



*We customize individual prescriptions  
for the specific needs of our patients.*

**FEBRUARY 2013**

**INSIDE THIS  
ISSUE:**

<b>Carpal Tunnel Syndrome</b>	<b>2</b>
<b>Neuropathic Pain</b>	<b>3</b>
<b>Neuralgia Pain</b>	<b>4</b>

**PRESCRIPTION COMPOUNDING FOR**

**NEUROLOGY**

---

2525 W. Carefree Hwy. Bldg. 1 Site 106

Phoenix, AZ 85085

Phone: (623) 806-1300

Fax: (623) 806-1304

[www.CCV2Rx.com](http://www.CCV2Rx.com)

## CARPAL TUNNEL SYNDROME

The following clinical paper found gabapentin to be effective in the reduction of pain and the reduction of severity of symptoms in patients suffering from CTS - "The efficacy and safety of gabapentin in carpal tunnel patients: open label trial" (Med Clin (Barc). 2008 Mar 22;130(10):371-3).

### ABSTRACT

**BACKGROUND AND OBJECTIVE:** To evaluate the analgesic efficacy and safety of gabapentin in the treatment of carpal tunnel syndrome (CTS), as well as the electromyographic (EMG) evolution after 6 months.

**PATIENTS AND METHOD:** A prospective study with a 6-month follow-up of patients with EMG diagnosis of primary CTS starting treatment with 1,800 mg/day of gabapentin. At baseline visit and after 6 months of treatment a complete clinical evaluation and an EMG study were performed. Adverse effects of gabapentin were also registered.

**RESULTS:** Twenty-five patients were included, mean age (standard deviation) 58.88 (7.69) years. After 6 months of treatment, a statistically significant reduction of pain ( $p = 0.001$ ) and improvement of severity of symptoms ( $p = 0.008$ ) were observed, although functional capacity did not change. EMG was performed in 19 patients at 6 months. Compared to baseline EMG: 52.6% patients showed no changes in EMG findings, while 5.3% patients showed improvement and in 26.3% the EMG was normal. Progression was only seen in 15.8% of patients after 6 months of treatment. In 28% of the patients gabapentin was stopped because of side effects.

**CONCLUSIONS:** In our series, gabapentin was effective in the reduction of pain and improvement of the severity of the symptoms. Results of EMG after 6 months of treatment showed no changes, with improvement and/or remission in 84.2% of the cases. The drug was safe and well tolerated. PMID: 18381028

With our state of the art compounding lab we have the ability to compound gabapentin into a transdermal cream that can be applied directly to the area of pain. This form of delivery may provide relief at a much lower dose, and help to limit the systemic side effects associated with the oral dosing form.

An example of how you might prescribe follows:

COMPOUNDED MEDICATION
<p><b>Gabapentin 10%</b> <b>Transdermal Cream</b> 60gm Apply sparingly BID-TID</p>

## NEUROPATHIC PAIN

The following study finds that ketamine gel may provide clinicians with an effective option in the battle against chronic neuropathic pain -“Topical ketamine gel: possible role in treating neuropathic pain” ([Pain Med.](#) 2000 Mar;1(1):97-100).

**ABSTRACT:** “Neuropathic pain is often resistant to opioids, so other medication classes, such as tricyclic antidepressants, anticonvulsants, and local anesthetics, are often used. Central sensitization, or pain 'wind-up', may perpetuate chronic neuropathic pain even when ongoing peripheral sensory input is absent. Wind-up is thought to cause allodynia, hyperalgesia, and hyperpathia. Receptors such as NMDA, AMPA, and M-glu have recently been identified for their role in central sensitization or pain 'wind-up'. Ketamine has been proposed recently for neuropathic pain secondary to its NMDA receptor activity. The current application as a topical gel stems from the theory that ketamine has peripheral action at both opioid and Na<sup>+</sup>-K<sup>+</sup> channels. This case study involved 5 patients from 25 to 70 years old (3 RSD, 1 lumbar radiculopathy, 1 post-herpetic neuralgia). Dose used was determined by site and surface area of involvement and ranged from 0.093 mg/kg to 9.33 mg/kg. All five patients reported significant pain relief at initial application and wished to continue treatment. The average numerical analogue scale (NAS) score preapplication was 8.8. The average 15 minutes post application NAS was 1.6. Patients reported alterations in temperature sensation, feelings of relaxation and decreased tension in the area of application, and pain relief. Reduction in numerical pain scores postapplication of ketamine gel ranged from 53-100% using a 1-10 numerical pain intensity scale. No significant side effects were reported. Ketamine Gel may provide clinicians with a new option in the battle against chronic neuropathic pain. Until further information is available and larger trials can be conducted, we can only recommend this type of therapy for refractory cases in which all primary and secondary options have been exhausted.” PMID: 15101968

