UW Integrative Medicine
Department of Family Medicine

University of Wisconsin
SCHOOL OF MEDICINE
AND PUBLIC HEALTH

An Integrative Approach to Recurring Headaches

An integrative approach to recurring headaches involves three steps: 1) determining if a patient's headaches are from medication overuse and if so, creating a plan to help discontinue the offending medication, 2) removing headache triggers, and 3) initiating preventive therapy (raising the headache threshold).

Determining if headaches are from medication overuse. (If not from medication overuse, jump to section below "Removing headache triggers.")

Migraine Assessment and Treatment Guidelines.

Access the following to view UW Health Migraine Assessment & Treatment Guidelines:

- 2006 Adult Migraine Assessment & Treatment Guidelines
- 2006 Pediatric Migraine Guidelines

Offending medications

The most common medications associated with overuse headaches: Butalbital, opioids, acetaminophen, caffeine and aspirin are known entities, but any-pain relieving medication may be a cause. Combination medications are especially likely to cause them.

Discontinuation

Create a plan to help discontinue the offending medication. It is important to discontinue the offending drug before preventive measures are started. The longer the patient has used the medication, the longer it will take to come off. Opioids, barbiturates and benzodiazepines should be withdrawn slowly (2-4 weeks). NSAIDS, triptans, ergot alkaloids, and acetaminophen generally can be stopped more abruptly. If the patient can tolerate it, going cold turkey is the fastest approach to breaking the rebound cycle. Allow at least two weeks for the frequency of the headaches to subside. Cessation of the offending drug can lead to severe rebound headaches, thus a bridge therapy can be considered.

Bridge therapy

Bridge therapy should be continued for 7-14 days. Typical withdrawal symptoms last 2-10 days with an average of 3.5 days.

- **Medications.** Agents that have been used for bridge therapy:

  - Naproxen Sodium 550 mg bid x 7d, then 550 mg q d X 7 d

  - Meclofenamate sodium 100 mg tid x 7 d, then 100 mg bid x 7d.

  - Prednisone 60 mg q d x 1 d, then titrate downward by 10 mg q 2-3 d over 2 wks.

- **Acupuncture.** Consider acupuncture therapy as an adjunct to help with the transition off the offending medication.

1. *Vickers AJ, Rees RW, Zollman CE, et al. Acupuncture for chronic headache in primary care; large, pragmatic, randomized trial. BMJ. 2004 Mar 27;328(7442):744.*
2. *Coeytaux RR, Kaufman JS, Kaptchuk TJ, et al. A randomized, controlled trial of acupuncture for chronic daily headache. Headache. 2005; 45(9):1113-1123.*
3. *Melchart D, Streng A, Hoppe A, et al. Acupuncture in patients with tension-type headache: Randomised controlled trial. BMJ. 2005; 331(7513):376-382.*
4. *Streng A, Linde K, Hoppe A, et al. Effectiveness and tolerability of acupuncture compared with metoprolol in migraine prophylaxis. Headache. 2006; 46(10):1492-1502.*

- **Raskin protocol.** Unless the medication being overused is a triptan or an alkaloid, the most effective therapy for severe rebound headaches is a combination of metoclopramide *(Reglan)* and dihydroergotamine *(DHE 45, Migranal)*. This is often referred to as the Raskin protocol. The challenge with bridge therapy is that patients can have trouble coming off the bridge. Thus, some do better going cold turkey or with a short bridge course for no more than 14 days.

  Step 1. 10 mg of metoclopramide is given intravenously (IV) over 10 minutes.

  Step 2. After a 10-minute delay, 0.5 mg of IV dihydroergotamine mesylate is given.

  Step 3. If nausea is reported or headache ceases within 1 hour, no additional dihydroergotamine is given for 8 hours.

  Step 4. In 8 hours and every 8 hours for 3 days, the dosing regimen is repeated.

