

Migraine Headaches: A Clinical Review of Etiology, Pathophysiology, Prevention, Treatment, and the Role of the Pharmacist

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Goals:

The goal of this lesson is to educate pharmacists on the etiology, pathophysiology, prevention, treatment, and professional management of migraine headaches.

Learning Objectives: Pharmacists

At the conclusion of this activity, the participant will be able to:

1. Identify risk factors for migraine headache
2. Select appropriate prevention and treatment options for migraine headache and be familiar with common adverse reactions, contraindications, interactions, and other important points regarding these medications
3. Effectively triage patients with migraine headache to over-the-counter remedies or physician referral

Learning Objectives: Pharmacy Technicians

At the conclusion of this activity, the participant will be able to:

1. Identify risk factors for migraine headache
2. Review appropriate prevention and treatment options for migraine headache
3. Review the common adverse reactions, contraindications, interactions and other important information.

Introduction¹⁻⁴

Migraine headache is a chronic condition that affects nearly 30 million Americans, or roughly 13% of the United States population. Migraine can significantly and negatively impact quality of life; nearly 90% of migraineurs become impaired or disabled by migraine attacks. 63% of migraine sufferers experience at least one episode per month and 25% experience weekly episodes. Because this condition can be so disabling, migraine is recognized as the leading cause of employee absenteeism in the United States. In fact, the effects of migraine are responsible for 13 to 17 billion dollars in lost work productivity annually.

The peak prevalence of migraine falls between the ages of 20 and 45 years old. Women are three times more likely to suffer from migraine than men. Up to 1 in 6 women, or 18%, suffer from migraine, while 6% of men are afflicted.

Clinical Manifestations^{1,3,4,5}

Migraine is associated with a myriad of potential symptoms lasting anywhere from 4 to 72 hours, all of which vary greatly between individuals and attacks. Headache pain is described as one-sided and throbbing. Individuals may also suffer from nausea, vomiting, cold hands, photophobia, phonophobia, irritability, malaise, sinus pain, and/or neck tension.

Migraine symptoms occur in three stages: prodrome, headache, and post-headache. The prodromal phase may present up to 48 hours prior to onset of migraine, and may be characterized by irritability, depression, frequent yawning, or hyperexcitability. Prodromal and post-headache stages may be associated with muscle tenderness, fatigue, and mood changes.

Another significant prodromal symptom that may occur in up to 30% of individuals with migraine is termed “aura”. Often a warning sign that a migraine attack is imminent, aura typically lasts less than one hour and resolves before the migraine begins. Aura is often characterized by shimmering or flashing lights, blind spots, zigzag lines, and numbness and/or tingling in the arms, legs, and/or face.

Risk Factors^{1,3,4}

There are several risk factors, or triggers, that may influence the onset of migraine. Migraine triggers differ for everyone and may not reliably cause migraine in any individual. Therefore, it is important for patients and physicians to work together to identify triggers. Keeping a migraine diary and recording potential triggers can help to identify these risk factors. The following risk factors are not all-inclusive, but encompass a wide range of common migraine triggers.

Triggers for migraine may be related to diet and the consumption of alcohol, red wine, caffeine, chocolate, cheese, oranges, tomatoes, onions, aspartame (Equal[®], Nutrasweet[®]), and monosodium glutamate (MSG). Tyramine-containing foods, such as fermented cheeses, smoked or aged meats, champagne, and avocados may cause migraine, as can nitrate-containing foods, such as bacon, hot dogs, and salami. Fluctuations in blood sugars caused by

