MEDICATION	EQUIANALGESIC DOSE (for chronic dosing)		USUAL STARTING DOSES Pediatric patients > 6 months (decrease dose by 1/4 to 1/2 for age < 6 months or severe renal or liver disease)		COMMENTS (Not all dosage forms are available for inpatients, consult pediatric pharmacy for availability)
	IM/IV onset 15-30 min	**PO** onset 30-60 min	**PARENTERAL**	**PO**	
MORPHINE	10 mg	30 mg	<40 kg: 0.05-0.1 mg/kg/dose q 2-4 hrs ≥40 kg: 2 - 5 mg q 2-4 hrs	<40 kg: 0.15-0.3 mg/kg/dose q 3-4 hrs ≥40 kg: 5 - 15 mg q 3-4 hrs	Oral Solution (2 mg/ml); Concent. oral solution (20 mg/ml) can be given buccally In some post-op patients, up to 0.2mg/kg IV may be required as an initial IV dose IR tablet (15, 30 mg) ER tablet (15, 30, 60, 100, 200 mg) q8-12h (MS Contin) ER capsules (10, 20, 30, 50, 60, 70, 80, 100, 130, 150, 200) q12-24h (Kadian) ER capsules (30, 45, 60, 75, 90, 120) q24h (Avinza) **Not recommended in renal failure.**
OXYCODONE	Not Available	20 mg	Not Available	<40 kg: 0.1-0.2 mg/kg/dose q 3-4 hrs ≥40 kg: 5 - 10 mg q 3-4 hrs	Oral solution (5mg/5ml); Concentrate (20mg/ml) can be given buccally IR capsule (5mg); IR tablets (5,10,15,20,30) ER tablet (10, 15, 20, 30, 40, 60, 80) q8-12h (Oxycontin) Designed with abuse-deterrent properties Combos available with acetaminophen or ibuprofen (generally not recommended) **Not enough literature regarding dosing in renal failure. Use with caution.**
HYDROMORPHONE	1.5 mg	7.5 mg	<40 kg: 0.015 mg/kg/dose q 3-4 hrs ≥40 kg: 0.2 - 0.6 mg q 3-4 hrs	<40 kg: 0.03-0.06 mg/kg/dose q 3-4 hrs ≥40 kg: 1 - 2 mg q 3-4 hrs	Oral Solution (1mg/ml); Suppository (3mg); Tablet (2, 4, 8mg) ER tablets (8, 12, 16, 32mg) - Designed with abuse-deterrent properties **Use carefully with renal failure.**
METHADONE (see text for dosing conversations)	1/2 oral dose 2 mg PO methadone = 1 mg parenteral	24 hour oral morphine / Oral morphine: methadone ratio <30 mg: 2:1 31-99 mg: 4:1 100-299 mg: 8:1 300-499 mg: 12:1 500-999 mg: 15:1 1000-2100 mg: 20:1 >1200mg: consider consult	Consult Pediatric Supportive (Palliative) Care or Anesthesia Pain Service	Consult Pediatric Supportive (Palliative) Care or Anesthesia Pain Service	Oral Solution (1mg/ml, 2mg/ml); Concentrate (10 mg/ml) Tablet (5, 10mg); Usually q12h or q8h; Long variable t½ and high interpatient variability; Small dose change makes big difference in blood levels; Tends to accumulate with higher doses, always advise "hold for sedation" Because of long half-life, do not use methadone prn unless experienced Many drug interactions with commonly used medications When converting from oral to parenteral, decrease dose by HALF for safety; When converting from parenteral or oral, keep dose the same **Acceptable with renal disease.**
FENTANYL	100 mcg (single dose) t ½ and duration of parenteral doses variable	24 hour MS dose / Initial patch dose 30-59 mg: 12 mcg/h 60-134 mg: 25 mcg/h 135-224 mg: 50 mcg/h 225-314 mg: 75 mcg/h 315-404 mg: 100 mcg/h	<40 kg: 0.5 - 2 mcg/kg/dose q 1-3 hrs ≥40 kg: 25 - 50 mcg q 1-3 hrs	Consult Pediatric Supportive (Palliative) Care or Anesthesia Pain Service	Transdermal patch (12, 25, 50, 75, 100mcg); If transitioning from IV Fentanyl to patch, the hourly rate is the patch dose; eg. if patient is on 50mcg/hr IV, start with a 50mcg patch Buccal film (200-1200mcg), Buccal tablet (100-800mcg), Nasal solution (100 & 400mch/act), SL tablet (100-800mcg), Lozenge (200-1600mcg); SL spray (100- 1600mcg) Indicated for breakthrough cancer pain only **NB: Incomplete cross-tolerance already accounted for in conversion; when converting to other opioid from fentanyl, generally reduce equianalgesic amount by 50%** IV: very short acting; associated with chest wall rigidity if given quickly or in high dose. **Acceptable in renal failure, monitor carefully if using long term.**
HYDROCODONE	Not available	30 mg	Not Available	<40 kg: 0.2 mg/kg/dose q 4-6 hrs ≥40 kg: 5 - 10 mg q 4-6 hrs	APAP combo tablets - 2.5-10mg hydrocodone with 300-325mg APAP; APAP combo solution - 2.5mg hydrocodone with 108mg APAP per 5ml IBU combo tablets - 2.5-10mg hydrocodone with 200mg ibuprofen ER tablets (10, 15, 20, 30, 40, 50mg) – Not an abuse-deterrent formulation **Monitor total acetaminophen or ibuprofen dose.**

