

Table 14.5 Medications Used to Manage Central Pain Syndromes

Medication	Indications and mechanisms of action	Dosing	Side effects affecting rehab	Other side effects or considerations
Amitriptyline (Elavil)	Pain related to the spinal cord. Inhibits reuptake of serotonin and norepinephrine.	10-25 mg at bedtime; titrate by 10-25 mg every 3-7 days to 75-150 mg/day as tolerated.	Cog: ++++ S: ++++ A: 0 Motor: ++ D: ++++ Com: ++++ F: ++++	Weight gain: +++ Seizure: +++ Cardiac: +++ Sexual: ++ Not recommended in elderly due to high sedative and anticholinergic effects that increase risk of falls.
Lamotrigine (Lamictal)	Pain related to the spinal cord, multiple sclerosis, or trigeminal neuralgia. Inhibits sodium channels.	25 mg/day; can slowly titrate to 400 mg/day.	Cog: ++ S: 0 A: ++ Motor: + D: 0 Com: ++ F: ++	Liver: + Hematologic: 0 Renal: + Rash: + Insomnia, rash that can progress to Stevens-Johnson syndrome. Titrate slowly to avoid rash or more severe skin reactions (i.e., TEN and Stevens-Johnson). Anticonvulsant hypersensitivity syndrome. Avoid in pregnancy. Teratogenic; causes cleft palate.
Baclofen (Lioresal)	Pain related to multiple sclerosis. Suppresses excitatory trigeminal nerve transmission.	Oral: 5 mg 2-3 times/day; maximum dose of 80 mg/day. Intrathecal: 1/100 of oral dose; maximum dose of 3200 µg/day.	Cog: ++ S: +++ A: ++ Motor: +++ D: ++ Com: ++ F: +++	Oral: Initial sedation, muscle weakness, ataxia, orthostatic hypotension, fatigue, headache, nausea, dizziness; confusion and hallucinations reported in the elderly or those with history of stroke. Intrathecal: Chronic constipation, hypotonia, somnolence, headache, vomiting, paresthesias. Eliminated by the kidneys; reduce dose with renal dysfunction. Abrupt discontinuance results in rebound increase in spasticity, rhabdomyolysis, disorientation, hallucination, and seizures.
Dantrolene (Dantrium)	Pain related to multiple sclerosis. Relaxes skeletal muscles.	25-100 mg/day; can titrate every 7 days to 100 mg 4 times/day.	Cog: ++ S: +++ A: ++ Motor: +++ D: +++ Com: ++ F: +++	Drowsiness, dizziness, nausea, diarrhea, dysphagia. Dose-limiting hepatotoxicity; obtain baseline liver-function tests and monitor throughout therapy. Hyperkalemia with verapamil, increased hepatotoxicity with estrogens, increased central nervous system depression with other central nervous system depressants. Avoid combining with monoamine oxidase inhibitors.
Tizanidine (Zanaflex)	Pain related to multiple sclerosis. Alpha-2 adrenergic receptor agonist; increases presynaptic transmission of excitatory neurotransmitters.	1-2 mg at bedtime; can increase by 1-2 mg 3 times/day every 3-4 days to maximum dose of 36 mg/day.	Cog: ++ S: +++ A: 0 Motor: + D: ++ Com: ++ F: +++	Sedation, hypotension, dizziness, gastrointestinal upset. Starting with a very low dose and titrating slowly may reduce or eliminate side effects such as sedation, xerostomia, and dizziness. Monitor liver-function tests at baseline and throughout therapy.

From L. Carl, J. Gallo, and P. Johnson, 2014, *Practical Pharmacology in Rehabilitation: Effect of Medication on Therapy* (Champaign, IL: Human Kinetics).

