

Table 5. First-Line Abortive Medications: Triptans^a

Drug Name (Brand)	Formulations	Usual Dosage	Comments
Almotriptan (Axert)	Oral tablet	12.5 mg every 3-4 h; limit to 25 mg/d	Similar to other triptans, almotriptan combines good efficacy with excellent tolerability. In 2009, almotriptan gained an official FDA indication for use in adolescents with migraine.
Eletriptan (Relpax)	Oral tablet	40 mg every 4 h; limit to 80 mg/d	Effective and well tolerated; minimal side effects include nausea, pressure in the throat, dizziness, and tiredness or weakness.
Frovatriptan (Frova)	Oral tablet	2.5 mg every 4 h; limit to 5 mg/d	Useful for slower-onset moderate or moderate to severe migraines; effective for preventing menstrual migraines. Long (26 h) half-life advantageous for patients with prolonged migraines. Mean maximal blood concentrations are seen approximately 2-4 h after a dose.
Naratriptan (Amerge, generic)	Oral tablet	1 tablet every 3-4 h; maximum 2 doses/d	Milder, longer-acting triptan. A generic form is available.
Rizatriptan (Maxalt, generic)	Oral tablet and rapidly disintegrating tablet	10 mg every 4 h; maximum 3 doses/d	Similar to sumatriptan (see below). Maxalt MLT (rapidly disintegrating tablets) are placed on the tongue; tablets have a pleasant taste and may be taken without water. Approved for use in children and adolescents. Side effects are similar to those of sumatriptan. A generic form is available.
Sumatriptan (Imitrex, generic; Onzetra Xsail nasal spray)	Oral tablet and nasal spray	Oral: 50 and 100 mg tablet every 2-3 h; maximum 200 mg/d Nasal spray: maximum daily dose 40 mg	More than 100 million people have used sumatriptan over the past 20 years. The generic form of sumatriptan is the least expensive triptan available.
Sumatriptan (Imitrex STAT dose, Sumavel DosePro, Alsuma, or generic prefilled syringes)	Subcutaneous injection	Injection: 4 and 6 mg every 3-4 h as needed; maximum dosing: twice daily	Although the usual dose had been 6 mg, the 4 mg STAT dose often is effective. A generic STAT form is available. Sumavel is a good "needle-free" option. Alsuma is a new EpiPen-type device containing 6 mg/0.5 mL of sumatriptan. A generic form is available. There are also generic, easy-to-use prefilled syringes of 6 mg sumatriptan.
Sumatriptan plus naproxen (Treximet)	Oral tablet	85 mg sumatriptan and 500 mg naproxen sodium. Dosage: 1 tablet every 3-4 h; maximum daily dose: 2 tablets	Treximet is an excellent combination drug that helps prevent recurrence of headache. The addition of naproxen may cause stomach pain or nausea.
Zolmitriptan (Zomig, generic tablets; Zomig 5 mg nasal spray)	Dissolvable tablet and nasal spray	Oral: 2.5 or 5 mg; usual dose 5 mg every 3-4 h as needed; maximum 10 mg/d Nasal spray: 2.5 or 5 mg	Zolmitriptan ZMT, 5 mg, is a pleasant-tasting, dissolvable tablet. Like Maxalt MLT, it provides an alternative to the oral tablets. A generic ZMT form is available. The nasal spray is very effective and works quickly.

FDA, Food and Drug Administration; NSAID, nonsteroidal anti-inflammatory drug

^a All FDA-approved for migraine. The addition of an NSAID to a triptan may enhance efficacy and prevent recurrence.

