



## Pediatric Neurology Headache Consult Request Guidelines

*Updated April 2017*

The Division of Pediatric Neurology will offer new outpatient consultation for children with migraine headaches only if at least one migraine preventative medication has failed to control the headaches. The preventative treatment must have been at an adequate dosage and of sufficient duration, also as described below.

### **Exclusion Criteria: Which patients can be referred to us without having been tried on a preventative medication?**

- Children 5 years of age or younger
- Uncertainty about the diagnosis
- Signs or symptoms of increased intracranial pressure
  - Headaches worsened by lying down
  - Headaches starting in the middle of the night or most severe immediately upon waking
  - Papilledema on examination (if brain imaging has been normal; if it has not been performed, send him or her to the ED)
- Patients with an abnormal neurological examination
- Patients with very prolonged and severe migraines or migraines with worrisome auras (e.g., hemiplegic migraines or basilar migraines with several symptoms suggesting brainstem dysfunction)

### **When does a child with headaches need to be sent to the Emergency Department?**

- Papilledema on examination
- New onset of focal weakness of any duration
- New onset of a persistent aura (though it might be useful to discuss with one of the pediatric neurologists first)
- Sudden, explosive headache

### **How do you diagnose migraine headaches?**

- Migraines in children are typically bilateral but can be unilateral.
- They most commonly are frontal but can be temporal or occipital.
- They commonly are associated with photophobia, phonophobia, and nausea.

- They may or may not have an aura (associated positive or negative neurological symptoms such as vision loss or changes, vertigo, or numbness and tingling). An aura can come before, during, or after a headache.
  - Auras are very common and not usually of concern. If symptoms are persisting longer than 30 minutes or seem very atypical, they should be evaluated. New onset of focal weakness, regardless of the duration, should be evaluated in an Emergency Department.
- The headache often improves with sleep and worsens with exercise.
- 80-90% of children with migraine have a parent with migraines, even if the parent does not label him- or herself as having migraines.

### **Does a child with headaches need to have brain imaging performed?**

- Children with typical migraines (including typical auras) do not need brain imaging.
- Brain imaging is indicated in the presence of:
  - Sudden onset, severe headache (CT if very acute, otherwise MRI)
  - Abnormal neurological examination, including papilledema (MRI)
  - Significant worsening in the pattern, frequency or severity of the headaches (MRI)
  - Onset of headache with exertion/cough/sexual activity (MRI)
  - Headaches in children under 5 years of age, unless you are confident that you have obtained an excellent neurological examination and there is a family history of migraine (MRI)

### **When should you prescribe a preventative medication?**

- Offer a preventative medication when a child is having one or more headaches per week that are at least moderately severe and/or impair his or her functioning.
- We will occasionally use preventatives when patients have less frequent, but very prolonged and severe migraines or migraines with worrisome auras (e.g., hemiplegic migraines or basilar migraines with several symptoms suggesting brainstem dysfunction).
  - We will accept referrals for such children before you prescribe a preventive medication, but we do encourage you to offer the prescription so that the children can have more expedited treatment while they wait for their clinic appointment.

### **Which preventative medication should you choose?**

- There is very little scientific evidence in support of any particular migraine preventative. Nortriptyline and cyproheptadine are the two prescription medications we in Pediatric Neurology use most frequently. In addition, we often use MigreLief, a nonprescription supplement.
- We most commonly use cyproheptadine for children less than 10 years old and nortriptyline for older children.

- Some of us prefer MigreLief, particular when a patient or parent is reluctant to use a prescription medication.
- Our patient information handouts on the two medications are attached.

