EMERGENCY AND INPATIENT MANAGEMENT OF MIGRIANE AND OTHER HEADACHE DISORDERS

Stephanie J. Nahas, MD, MSEd, FAHS, FAAN
William B. Young, MD, FAHS, FAAN
Thomas Jefferson University
Philadelphia, PA

In this presentation, we will review the emergency and inpatient treatment of migraine, cluster headache, and other primary headache disorders. On completing the course, learners should be able to:

- Explain how to select appropriate urgent therapy for migraine
- Review the treatment of medication overuse headache
- Treat cluster headache in the urgent or inpatient setting
- Describe urgent/inpatient treatment strategies for other trigeminal autonomic cephalalgias and cranial neuralgias
- Discuss the appropriate use of multiple simultaneous intravenous therapies for headache

FDA-approved Treatments

Among all treatments utilized in managing headaches, relatively few are FDA-approved for this purpose. Below are outlined on-label medications for primary headaches.

Acute Migraine: ergots, triptans, aspirin, diclofenac potassium for oral solution, aspirin-acetaminophen-caffeine, single pulse transcranial magnetic stimulation (migraine with aura only)

Migraine Prevention: topiramate, divalproex sodium, timolol, propranolol, transcutaneous supraorbital nerve stimulation, onabotulinum neurotoxinA (chronic migraine only)

Cluster headache: subcutaneous sumatriptan (acute attacks)

Everything else we use is off-label.

Headache in the Emergency Department (ED)

The first step in management of headache in the urgent or emergent setting is to determine the diagnosis, of course, and more specifically, whether the headache represents a primary or secondary cause (ie, an attack of a known headache syndrome vs a headache due to some other potentially serious underlying cause). Assessing for red flags in the history and exam will help steer the differential diagnosis in one direction or the other. A helpful mnemonic assists in uncovering red flags and is detailed below. If you remember 2SNOOP4 red flags, you have a better chance of finding a secondary cause or contributor.

2S: systemic symptoms (fever, weight loss), secondary risks (HIV, cancer)
N: neurologic symptoms/signs (altered consciousness, focal deficits)
O: onset: sudden or split-second (think subarachnoid hemorrhage)
O: older: new or progressive over age 50 (think giant cell arteritis)
P4: prior history: first, newly progressive, or different from usual headache; precipitants: dramatic triggering or worsening with cough/Valsalva/exertion; positional: could indicate CSF volume depletion, colloid cyst, autonomic dysfunction; papilledema: never forget to check the fundi!

In the absence of red flags, a primary headache diagnosis is more likely, and this diagnosis relies on clinical features as detailed in the International Classification of Headache Disorders, 3rd edition (beta). In the urgent setting, a primary headache is most likely to be a form of migraine or trigeminal autonomic cephalalgia (TAC). A 3-question screener called ID migraine™ has been validated in the outpatient setting and reliably predicts a migraine diagnosis in the vast majority of patients who answer yes to 2 or 3 of the questions intended to “PIN” the diagnosis:

P: (photophobia) Does light bother you when you have a headache?
I: (incapacity) Has a headache limited your activities for a day or more in the last 3 months?
N: (nausea) Are you nauseated or sick to your stomach when you have a headache?

For TACs, and unvalidated mnemonic nicknamed “SEAR” (in reference to the typical character of the pain of TACs) can be useful:

S: SHORT lasting (in contrast to migraine attacks, which last hours to days)
E: EXCRUCIATING pain (distinct from migraine, which need not be severe)
A: AGITATING (whereas in migraine, patients prefer to be still and quiet)
R: REGULARLY RECURRENT (in reference to the cyclical nature of cluster headache attacks)

If the attack is diagnosed as migraine or cluster, acute treatment is the next step. Guidelines have been published for the acute management of migraine in the general setting as well as the ED, and more recently, guidelines for the management of cluster headache also have been published. If the attack is not consistent with migraine or cluster, it represents a less common primary disorder or some other secondary headache not yet suggested by the history and exam – retaking the history and re-focusing the exam is then necessary. Also keep in mind that some presentations wholly suggestive of primary headache, particularly of TAC syndromes, may have a serious underlying cause, so vigilance, and possibly testing, for alternative etiologies is recommended.

Treatment of Migraine Headache

Below are treatment pearls for migraine based on guidelines and the best available evidence. Bear In mind, it must first be determined that selected treatments are appropriate and not contraindicated for an individual patient.