excessive hunger or skipped meals may lead to migraine. Factors such as activity level may lead to migraine, especially if one gets too little or too much sleep or is fatigued. Environmental factors such as changes in altitude or weather, glaring or flickering lights, loud noises, cigarette smoke, perfumes, or fumes are also common risk factors. Emotions, particularly stress or anger, can lead to a migraine attack. While certain medications are useful for aborting or preventing a migraine, others are notorious for causing them. Medications that may cause migraines include oral contraceptives, hormone replacement therapy, nitroglycerin, histamine, reserpine, hydralazine, ranitidine, and ondansetron, to name a few. Genetics are a huge migraine risk factor. An individual has a 75 percent chance of experiencing migraines if two parents suffered from migraine, a 50 percent chance if one parent suffered from migraine, and a 20 percent chance if a distant relative suffered from migraine. Menstrual cycle also plays a large role in triggering migraine headaches. Approximately 13 million women suffer from menstrual migraines, and 60% of women complain of migraines related to their menstrual cycle. Menstrual migraine may occur before or during menstruation, at ovulation, or during menopause, but usually occurs when there are low levels of estrogen.

Pathophysiology^{4,6}

Two different theories attempt to explain the pathophysiology of migraine: the vascular theory and the neurovascular theory.

The vascular theory suggests that migraine aura is a result of constriction of vessels in the brain. Headache pain is a result of rebound dilation of these vessels, as well as the activation of pain-receptor nerves in the brain. However, with the advent of the neurovascular theory, the vascular theory has largely fallen out of favor with healthcare professionals.

The neurovascular theory suggests that migraine aura is a result of a neuronal excitation and suppression that spreads throughout the gray matter of the brain. This spreading phenomenon is referred to as cortical spreading depression, or CSD. Essentially, CSD causes the release of hydrogen and potassium ions into the pia mater, which activates C-fiber meningeal pain receptors. Pro-inflammatory chemicals, such as calcitonin gene-related peptide and serotonin, are then released, and plasma extravasation occurs. Ultimately, the central trigeminal system becomes activated and inflamed, and this results in dilation of blood vessels in the brain. Cutaneous allodynia, or the sensitization of the body to stimuli that are not usually considered painful (such as a gust of wind or a light touch), is a symptom experienced by some migraineurs. Cutaneous allodynia results from the secondary pain pathways of the trigeminothalamic system becoming sensitized during a migraine attack.

It has been suggested that dopaminergic stimulation and magnesium deficiency may have a role in triggering migraine attacks. Dopamine may be responsible for the prodromal symptoms that some migraineurs experience. Magnesium deficiency causes platelet aggregation and release of glutamate and 5-hydroxytryptamine, which subsequently cause vasoconstriction of blood vessels in the brain.

Diagnosis^{3,4,7,8}

The first step to effective migraine management is an accurate diagnosis. Often undiagnosed, migraines lead to increased disability, decreased work productivity, and decreased quality of life. Furthermore, as symptoms, incidence, frequency, and disability are so highly variable and unpredictable between individuals and individual attacks, nearly half of migraineurs stop seeking medical care altogether. In response, the International Headache Society has proposed guidelines for the diagnosis of migraines.

Migraine with aura constitutes two attacks fulfilling 3 of the 4 following criteria:

- 1 fully reversible symptom of aura indicates focal cerebral, cortical, and/or brain stem dysfunction
- 1 symptom of aura develops gradually over > 4 minutes or 2 or more symptoms occur in succession
- Symptoms of aura last < 60 minutes (or proportionally greater if >1 symptom exists)
- Symptom-free interval < 60 minutes between aura and headache
- 1 of the following criteria must be fulfilled:
 - Medical history and physical exam do not suggest headache associated with head trauma, vascular disorder, nonvascular intracranial disorder, substance abuse withdrawal, noncephalic disorder, metabolic disorder, cranial disorder, disorders of the neck, ear, nose, and/or throat, or cranial neuralgias
 - Disorder that may cause secondary headache is ruled out and/or not temporally related to headache pain

Migraine without aura constitutes 5 attacks fulfilling the following criteria:

