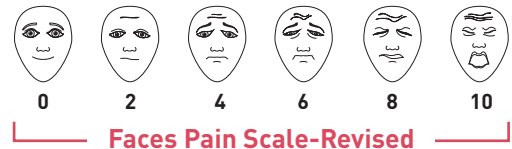


The majority of healthcare visits are related to pain.<sup>1</sup> Untreated pain has short-term (pain and distress for the child, caregivers, and healthcare providers; prolonged procedure time; slower healing) and long-term consequences (increased sensitivity to pain; avoidance of healthcare settings; needle phobia; higher levels of anxiety before a procedure). Timely and effective multi-modal pain care improves procedure success rates, prevents the need for repeated attempts, improves patient flow, and improves patient and caregiver satisfaction.<sup>2</sup> Repeated pain measures and consideration of each family's situation, level of distress, and life experience can help guide appropriate therapy.

## RECOMMENDED PAIN SCALES IN CHILDREN

Children should be asked to rate their pain. If unable (e.g., cognitive issues, non-verbal), then FLACC-R should be used.<sup>1</sup>

1. **FLACC-R Score** – For children 0-3 years of age or non-verbal.
2. **Faces Pain Scale-Revised** – For children 4-12 years of age.
3. **Verbal Numerical Rating Score** – For children over 6 years of age (e.g., “On a scale of 0-10, where 0 is no pain and 10 is the worst pain you can imagine, tell me what number your pain is”).



## GENERAL SUGGESTIONS TO MINIMIZE PAIN

### Physical

- Ask the caregiver(s) to **remain present** if possible and provide them with guidance to calmly support their child with distraction, gentle touch (if desired by the child), conversation, music, and/or suggestions for deep breathing.
- Caregivers may hold the child in a number of **comfort positions** that do not interfere with examinations or procedures (e.g., upright and in direct physical contact with caregiver), and **rock** the child after the intervention.
- Infants <2 months can benefit from **facilitated tucking** (e.g., legs and arms tucked close to body) or **swaddling with blankets** to calm them while awaiting assessment/results.
- Caregivers may provide infants with **skin-to-skin contact** while awaiting assessment/results.
- **Breastfeeding** can be very soothing in the infant/child if the patient is not NPO, otherwise **non-nutritive sucking** (e.g., pacifier) can be used.
- Use of **warm/cold packs** for pain can be soothing (e.g., warm packs in sickle cell pain crisis or back pain, cold packs for acute musculoskeletal injuries).

### Distraction Techniques

- **Simple techniques** such as bubbles, books, I-spy books/cards, singing, portable distraction kits (e.g., poppers, fidget spinners) and conversation.
- **Technology-based distraction** such as smart phone videos/games, tablet device, tv/video, music, and virtual reality.

## PHARMACOLOGICAL TREATMENT OF ACUTE PAIN

- To be used in conjunction with physical and distraction interventions.
- Reassess response to pharmacotherapy regularly. Re-dosing, as required, is recommended.
- Diagnostic accuracy is NOT affected by the provision of early analgesia.
- Intramuscular and subcutaneous injections should be avoided in children, as intranasal and intravenous options provide less painful modes of delivery and more predictable absorption.
- For infants <12 months old, consultation with Pediatric Referral Centre is advised for recommendations when opioids or IV analgesics are being considered for pain management.

### Opioids

- Titrate all opioids to clinical effect and to minimize adverse effects.
- Always use opioids as co-therapy and never on their own.
- Side effects such as nausea, sedation, or confusion can be mislabeled as an allergy. An accurate drug allergy history is essential as true allergy to morphine and other opioids is extremely rare; cross reactivity is also rare.
- Health Canada and the US FDA advise avoidance of codeine in children <18<sup>3</sup> and hydrocodone in children <6.<sup>4</sup>
- Opioid administration prior to procedural sedation increases the risk of oxygen desaturation, vomiting, and need for positive pressure ventilation. This risk is greatest if procedure is performed within 30 min of opioid administration.
- All families should have a **substance use risk assessment** performed before prescribing outpatient opioids.
- If discharging patient home with PO opioids, prescribe for no more than 3 days (or 10 doses total) for most conditions.
- Recommend stool softener for those discharged with PO opioids. Refer to **TREKK Recommendations for Constipation**.
- Opioids should be stored safely out of reach and only given as needed. Unused quantities of any medication should be returned to the pharmacy or disposal site for **safe disposal**.

