JCH EMS SYSTEM
MEDICATION LIST

John Palcheff, DO, *EMS Medical Director*

Pharmacology

GENERAL PRINCIPLES

1. Known allergies must be assessed prior to administration of a medication.

2. Verify right patient, right drug, right dose, right route, right time of administration.

3. The maximum dose of any pediatric medication is equal to the adult dose.

4. A Broselow tape or similar device is highly encouraged when calculating pediatric drug dosages, particularly for the unstable child.

5. Any medications given IV should be inserted into the tubing port closest to the needle insertion site. Immediately following medication administration, a saline flush of 5-10 mL should be given.

6. IV fluids will be at keep open (TKO) rate (30ml/hr for adults, 20ml/hr for pediatrics) unless patient condition indicates a need for higher flow rates. A saline lock may be utilized on stable patients.

7. In the unstable patient, if IV access is delayed or cannot be achieved, IO administration of medications should be utilized only as a last resort when IV or IO access is not readily obtainable.

8. Endotracheal medications should be administered at twice the regular dose. No further dilution is required.

9. Naloxone, Atropine, and Epinephrine are approved for endotracheal administration.

10. An allergy to a medication or another of its class is a contra-indication for administration of a medication.

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ACTIVATED CHARCOAL	
CLASS	
ACTION	▪ Activated charcoal is useful in absorbing gases and toxins from mineral, bacterial, viral and plant sources.
INDICATIONS	▪ Selective poisonings
CONTRAINDICATIONS	▪ Inability to swallow safely/loss of gag reflex ▪ Gastrointestinal perforation or small bowel obstruction
PRECAUTIONS	▪
SIDE EFFECTS	▪ Diarrhea ▪ Vomiting ▪ Aspiration of activated charcoal results in very high morbidity and mortality
ROUTE	
DOSE	▪ Adult: 1 g/kg PO ▪ Pediatric: 1g/kg PO
PEDIATRIC DOSE	▪
ONSET	
DURATION	
STOCK	

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ADENOSINE (ADENOCARD)	
CLASS	Antiarrhythmic; nucleoside
ACTION	▪ Slows the heart rate by slowing conduction through the AV node. Blocks re-entry pathways in supraventricular tachycardias.
INDICATIONS	Narrow complex tachycardias; Supraventricular tachycardias (SVT)
CONTRAINDICATIONS	Second or third degree heart block, sick sinus syndrome, hypersensitivity to the drug
PRECAUTIONS	Can produce bronchoconstriction in asthma patients.
SIDE EFFECTS	Side effects are usually brief due to the short half life of the drug. ▪ Conversion arrhythmias ▪ Facial flushing ▪ Headache ▪ Shortness of breath ▪ Dizziness ▪ Lightheadedness ▪ Nausea ▪ Chest pain
ROUTE	Rapid IV bolus over 1-2 seconds via antecubital IV site. Follow each dose with 10 to 20 mL flush of normal saline and raise the arm.
DOSE	▪ Initial dose = 6 mg ▪ Second dose of 12 mg in 1-2 minutes if rhythm does not convert ▪ Repeat 12 mg dose again in 1-2 minutes if rhythm does not convert
PEDIATRIC DOSE	▪ 0.1 mg/kg very rapidly at closest central IV injection site ▪ Repeat dose is 0.2 mg/kg ▪ Maximum single dose = 12 mg ▪ Utilize Broselow tape or pediatric weight based dosing chart to confirm dose. ▪ Reference policy PED-5
ONSET	Immediate
DURATION	1-2 minutes
STOCK	(5) 6 mg/2 mL vials

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ALBUTEROL (PROVENTIL, VENTOLIN)	
CLASS	Beta-2 agonist; synthetic sympathomimetic
ACTION	Stimulates beta 2 receptor sites in the smooth muscle of the bronchial tree to reverse bronchospasm.
INDICATIONS	Asthma, emphysema, bronchospasm associated with other conditions.
CONTRAINDICATIONS	Known hypersensitivity to the drug
PRECAUTIONS	Could cause severe paradoxical bronchospasm with repeated excessive use.
SIDE EFFECTS	▪ Tachycardia ▪ Palpitations ▪ Anxiety ▪ Tremors ▪ Headache ▪ Sweating ▪ Bad taste ▪ PVC's ▪ Hypotension
ROUTE	Inhalation via nebulizer
DOSE	2.5 mg
PEDIATRIC DOSE	▪ Per order of Medical Control ▪ Reference policy PED – 7.2
ONSET	5 to 15 minutes
DURATION	2 to 3 hours
STOCK	(4) 2.5 mg/3 mL unit doses

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ASPIRIN CHEWABLE	
CLASS	Anti-inflammatory; platelet aggregation inhibitor
ACTION	Prevents formation of clots by blocking formation of thromboxane A2 which causes platelets to aggregate and arteries to constrict.
INDICATIONS	Acute coronary syndrome; acute MI; chest pain (non-traumatic)
CONTRAINDICATIONS	▪ Known hypersensitivity to the drug ▪ Bleeding disorders ▪ Active ulcer disease ▪ Asthma
PRECAUTIONS	None
SIDE EFFECTS	▪ Nausea/vomiting ▪ Heartburn ▪ GI bleeding ▪ Increased bleeding time ▪ Wheezing
ROUTE	Oral – have the patient chew all four tablets and swallow
DOSE	Four 81 mg chewable tablets
PEDIATRIC DOSE	None
ONSET	30 to 60 minutes
DURATION	4 to 6 hours
STOCK	(4) chewable tablets 81 mg each