**Nortriptyline** is commonly our first-line preventative medication.

- Nortriptyline dosage for children older than 10-years-old:
  - 10 mg qHS, increasing weekly by 10 mg/day, to 20 mg qHS then 30 mg qHS (but for children over 60 kg, we also sometimes start with 25 mg qHS, advancing weekly to 50 mg qHS and then 75 mg qHS).
  - Trough levels and EKGs should be monitored for doses between 100 and 150 mg/day.
  - This medication is available in 10-, 25-, 50- and 75-mg capsules and as a 10 mg/5 mL liquid.
- Common and potentially dangerous side effects
  - Sleepiness. This is a relatively common side effects, and can be an advantage for children who have difficulty sleeping. If sleepiness is transient, in the mornings, the child may take their dose somewhat earlier in the evening.
  - Dry mouth (can drink water, chew gum, or suck on hard candy)
  - Orthostatic lightheadedness
  - Weight gain, but only in 5% of patients
  - Constipation
  - Mood changes (usually an improvement, but occasionally a worsening)
  - Tachycardia
  - Arrhythmia. This is the most dangerous side effect and is usually the result of an overdose. Before starting nortriptyline, ask if the patient or anyone in the home is depressed and/or suicidal, and confirm that small children will not have access to the medication. Explain that an overdose can be fatal, but that this medication is safe and effective if taken as prescribed.
- Contraindications
  - Known arrhythmias, particularly long QT. **Therefore, it is prudent to obtain a baseline EKG prior to starting this medication.**
  - Suicidality
- Latency of action
  - There is usually a 4-8-week latency before a benefit is seen.

- Interactions
  - Nortriptyline interacts with many medications. Use it with caution with medications that prolong the QT interval.
- SSRIs inhibit the metabolism of tricyclics like nortriptyline. Tricyclics can be used with caution with SSRIs, but if your patient is already taking an SSRI, start nortriptyline at half of the usual suggested dose.
- Follow-up
  - After reaching the initial target dose, wait 4-6 weeks before making any further increases.

### **Cyproheptadine**

- The brand name medication “Periactin” is no longer available but is easier to say, so we often use the old brand name when talking with families about this medication.
- Dose
  - The dosage recommendation is 0.2-0.4 mg/kg/day, but we usually dose in increments of 2 mg’s, typically starting 2-4 mg/day ÷ BID. If sleepiness results, we prescribe the entire daily dose at bedtime.
  - Advance slowly as tolerated up to 8-16 mg/day if needed, though we rarely go beyond 8 mg/day.
  - Cyproheptadine comes as a 4 mg tablet and a 2 mg/5 mL liquid.
- Side effects
  - Sedation
  - Weight gain due to increased appetite
  - Dry mouth
  - The side effects seem to be less common in younger children than in teens or adults.
- Latency of action
  - Cyproheptadine typically works faster than does nortriptyline, typically within weeks.
  - It can therefore be advanced more quickly (as long as there are not side effects).
- Interactions

Cyproheptadine is a very weak antihistamine, so there is no need to reduce or discontinue any other antihistamines the patient is taking.

## MigreLief

- Magnesium, riboflavin (vitamin B2), and feverfew (a traditional medicinal herb) each have some evidence as migraine preventatives, and some of use them individually in patients.
- They have been combined into a single “nutritional migraine supplement” under the brand name MigreLief.
- Each MigreLief tablet contains:
  - Magnesium (citrate and oxide) 180 mg
  - Riboflavin 200 mg
  - Puracol™ Feverfew (proprietary extract + whole leaf) 50 mg
- Children’s MigreLief is recommended for children 2-12 years of age and comes in a smaller tablet with half of each of the ingredients listed above.
- The standard dose is one tablet twice per day of either the standard and children’s pills. We typically do not increase to higher doses beyond this.
- Latency of onset of action may be three months.
- More information can be found on the company’s web site:  
<http://www.migrelied.com/migrelied-original/product-information>
- Since this is not a prescription medication, it will not be covered by a patient’s insurance. As of March, 2017, the price on Amazon is \$36/month.
- The manufacturer lists these potential side effects and precautions:
  - Allergies
  - Diarrhea or GI upset
  - Riboflavin (Vitamin B-2) can cause urine to become bright yellow. This is normal and harmless.
  - Headache if feverfew is stopped abruptly. It is recommended that patients taper off gradually, cutting the dose down to once daily for a week, then down to one every other day for a week, and then stop.
  - Like most dietary supplements, use of MigreLief should be discontinued one week before surgery to reduce the risk of excessive bleeding.
- In addition, feverfew can inhibit CYP450 metabolism and can slow blood clotting.
- Some of our physician recommend the individual ingredients rather than the combination and use these doses:
  - Riboflavin B2 400 mg per day
  - Magnesium 200 mg BID of oxide, sulfate, or glycinate

