

Trauma Reference Card for Pediatric Patients

Statline • 1-800-238-8001

For patient transfers, referrals
and medical advice.

As the region's only Level I Pediatric Trauma Center verified by the American College of Surgeons, Cincinnati Children's Trauma Services is committed to serving pediatric patients within our community. If you have any questions about the information provided in this guide, please call 513-636-7865.

*This card is intended to serve as a guide only for drug dosages and equipment size. It should be used in conjunction with pediatric training and medical director approval.

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Physician Priority Link 1-888-636-7997

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07/06



Resuscitation Medications

Medication	Dose	Max Dose	Route	Remarks
Epinephrine 1:10,000 (0.1 mg/ml)	0.1 mL/kg	10 mL	IV, IO	First and subsequent dosage for cardiac arrest; drug of choice for symptomatic bradycardia, refractory to airway management.
Epinephrine 1:1,000 (1 mg/ml)	0.1 mL/kg	----	IV, IO, ET	May be considered for subsequent dosing in exceptional circumstances (eg. beta-blocker overdose)
Atropine **	0.02 mg/kg	0.5mg child 1 mg adolescent	IV, IO, ET	Minimum dose = 0.1 mg Maximum cumulative dose: 1 mg child 2 mg adolescent
Lidocaine 1% (10 mg/ml)	1 mg/kg	----	IV, IO, ET	Useful for ventricular dysrhythmias. May repeat every 10-15 minutes to a Maximum dose of 3 mg/kg, then start drip
Amiodarone (50 mg/ml)	5 mg/kg	150 mg	IV, IO	Indicated for pulseless v-fib and v-tach; if + pulse, give over 10 minutes; if no pulse, push fast Must dilute to < 3 mg/mL before administration
Sodium Bicarb 8.4% (1 mEq/ml)	1 mEq/kg	50 mEq	IV, IO	Use only for prolonged arrest, dilute to 1/2 strength (cc:cc with 5% Dextrose) for infants
Calcium Chloride 10% (100 mg CaCl/mL)	20 mg/kg (0.2 mL/kg)	1000 mg (10 mL)	IV, IO	Avoid extravasation

Intubation Medications

Medication	Dose	Max Dose	Route	Remarks
Lidocaine 1% (10 mg/ml)	1 mg/ kg		IV, IO, ET	Useful as adjunct treatment for patients with increased ICP
Atropine **	0.02 mg/kg	0.5mg child 1 mg adolescent	IV, IO, ET	Minimum dose = 0.1 mg Maximum cumulative dose: 1 mg child 2 mg adolescent
Etomidate (2 mg/ml)	0.3 mg/kg	20 mg	IV, IO	May lower seizure threshold, use with caution in patients with known seizure disorder
Succinylcholine **	2 mg/kg	150 mg	IV, IO, IM	Do not use in patients with muscular dystrophy. Use with caution in patients with hyperkalemia, severe burns or patients with severe trauma

** Calculate carefully, concentrations of drugs vary

Common Medications

Medication	Dose	Max Dose	Route	Remarks
Adenosine (3 mg/ml)	0.1 - 0.2 mg/kg	12 mg	IV	Useful in SVT; push rapidly followed by rapid saline flush; use lower dose first, repeat with larger dose if needed
Benadryl	1 mg/kg	50 mg	IV, Oral	----
Dextrose 10%	2 ml/kg	----	IV, IO	First check blood glucose; use in newborns
Dextrose 25%	2-4 ml/kg	100 mL	IV, IO	First check blood glucose; dilute dextrose 50% (mL:mL) with NS; for use in children
Diazepam (Valium) (5 mg/ml)	0.2 mg/kg	10 mg	IV, IO	Watch for respiratory depression; useful for seizure control
Diazepam (Valium) (5 mg/ml)	0.3 - 0.5 mg/kg	20 mg	Rectal	Useful route when IV not available
Fentanyl (Sublimaze) (50 micrograms/mL)	2 microgms/kg	100 micrograms	IV	Slow IV push (too rapid injection can cause rigid chest syndrome)
Fosphenytoin (50 mg PE/mL)	15-20 mg PE/kg	1000 mg PE	IV, IM	Dilute mL:mL with NS or D5W before IV administration (final conc.= 25mg PE/mL) Max rate = 3 mg PE/kg/min or 150 mg PE/min; May give IM if IV access unavailable
Lorazepam (Ativan) **	0.1 mg/kg	4 mg	IV, IO	Watch for respiratory depression; good for seizure control
Mannitol	0.5-1.0 gm/kg	----	IV	In-line filter < 5 microns is required for infusion of concentrations > 20%. Infuse over 20-30 minutes
Midazolam (Versed) **	0.1 mg / kg	5 mg	IV, IO	----
Morphine sulfate **	0.1 - 0.2 mg /kg	10 mg	IV, IO, IM	Watch for respiratory depression; useful for pain control Neonates: use preservative free formulations
Naloxone (Narcan) **	0.1 mg / kg	2 mg	IV, IO, ET	Indicated for unknown decreased LOC and narcotic overdose; May repeat every 2-3 minutes; Use smaller dose (0.01 mg/kg) for chronic narcotic use reversal Watch for respiratory depression; Max rate = 1 mg/kg/min or 30 mg/min. Avoid extravasation
Phenobarbital **	20 mg/kg	----	IV	Give 1 mg/kg/min, max rate 50 mg/min
Phenytoin (50 mg/mL)	15-20 mg/kg	1000 mg	IV	

