

# Analgesics and Sedatives

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DRUG	DOSE	ONSET/ DURATION OF ACTION	COMMENTS
Narcotic analgesics and sedatives	Fentanyl	IV: 1-5 mcg/kg over 3-5 minutes, may repeat every 3-5 minutes if necessary (higher doses up to 10 mcg/kg may be required for more painful procedures, i.e., laparotomy)  IV infusion: 1-5 mcg/kg/hr titrate to effect	IV: Onset of action is almost immediate and lasts ~ 1 hour.  Minimal hemodynamic effects. No histamine release. Tolerance may develop rapidly following constant infusion. Consider first line for short procedures (i.e., intubation) <b>Risk of chest rigidity with infusion time &lt;3 minutes.</b>
	Morphine	IV infusion: starting dose 10 - 20 mcg/kg/hr IV (titrate to effect. Usual upper limit may be 50 mcg/kg/hr but higher in cases with ECMO)  IV: 0.05 - 0.1 mg/kg IV no more frequent than q 2 h PRN  PO: 0.05 - 0.1 mg/kg PO q 4-6 h PRN	IV: Peak effect occurs in 20 minutes and lasts for 6-8 hours in preterm infants and 2-4 hours in full-term infants.  PO: Peak effect occurs in 1 hour.  Increased entero-hepatic circulation prolongs half-life in preterm infants. Can cause histamine release. Higher doses may be needed as tolerance develops. Conversion from IV to PO is 1:3 in neonates; however, starting doses are the same on a per kg basis.
Benzodiazepines	Lorazepam	IV/PO: 0.05 - 0.1 mg/kg IV q 1-2 h PRN	IV: Onset of action occurs within 5 minutes with peak effect occurring in 45 minutes. Duration of action is 3-24 hours.  PO: Onset occurs within 60 minutes.  Note: some products contain benzyl alcohol and propylene glycol. Do not exceed 25 mg/kg/day of benzyl alcohol.
	Midazolam	IV: 0.05 - 0.15 mg/kg IV q 2-4 h PRN  PO: 0.25 mg/kg PO 30-60 min prior to procedure  Intranasal: 0.3 mg/kg prior to procedure  IV Infusion: PMA <30 weeks: Not recommended PMA >= 30 weeks and < 36 weeks: 10 to 60 mcg/kg/hr (MAX dose of 60mcg/kg/hr) PMA >= 36 weeks: 10-120 mcg/kg/hr (MAX dose of 120 mcg/kg/hr)	Rapid onset of action. Duration of action is 2-6 hours.  Intranasal: Onset occurs in 5 minutes and lasts 30-60 minutes. Can repeat dose once in 5-15 minutes.  Contains benzyl alcohol. Do not exceed 25 mg/kg/day of benzyl alcohol.

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<b>Non-narcotic analgesic and sedative</b>  See the link within the Cardiology Chapter of the Iowa Neonatology Handbook “ <i>PDA Screening and Management Guidelines</i> ”) for Acetaminophen treatment dosing]	Dexmedetomidine	IV infusion: 0.1 - 1 mcg/kg/hr (start at 0.25 mcg/kg/hr and increase dose by 0.25 mcg/kg/hr q 2-4 h PRN)	Duration of action 2-7 hours (longer in premature infants).  Monitor for bradycardia with higher doses.	Must wean off drip. To wean, decrease dose by 0.1 mcg/kg/hr q 12-48 h. Consider starting PO clonidine if patient has been on dexmedetomidine for > 3 days. Overlap clonidine with dexmedetomidine therapy for 2 days. Clonidine PO dose: 2 mcg/kg q 6 h, then 1 mcg/kg q 6 h, then 1 mcg/kg q 12 h, then 0.5 mcg/kg q 12 h.
	Ibuprofen	PO: 5 - 10 mg/kg PO q 6-8 h PRN (max: 40 mg/kg/24 h)	PO: Onset occurs within ~ 1 hour with peak effect in 2-4 hours. Duration of action is 6-8 hours.	Recommended for pain in children who are ≥ 6 months of age.
	Acetaminophen	PO: 10 - 15 mg/kg PO q 4-6 h PRN <ul style="list-style-type: none"> <li>• Max (GA 28-32 weeks): 40 mg/kg/24 h</li> <li>• Max (GA 33-37 weeks or term neonate &lt; 10 days): 60 mg/kg/24 h</li> <li>• Max (term neonates ≥ 10 days): 90 mg/kg/24 h</li> </ul> PR: 15 - 30 mg/kg PR q 6 h PRN <ul style="list-style-type: none"> <li>• Max (GA 28-32 weeks): 40 mg/kg/24 h</li> <li>• Max (GA 33-37 weeks or term neonates &lt; 10 days): 60 mg/kg/24 h</li> <li>• Max (term infants ≥ 10 days): 90 mg/kg/24 h</li> </ul> IV: <ul style="list-style-type: none"> <li>• Preterm infants &gt; 32 weeks: 10 mg/kg/dose q 6 h PRN</li> </ul> Term infants: 7.5 mg/kg/dose q 6 h PRN (max: 30 mg/kg/24 h)	PO: Peak effect occurs within 1 hour. Duration of action is 4-6 hours.  PR: Absorption is erratic and onset of action can be prolonged.  IV: Onset of action is within 5-10 minutes with peak effect in 1 hour. Duration of action is 4-6 hours.	Note: Higher rectal doses may be used (up to 40 mg/kg/dose PR).

**References:**

1. Taketomo, Carol K., J. H. Hodding, and D. M. Kraus. Pediatric & Neonatal Dosage Handbook, 19th ed. Hudson, OH: Lexi-Comp (2012).
2. Micromedex. Neofax Pediatrics 2021.
3. Lexi-Comp, Inc. Pediatric Drug Information. Accessed online. Updated annually.
4. Tierney, S. Dexmedetomidine Drug Monograph. Updated 7 May 2014.