**What other recommendations should you offer your patients with migraines?**

- Do not overuse analgesics. Use of pain medications of any sort more than a total of 2-3 days per week can result in rebound headaches.
- Drink 4-8 glasses of water per day.
- Avoid skipping meals.
- Get sufficient sleep (most children need 8-10 hours per night) and maintain regular sleep hours.
- Avoid excessive use of caffeinated beverages, including soda pop; withdrawal can lead to headaches.
- Seek professional help if your child may be anxious or depressed.
- Exercise.
- Keep a headache diary to look for triggers.

**To speak with a C.S. Mott Children's Hospital pediatric neurologist, call M-LINE: 800-962-3555.**



**MEDICATION:**            **NORTRIPTYLINE HYDROCHLORIDE (PAMELOR)**

**PREPARATIONS:**        10 mg capsule  
                                     25 mg capsule  
                                     50 mg capsule  
                                     75 mg capsule  
                                     10 mg/5 cc (liquid)

**USE:**    For use in treatment of migraine headaches

**PEAK LEVEL:** 7-8.5 hrs

**POSSIBLE SIDE EFFECTS:**

1. Rash
2. Drowsiness, dizziness
3. Tachycardia (increased pulse rate) or other heart rate problem
4. Dry mouth, constipation
5. Mood changes
6. Weight gain

**INSTRUCTIONS FOR PATIENT AND FAMILY:**

1. Medication is prescribed to be taken at bedtime unless you have been instructed differently.
2. Protect from light
3. Dilute oral solution in water, milk, or fruit juice immediately before use; do not dilute in grape juice or carbonated beverages
4. May take 4-6 weeks to be effective.
5. Take with food to decrease any gastric upset.
6. Use hard candy/lozenges to reduce dry mouth effect.
7. Avoid driving a car or operating hazardous machinery if this medication is causing sedation.
8. If early more sedation is a problem, try giving the medication a little earlier such as 7 or 8 pm.
9. An EKG may be ordered prior to starting or increasing this medication.
10. **DO NOT STOP THIS MEDICATION ABRUPTLY.**
11. **Tell your doctor if you are taking the medication ZOLOFT.**

**NOTIFY YOUR CHILD'S PRIMARY CARE PHYSICIAN IF YOUR CHILD DEVELOPS:**

1. A rash
2. An irregular heart rate

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**MEDICATION:**            **PERIACTIN (CYPROHEPTADINE HYDROCHLORIDE)**

**PREPARATIONS:**        4 mg tablet  
                                     2 mg/5 ml liquid

**USE:**    Prophylactic treatment for migraine headaches

**HALF-LIFE:** 1-4 hrs, **PEAK LEVEL:** 6-9 hrs

**POSSIBLE SIDE EFFECTS:**

1. Rash
2. Drowsiness, dizziness
3. Tachycardia (increased heart rate)
4. Dry mouth, nausea, vomiting, diarrhea or constipation
5. Weight gain
6. Mood changes

**INSTRUCTIONS FOR PATIENT AND FAMILY:**

1. Medication may be taken with food or milk to reduce gastric upset.
2. Protect liquid form from light
3. Stop medication four (4) days before having allergy skin tests to preserve accuracy of tests.
4. Don't take with MAO inhibitor
5. Make take 6-8 weeks to be effective

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