FEDERAL BUREAU OF PRISONS
CLINICAL PRACTICE GUIDELINES
FOR THE MANAGEMENT OF HEADACHE
September 2003

PURPOSE

The Federal Bureau of Prisons Clinical Practice Guidelines for the Management of Headache provide recommendations for the evaluation and treatment of headache disorders in Federal inmates.

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1. INTRODUCTION

Headache is one of the most common pain problems seen in primary care settings affecting nearly 100% of patients at some point in their lives. Despite the high prevalence of headache complaints, many primary care providers fail to appropriately evaluate and treat patients with headaches. Cursory or poorly targeted headache evaluations may fail to identify serious underlying conditions that warrant urgent diagnostic investigation. Empiric treatment of headache with analgesics without establishing a specific headache diagnosis is often ineffective, and precludes prophylaxis as a potential, and often the most important, treatment option. Effective headache management is not only important for improving quality of care, but helps ensure that the significant costs associated with headache management (approximately 15 billion dollars annually in the U.S.) are appropriately spent.

2. DEFINITIONS

Analgesic is a medication that relieves or reduces pain.

Aura is a reversible symptom(s) reflective of focal cortical or brainstem dysfunction that can precede the onset of some migraine headaches.

Headache, or cephalalgia, is generally defined as pain in various parts of the head that is **not** confined to the area of distribution of a single nerve, or a nerve with multiple projections. For example, trigeminal and occipital neuralgia are not considered headaches.

Primary headache, or benign headache, is a headache without an underlying disease as the source of the pain. Primary headaches are usually recurrent.

Secondary headache is a headache which has an underlying disease or pathologic process that is the cause of the pain.

3. DIAGNOSIS

History: The accurate diagnosis of head pain depends largely on obtaining an adequate history that should address the following: clues to the etiology of the pain, triggers associated with the pain, the natural history of the pain, the psychological meaning of the pain, impact of the pain on the inmate's functioning,

treatment history (successes and failures) for the pain, and prior diagnostic testing and results of such testing. Key questions for taking a history from a patient presenting with headache are outlined in **Appendix 1, Headache History Outline.** The history should also include queries regarding frequent headache triggers, outlined in **Appendix 2, Common Headache Triggers.**

Individuals suffering from chronic headaches have a high rate of comorbid depression; therefore all inmates presenting with complaints of headache should also be screened for depression, including a risk assessment for suicidal ideation, plan, or intent.

Taking the time to elicit a thorough history provides the inmate with an opportunity to better understand the headache and to develop a working relationship with the health care provider, thus improving the potential for cooperation and adherence to the treatment plan.

Physical examination: The primary purpose of the physical examination is to identify any potential underlying conditions that may be causing the headache. The examination should be guided by the history and presenting symptoms, but should always include the following:

- Vital signs
- Complete neurological examination
- Fundoscopic examination
- Palpation of the head, neck, and upper thoracic regions
- Cardiovascular assessment

Laboratory and other studies: The decision to order further tests or studies can only be made after the health care provider has arrived at a differential diagnosis. Any tests ordered should be guided by that differential and may or may not include neuroimaging. The presence of any of the "red flags" noted in **Appendix 3, Red Flags for Secondary Headache Disorders**, should prompt consideration for further diagnostic studies.

Neuroimaging should be obtained when the differential diagnosis includes hemorrhage, mass, and certain infections, such as herpes encephalitis or cysticercosis. Lumbar puncture may be helpful after neuroimaging if an infectious process is suspected. An erythrocyte sedimentation rate (ESR) should be obtained if an inflammatory process, such as temporal arteritis (TA), is suspected. Temporal artery biopsy is the definitive diagnostic study if TA is suspected based on clinical presentation and/or the ESR.

4. CLASSIFICATION OF HEADACHES

Headaches are classified as either primary or secondary headaches. A few of the most common primary headache disorders are outlined in **Appendix 4, International Headache Society Classification.** (For a complete list of primary headache criteria access www.i-h-s.org.) The major causes of secondary headache are outlined in **Appendix 5, Secondary Headache Disorders.** Clinical presentations of the most common primary headaches are summarized as follows:

Tension - type headache: Tension-type (Tt) headaches are nonpulsatile, mild to moderate headaches that are bilateral and not associated with nausea or vomiting. The headache may last for minutes to days. Pain can extend from the forehead or temples to the occiput and neck muscles. Tt headaches can be episodic or chronic.

The pathophysiology of Tt headaches is unknown, though it is thought to be of muscular origin. Physical findings are typically nonspecific in Tt headache sufferers. Increased muscle tone in the shoulders (particularly the parascapular muscles), trapezius muscles, cervical muscles, as well as in facial and scalp musculature may be observed; however these findings are not specific for Tt headaches and can be found in other types of head and facial pain syndromes. Any neurological findings should alert the clinician to pursue further studies.

Laboratory tests and neuroimaging are not recommended for Tt headaches.

