

PREHOSPITAL FORMULARY



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11th Edition
(Updated: December 21, 2011)
Effective: January 1, 2012

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Activated Charcoal (Charcoal Slurry)	
Classification:	Chemical absorbent
Actions:	Inhibits gastrointestinal absorption of drugs or chemicals
Indications:	Suspected overdose or accidental ingestion of drugs or chemicals
Contraindications:	<ul style="list-style-type: none"> • Altered level of consciousness • No gag reflex • Ingestion of caustics, corrosives, or petroleum distillates
Adverse effects:	<ul style="list-style-type: none"> • Vomiting • Aspiration
Adult Administration:	50 gm PO
Pediatric Administration:	1-2 gm/kg (Maximum dose 100 gm)
Onset:	Immediate
Duration:	24 hours
Pregnancy Safety:	Not established
Comments:	<p>Milk products ingested prior to activated charcoal can reduce its effectiveness.</p> <p>Most effective if administered within 30 minutes of ingestion.</p> <p>Activated charcoal without Sorbitol is the only approved type.</p>

Adenocard	(Adenosine)
Classification:	Antidysrhythmic agent
Actions:	Slows conduction through the A-V node, can interrupt the re-entry pathways through the A-V node, and can restore normal sinus rhythm in patients with PSVT
Indications:	Supra-ventricular tachycardia (stable) Monomorphic wide-complex tachycardia (stable)
Contraindications:	<ul style="list-style-type: none"> • Patients with a known history of atrial fibrillation • Patients with a known history of atrial flutter • Irregular narrow or wide-complex tachycardia • 2nd or 3rd degree heart block • Sick sinus syndrome • Hypersensitivity to adenosine
Adverse effects:	<ul style="list-style-type: none"> • Facial flushing • Headache • Dizziness • Dyspnea • Nausea/vomiting • Chest pressure • Transient asystole • Bronchoconstriction in some asthma patients
Adult Administration:	6 mg Rapid IVP followed with 10 mL NS flush. 1 repeat dose of 12 mg in 2 minutes if no conversion with 6 mg dose.
Pediatric Administration:	0.1 mg/kg rapid IVP followed with 5 mL NS flush (Max. dose 6 mg). MR in 3 minutes at 0.2 mg/kg followed with 5 mL NS flush (Max. dose 12 mg.)
Onset:	Immediate
Duration:	10 seconds
Pregnancy Safety:	Category C
Comments:	1/2 life is "10 seconds." A brief period of asystole (up to 15 seconds) following conversion, followed by resumption of NSR is common after rapid administration.

Albuterol Sulfate (Proventil, Ventolin)	
Classification:	Bronchodilator
Actions:	Relaxes bronchial smooth muscle by stimulating beta ₂ receptors resulting in bronchodilation
Indications:	<ul style="list-style-type: none"> • Acute asthma • Allergic reaction • COPD/bronchitis • Bronchospasm
Contraindications:	<ul style="list-style-type: none"> • Prior hypersensitivity reaction to Albuterol • Symptomatic tachycardia • Chest pressure
Adverse effects:	<ul style="list-style-type: none"> • Tachycardia • Hypertension • Palpitations • Dizziness • Dysrhythmias • Restlessness • Nausea
Adult Administration:	2.5 mg/3 mL NS via nebulizer. If severe distress persists, initiate continuous Albuterol via nebulizer, not to exceed 15 mg/hr. May also be administered via facemask, BVM, or ETT
Pediatric Administration:	2.5 mg in 3 mL NS via nebulizer. If severe distress persists repeat at 0.5 mg/kg hr to a maximum of 15 mg/hr
Onset:	Within 5 minutes
Duration:	3 - 4 hours
Pregnancy Safety:	Category C
Comments:	<p>Use with caution in patients with:</p> <ul style="list-style-type: none"> • Heart disease • Hypertension • Tachydysrhythmias • Patients being treated with MAO inhibitors • Patients that are hypersensitive to sympathomimetics

Amiodarone (Cordarone, Pacerone)	
Classification:	Antiarrhythmic agent
Actions:	<ul style="list-style-type: none"> Delays repolarization Prolongs action potential Slows conduction Delays impulses from SA and AV nodes Slows conduction through accessory pathways Vasodilatation
Indications:	<ul style="list-style-type: none"> • Ventricular fibrillation • Wide-complex tachycardia
Contraindications:	<ul style="list-style-type: none"> • Cardiogenic shock • Bradycardia/Heartblocks • Iodine allergies
Adverse effects:	<ul style="list-style-type: none"> • Hypotension • Bradycardia • AV block • Asystole • PEA • Hepatotoxicity
Adult Administration:	<p>VF/VT (pulseless) – 300 mg slow IV/IO push (over 1-2 Min.) followed in 5 minutes by 150 mg IV/IO push</p> <p>VT (with pulses) – IV /IO – Slowly infuse 150 mg over 10 min. (Recommendation: Add 150 mg to 100 mL of Normal Saline in a Volutrol/Buretrol and infuse total contents over 10 minutes)</p>
Pediatric Administration:	<p>VF/VT (pulseless) – 5 mg/kg slow IV/IO push (over 1-2 Min.) followed by 5 mg/kg slow IV/IO q 5 Min. to Max. of 15 mg/kg</p> <p>VT (with pulses) – 5 mg/kg (Add to 50 mL of Normal Saline in a Volutrol/Buretrol and infuse total contents over 30 minutes)</p>
Onset:	2-3 minutes
Duration:	Days to weeks
Pregnancy Safety:	Category D
Comments:	<ul style="list-style-type: none"> • In patients with a pulse Amiodarone must be administered very slowly (Adults: Over 10 minutes / Pediatrics: Over 30 minutes) • Contact base for ROSC patients

Aspirin (ASA, Acetylsalicylic Acid)	
Classification:	Antiplatelet, Analgesic, Antipyretic, Anti-inflammatory
Actions:	Inhibition of platelet aggregation and platelet synthesis Reduction of risk of death in patients with a history of myocardial infarction or unstable angina
Indications:	Chest pain with suspected myocardial ischemia
Contraindications:	<ul style="list-style-type: none"> • Allergy to ASA • Peptic ulcer disease • Hypersensitivity to salicylates
Adverse effects:	<ul style="list-style-type: none"> • Nausea-GI upset • Hepatotoxicity • Occult blood loss • Anaphylaxis
Adult Administration:	2 tablets 160 - 162 mg (chewable baby ASA) PO
Pediatric Administration:	Not recommended for prehospital use
Onset:	30-60 minutes
Duration:	4-6 Hours
Pregnancy Safety:	Pregnancy safety: Consult M.D., not recommended in third trimester
Comments:	Salicylism signs and symptoms: dizziness, tinnitus, difficulty hearing, nausea, vomiting, and mental confusion.