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ATROPINE SULFATE	
CLASS	Parasympathetic blocker; anti-cholinergic
ACTION	▪ Increases the heart rate (positive chronotrope) by binding to muscarinic receptor sites to block the action of acetylcholine. ▪ Enhances both sinus node automaticity and atrioventricular conduction.
INDICATIONS	▪ Symptomatic bradycardia ▪ Asystole ▪ Pulseless Electrical activity (PEA) with rate less than 60 ▪ Organophosphate poisoning
CONTRAINDICATIONS	▪ Use with caution in high degree heart blocks with wide QRS ▪ Use with caution in the patient with MI as an increase in heart rate could increase cardiac workload
PRECAUTIONS	A dose less than 0.5 mg in the adult could result in paradoxical slowing of the heart rate.
SIDE EFFECTS	▪ Tachycardia ▪ Hypertension ▪ Palpitations ▪ Headache ▪ Blurred vision ▪ Dilated pupils ▪ Dry mouth ▪ Confusion ▪ Drowsiness
ROUTE	▪ IV push ▪ Endotracheal
DOSE	▪ Symptomatic bradycardia: 0.5 mg every 5 minutes to maximum dose of 3 mg. ▪ Asystole/PEA: 1 mg every 3-5 minutes to maximum dose of 3 mg. ▪ Organophosphate poisoning: 2-5 mg IVP
PEDIATRIC DOSE	▪ 0.02 mg/kg ▪ Minimum single dose is 0.1 mg. ▪ Maximum single dose 0.5 mg ▪ May repeat once ▪ Use Broselow tape or pediatric weight based dosing chart to confirm dose. ▪ Reference policy PED-3.2
ONSET	2 to 5 minutes
DURATION	20 minutes
STOCK	(5) 1 mg/10 mL Abbojects

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CALCIUM CHLORIDE	
CLASS	Calcium salt
ACTION	Positive inotrope (increases the force of contraction) Increases myocardial automaticity
INDICATIONS	▪ Calcium channel blocker overdose ▪ Hypocalcemia ▪ Magnesium intoxication ▪ Hyperkalemia
CONTRAINDICATIONS	Patients taking digitalis (Digoxin, lanoxin)
PRECAUTIONS	Precipitates with sodium bicarbonate – flush the IV line before and after administration.
SIDE EFFECTS	▪ Extravasation (infiltration) can cause necrosis, sloughing of skin or abscess. ▪ Hypotension
ROUTE	IV
DOSE	0.5 grams (500 mg) IV
PEDIATRIC DOSE	▪ Per Medical Control ▪ Utilize Broselow tape or pediatric weight based dosing chart to confirm dose
ONSET	5 to 15 minutes
DURATION	Dose dependent (effects may last up to 4 hours)
STOCK	(1) 10 mL Abboject (100 mg/mL)

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DEXTROSE 50%	
CLASS	Hyperglycemic agent; hypertonic agent
ACTION	Supplies supplemental glucose to elevate the blood sugar.
INDICATIONS	▪ Hypoglycemia ▪ Suspected hypoglycemia in coma of unknown origin
CONTRAINDICATIONS	Do not administer to head injured patients unless they are hypoglycemic
PRECAUTIONS	▪ Extravasation (infiltration) can cause pain, tissue necrosis
SIDE EFFECTS	▪ Irritation to vein with pain and redness
ROUTE	IV
DOSE	25 grams (50 mL)
PEDIATRIC DOSE	(0.5-1.0 g/kg): ▪ > 8yrs. D50% 1-2ml/kg IV/IO ▪ 1-8 yrs. D25% 2-4 ml/kg IV/IO ▪ <1 yr. D12.5%* 4ml//kg IV/IO for infants ▪ Utilize Broselow tape or pediatric weight based dosing chart to confirm dose ▪ To make D12.5% dilute D25% 1:1 with sterile water ▪ Reference policy PED-12.2
ONSET	30 to 60 seconds
DURATION	Depends upon the level of hypoglycemia
STOCK	(2) 25 gram/50 mL Abbojects (50% solution) (1) 2.5 gram/10 mL Abboject for children over 2 months (25% solution)

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DIAZEPAM (VALIUM)	
CLASS	Benzodiazepine Anticonvulsant; skeletal muscle relaxant, sedative-hypnotic
ACTION	Anticonvulsant properties due to enhancement of GABA-mediated presynaptic inhibition at the spinal level as well as in the brain stem reticular formation. CNS depressant.
INDICATIONS	▪ Active seizures ▪ Sedation prior to synchronized cardioversion ▪ Sedation prior to transcutaneous pacing ▪ Acute anxiety
CONTRAINDICATIONS	History of hypersensitivity to the drug.
PRECAUTIONS	▪ May precipitate if mixed with other drugs – always flush the IV line before and after administration. ▪ Elderly patients may experience adverse effects more quickly – administer the medication slowly. ▪ Monitor level of consciousness, BP, pulse and respiratory status closely ▪ Be prepared to manage the airway
SIDE EFFECTS	▪ CNS depression; drowsiness ▪ Respiratory depression ▪ Hypotension ▪ Phlebitis; venous thrombosis
ROUTE	▪ IV (administer no faster than 1 mg/minute) ▪ IM (Onset of action 15-30 minutes) ▪ Rectal
DOSE	▪ Seizures: 5-10 mg slow IV push at 1 mg/minute. Maximum dose of 10 mg. ▪ Sedation prior to electrical therapy: 5-10 mg slow IV push at 1 mg/minute. Maximum dose of 10 mg. ▪ Acute anxiety: 2-5 mg IM or slow IV push.
PEDIATRIC DOSE	▪ For Seizures: 0.1-0.3 mg/kg slow IV push over 2-3 minutes. ▪ Less than age 5 maximum dose = 5 mg ▪ Over age 5 maximum dose 10 mg ▪ Utilize Broselow tape or pediatric weight based dosing chart to confirm dose. ▪ Reference policy PED-11.2
ONSET	IV = less than 15 minutes IM = 15 to 30 minutes
DURATION	3 hours
STOCK	(2) 10 mg/2 mL syringes