- Headache lasts 4 to 72 hours
- Headache fulfills 2 of the following criteria:
 - Unilateral pain
 - Pulsating/throbbing pain
- Moderate/severe pain interferes with daily activities
- Pain aggravated by physical activities
- During headache, 1 of the following criteria occurs:
 - nausea and/or vomiting
 - photophobia and phonophobia
- Disorder that may cause secondary headache is ruled out and/or not temporally related to headache pain

Prevention^{3-5,7,9}

A mere 3 to 5% of migraineurs receive preventive migraine therapy. However, nearly half stop seeking care due to dissatisfaction with their therapy. Preventive therapy has several potential positive outcomes for migraine sufferers. In fact, the American Headache Society and the American Academy of Neurology delineate specific goals for preventive therapy:

- Reduce migraine attack frequency, severity, duration, and disability
- Improve function and quality of life
- Improve responsiveness to acute treatment
- Reduce reliance on poorly tolerated, ineffective, or unwanted acute treatments and avoid acute headache medication escalation
- Educate and empower patients to take charge of their migraine management
 - Maintain headache diaries or calendars that measure migraine frequency, severity, duration, related disabilities, triggers, response to treatment, and adverse drug reactions
 - Subsequently allow the provider to more realistically address patient concerns
 - Maximize medication adherence

The American Headache Society and American Academy of Family Physicians/American College of Physicians-American Society of Internal Medicine (AAFP/ACP-ASIM) suggest that patients meeting the following criteria be considered for preventive migraine therapy:

- Recurring migraines that significantly interfere with daily routines, despite acute treatment (2 attacks/month causing disability at least 3 days/month)
- Frequent headaches
- Contraindication to, failure of, overuse of, or adverse drug reactions from acute therapies
- Use of abortive medications more than twice a week
- Cost of acute therapies exceeds preventive therapies
- Patient preference
- Presence of uncommon migraine conditions, including hemiplegic migraine, basilar migraine, migraine with prolonged aura, or migrainous infarction (to prevent neurologic damage)

When recommending appropriate preventive migraine therapy for a patient, it is important to consider available evidence, patient medical and medication history, patient preference, and cost. Co-morbid conditions should be considered when selecting a preventive therapy so as to identify any potential contraindications; in fact, selecting a therapy that may benefit migraine prevention and a particular co-morbidity is preferred. For instance, a patient with hypertension and migraines may achieve resolution of both conditions with administration of propranolol. Considering potential adverse drug reactions, drug interactions, and risks to pregnant and lactating women is also a critical element to selecting preventative migraine therapy.

When selecting and initiating preventive migraine therapy, the American Academy of Neurology recommends the following:

- Select a medication with a high level of evidence
- Start with the lowest effective dose to reduce risk of adverse drug reactions, and increase dose slowly as tolerated
- Allow a 2 to 3 month trial before ruling the therapy a failure

- Avoid interacting medications or overuse of acute medications
- Use long-acting formulations to improve compliance
- Taper medication doses after 3 to 6 months if migraines are well-controlled

Current recommendations for migraine preventive therapy are based largely on expert clinical opinion and limited evidence. The current body of evidence is in need of additional head-to-head trials comparing various preventive therapies. See Table 1 for a summary of the U.S. Headache Consortium and AAFP/ACP-ASIM guidelines for migraine preventative therapies.

Treatment^{1,3,7,9,10}

For those migraineurs who are not candidates for or do not prefer preventive therapy, an acute treatment approach may be necessary. The treatment of acute migraine may be accomplished with over-the-counter remedies, prescription medications, and/or alternative approaches. Non-pharmacologic therapy has shown to be helpful when used concomitantly with drug therapy. Non-pharmacologic approaches gaining popularity in the literature and in practice include proper sleep and diet habits, relaxation techniques, exercise, trigger avoidance, massage, acupuncture, thermal biofeedback with or without relaxation, electromyographic feedback, cognitive behavioral therapy with or without drug therapy, and heat/cold applications.

