

PEDIATRIC ACUTE PAIN MANAGEMENT REFERENCE CARD

Use this guide to improve the safety and effectiveness of pain management in children older than six months of age.

Department of Pain Medicine, Palliative Care and Integrative Medicine

Non-opioids Commonly Used for Mild to Moderate Pain				
Drug	Route	Pediatric Dose	Maximal Dose	Dosing Interval
Ibuprofen	PO	5-10 mg/kg	400 - 600 mg	6 - 8 hrs
Acetaminophen	PO, PR	10-15 mg/kg	60 mg/kg/day <2 years 90 mg/kg/day >2 years	4 - 6 hrs
Acetaminophen*	IV	<10 kg = 7.5 mg/kg; 1-2 yrs = 15 mg/kg; >2 yrs (<50 kg) = 15 mg/kg; >13 yrs (>50 kg) = 1000 mg	30 mg/kg/day 60 mg/kg/day 75 mg/kg/day 4000 mg/day	6 hrs 6 hrs 6 hrs 6 hrs
Ketorolac** (Toradol)	IV	<2 yrs = 0.25 mg/kg >2 yrs = 0.5 mg/kg	30 mg	6 - 8 hrs
Celecoxib***	PO	1-2 mg/kg	100 mg	12 - 24 hrs

*ONLY if rectal or oral administration contraindicated; re-evaluate daily

**Recommend dosing no longer than five days

***If classical NSAIDs contraindicated; safety and efficacy has been established only in children 2 years of age or older and for a maximum of 6 months of treatment in JRA

Opioid Analgesics Commonly Used for Mild to Moderate Pain				
Drug	Route	Initial Pediatric Dose	Maximal Dose	Dosing Interval
Tramadol*	PO	1 - 2 mg/kg	50 - 100 mg	4 - 6 hrs

Medications NOT recommended

- Codeine can **NOT** be recommended, as up to 34 percent of children gain no analgesic effect due to being poor (CYP 2D6) metabolizers; on the other hand ultra-rapid metabolizers produce dangerously high morphine levels.
- Acetaminophen combination products (e.g. Tylenol #3, Vicodin [hydrocodone], Percocet [oxycodone]) are not recommended as dosing cannot be increased with increasing pain without risking associated liver toxicity of high doses of acetaminophen.

*If using > 8 mg/kg/day change to strong opioid.

Apply the WHO-pain ladder: Codeine and Tramadol have a ceiling effect. If pain persists or increases, discontinue and change to strong opioids. **Do not** combine Tramadol with strong opioids.

Consider using both non-opioids and opioids to maximize pain control.

Opioid Analgesics Commonly Used for Moderate to Severe Pain

These represent starting doses only – children may require higher doses.

Drug	Route	Initial Pediatric Dose	Initial Adult Dose	Dosing Interval
Morphine	IV, SC PO/SL, PR	0.05 - 0.1 mg/kg 0.15 - 0.3 mg/kg	5 - 10 mg 10 - 15 mg	2 - 4 hrs
Hydromorphone (Dilaudid)	PO/SL	0.05 mg/kg	1 - 2 mg	3 - 4 hrs
Oxycodone	PO/SL	0.1 - 0.2 mg/kg	5 - 10 mg	4-6 hrs
Morphine PCA (patient/nurse controlled analgesia)		Basal infusion: 0.015 mg/kg/hr PCA dose: 0.015 mg/kg *recommend basal infusion = PCA dose	Lockout Interval = 5 - 10 minutes	1 Hour Maximum Limit = 4-6 PCA boluses/hr; e.g. 0.1 mg/kg
Fentanyl	IV bolus IV continuous infusion	1 - 2 mcg/kg 1 mcg/kg/hr	25 - 75 mcg 50 mcg/hr	10 min - 1 hr
Hydromorphone (Dilaudid)	IV bolus IV continuous infusion	15 mcg/kg 2 - 5 mcg/kg/hr	200 - 600 mcg 100 - 250 mcg/hr	2 - 4 hrs

Opioid Antagonist				
Drug	Route	Initial Dose	Clinical Indication	Dosing Interval
Low Dose Naloxone Infusion	IV	0.5 - 2 mcg/kg/hr	Clinical indication: mild-moderate opioid induced side effects such as pruritus, nausea etc. (for moderate to severe: opioid rotation)	
Naloxone	IV, SC	1 - 5 mcg/kg 10 mcg/kg	*Reverse opioid-induced depressed respiratory rate Reverse opioid-induced apnea and coma; titrate to effect	2 - 3 minutes

*Consider using Naloxone for oversedation **ONLY**, if conservative measures (tactile stimulation, etc.) show no effect.