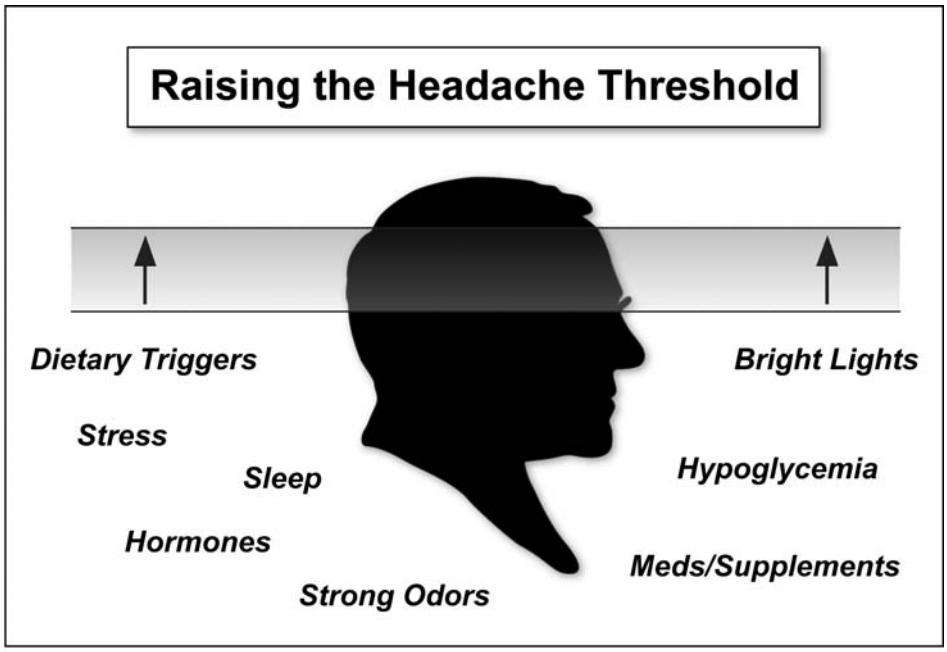
  Step 5. If the headache does not respond to the first dose, 0.5 mg of dihydroergotamine is repeated after 1 hour; then 10 mg of metoclopramide, followed by 1 mg of dihydroergotamine, is given every 8 hours for 3 days.

  If this is outpatient therapy, these medications can be used orally (metoclopramide) and nasally *(Migranal).*

Removing headache triggers.

Address psycho-social factors

- Help patients identify their headache triggers.
  - See patient handout "Headache Diary"



Headache triggers can be multifactorial. Identifying and eliminating at least some of the influences can raise the headache threshold.

- Recommend lifestyle changes to reduce reactivity to stress, e.g., Mindfulness-Based Stress Reduction (MBSR]), exercise, or movement therapies such as yoga or tai chi.
- Encourage mind-body techniques. (See section below under prevention).
- Consider referral for biofeedback training. (See prevention section).

Introduce elimination diet to remove potential food triggers

- See patient handout "Headache Elimination Diet."

Initiating preventive therapy (raising the headache threshold).

Assess myofascial tension.

Assess myofascial tension in the neck and shoulders. If present, consider adjunctive myofascial treatment with massage, sub-occipital release, strain-counterstrain and others.

Maintain the headache elimination diet.

Start a trial of supplements.

Some to consider include:

- **Vitamin B2 (Riboflavin).** The idea behind riboflavin for migraine prevention is its role in mitochondrial function. It has been suggested that migraine headaches could be partly due to mitochondrial dysfunction. Mitochondria are involved in oxidative energy metabolism. Riboflavin is required as a precursor for factors needed for electron transport in mitochondria.

  Vitamin B_2 increases this energy production and has been found in studies to decrease the frequency of migraines 15% for placebo and 59% for riboflavin ($p = 0.002$), and the number-needed-to-treat for effectiveness was 2.3.[6] Riboflavin has also been found to enhance the preventive effects of beta-blockers for migraines.[7] The dose is 400 mg a day. This is a high dose. Most over-the-counter products have a maximum of 100 mg of riboflavin.