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DIPHENHYDRAMINE (BENADRYL)	
CLASS	Antihistamine
ACTION	▪ Competes with histamine for H1 histamine receptor sites. ▪ Anticholinergic ▪ Antiemetic
INDICATIONS	▪ Allergic reaction; anaphylaxis ▪ Dystonic reaction due to phenothiazines (Ex: Phenergan) ▪ Nausea/vomiting
CONTRAINDICATIONS	▪ Known hypersensitivity to the drug ▪ Acute asthma attack
PRECAUTIONS	May cause drowsiness and sedation.
SIDE EFFECTS	▪ CNS depression; drowsiness; confusion ▪ Dizziness; vertigo ▪ Excitement especially in children ▪ Tachycardia ▪ Palpitations ▪ Ataxia ▪ Dry mouth ▪ Blurred vision ▪ Headache ▪ Urine retention
ROUTE	▪ IV (Slow IVP at 25 mg/minute) ▪ Deep IM
DOSE	25-50 mg
PEDIATRIC DOSE	▪ 1-2 mg/kg ▪ Utilize Broselow tape or pediatric weight based dosing chart to confirm dose ▪ Reference policy PED-10.2
ONSET	IV = 1 to 5 minutes IM = 15 minutes
DURATION	3 to 4 hours
STOCK	(1) 50mg/mL injectable

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DOPAMINE (INTROPIN)	
CLASS	Vasopressor; Adrenergic; Catecholamine
ACTION	▪ Acts on alpha and beta 1 receptor sites to vasoconstrict and increase heart rate. ▪ Positive chronotrope (increases heart rate) ▪ Positive inotrope (increases force of cardiac contraction ▪ Vasopressor at higher doses (increases BP)
INDICATIONS	▪ Symptomatic bradycardia refractory to atropine ▪ Cardiogenic shock with hypotension
CONTRAINDICATIONS	▪ Hypersensitivity to the drug ▪ Hypovolemic shock ▪ Tachydysrhythmias ▪ Ventricular dysrhythmias (V-tach / V-fib)
PRECAUTIONS	▪ Dopamine is not a substitute for fluid or blood volume deficits ▪ Extravasation (infiltration) can cause necrosis with tissue sloughing ▪ Monitor vital signs every 5 minutes during administration ▪ Monitor cardiac rhythm closely.
SIDE EFFECTS	▪ Tachycardia ▪ Ectopic beats ▪ Angina ▪ Palpitations ▪ Headache ▪ Nausea; vomiting ▪ Hypertension
ROUTE	IV infusion (The infusion rate must be monitored precisely – preferred to use with an IV pump)
DOSE	▪ Symptomatic bradycardia: 5-10 mcg/kg/minute ▪ Cardiogenic shock: 5-20 mcg/kg/minute
PEDIATRIC DOSE	▪ Per Medical Control 5-20 mcg/kg/minute infusion ▪ Utilize Broselow tape or pediatric weight based dosing chart to confirm dose ▪ Reference policy PED-9.2
ONSET	5 minutes
DURATION	5 to 10 minutes
STOCK	(1) 1600 mcg/mL premix solution (800 mg/500 mL)

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EPINEPHRINE 1:1000 SOLUTION	
CLASS	Sympathomimetic; Catecholamine; bronchodilator
ACTION	▪ Beta-2 receptor agonist promotes bronchodilation ▪ Beta-1 receptor agonist = positive chronotrope(increases heart rate); positive inotrope (increases force of cardiac contraction)
INDICATIONS	▪ Allergic reaction ▪ Anaphylaxis ▪ Asthma ▪ Exacerbation of some forms of COPD
CONTRAINDICATIONS	▪ Patients with underlying cardiovascular disease ▪ Hypertension ▪ Pregnancy (safety in pregnancy and lactation not established) ▪ Patients with tachydysrhythmias
PRECAUTIONS	▪ Protect from light ▪ Monitor vital signs every 5 minutes ▪ Monitor cardiac rhythm closely
SIDE EFFECTS	▪ Tachycardia ▪ Palpitations ▪ Anxiety; restlessness ▪ Tremors ▪ Headache
ROUTE	Subcutaneously
DOSE	0.3 mg SQ
PEDIATRIC DOSE	▪ 0.01 mg/kg up to 0.3 mg ▪ Utilize Broselow tape or pediatric weight based dosing chart to confirm dose ▪ Reference policy PED-10.2
ONSET	5 to 10 minutes
DURATION	20 minutes
STOCK	(3) 1 mg/mL ampules (1) 30 mL multidose vial (1 mg/mL)

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EPINEPHRINE 1:10,000	
CLASS	Catecholamine; cardiac stimulant
ACTION	▪ Beta 1 and beta 2 adrenergic effects ▪ Positive chronotrope (increases heart rate) ▪ Positive inotrope (increases force of cardiac contraction
INDICATIONS	▪ Cardiac arrest with ventricular fibrillation, pulseless ventricular tachycardia, asystole, pulseless electrical activity (PEA) ▪ Anaphylaxis
CONTRAINDICATIONS	None when used in an emergency situation such as cardiac arrest
PRECAUTIONS	▪ Protect from light ▪ Can be deactivated by alkaline solutions – flush the IV line before and after administration
SIDE EFFECTS	Tachydysrhythmias
ROUTE	IV Endotracheal (ET)
DOSE	▪ Cardiac arrest: 1 mg every 3-5 minutes; ET dose is 2 – 2.5 mg ▪ Anaphylaxis: 0.3-0.5 mg slow IVP
PEDIATRIC DOSE	▪ 0.01 mg/kg IV ▪ Utilize Broselow tape or pediatric weight based dosing chart to confirm dose ▪ Reference policy PED-2.2
ONSET	IV = immediate
DURATION	3 to 5 minutes
STOCK	(6) 1 mg /10 mL Abbojects

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EPI-PEN	
CLASS	Catecholamine
ACTION	▪ Produces bronchodilation ▪ Positive chronotrope (increases heart rate) ▪ Positive inotrope (increases force of cardiac contraction)
INDICATIONS	Anaphylaxis
CONTRAINDICATIONS	Chest pain consistent with angina/cardiac
PRECAUTIONS	▪ Protect from light ▪ Assess vital signs every 5 minutes
SIDE EFFECTS	▪ Tachycardia ▪ Dizziness ▪ Nausea; vomiting ▪ Headache
ROUTE	Intramuscularly (IM)
DOSE	0.3 mg
PEDIATRIC DOSE	0.15 mg for pediatric patient 60 pounds or less
ONSET	5 to 10 minutes
DURATION	20 minutes
STOCK	BLS units (1) Adult Epi-Pen (1) Epi-Pen Junior

