CT Children's CLASP Guideline

Migraine and Other Headache Disorders

INTRODUCTION

Several types of headache disorders affect children and adolescents. Three account for the greatest burden:

- **Migraine:** Symptoms commonly include a throbbing quality, unilateral location and associated photophobia, phonophobia, nausea and vomiting, and typically last more than 2-4 hours.
- **Tension type headaches:** Dull or achy quality, in a frontal or band like location, may have associated photophobia or phonophobia, are typically shorter in duration but more frequent than migraines.
- **Medication Overuse Headache:** Arises from use of OTC or prescription rescue medications used more than twice weekly.

Headaches can contribute to social activity disruption and school absences. Common lifestyle factors, such as inadequate sleep, skipping meals, dehydration, excessive caffeine, lack of exercise and excessive reliance on over the counter pain medications, can trigger or exacerbate headaches. The recommended initial evaluation and management of headaches includes an assessment of modifiable lifestyle factors or medication overuse that may be contributing to headache frequency.

INITIAL EVALUATION AND MANAGEMENT

INITIAL EVALUATION:

- History and Physical Exam:
  - Assess characteristics of the headaches to categorize type of headache disorder (***Click here*** for the International Headache Society diagnostic criteria for headache)
  - Assess lifestyle factors (adequate sleep, regular meals and/or hydration, caffeine intake, exercise)
  - Assess for psychosocial conditions (e.g. anxiety, depression, substance use disorder)
  - Assess for medication overuse (OTC or prescription rescue medications used more than twice weekly)
  - Consider dilated eye exam
- Consider labwork (CBC, CMP, TSH) to assess for treatable causes of headache, such as anemia or thyroid dysfunction, and evaluate liver/kidney function if taking frequent over-the-counter pain medications or as a baseline prior to starting a preventative medication.
- Imaging is usually NOT indicated unless there is presence of **Red Flags** ***(See Appendix A: Red Flags).*** A non-contrast brain MRI is the most commonly ordered study.

INITIAL MANAGEMENT:

- First steps:
  - Initiate lifestyle interventions
  - Address underlying psychosocial issues
    - **Cognitive behavioral therapy (CBT) with a behavioral health provider is recommended as an integral part of *preventive* treatment and pain coping for frequent headaches, not an add-on if medications are ineffective**
  - If medication overuse identified, limit OTC pain medications to less than 2 days per week).

- Next steps if initial management inadequate:
  - After 6-8 weeks, may proceed to a trial of a daily preventative medication (for headaches occurring once per week or more OR less often but severe enough to interfere with daily activities) or prescription rescue medication. ***(See Appendix B: Preventive Management and Appendix C: Rescue Management)***

- See accompanying CLASP patient handouts: National Headache Foundation Headache Diary & other patient handouts on migraine and management of headaches

WHEN TO REFER

To better meet community demand and improve the patient and family experience, CT Children's has implemented a Headache Center, which navigates new patients to the right provider at the right site of care. When referring, please provide the answers to referral questions so we may best match your patient with appropriate services. ***(See Appendix D)***

DEFER REFERRAL:	**ROUTINE REFERRAL:**	**URGENT REFERRAL:**
If you have not yet carried out an initial evaluation and 12-week or more treatment trial as specified in the guideline, please defer the referral and first follow the initial management steps in this CLASP tool.	If headaches are still occurring after evaluation and adequate treatment trial (≥ once a week OR less often but severity interferes with daily activities), we will schedule the next available routine appointment.	Contact Neurologist on call and/or refer to Connecticut Children's ED if **Red Flags** are present: new onset or nocturnal headache with emesis, balance problem, vision changes, or abnormal neurologic exam

HOW TO REFER

Referral to Neurology Department via CT Children's One Call Access Center
Phone: 833.733.7669 **Fax:** 833.226.2329
For more information on how to place referrals to Connecticut Children's, click **here**.