Chronic daily headache: Chronic daily headaches (CDH) usually result from chronic use of common headache remedies including: caffeine containing compounds, barbiturates, ergots, triptans, narcotics, aspirin, acetaminophen, and nonsteroidal anti-inflammatory agents (NSAIDs). These headaches are sometimes referred to as analgesia-rebound headaches or medication overuse headaches. They develop over various time frames, depending on the analgesic used and the pattern of use. One study reported that CDH developed in a mean of 1.7 years of chronic use of triptans, 2.7 years for ergots, and 4.8 years for other analgesics. This study also found that the average number of doses per month resulting in CDH were smallest for triptans, followed by ergots, and greatest for other analgesics.

CDH most commonly develops in individuals with migraine or Tt as the primary headache type; however, rarely it has been reported to develop in other types of headache, such as cluster headaches. CDHs occur daily or nearly daily, and vary in severity and

location. They tend to be refractory to treatment and may be accompanied by nonspecific neuropsychological symptoms such as restlessness, anxiety, irritability, low mood, nausea, or gastrointestinal symptoms. Comorbid psychiatric conditions, such as depressive disorders, anxiety disorders, or substance abuse disorders may be present. Other symptoms may be related to the medication's side effects or withdrawal syndrome.

Individuals with CDH develop tolerance to analgesics and require increased doses to obtain the same effect. Withdrawal symptoms including temporary worsening of the headache are experienced with cessation of the medication, and spontaneous improvement occurs with discontinuation of the medications. Prophylaxis is **not** effective while the individual continues to use the offending medications; therefore the decision to prescribe prophylactic medication should be delayed until the headache type and frequency can be determined in an "analgesic-free" milieu.

Migraine: Migraine headaches, sometimes called vascular headaches, affect over 18% of women and 6% of men, commonly between the ages of 25 and 55. Contrary to popular belief, an aura occurs in a minority (15%) of migraine sufferers and is not pathognomonic of migraine. Individuals with other neurological conditions, such as AV malformations, can also experience aurae.

Migraine headaches are episodic, severe, pulsatile, unilateral (though the affected side may vary from one episode to the next), and can be associated with phonophobia, photophobia, nausea and vomiting. The migraine may be divided into 4 phases: prodrome, aura, headache, resolution. The prodrome can last up to 24 hours prior to the onset of the headache and may include: irritability, euphoria, diarrhea, appetite increase, or other symptoms. Aurae are variably present and may include scotomata, sensory disturbances, hemiparesis, or other focal neurologic symptoms typically resolving within one hour. The headache phase can last for up to 3-4 days, followed by the resolution phase that may be characterized by symptoms of fatigue, malaise, and deep sleep.

Individuals with migraines are more likely to have epilepsy, stroke, anxiety and depressive disorders, and sleep disorders, but there is no causal relationship between these comorbid conditions and migraines. A careful diagnostic evaluation for comorbid conditions can optimize treatment. For example, an inmate suffering from seizures and migraines can be treated with an anti-epileptic medication that is effective for both disorders (such as sodium valproate); whereas medications that lower the seizure threshold, such as certain antidepressants and antipsychotics, should not be prescribed.

The diagnosis of migraine headaches is based on a thorough history. Laboratory and other studies are not diagnostically helpful. The patient presentation during an acute episode may or may not include objective signs, such as photophobia or vomiting; and patients may not be aware of any triggers of their migraine headaches. Common migraine triggers are outlined in **Appendix 2, Common Headache Triggers.**

Status migrainosus can occur and may require more intensive treatment, including hospitalization.

Cluster Headache: Cluster headaches occur in approximately 0.4% of the population. Unlike migraines, they are more common in males than females. Age of onset is usually in the twenties.

As the name implies, these headaches occur in "clusters" and tend to occur in a seasonal pattern (after the winter and summer solstices). Attacks can occur with clock-like regularity, most often at night. An individual may have up to 8 attacks in a 24 hour period, and they may occur for up to 3 months at a time.

The pain associated with cluster headaches is very severe, unilateral, usually localized around the eye, and often accompanied by autonomic symptoms of nasal congestion, rhinorrhea, partial Horner's syndrome (miosis and ptosis), facial flushing, sweating and/or edema on the affected side. Other symptoms may include nausea, photophobia, phonophobia, and aurae. The onset of pain is rapid, peaks at 5-10 minutes, and may last up to 2 hours.

In contrast to migraines, the individual may exhibit extreme agitation, restlessness and even suicidality or head banging during an attack. Like other types of headaches, cluster headaches can become chronic instead of episodic, or conversely switch from chronic to episodic.

Miscellaneous: Other primary headache types include: idiopathic stabbing; paroxysmal hemicrania; cold-stimulus; benign cough; benign exertional; and headache associated with sexual activity. These headaches will not be further described or addressed in these guidelines.