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FUROSEMIDE (LASIX)	
CLASS	Diuretic
ACTION	A potent loop diuretic that inhibits sodium and chloride reabsorption at the proximal and distal tubules and ascending loop of Henle in the kidney to promote prompt diuresis.
INDICATIONS	▪ Congestive heart failure (CHF) ▪ CHF with pulmonary edema
CONTRAINDICATIONS	▪ Dehydration ▪ Hypotension ▪ Hypokalemia ▪ Pregnancy ▪ Anuria (inability to produce urine)
PRECAUTIONS	▪ Protect from light
SIDE EFFECTS	▪ Vertigo, restlessness ▪ Headache ▪ Paresthesia ▪ Volume depletion; orthostatic hypotension ▪ Blurred vision ▪ Nausea; vomiting; anorexia; ▪ Hypokalemia, hypochloremic alkalosis; fluid and electrolyte imbalances
ROUTE	IV
DOSE	40-80 mg slow IVP over 1-2 minutes
PEDIATRIC DOSE	Per Medical Control
ONSET	5 to 10 minutes
DURATION	2 to 3 hours
STOCK	(2) 100 mg/10 mL vials

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GLUCAGON (GLUCAGEN)	
CLASS	Endocrine – pancreatic hormone
ACTION	▪ Causes breakdown of glycogen stored in the liver to glucose ▪ Inhibits glycogen synthesis ▪ Elevates blood glucose level
INDICATIONS	Hypoglycemia when unable to establish an IV site
CONTRAINDICATIONS	▪ Hypersensitivity to the drug ▪ Hypersensitivity to beef or pork protein
PRECAUTIONS	▪ Only effective if there are sufficient stores of glycogen in the liver ▪ Use with caution in patients with cardiovascular or renal disease ▪ Transport immediately after administration
SIDE EFFECTS	Nausea / vomiting
ROUTE	IM
DOSE	0.5 – 1 unit (1 unit = 1 mg)
PEDIATRIC DOSE	▪ 0.03 mg/kg – maximum dose 1 mg ▪ Utilize Broselow tape or pediatric weight based dosing chart to confirm dose ▪ Reference policy PED-12.2
ONSET	5 to 20 minutes
DURATION	20 to 30 minutes
STOCK	(1) 1 mg (1 unit) vial; with diluent

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LIDOCAINE (XYLOCAINE)	
CLASS	Antiarrhythmic
ACTION	▪ Class IB antiarrhythmic agent decreases depolarization, automaticity and excitability in the ventricles during the diastolic phase by direct action on the tissues especially the Purkinje network. ▪ Increases the ventricular fibrillation threshold making it more difficult for the heart to go into VF. ▪ Suppresses ventricular ectopic activity
INDICATIONS	▪ Ventricular Tachycardia ▪ Ventricular fibrillation ▪ Malignant PVCs
CONTRAINDICATIONS	▪ Hypersensitivity to the drug or to the amide-type local anesthetics. ▪ High degree heart blocks (2^{nd} degree type II, 3^{rd} degree) ▪ Ventricular ectopy in conjunction with bradycardia
PRECAUTIONS	▪ Monitor level of consciousness for signs of CNS toxicity. ▪ Consider maintenance infusion after bolus. ▪ Maintenance infusion dosage should be reduced if over age 70, liver disease, CHF or shock.
SIDE EFFECTS	▪ Confusion; lethargy ▪ Anxiety; restlessness; nervousness ▪ Lightheadedness ▪ Muscle twitching; seizures ▪ Bradycardia ▪ Hypotension ▪ Cardiac arrhythmias ▪ Cardiac arrest
ROUTE	▪ IV push ▪ Endotracheal (ET) ▪ IV infusion
DOSE	▪ 1 to 1.5 mg/kg initial dose. Repeat doses of 0.5 to 0.75 mg/kg can be repeated every 5 to 10 minutes to maximum of 3 mg. ▪ Ventricular ectopy: 1 to 1.5 mg/kg IVP; repeat doses every 10 minutes at 0.5 to 0.75 mg/kg IVP to maximum of 3 mg/kg. ▪ Maintenance drip: 2 to 4 mg/minute
PEDIATRIC DOSE	▪ 1 mg/kg – may repeat every 3 to5 minutes to maximum of 3 mg ▪ Utilize Broselow tape or pediatric weight based dosing chart to confirm dose ▪ Reference policy PED-4
ONSET	45 to 90 seconds
DURATION	10 to 20 minutes
STOCK	(3) 100 mg/5 mL Abbojects (1) Premix bag 2 grams/500 mL Normal Saline

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MAGNESIUM SULFATE	
CLASS	Anticonvulsant; magnesium supplement
ACTION	▪ Acts as a physiologic calcium channel blocker to block neuromuscular transmission. ▪ Central nervous system depressant
INDICATIONS	▪ Seizures associated with eclampsia ▪ Polymorphic ventricular tachycardia / Torsades de Pointe ▪ Ventricular fibrillation associated with hypomagnesemia
CONTRAINDICATIONS	▪ Heart block ▪ Hypocalcemia ▪ Hypotension
PRECAUTIONS	▪ Side effects can occur from too rapid administration or if given undiluted. ▪ Monitor vital signs, cardiac status and respiratory status closely.
SIDE EFFECTS	▪ Drowsiness ▪ Depressed reflexes; flaccid paralysis ▪ Respiratory depression; respiratory paralysis ▪ Bradycardia, other arrhythmias ▪ Hypotension; cardiac collapse ▪ Hypothermia ▪ Flushed skin; rash; itching
ROUTE	IV
DOSE	▪ Seizures associated with eclampsia: 2-4 grams of 50% solution diluted in 100-250 mL of Normal Saline and infused over 30 minutes. ▪ Polymorphic ventricular tachycardia: 1-2 grams of 50% solution diluted in 10 mL of sterile water and administered over 1-2 minutes. ▪ Ventricular fibrillation: 1-2 grams of 50% solution IVP
PEDIATRIC DOSE	None
ONSET	Immediate
DURATION	3 to 4 hours
STOCK	(1) 5 grams/10 mL 50% solution Abboject (500 mg/mL)