Table 6. First-Line Abortives for Migraine: Non-Triptans

Drug Name (Brand)	FDA Approved for Migraines	Formulations	Dosage	Comments
Acetaminophen-containing Products				
Excedrin Migraine	Yes	Oral tablet	Usual dose: 1-2 tablets every 3 h; maximum of 4 tablets/d Tablets contain 250 mg aspirin, 65 mg caffeine, and 250 mg acetaminophen	Useful OTC for patients with mild or moderate migraines. Anxiety from the caffeine and nausea from the aspirin are common. Rebound headache may occur with overuse; 4 tablets/d (but not on a daily basis) should be maximum. Patients need to be educated about not exceeding acetaminophen's upper daily limits.
Prodrin	Yes	Oral tablet	Usual dose: 1 tablet every 2-3 h; limit to 2-3 doses/d Tablets contain 20 mg caffeine, 65 mg isometheptene, and 325 mg acetaminophen	Nonsedating and nonaddictive. Caffeine may cause nervousness or a faster heartbeat; limit dosing to 2-3 times per day. Patients with insomnia should not use Prodrin after 3 PM. Patients with hypertension should use with caution, and only if blood pressure is controlled. If not available, generic Midrin, which has a sedative and no caffeine, usually is used, along with additional caffeine. Patients need to be educated about not exceeding acetaminophen's upper daily limits.
NSAIDs				
Diclofenac potassium powder (Cambia)	Yes	Packets dissolved in water Available in boxes of 3 or 9 packets	50-mg packet every 2-4 h, maximum dose 150 mg/d	Excellent new migraine abortive. Useful in younger patients and in older individuals who can tolerate NSAIDs. Typical side effects of NSAIDs, primarily GI, may occur. May be combined with triptans; caffeine may be added to increase efficacy.
Ibuprofen (Advil, Motrin, generic)	No	Liquid and oral tablet/capsule	400-800 mg every 3 h; maximum dose 2,400 mg/d	Available OTC and approved for children; occasionally useful in treating menstrual migraine. GI side effects are common. May be used with triptans; caffeine increases efficacy.
Naproxen (Anaprox, Aleve, generic)	No	Oral tablet and capsule	220 mg; usual dose, 500 mg, repeated in 1 h and again in 3-4 h; maximum dose 1,000 mg/d	Useful in younger patients; occasionally helpful for menstrual migraine. Nonsedating, but patients frequently report GI upset. First/usual dose is taken with food or a Tums; may be repeated in 1 h if no severe nausea is present, and again in 3-4 h. May be used with triptans; caffeine increases efficacy.

GI, gastrointestinal; NSAID, nonsteroidal anti-inflammatory drug; OTC, over the counter

Table 7. Second-Line Abortive Medications for Migraine			
Drug Name (Brand)	Formulations	Usual Dosage	Comments
NSAIDs			
Ketorolac (Toradol, generic; Sprix nasal spray)	Oral, IM, nasal spray	Injection: 60 mg/2 mL; repeat in 4 h if needed. Maximum dose, 2 injections/d Oral: 2 tablets/d, at most	Ketorolac intramuscular (IM) injections, which can be administered at home, are much more effective than tablets. Nausea or GI pain may occur. Ketorolac is nonaddicting and does not usually cause sedation. Limit to 3 injections/wk due to possible nephrotoxicity. IV ketorolac is very effective. There is a nasal spray form of ketorolac (Sprix), which may produce a burning feeling in the throat. Sprix is more effective than tablets but not as effective as IM.
DHE			
Dihydroergotamine (Migranal nasal spray, generic DHE)	IV, IM, nasal spray	1 mg IM or IV; may be titrated up or down. If it is the first time a patient has used DHE, start with 0.33 or 0.50 mL only.	Effective as an IV or IM injection, and may be effective as a nasal spray. Migranal is the brand name of DHE nasal spray; inhaled form of DHE is awaiting FDA approval. All forms of DHE are safe and well tolerated. Nausea, leg cramps, and burning at the injection site are common. IV DHE is very effective in the office or emergency room.
Butalbital			
Butalbital (Phrenilin) Butalbital, aspirin and caffeine (Fiorinal) Butalbital, acetaminophen, and caffeine (Fioricet, Esgic) Butalbital, acetaminophen, caffeine, and 30 mg codeine (Fiorinal #3)	Oral tablets and capsules	1-2 tablets or capsules every 3 h; maximum dose 4 tablets/d. Limit to 30 or 40 pills/mo	Barbiturate medications are addicting but very effective for many patients. Generics of these compounds may not work as well. Fiorinal #3 is more effective than plain Fiorinal or Fioricet. Phrenilin contains no aspirin or caffeine and is very useful at night and in those with GI upset. Brief fatigue and "spacey" or euphoric feelings are common side effects. Butalbital must be used sparingly in younger people.
Opioids			
Hydrocodone and acetaminophen (Vicodin, Norco, generic) Hydrocodone and ibuprofen (Vicoprofen) Oxycodone (generic) Meperidine (generic) Tramadol (Ultram)	Oral, IM	See individual PIs. These must be limited per d, and per mo	By mouth or IM, opioids often are the best of the "last resort" approaches. When given IM, they usually are combined with an antiemetic. Although addiction is a potential problem, it is crucial to understand the difference between dependency and addiction. Tramadol is milder, with relatively few side effects. Vicoprofen is more effective than the other hydrocodone preparations because of the addition of ibuprofen and, generally, is well tolerated.

