Pediatric Headache:
Consult and Referral Guidelines

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Children's National Medical Center
CME Accreditation

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  – This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education through the joint sponsorship of The George Washington University School of Medicine and Health Sciences is accredited by the ACCME to provide continuing medical education for physicians.

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  – The George Washington University School of Medicine and Health Sciences designates this continuing medical education activity for a maximum of 29 AMA Physician Recognition Award Category 1 Credits™.
  – Participants will be required to certify attendance or participation on an hour for hour basis.
Disclosure Statement

• Upon disclosure, the speaker indicated that they did not have any relevant financial relationships to disclose
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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- Considering other common causes of headache:
  - Sinus headache
  - Post traumatic/concussive headache
  - Allergic rhinitis
  - Ophthalmologic problems
  - Depression
Tension Type Headache - The “Anti-Migraine”
ICHDIII 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
ICHDI-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, 2\textsuperscript{nd} 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
ICHDI 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
ICHDI II Requires 1 Minor Criteria

- Nausea
- Vomiting
- Photophobia
- Phonophobia
ICHD 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

<table>
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<th>Sinus: pain is usually behind the forehead and/or cheekbones</th>
<th>Cluster: pain is in and around one eye</th>
<th>Tension: pain is like a band squeezing the head</th>
<th>Migraine: pain, nausea and visual changes are typical of classic form</th>
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[Image of head illustrations showing different headache locations and descriptions.]
Pediatric Headache: Consult and Referral Guidelines

**Provider should instruct family on basic first line treatment for headaches including:**

**• Lifestyle modification for prevention of headaches including:**
  - Hydration – goal ounces per day = weight in pounds to a max of 100 oz per day, none with caffeine or artificial sweeteners
  - Exercise at least 3 days per week for 30 minutes
  - Sleep per AAP guidelines with no more than two hours of variability in sleep or wake timing
  - Eat 3 healthy well balanced meals per day

**• Abortive therapy when child gets a headache includes:**
  - Ibuprofen 10mg/kg per dose up to three days per week
  - 8-12oz fluid bolus with medication, sports drinks preferable in those without contraindications (obesity, diabetes)
  - Triptans may be considered up to twice weekly if no contraindication

**• 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

Migraine Treatment

Acute Abortive Treatment

Daily Preventative Medication
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 2hrs change
- Diet: 3 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.

Preventative Treatment (What do I take everyday to prevent my headaches?)

<table>
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<tr>
<th>MEDICATION</th>
<th>Week</th>
<th># Pills</th>
<th>AM</th>
<th>PM</th>
</tr>
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<tbody>
<tr>
<td>Amtriptyline</td>
<td>1</td>
<td>______</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topamax</td>
<td>2</td>
<td>______</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depakote</td>
<td>3</td>
<td>______</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cypresphenadine</td>
<td>4</td>
<td>______</td>
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Treatment for All Patients with Migraine

Abortive Therapy

- **NSAIDS**
  - Ibuprofen 10mg/kg/dose AT ONSET
  - 12oz sports drink
  - Max 3d/wk

- **Triptans**
  - Nasal Spray
    - Zolmitriptan or Sumatriptan
  - Oral
    - Zolmitriptan, Rizatriptan, Almotriptan
  - 12oz sports drink
  - Max 2d/wk

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
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
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
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• 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