- Certain parenteral medications (sumatriptan, prochlorperazine, and metoclopramide) should be offered (Level B recommendation) in the ED
    - Sumatriptan (all doses and forms): Level A recommendation as an abortive in general
    - Prochlorperazine 10 mg IV/IM or 25 mg PR and metoclopramide 10 m IV: Level B recommendation as an abortive in general
- Certain parenteral medications (chlorpromazine, haloperidol, ketorolac, and sodium valproate) may be offered (Level C recommendation) in the ED
    - Chlorpromazine 12.5 mg IV and ketorolac 30-60 mg IM/IV: Level B recommendation as an abortive in general
    - Sodium valproate 400-1000 mg IV: Level B recommendation as an abortive in general
    - Haloperidol carries no specific recommendation as an abortive in general
- Certain parenteral medications (diphenhydramine, morphine, and hydromorphone) are best avoided, at least as first-line options, in the ED
- Parenteral DHE, magnesium, and promethazine have not been studied adequately in an ED setting for a recommendation to be given regarding use in the ED
    - DHE 2 mg intranasally carries a Level A recommendation as an abortive in general, and DHE 1 mg IM/IV/SC carries a Level B recommendation for general abortive use
    - Magnesium sulfate 1-2 grams IV carries a Level B recommendation as an abortive in general for migraine with aura
    - There is insufficient evidence to provide a recommendation for promethazine as an abortive in general
- Dexamethasone should be offered in the ED to reduce recurrence (Level B recommendation)

Even in the urgent setting, time may be taken to create or modify a preventive regimen. As with choosing appropriate abortive therapy, the patient and drug profiles are important to consider. Medications come from three major classes: anticonvulsants, antihypertensives, and antidepressants. A few other drugs not in these categories have some, but limited, evidence of efficacy. Certain vitamins, supplements, and devices also may be effective. First choices come from a relatively short list of treatments established as effective based on a comprehensive review of evidence. These include **topiramate, divalproex/sodium valproate, metoprolol, propranolol and timolol**. Selection is based on patient comorbidities (to avoid contraindications or possibly achieve dual benefit) and preferences (dosing schedules, anticipated side effects). Failing those options, a number of second- and third-line options are considered. Notable second-line options are amitriptyline, venlafaxine, atenolol, and nadolol. Third-line options include Lisinopril and candesartan. Gabapentin and verapamil, previously widely used, are now considered to be of uncertain benefit after reviewing evidence more critically. These recommendations are based on guidelines for migraine prevention published by the American Academy of Neurology.

In conjunction, non-pharmacologic measures are also important. Regular sleep and exercise, a healthful diet, strategies for relaxation and stress management, and the mitigation of environment and triggers are also key.

Treatment of Cluster Headache

Cluster headache treatment is divided into three groups: acute, transitional, and prophylactic; the latter is not typically the emphasis of management in the urgent setting, but re-crafting a prophylactic regimen may be warranted for patients needing intensive inpatient treatment. A recent systematic review evaluated acute and prophylactic therapy of cluster headache. For acute treatment, level-A evidence was demonstrated for subcutaneous sumatriptan, zolmitriptan nasal spray, and high flow oxygen.

Acute therapy must be via rapid delivery, ie, intranasal, subcutaneous, or intravenous. Transitional therapy is intended to shorten the duration of the cluster cycle, and in some cases, may abort it. Preventive therapy, in contrast to that for migraine, must be titrated as rapidly as tolerated to achieve relief quickly.

Acute Treatment of Cluster Headache
-Sumatriptan SC/NS (Level A Recommendation for SC, Level B for NS)
-Zolmitriptan NS/PO (Level A Recommendation for NS, Level B for PO)
-Dihydroergotamine SC/IM/NS (Level U, insufficient data)
-High flow 100% oxygen via non-rebreather mask for up to 20 minutes (Level A Recommendation)
-Chlorpromazine PO/IV (no recommendation but used empirically)
-Hand held vagus nerve stimulator, sphenopalatine ganglion stimulator (not yet available nor FDA-approved in the US)

Transitional Treatment (insufficient evidence for all but greater occipital nerve block)
-Greater occipital nerve block with steroid (Level A recommendation)
-Steroid taper (typically prednisone starting at 100 mg and tapering over 10-14 days)
-Triptan/ergot dosed repetitively for several days
-IV therapy with steroids, valproic acid, chlorpromazine, dihydroergotamine

Preventive Treatment
-Verapamil (check baseline EKG and monitor PR interval) – Level C
-Lithium (follow levels if concern for toxicity, counsel patient on restricting or completely stabilizing NSAID/salt exposure) – Level C
-Topiramate (no recommendation but used empirically)
-Gabapentin (no recommendation but used empirically)
Note that sodium valproate is given a Level B recommendation not to use as evidence suggests it is probably ineffective.