Table 7. Second-Line Abortive Medications for Migraine

Drug Name (Brand)	Formulations	Usual Dosage	Comments
Corticosteroids			
Cortisone (generic) Dexamethasone (Decadron) Prednisone (generic)	Oral, IV, and IM	Dexamethasone: 4 mg (½ to 1 tablet) every 8-12 h as needed. Maximum 8 mg/d. Limit to 12 to 16 mg/mo, at most Prednisone: 20 mg (½ to 1 tablet) every 8-12 h as need. Maximum dose, 40 mg/d. Limit to 80 mg/mo, at most	Often very effective therapy for severe, prolonged migraine; dexamethasone and prednisone are very helpful for menstrual migraine. The small doses limit side effects, but nausea, anxiety, a “wired” feeling, and insomnia are seen. IV or IM steroids are very effective as well. Patients need to be informed of, and accept, the possible adverse events.
Ergots			
Ergotamine (Ergomar, generics) Ergotamine and caffeine (Cafergot)	Sublingual tablets, suppositories	Varies with preparation Tablets: ½ or 1 tablet once or twice per day as needed	Oldest therapy for migraines. Often effective, but side effects, including nausea and anxiety, are common. Only compounded Cafergot PB is available. The suppositories are more effective than the tablets. Rebound headaches are common with overuse of ergots. Use only in younger patients. Ergomar SL tablets are back on the market; contains no caffeine. The Ergomar dose is ½ or 1 tablet once or twice per day as needed.

ASA, aspirin; DHE, dihydroergotamine; GI, gastrointestinal; IM, intramuscular; IV, intravenous; NSAID, nonsteroidal anti-inflammatory drug; PI, prescribing information

Table 8. Antiemetic Medications^a

Drug Name (Brand)	Formulations/Dosage	Comments
Promethazine (Phenergan)	Available as tablets, suppositories, and oral lozenges	Mild but effective for most patients. Very sedating with a low incidence of serious side effects. Used for children and adults. Oral lozenges are formulated by compounding pharmacists.
Prochlorperazine (Compazine)	IV, tablets, long-acting spansules, and suppositories	Very effective but there is a high incidence of extrapyramidal side effects. Anxiety, sedation, and agitation are common. When given IV, it may stop the migraine pain as well as the nausea.
Metoclopramide (Reglan)	Oral, IM, and IV; dose: 5-10 mg	Mild, but well tolerated; commonly used prior to IV DHE. Fatigue or anxiety do occur, but usually are not severe. It is Pregnancy Category B (relatively safe).
Trimethobenzamide (Tigan)	Tablets, oral lozenges, and suppositories	Well tolerated, useful in children and adults. Oral lozenges are formulated by compounding pharmacists.
Ondansetron (Zofran, generic)	Oral tablets and disintegrating tablets; dose: 4 or 8 mg (usually 8 mg every 3 to 4 h prn)	A very effective antiemetic with few side effects but expensive. It is not sedating. Zofran is extremely useful for patients who need to keep functioning and not be sedated with an antiemetic. It is Pregnancy Category B (relatively safe).

DHE, dihydroergotamine; IM, intramuscular; IV intravenously; prn, as required

^a These are commonly prescribed for nausea and other GI symptoms.

Table 9. First-Line Preventive Medications for Migraine

Drug Name (Brand)	FDA Approved	Formulation	Usual Dosage	Comments
Onobotulinum toxin A (Botox)	Yes	Injection	Dose: Varies (FDA official dose is 155 units, via 31 injections, every 3 mo)	One set of injections can decrease headaches for 1-3 mo. Botox is most likely safer than the other medications used for headache. There also is a cumulative benefit, in which the headaches continue to improve over 1 y of Botox therapy.
Anticonvulsants				
Topiramate (Topamax) Topiramate ER (Trokendi)	Yes	Oral	Total dose varies from 25 or 50 mg/d up to 400 mg/d.	Sedation and cognitive side effects, such as confusion or memory problems, may limit its use; GI upset may occur. Topiramate increases the risk for kidney stones. Bicarbonate levels should be monitored because topiramate may cause dose-related metabolic acidosis.
Valproic or Divalproex sodium (Depakote)	Yes	Oral	Usual dose: 500-1,000 mg/d, in divided doses	Liver function levels need to be monitored in the beginning of treatment. Depakote needs 4-6 wks to become effective. Side effects include lethargy, GI upset, depression, memory difficulties, weight gain, and alopecia. Depakote should not be used during pregnancy. Available in 125, 250-ER, and 500-ER mg tablets.
β-blockers				
Propranolol (Inderal, others)	Yes	Oral	60-120 mg/d	Side effects include dizziness, insomnia, fatigue, GI upset, respiratory distress, weight gain.
Metoprolol (Toprol XL)	No	Oral	25-100 mg/d	Fewer respiratory effects than propranolol.
Atenolol (Tenormin)	No	Oral	25-50 mg/d	Fewer respiratory effects than propranolol.
Nebivolol (Bystolic)	No	Oral	2.5-10 mg/d	Better tolerated than the other β -blockers with the fewest respiratory effects.
Tricyclic Antidepressants				
Amitriptyline (Elavil, others) Nortriptyline (Pamelor)	No	Oral	Starting dose: 10 mg at bedtime; titrate up to 25-50 mg at night. Maximum dose: 150 mg/d	Effective, inexpensive, and also useful for daily headaches and insomnia. Sedation, weight gain, dry mouth, and constipation are common. Nortriptyline, a metabolite of amitriptyline, is somewhat better tolerated (milder).
Doxepin (Sinequan)	No	Oral	Starting dose: 10 mg at bedtime; titrate up to 25-50 mg/d. Maximum dose: 150 mg/d	Similar to amitriptyline, with fewer side effects.
Protriptyline	No	Oral	5-20 mg/d	Protriptyline is one of the only older antidepressants that does not cause weight gain. However, its anticholinergic side effects are more pronounced. More effective for tension than migraine.