5. *Schoenen J, Lenaerts M, Bastings E. High-dose riboflavin as a prophylactic treatment of migraine: results of an open pilot study. Cephalalgia, 1994;14(5):328-9.*
6. *Schoenen J, Jacquy J, Lenaerts M. Effectiveness of high-dose riboflavin in migraine prophylaxis. A randomized controlled trial. Neurology 1998;50(2):466-70.*
7. *Sandor PS, Afra J, Ambrosini A, Schoenen J. Prophylactic treatment of migraine with beta-blockers and riboflavin: differential effects on the intensity dependence of auditory evoked cortical potentials. Headache 2000;40:30-5.*

- **Magnesium.** This has been found to maintain the tone of blood vessels and prevent over-excitability of nerve cells that can trigger headaches. It is beneficial for menstrual migraines and for headaches in children.[8-9] High dose oral magnesium (600 mg/day) after 9-12 weeks reduced the attack frequency by 41.6% in the magnesium group and by 15.8% in the placebo group compared to the baseline ($p < 0.05$). The number of days with migraine and the drug consumption for symptomatic treatment per patient also decreased significantly in the magnesium group.[10]

  As with all supplements, you may need to give 4-8 weeks to see the greatest effect. Magnesium can cause diarrhea so consider Magnesium glycinate (chelated magnesium), magnesium gluconate or chloride, which are highly soluble and less likely to cause this side effect. The dose is 600 mg a day.

8. *Facchinetti F, Sances G, Borella P, et al. Magnesium prophylaxis of menstrual migraine: effects on intracellular magnesium. Headache 1991;31(5):298-301.*
9. *Castelli S, Meossi C, Domenici R, et al. Magnesium in the prophylaxis of primary headache and other periodic disorders in children. Pediatria Medica e Chirurgica 1993;15(5):481-8.*

10. *Peikert A, Wilimzig C, Kohne-Volland R. Prophylaxis of migraine with oral magnesium: results from a prospective, multi-center, placebo-controlled and double-blind randomized study. Cephalalgia 1996;16:257-63.*

- **Feverfew.** How feverfew prevents migraines is not completely understood. Current theories are that feverfew inhibits platelet aggregation, serotonin release, leukotrienes, and prostaglandin synthesis. The applicable part of feverfew is the leaf, which contains at least 39 constituents. A previous hypothesis thought that its activity was due to the constituent parthenolide, but the current thinking is that other constituents are more likely responsible. For this reason, you should recommend the whole leaf in encapsulated form.

  Feverfew does not treat acute headaches, and it should be tapered gradually since it has been found to be associated with rebound headache when abruptly stopped.

  Feverfew can prolong INR and caution should be used not to give with blood thinners such as warfarin. It should be avoided in those with ragweed allergies.

  It can reduce the frequency of migraines, and when migraines do occur, they tend to have less severe symptoms of pain, nausea, vomiting, and sensitivity to light and noise. Feverfew has also been reported to be better tolerated than conventional drugs. The dose is 25 mg twice a day.

11. *Johnson ES, Kadam NP, Hylands DM, Hylands PJ. Efficacy of feverfew as prophylactic treatment of migraine. Br Med J (Clin Res Ed) 1985;291:569-73.*
12. *Murphy JJ, Heptinstall S, Mitchell JR. Randomized, double-blind, placebo-controlled trial of feverfew in migraine prevention. Lancet 1988;2:189-92.*
13. *Palevitch D, Earon G, Carasso R. Feverfew (tanacetum parthenium) as a prophylactic treatment for migraine- a double-blind, placebo-controlled study. Phytotherapy Res 1997; 11:508-11.*
14. *Vogler BK, Pittler MH, Ernst E. Feverfew as a preventive treatment for migraine: a systematic review. Cephalalgia 1998;18:704-8.*

❖ There is a product called *MigreLief (www.migrelief.com)* that contains the above three supplements (Vit. B_2 [Riboflavin], Magnesium and Feverfew in the form of Puracol) that can be taken at the dose of one pill twice daily. If after 30 days there is no improvement, you can increase the dose to 2 pills twice daily. Stop if there is no benefit after 6-8 weeks. The cost for 60 pills is about $20.00.

- **CoEnzyme Q-10.** Like riboflavin, CoEnzyme Q-10 is thought to work through electron transport in the mitochondria by boosting energy production. Early evidence suggests CoEnzyme Q-10 can cut the frequency of migraines by half in about 61% of patients.[15] After three months of 150 mg/day of CoEnzyme Q-10 at breakfast, the average number of days with headache dropped from seven days to three days per month. And it is well tolerated at doses less than 300 mg/day. Higher doses cause nausea and diarrhea.

