## **Drugs Used in Transdermal Pain Management**

Drug	Strength	Use / Venosan	Mechanism	Notes
Amitriptyline	1%-5%	<ul> <li>Chronic/neuropathic pain</li> <li>Shingles</li> <li>Diabetic peripheral neuropathy</li> <li>Plantar fasciitis</li> </ul>	Sympatholytic/NE reuptake inhibitor	Has a synergistic effect with ketamine
Baclofen	2%	<ul> <li>Muscle relaxant/anti-spastic</li> <li>Normalizes muscle excitability, decrease pain, and improve motor function</li> <li>Improves muscle contraction and joint range of motion resulting in improved mobility and functioning</li> </ul>	<ul> <li>Direct GABAβ agonist</li> <li>The precise mechanism of action of baclofen is not fully known</li> </ul>	Works well as an add on in fibromyalgia
Clonidine	0.1%- 0.3%	Chronic/neuropathic pain	Alpha2 adrenoreceptor agonist (reduces sympathetic outflow)	<ul> <li>Anti-hypertensive effects start showing at strengths above</li> <li>0.4%</li> <li>Listed as Exception in WADA</li> <li>2017 Prohibited List (Section S6: b-Specified Stimulants)</li> </ul>
Cyclobenzaprine	1%-4%	Skeletal muscle relaxant/anti-spastic	Like other tricyclic antidepressants, cyclobenzaprine potentiates of norepinephrine	2nd line therapy     May cause drowsiness
Diclofenac	2%-10%	NSAID, analgesic	Non-selective COX inhibitor	Causes more pruritis than ketoprofen
Diphenhydramine	2%-10%	Neuropathic pain     Plantar fasciitis	Voltage regulated Na+ & Ca++ blockade	
Gabapentin	6%-12%	<ul><li>Chronic/neuropathic pain</li><li>Helpful in burning, stabbing pains, feelings of electric shock</li></ul>	<ul> <li>Voltage regulated Na+ &amp; Ca++ blockade</li> <li>AMPA-Na+ channel blockers</li> <li>Glutamate antagonist</li> </ul>	<ul><li>Could use topical to wean patient off oral</li><li>Great for trigger points</li></ul>
Guaifenesin	5%-10%	Skeletal muscle relaxant     Analgesic     Fibromyalia	<ul> <li>Mechanism is not fully understood</li> <li>It is believed to work by depressing transmission of nerve impulses in the central nervous system (CNS)</li> </ul>	1st line for trigger point pain gels (10%)     Up to 600 mg TID orally for fibromyalgia

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Ketamine	5-15%	<ul> <li>General anesthetic</li> <li>Neuropathic pain of various origins, including post- herpetic neuralgia, complex regional pain syndrome, cancer pain, orofacial pain, and phantom limb pain</li> <li>Effective in treating painful neuropathy when other traditional methods have failed</li> </ul>	NMDA-Ca++ channel blocker     Blocks a cascade of intracellular events that inhibit the hyper excitability of spinal cord neurons	<ul> <li>Has the highest affinity for NMDA receptors</li> <li>Not listed in WADA 2017 Prohibited List (Section S7: Narcotics)</li> </ul>
		<ul> <li>Post-operative pain and other post-traumatic pain</li> <li>Control of pain during dressing changes</li> </ul>		
Ketoprofen	5%-20%	NSAID, analgesic, neuropathic pain	Propionic acid NSAID	<ul><li>1st line for joint pain</li><li>Has affinity for synovial fluid</li></ul>
Lidocaine	2%-10%	Local anesthetic     Used to treat acute and chronic pain, shingles Pain	<ul> <li>Blocks initiation and conduction of nerve impulses by blocking the Na+ channels</li> <li>AMPA-Na channel blocker anesthetic blocks initiation and conduction of nerve impulses by blocking the Na+ channels</li> </ul>	• 2nd line for trigger point pain gels – add on (2%)
Magnesium Chloride	10%-20%	Muscle relaxant     Inflammatory pain     Fibromyalgia	NMDA-Ca++ channel blocker     Works through Na/K ATPase to reduce pain and inflammation while propagating regeneration of tissues and increasing flexibility	<ul> <li>1st line for trigger point pain gels (10%)</li> <li>10% in Lipoderm® – 6x/day for fibromyalgia patients (on dermatomes/trigger points)</li> </ul>
Piroxicam	1%-5%	<ul> <li>NSAID, analgesic, anti-inflammatory</li> <li>Well established in treating rheumatoid arthritis and osteoarthritis and used for musculoskeletal disorders</li> </ul>	Oxicam type NSAID	Excellent with plantar fasciitis