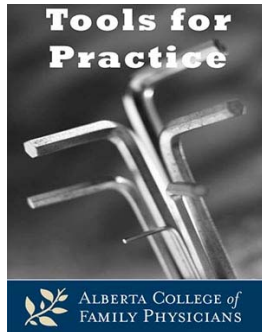


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Optimal pain relief for acute pediatric musculoskeletal injuries - NSAIDs or Opioids?

Clinical Question:

In children with acute musculoskeletal (MSK) injuries, what is the optimal approach to pain management?

Evidence

Three (3) recent randomized controlled trials (RCTs) examined pain control in children with acute MSK injuries

- 1) 336 children with MSK injuries (54% fractures) at emergency in Ottawa, Ontario given ibuprofen, acetaminophen or codeine.¹ At 60 minutes on 100mm pain scale,
 - Mean reductions were superior ($p < 0.001$) for ibuprofen (down 24mm out of 100) compared to acetaminophen (12mm) or codeine (11mm).
 - More ibuprofen patients ($p < 0.001$) attained adequate analgesia (< 30 mm)
 - 12% more than codeine, number needed to treat (NNT)=9
 - 16% more than acetaminophen, NNT=7
- 2) 68 children with traumatic extremity injury (55% fractures) presenting to a US emergency² given ibuprofen or acetaminophen+codeine
 - No difference in pain scores.
- 3) 336 children with arm fracture, up to 3 days post emergency department discharge (ibuprofen vs. acetaminophen+codeine)³
 - No difference in mean pain scores
 - Ibuprofen resulted in significantly less functional limitation due to pain.
 - Significantly fewer ibuprofen patients had adverse events, absolute difference 21% (9-34), NNT= 5.
 - No difference in fracture non-union or recurrent fracture after 1 year.

Study doses¹⁻³ were ibuprofen (10mg/kg, max 400mg-600mg), acetaminophen (15mg/kg, max 650mg) and codeine (1mg/kg, max 60mg).

Context

- The World Health Organization pain ladder recommends oral narcotics after failure of oral NSAIDs⁴, although evidence to support the superiority of codeine to NSAIDs for acute pediatric pain is lacking.
- Pediatric pain is historically poorly controlled⁵
- There has been some reluctance to use NSAIDs in MSK injuries due to concerns regarding their anti-inflammatory actions and effects on fracture healing. There is no conclusive evidence to support this theory^{6,7} and the RCT following patients for one year did not identify any differences in fracture healing or recurrence.³

Bottom-line: Current evidence suggests that ibuprofen provides better single agent pain relief than acetaminophen or codeine, and is at least equivalent to acetaminophen with codeine for acute pediatric pain due to injury with fewer adverse events.

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1. [Pediatrics 2007;119:460-7.](#)
2. [Acad Emerg Med 2009;16\(8\):711-716.](#)
3. [Ann Emerg Med 2009 In Press.](#)
4. World Health Organization. WHO's pain ladder.
[http://www.who.int/cancer/palliative/painladder/en/.](http://www.who.int/cancer/palliative/painladder/en/)
5. [Pediatrics 1997;99:711-714.](#)
6. [Br J Sports Med 2005;39:65-69.](#)
7. [Emerg Med J 2005;22:652-653.](#)

Tools for Practice is a biweekly article summarizing medical evidence with a focus on topical issues and practice modifying information. It is coordinated by G. Michael Allan, MD, CCFP and the content is written by practising family physicians. Archived articles are available on the Towards Optimized Practice and ACFP websites.

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