Information to be included with the referral:

- Answers to questions in ***Appendix D***
- Notes from the initial and follow up visits
- Copies of recently completed labs and neuroimaging

WHAT TO EXPECT

What to expect from CT Children's Visit:

- History and physical
- Consideration and discussion of possible additional labs, neuroimaging, medication options
- Patient education

APPENDIX A: RED FLAGS (mnemonic "2SNOOP4") SUGGESTIVE OF SECONDARY HEADACHE

Systemic Signs/Symptoms
Secondary Risk Factors (immunodeficiency, obesity, concussion)
Neurologic Signs/Symptoms
Occurs suddenly (abrupt, pain peaks in less than 1 minute or awakens from sleep)
Onset before age 5 years
Positional
Precipitated by Valsalva
Pulsatile tinnitus, papilledema
Progressive

APPENDIX B: PEDIATRIC HEADACHE PREVENTIVE MANAGEMENT

A comprehensive approach to pediatric headache management can include nutritional supplements and medications, psychotherapy, rehabilitation therapies, integrative therapies, use of neuromodulation devices and procedural pain interventions. **Those with a ✪ in the PCP column reflect strategies commonly initiated by Primary Care Providers.**

Pharmacologic *preventive* therapies are of uncertain benefit over placebo for much pediatric migraine. The American Academy of Neurology/American Headache Society Pediatric Migraine Guidelines updated in 2019 and endorsed by the American Academy of Pediatrics are indicated below. There are no active guidelines regarding nutritional supplements or devices for pediatric headache. Supplements listed below are used in adults and have good safety/tolerability. They may be considered as initial or adjunctive therapy in patients aware of evidence limitations. Cognitive behavioral therapy has a compelling evidence base.

PCP?	Nutritionals	Pediatric dosing	Side Effects	AAN/AHS 2019
✪	Melatonin	3 mg – 5mg /night	• Daytime drowsiness, dizziness	Not part of 2019 review. Evidence is mixed but generally benign s/e profile.
✪	Riboflavin (B2)*	200- 400 mg/day	• Urochromia (vivid orange urine)	
✪	Magnesium (Mg)*	200 - 600 mg/day of elemental Mg	• Loose stool	
✪	Coenzyme Q 10	1 - 3 mg/kg/day	• GI upset, rash, low BP	

**Consider MigReLief, a combination formulation of Riboflavin and Magnesium, for convenience: 2 tablets orally daily*

***Note, Caffeine in small quantities (60-120mg) sensitizes the brain to respond better to analgesics. Advise patients that effects last 6 hours.*

PCP?	Medications	Pediatric dosing	Side Effects	Monitoring	AAN/AHS 2019
✪	Cyproheptadine (Periactin)	2 – 8 mg QHS	• Sedation • Appetite stimulation	• Monitor weight gain	Not part of 2019 review
✪	Amitriptyline (Elavil)	10 – 75 mg QHS (1 mg/kg)	• Sedation • Anticholinergic s/e: Dry mouth, constipation • QT prolongation at high doses	• Consider EKG for doses >40 mg or >1 mg/kg/day	Part of 2019 Guidelines *With CBT psychotherapy*
	Topiramate (Topamax)	25 – 150 mg daily (may divide BID) (2 -3 mg/kg)	• Weight loss • Nephrolithiasis • Paresthesias • Word-finding difficulties • Glaucoma • Can decrease efficacy of OCPs at higher doses	• Monitor BUN/Cr • Is a teratogen. Advise contraception in sexually active patients. Start folate supplementation in menarchal patients.	Part of 2019 Guidelines *Is the only FDA approved medication labeled for migraine prevention in adolescents 12 -17 years, but not necessarily the most effective or safest*
	Propranolol (Inderal)	1 – 4 mg/kg/day Consider once daily ER formulation for adolescents	• Hypotension • Depression • Sleep disruption • Bronchospasm	• Monitor HR, BP, sleep, exercise intolerance and mood	Part of 2019 Guidelines

PCP?	Psych, Rehab, Integrative Therapies	Consider Ordering	AAN/AHS 2019
✪	Cognitive Behavioral Therapy	• For skills-based therapy: Diaphragmatic breathing, Progressive muscle relaxation, Cognitive restructuring, activity pacing.	Part of 2019 Guidelines
✪	Physical Therapy	• Manual therapy for head/ neck to improve joint mobility/increase range of motion, decrease muscle tightness/tenderness of head/neck joints. • Graded exercise programs for deconditioning	Not part of 2019 Review.
✪	Occupational Therapy	• Evaluation for pain management • Sensory integration assessment and treatment	
✪	Biofeedback Therapy (Services are offered by selected PTs and OTs at Connecticut Children's)	• Biofeedback training sessions to manage physiologic responses to pain/stress. Commonly 3 -5 sessions involving use of sensors and video to learn techniques.	