In terms of acutely managing migraines with medication, AAFP/ACP-ASIM guidelines recommend selecting acute therapies based on the frequency, severity, and degree of temporary disability associated with migraine, as well as associated symptoms (nausea/vomiting), medication history and response, pregnancy status, and presence of other co-morbid conditions (hypertension, heart disease, mood disorders, etc.). According to the U.S. Headache Consortium, the following points should be considered when selecting acute migraine therapy:

- Educate and empower patients to take charge of their migraine management
- Use migraine-specific agents (triptans, dihydroergotamine, ergotamine) if possible in patients with more severe migraine and in those with headaches that respond poorly to NSAIDs or combination analgesics (aspirin + acetaminophen + caffeine)
- Select a non-oral route of administration for migraines associated with nausea and/or vomiting, and consider concomitant treatment with an antiemetic
- Consider a self-administered rescue medication for patients with severe migraine that does not respond to, or fails, acute medication
- Educate and guard against medication-overuse headache, or rebound headache, which is associated with withdrawal of analgesics or abortive medications (ergotamine, opiates, triptans, NSAIDs, and mixed analgesics containing butalbital, caffeine, or isometheptene)
- Educate and guard against drug-induced headache, associated with frequent use of acute medications > 2 days/week

Current recommendations for migraine treatment options are largely based on expert clinical opinion and limited evidence. See Table 2 for a summary of the U.S. Headache Consortium and AAFP/ACP-ASIM guidelines for acute migraine treatment.

The Pharmacists' Role²

Pharmacists have a significant opportunity to assist patients in appropriate medication selection and migraine management. Up to 60% of patients self-medicate with over-the-counter (OTC) products to treat migraine attacks. Headache remedies lead the polls for over-the-counter recommendations made by pharmacists, with approximately 50,000 recommendations made every day.

In a review published in 2003 by Wenzel RG and colleagues, the authors suggested a four-point questionnaire for pharmacists to use when counseling patients with migraine:

- What percentage of your headaches prohibits you from performing normal work, school, or household activities and/or is accompanied by vomiting?
- How many days/month are you headache-free?
- What symptoms accompany your headaches?
- What over-the-counter products have you tried?

By asking these sorts of questions, a pharmacist may determine whether recommending an over-the-counter therapy or referring the patient to a physician is more appropriate. It is important to note that each pharmacist's management strategy will differ and depend on the particular patient in question. Wenzel and colleagues propose the following algorithm for patients who are poor candidates for over-the-counter therapy, and, therefore, candidates for physician referral:

- > 50% of migraines result in morbidity or disability
- > 20% of migraines are accompanied by vomiting
- < 15 days/month are headache-free
- Migraine worsened by routine activity
- Unilateral, throbbing, or moderate-to-severe pain, photophobia, phonophobia, and nausea and/or vomiting
- Has tried at least 2 OTC medications
- Uses OTC medications > 2 days/week
- Complains of headache related to trauma, fever or stiff neck, exertion, or neurologic deficits
- > 50 years old and complains of new-onset headache
- Describes headache as "worst headache ever"
- Headache lasts > 72 hours
- Headache worsens daily and does not ease up
- Headache pain occurs daily in same location, or headache pain progresses from nonexistent to severe in a matter of seconds to minutes

Wenzel and colleagues consider patients with the following criteria good candidates for over-the-counter therapy:

- Tension headache with bilateral, dull-ache, mild-to-moderate pain with photophobia or phonophobia, but not both
- Has not tried any medications
- Has tried one medication (try a medication from a different class)
- If 2 of 3 attacks are not alleviated, consider treatment failure and try another over-the-counter therapy (or refer to a physician)

Conclusion

Migraine headache is a significant cause of disability and discomfort for millions of individuals around the world. By taking the time to understand our patients' migraine complaints, medical and medication histories, we are able to make thoughtful recommendations to improve our patients' functional status and quality of life. Migraine headache management offers a significant opportunity for pharmacists to reach out and make a positive impact on a medical, socioeconomic, psychosocial, and personal level.