Atropine Sulfate	
Classification:	Parasympathetic blocker (Anticholinergic), Antidysrhythmic agent
Actions:	<p>Inhibits parasympathetic stimulation by blocking acetylcholine receptors</p> <p>Decreases vagal tone resulting in increased heart rate and AV conduction</p> <p>Dilates bronchioles and decreases respiratory tract secretions</p> <p>Decreases gastrointestinal secretions and motility</p>
Indications:	<ul style="list-style-type: none"> • Symptomatic bradycardia • Organophosphate poisoning (OPP) • Pre-intubation for patients <20 kg or <5 years of age • Nerve agent exposure (See pages 38-45)
Contraindications:	Neonates (bradycardia and asystole/PEA in neonates is usually caused by hypoventilation; also the vagus nerve in neonates is underdeveloped and atropine will usually have no effect upon it.)
Adverse effects:	<ul style="list-style-type: none"> • Tachycardia • Increased myocardial O₂ demand • Headache • Dizziness • Palpitations • Dries mucous membranes • Nausea/vomiting • Flushed skins • Dilated pupils • Increased intraocular pressure
Precautions:	<ul style="list-style-type: none"> • Use with caution in patients with suspected acute myocardial infarction (AMI) and glaucoma patients • Will not be effective for Type II AV Block and new Third Degree Block with wide QRS complexes (In these patients may cause paradoxical slowing. Be prepared to pace)
Adult Administration:	<p><u>Bradycardia:</u> IVP/IO 0.5- q 3-5 min to Max. of 3 mg</p> <p>ET: 1 mg followed by 5 mL normal saline flush and 5 normal ventilations. May repeat every 5 minutes to a Max. of 3 mg</p> <p><u>OPP:</u> IV/IO/IM: administer 2 mg. May be repeated every 5 minutes until symptoms clear.</p> <p>ET: administer 4 mg followed by 5 mL normal saline flush and 5 normal ventilations. May be repeated every 5 minutes until symptoms clear.</p>

	If symptoms are severe or the patient does not respond to treatment, higher doses of atropine may be ordered by base station
Pediatric Administration:	<p><u>Bradycardia:</u> IVP/IO: 0.02 mg/kg. Minimum dose of 0.1 mg and a Max. dose of 0.5 mg for a child; 1.0 mg for an adolescent. This dose may be repeated after 5 minutes for a Max. total dose of 1.0 mg for a child and 2.0 mg for an adolescent</p> <p>ET: 0.04-0.06 mg/kg followed by 5 mL NS or SW flush and 5 normal ventilations. May repeat dose once in 5 min. (Max. 6 mg).</p> <p><u>OPP:</u> Administer per Poison Control guidelines</p> <p><u>Pre-intubation:</u> In patients <20 kg or <5 years of age, administer atropine 0.02 mg/kg IV/IO minimum dose – 0.1 mg (Max. dose 1.0 mg)</p>
Onset:	2 – 5 minutes
Duration:	20 minutes
Pregnancy Safety:	Category C
Comments:	<p>Bradycardia in pediatrics is usually due to hypoxia.</p> <p>Max adult dosage of atropine is 6 mg for atropine given via ET tube.</p> <p>Antihistamines, phenothiazines, and tricyclic antidepressants enhance the effects of atropine.</p> <p>Atropine is not recommended in asymptomatic bradycardia. The increase in myocardial O₂ demand may cause/extend an AMI.</p> <p>Atropine is not recommended in neonates.</p> <p>Neonatal bradycardia often resolves itself quickly without corrective treatment.</p>

Atrovent (Ipratropium Bromide Monhydrate In a DuoNeb pillow)	
Classification:	Parasympathetic blocker (Anticholinergic), Bronchodilator
Actions:	<p>Inhibits parasympathetic stimulation by blocking acetylcholine receptors</p> <p>Anticholinergics prevent the increase of cyclic guanosine monophosphate which is caused by interaction of acetylcholine with the muscarinic receptor on bronchial smooth muscle</p> <p>Dilates bronchioles and decreases respiratory tract secretions</p>
Indications:	<ul style="list-style-type: none"> • Asthma • COPD • Allergic reaction • Bronchospasm
Contraindications:	Patients with a history of hypersensitivity to peanuts, soy products, or atropine.
Adverse effects:	<ul style="list-style-type: none"> • Tachycardia • Blurred vision • Headache • Dizziness • Nausea/vomiting • Cough • Increased intraocular pressure
Precautions:	<ul style="list-style-type: none"> • Use with caution in glaucoma patients
Adult Administration:	0.5 mg premixed with 2.5 mg albuterol (3 mL total solution) via nebulizer. Single dose only.
Pediatric Administration:	0.5 mg premixed with 2.5 mg albuterol (3 mL total solution) via nebulizer. Single dose only.
Onset:	5- 15 minutes
Duration:	2-4 hours
Pregnancy Safety:	Category B
Comments:	Atrovent is given as a single dose only.

Calcium Chloride (CaCl₂)	
Classification:	Inotropic Agent (electrolyte)
Actions:	Couples electrical and mechanical events of the myocardium Increases myocardial contractility Increases ventricular irritability
Indications:	<ul style="list-style-type: none"> • Hyperkalemia • Overdose of calcium channel blockers
Contraindications:	Patients taking digitalis based medications
Adverse effects:	<ul style="list-style-type: none"> • Bradycardia • Hypotension • Syncope
Adult Administration:	Administer 10 mg/kg slow IV push
Pediatric Administration:	Administer 0.2 mL/kg slow IV push
Onset:	5 – 15 minutes
Duration:	Dose dependant (effects may persist for up to 4 hours)
Pregnancy Safety:	Category C
Comments:	Hyperkalemia may be caused by potassium retention in dialysis patients or overdose of potassium supplements. Causes tissue necrosis if injected into interstitial space. Flush the IV line if sodium bicarbonate is used.

Dextrose 50% in Water	(D₅₀W, Glucose)
Classification:	Hyperglycemic agent, hypertonic solution
Actions:	Provides immediate source of glucose which is rapidly utilized for cellular metabolism
Indications:	Altered level of consciousness due to suspected hypoglycemia
Contraindications:	None
Adverse effects:	<ul style="list-style-type: none"> • CVA • Intra-cranial hemorrhage • Thrombophlebitis • Rhabdomyolysis • May worsen Wernicke's encephalopathy
Administration:	50 mL (25 gm) IVP. MR once
Pediatric:	Less than 1 m/o D10W 2 mL/kg IV/IO MR More than 1 m/o D25W 2 mL/kg IV/IO MR
Onset:	30 - 60 seconds
Duration:	Depends on level of hypoglycemia
Pregnancy Safety:	Category A
Comments:	<p>Causes tissue necrosis if injected into interstitial space.</p> <p>Dilute 50:50 with sterile water to make a 25% solution.</p> <p>Dilute 5:1 with sterile water to make a 10% solution.</p> <p>Use caution in patients with suspected intracranial hemorrhage.</p> <p>May increase cerebral ischemia in CVA.</p> <p>Use as large a vein as possible.</p> <p>Hypoglycemia is defined as:</p> <ul style="list-style-type: none"> • Neonate < 1 month (b.s. < 50 mg/dL) • Infant/child >1 month (b.s. < 60 mg/dL) • Adult (b.s. = <80 mg/dL)

Diphenhydramine (Benadryl)	
Classification:	Antihistamine
Actions:	Competes with histamines at receptor sites Reverses muscle spasms associated with dystonic reactions (phenothiazine)
Indications:	<ul style="list-style-type: none"> • Allergic reactions • Muscle spasms associated with dystonic reactions
Contraindications:	<ul style="list-style-type: none"> • Glaucoma • Acute asthma • COPD
Adverse effects:	<ul style="list-style-type: none"> • Hypotension • Drowsiness • Tachycardia • Bradycardia • Dry mouth
Administration:	Allergic Reaction/Anaphylaxis 50 mg IV/IO Push, IM, or PO Dystonic Reaction 25 mg IV Push, IM, or PO
Pediatric:	1 mg/kg slow IVP/IO/IM or PO (Max. of 25 mg)
Onset:	1-5 minutes if given IV/IO Push 15 minutes if given IM/PO
Duration:	3-4 hours
Pregnancy Safety:	Category B
Comments:	May cause depressed level of consciousness in elderly patients. Overdoses may result in seizures, coma, and death.