SUNCT/SUNA

Think of this on the spectrum of the trigeminal autonomic cephalalgias, but with neuralgiform features reminiscent of trigeminal neuralgia. Since attacks are so short, therapy is mainly preventive in nature, as it is with trigeminal neuralgia. However, response to therapy is variable and usually incomplete. After diagnosis in the ED, preventive therapy should be started, and a plan to investigate for a secondary cause (such as a vascular loop compressing the trigeminal nerve or a pituitary adenoma – two commonly recognized causes of secondary SUNCT/SUNA syndrome). First-line preventive treatment is lamotrigine, followed by an assortment of therapies utilized for trigeminal neuralgia and other headaches (eg, oxcarbazepine, topiramate, duloxetine, carbamazepine, gabapentin, pregabalin, mexiletine). Intravenous lidocaine can be useful in refractory cases in the inpatient setting.

What is medication overuse headache, and how is it managed?

The excessive use of acute medication can lead to or perpetuate refractory chronic migraine. Patients may present to the ED during a particularly bad attack, and some patients require inpatient management. This phenomenon is well-recognized, but its true nature, and the best ways to manage it, remains under debate. Even its name is contentious, as “medication overuse headache” implies some blame to the patient, which is not really accurate. Regardless, some experience an escalating number of headache attacks coincident with escalating abortive use. The notion is that repeated exposure to abortive agents abnormally sensitizes the trigeminovascular

system such that an increasing number of migraine attacks result and they become less and less responsive to those abortives and even stronger ones. This phenomenon can be replicated in animal models with opioids and triptans, two medications recognized widely to be associated with this problem in humans. Butalbital containing medications and other analgesics, particularly combination analgesics containing caffeine, also can be associated. Typically, when excessive abortive use is interrupted, with or without concomitant “bridging” strategies (eg, an alternate abortive regimen given for several days to break the cycle) and initiation of preventive medication, patients can regain control of headaches and recapture abortive effectiveness. This is one of the reasons that strict limits are placed on abortive use.

Some abortives cannot be stopped abruptly due to withdrawal syndromes which can be unpleasant (caffeine, opioids) or even dangerous (butalbital). In these circumstances, a detoxification must occur over time, either by tapering use of the offending agent or substituting something else to then taper. When opioids are overused, it may be helpful to switch the patient to methadone, which has a relatively long half-life and pharmacologic properties which may actually be more beneficial for migraine than other opioids. Generally, due to incomplete cross tolerance among opioids for a particular individual, an equivalent dose of methadone is reduced by 50%, given instead of the current opioid, an then tapered. With butalbital containing medications, phenobarbital may be substituted and tapered; the recommended conversion is 30 mg phenobarbital for every 100 mg butalbital consumed on a daily basis, on average.

Most often, making changes to the preventive regimen is warranted to reduce the chances of reversion to medication overuse once the problem has been addressed and resolved. Behavioral therapies are of great importance as part of this preventive plan.

In some simpler cases, such as a patient who overuses a combination analgesic, all that is required is to stop the offending agent, knowing that there may be a rough period of adjustment for some days to weeks, but expecting that headaches will fade away. Most cases require a more strategic approach, and sometimes, infusion or even hospitalization will be required.