# Pain Treatment

Mild Pain (e.g., 1-3 out of 10)		
Drug	Dose	Comments/Cautions
ibuprofen PO	10 mg/kg/dose q6h PRN (MAX 600 mg/dose)	For children ≥6 months, first-line option for musculoskeletal injuries and most other painful inflammatory conditions.
acetaminophen PO	15 mg/kg/dose q4h PRN (MAX 1000 mg/dose)	Do not exceed 75 mg/kg/day or 4 g/day (whichever is less).
<b>Moderate Pain (e.g., 4-6 out of 10) Always start with non-opioid medications above, layer on opioid medications below as needed.</b>		
morphine PO	0.2-0.5 mg/kg/dose q3-4h PRN (MAX 15 mg/dose)	Most common pediatric opioid. Lack of demonstrated efficacy for musculoskeletal pain. For initial pain management, second dose may be given sooner than 3 hrs.
HYDROMORPHONE PO	0.03-0.06 mg/kg/dose q3-4h PRN (MAX 1-2 mg/dose)	Higher risk of dosing errors. Do not use if <6 months or <10 kg.
oxyCODONE PO	0.1-0.2 mg/kg/dose q4-6h PRN (MAX 5-10 mg/dose)	Risk of QT interval prolongation. Tablets must be swallowed whole.
<b>If not responding to PO opioid, consider lower dose IV/Intranasal opioid (see Severe Pain below).</b>		
Severe Pain (e.g., 7-10 out of 10)		
fentaNYL Intranasal	1.5 mcg/kg/dose (MAX 100 mcg/dose). May repeat 0.5-1 mcg/kg/dose (MAX 50 mcg/dose) 10 min after 1st dose if needed. Divide dose between nostrils (MAX 1 mL/nosril)	Provides rapid pain reduction. Provides early pain relief if IV access is not yet established. Give via mucosal atomization device for enhanced absorption. Monitor level of consciousness, vital signs, and pain score prior to therapy and at 10 min post administration.
fentaNYL IV	1 mcg/kg/dose q1-2h PRN (MAX 50 mcg/dose)	DO NOT push medication to avoid rigid chest. For initial pain management, second dose may be given sooner than 1 hr. Monitor level of consciousness, vital signs, and pain score prior to therapy and q10 min post administration (for MIN 30 min). Some institutions recommend continuous O <sub>2</sub> sat monitoring for 30 min post administration.
morphine IV	0.05-0.1 mg/kg/dose q2-4h PRN (MAX 4-8 mg/dose)	For initial pain management, second dose may be given sooner than 2 hrs. Monitoring as per fentaNYL IV above.
<b>ALWAYS ADD PO OR IV NSAID FOR OPIOID-SPARING EFFECT if the pain is expected to require multiple opioid doses.</b>		
ibuprofen PO	Dosing as for Mild Pain section above	
ketorolac IV	0.5 mg/kg/dose q6h PRN (MAX 30 mg/dose, 15 mg/dose for subsequent)	Avoid IV ketorolac if ibuprofen or NSAIDs were given less than 6 hours before.

## COUNSELING CAREGIVERS WHO ARE HESITANT ABOUT ANALGESIC USE

1. Our goal today is to keep your child comfortable while we figure out what is going on; they do not need to remain in pain while we diagnose and treat them.
2. Treating pain does not make a child weak. Untreated pain, however, can have long-term consequences for the way your child experiences future pain or medical encounters.
3. We will first use maximum doses of non-opioid medications, NSAIDs are equivalent to morphine with fewer side effects.
4. Provide education that the worst pain after a musculoskeletal injury occurs in the first 3 days, use adjuncts (e.g., immobilization and ice).
5. There is no clinical evidence that using NSAIDs affects bone healing in children.

**For a full list of references and development team members, please see the following page.**

The purpose of this document is to provide healthcare professionals with key facts and recommendations for treating pain in children. Healthcare professionals should continue to use their own judgment and take into consideration context, resources and other relevant factors. The TREKK Network and EIC are not liable for any damages, claims, liabilities, costs or obligations arising from the use of this document including loss or damages arising from any claims made by a third party. The TREKK Network and EIC also assumes no responsibility or liability for changes made to this document without its consent.

