

2006 PALS PHARMACOLOGY

DRUGS	CLASSIFICATION	ACTION	INDICATIONS	DOSAGE	CONSIDERATIONS/PRECAUTIONS
<u>OXYGEN</u>	Medicinal Gas	Improves tissue oxygenation	1. Suspected hypoxia 2. Cardiac Arrest	NC 1 – 6 L Mask 6-10 L Partial NRB 10+L Poss 100% in Code	O ₂ toxicity, chronic CO ₂ retainers BUT never withhold O ₂ in known or suspected hypoxia – EVEN IF HAVE COPD
<u>EPINEPHRINE</u> (Adrenalin, Epi)	Sympathomimetic	A1=Vasoconstriction B1=↑ HR, contractility and conduction B2=Bronchodilation ↑ perfusion pressure with CPR ↑ cardiac & CNS blood flow	1. Bradycardia 2. Asystole 3. PEA 4. VF or Pulseless VT 5. ↓ SVR	<u>First dose:</u> IV/IO - 0.01mg/kg (1:10,000; 0.1 mL/kg) ETT – 0.1 mg/kg (1:1000; 0.1 mL/kg) REPEAT SAME DOSE Q 3-5 MINS or may use 0.2 mg/kg of 1:1000 IV/IO/ET <u>Epi drip:</u> 0.6 x kg = mg added to 100 mL fluid ⇒ 1 mL/hr delivers 0.1 mcg/kg/min	Incompatible with NaHCO ₃ Tachydysrhythmias = ↑ workload of heart
<u>ATROPINE</u>	Parasympatholytic	↑ HR & AV conduction velocity	Symptomatic bradydysrhythmias – AFTER ventilation and epi, <u>Symptomatic = Hemodynamic compromise</u> 1. Change in LOC 2. Hypotension 3. S/S peripheral hypoperfusion FOR RSI	0.02 mg/kg or 0.2 mL/kg <u>Min single dose:</u> 0.1 mg <u>Max single dose:</u> 0.5 mg = child 1 mg = adolescent May repeat x 1 0.01-0.02 mg/kg	Tachydysrhythmias, VT, VF. Caution with MI or myocardial ischemia. Dose less than 0.1 mg may cause parasympathomimetic effect.
<u>ADENOSINE</u> (Adenocard)	Endogenous purine nucleoside	Depresses AV node & sinus node activity	SVT/PSVT and AT/PAT involving re-entry pathway, including AV node	0.1 mg/kg RAPID IV over 1-3 seconds with NS flush <u>MR</u> 0.2 mg/kg in 1-2 min <u>Max single dose:</u> 12 mg	Common but Transient: 1. Flushing 2. Dyspnea 3. AV block/ Asystole 4. Chest pain 5. Sinus bradycardia 6. Ventricular ectopy Theophylline (& xanthine derivatives) block action
<u>VERAPAMIL</u> (Calan) <u>DILTIAZEM</u> (Cardizem)	Slow Calcium Channel Blocker	1. (-) Inotropic 2. (-) Dromotropic 3. Vasodilator 4. Slows conduction & ↑ refractory state through the AV node	<u>THERE IS NO INDICATION FOR USE IN PEDIATRIC PTS.</u>	<u>IF CHILD INGESTS OR GIVEN ANY – REQUIRES MIN 6 HR PREFERRED 24 HR OBSERVATION ON HEART MONITOR</u>	

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<u>GLUCOSE</u> (Dextrose)	A carbohydrate - increases circulating blood sugar levels.	May act as an osmotic diuretic .	Unconsciousness of unknown etiology. Pediatric patients with blood sugar below 40	0.5-1 gm/kg <u>1 amp = 25 GM of glucose in 50 mL of water</u> D25 = 1:1 dilution = 2-4 mL/kg D10 = 1:4 dilution = 5-10 mL/kg	May cause tissue necrosis at injection site If undiluted – will cause sclerosis of veins
<u>NALOXONE</u> (Narcan)	Narcotic antagonist	Competes with opiates at narcotic receptor sites	Unconsciousness of unknown etiology Known narcotic respiratory and CNS depression	Up to 20 kg = 0.1 mg/kg Over 20 kg = 2 mg IV/IO/ET <u>Continuous drip:</u> 0.04 – 0.16 mg/kg/hr	Possible pulmonary edema May precipitate withdrawal sx/sx leading to seizures and IC bleeds
<u>AMIODARONE</u> (Cordarone)	Antiarrhythmic	Noncompetitive inhibitor of both alpha and beta adrenergic receptors. Inhibits outward potassium current, sodium channels which prolongs QT interval, QRS duration and slows ventricular conduction	1. MAT, SVT, JT 2. VT/V-fib	<u>Perfusing Tachys:</u> 5 mg/kg IV/IO push over 20-60 mins MAX dose: 15 mg/kg/day <u>VT/VF:</u> 5 mg/kg IV/IO – RAPID	Do not give with Procainamide Causes vasodilation May increase risk of Polymorphic VT HYPOTENSION May worsen existing arrhythmias or promote new ones
<u>LIDOCAINE</u> (Xylocaine)	Antiarrhythmic	Depress automaticity. Blocks re-entry. No significant effect above HIS bundle	VT or VF resistant to defib Wide-complex tachycardias of unknown origin FOR RSI – 1-2mg/kg	<u>VF/VT</u> 1 mg/Kg FOLLOWED immediately by a drip. If there is a 15 min delay between bolus and drip = rebolus at 0.5 – 1 mg/kg and start drip. <u>Infusion rate:</u> 20-50 mcg/kg/min <u>DRIP MIX:</u> 60 x wt in kg = # of mg diluted to total of 100 mL – then 1 mL/hr = 10 mcg/kg/min	CNS Toxicity - if present then ↓ dose and monitor closely. If reduced Lidocaine clearance is expected or suspected, the drip should not run more than 20 mcg/kg/min
<u>PROCAINAMIDE</u> (Pronestyl)	Antiarrhythmic	Sodium channel blocker that prolongs refractory period and slows down conduction.	Perfusing tachycardias NOT APPROPRIATE FOR Pulseless VT or V-fib	15 mg/kg IV or IO <u>infuse over 30-60 mins</u>	May prolong QT and PR intervals STOP IF Hypotension OR QRS widens by 50 % May initiate Polymorphic VT