Inpatient Therapy for Complex Headache Patients

Managing complex patients with headache in the inpatient setting carries several goals:

1. First and foremost, achieve pain relief
2. Explore new medications which may become useful in the long-term, outpatient setting
3. Detoxify from overused acute medications when necessary
4. Further educate patients in headache management, including non-pharmacologic approaches and considerations (e.g., nutrition, physical activity, relaxation techniques)
5. Address significant psychiatric comorbidities
6. Reassess preventive treatment plan when necessary
7. Minimize adverse events

Patients are hospitalized for a number of reasons. These include:

- Migraine status: episodic migraine lasting longer than 72 hours and refractory to multiple outpatient treatments, including emergency room or infusion treatments
- Refractory primary headache (chronic migraine, chronic tension-type headache, new daily persistent headache, hemicrania continua) or refractory posttraumatic headache, with any of the following:
    - Severe disability (e.g., unable to work, severe absenteeism) and have failed multiple outpatient treatments
    - Medication overuse for which outpatient treatment is too risky or unlikely to succeed
    - Psychiatric or medical disease that makes outpatient management risky or unlikely to succeed
- Intractable trigeminal autonomic cephalalgias (e.g., cluster headaches)
- Intractable trigeminal neuralgia
- Prolonged migraine aura unresponsive to outpatient measures
- Secondary headache with the possibility of brain injury (e.g., thunderclap headache due to dissection or reversible cerebral vasoconstriction syndrome)
- Diagnostic mysteries or uncertainties and concern for ominous cause of headache

In centers that do not have outpatient infusion capability, the average hospitalization is about 3 days. In contrast, length of stay is typically 6 and up to 21 days at centers that treat the most refractory patients. One constraint on length of stay is the safety of repetitive intravenous dihydroergotamine (DHE): safety beyond 7 days (21mg; 3mg/day x 7 days) has not been established. Furthermore, the likelihood of the patient becoming headache-free diminishes after day 5 or 6.

Since inpatient treatment is often used for patients who are overusing acute medications (or are at high risk for doing so), inpatients should not be given analgesics other than NSAIDs, and should not receive any as-needed acute medication. Giving these drugs sends the wrong message, can reinforce counterproductive behaviors, and even can interfere with the therapeutic goals of hospitalization.

The typical inpatient at our center receives:

- Intravenous neuroleptic, followed by intravenous DHE every 8 hours
- Intravenous ketorolac, magnesium, valproic acid, and corticosteroids when appropriate
- Intravenous lidocaine drip
- A regimen to avoid physical withdrawal to opioids or barbiturates (methadone, clonidine, phenobarbital)
- Access to group classes on such topics as yoga and posture, nutrition, coping skills, and relaxation techniques
- Psychology and psychiatry consultations to provide a 5 Axis DSM V diagnosis, an outpatient behavioral management plan appropriate for the patient, and psychopharmacologic advice
- Urine toxicology including a separate assay for oxycodone (since it is typically missed on an opioid screen) to detect drugs of abuse, misuse, and interference

The art of inpatient management is to find the most effective treatment possible, thus shortening length of stay while managing risk and not causing unmanageable or unacceptable side effects. The uses of and major considerations for inpatient medications are detailed below.

IV lidocaine. We treat almost every patient in the hospital with continuous lidocaine infusion as the backbone of therapy. It has been studied in several case series and appears to be effective. We initiate telemetry monitoring and check EKG, magnesium, and potassium before starting the drug, then daily EKG, daily lidocaine levels, and other routine labs every 2 to 4 days, or as needed. Start lidocaine 1 mg/min x 4 hours then automatically increase to 2 mg/min. Thereafter, we increase in 0.25 to 0.5 mg/min increments based on response and serum levels (checked daily). In our experience, the patient responds better when lidocaine levels are near the top of the therapeutic range. Side effects are common and principally involve the central nervous system, including blurry vision, tremor, vivid dreams, hallucinations, and psychosis. Tachycardia or bradycardia may occur but generally does not lead to discontinuation. Lidocaine is metabolized rapidly, and holding the infusion for an hour will result in a significant decrease in serum level. This is useful when adverse events occur, but troublesome if the infusion needs to be stopped for other reasons (e.g., showering or diagnostic tests). Therefore, we aim to limit pauses in its use.

Intravenous neuroleptics are an integral part of an inpatient treatment regimen, and we have made several observations regarding the most commonly used ones. In most cases, pretreatment with diphenhydramine 25 mg po is advisable to mitigate akathesia and dystonic reactions.