Table 10. Supplements for Chronic Migraine

Supplement	Dosage	Uses	Comment
Riboflavin (vitamin B2)	50-400 mg/d	Prevention	Occasionally helpful, but very mild effect. Higher dose found more effective in reducing number of headaches.
Magnesium	200-700 mg/d	Prevention	Magnesium (usually magnesium oxide or citrate) is available in capsule or powder forms. Safe for pregnant women. Not as effective as Petadolex, but occasionally helpful.
Coenzyme Q10 (CoQ10)	300-500 mg/d	Prevention	CoQ10 is primarily used to offset side effects of statins, occasionally helpful for migraine. No solid controlled trial data proving efficacy.
Fish oil (omega-3 fatty acids)	6,000 mg/d	Adjunctive therapy	May represent beneficial adjunctive therapy, but its efficacy as a preventive agent for chronic migraine has not been proven.
Medicinal Herbs and Teas			
Botanical Name (Common Name)	Dosage	Uses	Comment
Aromatherapy: lavender/peppermint, and others	Unknown	Symptomatic treatment	Lavender oil (as well as peppermint, and others) applied topically may help reduce sympathetic outflow, reducing pulse and blood pressure, while having a calming effect; aromatherapy is safe and occasionally helpful.
MigreLief (magnesium, riboflavin, and feverfew)	2 capsule/d	Migraine prevention	Reliable formulation. MigreLief is available online at MigreLief.com.
Petasites Petadolex (Butterbur)	100-150 mg/d	Treatment	Petadolex is the branded, better form of butterbur (Petadolex limits the molecule that is worrisome in butterbur); of the natural supplements, it has the most solid evidence for efficacy. Petadolex (Butterbur) is available online at Petadolex.com or Amazon.com.
Salix alba (white willow bark)	600 mg	Adjunctive therapy	Used for decades, but no true evidence of efficacy.
Tanacetum parthenium (Feverfew)	50-143 mg/d	Treatment/prevention	Feverfew is well tolerated, but efficacy is very limited.

Table 11. Second-Line Migraine Preventive Therapy ^a				
Drug Name (Brand)	FDA Approved	Formulation	Dosage	Comments
Antiseizure Medications				
Gabapentin (Neurotin, Gralise, others)	No	Oral	Usual dose: 600-2,400 mg/d Some patients do well on low doses (100-300 mg/d)	Sedation and dizziness may be a problem; however, gabapentin does not appear to cause end-organ damage, and weight gain is relatively minimal. Gabapentin can be used as an adjunct to other first-line preventive medications. Available in 100, 300, 400, 600, and 800 mg doses Gralise is a once-daily, long-acting version of gabapentin.
Pregabalin (Lyrica)	No	Oral	25 mg bid to 150 mg tid	Side effects similar to those of gabapentin; possibly causes more weight gain
Muscle Relaxants				
Cyclobenzaprine	No	Oral	5-10 mg/d	Sedation is a common side effect; helpful for sleeping.
Tizanidine	No	Oral	Usual dose: 2-4 mg every night; patients start with ¼ to ½ tablet. May be increased to 12 mg/d	Safe, nonaddicting agent. Sedation and dry mouth are common. Tizanidine may be used on an as-needed basis for milder headaches, or for neck or back pain. Available in 2 and 4 mg tablet.
Antidepressants				
Desvenlafaxine (Pristiq)	No	Oral	50-100 mg/d	The antidepressants with dual mechanisms (serotonin and norepinephrine) are more effective for pain and headache than the SSRIs.
Duloxetine (Cymbalta, generic)	No	Oral	30-60 mg/d	
Venlafaxine (Effexor XR)	No	Oral	75-225 mg/d	
Natural Agent				
Petadolex (purified butterbur)	No	Oral	100-150 mg/d	Petadolex is very effective; it is a safer form of butterbur. Minimal side effects.

bid, twice daily; SSRIs, selective serotonin reuptake inhibitors; tid, thrice daily

^a Polypharmacy also is commonly used as second-line treatment of migraine (eg, amitriptyline with propranolol, or amitriptyline with valproic acid).