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MORPHINE SULFATE	
CLASS	Opiate
ACTION	▪ Narcotic analgesic that binds to opiate receptors in the brain to produce pain relief. (opiate agonist) ▪ Peripheral vasodilation decreases systemic vascular resistance and venous return (decreases preload and afterload) ▪ CNS depressant
INDICATIONS	▪ Severe pain ▪ CHF with pulmonary edema
CONTRAINDICATIONS	▪ History of sensitivity to the drug ▪ Head injury ▪ Hypovolemia ▪ Hypotension ▪ Undiagnosed abdominal pain
PRECAUTIONS	Can cause hypotension and respiratory depression in higher doses. (Narcan should be available as a reversal agent.)
SIDE EFFECTS	▪ Decreased level of consciousness ▪ Respiratory depression ▪ Hypotension ▪ Nausea; vomiting ▪ Dizziness ▪ Headache
ROUTE	▪ IV ▪ IM
DOSE	▪ IV: Standard initial dose is 2 mg. slow IVP. Additional doses may be given upon the order of Medical Control. ▪ *2nd dose: 2mg may be given prior to contact Medical Control*
PEDIATRIC DOSE	▪ Per Medical Control ▪ Utilize Broselow tape or pediatric weight based dosing chart to confirm dose
ONSET	▪ IV = Immediate ▪ IM = 5 to 30 minutes
DURATION	3 to 5 hours
STOCK	(5) 2 mg/mL tubexes

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NALOXONE (NARCAN)	
CLASS	Narcotic antagonist
ACTION	Reverses the effects of narcotics by competing for and blocking opiate receptors. Approved administration by BLS/ALS.
INDICATIONS	▪ For complete or partial reversal of narcotics including: morphine, Demerol, heroin, dilaudid, paregoric, percodan, fentanyl, and methadone. ▪ For complete or partial reversal of synthetic narcotics such as: nubain, stadol, talwin, Darvon. ▪ Coma of unknown origin with suspected narcotic involvement. ▪ Alcoholic coma
CONTRAINDICATIONS	Known hypersensitivity to the drug
PRECAUTIONS	▪ Administer with caution to patients dependent upon narcotics as it may cause withdrawal effects including seizures. ▪ Narcan is a short acting drug and the dose may need augmentation every 5 minutes. ▪ Larger than average doses (2-5 mg) may be needed for management of Darvon overdose or alcoholic coma. ▪ The patient may become combative upon reversal of the opiate. Appropriate precautions should be taken prior to administration to ensure the safety of emergency providers.
SIDE EFFECTS	▪ Nausea; vomiting ▪ Tremors ▪ Sweating ▪ Hypertension
ROUTE	▪ IV ▪ IM ▪ Endotracheal (ET) ▪ Atomization Device
DOSE	▪ 2 mg IVP. ▪ May repeat in 2 to 3 minute intervals for 2 to 3 doses if no response. ▪ Failure to obtain reversal after 2 to 3 doses indicates other disease process or overdose on other non-opioid type drugs.
PEDIATRIC DOSE	▪ Less than 20 kg = 0.1 mg/kg Maximum dose 2 mg ▪ Greater than 20 kg = 2 mg single dose ▪ Utilize Broselow tape or pediatric weight based dosing chart to confirm dose ▪ Reference policy PED-12.2
ONSET	IV = Immediate IM = 5 to 10 minutes
DURATION	20 to 30 minutes
STOCK	(1) 10 mL vial (0.4 mg/mL)

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NITROGLYCERIN	
CLASS	Organic nitrate
ACTION	▪ Relaxes vascular smooth muscle ▪ Dilation of coronary arteries ▪ Dilation of systemic arteries (reduces afterload) ▪ Venous dilation (reduces preload)
INDICATIONS	▪ Chest pain suspected to be cardiac in origin ▪ Pulmonary edema
CONTRAINDICATIONS	▪ Hypotension
PRECAUTIONS	▪ Monitor blood pressure before and after administration of each dose. ▪ Do not administer if systolic BP less than 90 ▪ Protect from light
SIDE EFFECTS	▪ Headache ▪ Facial flushing ▪ Dizziness ▪ Hypotension ▪ Bradycardia (rare) ▪ Reflex tachycardia
ROUTE	▪ Sublingual ▪ Topical
DOSE	▪ Sublingual: place 1 tablet under the patient's tongue. May repeat every 5 minutes for a total of 3 tablets. ▪ Topical: Used for long transport times when sublingual nitroglycerin has been helpful in reducing chest pain. Place ½ inch of nitropaste on the ruled applicator measuring paper. Apply to a hairless are of the skin on the chest. Tape in place. Remove any previously applied nitroglycerin patches/ointment.
PEDIATRIC DOSE	None
ONSET	1 to 2 minutes
DURATION	15 to 30 minutes
STOCK	(1) 25 tablet bottle of 0.4 mg tablets (2) Unit doses of topical nitroglycerin and ruled applicator papers

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ORAL GLUCOSE (INSTA-GLUCOSE; GLUTOSE)	
CLASS	Glucose
ACTION	Increases blood glucose levels
INDICATIONS	Known or suspected hypoglycemia in the diabetic patient
CONTRAINDICATIONS	▪ Decreased level of consciousness that could lead to choking or risk of aspiration. ▪ Inability to swallow
PRECAUTIONS	None
SIDE EFFECTS	None
ROUTE	Oral
DOSE	30 grams (one tube)
PEDIATRIC DOSE	Only as ordered by Medical Control
ONSET	
DURATION	
STOCK	(1) 30 gram tube