The following study reviews the use of clonidine to treat neuropathic pain -“Continuous intrathecal clonidine administration for the treatment of neuropathic pain” ([Stereotact Funct Neurosurg.](#) 2000;75(4):167-75).

**ABSTRACT:** “In a trial involving 10 patients, the intrathecal administration of clonidine combined with opioids in the treatment of chronic pain was introduced in our department for the first time. Eight patients with neuropathic pain syndromes were subjected to a continuous intrathecal clonidine application in addition to intrathecal morphine. At an average dose of 44 microg clonidine/day, a 70-100% reduction in pain was achieved. Residual non-neuropathic pain in 4 of 8 patients was successfully treated with clonidine and low doses of opioids. On the basis of the results achieved so far, we recommend that clonidine should be routinely tested for intrathecal drug administration, especially in patients with a prominent neuropathic pain component.” PMID: 11910210

The following paper finds that methadone appears to have unique properties that may make it especially useful in the management of neuropathic pain -“Methadone in the management of intractable neuropathic noncancer pain” ([Can J Neurol Sci.](#) 2005 Aug;32(3):340-3).

**OBJECTIVE:** To evaluate the role of methadone in the management of intractable neuropathic noncancer pain.

**METHODS:** A case series of 50 consecutive noncancer pain patients who were seen at a tertiary care centre and treated with oral methadone for a variety of intractable neuropathic pain states.

**RESULTS:** The mean age was 52.7 years and the mean duration of follow-up was 13.9 months. Post-discectomy nerve root fibrosis, complex regional pain syndrome, peripheral neuropathy and central spinal cord pain syndromes were the most common diagnoses. Over 90% had been treated with one or more tricyclic antidepressants and anticonvulsants and a similar number had received other adjuvant analgesics. All patients had failed treatment with one or more conventional opioid analgesics (mean 2.8) at a mean maximal morphine dose of 384 mg (or equivalents) per day. Twelve patients had failed spinal cord stimulation. Nineteen patients (38%) did not tolerate initial methadone titration or thought their pain was worse on methadone. Five patients (10%) declared initial benefit but required repetitive dose escalation and eventually became non-responders. Twenty-six patients (52%) reported mild (4), moderate (15), marked (6) or complete (1) pain relief and continued on methadone at a mean maintenance dose of 159.8 mg/day for a mean duration of 21.3 months. Fourteen patients (28%) reported improved function on methadone relative to previous treatments.

**CONCLUSIONS:** Methadone appears to have unique properties including N-methyl-D-aspartate antagonist activity that may make it especially useful in the management of intractable neuropathic pain. This observation needs to be tested in randomized, controlled trials. PMID: 16225176

With our state of the art compounding lab and pharmaceutical knowledge and experience, we can compound ketamine, clonidine, and methadone into one transdermal gel.

An example of how you might prescribe follows:

### COMPOUNDED MEDICATION

**Ketamine 10% / Clonidine 0.2% / Methadone 1%  
Transdermal Gel  
120gm  
Apply 1gm locally TID**

## NEURALGIA PAIN

Neuralgia is a common cause of pain and the following studies discuss which drugs effectively treat classic and symptomatic neuralgia pain.

“Gabapentin for refractory idiopathic trigeminal neuralgia” (J Indian Med Assoc. 2008 Feb;106(2):124-5).

**ABSTRACT:** “Trigeminal neuralgia is sudden, usually unilateral, severe, stabbing, brief recurrent pain in the distribution area of one or more of the branches of trigeminal nerve. Various pharmacological agents including carbamazepine, oxcarbazepine, phenytoin, lamotrigine, baclofen and clonazepam have been tried with variable success rate. Here a case of idiopathic trigeminal neuralgia is presented. The patient presented in the emergency room with severe pain in the distribution area of maxillary branch of trigeminal nerve, resistant to conventional pharmacotherapy, **managed successfully with gabapentin** without untoward side-effects.” PMID: 18705259

“Preliminary report: the efficacy of clonidine hydrochloride ointment for postherpetic neuralgia” (Masui. 2001 Feb;50(2):160-3).

