

Blue Weight 20 kg Blue

Heart rate 70 to 115 SBP 105 to 114 Resp 20 to 24

Acetaminophen (Tylenol): Oral liquid: 160 mg/5 ml
Suppository: 120 mg, 650 mg

Route	Dose per kg	Onset	Duration	Dose	ml to give
PO, PR	15 mg/kg	30 m	4 hr	300 mg	9.4 ml of 160 mg/5 ml

Alerts: Check concentration, as there are many different formulations. Suppository also available in two doses.

Comments: Equivalent to NSAID's for pain and fever, but has no anti-inflammatory effect. Oral liquid can be 100 mg/ml infant drops OR children's suspension 160 mg/5ml. Do not exceed 5 doses per day and use with extreme caution in children with hepatic dysfunction.

Diazepam: Intravenous formulation (same for IV or PR): 5 mg/ml

Route	Dose per kg	Onset	Duration	Dose	ml to give
IV	0.2 mg/kg	1-3 m	0.5 hr	4 mg	0.8 ml
PR	0.5 mg/kg	2-15 m	0.5 hr	10 mg	2 ml

Alerts: Resp depression with fast IV push. Rectal gel available at 2.5 mg/ml

Comments: Not a first line drug. Works for status epilepticus, but midazolam or lorazepam preferred. Works for sedation but midazolam or lorazepam preferred. Push slowly IV. May repeat IV dose q 10 minutes prn, with max total dose of 10 mg. Decrease dose by ½ if given with morphine. IV solution can be administered with lubricated TB syringe (no needle) into rectum. Rectal gel easier to insert into rectum, but expensive.

Etomidate: Intravenous formulation: 2 mg/ml

Route	Dose per kg	Onset	Duration	Dose	ml to give
IV	0.2 mg/kg	30-60 sec	2-15 min	4 mg	Sedation dose 2 ml
IV	0.3 mg/kg	30-60 sec	5-15 min	6 mg	RSI dose 3 ml

Alerts: Give lower dose for sedation for imaging. Watch for myoclonus, vomiting.

Comments: Use starting dose of 0.2 mg/kg for sedation for imaging. Use with narcotic (e.g., fentanyl) for procedural sedation. Use higher dose of 0.3 mg/kg for induction for rapid sequence intubation. Increase by 0.05 mg/kg every 60-90 seconds to maximum of 0.4 mg/kg.

Fentanyl: IV/IM formulation: 100 mcg/2ml = 50 mcg/ml

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Route	Dose per kg	Onset	Duration	Dose	ml to give
IV, IM	1 mcg/kg	<1 m IV 7-15 m IM	30-60 m	20 mcg	0.4 ml

Alerts: Resp depression, reversible with naloxone. Avoid rapid infusion, as it may lead to rigid chest syndrome and need for respiratory support.

Comments: Start with 1 mcg/kg. Max 100 mcg single dose. May repeat dose q5-10 minutes prn. The respiratory depressant effects may last longer than analgesic effects. Best drug for major trauma cases and possible hypoperfusion.

Fentanyl (Intranasal): Use IV formulation for intranasal administration:
100 mcg/2ml = 50 mcg/ml

Route	Dose per kg	Onset	Duration	Dose	ml to give
IN	1.5 mcg/kg	1-2 m	½-2 hr	30 mcg	0.6 ml

Alerts: Atomizer needed to nebulize drug intranasally to maximize absorption.

Comments: Put half of each dose in each nostril. May repeat 0.5 mcg/kg dose q 5-10 minutes prn. The respiratory depressant effects may last longer than analgesic effects. Use when vascular access unavailable or unnecessary. Has not been trialed on <3 yo.

Hydromorphone (Dilaudid): IV/IM formulation: 2 mg/ml

Route	Dose per kg	Onset	Duration	Dose	ml to give
IV, IM	0.02 mg/kg	2-5 m	4-5 hr	0.4 mg	0.2 ml

Alerts: Resp depression possible. Contraindicated in status asthmaticus.

Comments: Not recommended for children intolerant or unresponsive to morphine. Excellent alternative to morphine for sickle cell pain. 1 mg hydromorphone = 7 mg morphine.

Ibuprofen (Motrin): Formulation: Oral liquid 100 mg/5ml

Route	Dose per kg	Onset	Duration	Dose	ml to give
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PO	10 mg/kg	30 m	6 hr	200 mg	10 ml of 100 mg/5 ml
<p>Alerts: Contraindicated if hypersensitive to NSAID's. Use with extreme caution in patients with decreased renal function.</p> <p>Comments: Excellent first line analgesic and antipyretic. Use when an anti-inflammatory effect is desired in patients with pain or fever.</p>					

Ketamine: IV/IM formulation: 50 mg/ml

Route	Dose per kg	Onset	Duration	Dose	ml to give
IV	1-2 mg/kg	30 sec	15-30 m	20-40 mg	0.4-0.8 ml
IM	5 mg/kg	3-5 m	30-90 m	100 mg	2 ml
<p>Alerts: Laryngospasm, hypersalivation, vomiting. Contraindicated if increased intracranial or intraocular pressure. Watch for emergence reaction, nausea/vomiting.</p> <p>Comments: No atropine needed. Do not exceed injection rate of 0.5 mg/kg/min or give the dose in less than 1 minute.</p>					

Lorazepam (Ativan): IV/IM formulation: 2 mg/ml

Route	Dose per kg	Onset	Duration	Dose	ml to give
IV, IM	0.05- 0.1 mg/kg	2-3 m	6-8 hrs	1-2 mg	0.5-1 ml
<p>Alerts: Check concentration (4 mg/ml also available). Resp depression, especially with fast IV push.</p> <p>Comments: Best first seizure drug. Decrease dose by ½ if given with morphine.</p>					

Methohexital (Brevital): IV/ PR (1% solution): 500 mg/ 50 ml = 10 mg/ml
 IM (5% solution): 500 mg/10ml = 50 mg/ml

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Route	Dose per kg	Onset	Duration	Dose	ml to give
IV	1 mg/kg	1 m	10 m	20 mg	2 ml of 10 mg/ml
IM	6 mg/kg	2-10 m	1-1½ hr	120 mg	2.4 ml of 50 mg/ml
Rectal	25 mg/kg	5-15 m	1-1½ hr	500 mg	50 ml of 10 mg/ml

Alerts: Resp depression. Note there is a different dilution for IV/PR versus IM administration. Do not use with hypoperfusion.