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Table 1: Prophylactic Treatment of Migraines

Medication(s)	Adverse Drug Reactions	Contraindications	Other Important Information
Medium to High Efficacy, Strong Evidence, Range of Severity and Frequency of Adverse Drug Reactions (Recommended)			
Amitriptyline 30-150/day	<ul style="list-style-type: none"> Boxed warning: suicidal ideation and behavior Sedation, weight gain, anticholinergic symptoms, orthostatic hypotension 	<ul style="list-style-type: none"> Hypersensitivity to TCAs Pregnancy and breastfeeding MAOI within last 14 days Acute recovery phase following MI 	<p>May be better for mixed migraine/tension-type headache or patients with depression, neuropathic pain</p> <p>Counseling points:</p> <ol style="list-style-type: none"> take at bedtime do not stop abruptly avoid grapefruit juice avoid alcohol and other sedating products take precautions for increased sun sensitivity (use sunscreen, limit exposure)
Propranolol (80-240 mg/day) Timolol (20-30 mg/day)	<ul style="list-style-type: none"> Fatigue, depression, nausea, dizziness, insomnia, decreased libido 	<ul style="list-style-type: none"> Hypersensitivity to beta-blockers Pregnancy (especially after 2nd trimester) Uncompensated CHF Cardiogenic shock Severe sinus bradycardia, 2nd or 3rd degree heart block Severe asthma or COPD 	<p>Option for patients with migraine <u>and</u> hypertension</p> <p>Counseling points:</p> <ol style="list-style-type: none"> take medication consistently with regard to time of day and consumption of food avoid alcohol and other sedating products
Divalproex sodium (500-1500 mg/day) Sodium valproate (800-1500 day)	<ul style="list-style-type: none"> Boxed warnings: hepatic failure, pancreatitis, increased risk of suicidal ideation and behavior Nausea, vomiting, abdominal pain, dark urine, yellow skin or sclera, dizziness, somnolence, insomnia, weight gain, hair loss, tremor, asthenia 	<ul style="list-style-type: none"> Hypersensitivity to divalproex sodium or sodium valproate Pregnancy (neural tube defects) and breastfeeding Significant hepatic impairment Urea cycle disorders 	<p>May be useful in migraine with prolonged or atypical aura</p> <p>Option for patients with migraine <u>and</u> seizures or mood disorders</p> <p>Counseling points:</p> <ol style="list-style-type: none"> take without regard to food limit caffeine intake do not stop abruptly avoid alcohol and other sedating products
Low Efficacy, Limited Evidence, Mild to Moderate Adverse Drug Reactions			
<ul style="list-style-type: none"> Beta-blockers: atenolol, metoprolol, nadolol Calcium channel blockers: nimodipine, verapamil Feverfew (<i>caution: may increase risk of bleeding when combined with anticoagulants or in hypocoagulable state</i>) Fluoxetine Gabapentin Guanfacine Vitamin B12 Magnesium Nonsteroidal anti-inflammatory drugs (NSAIDs): aspirin, fenopufen, flurbiprofen, ketoprofen, mefenamic acid, naproxen 			

Anecdotally Efficacious, but No Evidence

- Antidepressants: bupropion, doxepin, fluvoxamine, imipramine, mirtazapine, nortriptyline, paroxetine, sertraline, trazodone, venlafaxine
- Cyproheptadine
- Diltiazem
- Ibuprofen
- Tiagabine
- Topiramate

Medium to High Efficacy, Good Evidence, Serious Adverse Drug Reactions

- Methysergide

No Efficacy Compared to Placebo

- Beta-blockers: acebutolol, pindolol
- Calcium channel blockers: nicardipine, nifedipine
- Carbamazepine
- Clomipramine
- Clonazepam
- Clonidine
- Lamotrigine
- NSAIDs: indomethacin, nabumetone