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OXYTOCIN (PITOCIN)	
CLASS	Hormone
ACTION	Stimulates uterine smooth muscle contraction to slow post-partum hemorrhage after expulsion of the placenta.
INDICATIONS	Post-partum hemorrhage
CONTRAINDICATIONS	Any condition other than post-partum hemorrhage
PRECAUTIONS	▪ Ensure that the placenta has delivered prior to administration of oxytocin. ▪ Ensure that there is not another fetus present prior to administration. ▪ Too rapid administration could result in uterine rupture.
SIDE EFFECTS	▪ Nausea; vomiting ▪ Seizures ▪ Hypotension ▪ Anaphylaxis ▪ Arrhythmias ▪ Coma
ROUTE	▪ IM ▪ IV infusion
DOSE	▪ IM: 3-10 units ▪ IV infusion: Mix 10 units in 1000 mL of Normal Saline. This yields 10 milliunits/mL. Start the infusion very slowly at 10 milliunits (1mL) per minute or as indicated by Medical control.
PEDIATRIC DOSE	None
ONSET	IV = Immediate IM = 3 to 5 minutes
DURATION	IV = 20 minutes after infusion is stopped IM = 2 to 3 hours
STOCK	(1) 10 USP units/mL vial

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PROMETHAZINE (PHENERGAN)	
CLASS	Phenothiazine Antihistamine
ACTION	Inhibits the chemoreceptor trigger zone in the medulla to produce anti-emetic effect. Blocks H1 and H2 histamine receptor sites.
INDICATIONS	Vomiting
CONTRAINDICATIONS	Acute asthma attack
PRECAUTIONS	▪ Extravasation (infiltration) can cause necrosis, tissue sloughing, gangrene ▪ Should be diluted in at least 10 mL Normal Saline ▪ Should be administered very slowly over several minutes ▪ Patient should be instructed to advise you if any pain or burning with administration
SIDE EFFECTS	▪ Drowsiness; excess sedation; confusion ▪ Hypotension ▪ Dizziness ▪ Palpitations
ROUTE	IV
DOSE	12.5 mg diluted in 10 mL Normal Saline slow IVP. May repeat X 1 if necessary for a maximum dose of 25 mg.
PEDIATRIC DOSE	▪ Child over age 2 = 0.25 – 0.5 mg/kg with maximum dose of 25 mg ▪ Not for administration in patients under the age of two years. ▪ Dilute in 10 mL normal saline and administer very slowly over several minutes ▪ Utilize Broselow tape or pediatric weight based dosing chart to confirm dose
ONSET	3 to 5 minutes
DURATION	6 to 12 hours
STOCK	(2) 25 mg inj.

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SODIUM BICARBONATE	
CLASS	Alkalinizing agent (buffer)
ACTION	Binds free hydrogen ions to form carbonic acid. Effectively increases the blood pH.
INDICATIONS	▪ Acidosis associated with prolonged down time in cardiac arrest ▪ Tricyclic antidepressant overdose
CONTRAINDICATIONS	Alkalosis
PRECAUTIONS	▪ Correct dosage is essential to avoid overcompensation of pH. ▪ Flush IV line before and after administration of the drug. Is not compatible with many other drugs in the IV line. Precipitates with calcium chloride. Inactivates epinephrine and dopamine. ▪ Extravasation (infiltration) may cause ulceration, tissue necrosis or tissue sloughing at injection site.
SIDE EFFECTS	▪ Alkalosis ▪ Electrolyte imbalance
ROUTE	IV
DOSE	1 mEq/kg initially followed by 0.5 mEq/kg every 10 minutes.
PEDIATRIC DOSE	▪ Use pediatric 4.2% solution. ▪ 0.5-1 mEq/kg initial dose followed by 0.5 mEq/kg doses every 10 minutes as indicated. ▪ Utilize Broselow tape or pediatric weight based dosing chart to confirm dose
ONSET	Immediate
DURATION	30 to 60 minutes
STOCK	(1) 50 mL Abboject (1 mEq/mL) (2) (1) 10 mL Abboject 4.2% pediatric solution (0.5 mEq/mL)

John Palcheff, DO
EMS Medical Director

VERAPAMIL (CALAN)	
CLASS	Calcium channel blocker
ACTION	▪ Blocks the entry of calcium into the cell ▪ Slows conduction through the AV node ▪ Negative chronotrope (slows heart rate) ▪ Negative inotrope (decreased force of cardiac contraction)
INDICATIONS	To control the rate in hemodynamically stable atrial fibrillation or atrial flutter with rapid ventricular response.
CONTRAINDICATIONS	▪ Hypotension ▪ Cardiogenic shock ▪ Myocardial infarction ▪ Wide complex tachycardias ▪ WPW syndrome ▪ Patients taking beta blockers
PRECAUTIONS	▪ Vital signs should be monitored closely. ▪ May induce or exacerbate CHF/pulmonary edema
SIDE EFFECTS	▪ Headache ▪ Dizziness ▪ Sweating ▪ Seizures ▪ Bradycardia ▪ Heart blocks ▪ Hypotension ▪ Asystole ▪ Ventricular fibrillation
ROUTE	IV
DOSE	▪ 2.5-5 mg slow IVP over 2-3 minutes. ▪ May repeat at 5-10 mg in 15-30 minutes if rhythm persists with no adverse effects after initial dose. ▪ Total dose should not exceed 30 mg in 30 minutes.
PEDIATRIC DOSE	▪ Verapamil is not recommended in the pediatric population in the absence of Medical Direction. ▪ Reference policy PED-5
ONSET	3 to 5 minutes
DURATION	2 hours
STOCK	(2) 5 mg/2 mL vials