Because sinus problems occur so commonly, primary headaches are often misdiagnosed as sinus headaches by both patients and providers. Sinus infections can cause significant facial and dental pain. Signs and symptoms associated with sinus infections include: fever, pain localized to the sinus areas of the face, purulent nasal discharge, postnasal drip, hyperemic nasal mucosa, and upper respiratory symptoms. Dental infections, such as

dental abscesses, can cause facial pain that may be misdiagnosed as sinusitis, neuralgia, or headache. Radiologic studies may be appropriate for inmates presenting with symptoms consistent with an infectious dental or sinus process.

5. TREATMENT

Introduction: Treatment for head pain varies depending on the nature and underlying organic process associated with the headache. The goal of treatment varies, ranging from complete relief of pain to management of the functional impairment associated with a chronic pain condition. Treatment of the underlying condition is the primary aim in managing secondary headaches.

Patient education and skills training are crucial in treating all pain syndromes. Excellent patient education tools are available through the National Headache Foundation, available online at www.headaches.org.

Timing of the education may vary depending on the type and severity of the headache. Individuals in the midst of an acute migraine or cluster headache may be receptive to reassurance and empathy, but in depth education should wait until the acute phase has passed. Many lifestyle issues, such as lack of regular exercise, poor sleep hygiene, excessive use of caffeine, tobacco use, and poor stress management skills, can all contribute to the development or worsening of headaches. Inmates with complaints of recurrent or chronic headaches present the provider with an excellent opportunity to address important preventive health issues.

Headache logs are invaluable in providing the inmate and the provider with information as to potential triggers and responses to treatment. Additionally they provide a point of reference and focus for clinic visits.

Treatment strategies: The following general treatment strategies should be considered in managing inmates with headaches:

- **Skills training techniques** include stress management, relaxation therapy, and biofeedback. A referral to psychology and/or psychiatry services for evaluation and treatment is appropriate for inmates suffering from frequent headaches of any type, or comorbid psychiatric conditions.

- **Physical interventions**, such as application of heat or ice to painful areas, can also be effective in alleviating headaches.

- **Pharmacological interventions** vary depending on the headache type. For example, triptans are not effective in tension headaches except for those individuals who also suffer from migraines. Virtually all the medications used for management of headache have troublesome side effects in certain individuals. Clinicians should be aware of potential drug-drug interactions, medical conditions that may preclude the use of certain agents (e.g., coronary artery disease and triptans), as well as the potential for rare adverse reactions, such as serotonin syndrome in an individual using a triptan in combination with a serotonin reuptake inhibitor such as fluoxetine or sertraline. Precautions for prescribing headache medications are outlined in **Appendix 6, Headache Medication Precautions.**

NOTE: Certain medications used for headache management have a potential for abuse, including the ergotamines, antiemetics, as well as any narcotic or barbiturate-containing medication.

Tension-type Headaches: Tt headaches can be effectively treated with a variety of interventions beginning with the lowest risk treatment and progressing stepwise until relief is achieved.

- Mechanical interventions can be very effective alone, or in combination with medication. Application of ice or heat to painful areas for 15-20 minutes at a time, progressive relaxation, and biofeedback can all be of benefit, especially during the early phase of development of the headache. Referral to psychology services for stress management may also be helpful.

- Medications for tension headaches should be confined to nonnarcotic, nonaddictive treatments. Aspirin, nonsteroidal anti-inflammatory agents (NSAIDs) and acetaminophen are all effective in the treatment of Tt headaches and are the first line choice for migraines or a combination of migraine and tension headaches. Overuse of these medications can lead to chronic headaches. Inmates who suffer from chronic Tt headaches should be treated as recommended for chronic daily headaches.

Chronic Daily Headache: The abrupt discontinuation of non-narcotic analgesics and caffeine (or rapid taper of narcotic medications, slow taper of barbiturates) is the treatment of choice for chronic daily headaches whether the initial headache type was migraine, tension, or a combination of the two. Detoxification has been effective in eliminating or greatly reducing headaches in up to 73% of patients with CDH. Withdrawal symptoms last from 2-10 days and can include: mood changes, sleep disturbance, increased severity of headache, nausea, vomiting, hypotension, and restlessness.

Patient education prior to, during, and after the drug discontinuation is vital to the success of the withdrawal program. Studies do not currently clearly support any specific intervention aimed at reducing the severity of the withdrawal syndrome or the headache associated with it. Medications not associated with the overuse syndrome in a particular individual (if there is one available) should be considered as the analgesic of choice during this phase. For example, if detoxifying an inmate from ergots, use of a triptan during the acute headache may provide temporary (though not permanent) relief. Naproxen may be more effective than symptomatic treatment with anti - emetics and other analgesics. A short course of steroids has been effective for some patients in suppressing withdrawal symptoms.