Dopamine	(Intropin)
Classification:	Sympathomimetic agent (Catecholamine)
Actions:	<p><u>Low dose (1-2 µg/kg/min)</u></p> <p>Dilates renal and mesenteric arteries by stimulating dopaminergic receptors</p> <p>May decrease BP due to vasodilation</p> <p><u>Moderate dose (2-10 µg/kg/min)</u></p> <p>Increases inotropy (force) without increasing chronotropy (heart rate)</p> <p>Increases BP by stimulating beta₁ receptors</p> <p><u>High dose (over 10 µg/kg/min)</u></p> <p>Causes vasoconstriction. Increases inotropy and chronotropy</p> <p>Increases BP by stimulating alpha and beta₁ receptors</p>
Indications:	<ul style="list-style-type: none"> • Cardiogenic shock • Distributive shock
Contraindications:	<ul style="list-style-type: none"> • Hypovolemia
Adverse effects:	<ul style="list-style-type: none"> • Hypertension (High doses) • Hypotension (Low doses) • Tachycardia • Dyspnea
Administration:	<p>2-20 µg/kg/min. IV infusion</p> <p>Bradycardia – 2-10 µg/kg/min</p> <p>Hypotension – 10-20 µg/kg/min</p>
Pediatric:	5 -10 µg/kg/min. via volutrol with micro drip
Onset:	5 minutes
Duration:	5-10 minutes
Pregnancy Safety:	Not well established
Comments:	<p>Not for use in hypovolemia</p> <p>Causes tissue necrosis if injected into interstitial space.</p> <p>MAO inhibitors may increase its effects.</p>

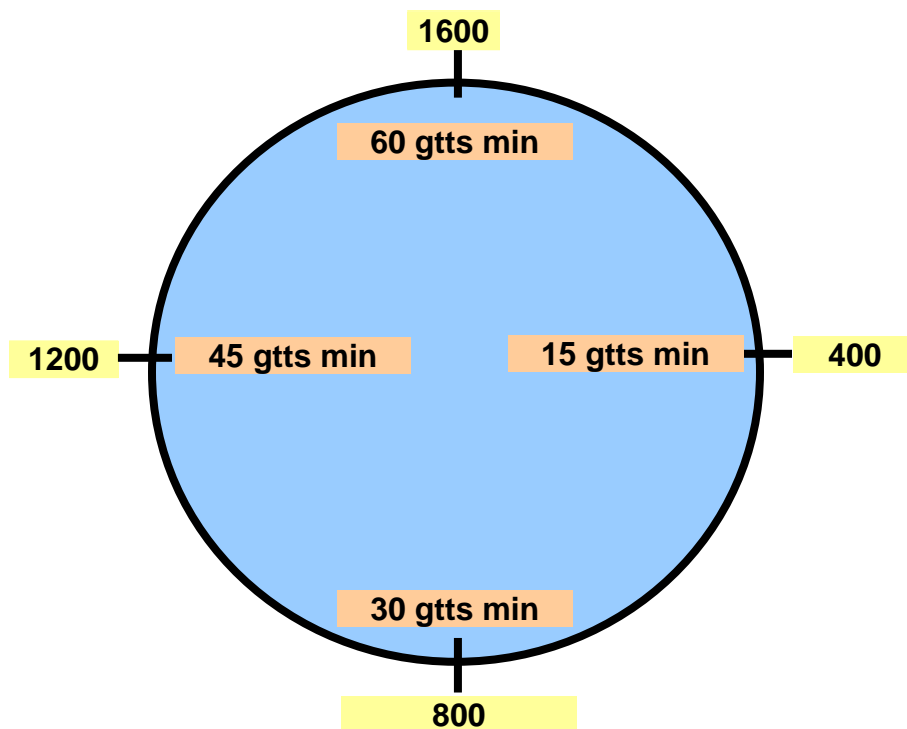
Dopamine Drip Chart

Run pre-mixed Dopamine 400 mg in 250 mL solution
via micro drip (60 gtts/mL) tubing at the following rates:
(Note: *Dial-a-Flow* device requires an additional
calculation to convert mL/hr to gtts/min)

	5 Mcg	10 Mcg	15 Mcg	20 Mcg
Weight/Kg	gtts/min	gtts/min	gtts/min	gtts/min
40	8	16	24	36
50	10	20	30	40
60	12	24	36	48
70	14	28	42	56
80	16	32	48	64
90	18	36	54	72
100	20	40	60	80
110	22	44	66	88
120	24	48	72	96
130	26	52	78	104
140	28	56	84	112
150	30	60	90	120
160	32	64	96	128
170	34	68	102	136
180	36	72	108	144

Dopamine Clock Method

- 1) Multiply the patient's weight in Kg x 10 (i.e., 80 x 10 = 800)
- 2) Find the 800 on the outside of the clock and the corresponding number on the inside of the clock will give you the number of drops per minute to equal 10 mcg/kg/min.
- 3) To give 5 mcg/kg/min just divide the inside number in half. To give 20 mcg/kg/min, double the inside number.
- 4) Run the dopamine via either micro drip tubing or macro drip tubing with a Dial a Flow device.



Epinephrine Hydrochloride	(Adrenalin)
Classification:	Sympathomimetic agent (Catecholamine)
Actions:	<p>Acts directly on Alpha & Beta receptors of the SNS. Beta effect is more profound than Alpha effects. Effects include:</p> <ul style="list-style-type: none"> • Increased HR (chronotropy) • Increased cardiac contractile force (inotropy) • Increased electrical activity with in myocardium (dromotropy) • Increased systemic vascular resistance • Increased blood pressure • Increased automaticity • Increased bronchial smooth muscle dilation • Increases coronary perfusion during CPR by increasing aortic diastolic pressure
Indications:	<ul style="list-style-type: none"> • Cardiopulmonary arrest: <ul style="list-style-type: none"> -Ventricular fibrillation -Pulseless ventricular tachycardia -Asystole -Pulseless electrical activity (PEA) • Allergic reaction/anaphylaxis • Asthma • Refractory pediatric bradycardia, unresponsive to oxygen and ventilation
Contraindications:	<ul style="list-style-type: none"> • Hypertension
Adverse effects:	<ul style="list-style-type: none"> • Hypertension-tachycardia • Increases myocardial oxygen demand and potentially increases myocardial ischemia
Administration:	<p><u>Cardiopulmonary arrest:</u> IV/IO: 1 mg 1:10,000. If rhythm persists repeat every 3 to 5 minutes</p> <p>ET: 2 mg 1:1000 diluted to 5-10 mL. Followed with 5 normal ventilations. If rhythm persists repeat every 3 to 5 minutes</p> <p><u>Asthma:</u> 0.3 mg of 1:1,000 SQ, may repeat in 20-minute intervals</p> <p><u>Allergic Reaction:</u> Bronchospasm: 0.3 mg of 1:1,000 IM, may repeat in 10-20 minutes for a total of two doses.</p> <p>Hypotension /Airway Compromise: 0.3-0.5 mg of 1:1,000 IM q 15 minutes if there is no improvement</p>