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METOPROLOL TARTRATE	
CLASS	Beta-Adrenergic blocking agent
ACTION	▪ Exerts mainly beta-1 adrenergic blocking activity although Beta-2 receptors are blocked at high doses
INDICATIONS	▪ Acute MI in hemodynamically stable patients
CONTRAINDICATIONS	▪ MI in patients with a HR of less than 60 bpm ▪ 2nd or 3rd degree heart blocks ▪ Systolic BP is less than 100 ▪ Sinus Bradycardia
PRECAUTIONS	Use with caution in impaired hepatic function and during lactation
SIDE EFFECTS	▪
ROUTE	▪ PO
DOSE	▪ 25 mg
PEDIATRIC DOSE	▪ Not determined for children
ONSET	15 minutes
DURATION	
STOCK	25 mg tablet

Jersey Community Hospital, EMS Medical Director

PLAVIX	
CLASS	Anitplatelet drug
ACTION	▪ works by preventing a natural substance called **ADP** from binding to its receptors on platelets ▪ ADP is one of the chemicals in the body that cause platelets to clump together.
INDICATIONS	▪ Reduction of MI, Stroke and Vascular death in patients with atherosclerosis. ▪
CONTRAINDICATIONS	▪ Lactation ▪ Active bleeding such as peptic ulcer or intracranial hemorrhage
PRECAUTIONS	Use with caution in those at risk of increased bleeding from trauma, surgery or other pathological conditions
SIDE EFFECTS	▪ Edema ▪ Hypertension ▪ Intracranial hemorrhage ▪
ROUTE	▪ PO
DOSE	▪ 300 mg PO unless patient is older than 75 yrs and will be getting thrombolytics then dose is 75 mg.
PEDIATRIC DOSE	▪ Not determined for children
ONSET	
DURATION	
STOCK	75 mg tablets x 4

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VERSED (MIDAZOLAM) Versed 10 mg/2ml, 5 mg/1ml vials	
CLASS	Benzodiazapine
ACTION	▪ Short acting benzodiazepine that works as a central nervous system depressant. It is 3-4 times more potent than Valium.
INDICATIONS	▪ Indicated for use in status epilepticus, pre-procedural sedation, severe anxiety, as an amnesic, and as an aid to anesthesia and intubation.
CONTRAINDICATIONS	▪ Known hypersensitivity to the drug, or any of its components (propylene glycol). Patients with narrow angle glaucoma. **Pregnancy category D.**
PRECAUTIONS	
SIDE EFFECTS	▪ As with all benzodiazepines, paradoxical reactions such as stimulation, mania, restlessness, agitation, aggression, psychosis, and hallucinations may occur.
ROUTE	▪
DOSE	▪ Adult: Given as 2-5 mg doses IV/IM
PEDIATRIC DOSE	▪ Pediatric: 0.05-0.1 mg/kg IV or 0.1-0.15 mg/kg IM
ONSET	
DURATION	See SPECIAL CONSIDERATIONS below
STOCK	*4 (5 mg / 5 ml vial)*
SPECIAL CONSIDERATIONS	Observe for signs of respiratory depression. Use with caution in patients who are hypotensive. Versed should be given in small titratable doses over 2 minutes, with an additional 2 minutes of observation for maximal effect before additional doses are given. All patients should have monitoring equipment in place prior to administration, and equipment should be readily available to intubate, resuscitate the patient as necessary.

John Palcheff, DO., EMS Medical Director

NORCURON 10 mg/10ml reconstituted (Vecuronium Bromide):	
CLASS	Nondepolarizing skeletal muscle relaxant
ACTION	▪ A non-depolarizing skeletal muscle relaxant of intermediate onset and duration. It can be used for maintenance of neuromuscular block. Acceptable intubating conditions can be achieved in approximately 3 minutes. Elimination is primarily through hepatic mechanisms with a half-life of approximately 70 minutes and duration of 30-60 minutes. Has minimal effects on hemodynamics and causes little or no histamine release.
INDICATIONS	▪ Maintenance of neuromuscular blockade in intubated and ventilated patients. ▪ Neuromuscular blockade during rapid sequence intubation when succinylcholine is contraindicated.
CONTRAINDICATIONS	▪ Hypersensitivity to drug. Pregnant and lactating women
PRECAUTIONS	
SIDE EFFECTS	▪ Flaccid paralysis, respiratory depression
ROUTE	▪
DOSE	▪ Adult : 0.1 mg/kg IV bolus (10 mg max dose)
PEDIATRIC DOSE	▪ Pediatric -0.1 mg/kg IV bolus (10 mg max dose)
ONSET	
DURATION	▪ 25-30 minutes
STOCK	▪ 20 mg vial
SPECIAL CONSIDERATIONS	• Prolonged recovery time in patients with liver disease. • Burn patients may require higher doses due to resistance to non-depolarizing agents in this population. • Pediatric patients, age 1-10 years of age may require a slightly higher initial dose and more frequent re-dosing. • Pediatric patients under age 1 year are more sensitive to the medication and may take 1 1/2 times longer to recover.

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ONDANSETRON (ZOFRAN):		
CLASS	Anti-emetic, selective Serotonin (5HT3) Receptor antagonist	
ACTION	▪ Ondansetron reduces the activity of the vagus nerve which activates the vomiting center in the medulla oblongata, and also blocks serotonin receptors in the chemoreceptor trigger zone. It has little effect on vomiting caused by motion sickness.	
INDICATIONS	▪ Moderate to severe nausea, vomiting	
CONTRAINDICATIONS	▪ Hypersensitivity to the drug ▪ Prolonged QT syndrome ▪ Concurrent use of Apomorphine (Apokyn), an anti-parkasonian drug	
PRECAUTIONS	▪ Not well studied in children less than 2 years of age ▪ Use with caution with patients concurrently using drugs which effect AT interval (i.e., Procainamide, amiodarone, TCA's, Haldol) ▪ Use with caution with hepatic impairment (consider prolonging dosage intervals or decreasing dose)	
SIDE EFFECTS	▪ Sedation ▪ Hypotension ▪ Tachycardia	▪ Angina ▪ Torsades de Pointes (rare) ▪ Constipation
ROUTE	▪ IV/IO	
DOSE (ADULT)	▪ Adult – 4 mg, repeated once in 15 minutes PRN	
PEDIATRIC DOSE	▪ Pediatric –**(>2 years of age) Contact Medical Control**	
ONSET	3–5 minutes	
DURATION	▪ 2-4 hours	
STOCK	▪ 4 mg/2 ml vials	
SPECIAL CONSIDERATIONS		