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Systemic Responses to Volume Loss in the Pediatric Patient

System	<15% Blood Loss	15-25% Blood Loss	25% Blood Loss	40% Blood Loss
Cardiovascular	HR normal or mildly increased; normal pulses; normal BP	HR increased; peripheral pulses diminished; normal BP	Significantly increased heart rate; thready pulses; hypotension	Severe tachycardia to bradycardia; hypotension
CNS	Slightly anxious	Irritable, confused, combative	Irritable or lethargic; dulled pain response	Lethargy; coma
Skin	Warm, pink; brisk capillary refill	Cool extremities; mottling; delayed capillary refill	Cool extremities; mottling; prolonged capillary refill	Cold extremities; pale or cyanosis
Renal	Normal urine output	Minimal decrease in urine output; increased specific gravity	Minimal urine output	No urine output

Infusion Medications/Countershock Guidelines

Therapy	Dose	Remarks
Defibrillation	2-4 joules / kg	Start with 2 joules / kg, then to 4 joules / kg if no effect
Synchronized cardioversion	0.5 - 1 joule / kg	Use with SVT, start with 0.5 joules / kg, then double if no effect
Epinephrine pts. < 4kg	2.4 mg / 100ml Add 2.4 ml of epinephrine (2.4 mg) to the 100 ml bag of D5W	$\frac{\text{___mcg}}{\text{kg}} / \text{min} \times \text{___kg} \times 60 \text{ min} \div 24 \text{ mcg} / \text{ml} = \text{___ml} / \text{hr}$
pts. \geq 4kg	12 mg / 100ml Remove 12 ml D5W. Add 12 ml of epinephrine (12mg) to the remaining 85 ml of D5W	$\frac{\text{___mcg}}{\text{kg}} / \text{min} \times \text{___kg} \times 60 \text{ min} \div 120 \text{ mcg} / \text{ml} = \text{___ml} / \text{hr}$
Dopamine and Dobutamine pts. < 4kg	120 mg / 100ml Add 1.5 ml of dopamine to the 100 ml bag of D5W	$\frac{\text{___mcg}}{\text{kg}} / \text{min} \times \text{___kg} \times 60 \text{ min} \div 1200 \text{ mcg} / \text{ml} = \text{___ml} / \text{hr}$
pts. \geq 4kg	240 mg / 100ml Add 3 ml of dopamine to the 100 ml bag of D5W	$\frac{\text{___mcg}}{\text{kg}} / \text{min} \times \text{___kg} \times 60 \text{ min} \div 2400 \text{ mcg} / \text{ml} = \text{___ml} / \text{hr}$

Normal (Pediatric) Vital Signs by Age

Age	Pulse Beats/min	Respirations Breaths/min	Avg. Systolic BP	Avg. Diastolic BP
Premature	120-170	40-70	55-75	35-46
0-3 months	100-150	35-55	65-85	45-55
3-6 months	90-120	30-45	70-90	50-65
6-12 months	80-120	25-40	80-100	55-65
1-3 years	70-110	20-30	90-105	55-70
3-6 years	65-110	20-25	95-110	60-75
6-12 years	60-95	14-22	100-120	60-75
12+ years	55-85	12-18	110-135	65-85

Behman, R.E., Kliegman, R.M., & Jenson, H.B. (2003). Nelson Textbook of Pediatrics. Saunders

Normal (Pediatric) Temperatures by Age

Age	Celsius	Fahrenheit
New Born	36-37.2 (axillary)	96.8-99.0 (axillary)
3 years	36.4-37 (axillary)	97.5-98.6 (axillary)
10 years	36.4-37.0 (oral)	97.5-98.6 (oral)
16 years	36.4-37 (oral)	97.5-98.6 (oral)

Bowden, V.R. & Greenberg, C.S. (2003). Pediatric Nursing Procedures. Lippincott, Williams & Wilkins. Philadelphia.

