

# Medications in PALS

Drug	Classification	Indications	Dose/Administration	Possible Side effects	Considerations
<b>Adenosine</b>	Antiarrhythmic	SVT	1st dose = 0.1 mg/kg rapid IV push to max of 6 mg 2nd dose = 0.2 mg/kg rapid IV push to max of 12 mg	Dizziness, headache, metallic taste, shortness of breath, hypotension, slow or fast heart rate, nausea, flushing, sweating	Cardiac monitoring during administration; administer through central line if available; flush with saline following administration
<b>Amiodarone</b>	Antiarrhythmic	SVT, VT with pulses, VF, VT without pulse	SVT or VT with pulse: 5mg/kg load over 20-60 minutes to 300 mg max VF or VT without pulse: 5mg/kg rapid bolus to 300 mg max	Headache, dizziness, tremors, syncope, hypotension, bradycardia, CHF, nausea, vomiting, diarrhea, rash, skin discoloration, hair loss, flushing, coagulation problems	Monitor ECG and BP; use with caution in patients with a perfusing rhythm, hepatic failure; contraindicated for 2nd or 3rd degree heart block
<b>Atropine</b>	Anticholinergic	Symptomatic bradycardia, toxins and overdoses	Bradycardia: 0.02 mg/kg IV with 0.5 mg max dose may repeat one time By ETT: 0.04-0.06 mg/kg Toxins/overdose: 0.02-0.05 mg/kg repeated	Headache, dizziness, confusion, anxiety, flushing, visual difficulties, pupil dilation, dry mouth, tachycardia, high or low blood pressure, nausea,	Monitor ECG, oxygen, and BP; administer before intubation if bradycardic; contraindicated in glaucoma and tachyarrhythmias

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			every 20-30 minutes until symptoms reverse	vomiting, constipation, urinary retention, painful urination, rash, dry skin	
<b>Epinephrine</b>	Catecholamine vasopressor, Inotrope	Anaphylaxis, asthma, symptomatic bradycardia, croup, shock, cardiac arrest, toxins or overdose	<p>Anaphylaxis: 0.01 mg/kg every 15 minutes to max of 0.3 mg</p> <p>Asthma: (1:1000) 0.01 mg/kg subcutaneous every 15 minutes to max 0.3 mg</p> <p>Symptomatic bradycardia: 0.01 mg/kg IV every 3-5 minutes to max dose of 1 mg</p> <p>Croup: 0.25 ml Racemic epi solution via nebulizer</p> <p>Cardiac arrest: 0.01 mg/kg (1:10000) IV or 0.1 mg/kg (1:1000) per ET tube every 3-5 minutes</p> <p>Shock: 0.1-1 mcg/kg/minute IV infusion</p>	Tremors, anxiety, headaches, dizziness, confusion, hallucinations, dyspnea, SVT, VT, palpitations, hypertension, nausea, vomiting, hyperglycemia, hypokalemia, vasoconstriction	Available in 1:1000 and 1:10000 concentrations so the team must be aware of which concentration is being used; monitor BP, oxygen, and ECG; give via central line if possible; do not give in cocaine induced VT

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			Toxins/ODs: 0.01 mg/kg (1:10000) IV to max dose of 1 mg		
<b>Oxygen</b>	Elemental gas	Hypoxia, respiratory distress or failure, shock, trauma, cardiac arrest	In resuscitation, administer at 100% via high flow system and titrate to response to maintain oxygen saturation >94%	Headache, dry nose/ mouth, airway obstruction if secretions become dry	Monitor oxygen saturation; insufficient flow rates may cause carbon dioxide retention
<b>Albumin</b>	Plasma volume expander	Shock, trauma, burns	0.5-1 g/kg by rapid infusion	Fluid overload, increased respiratory rate, flushing, rash, hypocalcemia	Use within 4 hours of opening vial
<b>Albuterol</b>	Bronchodilator	Asthma, bronchospasm, hyperkalemia	2.5 mg if weight <20 kg 5 mg if weight >20 kg	Tremors, anxiety, headaches, bad taste, dry nose/throat, dyspnea, wheezing, tachycardia, hypotension, nausea, vomiting, flushing	Should not be used with tachyarrhythmias
<b>Alprostadil</b>	Prostaglandin vasodilator	Maintain patency of ductus arteriosus in	Initial: 0.05-0.1 mcg/kg/minute Maintenance: 0.01-0.05 mcg/kg/minute	Apnea, bradycardia, vasodilation, hypotension, cardiac arrest, diarrhea, renal failure, flushing, fever,	May cause tissue sloughing, must not be bolused or stopped suddenly, should be