	<p>Impending Arrest: 0.1mg 1:10,000 diluted to 10 mL with NS or SW slow IVP over 5 minutes. (Diluted dose is equivalent to 1:100,000)</p> <p>Patient in cardiac arrest from anaphylaxis:</p> <p>IV or IO (1:10,000): First dose: 1-3 mg. Repeat doses: 3-5 mg, q 3 min if cardiac arrest persists.</p> <p>If no IV or IO (1:1,000): ET: 4.0 mg (diluted in 5 - 10 mL SW or NS, followed by 5 normal ventilations) q 3 minutes if cardiac arrest persists.</p>
Pediatric:	<p><u>Cardiac Arrest:</u> Initial dose: IV/IO*: 0.01 mg/kg (1:10,000, 0.1 mL/kg) ET: 0.1 mg/kg (1:1000, 0.1 mL/kg) Followed with 5-10 mL NS or SW flush and 5 normal ventilations.</p> <p>Repeat doses: IV/IO: 0.01 mg/kg (1:10,000, 0.1 mL/kg). If rhythm persists repeat every 3 to 5 minutes. ET: 0.1 mg/kg (1:1000, 0.1 mL/kg) Followed with 5 mL NS or SW flush and 5 normal ventilations. If rhythm persists repeat every 3 to 5 minutes. in sterile water to a maximum</p> <p><u>Asthma:</u> 0.01 mg/kg (max. 0.3 mg) of 1:1,000 SQ, may repeat in 10-20 minutes for a total of 2 doses.</p> <p><u>Refractive Bradycardia</u> IV/IO: 0.01 mg/kg (1:10,000, 0.1 ml/kg) repeat dose is same as initial every 3-5 minutes</p> <p><u>Allergic Reaction:</u> Bronchospasm: 0.01 mg/kg of 1:1,000 IM q 15 minutes if there is no clinical improvement. Hypotension /Airway Compromise: 0.01 mg (Max. 0.3 mg) IM, q 15 minutes if there is no clinical improvement. Impending Arrest: 0.01 mg/kg, diluted with NS or SW to 10 mL slow IV push over 5 minutes, q 1-2 minutes if there is inadequate response to treatment. (Dose is equivalent to 1:100,000 after dilution).</p> <p>Anaphylaxis Related Cardiac Arrest: Refer to cardiac arrest section</p>
Onset:	Immediate if given IVP 5-10 minutes if given SQ/IM
Duration:	3-5 minutes if given IVP 20 minutes if given SQ/IM
Pregnancy Safety:	Category C
Comments:	High dose epinephrine is no longer recommended (except in adult patients in anaphylaxis related cardiac arrest). High

	doses do not improve survival or neurologic outcome and may contribute to post resuscitation myocardial dysfunction.
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Glucagon	
Classification:	Hyperglycemic agent (pancreatic hormone)
Actions:	Elevates blood glucose by converting liver glycogen into glucose Increases cardiac output by increasing inotropy and chronotropy Stimulates the release of catecholamines Relaxes smooth muscle of the gastrointestinal tract, bronchioles, and blood vessels
Indications:	<ul style="list-style-type: none"> • Hypoglycemia • Beta blocker OD • Allergic reaction
Contraindications:	Not significant in the above indications.
Adverse effects:	Nausea/vomiting
Administration:	Hypoglycemia : 1 mg IM/IN Allergic reaction: 2 - 4 mg IV/IN push or IM Beta blocker OD: 2 - 4 mg IV/IN push or IM
Pediatric:	Hypoglycemia: 0.1 mg/kg IN/IM (Max. 1mg) Allergic reaction: 0.1 mg/kg IV/IN push or IM Beta blocker OD: 0.1 mg/kg IV/IN push or IM
Onset:	1 - 3 minutes if given IVP/IN 5 - 20 minutes if given IM
Duration:	15 - 20 minutes if given IVP/IN 15 - 30 minutes if given IM
Pregnancy Safety:	Category B
Comments:	Use with caution in patients with cardiovascular disease.

Glucose (Oral Glucose)	
Classification:	Monosaccharide carbohydrate
Actions:	After absorption from GI tract, glucose is distributed in the tissues and provides a rapid increase in circulating blood sugar
Indications:	<ul style="list-style-type: none"> • Suspected or known Hypoglycemia
Contraindications:	Patient not able to follow commands
Adverse effects:	<ul style="list-style-type: none"> • Nausea/vomiting • Aspiration • Hyperglycemia
Administration:	15 Grams PO may repeat if no response and IV dextrose is not available
Pediatric:	15 Grams PO may repeat if no response and IV dextrose is not available
Onset:	5-10 minutes
Duration:	Variable
Pregnancy Safety:	Category A
Comments:	Not a substitute for IV dextrose in extreme cases of hypoglycemia (i.e., BS < 40) unless IV access is unobtainable.

Lidocaine Hydrochloride	(Xylocaine)
Classification:	Antidysrhythmic, anesthetic
Actions:	<p>Suppresses ventricular dysrhythmias by decreasing ventricular irritability</p> <p>Increases fibrillatory threshold by elevating the electrical stimulation of the ventricles</p> <p>Depresses conduction in ischemic tissues</p> <p>May reduce ICP</p> <p>Blocks the conduction of impulses and stabilizes neuronal membranes, thereby relieving pain</p>
Indications:	<ul style="list-style-type: none"> • Head injured patients (pre-intubation) • Pain management post intraosseous insertion • Ventricular dysrhythmias*: <ul style="list-style-type: none"> - Ventricular tachycardia (VT) - Ventricular fibrillation (VF) • Post cardioversion or defibrillation of ventricular rhythms* <p>* May be used if patient is allergic to amiodarone</p>
Contraindications:	<ul style="list-style-type: none"> • Second-degree heart block, Mobitz II • Third degree (complete) heart block • Junctional bradycardia • Ventricular ectopy associated with bradycardia • Idioventricular or escape rhythms • Hypersensitivity
Adverse effects:	<ul style="list-style-type: none"> • Lightheadedness • Bradycardia • Confusion • Hypotension • Seizures • May be pro-arrhythmic
Administration:	<p><u>Head injured patients requiring intubation:</u></p> <p>1.5 mg/kg IV/IO push. (Maximum dose 100 mg). Dose should be administered two minutes prior to intubation attempt, when feasible</p> <p><u>Post intraosseous insertion pain:</u></p> <p>20 mg IO push.</p> <p><u>VF/VT no pulses*:</u></p> <p>1.0 - 1.5 mg/kg IV/IO push* or double the dose via ET tube. May repeat in 3 – 5 minutes. (Max. dose 3 mg/kg.)</p> <p><u>VT with pulses*:</u></p> <p>1.0 – 1.5 mg/kg slow IV/IO push*. If rhythm persists, repeat</p>

	<p>½ initial dose in 5 –10 minutes. (Max. dose 3 mg/kg).</p> <p>*IVP is the preferred route of administration</p>
Pediatric:	<p><u>Head injured patients requiring intubation:</u></p> <p>1 mg/kg IV/IO. (Max. dose 50 mg.) Dose should be administered two minutes prior to intubation attempt, when feasible</p> <p><u>Post intraosseous insertion pain:</u></p> <p>0.5 mg/Kg IO push</p> <p><u>VF/VT no pulses*:</u></p> <p>IV/IO: 1 mg/kg. If rhythm persists, repeat dose in 10 minutes (Max. dose 3 mg/kg.). Only bolus therapy shall be used in pediatric patients</p> <p>ET: 2mg/kg. If rhythm persists, repeat dose in 10 minutes (Max. dose 3 mg/kg.)</p> <p><u>VT with pulses*:</u></p> <p>IV/IO*: 1 mg/kg. If rhythm persists, repeat dose in 10 minutes</p> <p>ET: 2 mg/kg. If rhythm persists, repeat dose in 10 minutes</p> <p>IVP/IO is the preferred route of administration</p>
Onset:	45-90 seconds
Duration:	10-20 minutes
Pregnancy Safety:	Category B
Comments:	For patients who are 70 years or older, have CHF, chronic liver disease or are in impaired circulatory states, the repeat doses of Lidocaine should be half of the initial dose.

