

# White Weight 18 kg White

Heart rate 70 to 115 SBP 104 to 112 Resp 20 to 24

**Acetaminophen (Tylenol):** Oral elixir: 160 mg/5 ml  
Suppositories: 120 mg, 650 mg

Route	Dose per kg	Onset	Duration	Dose	ml to give
PO, PR	15 mg/kg	30 m	4 hr	<b>270 mg</b>	<b>8.4 ml of 160 mg/5 ml</b>

**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	<b>3.6 mg</b>	<b>0.72 ml</b>
PR	0.5 mg/kg	2-15 m	0.5 hr	<b>9 mg</b>	<b>1.8 ml</b>

**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	<b>3.6 mg</b>	<b>Sedation dose 1.8 ml</b>
IV	0.3 mg/kg	30-60 sec	5-15 min	<b>5.4 mg</b>	<b>RSI dose 2.7 ml</b>

**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 (**4 mg**).

**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	18 mcg	0.36 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	27 mcg	0.54 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	0.36 mg	0.18 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.

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

Route	Dose per kg	Onset	Duration	Dose	ml to give
PO	10 mg/kg	30 m	6 hr	180 mg	9 ml of 100 mg/5 ml

**Alerts:** Contraindicated if hypersensitive to NSAID's. Use with extreme caution in patients with decreased renal function.  
**Comments:** Excellent first line analgesic and antipyretic. Use when an anti-inflammatory effect is desired in patients with pain or fever.

**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	18-36 mg	0.36-0.72 ml
IM	5 mg/kg	3-5 m	30-90 m	90 mg	1.8 ml

**Alerts:** Laryngospasm, hypersalivation, vomiting. Contraindicated if increased intracranial or intraocular pressure. Watch for emergence reaction, nausea/vomiting.  
**Comments:** No atropine needed. Do not exceed injection rate of 0.5 mg/kg/min or give the dose in less than 1 minute.

**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	0.9-1.8 mg	0.45-0.9 ml

**Alerts:** Check concentration (4 mg/ml also available). Resp depression, especially with fast IV push.  
**Comments:** Best first seizure drug. Decrease dose by ½ if given with morphine.

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

Route	Dose per kg	Onset	Duration	Dose	ml to give
IV	1 mg/kg	1 m	10 m	18 mg	1.8 ml of 10 mg/ml
IM	6 mg/kg	2-10 m	1-1½ hr	108 mg	2.16 ml of 50 mg/ml
Rectal	25 mg/kg	5-15 m	1-1½ hr	450 mg	45 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	0.9-1.8 mg	0.9-1.8 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	0.9-1.8 mg	0.18-0.36 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

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Route	Dose per kg	Onset	Duration	Dose	ml to give
IV	1-2 mg/kg	3-5 m	15-45 m	18-36 mg	0.36-0.72 ml
IM	5 mg/kg	10 m	1-4 hrs	90 mg	1.8 ml

**Alerts:** May cause hypotension. Paradoxical excitement may occur when administered (small doses of morphine can ameliorate this effect).

**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.

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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	<b>0.18 mg</b>	<b>1.8 ml</b>

**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	<b>1.8 mg</b>	<b>1.8 ml of 1 mg/ml</b>

**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	10 g	100 cm <sup>2</sup> area of skin	60 m	2-3 hrs
<b>Alerts:</b> Do not apply to mucous membranes or open wounds. Apply for no longer than 4 hours. Contraindicated if hypersensitivity to lidocaine or prilocaine. <b>Comments:</b> 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
<b>Alerts:</b> 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. <b>Comments:</b> 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	9 ml	Rapid	½-1 hr
<b>Alerts:</b> 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. <b>Comments:</b> 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.			