



Priority Updates from the Research Literature from  
the Family Physicians Inquiries Network

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# An alternative to oral NSAIDs for acute musculoskeletal injuries

A topical NSAID can relieve acute musculoskeletal pain, with little risk of side effects.

## PRACTICE CHANGER

For patients with acute musculoskeletal injuries, topical NSAIDs are an effective alternative for pain relief.<sup>1</sup>

## STRENGTH OF RECOMMENDATION

**A:** Based on a meta-analysis of 47 high-quality randomized clinical trials.

Massey T, Derry S, Moore RA, et al. Topical NSAIDs for acute pain in adults. *Cochrane Database Syst Rev.* 2010;(6):CD007402.

## ILLUSTRATIVE CASE

A 47-year-old man limps into your office complaining of ankle pain. The patient is well known to you and has a long history of dyspepsia, which is aggravated when he takes any oral nonsteroidal anti-inflammatory drug (NSAID). He injured his ankle while playing basketball. You diagnose acute ankle sprain. Would a topical NSAID be a safe option for pain relief for this patient?

Patients with tendon and ligament injuries often see their family physician for care. Rest, ice, compression, elevation (RICE) therapy is first-line treatment for these injuries.<sup>2</sup> Oral NSAIDs, such as diclofenac, piroxicam, and ibuprofen reduce swelling and lead to a more rapid return to activity than RICE alone in patients with ankle sprains,<sup>3</sup> and relieve pain associated with muscle strains, too. Acetaminophen provides comparable pain relief and resumption of normal activities.<sup>4</sup>

## Help for those who can't take oral NSAIDs

Oral NSAIDs, however, are contraindicated for patients with a history of gastrointestinal bleeding and must be used cautiously in those with chronic kidney disease. Some patients can't tolerate the adverse effects, which may include stomach upset, vomiting, and abdominal pain. Others may have medication interactions that prohibit use of oral NSAIDs.

Numerous high-quality, randomized, double-blinded placebo-controlled trials of topical NSAIDs have been conducted in recent years, involving diclofenac—the only topical NSAID available in the United States—as well as other topical agents on the market outside of this country. A recent Cochrane review, detailed below, assessed the efficacy of topical NSAIDs for patients with acute musculoskeletal injuries.

## STUDY SUMMARY

### Topical NSAIDs provided significant relief

This meta-analysis of 47 high-quality, randomized, double-blinded, placebo-controlled trials included 3455 patients with acute strain, sprain, sport, or overuse injuries.<sup>1</sup> Four of the 47 trials, with a total of 746 participants, studied topical diclofenac.

There was significant heterogeneity in the studies included in the review, but each arm of every trial had at least 10 participants >16 years of age with a painful musculoskeletal injury sustained within the previous 48 hours. To be included in the Cochrane

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A 10-day supply of oral ibuprofen (plain tablets) costs about \$3, while diclofenac gel costs about \$65.

**Patients should avoid oral NSAIDs while using a topical preparation.**

meta-analysis, participants had to have used a topical NSAID at least once a day for  $\geq 3$  days.

The primary outcome measure was a reduction in pain  $\geq 50\%$  from baseline. Post-treatment data were obtained approximately 7 days after the injury. Of the patients receiving any topical NSAID, 65% (1181/1822) had successful treatment, compared with 43% (695/1633) receiving a placebo. The number needed to treat (NNT) with a topical NSAID instead of placebo was 4.5 (95% confidence interval, 3.9-5.3) to reduce pain  $\geq 50\%$ .

For patients using topical diclofenac, 52% (166/319) had a 50% reduction in pain, vs 25% (77/307) using a topical placebo. The NNT for topical diclofenac was 3.7, about the same as for oral NSAIDs.<sup>5</sup>

**Adverse events were rare** in the topical NSAID group: 6.3% had a local adverse event such as a skin reaction vs 5.9% in the topical placebo group. There were no systemic adverse events with topical diclofenac. While all topical NSAIDs combined showed a few minor adverse events compared with placebo, no serious systemic events were reported.

**WHAT'S NEW**

**Topical NSAIDs are a useful alternative**

Patients now have another option when seeking treatment for acute musculoskeletal pain. In addition to those who are unable to take oral NSAIDs, some patients may prefer a topical preparation because of perceived or actual side effects and safety profiles.

**CAVEATS**

**Dosing intervals were not established**

This meta-analysis included studies that examined a variety of dosing strategies and conditions, so an optimal dosing interval is not clear. However, the studies generally found evidence

of benefit regardless of the acute condition and the amount and type of topical NSAID used. Diclofenac had the best results compared with other topical NSAIDs. Benzydamine, which is not sold in the United States, was the only topical NSAID not found to be statistically beneficial compared with placebo, based on 3 studies.

Topical NSAIDs have a small amount of systemic absorption, with blood concentrations about 5% of those from oral NSAIDs. However, patients with a strict contraindication to oral NSAIDs (for example, severe allergy) may also have a contraindication to topical NSAIDs. Also, all patients should be cautioned to avoid oral NSAIDs while using a topical preparation.<sup>6</sup>

**CHALLENGES TO IMPLEMENTATION**

**Topical NSAIDs are costly**

In the United States, topical diclofenac is available only by prescription. This may create accessibility and cost differences between oral and topical NSAIDs. The average cost of a typical 10-day acute injury treatment of an adult with oral ibuprofen would be about \$3 for plain tablets (\$10 for extended release and enteric coated), vs about \$65 for diclofenac gel, \$113 for a diclofenac patch, and \$66 for a diclofenac topical solution (www.drugstore.com, accessed December 2, 2010).

Physician inertia may also interfere with implementation. Physicians may not add a new medication to current prescribing options, although there appear to be no medical barriers to topical NSAIDs. This meta-analysis shows that topical NSAIDs are safe and effective for pain relief from acute injuries. **JFP**

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