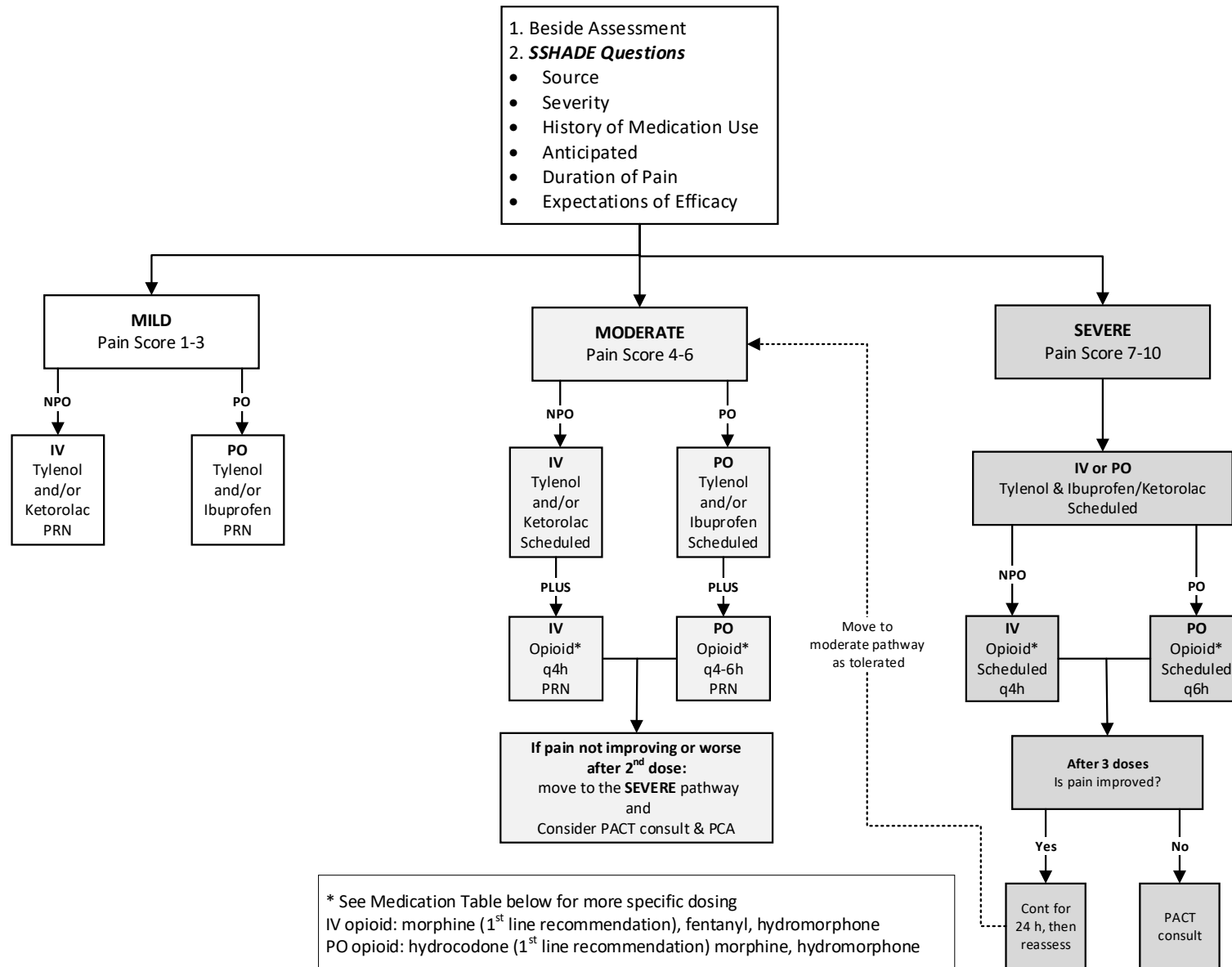


Pediatric Pain

Purpose: For **INPATIENT** pediatric patients with acute pain, below is a step-wise management approach to treatment. This approach incorporates patient history, physical exam and pain assessment tools as well as a workflow to guide providers in the management of patients experiencing mild, moderate and severe acute pain. Emphasis should be on individual patient assessment and reassessment after intervention in line with this guideline



| Created by | Department | Creation Date | Version Date |
|--------------------------|------------|---------------|--------------|
| R. Ganesan, K. Wittmayer | Peds/PACT | Feb 2022 | July 2024 |