As with most chronic conditions, relapse is frequent. Patient education on the cause of CDH on an ongoing basis with attention to lifestyle issues and avoidance of known triggers can be part of an effective prevention program. Treatment with a prophylactic medication is the preferred intervention for inmates who continue to suffer migraines after drug withdrawal. Beta-blockers, valproate, amitriptyline, and fluoxetine have all been shown to provide significant benefit in the prevention of migraine headaches. Medications known to cause CDH, such as triptans, NSAIDs, ergots, and caffeine-containing compounds (including coffee, tea, etc.) should be avoided. Because NSAIDs and aspirin are available in commissary, the inmate should be advised to avoid these medications.

If an agent is required for an acute headache, use should be strictly limited to no more than two, 2 mg doses of ergotamine per week, or no more than 3 doses of a triptan per week. Medications with barbiturates, narcotics, or tranquilizers should **not** be used.

Migraine: Treatment for migraine headaches is both preventive and therapeutic.

- **Prevention**: Because of the morbidity associated with migraine (loss of work days, pain) prevention is **always** a goal for individuals who suffer from recurrent migraines. Headache diaries, in combination with review of potential triggers can provide substantial information from which to devise preventive strategies. The addition of prophylactic agent(s) should be considered for all inmates who have any of the following conditions:

    - frequent migraines

- migraines that have a substantial negative impact on the inmate's functioning

- uncommon migraines potentially associated with negative outcomes, such as hemiplegic migraine, migraine with prolonged aura, or basilar migraine

- history of stroke

Prophylactic treatments are outlined in **Appendix 7, Prophylactic Agents for Migraine.** Preventive therapy should start with an agent with the highest evidence-based efficacy, i.e. a **Group 1** agent such as propranolol, timolol, valproate, or amitriptyline. The dose should be slowly increased to a therapeutic dose or until further dose increases are limited by side effects. Effective prophylaxis may not be noticeable for 8-12 weeks; therefore prophylaxis should not be discontinued prematurely if the medication is being tolerated. Headache diaries should be continued throughout the prophylaxis trial(s) until consistent efficacy has been demonstrated.

Monotherapy is usually, but not always effective prophylaxis. Combination therapy may be necessary to control migraines in certain individuals. Whenever feasible, a prophylactic agent should be chosen that is efficacious for the headache and for any existing comorbid conditions. For example, an inmate suffering from an anxiety or depressive disorder and migraine may show significant improvement in both conditions with the addition of fluoxetine.

- **Acute treatment:** Acute treatment is aimed at treating the headache pain, and when necessary, relief of associated symptoms such as nausea or vomiting. Prochlorperazine and chlorpromazine have both been shown to be effective in relieving the pain of migraine independent of relief of nausea or vomiting. Aspirin, acetaminophen, NSAIDs, alone and in combination with other agents, have all been shown to be effective in acute treatment. Ergotamines, dihydroergotamine (DHE), and triptans are also effective.

The choice of agent will depend on the inmate's other medical conditions, previous response to treatment, and potential for any drug - drug interactions. See **Appendix 8, Acute Migraine Treatment, Appendix 9, Acute Migraine Treatments - Categorized by Efficacy, and Appendix 10, Recommended Doses of Agents for Acute Migraine.** The following general guideline for acute treatment may be adapted for an individual based on the aforementioned factors:

- **Mild to moderate migraine without nausea or vomiting:** NSAIDs, aspirin, or acetaminophen, with or without caffeine, are first line agents.

- **Mild to moderate migraine with nausea or vomiting:** Consider prochlorperazine, given rectally or parenterally, as the first line agent. If NSAIDs, aspirin, or acetaminophen, with or without caffeine, are given, they should be administered rectally in addition to an antiemetic administered rectally or parenterally.

- **Moderate to severe migraine or migraine unresponsive to above agents:** Triptans are first line agents and can be administered orally, subcutaneously, or intranasally. If significant nausea or vomiting is present, choose a non-oral route for administration of medication and consider prochlorperazine, either alone or in combination with a triptan. For severe migraines unresponsive to triptans, oral ergotamine or parenteral DHE may be effective.

Cluster Headache: Since cluster headache pain peaks in approximately 5-10 minutes after onset, agents with rapid onset of action are the treatment of choice for acute treatment. 100% oxygen delivered via face mask at 7 liters per minute has been shown to relieve pain in up to 75% of patients, but the pain sometimes returns when the oxygen is discontinued. Sumatriptan SC (but not PO) has been shown to be more effective than DHE in aborting cluster headaches (though both are effective).

Suppression of the cluster headaches is preferable to relying on acute treatment only. Short term treatment with prednisone while titrating a prophylactic agent to a maintenance dose is effective in 75% of patients. Verapamil is the treatment of choice for preventive therapy. Lithium has also been shown to be effective. Other potential treatments include methysergide; however its usefulness is offset by rare but potentially serious side effects, such as retroperitoneal fibrosis.