Neuroleptic	Dose Range	Efficacy	Sedation	Akathesia/Dystonia	Anticholinergic
metoclopramide	5-30 mg	+	+	++	+
prochlorperazine	10 mg	++	++	+++	++
promethazine	12.5-50 mg	+	+++	+	+++
chlorpromazine	12.5-50 mg	+++	+++	++	+++
haloperidol	1-10 mg	+++	++	+++	+

Dihydroergotamine (DHE). Unless it is contraindicated or the patient was overusing DHE prior to hospitalization, most of our patients receive DHE. Patients who receive DHE in the hospital should have a vascular risk assessment including an electrocardiogram prior to beginning treatment. Contraindications include coronary artery disease, peripheral vascular disease, poorly controlled hypertension, large or medium vessel stroke, prolonged aura, hemiplegic migraine, and basilar-type migraine. It is a 5-HT_1 agonist [hence antimigraine];

dopamine agonist [hence pronausea]; and alpha adrenergic blocker. The inpatient dose is 0.2 to 1 mg IV every 8 hours (generally 0.5 mg first, repeated in one hour if tolerated, then raised thereafter) maximum of 3 mg a day; limit 7 consecutive days in hospital. DHE is a vasoconstrictor (veins >> arteries) and thus makes maintaining peripheral venous access challenging in many cases. Chest symptoms are so common that diagnostic testing is usually not warranted unless angina is suspected. There may be a flushing reaction—warmth or pressure in neck, chest, face, or sometimes entire trunk—following DHE administration. It is most intense the first time the patient is exposed to a given dose. This side effect is not a contraindication for ongoing use and decreases with subsequent doses. Nausea often occurs the first time a patient is given DHE but likewise decreases over subsequent doses. Diarrhea may occur, usually after a few days. Aching or sore legs can also occur.

Nonsteroidal antiinflammatory drugs. There is a high risk of gastrointestinal bleeding or renal injury if used too long. We limit ketorolac to 30mg IV q8hr for a maximum of 9 consecutive doses. We do not concurrently use corticosteroids, and we give gastrointestinal protection (H_2 blocker or PPI).

Magnesium sulfate is very safe but its benefit is small. It tends to sclerose veins so it is better to give it only if the patient has a central venous catheter or will be discharged soon. We give 2 grams IV every 12 hours in the hospital. We monitor serum levels and allow 1.5 times top normal limit if no side effects occur.

IV Valproic acid has been studied open label and may be effective in single or repetitive doses. We generally give 250 to 500 mg IV every 8-12 hours at first and increase as tolerated and needed to a maximum of 3000 mg/day. It works best when infused rapidly over 10 minutes. Watch for tremor, encephalopathy, and nausea with prolonged use; if these are problematic, stop the medication and consider checking ammonia level. We have found that concomitant use with IV lidocaine increases the risk of reversible encephalopathy due to the inhibition of lidocaine metabolism by valproic acid, so we use this combination only with great caution.

IV levetiracetam. Limited data suggest that IV levetiracetam is effective for severe migraine. The dose is 1000 mg q12-24 hours (in one case series 2000 mg was used as a one-time dose). There are few side effects. One concern is the possibility of rare dysphoria/mood changes.

Corticosteroids. We generally use IV methylprednisolone 100 to 200 mg every 12 hours for up to 3 days. We check glucose (finger sticks) twice a day and cover with sliding scale insulin. Gastrointestinal bleeding is a major concern with steroid use; therefore, we give gastrointestinal protection. Activation of mania or other psychiatric symptoms infrequently occurs. We utilize the psychiatric consultation to identify individuals at risk for this complication. It should be remembered that avascular necrosis is a rare but serious potential adverse event with the use of steroids.

Ketamine. Recent published data from our center suggest that continuous infusion of IV ketamine for up to 5 days can be beneficial in refractory chronic migraine and new daily persistent headache. No telemetry or intensive monitoring is required, but use may be restricted to certain individuals or services (eg, only the acute pain team run by anesthesiology may prescribe it at our institution). We use a standard dosing schedule with initiation at a rate of 0.1 mg/kg/hr with gradual titration to a maximum rate of 1 mg/kg/hr as tolerated. Dosing should not be escalated if the patient has vomiting or intoxicating effects, but nausea and nystagmus are common. Typically patients receive clonidine (0.1 mg po tid or transdermal patch) and a benzodiazepine such as lorazepam 0.5 mg po q8hr to minimize side effects. We also monitor hepatic function testing since there are reports of infrequent elevation of liver enzymes.

Adjunctive Medications are useful for preventing or reversing adverse events stemming from the above medications as well as for detoxification when needed.