## BOTTOM LINE RECOMMENDATIONS

Bottom Line Recommendations are short summaries for healthcare providers of the latest knowledge related to the diagnosis and management of pediatric emergency conditions. This resource is not intended to be used as a step-by-step guide. It is ideal for educational purposes and to summarize existing evidence on pain treatment in pediatric emergency care. Development of this resource involved a rigorous and iterative process, bringing together experts from a variety of specialties (nursing, simulation, emergency medicine, intensive care, and pharmacy). To learn more about the development, see the References & Development Team section below.

## REFERENCES

1. Birnie KA, Hundert AS, Lalloo C, Nguyen C, Stinson JN. Recommendations for selection of self-report pain intensity measures in children and adolescents: a systematic review and quality assessment of measurement properties. *Pain*. 2019;160(1):5-18. doi: 10.1097/j.pain.0000000000001377. PMID: 30180088
2. Drendel AL, Ali S. Ten practical ways to make your ED practice less painful and more child-friendly. *Clinical Pediatric Emergency Medicine*. Volume 18, Issue 4, December 2017, 242-255.
3. Health Canada. Non-prescription pain relief products containing codeine are not recommended for use in people under 18 years of age. July 2020. Accessed May, 2020. <https://www.canada.ca/content/dam/hc-sc/documents/services/drugs-health-products/medeffect-canada/health-product-infowatch/august-2020/hpiw-ivps-eng.pdf>
4. Health Canada. New safety measures for prescription codeine and hydrocodone to further restrict use in children and adolescents. July 2016. Accessed May, 2020. <https://www.canada.ca/content/dam/hc-sc/documents/services/drugs-health-products/medeffect-canada/health-product-infowatch/august-2020/hpiw-ivps-eng.pdf>
5. Drendel AL, Kelly BT, & Ali S. Pain assessment for children: overcoming challenges and optimizing care. *Pediatr Emerg Care*. 2011;27(8):773-81. doi: 10.1097/PEC.0b013e31822877f7. PMID: 21822093
6. Fein JA, Zempsky WT, Cravero JP; Committee on Pediatric Emergency Medicine and Section on Anesthesiology and Pain Medicine; American Academy of Pediatrics. Relief of pain and anxiety in pediatric patients in emergency medical systems. *Pediatrics*. 2012;130(5):e1391-405. doi: 10.1542/peds.2012-2536. PMID: 23109683

## CONTENT TEAM

Thank you to the following content experts who led the development of this resource.

### Samina Ali, MDCM, FRCPC (PEM)

Professor, Pediatrics & Emergency Medicine  
Faculty of Medicine & Dentistry  
University of Alberta  
Edmonton, Alberta

### Amy L. Drendel, DO, MS

Professor of Pediatrics and Medical Director  
Children's Wisconsin Emergency Department Trauma  
Center, Medical College of Wisconsin

### Corrie Chumpitazi, MD, MS

Associate Professor of Pediatrics  
Baylor College of Medicine, Division of Emergency  
Medicine, Texas Children's Hospital

### Naveen Poonai, MSC, MD, FRCPC

Associate Professor, Pediatrics, Internal Medicine,  
Epidemiology & Biostatistics, Schulich School of  
Medicine & Dentistry  
Scientist, Child Health Research Institute  
Research Director, Division of Pediatric Emergency  
Medicine

## DEVELOPMENT TEAM

Thank you to the [TREKK Editorial Committee](#) and those in the [EIIIC KEAP Program](#) who provided editorial support, expertise in the development of this resource. Thank you as well to the following people who coordinated and oversaw the development process:

### Mateja Carevic, BA, MA

TREKK Knowledge Broker  
University of Manitoba

### Mona Jabbour, MD, MEd, FRCPC

TREKK Co-Director  
Interim Chair/Chief,  
Department of Pediatrics  
Associate Professor, Pediatrics and  
Emergency Medicine, University  
of Ottawa Children's Hospital of  
Eastern Ontario

### Sarah Reid, MD

TREKK Editorial Lead  
Clinical Investigator, CHEO Research  
Institute Physician, Division of  
Emergency Medicine, CHEO  
Assistant Professor and Director,  
Emergency Department Outreach,  
University of Ottawa

### Danica Irwin, BSc.Phm

Pharmacist, CHEO

### Marc Vazquez, MHA/MBA, PMP

EIIIC Knowledge Broker  
Baylor College of Medicine