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		congenital heart disease		hypoglycemia, DIC, hypocalcemia, seizures	refrigerated until administered
<b>Calcium chloride/gluconate</b>	Electrolyte	Hypocalcemia, hyperkalemia; consider for calcium channel blocker overdose	In cardiac arrest: 20 mg/kg IV bolus into central line In non-arrest: infuse over 30-60 minutes	Hypotension, cardiac arrhythmias, cardiac arrest, burn or sclerosis of peripheral veins, hypercalcemia	Monitor ECG and BP; contraindicated in digtoxicity or hypercalcemia; flush IV tubing before and after administration; do not administer with phosphorus-containing solutions
<b>Dexamethasone</b>	Corticosteroid	Croup, asthma	0.6 mg/kg for one dose (max dose 16 mg)	Headache, insomnia, seizures, psychosis, visual difficulties, hypertension, edema, tachycardia, osteoporosis, diarrhea, nausea, GI bleeding, flushing, sweating, poor wound healing, hyperglycemia, sodium and fluid retention, hemorrhage, hypokalemia	Can be given PO, IM or IV

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<b>Dextrose</b>	Carbohydrate	Hypoglycemia	0.5-1 g/kg	Sclerosis of veins, hyperglycemia	Do not administer during resuscitation unless hypoglycemia is documented; use point of care glucose monitoring
<b>Diphenhydramine</b>	Antihistamine	Anaphylaxis after epinephrine	1-2 mg/kg every 4 to 6 hours to a max dose of 50 mg	Dizziness, drowsiness, CNS symptoms, blurred vision, pupil dilation, dry nose/mouth/throat, hypotension, tachycardia, nausea, vomiting, urinary retention or frequency, photosensitivity	Monitor oxygen saturations and BP; use with caution in presence of glaucoma, ulcer, hyperthyroidism
<b>Dobutamine</b>	Beta-adrenergic	Ventricular dysfunction	2-20 mcg/kg/minute infusion	Headache, dizziness, hypotension, palpitations, angina, nausea, vomiting, thrombocytopenia	Monitor ECG and BP; do not mix with sodium bicarbonate or alkaline solutions
<b>Dopamine</b>	Catecholamine vasopressor, inotrope	Ventricular dysfunction, cardiogenic or distributive shock	2-20 mcg/kg/minute infusion titrated to response	Headache, dyspnea, palpitations, PVCs, SVT, VT, nausea, vomiting, acute renal failure	Monitor ECG and BP; avoid high infusion rates; do not mix in alkaline solutions or with sodium bicarbonate

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<b>Etomidate</b>	Short acting sedative with no analgesic properties	Sedation for intubation or for patients with hypotension or multiple trauma	0.2-0.4 mg/kg IV over 30 to 60 seconds with max dose of 20 mg	Fast or slow respiratory rate, high or low blood pressure, tachycardia nausea, vomiting, cough	Sedation will last 10-15 minutes; monitor oxygen, BP and respiratory function; avoid use in septic shock
<b>Furosemide</b>	Loop diuretic	Pulmonary edema, fluid overload	1 mg/kg IV or IM to max dose of 20 mg	Headache, weakness, vertigo, hearing and vision problems, dry mouth, ECG changes, nausea, vomiting, diarrhea, abdominal cramping, polyuria, glycosuria, muscle cramps, sweating, hives, hyperglycemia, anemia, hypokalemia, hyponatremia, metabolic alkalosis	Monitor BP, BUN, serum creatinine and electrolytes (especially potassium)
<b>Hydrocortisone</b>	Corticosteroid	Adrenal insufficiency associated with septic shock	2 mg/kg IV bolus to max dose of 100 mg	Psychological signs, infections, blurred vision, hypertension, diarrhea, nausea, vomiting, osteoporosis, flushing, sweating, slow wound healing, hyperglycemia	Watch for signs of infection

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<b>Inamrinone</b>	Inotrope	Myocardial dysfunction, cardiogenic shock, CHF	Loading dose 0.75-1 mg/kg bolus over 5-10 minutes may repeat twice to max dose of 3mg/kg Infusion at 5-10 mcg/kg/minute	Hypoxemia, hypotension, angina, arrhythmias nausea, vomiting, abdominal pain, jaundice, allergic reactions, thrombocytopenia	Monitor ECG, oxygen, and BP
<b>Ipratropium</b>	Anticholinergic bronchodilator	Asthma	250-500 mcg every 20 minutes via nebulizer for 3 doses	Anxiety, dizziness, headache, dry mouth, blurred vision, cough, bronchospasm, palpitations, nausea, vomiting, rash	Monitor oxygen; if medication gets in eyes, will cause pupil dilation
<b>Lidocaine</b>	Antiarrhythmic	VF, pulseless VT, wide complex tachycardia, RSI	Tachyarrhythmias and VF: 1 mg/kg IV bolus followed by infusion of 20-50 mcg/kg/minute RSI: 1-2 mg/kg IV	CNS symptoms, tinnitus, blurred vision, hypotension, heart block, bradycardia, cardiac arrest, dyspnea, respiratory depression, nausea, vomiting, rash	Monitor ECG and BP; May cause seizures; contraindicated for wide complex bradycardia
<b>Magnesium sulfate</b>	Electrolyte, bronchodilator	Asthma; torsades de pointes; hypomagnesemia	Asthma: 25-50 mg/kg over 15-30 minutes IV Pulseless torsades: 25-50 mg/kg bolus	Confusion, sedation, weakness, respiratory depression, hypotension, heart block, bradycardia, cardiac arrest, nausea,	Monitor ECG, oxygen and BP; rapid bolus may cause hypotension and bradycardia; calcium chloride can be used if

