



Fracture pain relief for kids? Ibuprofen does it better

This OTC analgesic is as effective as acetaminophen with codeine and better tolerated, a new study of children with arm fractures shows.

PRACTICE CHANGER

Use ibuprofen instead of acetaminophen with codeine for pediatric arm fractures. It controls the pain at least as well and is better tolerated.¹⁻³

STRENGTH OF RECOMMENDATION

A: Based on 1 longer-term and 2 short-term randomized controlled trials (RCTs).

Drendel AL, Gorelick MH, Weisman SJ, et al. A randomized clinical trial of ibuprofen versus acetaminophen with codeine for acute pediatric arm fracture pain. *Ann Emerg Med.* 2009;54:553-560.

Koller DM, Myers AB, Lorenz D, et al. Effectiveness of oxycodone, ibuprofen, or the combination in the initial management of orthopedic injury-related pain in children. *Pediatr Emerg Care.* 2007;23:627-633.

Clark E, Plint AC, Correll R, et al. A randomized controlled clinical trial of acetaminophen, ibuprofen, and codeine for acute pain relief in children with musculoskeletal trauma. *Pediatrics.* 2007;119:460-467.

ILLUSTRATIVE CASE

A mother brings her 6-year-old son to the emergency department (ED) for treatment of forearm pain after a bicycle accident. Clinical examination reveals a swollen and tender wrist. A radiograph confirms a diagnosis of a nondisplaced distal radial fracture. After proper stabilization, the little boy is discharged home, with a visit to his primary care physician scheduled for the following week. If he were your patient, what would you prescribe for outpatient analgesia?

Musculoskeletal trauma is a common pediatric presentation, in both emergency and office settings. In fact, it is estimated that by age 15, one-half to two-thirds of children will have fractured a

bone.⁴ Physicians commonly prescribe non-steroidal anti-inflammatory drugs (NSAIDs) and opioids—especially acetaminophen with codeine—as analgesia for children with fractures,⁵ but few studies have directly compared these medications in pediatric patients.

No consensus on analgesia for musculoskeletal pain in kids

Pain associated with an acute fracture is substantial, and most children who incur fractures are managed at home, and thus require effective and well-tolerated oral analgesia. However, prescribing practices vary widely, and there is no consensus regarding the first-line medication for kids with fracture.

A Cochrane review of adult postoperative pain concluded that NSAIDs are effective, and they are commonly prescribed to adult patients for various types of pain.⁶ Fewer studies of pain control in children exist. Before the 2009 study reported on here, there were just 2 RCTs that addressed pediatric musculoskeletal pain in patients presenting to the ED.

In single-dose studies, ibuprofen comes out ahead

The smaller of the 2 trials (N=66) compared ibuprofen alone vs ibuprofen plus oxycodone for suspected orthopedic injury. The researchers found that pain relief was equivalent, but the oxycodone group had more adverse effects.² The larger trial (N=336) compared ibuprofen, acetaminophen, and codeine for acute pediatric musculoskeletal injuries. An hour after receiving their study drug, children in the

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ibuprofen group had significantly greater reduction in pain than those in either the acetaminophen group or the codeine group. They were also more likely to report adequate analgesia.³ Neither study followed patients after discharge from the ED.

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Ibuprofen users had fewer problems

Analysis of 244 diaries revealed that less rescue medication was used in the ibuprofen group, although the difference was not statistically significant (20.3% vs 31% [absolute risk reduction, 10.7%], 95% confidence interval, -0.2% to 21.6%). Decrease in mean pain score was the same in both groups. Functional status the day after the injury was better in the ibuprofen group compared with the acetaminophen/codeine group. In addition, 50.9% of patients in the acetaminophen/codeine group reported adverse events, vs 29.5% of those in the ibuprofen group (number needed to harm=4.7).

At the study's end, children were more satisfied with ibuprofen. Only 10% of patients who took ibuprofen said they would not use it for future fractures; in comparison, 27.5% of patients in the acetaminophen/codeine group said they would not choose to use codeine again.

The authors followed participants for 1 to 4 years through orthopedic clinic records and telephone calls for any long-term adverse orthopedic outcomes. Four cases of refracture at the same site occurred (1.6%), 3 of which were in the acetaminophen/codeine group. There were no cases of nonunion.

STUDY SUMMARY

New RCT evaluates pain relief once patients go home

The Drendel study was a randomized, controlled, double-blind trial of outpatient analgesia for pediatric fractures.¹ The investigators randomized 336 children ages 4 to 18 years with radiographically confirmed arm fractures to a suspension of either ibuprofen (10 mg/kg) or acetaminophen with codeine (1 mg/kg codeine component per dose), which are recommended dosages. They enrolled a convenience sample of children with nondisplaced fractures that did not require reduction in the ED.