HALF LIFE (hours)	DURATION (hours)
1.5-2	3-7
3-4	4-6
2-3	4-5
15-90 (N.B. Huge Variation)	6-12
13-22 (patch)	48-72 (patch)
3.3-4.5	4-6

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GUIDELINES

These guidelines do not apply to infants in the NICU.

Codeine and Tramadol are CONTRAINDICATED in children under 12 years of age.

1. Evaluate pain on all patients using a developmentally appropriate scale.

   N.B. Opioids are not first line for chronic pain, even moderate to severe pain, which should be managed with an active approach and non-opioid pain relievers whenever possible. When opioids are indicated, based on a careful risk assessment, combine with an active approach and other measures. Be wary of dose escalation over time due to tolerance.

2. How to dose opioids:
   - A. Give baseline medication around the clock.
   - B. For breakthrough pain order 10% total daily dose as a PRN given q 1-2h for oral and q 30-60 min for SC/IV.
   - C. For continuous infusion, PRN can be either the hourly rate q 15 min or 10% of total daily dose q 30-60 min.
   - D. Adjust baseline upward daily in amount roughly equivalent to total amount of PRN.
   - E. Negotiate with patient/family to target level of relief, balancing function vs. complete absence of pain.
3. In general, oral route is preferable, then transcutaneous > subcutaneous > intravenous. Determine route as appropriate for situation/acuity and type of pain.
4. If parenteral medication is needed for mild to moderate pain, use half the usual starting dose of morphine or equivalent.
5. Short-acting preparations should be used acutely & post-op. Switch to long-acting preparations when pain is chronic and the total daily dose is determined.
6. Avoid multiple agents of similar duration.
7. When converting from one opioid to another, some experts recommend reducing the equianalgesic dose by 1/3 to 1/2, then titrate as in #2 above.
8. Infants < 6 months or those with severe renal or liver disease should start on 1/4 to 1/2 the usual starting dose.
9. Administering opioids to children <24 months:
   - A. Infants < 6 months: place on apnea/bradycardia monitor and pulse oximeter
   - B. Infants/children 6 months - 24 months: place pulse oximeter (consider for children with developmental disabilities, h/o prematurity and known respiratory difficulties)
10. Naloxone (Narcan) should only be used in emergencies: Dilute naloxone (0.4 mg/ml) 0.1 mg (0.25 ml) with 9.75 ml NS (final strength 10 mcg/ml). Give 2 mcg/kg IV, repeat q2minutes for total of 10mcg/kg. Monitor patient q15 minutes for at least 90 minutes. May need to repeat naloxone again in 30-60 minutes.

Equianalgesic Table for Pediatrics

Half-life, Duration, Dosing and Guidelines

(Tailor care to individual needs.)

Community Principles of Pain Management for Children

Adapted for pediatrics by University of Rochester Medical Center and Golisano Children's Hospital, 2012
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Additional pain management resources are available at CompassionAndSupport.org

Compassion and Support

CompassionAndSupport.org