Acute and suppressive treatment options for cluster headaches are outlined in **Appendix 11, Treatment of Cluster Headaches.**

6. APPENDICES

Appendix 1: Headache History

Appendix 2: Common Headache Triggers

Appendix 3: Red Flags for Secondary Headache Disorders

Appendix 4: International Headache Society Classification Guidelines

Appendix 5: Secondary Headache Disorders

Appendix 6: Headache Medication Precautions

Appendix 7: Prophylactic Agents for Migraine

Appendix 8: Acute Migraine Treatment

Appendix 9: Acute Migraine Treatments - Categorized by Efficacy

Appendix 10: Recommended Doses of Agents for Acute Migraine

Appendix 11: Treatment of Cluster Headaches

HEADACHE HISTORY

1. Describe the headache: location, radiation, frequency, character of pain (throbbing, constant, stabbing, etc.), age of first onset.

2. Describe the level of pain on a scale of 1 - 10 with 1 being no pain, 10 being the worst imaginable pain.

3. Describe any associated symptoms before or during the headache: nausea, vomiting, neurological symptoms.

4. What can bring on the headache?

5. What makes the headache better?

6. What makes the headache worse?

7. What studies have you had done for evaluation of your headache? When? Where? What were the results?

8. What treatments have you tried for your headache?

9. What was the outcome of the treatments?

10. Does anyone in your family suffer from headaches? What kind? What treatment worked for them?

11. What medications are you on?

12. What medical problems do you have? If any problems are present, pursue further current status, treatments, compliance, etc.

13. Have you had any recent trauma?

14. Have you had any recent medical or dental procedures?

15. Any recent substance use/abuse or withdrawal (including caffeine)?

16. Describe how the headache impacts your life?

COMMON HEADACHE TRIGGERS*

TRIGGER	HEADACHE TYPE
Monosodium glutamate	migraine
tyramine rich foods	migraine
nitrates nitroglycerin	migraine cluster headache
caffeine	migraine tension-type headache
chocolate	migraine
alcohol	migraine cluster headache
menstruation	migraine
high altitude	migraine tension-type
exercise	migraine
stress	tension-type migraine

*Adapted with permission from Snow V et al. Pharmacologic management of acute attacks of migraine and prevention of migraine headache. *Ann Intern Med* 2002; 137:840-849. (The American College of Physicians-American Society of Internal Medicine is not responsible for the accuracy of the translation).

RED FLAGS FOR SECONDARY HEADACHE DISORDERS*

Any of the following should prompt the provider to consider further studies, including neuroimaging, lumbar puncture, laboratory assessment such as ESR, markers for autoimmune disorders, etc.

1. Significant change in pattern or character of headache
2. First or worst headache
3. Abrupt onset, or awakens inmate from sleep
4. Abnormal physical or neurological examination
5. Neurological symptoms lasting >1 hour
6. New headache in inmate >50 years of age
7. Headache in immunosuppressed individual
8. Headache suggestive of increased intracranial pressure (onset with straining, positional change, cough)

*Adapted with permission from Kaniecki R., Headache assessment and management. *JAMA*, 2003; 289:1430-33.

INTERNATIONAL HEADACHE SOCIETY CLASSIFICATION*

Tension - type Headache

- Episodic

1. At least 10 headaches lasting from 30 minutes to 7 days with at least 2 of the following characteristics:
   - Pressing, tightening, nonpulsatile
   - Mild or moderate intensity (may inhibit but not prohibit activity)
   - Bilateral location
   - Not aggravated by routine physical activity
2. In addition:
   - No nausea or vomiting
   - Photophobia or phonophobia may be present, but not both
   - No organic disease as cause of headache

- Chronic

1. At least 15 headaches per month for at least 6 months with at least 2 of the following characteristics:
   - Pressing, tightening, nonpulsatile
   - Mild or moderate intensity (may inhibit but not prohibit activity)
   - Bilateral location
   - Not aggravated by routine physical activity
2. In addition:
   - No vomiting
   - Nor more than 1 of the following: nausea, phonophobia, or photophobia
   - No organic disease as cause of headache

Cluster Headache

At least 5 attacks that meet the following criteria:

1. Severe unilateral orbital, supraorbital and/or temporal pain for 15-180 minutes untreated
2. Headache is associated with at least one of the following signs, ipsilateral to the pain:
   - Conjunctival injection
   - Lacrimation
   - Nasal congestion
   - Rhinorrhea
   - Forehead or facial swelling
   - Miosis
   - Ptosis
   - Eyelid edema
4. Frequency of attacks is from 1 every other day to 8 per day
5. No underlying organic cause as cause of headache

Migraine**

- Migraine without Aura

1. At least 5 attacks with at least 2 of the following characteristics:
   - Unilateral
   - Pulsating
   - Moderate to severe intensity
   - Physical activity aggravates
2. At least 1 of the following:
   - Nausea and/or vomiting
   - Photophobia and phonophobia
3. No organic disease as cause of headache

- Migraine with Aura

1. At least 2 attacks with at least 3 of the following characteristics:
   - One or more fully reversible aura symptoms indicating brain dysfunction
   - At least 1 aura symptom develops gradually over more than 4 minutes or 2 or more symptoms occur in succession
   - No single aura symptom lasts more than 60 minutes
   - Headache follows aura with a free interval of less than 60 minutes
2. No organic disease as cause of headache

*Adapted with permission from Headache Classification Committee of the International Headache Society. Classification and diagnostic criteria for headache disorders, cranial neuralgias, and facial pain. *Cephalalgia* 1988; 8(suppl 7):1-96. (Available at www.i-h-s.org).