Table 2: Acute Migraine Treatment

Medication(s)	Adverse Drug Reactions	Contraindications	Other Information
Proven Benefit (Recommended)			
Acetaminophen (APAP) + aspirin (ASA) + caffeine	<ul style="list-style-type: none"> • Insomnia, GI symptoms (nausea/vomiting, gastritis, heartburn, blood in stool) 	<ul style="list-style-type: none"> • Hypersensitivity to ASAP, ASA, and/or caffeine • Pregnancy and breastfeeding 	First-line for acute migraine treatment Counseling points: 1) take with food 2) do not take for > 48 hours 3) caution with anticoagulants, APAP, NSAIDs 4) caution with liver disease, GI disease, and asthma 5) avoid alcohol and other sedating products
Aspirin (ASA)	<ul style="list-style-type: none"> • GI symptoms (nausea/vomiting, gastritis, heartburn, blood in stool) 	<ul style="list-style-type: none"> • Hypersensitivity to ASA • Pregnancy (especially 3rd trimester) and breastfeeding • Asthma, rhinitis, nasal polyps, children < 16 years old positive for viral symptoms 	First-line for migraine Counseling points: 1) take with food 2) do not take for > 48 hours 3) caution with anticoagulants, NSAIDs 4) caution with liver disease, GI disease, and asthma 5) avoid alcohol and other sedating products
Butorphanol (intranasal)	<ul style="list-style-type: none"> • Dizziness, vertigo, drowsiness, nausea, vomiting, blurred vision, constipation, nasal irritation, nervousness, insomnia, taste perversion, dependency 	<ul style="list-style-type: none"> • Hypersensitivity to butorphanol • Pregnancy and breastfeeding • Opioid-dependent patients who have not been detoxified 	Only first-line opioid for moderate-to-severe migraine Use as a rescue medication; limit use Intranasal option for patients with nausea/vomiting Counseling points: 1) sit down before and one hour after use 2) avoid alcohol and other sedating products
Dihydroergotamine	<ul style="list-style-type: none"> • IM/IV/SQ: nausea, vomiting, dysphoria, flushing, restlessness, anxiety, irritation at injection site • IN: rhinitis, nasal congestion and irritation, dizziness, somnolence, nausea, vomiting, taste perversion 	<ul style="list-style-type: none"> • Hypersensitivity to DHE • High-dose ASA therapy • Pregnancy and breastfeeding • Ischemic heart disease, uncontrolled HTN, angina pectoris, history of MI, silent ischemia, coronary artery vasospasm • Hemiplegic or basilar migraine • PVD, sepsis, severe hepatic or renal dysfunction, following vascular surgery <p>*Do not use within 24 hours of triptan/ergot, OR within 2 weeks of discontinuing MAOI</p> <p>*Do not use with potent CYP3A4 inhibitors</p>	First-line for moderate-to-severe migraine (when NSAIDs or combination analgesics fail) Option for mild-to-moderate migraine not responding to NSAIDs or combination analgesics Option for patients with nausea/vomiting Counseling points: 1) avoid grapefruit juice 2) avoid cigarette smoking