Magnesium Sulfate (MgSO₄)	
Classification:	Antidysrhythmic, Electrolyte
Actions:	Controls ventricle response rate Increases the movement of potassium into cells Blocks the release of acetylcholine
Indications:	<ul style="list-style-type: none"> • Ventricular fibrillation pulseless ventricular tachycardia (VF/VT) • Ventricular tachycardia with a pulse • Post conversion of VF/VT • Torsades de Pointes • Seizures related to eclampsia
Contraindications:	<ul style="list-style-type: none"> • Hypersensitivity • Sinus bradycardia • Pediatrics
Adverse effects:	<ul style="list-style-type: none"> • Hypotension • Hypertension • Dysrhythmias • Facial flushing • Diaphoresis • Depressed reflexes • Bradycardia
Administration:	<p><u>Torsades De Pointe pulseless:</u> 2 gm in 10 mL NS or SW IV/IO bolus</p> <p><u>Torsades De Pointe with a pulse:</u> 2 gm in 10 mL NS or SW slow IV/IO push over 1-2 minutes</p> <p><u>Eclampsia</u> 6 gm in 10 mL NS or SW slow IV/IO push over 15 minutes</p>
Pediatric:	Not recommended for prehospital use
Onset:	Immediate
Duration:	3-4 hours
Pregnancy Safety:	Category A
Comments:	<p>Magnesium is a naturally occurring positive ion present in all cells of the body.</p> <p>Use the most proximal port possible for administration.</p> <p>Check deep tendon reflexes every 15 minutes and continuously monitor respirations. Discontinue administration if either become depressed.</p>

Midazolam (Versed)	
Classification:	Short-acting benzodiazepine, CNS depressant
Actions:	Reduces anxiety, Depresses CNS function, Induces amnesia
Indications:	<ul style="list-style-type: none"> • Seizures • Pre-synchronized cardioversion • Treatment of severe agitation • Transcutaneous pacing (TCP)*See notes
Contraindications:	<ul style="list-style-type: none"> • Hypotension • Hypersensitivity
Adverse effects:	<ul style="list-style-type: none"> • Hypotension • Respiratory depression • Headache • Nausea
Administration:	<p><u>Seizures/Pre cardioversion/TCP*:</u></p> <p>IV/IO – 2.5 mg diluted in 5 mL sterile water slow IV/IO push titrated to effect. May repeat in 5 minutes. (Max. total dose of 5 mg).</p> <p>IN – 5 mg via MAD atomizer (Max. of 1 mL per nostril).</p> <p>IM – 5 mg.</p> <p style="background-color: #e0e0e0;">For doses above 5 mg contact base station.</p> <p><u>Severely Agitated Patient:</u></p> <p>5 mg IM/IN q 3-5 minutes to effect. (Giving IM injection through patient's clothing is okay if personal safety is compromised).</p> <p>If IV is already established give 2.5 mg IVP q 3-5 minutes to effect.</p>
Pediatric:	<p>IV/IO - 0.1 mg/kg diluted in 3 - 5 mL of sterile water slow IV/IO push over 2-5 minutes, titrated to effect. Contact base station for additional repeat doses.</p> <p>IN – 0.1 mg/kg via MAD atomizer (Max. of 1 mL per nostril) May repeat once (in different nostril).</p> <p>IM - 0.1 mg/kg may be given IM.</p> <p>(Max total dose of 3 mg)</p>
Onset:	IV/IO/IN: 3-5 minutes; dose dependent IM: 15 minute
Duration:	2-6 hours; dose dependent
Pregnancy Safety:	Category D

Comments:

May cause apnea, especially in children and the elderly.

Effects are intensified by ETOH or other CNS depressant medications.

Be prepared to support respiration.

Carefully monitor the patient's vital signs including EKG and pulse oximetry.

Midazolam is a Schedule IV medication under the Controlled Substances Act of 1970

*May **only** be used for transcutaneous pacing (TCP) if patient has an allergy to morphine.

Morphine Sulfate	(M.S., M.S.O.)
Classification:	Narcotic analgesic
Actions:	<p>Produces analgesia by inhibiting the ascending pain pathways</p> <p>Depresses the central nervous system by interacting with receptors in the brain</p> <p>Causes venous pooling due to peripheral vasodilatation resulting in decreased systemic vascular resistance and decreased venous return</p>
Indications:	<ul style="list-style-type: none"> • Moderate to severe pain • Pain associated with transcutaneous pacing • Snakebite • Chest pain
Contraindications:	<ul style="list-style-type: none"> • Patients with ALOC • Pain of unknown etiology • Patients at risk of respiratory depression • Head injury • Hypovolemia • Blood pressure <100 • Multi-system trauma
Adverse effects:	<ul style="list-style-type: none"> • Respiratory depression • Hypotension • Seizures • Bradycardia • Altered mental status
Administration:	4 mg increments up to 20 mg, slow IV push or IM. Titrate to relief of pain. (Systolic BP < 100 mm Hg MS shall be withheld/discontinued.) For doses above 20 mg, base station order is required.
Pediatric:	0.05 mg/kg slow IV/IO push or IM Titrated to pain relief (Max. total dose of 6 mg). (Contact base station if Pt. < 2 y/o).
Onset:	Immediate if given IVP, 5-30 minutes if given IM or SQ
Duration:	3-5 hours
Pregnancy Safety:	Category C
Comments:	Morphine is a Schedule II medication under the Controlled Substances Act of 1970