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<u>Sodium Bicarbonate</u> (NaHCO ³ , Bicarb)	Alkaline	Buffering for metabolic acidosis	Metabolic acidosis when preexisting or has hyperkalemia, TCA OD, prolonged arrest state, phenobarb OD	Wait even in unwitnessed arrest 1 mEq/Kg initially, then 0.5 mEq/Kg q 10 min OR preferably according to ABG's <u>Always with appropriate ventilation</u>	Calcium, catecholamine incompatibility. Paradoxical cellular acidosis, hypernatremia, hyperosmolality. Metabolic alkalosis 1. Hypokalemia 2. O ² Hb shift to left 3. CO ² retention Central venous acidosis exacerbation
<u>DOPAMINE</u> (Intropin)	Sympathomimetic Synthetic catecholamine	<u>Dopaminergic</u> = 1-2 mcg/Kg/min. <u>Beta</u> = 2-10 mcg/Kg/min <u>Beta & Alpha</u> = >10-20 mcg/Kg/min <u>Alpha</u> = >20 mcg/Kg/min	1. Hypotension not volume related 2. Cardiogenic shock 3. Septic Shock 4. CHF	6 x kg wt = mg of drug in 100 mL OR 15 x kg wt = mg of drug in 250 mL Rate = 2-20 mcg/Kg/min	Monitor BP, EKG, UO, Sx of infiltration as for Norepinephrine Tachydysrhythmias = ↓ dose or D/C Incompatible with NaHCO ³ <u>TAPER, don't stop abruptly</u>
<u>MAGNESIUM</u> (Mag Sulfate)	Electrolyte	Deficiency is associated with cardiac arrhythmias, symptoms of cardiac insufficiency and sudden cardiac death.	Suspected ↓ magnesemia - if present in recurrent and refractory VT/VF <u>Drug of choice</u> for Torsades de Pointes	25-50 mg/kg over 10-20 min (max 2 gm)	Hypomagnesemia: 1. Muscle weakness 2. Dysrhythmias 3. Seizures 4. Tetany Hypermagnesemia: 1. Peaked T Waves 2. Bradycardia 3. ↓ RR 4. ↓ Neuromuscular activity
<u>CALCIUM CHLORIDE</u>	Electrolyte	Deficiency is associated with cardiac arrhythmias, symptoms of cardiac insufficiency and sudden cardiac death.	Calcium Channel Blocker Overdose ↓ calcium ↑ potassium ↑ magnesium	20 mg/kg or 0.2 mL/kg SLOW IV push	Rapid administration may result in bradycardia or asystole <u>DO NOT MIX WITH SODIUM BICARBONATE</u>

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<u>FENTANYL CITRATE</u> (Sublimaze)	Opioid agonist	Binds with opiate receptor sites in the CNS	FOR RSI Duration: 1-2 hrs	2-4 mcg/kg IV, IM	Respiratory depression, Hypotension May ↑ ICP Chest wall rigidity can occur with high dose rapid infusions
<u>MIDAZOLAM</u> (Versed) <u>DIAZEPAM</u> (Valium)	Benzodiazepine Sedative/hypnotic		FOR RSI Duration: Midazolam 1-2 hrs Diazepam 2-4 hrs	0.1-0.2 mg/kg IV <u>MAX – 4 mg</u> Midazolam can be given IM	Respiratory depression, Hypotension No analgesic properties Potentiates respiratory depressive effects of narcotics and barbiturates
<u>THIOPENTAL</u> (Pentothal)	Barbiturate – ultra short acting Sedative/hypnotic		FOR RSI Duration: 5-10 mins	2-4 mg/kg IV	(-) inotropic effects, Hypotension ↓ CNS metabolic rate and ICP
<u>ETOMIDATE</u>	Sedative/hypnotic		FOR RSI Duration: 10-15 mins	0.2-0.4 mg/kg IV	May cause myoclonic movements
<u>KETAMINE</u> (Ketalar)	Anesthetic		FOR RSI Duration: 30-60 mins	1-4 mg/kg	↑ ICP and BP ↑ secretions & laryngospasm Hallucinations/emergence reaction
<u>SUCCINYLCHOLINE</u> (Anectine)	Neuromuscular Blocking agent	Depolarizing agent	FOR RSI Duration: 3-5 mins	Infants – 2 mg/kg IV Children – 1 mg/kg IV Can give IM at double the IV dose Rapid onset of action	Muscle fasciculations ↑ ICP, intraocular & intragastric Life threatening ↑ K ⁺ HTN
<u>VECURONIUM</u> (Norcuron)	Neuromuscular Blocking agent	Non - depolarizing agent	FOR RSI Duration: 30-60 mins	0.1-0.2 mg/kg IV, IM 2-3 minute onset of action	Minimal cardiovascular side effects
<u>ROCURONIUM</u> (Zemuron)	Neuromuscular Blocking agent	Non - depolarizing agent	FOR RSI Duration: 30-35 mins	0.6 – 1.2 mg/kg IV Rapid onset of action	Minimal cardiovascular side effects