Green-Hendez, C., Singleton, J., & Aronzon, D. (2001). Primary Care Pediatrics. Lippincott, Williams & Wilkins. Philadelphia.

Glasgow Coma Score

	Infant	Child/Adolescent	
Eye Opening	Spontaneous	Spontaneous	4
	To voice	To voice	3
	To pain	To pain	2
	None	None	1
Verbal Response	Babbles, easily consoled	Oriented	5
	Irritable, difficult to console	Confused	4
	Cries to pain	Inappropriate	3
	Moans to pain	Garbled	2
	None	None	1
Motor Response	Normal movements	Obeys commands	6
	Withdraws to touch	Localizes pain	5
	Withdraws to pain only	Withdraws to pain	4
	Flexion (decorticate)	Flexion (decorticate)	3
	Extension (decerebrate)	Extension (decerebrate)	2
None	None	1	

Temperature Conversion

Fahrenheit - Celsius

Fahrenheit - Celsius

106°F = 41.1°C	100°F = 37.8°C
105°F = 40.6°C	99°F = 37.2°C
104°F = 40°C	98.6°F = 37°C
103°F = 39.4°C	98°F = 36.7°C
102°F = 38.9°C	97°F = 36.1°C
101°F = 38.3°C	96°F = 35.6°C
(Fahrenheit T° - 32) x 5 ÷ 9 = Centigrade T° (Centigrade T° x 9 ÷ 5) + 32 = Fahrenheit T°	

Maintenance Fluid Requirements

Weight	Hourly Fluid Rate	Example
0-10 kg	4 cc/kg/hr	6 kg x 4=24 cc/hr
10-20 kg	4 cc/kg/hr for first 10 kg	10 kg x 4=40 cc/hr
	2 cc/kg/hr for remaining kg	5 kg x 2=10 cc/hr
		15 kg maint.=50 cc/hr
>20 kg	4 cc/kg/hr for first 10 kg	10 kg x 4=40 cc/hr
	2 cc /kg/hr for next 10 kg	10 kg x 2=20 cc/hr
	1 cc /kg/hr for remaining kg	5 kg x 1=5 cc/hr
		25 kg maint.=65 cc/hr

Burn Injury Fluid Management:

First 24 hours: LR (4ml/kg/% TBSA), half given over first 8 hours after injury; remaining half given over next 16 hours.

Pediatric Care and Equipment Guidelines

Age	Weight estimated (2.2 lbs = 1 kg)	ET Tube	ET Tube cm at lip	OG/NG Tube (Fr)	Foley Catheter (Fr)	Chest Tube (Fr)	Fluid Bolus (NS/LR) (20 cc /kg)	Packed Cells (10 cc/kg)
Preterm	1-2 kg	2.5 - 3.0*	7-8 cm	8	5 feeding	8-10	40	20
Newborn	3 kg	3.0 - 3.5*	9-10 cm	8	5 feeding	10-12	60	30
3 mo	5 kg	3.5*	10 cm	8	8-10 foley	10-12	100	50
1yo	10 kg	4.0*	11 cm	10-12	8-10 foley	16	200	100
3 yo	15 kg	4.5-5.0*	12 cm	12	10 foley	20-24	300	150
6 yo	20 kg	5.5*	15 cm	12-14	10 foley	24-28	400	200
8 yo	25 kg	6.0*	17 cm	14	10-12 foley	24-28	500	250
10 yo	30 kg	6.0	17 cm	14-16	12 foley	28	600	300
12 yo	40 kg	6.5	20 cm	16	12-14 foley	32	800	400
14+ yo	50 kg+	7.0	22 cm	16-18+	14+ foley	32	1000	500

*Uncuffed ET tube-(May use cuffed in hospital setting where cuff pressures can be monitored.)