

White Weight 16 kg White

Heart rate 80 to 125 SBP 102 to 111 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	240 mg	7.5 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	3.2 mg	0.64 ml
PR	0.5 mg/kg	2-15 m	0.5 hr	8 mg	1.6 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 5 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	3.2 mg	Sedation dose 1.6 ml
IV	0.3 mg/kg	30-60 sec	5-15 min	4.8 mg	RSI dose 2.4 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 (4 mg).

White Weight 16 kg White

Heart rate 80 to 125 SBP 102 to 111 Resp 20 to 24

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

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	16 mcg	0.32 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	24 mcg	0.48 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	0.32 mg	0.16 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: 100 mg/5ml children's suspension

White Weight 16 kg White

Heart rate 80 to 125 SBP 102 to 111 Resp 20 to 24

Route	Dose per kg	Onset	Duration	Dose	ml to give
PO	10 mg/kg	30 m	6 hr	160 mg	8 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	16-32 mg	0.32-0.64 ml
IM	5 mg/kg	3-5 m	30-90 m	80 mg	1.6 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	0.8-1.6 mg	0.4-0.8 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.

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

White Weight 16 kg White

Heart rate 80 to 125 SBP 102 to 111 Resp 20 to 24

Route	Dose per kg	Onset	Duration	Dose	ml to give
IV	1 mg/kg	1 m	10 m	16 mg	1.6 ml of 10 mg/ml
IM	6 mg/kg	2-10 m	1-1½ hr	96 mg	1.92 ml of 50 mg/ml
Rectal	25 mg/kg	5-15 m	1-1½ hr	400 mg	40 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	0.8-1.6 mg	0.8-1.6 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	0.8-1.6 mg	0.16-0.32 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	16-32 mg	0.32-0.64 ml

White Weight 16 kg White

Heart rate 80 to 125 SBP 102 to 111 Resp 20 to 24

IM	5 mg/kg	10 m	1-4 hrs	80 mg	1.6 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.					

White Weight 16 kg White

Heart rate 80 to 125 SBP 102 to 111 Resp 20 to 24

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	0.16 mg	1.6 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	1.6 mg	1.6 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.

White Weight 16 kg White

Heart rate 80 to 125 SBP 102 to 111 Resp 20 to 24

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 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	8 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.