Pediatric Headache: Consult and Referral Guidelines

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Assistant Professor, Pediatric Neurology
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Objectives

• Differentiate between different causes of primary headache disorders
• Discuss basic prevention and treatment for primary headaches
• Identify indications for ordering neuroimaging tests in headache patients
16yo Female with Headache

- Frontal headache
- Throbbing quality
- "10/10"
- Needs to lay down in dark quiet room
- Occurring twice per week
### Pediatric Headache: Consult and Referral Guidelines

**Child Neurology Division at Children’s National Medical Center**

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- Specific testing for children with other systemic complaints including arthralgias, rash, sleep complaints
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Tension Type Headache - The “Anti-Migraine”
ICHDI-II Classification

• Headache lasting from 30 minutes to 7 days
• Headache has at least two of the following characteristics:
  – Bilateral location
  – Pressing/tightening (non-pulsating) quality
  – Mild or moderate intensity
  – Not aggravated by routine physical activity
• Both of the following:
  – No nausea or vomiting (anorexia may occur)
  – No more than one of photophobia or phonophobia
Headache Attributable to Sinusitis

ICHD-II Classification

- Frontal headache with pain in face, ears or teeth
- Clinical, endoscopic, CT/MRI evidence
  - Purulence in the nasal cavity, nasal obstruction, hyposmia/anosmia and/or fever.
- Headache and facial pain develop simultaneously
- Headache and/or facial pain resolve within 7 days after treatment
So What is the Definition of Pediatric Migraine?
Migraine Definition In Pediatrics

- International Classification of Headache Disorders, 2nd Revision (ICHD-II)
- Pediatric Modifiers
- Ask Child, Not Parent
- Open ended questioning
- Imply characteristic based on behavior or draw them
Unilateral or Bifrontal Location
Moderate to Severe Intensity
Pounding or Throbbing
Decreased Activity
ICHD II Requires 2 Major Criteria

- Bifrontal or unilateral
- Throbbing or Pounding
- Moderate to Severe
- Worse with activity or Relief with rest
Nausea
Vomiting

Usefulness of Children's Drawing in the Diagnosis of Headache.
Photophobia

Usefulness of Children’s Drawing in the Diagnosis of Headache. Pediatrics 2002;109;460-472
Phonophobia
ICHHD II Requires 1 Minor Criteria

- Nausea
- Vomiting
- Photophobia
- Phonophobia
ICHHD II Pediatric Modifiers for Migraine

- Pulsating means varying with the heartbeat
- Duration 1-72 hrs
- Occipital headache requires caution
  - Imaging is recommended
- Photophobia and/or phonophobia may be inferred from their behavior
  - Lying down in dark quiet room with a headache is diagnostic
Migraine Aura

- Visual
- Sensory
- Speech
# Headaches By Location

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<th>Headaches</th>
<th>Sinus: pain is usually behind the forehead and/or cheekbones</th>
<th>Cluster: pain is in and around one eye</th>
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- **Cluster:** pain is in and around one eye.
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<th>Abortive therapy when child gets a headache includes:</th>
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<td>– Ibuprofen 10mg/kg per dose up to three days per week</td>
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<td>– 8-12oz fluid bolus with medication, sports drinks preferable in those without contraindications (obesity, diabetes)</td>
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<tr>
<td>– Triptans may be considered up to twice weekly if no contraindication</td>
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| Preventative therapy may be considered in those with frequent headaches and include cyproheptadine (max 0.25mg/kg/day) and amitriptyline (max 1mg/kg QHS) |
Goals of Migraine Treatment


1. Reduction of headache frequency, severity, duration, and disability
2. Reduction of reliance on poorly tolerated, ineffective, or unwanted acute pharmacotherapies
3. Improvement in the quality of life
4. Avoidance of acute headache medication escalation
5. Education and enablement of patients to manage their disease to enhance personal control of their migraine
6. Reduction of headache-related distress and psychologic symptoms
Treatment Arms in Migraine

- Behavioral Strategies
- Acute Abortive Treatment
- Daily Preventative Medication

Migraine Treatment
Steps To Meeting Treatment Goals


1. Use migraine-specific agents as needed.

2. Use of non-oral route for medications.

3. Antiemetics if nausea prominent.

4. Design a self-administered rescue plan.

5. Avoid medication-overuse headache.
# Comprehensive Headache Treatment Plan

## My Headache Treatment Plan

**Children's National Medical Center**

**Date:** ____________

### Healthy Habits (What to do everyday to help resolve headaches?)
- Fluids: ________ ounces per day, none with caffeine or artificial sweeteners.
- Exercise: at least 3 times a week for 30 minutes of sweating.
- Sleep: ________ hours each night with no more than 2hr change.
- Diet: 5 meals a day, with riboflavin containing foods.

### Acute Treatment (What do I take when I get a headache?)
- Ibuprofen: ________ mg. Do not take more than 3 days/week.
- Naproxen sodium: ________ mg. Do not take more than 3 days/week.
- Fluids (sports drink): ________ oz. Take every time you get a headache.
- __________: ________ mg. Do not take more than 2 days/week.
- __________: ________ mg.