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FENTANYL CITRATE (SUBLIMAZE)	
CLASS	Opiate; synthetic narcotic
ACTION	A potent, short-acting opioid agonist; Relieves pain by stimulating receptors in the central nervous system. It has an analgesic effect approximately 50-100 times greater than that of morphine – a 50 mcg dose has roughly the same analgesic effect as 5 mg of morphine.
INDICATIONS	Non-cardiogenic pain Cardiogenic pain Aid in procedural sedation
CONTRAINDICATIONS	Hypersensitivity to the drug
PRECAUTIONS	Has an additive effect with other opiates and benzodiazepines / sedatives including alcohol which may contribute to respiratory depression. Rapid administration may result in spasm of respiratory muscles and chest wall rigidity resulting in difficulty or inability to ventilate the patient. Administer slowly to prevent this complication.
SIDE EFFECTS	CNS depression, respiratory depression, bradycardia, transient hypotension, ventilatory impairment in COPD patients, hives
ROUTE	IV
DOSE	Adult: 25 mcg slow IVP; may repeat dose prior to calling Medical Control
PEDIATRIC DOSE	Requires contact with Medical Control 0.1 mcg/kg slow IVP
ONSET OF ACTION	Immediate for IV route
DURATION OF ACTION	Peak effect 30-60 minutes
STOCK	*2 100mcg/2ml bottles*
NOTE:	Fentanyl Citrate should be mixed with 10ml of Normal saline flush prior to administration

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IV FLUIDS

0.9% SODIUM CHLORIDE (NORMAL SALINE)	
CLASS	
ACTION	• Fluid and sodium replacement
INDICATIONS	▪ Heat-related problems (e.g., heat exhaustion, heat stroke) ▪ Freshwater drowning ▪ Hypovolemia ▪ Diabetic ketoacidosis ▪ IV Lifeline
CONTRAINDICATIONS	• None
PRECAUTIONS	• . Electrolyte depletion (K+, Mg++, Ca++, among others) can occur following administration of large amounts of normal saline • May cause fluid overload if rate is not closely monitored.
SIDE EFFECTS	▪ Thirst
ROUTE	• IV Infusion
DOSE	• Dependent upon patient condition and situation being treated. In freshwater drowning and heat emergencies, the administration is usually rapid
PEDIATRIC DOSE	• Dose is dependent on patient size and condition • Trauma resuscitation 20 ml/kg initial bolus ▪ Utilize Broselow Tape or pediatric weight based dosing chart to confirm dose. Reference Policy PED-9
ONSET	
DURATION	
STOCK	

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RECTAL DIAZEPAM (VALIUM)	
CLASS	Benzodiazepine Anti convulsant; skeletal muscle relaxant, sedative-hypnotic
ACTION	Anticonvulsant properties due to enhancement of GABA-mediated presynaptic inhibition at the spinal level as well as in the brain stem reticular formation. CNS depressant.
INDICATIONS	▪ Active seizures ▪ Sedation prior to synchronized cardioversion ▪ Sedation prior to transcutaneous pacing ▪ Acute anxiety ▪ In the emergency setting you may give diazepam rectally if you cannot establish an intravenous line. Rectal administration may prove advantageous with the unconscious or pediatric patient or when IV access is impractical or not possible.
CONTRAINDICATIONS	History of hypersensitivity to the drug
PRECAUTIONS	▪ May precipitate if mixed with other drugs – always flush the IV line before and after administration. ▪ Elderly patients may experience adverse effects more quickly – administer the medication slowly. ▪ Monitor level of consciousness, BP, pulse and respiratory status closely ▪ Be prepared to manage the airway
SIDE EFFECTS	▪ CNS depression; drowsiness ▪ Respiratory depression ▪ Hypotension ▪ Phlebitis; venous thrombosis
ROUTE	▪ IV (administer no faster than 1 mg/minute) ▪ IM (Onset of action 15-30 minutes) ▪ Rectal
DOSE	▪ Seizures: 5-10 mg slow IV push at 1 mg/minute. Maximum dose of 10 mg. ▪ Sedation prior to electrical therapy: 5-10 mg slow IV push at 1 mg/minute. Maximum dose of 10 mg. ▪ Acute anxiety: 2-5 mg IM or slow IV push.
PEDIATRIC DOSE	▪ For Seizures: 0.1-0.3 mg/kg slow IV push over 2-3 minutes. ▪ Less than age 5 maximum dose = 5 mg ▪ Over age 5 maximum dose 10 mg ▪ Utilize Broselow tape or pediatric weight based dosing chart to confirm dose. ▪ Reference policy PED-11.2
ONSET	IV = less than 15 minutes IM = 15 to 30 minutes
DURATION	3 hours
STOCK	(2) 10 mg/2 mL syringes

Note: Compute dosage. Confirm the indication of administration and dose. Remove the needle from the TB syringe for children or the 3mL syringe for adults. Pull plunger back to the desired amount. Insert the diazepam needles into the hub (the part the needle connects with) of the TB or 3mL syringe. Inject the desired amount of diazepam into the appropriate syringe(s) e.g. an older child may exceed greater than the 1 mL TB syringe

can hold, a second TB syringe may be required to accurately measure a dose of greater then 1mL. Lubricate the tip of the syringe to be used for rectal administration. Insert the syringe **without the needle** into the rectum. [Note: a 3-5 mL syringe may be used for dosage greater than 1 mL that a tuberculin syringe allows. It is acceptable in this circumstance to attach an over the needle catheter (plastic portion only) and lubricate the catheter prior to rectal insertion. Administration of diazepam too high into the rectum may decrease its anticonvulsant effect, because the drug may be absorbed differently and broken down more quickly in the liver.] Push the plunger to expel the diazepam into the rectum. Withdraw the catheter and hold the patient's buttocks together thus permitting retention and absorption.

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