  In children with low Co-Q10 serum levels, supplementing with 1-3 mg/day of a liquid gel formulation resulted in a reduction in frequency and disability from migraine headaches. In children, consider checking a serum CoEnzyme Q-10 level and supplementing if it is low.[16]

  Both riboflavin and CoEnzyme Q-10 have little risk of toxicity when used at appropriate doses.

15. *Rozen TD, Oshinsky ML, Gebeline CA, et al. Open label trial of coenzyme Q10 as a migraine preventive. Cephalalgia 2002;22:137-41*
16. *Hershey AD, Powers SW, Vockell AL, et al. Coenzyme Q10 deficiency and response to supplementation in pediatric and adolescent migraine. Headache. 2007; 47(1):73-80.*

- **Fish Oil/Olive Oil.** Fish oil (756 mg/day eicosapentaenoic acid and 498 mg/day docosahexaenoic acid) and olive oil (1,382 mg/day oleic acid) have been found to reduce headache frequency (87 and 78 percent, respectively), duration (74 and 70 percent), and severity (83 and 65 percent) in adolescents. Research suggests that EPA, DHA, and metabolites of oleic acid suppress inflammatory cytokines, prostaglandins, or leukotrienes that can cause headaches.
  - To encourage more omega-3 fatty acids in the diet, see patient handout "The Anti-Inflammatory Diet."
  - See the clinician version of "The Anti-Inflammatory Diet" handout.

17. *Harel Z, Gascon G, Riggs S, Vaz R, Brown W. Fish oil versus olive oil in the management of recurrent headaches in adolescents. Presented at: Advancing Children's Health 2000, Joint Meeting of the Pediatric Academic Societies and the American Academy of Pediatrics; Boston, MA; May 15,2000.*
18. *Harel Z, Gascon G, Riggs S, et al. Supplementation with omega-3 polyunsaturated fatty acids in the management of recurrent migraines in adolescents. J Adolesc Health 2002;31:154-61.*

- **Butterbur *(Petasites hybridus)*** Research at Albert Einstein College of Medicine in New York showed that in a 245 subject double-blind randomized trial, this herb reduced frequency of headaches by 48% when 75 mg of Petasites was given twice a day for four months.[19] It is thought to work by preventing the release of inflammatory chemicals, leukotrienes. It has also been found helpful as an antihistamine and has been found to work as well as a common prescription antihistamine (Zyrtec) without the sedating side effects.[21] This product is marketed in the United States as Petadolex and the dose is 50 mg twice a day.

19. *Lipton B, Gobel H, Einhaupl KM, Wilks K, Mauskop A. Petasites hybridus root (butterbur) is an effective preventive treatment for migraine. Neurology. 2004 Dec 28;63(12):2240-4.*
20. *Grossmann WM, Schmidramsl H. An extract of Petasites hybridus is effective in the prophylaxis of migraine. Int J Clin Pharmacol Ther 2000;38:430-5.*
21. *Schapowal A. Petasites Study Group. Randomised controlled trial of butterbur and cetirizine for treating seasonal allergic rhinitis. BMJ 2002;324:144-6.*
22. *Scheidegger C, Dahinden C, Wiesmann U. Effects of extracts and of individual components from Petasites on prostaglandin synthesis in cultured skin fibroblasts and on leucotriene synthesis in isolated human peripheral leucocytes. Pharm Acta Helv 1998;72:376-8.*
23. *Danesch U, Rittinghausen R., Safety of a patented special butterbur root extract for migraine prevention. Headache. 2003 Jan; 43(1): 76-8.*

Consider prophylactic medications

Choose based on underlying conditions.