Comments: Deep sedation drug. Continuous monitoring essential.

Midazolam (Versed): IV/IM formulation: 1 mg/ml

Route	Dose per kg	Onset	Duration	Dose	ml to give
IV, IM	0.05-0.1 mg/kg	1-5 m	½-1 hr	1-2 mg	1-2 ml

Alerts: Check concentration (also available in 5 mg/ml). Watch for resp depression, especially with rapid IV push.

Comments: Decrease dose by ½ if given with morphine. May increase dose by 0.1 mg/kg every 5 minutes, to a **maximum** of 0.4 mg/kg to attain seizure control or sedation. Max 2 mg single dose IV, max total IV dose 6 mg.

Morphine: IV/IM formulations (multiple): 5 or 10 mg/ml

Route	Dose per kg	Onset	Duration	Dose	ml to give
IV, IM	0.05-0.1 mg/kg	1-3 m	1-2 hrs	1-2 mg	0.2-0.4 ml of 5 mg/ml

Alerts: Check concentration (multiple formulations). Adjust dose for renal impairment. May cause hypotension or resp depression, nausea, emesis, or pruritis.

Comments: May repeat dose q 5-15 minutes to desired effect. Decrease dose by ½ if given with barbiturates, hydroxyzine/diphenhydramine, or with other benzodiazepines.

Pentobarbital (Nembutal): IV/IM formulation: 50 mg/ml

Route	Dose per kg	Onset	Duration	Dose	ml to give
IV	1-2 mg/kg	3-5 m	15-45 m	20-40 mg	0.4-0.8 ml

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IM	5 mg/kg	10 m	1-4 hrs	100 mg	2 ml
<p>Alerts: May cause hypotension. Paradoxical excitement may occur when administered (small doses of morphine can ameliorate this effect).</p> <p>Comments: Not first line drug for imaging sedation—use etomidate. Decrease dose by ½ if given with morphine. Do not inject >50 mg/min. Lasts longer than methohexital.</p>					

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Reversal Agents

Flumazenil (Romazicon): IV formulation: 0.1 mg/ml

Route	Dose per kg	Onset	Duration	Dose	ml to give
IV	0.01 mg/kg	1-2 m	20-60 m	0.2 mg	2 ml
Alerts: Contraindicated if benzodiazepine addiction or concomitant tricyclic antidepressant overdose.					
Comments: May repeat 0.02 mg/kg q1 min up to a total of 1 mg.					

Naloxone (Narcan): IV/IO/IM/IN/ET formulation: 0.4 mg/ml, or 1 mg/ml

Route	Dose per kg	Onset	Duration	Dose	ml to give
IV, IO, IM, SC, IN, ET	0.1 mg/kg	<2 m (IV, IO), 2-5 m (IM, SC, IN, ET)	30-60 m	2 mg	2 ml of 1 mg/ml
Alerts: Careful with concentration. Use with extreme caution in neonates to avoid seizures. Contraindicated if hypersensitivity to naloxone.					
Comments: May repeat 0.05 mg/kg q2-3 min up to total 2 mg. Max single dose 2 mg. Titrate dose for either partial or complete opiate reversal.					

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Topical Pain Management

EMLA (Eutectic Mixture of Local Anesthetics): Formulation: lidocaine 2.5% & prilocaine 2.5% cream (5 g tube)

Route	Max dose	Max area of coverage	Onset	Duration
Topical	20 g	200 cm ² area of skin	60 m	2-3 hrs

Alerts: Do not apply to mucous membranes or open wounds. Apply for no longer than 4 hours. Contraindicated if hypersensitivity to lidocaine or prilocaine.

Comments: May cause methemoglobinemia. Anesthesia lasts 1-2 hrs after removal of cream.

LET (lidocaine, epinephrine, tetracaine): Formulation: Lidocaine 4%, Epinephrine 1:1000, & Tetracaine 0.5% (3 ml bottle)

Route	Dose	Onset	Duration
Topical	1-3 ml	10 m	1-2 hrs

Alerts: Do not use on fingertips, toes, nose, or penis. Max dose is 8 mg/kg of lidocaine. Contraindicated if hypersensitivity to lidocaine, epinephrine, or tetracaine. Avoid contact with mucous membranes.

Comments: For facial lacerations, apply solution with dropper or gauze (gel is better).

Lidocaine 1% (Xylocaine): Formulation: Lidocaine 1% (10 mg/ml)

Route	Max Dose	Onset	Duration
Infiltration	10 ml	Rapid	½-1 hr

Alerts: Do not exceed 4-5 mg/kg due to risk of seizures, or 8 mg/kg if combined with epinephrine. Do not use lidocaine/epinephrine combo on fingertips, toes, nose, or penis.

Comments: Buffer lidocaine injection (lidocaine 1%) as a 1:10 mixture of 1 part sodium bicarbonate solution in 9 parts of lidocaine 1% to reduce pain of injection.