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			VT with pulses and torsades: 25-50 mg/kg over 10-20 minutes	vomiting, muscle cramps, flushing, sweating	needed to reverse hypermagnesemia
<b>Methylprednisolone</b>	Corticosteroid	Asthma, anaphylactic shock	2 mg/kg to max of 60 mg IV as loading dose; 0.5 mg/kg every 6 hours as maintenance dose	Depression, headache, weakness, hypertension, diarrhea, nausea, pancreatitis, ulcer, osteoporosis, hyperglycemia	Watch for rare anaphylaxis
<b>Milrinone</b>	Inotrope, vasodilator	Cardiogenic shock or post-surgery CHF	50 mcg/kg IV over 10-60 minutes as loading dose 0.25-0.75 mcg/kg/minute IV infusion as maintenance dose	Headache, tremor, hypotension, ventricular arrhythmias, angina, nausea, vomiting, jaundice, hypokalemia	Monitor ECG, BP and platelet count; hypovolemia may make hypotension worse; use longer infusion time
<b>Naloxone</b>	Opioid antagonist	Narcotic reversal	For total reversal: 0.1 mg/kg IV bolus every 2 minutes to max dose of 2 mg Total reversal not needed: 1-5 mcg/kg IV (titrate to response required)	Seizures, drowsiness, rapid respiratory rate, pulmonary edema, VF, VT, tachycardia, asystole, hypertension nausea, vomiting	Monitor ECG, oxygen and BP; repeat doses often needed; establish assisted ventilation before administration; monitor newborn of addicted mother



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<b>Nitroglycerine</b>	Vasodilator, antihypertensive	CHF, cardiogenic shock	Begin infusion at 0.25-0.5 mcg/kg/minute and titrate every 15-20 minutes to max dose of 10 mcg/kg/minute	Headache, dizziness, hypoxemia, hypotension, cardiac arrest, tachycardia, flushing, pallor	Monitor ECG and BP; watch for hypotension in hypovolemic children
<b>Nitroprusside</b>	Vasodilator antihypertensive	Cardiogenic shock Hypertension	0.3-1 mcg/kg/minute for initial dose then titrate to max 8 mcg/kg/minute	Seizures, dizziness, headache, agitation, hypotension, slow or fast heart rate, nausea, vomiting	Monitor ECG and BP; if used for prolonged times; thiocyanate and cyanide levels should be monitored
<b>Norepinephrine</b>	Inotrope vasopressor	Hypotensive shock	0.1-2 mcg/kg/minute titrated to desired BP	Headache respiratory distress hypertension arrhythmias renal failure	Monitor ECG and BP; IV infiltration may lead to tissue necrosis; should be administered via central line; do not mix in alkaline solution
<b>Procainamide</b>	Antiarrhythmic	SVT, atrial flutter, VT with pulse	15 mg/kg as loading dose over 30-60 minutes	Headache, dizziness, confusion, weakness, hypotension, prolonged QT interval, heart blocks and cardiac arrest, nausea,	Monitor ECG (particularly QT interval) and BP; expert consultation should be called before administration

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				vomiting, diarrhea, rash, edema, anemia, neutropenia	
<b>Sodium bicarbonate</b>	Electrolyte to produce alkalinity	Severe metabolic acidosis, hyperkalemia, tricyclic overdose	1 mEq/kg slow IV bolus to max of 50 mEq For overdose 1-2 mEq/kg bolus repeating until pH >7.45 follow with infusion of sodium bicarb solution to maintain alkalosis	CNS symptoms, arrhythmia, hypotension, cardiac arrest, renal calculi, cyanosis, edema, metabolic alkalosis and other derangements, water retention	Monitor ECG, oxygen and ABGs; ensure adequate ventilatory support to reduce the chance of carbon dioxide accumulation; not recommended in cardiac arrest
<b>Terbutaline</b>	Bronchodilator, beta adrenergic agonist	Asthma, hyperkalemia	0.1-10 mcg/kg/ minute IV Infusion 10 mcg/kg SQ every 10-15 minutes until IV is established	CNS symptoms, palpitations, tachycardia, nausea, vomiting, arrhythmias, hypotension	Monitor ECG, oxygen and BP; use cautiously in children with hypokalemia
<b>Vasopressin</b>	Antidiuretic hormone analogue	Cardiac arrest, septic shock	0.4-1 unit/kg bolus to max of 40 units	Fever, vertigo, dysrhythmias, hypertension, nausea, vomiting, abdominal cramps, urticaria	Monitor BP and distal pulses; watch for signs of water intoxication; tissue necrosis may develop from IV extravasation