Medication	Purpose	Dosage
ondansetron	Antiemetic without risk of extrapyramidal side effects (QTc prolongation risk remains)	4-8 mg IV q8hr
aprepitant	Antiemetic without risk of extrapyramidal side effects or QTc prolongation	40-80 mg
lorazepam	Sedation, treat anxiety/nausea, manage withdrawal	0.5-2 mg PO q6hr prn
benztropine	Anticholinergic to treat extrapyramidal side effects	0.5-1mg PO/IM q8hr
diphenhydramine (IV)	Anticholinergic to treat severe extrapyramidal side effects	50 mg IV q4hr prn
methadone	Treat opioid withdrawal	2.5-10 mg PO daily-tid*
phenobarbital	Treat barbiturate/butalbital withdrawal	Conversion is 30 mg phenobarbital for every 100 mg butalbital; start there then taper
clonidine	Treat opioid withdrawal	0.1-0.2 mg bid/tid
atropine diphenoxylate	Diarrhea due to DHE	1 to 2 tablets PRN

*Titrate to mild to moderate opioid withdrawal symptoms. Do not give equianalgesic doses—this is too much. We suggest using a conversion calculator with dose reduction of 50% to account for incomplete cross-tolerance. Many calculators are freely available online and as apps.

Adverse Events

Despite the sedation that typically occurs with medications used for inpatient headache management, restlessness can be a significant complaint. This can be due to akathesia from a neuroleptic, withdrawal from opioids, undiagnosed restless legs syndrome (RLS), psychomotor agitation, or other reasons. A history of nocturnal symptoms relieved by walking and aggravated by neuroleptics help differentiate RLS from akathisia. In patients diagnosed with RLS who are taking a dopamine agonist, rather than avoiding neuroleptics and thus risking an unsuccessful hospitalization, we replace the agonist with gabapentin or clonazepam at bedtime.

An important consideration during hospitalization is the risk of prolonging the QTc beyond 500 msec, potentially leading to Torsades de pointes, a potentially fatal cardiac arrhythmia caused by various medications commonly used for hospitalized headache patients, especially neuroleptics. We perform daily EKGs to identify QTc prolongation. If QTc is > 450 for men or > 460 for women, or increases significantly from baseline, we eliminate any drugs likely to contribute to QTc prolongation. The website www.torsades.org maintains an up to date listing of all drugs that may be problematic in this regard. With respect to headache management, important drugs include not only neuroleptics, but also methadone, venlafaxine, citalopram, ondansetron, tizanidine, and lithium.

Some adverse events need urgent management. Encephalopathies may be due to valproic acid, lidocaine, or related to how a patient reports taking medications at home compared to how (s)he actually uses them, leading to under- or overdosing of home medications or withdrawal syndromes from undisclosed medications. Anticholinergic toxicity can present with a Korsakov amnesic syndrome. This can be aggravated by lorazepam or valproic acid, but reverses quickly.

Serotonin toxicity may present with alterations in mental status, behavior, autonomic nervous system function, and neuromuscular activity. Altered neuromuscular function is the most commonly reported symptom, presenting as myoclonus, hyperreflexia with clonus, or muscle rigidity (in particular, bilateral lower extremity rigidity). Changes in cognition and behavior, such as confusion or agitation, are common, but may be undetected or dismissed as a manifestation of an underlying psychiatric condition. Diaphoresis, hyperthermia, hypertension, and tachycardia are the most prevalent reported autonomic nervous system symptoms.

Neuroleptic malignant syndrome can be a diagnostic challenge. Compared with serotonin syndrome, neuroleptic malignant syndrome patients are more toxic with greater impairment of consciousness, greater degree of hyperthermia, lead-pipe muscle rigidity, and lack of myoclonus. Patients with neuroleptic malignant syndrome are more likely to have metabolic acidosis and elevations in liver function tests, white blood cell count, and creatinine kinase.

Discharge and Follow Up On the day of discharge, it is important to review in detail with the patient and caregiver(s) the acute and long term plans of care. Lessons learned from classes and mental health consultations should be highlighted. Written instructions should be provided. It should be re-emphasized that the goal has not been total elimination of headaches, but to achieve a break in pain, a “brain reset,” and to restock the “headache toolbox” with new medications and other approaches for managing pain. Timely outpatient follow up is key. We advise that no more than 3 weeks elapse between hospital discharge and office follow up. At that office visit, the overall plan should again be reinforced, and further adjustments can be made based on how the patient has fared in the intervening timeframe.

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