

LUCILE PACKARD CHILDREN'S HOSPITAL @ STANFORD
DEPARTMENT OF PHARMACY
CRITICAL CARE MEDICATION ADMINISTRATION GUIDELINES

Additional information may be found in the LPCH Housestaff Manuel

DRUG	BOLUS / LOADING (actual dosing will be indication dependent)		CONTINUOUS INFUSION	ACTION	NURSING CONSIDERATIONS
	USUAL DOSING	ADMINISTRATION	USUAL DOSE RANGE		
Adenosine	100mcg/kg; max12mg	undiluted, IV push over 1-2 seconds, central line preferred	n/a	Interrupts reentry pathway through AV node; for PSVT	follow by rapid NS flush; may cause facial flushing, dyspnea, chest pressure
Alprostadil (PgE1)	n/a	n/a	0.025-0.1 mcg/kg/min	Vasodilation, inhibit plt aggregation, relax sm.muscle of pulmonary artery	may cause apnea in neonates, hypotension, flushing
Amiodarone	5mg/kg, max 150mg	over 5-10 min	<50kg: 5-15mcg/kg/min >50kg, 1mg/min or 10mg/kg/24 hour	Antiarrhythmic, inhibits adrenergic stimulation, prolong action potential & refractory periods, decr. AV conduction, & sinus node function	must be in glass container or syringe only. Conc.>2mg/ml must be given centrally. Use regular PVC tubing as mfr states that losses are accounted for by the recommended dosing schedule. Use in-line filter.
Atropine	0.02 mg/kg/dose; minimum dose 0.1mg	rapid IV; slow administration may cause paradoxical bradycardia	n/a	Anti-cholinergic agent; vagally induced symptomatic bradycardia; symptomatic bradycardia refractory to oxygenation, ventilation & epinephrine	may be give ETT or IO
Calcium Chloride	10-20mg/kg/dose	dilute to 20mg/ml; rate45-90mg/kg/h	5-15mg/kg/h	Moderates nerve and muscle by action potential excitation threshold regulation	Central line only, not compatible with phosphate containing solns.
Dobutamine	n/a	n/a	3-10 mcg/kg/min	Stimulate beta 1 receptors, incr. contractility & heart rate, minor effect on alpha and beta 2 receptors	Central line preferred. Not compatible with alkaline solns.
Dopamine	n/a	n/a	3-12 mcg/kg/min	Stimulate adrenergic and dopaminergic receptors, positive inotrope, renal vasodilation	Central line preferred. Not compatible with alkaline solns. Treat extravasation with phentolamine
Epinephrine	0.01 mg/kg/dose (PALS dosing)	rapid IV administration	0.01-0.2 mcg/kg/min	beta1, beta 2 & alpha agonist, cardiac stimulation, relax bronchial muscles	watch for pallor, increase in HR, BP, O2 consumption.
Epoprostenol (Flolan)	n/a	n/a	2-10 ng/kg/min	vasodilator of all vascular beds, endogenous inhibitor of plt inhibition	infusions for pulmonary hypertension must NOT be interrupted. Central line only. Stable for 8 hours @ room temp.
Esmolol	100-500 mcg/kg	dilute to 10mg/ml; give over 1 minute	50-400 mcg/kg/min	Beta1 selective blocker; for SVT, post-op hypertension	central line preferred; max conc for PIV 10mg/ml
Etomidate	0.2 - 0.4 mg/kg	Give ove 30-60 seconds	n/a	Sedative-hypnotic agent ; with duration of sedation lasting 10-15 minutes; Minimal CV and respiratory depression	contraindicated in patients with known adrenal insufficiency; may exacerbate focal seizures; may cause hiccups and coughing