Ibuprofen Naproxen sodium	<ul style="list-style-type: none"> GI symptoms (nausea/vomiting, gastritis, heartburn, blood in stool), headache, constipation 	<ul style="list-style-type: none"> Hypersensitivity to NSAIDs Pregnancy and breastfeeding Perioperative pain in the setting of CABG 	<p>First-line for mild-to-moderate migraine</p> <p>Counseling points:</p> <ol style="list-style-type: none"> take with food caution with kidney or GI disease, hypertension, CHF caution with anticoagulants and NSAIDs avoid alcohol
Almotriptan PO Eletriptan PO Frovatriptan PO Naratriptan PO Rizatriptan PO, ODT Sumatriptan IN, PO, SQ Sumatriptan + naproxen sodium (Treximet®) PO Zolmitriptan IN,PO, ODT	<ul style="list-style-type: none"> SQ: dizziness, drowsiness, flushing, pain at injection site, paresthesia, chest pain/tightness/heaviness/pressure IN: taste perversion, nausea, vomiting, dizziness, nasal/throat discomfort PO/ODT: dizziness, drowsiness, malaise, fatigue, chest pain/tightness/heaviness/pressure, GI symptoms 	<ul style="list-style-type: none"> Hypersensitivity to triptans Pregnancy and lactation Heart disease, basilar or hemiplegic migraine, uncontrolled hypertension <p>*Do not use within 2 weeks of discontinuing MAOI</p> <p>*Do not use within 24 hours of a triptan or ergot</p>	<p>First-line for moderate-to-severe migraine (when NSAIDs or combination analgesics fail)</p> <p>Option for mild-to-moderate migraine not responding to NSAIDs or combination analgesics</p> <p>Option for patients with nausea/vomiting (IN, SQ, ODT)</p> <p>Counseling points:</p> <ol style="list-style-type: none"> take medication at onset of migraine avoid alcohol take medication in a familiar setting until you know how you will respond do not combine with ergots, MAOIs, or other triptans
Prochlorperazine IV	Dizziness, sedation, blurred vision, dry mouth, weight gain, constipation, nervousness, decreased libido	<ul style="list-style-type: none"> Hypersensitivity to prochlorperazine or other phenothiazines Severe CNS depression, coma Pediatrics < 2 years old or < 9 kg, Reye's syndrome 	<p>Option for migraine associated with nausea/vomiting</p> <p>Counseling points:</p> <ol style="list-style-type: none"> avoid alcohol and other sedating products take precautions for increased sun sensitivity (use sunscreen, limit exposure) stay hydrated in hot weather

Moderate Benefit

- APAP + codeine
- Butalbital + ASA + caffeine + codeine
- Butorphanol IM
- Chlorpromazine IM, IV
- Ergotamine + caffeine + pentobarbital + Belafolline®
- Isometheptene compound PO
- Lidocaine IN
- Meperidine IM, IV
- Methadone IM
- Metoclopramide IV
- Prochlorperazine IM/PR
- NSAIDs: diclofenac potassium, flurbiprofen, ketorolac IM, naproxen

Conflicting Evidence

- Butalbital + ASA + caffeine PO
- Ergotamine +/- caffeine PO
- Metoclopramide IM/PR

Ineffective Compared to Placebo

- APAP PO
- Chlorpromazine IM
- Granisetron IV
- Lidocaine IV

Insufficient Evidence

- Corticosteroids: dexamethasone IV, hydrocortisone IV – *rescue therapy in status migrainosus*

Continuing Education Quiz

Migraine Headaches: A Clinical Review of Etiology, Pathophysiology, Prevention, Treatment, and the Role of the Pharmacist

1. Emotional anguish, a family history of migraines, tyramine-containing foods, and ondansetron are NOT common triggers for migraine headache.
 - a. true
 - b. false
2. LG, a 54 year-old woman, presents to your pharmacy with stiff neck, blurred vision, slurred speech, tingling in her right-side extremities, and a headache that she describes as “the worst she has ever experienced”. Upon further questioning, LG reports a history of hypercholesterolemia and hypertension. What is the MOST appropriate course of action?
 - a. advise patient that she is having a migraine and recommend Excedrin® and rest
 - b. recommend patient chew a baby aspirin and follow-up with her provider tomorrow if no improvement
 - c. advise patient that she may have had a stroke and to make an appointment with her doctor
 - d. advise patient that she may have had a stroke and call 9-1-1 on her behalf
3. Which of the following triptans is the LEAST appropriate choice for a patient with migraine-induced nausea and vomiting?
 - a. naratriptan
 - b. sumatriptan
 - c. zolmitriptan
 - d. a and c
4. DK, a 33 year-old male, was in a serious car accident two years ago and continues to suffer from neuropathic pain secondary to his injuries. He has tried gabapentin, pregabalin, and lidoderm patches without much success. DK has suffered from migraines since childhood, has never managed them, but is tired of suffering. His migraines and pain have become so bothersome, he has had some difficulty sleeping. Which of the following preventive migraine therapies is MOST appropriate for DK?
 - a. divalproex sodium
 - b. amitriptyline
 - c. butorphanol
 - d. aspirin + acetaminophen + caffeine
5. Which of the following is NOT a widely established risk factor for migraine headache?
 - a. monosodium glutamate
 - b. second hand smoke
 - c. pet dander
 - d. Ortho Novum 7-7-7®
6. GK, a 22 year-old female, presents to your pharmacy complaining of one-sided headache pain that occurs during the first three days of her menstrual cycle each month, then subsides. She has no known allergies, no medical conditions, is not pregnant or lactating, and only uses NuvaRing® for contraception. GK would like a recommendation to ease her headache pain during the first three days of her cycle. Which of the following is the most appropriate recommendation?
 - a. ibuprofen
 - b. Exedrin Migraine®
 - c. refer GK to a physician for a prescription
 - d. a or b