### Preventive Treatment (What do I take every day to prevent my headaches?)

**MEDICATION:**

<table>
<thead>
<tr>
<th>Medicine</th>
<th>AM</th>
<th>PM</th>
<th>Week</th>
<th># Pills AM</th>
<th># Pills PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amitryptiline</td>
<td>______ mg</td>
<td>______ mg</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topamax</td>
<td>______ mg</td>
<td>______ mg</td>
<td>______ mg</td>
<td>______ mg PM</td>
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<tr>
<td>Depakote</td>
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# Treatment for All Patients with Migraine

## Abortive Therapy

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<tr>
<th>NSAIDS</th>
<th>Oral Triptans</th>
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<td>Ibuprofen 10mg/kg/dose AT ONSET</td>
<td>Zolmitriptan or Sumatriptan</td>
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<td>12oz sports drink</td>
<td>Oral</td>
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<td>Max 3d/wk</td>
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<td>12oz sports drink</td>
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## Lifestyle Modification

- **Hydrate**
  - 1-2x maintenance
  - NO CAFFEINE EVER
  - Sports Drinks = D5W

- **Sleep**
  - ≥ 8 hours sleep per night
  - no variability > 2 hrs

- **Diet**
  - 3 meals per day
  - Snacks PRN

- **Regular exercise**
Avoid Medication Overuse Headache

- Misuse of medications/caffeine
  - NSAIDS/Analgesics ≥ 15 days/month
  - Triptans ≥ 10 days/month

- Gradual increase headache frequency
  - ≥15 headaches per month

- Low dose daily use worse than high dose

- Treatment is withdraw of medications/caffeine
  - 2 months off offending agent
Medication Overuse
Silberstein, Lipton, and Goadsby, 1998

[Graph showing pain intensity and number of analgesic doses per day over time]
Indications for Migraine Prophylaxis

1) At least 3-4 severe migraines per month

2) Migraines that limit daily activities
   - Missing school, extracurricular activities
   - Adverse effect on grades, ability to pay attention
   - Disrupting sleep
   - Secondary psychiatric symptoms – depression

3) Migraines with interfering neurologic signs
   - Visual loss
   - Weakness
   - Confusion
   - Vertigo
Recommendations for preventive therapy of migraine in children and adolescents.

Neurology 2004; 63:2215-2224

1. Flunarizine is probably effective

2. Insufficient evidence for cyproheptadine, amitriptyline, divalproex sodium, topiramate, or levetiracetam

3. Conflicting evidence for propranolol or trazodone

4. Pizotifen, nimodipine, and clonidine not recommended
# Utilize Side Effects to Advantage

- **Amitriptyline** – sleep problems
  - Effective 5mg to 1mg/kg max
  - Available in 10mg and 25mg tabs

- **Cyproheptadine** – younger child, underweight
  - Effective 1mg HS to 0.25mg/kg divided BID max
  - Available in 2mg/5ml suspension and 4mg tabs

- **Topiramate** – obesity

- **Valproic acid** – rapid relief, underweight

- **Beta-blocker** – POTS, hypertension
Avoid Harmful Side Effects

- Amitriptyline – cardiac rhythm problems, hypertension
- Cyproheptadine – obesity
- Topiramate – kidney stones, underweight
- Valproic acid – obesity, liver dysfunction, teenage female/PCOS
- Beta-blocker – asthma, depression
Provider may consider testing in patients who:

- Patients with recurrent headache and a normal neurologic exam generally do not require additional testing.
- Brain imaging studies are suggested for patients who have:
  - Headaches for less than 6 months duration not responding to lifestyle changes and standard first line treatment (ibuprofen, triptans, cyproheptadine),
  - Headaches associated with abnormal neurologic exam findings, especially papilledema, nystagmus, gait or motor changes
  - Absent family history of headache
  - Headaches associated with substantial confusion or emesis
  - Headaches that awaken a child from sleep repeatedly
  - A family history or disorders that predispose child to central nervous system lesions such as brain tumors or cerebral aneurysms
- Specific testing for children with other systemic complaints including arthralgias, rash, sleep complaints
Does the patient require neuroimaging to rule out secondary causes of headache?

- MRI findings in 315 children, ages 3 to 20 who had headaches.
- The neurologic examinations were abnormal in 89 patients (28%).
- Thirteen (4%) had surgical space-occupying lesions
  - All had abnormal exams.

Recommendations for MRI in Headache
Child Neurology Division at Children’s National Medical Center

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Adapted from Medina S, Pinter JD, Zurakowski D, et al. Radiology 1997;202:819–24
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Back to Our 16yo Female with Headache
Headaches Improved in Frequency

- Now having one headache per month responding well to ibuprofen

- You Should:
  - Review Headache Treatment Plan
Headaches Are More Frequent

- Headaches now 3-4 days per week and missing school

- You Should:
  - Refer back to Neurology for possible prophylaxis
  - No need MRI if normal exam
Conclusions

• Consider common causes of headache
• Begin basic lifestyle changes and abortive treatment for primary headache disorders
• Consider MRI in patients with atypical history or abnormal exam findings
• Refer to neurology when headaches are not responding to first line management or resulting in morbidity