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Isoproterenol	n/a	n/a	0.1-1.5 mcg/kg/min	stimulate beta1 & beta2 receptors, relaxation of bronchi, incr.HR &contractility, vasodilation of peripheral vasculature	watch for hypotension, flushing, arrythmias.If used for bronchodilation, must be weaned off over 24-48 hours
Ketamine	0.5-2mg/kg	*by MD only* at least over 60 sec, max 0.5mg/kg/min	5-20 mcg/kg/min	produces cataleptic-like state, releases endogenous catecholamines; sedation, analgesia	monitor BP, HR; may cause hallucinations, restlessness, disorientation, spontaneous involuntary movements
Lidocaine	1 mg/kg	dilute to 20mg/ml; give over 2-10 minutes	20-50 mcg/kg/min	Suppress automaticity of conduction tissue, incr. elect. threshold of ventricle,	beta blockers may incr. lidocaine levels. Therapeutic level: 1.5-5 mcg/ml
Magnesium Sulfate	25-50 mg/kg; max 2 grams/dose	over 10-20 min. in code situations; otherwise over 1-4 hours	n/a	treat hypomagnesiumia; torsades de pointes VT	may cause hypotension with rapid bolus administration
Milrinone	50 mcg/kg	give undiluted or diluted over 10 minutes	0.25-1 mcg/kg/min	phosphodiesterase inhibitor; positive inotrope, vasodilator	watch for vent. arrythmias, nonsustain ventricular tachycardia. May cause HA, hypokalemia,hpotension, angina
Naloxone	0.001 mg/kg; minimum dose 0.01 mg	rapid IV administration	n/a	Reversal of respiratory and neurologic depression due to opiate intoxication	Dilute 1ml of 1mg/ml naloxone with 9ml NS for 0.1 mg/ml concentration
Nicardipine	n/a	n/a	1-5 mcg/kg/min	Calcium channel blocker; relax coronary vascular sm. muscle vasodilation	central line preferred, give thru in-line filter; monitor for orthostasis, HR, s/s of CHF
Nitroglycerin	n/a	n/a	0.5-4 mcg/kg/min	Dilates coronary artery, relax vascular smooth muscle; decr. left vent. pressure & systemic vascular resistance	use nitroglycerin tubing sets.Use with caution in volume depletion. May cause HA, flushing, hypotension, relex tachycardia
Nitroprusside	n/a	n/a	0.5-4 mcg/kg/min	Relax vascular sm. muscle; peripheral vasodilation;increase cardiac output by decreasing afterload	Protect IV and tubing from light. A blue color indicates breakdown to cyanide. Caution with renal or hepatic dysfunction.
Norepinephrine	n/a	n/a	0.01-0.2 mcg/kg/min	Stimulates beta1 & alpha adrenergic receptors; incr. Contractility & HR, vasoconstriction, incr SBP	Central line preferred;treat extravasation with phentolamine. Watch for PVCs, hypertension, angina, palpitations,arrythmias,bradycardia
Pentobarbital	3-5 mg/kg/dose	over 10-30 min. max 50mg/min	1-3 mg/kg/h	Short acting barbituate with sedative, hypnotic & anticonvulsant properties.	avoid intra-arterial administration; rapid administration may cause apnea, resp.depression, hypotension, bronchospasm
Phenylephrine	n/a	n/a	0.01-0.2 mcg/kg/min	alpha adrenergic stimulator; vasoconstriction	central line preferred; treat extravasation with phentolamine; may cause hypertension, angina, reflex bradycardia

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Potassium Chloride	0.3-0.5 meq/kg	DO NOT PUSH! Administer per KCl order set	n/a	major cation in intracellular fluid; essential for conduction of nerve impulses in heart, contraction of cardiac, smooth muscle	available as 0.1meq/ml for PIV (must be further diluted 0.05 meq/ml) and 0.4meq/ml for central lines
Procainamide	3-6 mg/kg/dose	over 5 minutes	20-80mcg/kg/min; max 2gm/24hours	decrease myocardial excitability & myocardial contractility	draw through 6-12 hours after infusion started. therapeutic level: 4-10 mcg/ml; NAPA 15-25 mcg/ml; combined 10-30 mcg/ml
Propofol	1-3.5 mg/kg/dose	*by MD only*	5-50 mcg/kg/min	GABA receptor mediated, with general anesthetic properties	continuous infusions must be changed q8h; monitor for metabolic acidosis, triglyceride level; do not use filter <5 micron for administration
Rocuronium	0.6-1.2 mg/kg/dose	undiluted, rapid IV infusion	10-12 mcg/kg/min	Neuromuscular blocker; competitive antagonist to acetylcholine @ skeletal muscle	may cause hypotension, hypertension, arrhythmia, tachycardia
Sodium Bicarbonate	1 meq/kg	rapid IV administration	1-2 meq/kg/hour	Alkalinizing agent used in manangement of metabolic acidosis; do not give unless pt. is well ventilated	Use 0.5meq/ml (4.2%) concentration for <10kg; Use 1 meq/ml (8.4%) concentration for >10kg; central line preferred; do not extravasate
Thiopental	1.5-5 mg/kg	rapid IV administration	1-5 mg/kg/hour	Decrease ICP; adjunctive therapy for intubation in head injury patients	potentiates respiratory depressive effectsof narcotics and benzodiazepines
Vecuronium	0.05-0.1 mg/kg/dose	dilute to 0.5mg/ml give over 30-60 seconds	0.1 mg/kg/hour	Neuromuscular blocker; competitive antagonist to acetylcholine @ skeletal muscle	monitor degree of muschle relaxation, HR, BP, respiratory rate