**Migraines can be further divided into categories based on type of aura, neurological deficit, familial patterns, etc. The reader is referred to the International Headache Society Guidelines at www.i-h-s.org.

SECONDARY HEADACHE DISORDERS*

ETIOLOGY	EXAMPLES
TRAUMA	Acute post-traumatic headache Subdural hematoma (acute or chronic) Orbital trauma/facial fracture
VASCULAR	Subarachnoid hemorrhage Stroke Arteriovascular malformation
INFLAMMATORY	Temporal arteritis or other arteritides Trigeminal neuralgia Pseudotumor cerebri
INFECTIOUS	Herpes encephalitis Cysticercosis Fungal Bacterial encephalitis/meningitis Sinus infection
MALIGNANCY	Primary or metastatic tumor
METABOLIC	Hypotension or hypertension Hypoglycemia Hypovolemia (dialysis) Hypoxia Hypercapnia
TOXIC	Acute intoxication Substance withdrawal
MECHANICAL	Malformation of facial/cranial or cervical anatomy

*Adapted with permission from: Headache Classification of International Headache Society. *Cephalalgia*, 1988:8(suppl 7):1-96; and Clinch CR. Evaluation of acute headache. *Amer Fam Phys* 2001; 63:4:685-92.

HEADACHE MEDICATION PRECAUTIONS

MEDICATION	MEDICAL CONTRAINDICATIONS*	DRUG INTERACTIONS**
Triptans	- Complicated migraines, e.g., hemiplegic, basilar, ophthalmoplegic - Coronary artery disease - Cerebrovascular disease - Hypertension-poorly controlled - Lactation - Pregnancy - Severe renal impairment - Severe hepatic impairment	- Monoamine oxidase inhibitors (MAOIs) - absolute contraindication - Cimetidine - (zolmitriptan) -Propranolol - (rizatriptan) - SSRI's - rare potential for serotonin syndrome - Triptans (do not use multiple triptans) - Ergotamines
NSAIDs **Aspirin**	- Hepatitis C - History of PUD - Aspirin hypersensitivity - Thrombocytopenia	- NSAIDs
Valproate	- Liver disease: use caution, monitor LFTs - Pregnancy - Obesity (will likely increase weight)	- Many - consult with pharmacist
Ergotamines **DHE**	- Vascular disease - cerebral, cardiac, peripheral - History of ergotism	- Triptans - Ergotamines
Beta blockers	- Asthma	- SSRIs - Rizatriptan
Tricyclic antidepressants	- Cardiac arrhythmia - (Use with caution in patients with potential for overdose) - Elderly patients - Obesity (will likely increase weight)	- Antiarrhythmics - SSRIs - MAOIs - Anticonvulsants - Anticoagulants
SSRIs	No absolute contraindications	- Many - consult with pharmacist - MAOIs - Triptans - rare serotonin syndrome
Antiemetics	No absolute, but note these can cause acute dystonic reactions and akathisia	Consult with pharmacist

* This is not a complete list of contraindications.

** This is not a complete list. Consult with your pharmacist for complete information on drug-drug interactions.

PROPHYLACTIC AGENTS FOR MIGRAINE+

GROUP 1*	GROUP 2**	GROUP 3***
Amitriptyline Divalproex Sodium valproate Propranolol Timolol	Beta blockers: atenolol, metoprolol, nadolol NSAIDs: naproxen, mefenamic acid, ketoprofen, aspirin Calcium channel blockers: verapamil, nimodipine Fluoxetine Gabapentin Feverfew Magnesium Riboflavin (vitamin B2)	Antidepressants: doxepin, fluvoxamine, imipramine, mirtazapine, nortriptyline, paroxetine, protriptyline, sertraline, trazodone, venlafaxine Cyproheptadine Diltiazem Ibuprofen Tiagabine Topiramate Methylergonovine: (adverse side effects) Phenelzine: (MAOI - special diet required)

* Strong evidence of moderate to high efficacy.
** Lower efficacy than Group 1, or limited evidence.
*** Consensus of clinical efficacy without scientific evidence of efficacy.

NO EVIDENCE OF EFFICACY OVER PLACEBO+
Acebutolol Carbamazepine Clomipramine Clonazepam Indomethacin Nicardipine Nifedipine Pindolol

+Adapted with permission from Silberstein SD. Practice parameter: Evidence-based guidelines for migraine headache (an evidence-based review). *Neurology* 2000; 55:754-763.