Naloxone (Narcan)	
Classification:	Narcotic antagonist
Actions:	Reverses the effects of narcotics by competing for opiate receptor sites in the central nervous system
Indications:	<ul style="list-style-type: none"> • Suspected narcotic overdose with respiratory depression • Altered level of consciousness with respiratory depression
Contraindications:	<ul style="list-style-type: none"> • None
Adverse effects:	<ul style="list-style-type: none"> • Hypertension • Tremors • Nausea/vomiting • Dysrhythmias • Diaphoresis
Administration:	<p>IV: 0.4 mg in 1 minute increments slow IV push titrated to effect (Max. 2 mg).</p> <p>IN: 0.4 mg (Max. Of 1 mL per nostril) May repeat in 5 minutes if no response.</p> <p>IM: 1 mg if unable to establish IV. May repeat in 5 minutes if no response.</p> <p>ET: 1 mg diluted to 5-10 mL May repeat in 5 minutes if no response. (IN/IM routes are preferred if no IV).</p> <p>If no response to normal doses or if patient is in extremis, administer 2 mg IV/IM/IO/ET/IN q 5 minutes.</p>
Pediatric:	<p>0.1 mg/kg IV/IN/IO/IM titrated to effect (Max. 2 mg). May repeat initial dose if no response within 5 minutes.</p> <p>Contact base before administration in neonates.</p>
Onset:	Immediate if given IVP, IN, or ET. 5-10 minutes if given IM.
Duration:	20-30 minutes
Pregnancy Safety:	Category B
Comments:	<p>The goal of Narcan administration is to improve respiratory drive, NOT to return patient to their full mental capacity.</p> <p>Medications such as Methadone and Darvon may require higher doses of Narcan. If no response to normal doses, administer 2 mg IV/IM/IO/ET/IN. May repeat every 5 minutes until return of adequate respiratory status.</p> <p>Rapid reversal of narcotic effects may lead to combative behavior and possible severe withdrawal.</p>

	<p>May not reverse hypotension.</p> <p>Observe for: seizures, hypertension, chest pain, and/or severe headache.</p> <p>May be administered via ET, but should be given prior to intubation whenever possible.</p> <p>Use caution in newborns.</p>
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Neosynephrine	(Phenylephrine)
Classification:	Synthetic sympathomimetic agent
Actions:	Produces long-acting vasoconstriction without chronotropic or inotropic actions on the heart
Indications:	Pre-treatment for BNTI
Contraindications:	None
Adverse effects:	<ul style="list-style-type: none"> • Headache • Reflex bradycardia • Excitability • Restlessness
Administration:	Spray into each nostril for 1-2 seconds
Pediatric:	Not applicable
Onset:	Immediate
Duration:	20-50 minutes
Pregnancy Safety:	Category C
Comments:	Adverse effects are minimal when neosynephrine is applied topically.

Nitroglycerin	(Nitro Spray, Nitrostat, NTG, Nitro Paste, Nitro-Dur)
Classification:	Vasodilator
Actions:	<ul style="list-style-type: none"> • Dilates arterial and venous vessels resulting in venous pooling • Reduces preload and after load resulting in decreased myocardial workload and reduced oxygen demand • Relaxes all smooth muscle • Dilates coronary vessels resulting in increased perfusion of the myocardium • Relieves coronary vasospasm
Indications:	<ul style="list-style-type: none"> • Chest pain of suspected myocardial origin • Congestive heart failure/cardiogenic pulmonary edema
Contraindications:	<ul style="list-style-type: none"> • Signs/symptoms of neurological deficit • Systolic blood pressure of <100 mm/Hg • Use of Viagra®, Cialis®, or Levitra® within last 48 hrs
Adverse effects:	<ul style="list-style-type: none"> • Hypotension • Nausea/vomiting • Headache • Postural syncope
Administration:	<p>SL: 0.4 mg (1 spray) SL. May repeat q 5 minutes to a Max. of 3 doses. Contact base station for additional doses.</p> <p>Transdermal: 1" of NTG paste placed on bare skin.</p>
Pediatric:	Not recommended for prehospital use
Onset:	1-2 minutes
Duration:	15-30 minutes
Pregnancy Safety:	Category C
Comments:	<p>Healthcare provider may experience adverse effects if accidentally inhaled or absorbed.</p> <p>If complications occur such as hypotension, or the need to cardiovert or defibrillate arises you should remove the applicator and wipe the area clean with a towel or some gauze</p>

Nitrous Oxide	(Nitronox, N ₂ O:O ₂)
Classification:	Analgesic gas
Actions:	Produces rapid, reversible relief from pain
Indications:	<ul style="list-style-type: none"> • Fractures • Sprains • Amputations • Soft tissue injuries • Burns • Low back pain (below level of thoracic spine) • Snakebite • Kidney stones • Contact base station for any other use
Contraindications:	<ul style="list-style-type: none"> • Administration in ambulance or small confined space • Patient unable to hold mouthpiece/mask • Severe COPD • Decompression sickness • Head injury • GCS <14 • Hypotension • Pregnancy • Sedated or intoxicated patients • Pneumothorax • Bowel obstruction • Chronic ear or sinus infection • Chest / upper back pain from any cause
Adverse effects:	Hypotension Dizziness/lightheadedness ALOC Nausea/vomiting
Administration:	Nitronox is self-administered
Pediatric:	Nitronox may be administered to any age patient as long as they are able to follow instructions and hold mouthpiece/mask.
Onset:	2-5 minutes
Duration:	2-5 minutes
Pregnancy Safety:	Category X

Comments:	<p>Discontinue use: Once in back of ambulance, if patients become hypotensive, or if adverse effects become severe.</p> <p>Higher elevations require higher concentrations of Nitrous Oxide:</p> <table><tr><td>Above 4000 ft:</td><td>60/40</td></tr><tr><td>Below 4000ft:</td><td>50/50</td></tr></table> <p>Nitrous Oxide is a Schedule III medication under the Controlled Substances Act of 1970</p> <p>Procedure:</p> <ol style="list-style-type: none">1. Set up equipment (outside of ambulance).2. Explain the procedure to the patient.3. Instruct the patient to do the following:<ol style="list-style-type: none">a. Hold the facemask securely over nose and mouth.b. Breath normally until the pain is relieved.c. Discontinue if Pt. becomes drowsy or experiences unpleasant side effects.5. Turn off nitrous oxide once patient is secured within ambulance.	Above 4000 ft:	60/40	Below 4000ft:	50/50
Above 4000 ft:	60/40				
Below 4000ft:	50/50				

Ondansetron	(Zofran)
Classification:	Antiemetic
Actions:	Serotonin receptor antagonist
Indications:	Treatment of nausea/vomiting
Contraindications:	Known sensitivity to ondansetron or other 5-HT ₃ antagonists: <u>Granisetron</u> (Kytril) <u>Dolasetron</u> (Anzemet) <u>Palonosetron</u> (Aloxi)
Adverse effects:	<ul style="list-style-type: none"> • Tachycardia • Hypotension • Syncope (if given too fast)
Adult Administration:	4 mg IV/IM/IO/ODT (IVP over 30 seconds or more) IVP is preferred route May repeat once in 10 minutes if no effect. Contact Base for additional doses.
Pediatric Administration:	4 mg IV/IM/IO/ODT (IVP over 30 seconds or more) IVP is preferred route May repeat in 10 minutes if no effect
Onset:	Up to 30 minutes (usual response is 5-10 minutes)
Duration:	Half life is 4 hours
Pregnancy Safety:	Category B
Comments:	If initial dose is not effective within ten minutes consider contacting the base and request additional dose(s).