Pediatric Pain

| Acetaminophen/NSAIDs | | | | | |
|---------------------------------------|--------|-----------------------------------|-----------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Agent | Route | Dose | Frequency | Onset | Comments/Side Effects |
| Acetaminophen (Tylenol®, Ofirmev®) | PO | 10-15 mg/kg (max: 650-1000 mg) | Q 4-6 h | 30-60 min | <ul style="list-style-type: none"> Maximum daily dose: 75 mg/kg/day or 4 gram/day For rectal doses: round dose to nearest ¼ suppository |
| | Rectal | 10-20 mg/kg (max: 650 mg) | Q 4-6 h | 30-60 min | |
| | IV | 10-15 mg/kg (max: 650-1000 mg) | Q 4-6 h | 30-60 min | |
| Ibuprofen (Advil®, Motrin®) | PO | 10 mg/kg (max: 600 mg) | Q 6-8 h | 30-60 min | <ul style="list-style-type: none"> Maximum daily dose: 40 mg/kg/day or 3.2 gram/day Avoid use in renal dysfunction |
| Ketorolac (Toradol®) | IV | 0.5 mg/kg (max: 15 mg) | Q 6 h | 30 min | <ul style="list-style-type: none"> P&T recommends initial max dose: 15 mg Dose may be increased to 30 mg for refractory pain Max duration: 5 days Avoid use in renal dysfunction |
| Opioids | | | | | |
| Agent | Route | Dose | Frequency | Onset | Comments/Side Effects |
| Morphine | IV | 0.05-0.1 mg/kg (max: 2 mg) | Q 4 h | 5-10 min | <ul style="list-style-type: none"> May cause flushing or pruritus Avoid use in renal dysfunction |
| | PO | 0.2-0.3 mg/kg (max: 15 mg) | Q 4 h | 30 min | |
| Fentanyl (Sublimaze®) | IV | 0.5-1 mcg/kg (max: 50 mcg) | Q 2 h | 1-3 min | <ul style="list-style-type: none"> Short acting opioid May cause apnea May cause chest wall rigidity, if given rapid IV push |
| | IN | 1.5 mcg/kg (max: 100 mcg) | -- | 5-10 min | <ul style="list-style-type: none"> Burning feeling in nostrils Must use atomizer for administration |
| Hydromorphone (Dilaudid®) | IV | 0.005-0.01 mg/kg (max: 0.5 mg) | Q 3-6 h | 5-10 min | <ul style="list-style-type: none"> Reserve for severe pain/opioid tolerance ~ 7 times more potent than morphine |
| | PO | 0.03-0.06 mg/kg (max: 2-4 mg) | | 15-30 min | |

*Please consider side effect profile including respiratory depression when prescribing opioids to **naïve patients**. Recommend starting at the lower range of recommended dose and titrate slowly to affect

***Opioid tolerance** occurs when a person using opioids begins to experience a reduced response to medication, requiring more opioids to experience the same effect. Tolerance can begin to develop in as little as 2-3 doses.

| | | | |
|----------------------------------------|-------------------------|---------------------------|---------------------------|
| Created by R. Ganesan, K. Wittmayer | Department Peds/PACT | Creation Date Feb 2022 | Version Date July 2024 |
|----------------------------------------|-------------------------|---------------------------|---------------------------|