7. RJ is a 50 year-old male who presents to your pharmacy complaining of throbbing on one side of his head, sensitivity to light and sound, and mild nausea. He has a history of active peptic ulcer disease and mild kidney dysfunction secondary to diabetes. Which of the following is the most appropriate over-the-counter remedy for RJ's migraines?

- a. acetaminophen
- b. Aleve®
- c. Exedrin®
- d. feverfew

8. For which of the following patients may triptan use be recommended?

- a. 88 year-old male with a blood pressure that averages 169/94
- b. 44 year-old woman taking Fioricet® and topiramate
- c. 26 year-old woman in her second trimester of pregnancy
- d. 76 year-old male with ischemic coronary artery disease

9. BB is a 42 year-old male presenting to his physician's office for acute migraine therapy. He has a history of atrial fibrillation, high blood pressure, CABG x 2, cardiac stent placement, and hypercholesterolemia. BB takes warfarin, metoprolol succinate, lisinopril, isosorbide dinitrate, simvastatin, fenofibrate, clopidogrel, and lansoprazole. Which of the following medications is the most appropriate for BB's acute migraine therapy?

- a. naproxen sodium
- b. Treximet®
- c. aspirin + acetaminophen + caffeine
- d. acetaminophen + codeine

10. CJ is a 32 year-old female with a history of post-partum depression and suicide attempts. Which of the following is an appropriate preventive migraine therapy for CJ?

- a. divalproex sodium
- b. propranolol
- c. amitriptylined
- d. none of the above



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AK Driver's License # _____ I am a current member of AKPhA ____ . I am not a member of AKPhA, enclosed is a check to AKPhA for \$20.00

To obtain CPE credit for this lesson you must answer the questions on the quiz (70% correct required). Should you score less than 70%, you will be asked to repeat the quiz.

In May and November of each year we will mail a statement of credit, unless otherwise arranged with the AKPhA office. The cost to reissue a statement of credit is \$20.00.

This knowledge-based activity is accredited for 1.0 hours of continuing pharmacy education (0.1 CEU). Pharmacists and technicians may receive credit for completing this lesson if returned by 6/15/2014. ACPE #0139-0000-11-205-H01-P ACPE#0139-0000-11-205-H01-T

(Mail to: AKPhA, 203 W. 15th Ave. #100 Anchorage, AK 99501) Circle one: Pharmacist Technician

Lesson Evaluation

	Disagree	Agree		Disagree	Agree
1) Activity met learning objectives	1	2 3 4 5	4) Activity learning assessment appropriate	1	2 3 4 5
2) Amount of time was appropriate	1	2 3 4 5	5) Author was knowledgeable in topic	1	2 3 4 5
3) Increased my knowledge of topic	1	2 3 4 5	6) Overall, I was satisfied with the activity	1	2 3 4 5