Oxygen (O ₂)	
Classification:	Gas
Actions:	<ul style="list-style-type: none"> • Oxidizes glucose to provide energy at the cellular level • Essential for normal metabolic function (aerobic metabolism)
Indications:	Whenever oxygen demands may be increased
Contraindications:	Not significant in the above indication
Adverse effects:	Not significant in the above indication
Administration:	<ul style="list-style-type: none"> • For patients without respiratory distress: give 2 L of oxygen per minute by nasal cannula • For patients with mild respiratory distress: give 5 to 6 L of oxygen per minute • For patients with severe respiratory distress, acute congestive heart failure, or cardiac arrest: use a system that provides a high-inspired oxygen concentration (preferably 100%) • Titrate oxygen up or down according to oxygen saturation value keeping saturation above 95% • Patients with chronic COPD may normally maintain saturation values below 95%; do not withhold oxygen if patient is in distress • In the most serious cases: move quickly to advanced airway devices, intubation, and 100% oxygen
Pediatric:	Same as above
Onset:	Immediate
Duration:	Up to 30 minutes
Pregnancy Safety:	Category A
Comments:	<ul style="list-style-type: none"> • Oxygen therapy should never be withheld from a patient in respiratory distress • Use with caution in COPD patients and observe for changes in respiratory and mental status

Oxygen Devices	
Nasal Cannula:	<ul style="list-style-type: none"> • Starting device; provides up to 44% oxygen • A nasal cannula is a low flow system in which the tidal volume mixes with ambient gas (room air). Inspired oxygen concentration depends on the flow rate through the cannula and the patient's tidal volume • Increasing oxygen flow by 1 L/min (starting with 1L/min) will increase the inspired oxygen concentration by approximately 4%: <ul style="list-style-type: none"> ❖ 1 L/min: 24% ❖ 2 L/min: 28% ❖ 3 L/min: 32% ❖ 4 L/min: 36% ❖ 5 L/min: 40% ❖ 6 L/min: 44%
Face Mask:	Up to 60% oxygen can be supplied through the oxygen port at 6 to 10 L/min
Face Mask with Oxygen Reservoir:	<ul style="list-style-type: none"> • Provides up to 90% to 100% oxygen • In this system a constant flow of oxygen enters an attached reservoir. Each liter-per-minute increase in flow over 6 L/min will increase the inspired oxygen content by 10%: <ul style="list-style-type: none"> ❖ 6L/min: 60% oxygen ❖ 7L/min: 70% oxygen ❖ 8L/min: 80% oxygen ❖ 9L/min: 90% oxygen ❖ 10L/min: almost 100% oxygen <p>Use a face mask with a reservoir for:</p> <ul style="list-style-type: none"> • Patients who are seriously ill, responsive, and spontaneously breathing and require high oxygen concentrations • Patients who may avoid tracheal intubation if acute interventions produce a rapid clinical effect (patients with acute pulmonary edema, COPD, severe asthma) • Patients who have relative indications for tracheal intubation but have clenched teeth or other physical barriers to immediate intubation (e.g., head injury, CO poisoning, or near drowning) <p>These patients may have diminished levels of consciousness and may be at risk for nausea and vomiting. A tight fitting mask always requires close monitoring. Suctioning devices should be immediately available</p>

Sodium Bicarbonate (NaHCO₃)	
Classification:	Alkalinizing agent
Actions:	Combines with hydrogen ions to form carbonic acid, Increases blood pH
Indications:	<ul style="list-style-type: none"> • Cardiopulmonary arrest states when drug therapy and/or defibrillation have not been successful • Overdose of tricyclic antidepressants (cardiac toxicity)
Contraindications:	Not significant in the above indications
Adverse effects:	<ul style="list-style-type: none"> • Metabolic alkalosis • Pulmonary edema
Administration:	1 mEq/kg IVP. May repeat ½ initial dose every 10-15 minutes throughout arrest
Pediatric:	1 mEq/kg IVP
Onset:	Immediate
Duration:	30-60 minutes
Pregnancy Safety:	Category C
Comments:	Flush IV tubing before and after administration

Sodium Chloride (Normal Saline) 0.9%	
Classification:	Isotonic solution
Actions:	Replaces fluid and electrolytes lost from the intravascular and intracellular spaces
Indications:	<ul style="list-style-type: none"> • Initial fluid replacement in hypovolemia and dehydration • Intravenous access for drug administration
Contraindications:	Not significant in above indications
Adverse effects:	Circulatory fluid volume overload
Administration:	<ul style="list-style-type: none"> • Flow rate dependent on patient's condition • Titrate to response of vital signs • Fluid challenge=250-500 mL
Pediatric:	<ul style="list-style-type: none"> • Flow rate dependent on patient's condition • Titrate to response of vital signs • Fluid challenge=20 mL/kg
Onset:	Immediate
Duration:	Remains in intravascular space less than one hour
Pregnancy Safety:	Category A
Comments:	Monitor infusion rate closely and auscultate breath sounds prior to administration

Reference Section	Dosage Calculations:
	<p>To calculate the amount of drug to be drawn up or administered, the following information is required:</p> <p>⇒WHAT Type and amount of drug ordered ⇒QUANTITY Volume of fluid in the container ⇒HAVE Amount of drug in the container</p> <p>To calculate the amount of drug to be drawn up or administered, use the following formula:</p> <p>WHAT multiplied by the QUANTITY divided by HAVE = the amount to be administered.</p> <p>Example: The base station orders Snorazil 75 mg IVP. Snorazil comes as an ampule containing 50mg/mL. How many mL should be given?</p> $\frac{\text{WHAT} \times \text{QUANTITY}}{\text{HAVE}} = \frac{75\text{mg} \times 1 \text{ mL}}{50\text{mg}} = 1.5 \text{ mL}$ <p>Another way of conversion is:</p> $\frac{\text{DO}}{\text{OH}} \times \text{VOLUME} = \frac{75\text{mg} \times 1 \text{ mL}}{50\text{mg}} = 1.5 \text{ mL}$ <p>To calculate the desired dose to be administered according to body weight, convert the pounds to kilograms and multiply by the given dose.</p> <p>Example: The base station orders Sodium Bicarbonate 2 mEq/kg for a patient weighing approximately 200 pounds. How many mEq will be administered:</p> <p>Divide 200 lb. by 2 = 100kg, then multiply by 2 mEq. 100 kg x 2 mEq = 200 mEq</p>

Reference Section	Key To Controlled Substances Categories	
	<p>Products listed with the numerals shown below are subject to the Controlled Substances Act of 1970. These Drugs are categorized according to their potential for abuse. The greater the potential, the more severe the limitations on their prescription.</p>	
	<p><u>CATEGORY</u></p>	<p><u>INTERPRETATION</u></p>
	<p>II</p>	<p>High potential for abuse. Use may lead to severe physical or psychological dependence. Prescriptions must be written in ink, or typewritten, and signed by the practitioner. Verbal prescriptions must be confirmed in writing within 72 hours, and may be given only in a genuine emergency. No renewals are permitted.</p>
	<p>III</p>	<p>Some potential for abuse. Use may lead to low-to-moderate physical dependence or high psychological dependence. Prescriptions may be oral or written. Up to 5 renewals are permitted within 6 months.</p>
	<p>IV</p>	<p>Low potential for abuse. Use may lead to limited physical or psychological dependence. Prescriptions may be oral or written. Up to 5 renewals are permitted within 6 months.</p>
	<p>V</p>	<p>Subject to state and local regulation. Abuse potential is low; a prescription may not be required.</p>