Condition	Medication	Dosage
Anxiety	SSRI	Gabapentin *(Neurontin)* 300 mg on day 1, bid on day 2 and tid on day 3. Titrate up to 1200 mg tid
Bipolar Disorder	Valproic Acid	*Depakene* 250 mg po bid, titrate to 500 mg bid if tolerated after 2 days.
Depression	Antidepressant	Fluoxetine *(Prozac)* 20 mg (or others), titrate to 40 mg.
Epilepsy	Anticonvulsant	Topiramate *(Topamax)* 12.5-25 mg and titrate by 25 mg per wk to max of 100 mg daily.
Fibromyalgia	Antidepressant, anti-spasmodic	Tizanidine HCL *(Zanaflex)* 4 mg q hs, titrate up to 24 mg.
Insomnia	Tricyclic Antidepressant	Amitriptyline *(Elavil)* 10 mg q hs, titrate up to 75 mg.
Hypertension	Beta blocker or calcium channel blocker.	Atenolol *(Tenormin)* 50-100 mg/d Verapamil 180-480 mg/d

Add mind-body tools for headache prevention

Encourage reducing reactivity to things that cause stress through the use of mind-body approaches.

- **Mindfulness-based stress reduction (MBSR) programs**

  Peace……
  It does not mean to be in a place where there is no noise, trouble or hard work. It means to be in the midst of those things and still be calm in your heart. -unknown-

  Consider encouraging enrollment in a mindfulness-based stress reduction program or similar class. MBSR teaches the art of living in the moment. Originated by Jon Kabat-Zinn at the University of Massachusetts, this stress reducing meditative technique has been found to have a beneficial influence on many disease conditions including heart disease, chronic pain, psoriasis, high blood pressure and headaches. It also can result in improved quality of life that can enhance long-term health.

  - The Center for Mindfulness in Medicine, Health Care, and Society at the University of Massachusetts Medical School keeps a list of MBSR programs across the country. It can be accessed at the following website: www.umassmed.edu/cfm/mbsr/ .
  - Patients can also call clinics and hospitals in their area for possible classes.
  - Two excellent books by Jon Kabat-Zinn are *Full Catastrophe Living* and *Wherever You Go, There You Are*.

- **Breath Work**
  Teaching a simple abdominal breathing exercise can empower the individual to use the breath to stimulate the parasympathetic nervous system to reduce the "reactivity and sensitivity" of the brain to stimuli. This is a great way to reduce the sympathetic "load" and can also be used to abort headaches when used early.

  - See patient handout "Breathing Exercise."

- **Consider exploring underlying subconscious trigger with Interactive Guided Imagery.** This is a form of imagery that uses the patient's images to communicate with her/his subconscious mind providing a window to help understand an illness or symptom. Obtaining greater understanding through this process can often bring surprising improvement of symptoms. The process involves going into a relaxed state in which the patient is able to imagine a comfortable place. From there s/he is directed to explore an area of interest that the imagery will address. A common theme is to allow an image to form that represents the headaches. The guide then encourages the patient to open up dialogue with the image to develop understanding of why it is there or what it needs to go away.

  For more information on Interactive Guided Imagery, go to The Academy for Guided Imagery at www.academyforguidedimagery.com

- **Self-hypnosis.** Self-hypnosis is a state in which a patient focuses internally. In this focused state, s/he is more open to suggestion. Self-hypnosis is not a loss of control, as patients often think. Instead it gives individuals control to make changes in their bodies or lives.

  - To learn more, see *Pearls for Clinicians "Self-Hypnosis."*
  - Access the patient version of "Self-Hypnosis."

- **Biofeedback Therapy.** Thermal biofeedback uses the temperature of the hands to help the individual learn how to positively reduce headaches and their frequency. It also helps teach the individual how to stimulate the relaxation response. Biofeedback with relaxation training has been found to work as well as beta-blockers for headache prevention without the side effects.

Therapy	% Reduction in Headaches
Biofeedback/Relaxation	56.4%
Propranolol (beta-blocker)	55.2%
Placebo	14.3%
Untreated	3.2%

24. *Holroyd KA, Penzien DB. Pharmacological versus non-pharmacological prophylaxis of recurrent migraine headaches: a meta-analytic review of clinical trials. Pain 1990;42:1-13.*

Other Therapies

- **Craniosacral Therapy.** More research is needed, but craniosacral therapy can often be of benefit when nothing else is working. Consider it for headaches that result from cranial trauma.

25. *Green, C. et al. "A systematic review of craniosacral therapy: biological plausibility, assessment reliability, and clinical effectiveness." Complementary Therapies in Medicine. Canada: Medline, December 1999, 7(4):210-7.*

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