ACUTE MIGRAINE TREATMENT

MODERATE PAIN LEVEL	**SEVERE PAIN LEVEL** (Or proven unresponsiveness to other agents)
NSAIDs (ibuprofen, naproxen), aspirin, or acetaminophen PO	Triptans SC, IN, PO
Combination agent such as acetaminophen + aspirin + caffeine PO	DHE SC, IV, IN, or IM
----------	ergotamines +/- caffeine

If nausea or vomiting preclude the use of oral agents, use non-oral route of administration such as per rectum and/or consider using prochlorperazine alone or with another agent.

ACUTE MIGRAINE TREATMENTS
(CATEGORIZED BY EFFICACY)***

GROUP 1*	GROUP 2**
acetaminophen + aspirin + caffeine PO	acetaminophen
aspirin PO	acetaminophen + codeine PO
butorphanol intranasal (IN)	butalbital + aspirin + caffeine + codeine PO
DHE SC, IM, IV	DHE IN
DHE IV + antiemetic	butorphanol IM
ibuprofen PO	chlorpromazine IM, IV
naproxen sodium PO	diclofenac PO
naratriptan PO	ergotamine + caffeine + pentobarbital + belladonna PO
prochlorperazine IV	flurbiprofen PO
rizatriptan PO	isometheptane compound PO
sumatriptan SC, PO, IN	ketorolac IM
zolmitriptan PO	lidocaine IN
----------	meperidine IM, IV
----------	methadone IM
----------	metoclopramide IV
----------	naproxen PO
----------	prochlorperazine IM, PR

* The agents in Group 1 have proven statistical and clinical benefit.

** Agents in Group 2 have moderate statistical and clinical benefit.

NOTE: For any single patient effectiveness may vary.

NOTE: Barbiturates and narcotics, although effective for acute treatment are likely to cause rebound headaches and have high abuse potential, therefore they are not recommended as a treatment for acute migraine.

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RECOMMENDED DOSES OF AGENTS FOR ACUTE MIGRAINE*

MEDICATION	**DOSE** (range)
acetaminophen PO or PR	1000 mg (650 - 4000 mg)
aspirin PO	1000 mg (650 - 1000 mg)
dihydroergotamine IM	1 mg
dihydroergotamine IN (intranasal)	2 mg (0.5 - 4 mg)
dihydroergotamine IV	1 mg (1 - 2 mg)
dihydroergotamine SC	1 mg
ergotamine PO	2 mg (1 - 5 mg)
ergotamine + caffeine	2 mg + 200 mg (2-6 mg + 200-600 mg)
ibuprofen PO	800 mg (400 - 2400 mg)
naproxen sodium PO	1000 mg (750 - 1750 mg)
sumatriptan IN	10 mg (1 - 40 mg)
sumatriptan PO	25 mg (25 - 100 mg)
sumatriptan SC	6 mg (1-8 mg)
zolmitriptan PO	2.5 mg (1 - 25 mg)

*Adapted with permission from Matcher DB et al. Evidence-based guidelines for migraine headache in the primary care setting: pharmacological management of acute attacks. US Headache Consortium. Accessed at www.aan.com. Based on data from Gray RN et al. Drug treatments for the prevention of migraine headache. Technical Review 2.3, February 1999 (Prepared for the Agency for Health Care Policy and Research under Contract No. 290-94-2025. Available from the National Technical Information Service; NTIS Accession No. 127953.)

TREATMENT OF CLUSTER HEADACHES

Acute	100% O-2 via face mask, 7 L/ min X 15 min Sumatriptan 6 mg SC DHE 1 mg IV, IM or SC (less efficacious than sumatriptan)
Suppressive	Prednisone 60 mg per day, tapered slowly X 2 - 4 weeks AND Verapamil increased to 120 mg TID (May add lithium in refractory cases)

PROVIDER SELF-ASSESSMENT QUESTIONS

1. All of the following represent types of primary headache disorders, except:
   a. Tension-type headache
   b. Sinus headache
   c. Cluster headache
   d. Migraine headache

2. True or False. Chronic Daily Headache is usually caused by stress.

3. True or False. There is no evidence to support the use of beta-blockers in prophylaxis of migraine headaches.

4. First line treatment for moderate migraine headache without nausea or vomiting may include any of the following except:
   a. Acetaminophen
   b. Meperidine
   c. Prochlorperazine
   d. Naproxen

5. True or False. Prochlorperazine is an effective agent for the treatment of migraine headaches even in the absence of nausea or vomiting.