PCP?	Neuromodulation Device	Dosing	Considerations	AAN/AHS 2019
	Nerivio remote neuromodulation device	45 minute treatment QOD	• Requires prescription & pt should have own mobile phone • Contraindicated if implanted devices or CGM/insulin pumps	Not part of 2019 Guidelines *FDA approved: pts≥ 12 yrs*

APPENDIX C: PEDIATRIC HEADACHE RESCUE MANAGEMENT

✪	**OTC ANALGESICS**	Ibuprofen	10 mg/kg/dose PO Q 6-8h prn		Part of 2019 Guidelines
✪		Acetaminophen	10 – 15 mg/kg/dose PO Q4-6h prn		Part of 2019 Guidelines
✪		Naproxen	5 – 7 mg/kg/dose PO Q 12h prn		Part of 2019 Guidelines *As combination preparation with sumatriptan*
✪	**ANTI-EMETICS**	Ondanestron (Zofran)	≤11 yrs: 4 mg PO Q8h prn N/V 12 yrs:: 8 mg PO Q8h prn N/V	• Constipation • Dose dependent QT prolongation	Not part of 2019 review
✪	**MIGRAINE SPECIFIC ABORTIVES (TRIPTANS)**	Riztriptan (Maxalt)	<40 kg: 5 mg PO ≥40 kg: 10 mg PO Take at onset of migraine (not onset of aura). May repeat once after 2 hours.	• Do not exceed 2 doses in 24h or 9 days per month • Nausea, flushing, chest tightness, dizziness • Adjust dose in patients using propranolol.	Part of 2019 Guidelines *FDA approved: pts≥ 6 yrs*
✪		Zolmitriptan (Zomig)	2.5 – 5 mg PO/IN at onset of migraine headache. May repeat once after 2 hours.	• Do not exceed 2 doses in 24h or 9 days per month • Nausea, flushing, chest tightness, dizziness, paresthesias	Part of 2019 Guidelines *FDA approved: pts≥ 12 yrs*
✪		Almotriptan (previously Axert)	6.25mg or 12.5mg PO at onset of migraine headache. May repeat once after 2 hours.	• Do not exceed 2 doses in 24h or 9 days per month • Nausea, dizziness, fatigue	Part of 2019 Guidelines *FDA approved: pts≥ 12 yrs*
✪		Sumatriptan (Imitrex)	25 mg, 50mg PO at onset of migraine headache. (Intranasal formulation now available as Tosymra)	• Do not exceed 2 doses in 24h or 9 days per month • Nausea, flushing, chest tightness, dizziness, xerostomia	Part of 2019 Guidelines *FDA approved: pts≥ 12 yrs in combination with Naproxen*
	COMBO TRIPTAN + ANALGESIC	Sumatriptan/ Naproxen (Treximet)	1 tablet PO once per 24h at onset of moderate to severe headache. May repeat once after 2 hours.	• Nausea, dizziness, weakness, chest tightness, xerostomia	Part of 2019 Guidelines *FDA approved: pts≥ 12 yrs*

PCP?	Neuromodulation Device	Dosing	Considerations	AAN/AHS 2019
	Nerivio	45 minute treatment at onset of headache.	• Requires prescription & pt should have own mobile phone • Contraindicated if implanted devices or CGM/insulin pumps	Not part of 2019 Guidelines *FDA approved: pts≥ 12 yrs*

APPENDIX D: QUESTIONS TO ADDRESS UPON REFERRAL

In order to expedite care by the most appropriate provider, please provide answers to the One Call Center on the following questions:

- Are there medical and/or behavioral health co-morbidities? If so, what medications is the patient currently taking or has previously taken?
- If previously seen, is this referral for a second opinion?