patient may take one sumatriptan tablet and one naproxen tablet simultaneously.*