Medication	Indications and mechanisms of action	Dosing	Side effects affecting rehab	Other side effects or considerations
Methocarbamol (Robaxin)	Pain related to multiple sclerosis. Decreases impulses from spinal cord to skeletal muscle.	1-2 mg at bedtime; may increase by 1-2 mg 3 times/day every 3-4 days to effective dose of 2-36 mg 2-3 times/day.	Cog: ++++ S: ++++ A: ++ Motor: +++ D: ++ Com: ++ F: +++	Somnolence, dizziness, vertigo, syncope, muscular incoordination, stomach upset, flushing, blurred vision, fever, skin rash, pruritus, bradycardia, jaundice, mood changes, slowed heart rate, fainting, clumsiness, difficulty urinating, discoloration of urine (e.g., black, blue, or green). Additive sedation with other central nervous system depressants. Metabolized by demethylation; no significant drug interactions.
Carbamazepine (Tegretol)	Pain related to multiple sclerosis or trigeminal neuralgia. Blocks sodium channels.	100 mg twice/day; can titrate up to 1200 mg/day in divided doses.	Cog: ++ S: ++ A: + Motor: ++ D: ++ Com: ++ F: +++	Liver: +++ Hematologic: +++ Renal: +++ Rash (Stevens-Johnson): +++ Ataxia, blurred vision, drowsiness, agitation, disequilibrium, dizziness, benign leukopenia, cardiac arrhythmias, congestive heart failure, anticonvulsant hypersensitivity syndrome, hepatic failure (rare), syndrome of inappropriate antidiuretic hormone (rare), aplastic anemia (rare). Dosage adjustments may be needed after first 3-5 wk due to induction of its own metabolism. Genetic testing required prior to initiation in Asians (increased risk of AHS).
Oxcarbazepine (Trileptal)	Pain related to trigeminal neuralgia. Blocks sodium channels.	Start at 300 mg twice/day and increase by 600 mg weekly to effective dose of 600-1200 mg/day.	Cog: ++ S: ++ A: 0 Motor: +++ D: +++ Com: ++ F: +++	Liver: + Hematologic: 0 Renal: 0 Rash (Stevens-Johnson): +++ Hyponatremia, nausea, rash, anticonvulsant hypersensitivity syndrome.
Diazepam (Valium)	Pain related to multiple sclerosis or trigeminal neuralgia. Activates gamma amino butyric acid receptors.	0.5-1 mg as needed or at bedtime; can titrate to 2-5 mg as needed or at bedtime.	Cog: ++++ S: ++++ A: 0 Motor: +++ D: ++ Com: ++++ F: ++++	Sedation, impaired memory, inattention, ataxia, weakness, constipation, urinary retention, depression, dependence. Enhances the effects of other central nervous system depressants, including alcohol. Diazepam may block the action of levodopa. Many medications interact with diazepam (see chapter 8).
Gabapentin (Neurontin)	Pain related to multiple sclerosis or trigeminal neuralgia. Increases gamma amino butyric acid and decreases	100-300 mg 3 times/day; can titrate by 100-300 mg every 1-7 days as tolerated to target dose of 1800-3600 mg/day in divided doses.	Cog: ++ S: ++ A: + Motor: +++ D: 0 Com: ++ F: +++	Sedation, peripheral edema, tremor, dizziness, fatigue, ataxia, drowsiness, weight gain, behavioral changes. Adjust dose for renal insufficiency. No known drug interactions.

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Medication	Indications and mechanisms of action	Dosing	Side effects affecting rehab	Other side effects or considerations
	glutamate.	Adjust dose for renal insufficiency.		
Lidocaine 5% topical patch (Lidoderm)	Pain related to multiple sclerosis. Local anesthetic.	One patch on for 12 h and then off for 12 h; may titrate to 3 patches/12 h.	Cog: + S: + A: + Motor: + D: + Com: + F: +	Confusion, nervousness, lightheadedness, euphoria, tremors, blurred vision, vomiting, hypotension.

Cog = cognition; S = sedation; A = agitation or mania; Motor = discoordination; D = dysphagia; Com = communication; F = falls; TEN = toxic epidermal necrolysis; AHS = anticonvulsant hypersensitivity syndrome.

The likelihood rating scale for encountering the side effects is as follows: 0 = Almost no probability of encountering side effects. + = Little likelihood of encountering side effects. +/+ = Low probability of encountering side effects; however, probability increases with increased dosage. ++ = Medium likelihood of encountering side effects. +++ = High likelihood of encountering side effects, particularly with high doses. ++++ = Highest likelihood of encountering side effects; best to avoid in at-risk patients.