6. All of the following are "red flags" that should prompt the provider to consider further diagnostic evaluation for the presence of an underlying organic process, except:
   a. First or worst headache
   b. New headache in inmate over 50 years of age
   c. Recurrent headache sometimes preceded by 30 minutes of right sided paresthesias
   d. Headache in individual with HIV
   e. Abrupt onset or awakens inmate from sleep

7. Which of the following behavioral modalities are effective in treating primary headaches?
   a. Biofeedback
   b. Stress management
   c. Relaxation training
   d. All of the above

8. Which of the following medications have the potential to cause CDH when used on a chronic or frequent basis?
   a. NSAIDs
   b. Sumatriptan
   c. Cafergot
   d. Codeine
   e. All of the above

9. True or False. Serotonin syndrome can be caused by the use of sumatriptan in combination with fluoxetine.

10. Which of the following can be a trigger for headache?
    a. Monosodium glutamate
    a. Exercise
    c. Menstruation
    d. Caffeine
    e. All of the above

11. Every evaluation for headache should include all of the following except:
    a. A description of the location and character of the pain
    b. A history of past treatments and their outcomes
    c. A history of substance use/abuse
    d. A CT scan of the head
    e. A neurological examination
    f. Screening for depressive and anxiety disorders

12. Comorbid conditions commonly seen in individuals with migraine headaches include all of the following except:
    a. Schizophrenia
    b. Depression
    c. Anxiety disorders
    d. Epilepsy
    e. Sleep disorders

13. True or False. Prophylaxis for CDH is not effective while the inmate continues to use analgesic medication.

14. True or False. Migraine headaches are always preceded by an aura.

15. The treatment of choice for cluster headache is:
    a. Parenteral narcotics
    b. 100 % Oxygen at 7 liters/min
    c. Suppressive treatment with prednisone and verapamil
    d. Sumatriptan 6 mg SC
    e. b, c, and d

PROVIDER SELF-ASSESSMENT ANSWERS

1. **Answer is (b).** Sinusitis is rarely the cause of headache pain and is associated with signs of infection, such as mucopurulent drainage, edematous mucosa, fever, etc. By definition, a primary headache disorder is one without an underlying organic process.

2. **False.** CDH is caused by chronic or frequent use of analgesics including: triptans, NSAIDs, ergots, aspirin, caffeine, narcotic or barbiturate-containing compounds. Tension-type, migraine, and cluster headaches can all become chronic. Treatment is withdrawal of all analgesic medications.

3. **False.** Beta-blockers have been shown to be very effective prophylactic agents in the management of migraine.

4. **Answer is (b).** Narcotics are not considered first line treatment for any primary headache disorder, including migraine headache with or without aura.

5. **True.** Prochlorperazine has been shown to be an effective treatment for acute migraine with or without the presence of nausea or vomiting.

6. **Answer is (c).** This is a fairly classic description of a migraine headache with aura. There is no need to proceed with further studies unless the inmate demonstrates persistent neurologic symptoms after resolution of the headache. However, you should consider migraine prophylaxis if the headaches are frequent, the neurologic symptoms are severe or prolonged, or the inmate has a history of stroke.

7. **Answer is (d), All of the above.** Headache management for recurrent primary headaches should always include extensive patient education, use of headache diaries, and adjunctive behavioral and physical treatments whenever feasible. Behavioral treatments can be very effective alone or in combination with pharmacologic interventions in the management of painful conditions.

8. **Answer is (e), All of the above.** Please see Answer 2 above.

9. **True.** Although serotonin syndrome is rare, and many patients have used triptans while taking SSRIs, there is an increased risk for this potentially fatal condition whenever serotonin is increased by any mechanism. Serotonin syndrome may present with unstable vital signs, myoclonus, changes in mental status, tremor, rigidity, and fever. Inmates with suspected serotonin syndrome should be hospitalized for management.

10. **Answer is (e), All of the above.** Other triggers include alcohol, changes in altitude, tyramine containing foods, sexual activity, among others.

11. **Answer is (d).** The diagnosis of headache disorders relies on a thorough history and a physical and neurological examination. Further studies, such as a CT scan, are appropriate if the inmate presents with an abnormal physical or neurological examination, or presents with one of the "red flags" noted in Appendix 3.

12. **Answer is (a), Schizophrenia.** There is no known association between migraine headache and any of the psychotic disorders. However, all of the other conditions noted occur more frequently among migraine sufferers than among the general population. Evaluation of migraine headache should include evaluation for these comorbid conditions, and treatment should include interventions effective for the migraines and the comorbid condition wherever possible.

13. **True.** Prophylactic medications will not be effect as long as the inmate continues to use analgesic medications. In many cases, the inmate may not need prophylaxis following withdrawal of the offending substances.

14. **False.** Only about 15% of individuals suffering from migraines experience an aura. Other conditions, such as AVM, can cause an aura. Therefore the presence or absence of an aura is not diagnostic of a migraine headache.

15. **Answer is (e).** Administration of oxygen will usually abort the current headache, though recurrence is common once the oxygen is discontinued. Triptans will also abort the headache, but again, recurrence of the headache is common. Repeated use of triptans may increase the risk of developing chronic cluster headaches. Suppressive therapy with a short course of steroids while adjusting verapamil or another suppressive agent to a therapeutic dose is the treatment of choice for cluster headaches.