Infant FLACC Scale

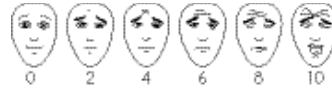
Category	Scoring		
	0	1	2
Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant quivering chin, clenched jaw
Legs	Normal position or relaxed	Uneasy, restless, tense	Kicking or legs drawn up
Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid, or jerking
Cry	No cry (awake or asleep)	Moans or whimpers, occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content, relaxed	Reassured by occasional touching, hugging or being talked to, distracted	Difficult to console or comfort

Each of the five categories (F) Face, (L) Legs, (A) Activity, (C) Cry, (C) Consolability, is scored from zero to two, which results in a total score between zero and 10.

Faces Pain Scale – Revised for ages > 4 yrs

www.painsourcebook.ca

Say to the child, "Point to the face that shows how much you hurt (right now)."



Numeric Scale – Use zero (no pain) to 10 (worst pain you can imagine) scale for children older than 7 years of age.

Procedural Pain

(e.g. for venipuncture, lab draws, suturing, dressing changes etc.)

Essential Components of Procedural Pain Management

(1) Comfort Positioning

- Will increase sense of support and decrease resistance to procedure, suggest comfort positions (eg. sit on parent lap, chest to chest hugging)
- To reduce pain at the time of injection, do **NOT** place children in a supine position
- When feasible, offer choice to child (parent's lap?)
- Child should **NOT** be held down by adults

(2) Distraction and Integrative Therapies

- Identify modalities based on age and development: positioning, diaphragmatic breathing, distraction, imagery, hypnosis, books, bubbles and pinwheels; video games; tablet/smartphone "Apps", "Buzzy Bee"
- At time of injection, offer to rub or stroke skin near injection site
- Parent coaching: Nonprocedural talk, suggestions on how to cope, humor decrease children's distress and pain
- Include child life specialist or assign parent/nurse as "comfort coach"

(3) Topical Local Anesthetics

- Should always be offered!** (Teenagers may decline)
- Choice of topical anesthetic depends on clinical scenario (ease of administration, cost, feasibility) - one of the following:
 - EMLA Cream (lidocaine 2.5% and prilocaine 2.5%) [at least 60 min]
 - Ela-Max LMX 4% Lidocaine Topical Anesthetic Cream [at least 30 min]
 - Ametop gel (4% amethocaine [tetracaine]) [at least 30 min]
 - J-tip (needleless lidocaine injector)

(4) Sucrose for children 0-12 months

- Reduces pain and cry during painful procedure, such as venipuncture
- Effective dose (24%): 0.05 - 0.5 mL (= 0.012 - 0.12 g)
- Administration 2 minutes prior to mild - moderately painful procedure
- Duration of analgesia about 4 min

(5) Other pharmacological approaches

- Short acting opioid (e.g. intranasal fentanyl 1.4 mcg/kg/dose)

(6) Sedation

- If excellent procedural analgesia not feasible, consider minimal (nitrous oxide) or moderate/deep sedation (e.g. midazolam, ketamine, propofol)

Positioning (1), integrative strategies (2) and offering topical local anesthetics (3) should be part of any **minor-moderate painful procedure**. If child 0-12 months old, add sucrose (4).

Administer short acting opioid and/or sedation for risk of moderate to severe pain. Perform procedure with nitrous oxide for higher level of anxiety.

Avoid Medication Errors, While Prescribing

Write comprehensive orders, avoid abbreviations.

- Include: Generic drug name, dose [stated as mg/kg = total dose (mg)], dosage form, frequency/rate of administration, and route.
- Example: Morphine (0.1 mg/kg) 1 mg IV every 3 hours prn pain
- Spell out micrograms to avoid a transcription error.
- Spell out morphine, to avoid medication error when writing "ms."

Avoid decimal errors:

- Write "0.1" not ".1" / Write "1" not "1.0". These can cause 10-fold dosing errors!
- NEVER prescribe volume [mL], ALWAYS prescribe dose [mg or mcg]

WHO Principles of Pediatric Pain Management

- Apply the WHO-pain ladder: Do NOT undermedicate; advance to opioids if pain control suboptimal
- Use around the clock medications for predictable pain PLUS additional breakthrough doses (NOT just prn pain medication)
- Use the simplest and least invasive routes whenever possible (e.g. oral vs. IV, NEVER IM)
- Assess the pain regularly and change your plan accordingly
- Use combinations of non-opioids and an opioid to enhance pain control
- Always integrate non-drug strategies in combination with medications to enhance pain control (e.g. cuddling, distraction, relaxation techniques, massage, hypnosis, aromatherapy)

Denying Pain

When a child denies or minimizes pain, consider possibility that the child:

- was previously treated for pain with injections or painful procedures
- has been encouraged to be "brave"
- lacks understanding that the pain can be treated
- lacks understanding regarding the words being used to ask about pain
- is afraid of medication side effects or addiction
- is worried that if still in pain, they will not be discharged as planned
- believes that tubes (such as NG) won't come out until pain medications are stopped

If you have questions about medications or pain management please call the Pain & Palliative Care Team 24/7. Minneapolis and St. Paul Campus phone: 651-220-5400.