Children were excluded if they weighed more than 60 kg, preferred tablets to liquid medication, sought care more than 12 hours after injury, or had developmental delays or contraindications to any study medication. Also excluded were children—or their parents—who did not speak English and those who were inaccessible by telephone for follow-up.

Study groups had similar baseline demographic and fracture characteristics, and similar pain scores. Patients and their parents were blinded to the assigned drug; all received the same discharge instructions and 2 doses of a rescue medication (the alternate study drug). The primary outcome was use of rescue medication due to failure of the assigned study drug. Secondary outcomes included decrease in pain score, functional outcomes (play, school, eating, sleeping), and satisfaction with the medication.

During the 72 hours after discharge from the ED, patients and parents filled out a standard diary recording pain and medication use. The diaries were returned by mail. Follow-up was good, with about 75% of diaries returned.

WHAT'S NEW

Ibuprofen emerges as first-line agent for kids

Both ibuprofen and acetaminophen with codeine are commonly prescribed for outpatient pediatric analgesia, but this is the first study to compare them head-to-head for outpatient management of postfracture pain. Ibuprofen worked at least as well as acetaminophen with codeine for fracture pain control, and had fewer adverse effects. Children given ibuprofen were better able to eat and play than those given acetaminophen with codeine—an important patient-oriented functional outcome. Patients and their parents were also more satisfied when ED physicians prescribed ibuprofen. This study is consistent with short-term (single-dose) studies and confirms that ibuprofen should be the first-line agent for outpatient analgesia in this group.

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Which analgesic do you usually prescribe for pediatric fracture?

- Acetaminophen
- Ibuprofen
- Acetaminophen with codeine
- Ibuprofen with oxycodone
- Other _____

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CAVEATS

Study did not address NSAIDs' effect on bone healing

In theory, ibuprofen—like other NSAIDs—can diminish the proinflammatory milieu required for bone turnover and fracture healing. Chart reviews of up to 4 years after the incident fracture found no evidence that ibuprofen delayed healing or increased rates of refracture. However, this study was neither designed nor powered to examine this outcome. Previous studies have found no conclusive evidence that short-term use of NSAIDs impairs fracture healing.^{7,8}

Results apply only to simple fractures.

Patients in this study did not require manipulation or reduction of their fracture, limiting the scope of the authors' recommendation to simple arm fractures. More severe injury may require narcotic analgesia. One can assume, based on this and other supporting literature, that the findings extrapolate to other similarly painful pediatric musculoskeletal injuries.²

Twenty-five percent of subjects were lost to follow-up. Follow-up diaries were available from about 75% of the participants. It is pos-

sible that a clearer beneficial outcome would have been found with 1 of the analgesics studied if the response rate had been higher. Because this study is consistent with the previous ED-only studies comparing ibuprofen with acetaminophen plus codeine, however, it is unlikely that a higher response rate would find ibuprofen inferior to acetaminophen plus codeine.

CHALLENGES TO IMPLEMENTATION

Parents—or patients—may expect an Rx

Prescribing an effective, common, inexpensive, and well-tolerated oral medication should have no barriers to implementation. Still, use of an over-the-counter medication, however effective, may face resistance from patients or parents who expect “something more” for fracture pain. **JFP**

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References

- Drendel AL, Gorelick MH, Weisman SJ, et al. A randomized clinical trial of ibuprofen versus acetaminophen with codeine for acute pediatric arm fracture pain. *Ann Emerg Med.* 2009;54:553-560.
- Koller DM, Myers AB, Lorenz D, et al. Effectiveness of oxycodone, ibuprofen, or the combination in the initial management of orthopedic injury-related pain in children. *Pediatr Emerg Care.* 2007;23:627-633.
- Clark E, Plint AC, Correll R, et al. A randomized, controlled trial of acetaminophen, ibuprofen, and codeine for acute pain relief in children with musculoskeletal trauma. *Pediatrics.* 2007;119:460-467.
- Lyons RA, Delahunty AM, Kraus D, et al. Children's fractures: a population based study. *Inj Prev.* 1999;5:129-132.
- Drendel AL, Lyon R, Bergholte J, et al. Outpatient pediatric pain management practices for fractures. *Pediatr Emerg Care.* 2006;22:94-99.
- Derry C, Derry S, Moore RA, et al. Single dose oral ibuprofen for acute postoperative pain in adults. *Cochrane Database Syst Rev.* 2009;(3):CD001548.
- Clarke S, Lecky E. Best evidence topic report. Do non-steroidal anti-inflammatory drugs cause a delay in fracture healing? *Emerg Med J.* 2005;22:652-653.
- Wheeler P, Batt ME. Do non-steroidal anti-inflammatory drugs adversely affect stress fracture healing? A short review. *Br J Sports Med.* 2005;39:65-69.

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This activity was submitted by DIME and funded through an independent educational grant from Boehringer Ingelheim Pharmaceuticals, Inc.

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