**ABSTRACT:** “The combination of clonidine hydrochloride, alpha 2-agonist, and opioid is useful for relieving the pain due to surgical procedures or cancer. The routes of administrations used are intravenous, intramuscular as well as intrathecal, epidural and transmucosal. However, transdermal clonidine has not been reported. We, therefore, investigated the **analgesic effect of local administration of clonidine ointment**. Ten patients with postherpetic neuralgia (PHN) were selected randomly. They were requested to fill out a questionnaire after applying clonidine ointment (150 micrograms/ointment 1 g) to the painful area. Items included in the questionnaire were: effectiveness, visual analog scale (VAS) before and after the administration of clonidine ointment, onset time, with or without allodynia and effectiveness to allodynia in the former case, side effects, and patients' background. Analysis of the answers indicates that clonidine ointment produced a satisfactory effect in nine patients. Onset time was within a few minutes in most patients. No patients suffered any side effects. Specific mechanism of effectiveness or the site affected has not been confirmed in this study, but considering the quick onset, it is presumed that the site where the ointment was applied was the very site that was affected. Clonidine hydrochloride ointment was effective in relieving the symptoms of PHN.” PMID: 11244770

“Baclofen in the treatment of trigeminal neuralgia: double-blind study and long-term follow-up” (Ann Neurol. 1984 Mar;15(3):240-4).

**ABSTRACT:** “A double-blind crossover study of the effects of baclofen was conducted on 10 patients with typical trigeminal neuralgia. Baclofen significantly decreased the number of painful paroxysms in 7 of the 10 patients. An open trial in another 50 patients with trigeminal neuralgia refractory to or unable to tolerate carbamazepine showed that 37 (74%) were relieved of their attacks by baclofen, either alone (12 patients) or in combination with previously ineffective doses of carbamazepine or phenytoin (25). On long-term follow-up of one to five years (mean, 3.0 years), 18 of the 60 patients (30%) continued pain free while receiving baclofen; 10 (17%) went into remission after 3 to 6 months; 13 (22%) became refractory to baclofen after 1 to 18 months; and 2 (3%) elected operation despite a good response to baclofen. The results indicate that **baclofen is a useful drug in the treatment of trigeminal neuralgia.**” PMID: 6372646

**We have the ability to combine gabapentin, clonidine, and baclofen into one transdermal cream which can be applied directly to the site of pain; potentially limiting the systemic side effects associated with the oral use of these medications and increasing patient compliance.**

An example of how you might prescribe follows:

### COMPOUNDED MEDICATION

**Gabapentin 10% / Baclofen 2% / Clonidine 0.2%  
Transdermal Cream  
120gm  
Apply locally BID-TID PRN**

Prescriber Name \_\_\_\_\_

Prescriber Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_

Date \_\_\_\_\_ Patient Name \_\_\_\_\_ DOB \_\_\_\_\_

Address \_\_\_\_\_ City/State/Zip \_\_\_\_\_ Phone \_\_\_\_\_

Patient will pick up at pharmacy       Please ship to patient

Bill Insurance Plan: \_\_\_\_\_ ID# \_\_\_\_\_

*All topical compound %s are per 1 ml or 1 gm unless otherwise noted*

**Carpal Tunnel Syndrome**

[ ] Gabapentin 10%      **Transdermal Cream**  
Quantity 60gm      Directions: Apply sparingly BID-TID

**Neuropathic Pain**

[ ] Ketamine 10%/Clonidine 0.2%/Methadone 1%      **Transdermal Gel**  
Quantity 120gm      Directions: 1gm locally TID

**Neuralgia Pain**

[ ] Gabapentin 10%/Baclofen 2%/Clonidine 0.2%      **Transdermal Cream**  
Quantity 120gm      Directions: Apply locally BID-TID PRN

**Directions**

\_\_\_\_\_  
\_\_\_\_\_

Prescriber's Signature \_\_\_\_\_ Refills: 1 2 3 4 5 6 7 8 9 10 11 12 NR