Pediatric Pain

| Combination Opioids w/ Acetaminophen (APAP) | | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| Agent | Route | Dose | Frequency | Onset | Comments/Side Effects |
| Hydrocodone/ APAP (Hycet®/Norco®) | PO | 0.1 mg/kg (initial max: 5 mg) Dose based on hydrocodone component | Q 4-6 h | 30-60 min | <ul style="list-style-type: none"> Max daily dose acetaminophen: 75 mg/kg/day or 4 gram/day |
| Dosage forms: <ul style="list-style-type: none"> Solution <ul style="list-style-type: none"> Hydrocodone 7.5 mg/APAP 325 mg per 15 mL Tablet <ul style="list-style-type: none"> Hydrocodone 5 mg/APAP 325 mg Hydrocodone 7.5 mg/APAP 325 mg Hydrocodone 10 mg/APAP 325 mg | | | | | |
| Neuropathic Pain | | | | | |
| <i>*Consider Pediatric Advanced Care Team (PACT) Consult</i> | | | | | |
| Agent | Route | Dose | Frequency | Comments/Side Effects | |
| Gabapentin (Neurontin®) | PO | 5 mg/kg/dose (initial max: 300 mg) | Q 8-12 h | | |
| Lidocaine 4% Patch | Topical | > 12 years: 1 patch | Daily | <ul style="list-style-type: none"> Apply to intact skin only Patch may remain in place up to 12 hours in a 24-hour period Patches may be cut to size (refer to manufacturer labeling) | |
| Adjunctive Treatments for Side Effects | | | | | |
| Agent | Route | Dose | Frequency | Comments/Side Effects | |
| Itching | | | | | |
| Naloxone (Narcan®) | IV infusion | 0.5-1.5 mcg/kg/hour | Continuous | <ul style="list-style-type: none"> Titrate to effect ICU & PACT team use only | |
| Nausea | | | | | |
| Metoclopramide (Reglan®) | IV/PO | 0.1 mg/kg (max: 10 mg) | Q 6h PRN | <ul style="list-style-type: none"> Prolonged QTc Avoid rapid push Consider pre-medicating with Benadryl® to prevent EPS effects. | |
| Ondansetron (Zofran®) | IV/PO | 0.1 mg/kg (max: 8 mg) | Q 6h PRN | <ul style="list-style-type: none"> Prolonged QTc | |
| Diphenhydramine (Benadryl®) | IV/PO | 0.5 mg/kg (max: 25-50 mg) | Q 6 h PRN | <ul style="list-style-type: none"> Drowsiness, dry mouth, risk for paradoxical reaction (in young children) | |
| Hydroxyzine (Atarax®) | PO | 0.5 mg/kg (max: 25-50 mg) | Q 6 h PRN | <ul style="list-style-type: none"> Drowsiness | |

***Max dosing should be considered in opioid naïve patients.**

***Opioid tolerance** occurs when a person using opioids begins to experience a reduced response to medication, requiring more opioids to experience the same effect. Tolerance can begin to develop in as little as 2-3 doses.

| | | | |
|--------------------------|------------|---------------|--------------|
| Created by | Department | Creation Date | Version Date |
| R. Ganesan, K. Wittmayer | Peds/PACT | Feb 2022 | July 2024 |

<https://www.advocatechildrenshospital.com/healthcare-professionals/peds-pathways>

Pediatric Pain

| Opioid Reversal | | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Agent | Route | Dose | Comments/Side Effects | |
| Opioid Reversal | | | | |
| Naloxone (Narcan®) | IV | Full Reversal Dosing 0.1 mg/kg (max: 2 mg) Respiratory Depression Dosing 0.01 mg/kg (max: 0.4 mg) | <ul style="list-style-type: none"> Opioid induced over-sedation Duration: 20-60 min Repeat dosing may be needed | |
| Constipation Prevention & Treatment | | | | |
| One of the major side effects of opioids is constipation. Remember to maintain appropriate hydration, dietary management and encourage physical activity in patients receiving these medications as directed by the physician. Consider the combination of medications to bulk stool and stimulate the GI tract. | | | | |
| Agent | Route | Dose | Frequency | Comments/Side Effects |
| Docusate Sodium (Colace®) | PO | < 20 kg: 2.5 mg/kg 20-40 kg: 50 mg > 40 kg: 100 mg | BID | <ul style="list-style-type: none"> Stool softener |
| Glycerin (Pedia-Lax®) | Rectal | 0.5-1 suppository | Daily | <ul style="list-style-type: none"> Stool softener |
| Lactulose | PO | 0.5-1 g/kg (max: 20 g) | Daily or BID | <ul style="list-style-type: none"> Osmotic laxative |
| Polyethylene Glycol (MiraLax®) | PO | < 11 kg: 4.25 g 11-25 kg: 8.5 g > 25 kg: 17 g | Daily or BID | <ul style="list-style-type: none"> Osmotic laxative |
| Senna (Senokot®) | PO | < 6 years: 4.4 mg (2.5 mL syrup) ≥ 6 years: 8.8 mg (5 mL syrup) | BID | <ul style="list-style-type: none"> Stimulant |
| Senna/docusate (Senokot S®) | PO | ≥ 6 years: 1-2 tabs | BID | <ul style="list-style-type: none"> Stimulant/stool softener Combination tablet: Senna 8.6 mg/Docusate 50 mg |