Reference Section	Key To FDA Use-In-Pregnancy Ratings												
	<p>The Food and Drug Administration's Pregnancy Categories are based on the degree to which available information has ruled out risk to the fetus, balanced against the drug's potential to the patient. Ratings range from "A", for drugs that have been tested for teratogenicity under controlled conditions without showing evidence of damage to the fetus, to "D" and "X" for drugs that are definitely teratogenic. The "D" rating is generally reserved for drugs with no safer alternatives. The "X" rating means there is absolutely no reason to risk using the drug in pregnancy.</p> <table border="1"> <thead> <tr> <th data-bbox="565 653 808 684"><u>CATEGORY</u></th> <th data-bbox="833 653 1479 684"><u>INTERPRETATION</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="621 716 646 747">A</td> <td data-bbox="833 716 1479 810">Controlled studies show no risk. Adequate, well-controlled studies in pregnant women have failed to demonstrate risk to the fetus.</td> </tr> <tr> <td data-bbox="621 842 646 873">B</td> <td data-bbox="833 842 1479 978">No evidence of risk in humans. Either animal findings show risk, but human findings do not; or, if no adequate human studies have been done, animal findings are negative.</td> </tr> <tr> <td data-bbox="621 1010 646 1041">C</td> <td data-bbox="833 1010 1479 1146">Risk cannot be ruled out. Human studies are lacking, and animal studies are either positive for fetal risk, or lacking as well. However, potential benefits may justify the potential risk.</td> </tr> <tr> <td data-bbox="621 1178 646 1209">D</td> <td data-bbox="833 1178 1479 1314">Positive evidence of risk. Investigational or post-marketing data show risk to the fetus. Nevertheless, potential benefits may outweigh the potential risk.</td> </tr> <tr> <td data-bbox="621 1346 646 1377">X</td> <td data-bbox="833 1346 1479 1461">Contraindicated in pregnancy. Studies in animals or human, or investigational or post-marketing reports have shown fetal risk, which clearly outweighs any possible benefit to the patient.</td> </tr> </tbody> </table>	<u>CATEGORY</u>	<u>INTERPRETATION</u>	A	Controlled studies show no risk. Adequate, well-controlled studies in pregnant women have failed to demonstrate risk to the fetus.	B	No evidence of risk in humans. Either animal findings show risk, but human findings do not; or, if no adequate human studies have been done, animal findings are negative.	C	Risk cannot be ruled out. Human studies are lacking, and animal studies are either positive for fetal risk, or lacking as well. However, potential benefits may justify the potential risk.	D	Positive evidence of risk. Investigational or post-marketing data show risk to the fetus. Nevertheless, potential benefits may outweigh the potential risk.	X	Contraindicated in pregnancy. Studies in animals or human, or investigational or post-marketing reports have shown fetal risk, which clearly outweighs any possible benefit to the patient.
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Reference Section	Formulary Abbreviations*	
<p>* This list of abbreviations only covers this Prehospital Formulary. For a complete list of County approved abbreviations refer to the El Dorado County EMS Agency Policy and Procedure Manual.</p>	ASA	aspirin
	AV	atrio-ventricular
	BP	blood pressure
	BPM	beats per minute
	b.s.	blood sugar
	cc	cubic centimeter
	CHF	congestive heart failure
	COPD	chronic obstructive pulmonary disease
	CNS	central nervous system
	CVA	cerebral vascular accident
	Deciliter	dL
	EKG	electrocardiogram
	ET	endotracheal
	ETAD	esophageal tracheal airway device
	ETOH	alcohol
	GCS	Glasgow coma scale
	GI	gastro-intestinal
	gm	gram
	gtt	drop
	HR	heart rate
	IM	intramuscularly
	IO	intraosseous
	IV	intravenous
	IVP	intravenous push
	kg	Kilogram
	lb	Pound
	L	Liter
	MAO	monoamine oxidase
	mcgtt	microdrip
	mEq	milliequivalent
mL	milliliter	
mg	milligram	
MR	may repeat	
NS	normal saline	
NSR	normal sinus rhythm	
OD	overdose	
OH	on hand	
OPP	organophosphate poisoning	
PEA	pulseless electrical activity	
PO	by mouth	
PRN	as needed	
PVC	premature ventricular contraction	
q	every	
SOC	state of consciousness	
SQ	subcutaneous	
SW	sterile water	
U	unit	
µg	microgram	

Reference Section	Equivalents
	1 kg = 2.2 lb 1 kg = 1000 gm 1 gm = 1000 mg 1 L = 1000 mL 1 mL = 60 mcgtts (micro tubing) 1 mL = 10/15/20 gtts (macro tubing) 1 mL and 1 cc are interchangeable

IFT IV Solutions	List of IV fluids for patients during interfacility transfer
Approved Solutions	<ul style="list-style-type: none">• Normal Saline• D5W• Lactated Ringers• Any combination of the above solutions mixed together• Any one of the above solutions containing Potassium less than or equal to 20 mEq/L

CHEMPACK INFORMATION		
Treatment Capacity: 454 Patients		
MEDICATION	UNIT PACK	NUMBER OF CASES
Mark I auto-injector	240	5
Atropine Sulfate 0.4 mg/ml 20mL	100	1
Pralidoxime 1 gm inj 20 mL	276	1
Atropen 0.5 mg	144	1
Atropen 1.0 mg	144	1
Diazepam 5 mg/mL auto-injector	150	2
Diazepam 5 mg/mL vial 10 mL	25	2
Sterile water for injection 20 mL vials	100	2

Mark I auto-injector (Atropine / Pralidoxime)	
Classification:	Nerve agent antidote
Indications:	<p><u>MILD EXPOSURES:</u> Rhinnorhea Chest tightness Dyspnea Bronchospasm</p> <p><u>MODERATE EXPOSURES:</u> Salivation Lacrimation Urination Defecation GI symptoms Emesis Miosis</p> <p><u>SEVERE EXPOSURES:</u> Jerking Twitching Staggering Headache Drowsiness Coma Seizures Apnea</p>
Contraindications:	Do not use auto-injectors in patients under 30 kg
Adverse effects:	<p><u>ATROPINE:</u></p> <ul style="list-style-type: none"> • Tachycardia • Increased myocardial O₂ demand • Headache • Dizziness • Palpitations • Dries mucous membranes • Nausea/vomiting • Flushed skins • Dilated pupils • Increased intraocular pressure <p><u>PRALIDOXIME:</u></p> <ul style="list-style-type: none"> • Pain at injection site • Hypertension • Blurry vision • Diplopia • Tachycardia • Nausea • Increases atropine effects
Administration:	See respective meds for dosing
Pediatric:	Not indicated for pediatrics <10 years or <30 kg

Onset:	Immediate – 15 minutes
Duration:	Half life: 2-Pam 74-77 minutes; Atropine 10 minutes
Pregnancy Safety:	Category C
Comments:	<ul style="list-style-type: none"> • Kits contain: <ul style="list-style-type: none"> ▪ Atropine 2 mg/0.7 mL auto-injector ▪ Pralidoxime 600 mg/2 mL auto-injector • Nerve agents are the most toxic of the known chemical agents. They are hazards in their liquid and vapor states and can cause death within minutes after exposure. Nerve agents inhibit acetylcholinesterase in tissue, and their effects are caused by the resulting excess acetylcholine. Nerve agents are considered to be major military and terrorist threats. Common names for nerve agents include Tabun (GA), Sarin (GB), and Soman (GD), GF and VX. Nerve agents are liquids under normal temperature conditions. When dispersed, the most volatile ones constitute both a vapor and liquid hazard

Atropine Sulfate	
Classification:	Parasympathetic blocker (Anticholinergic) Antidysrhythmic agent
Actions:	Inhibits parasympathetic stimulation by blocking acetylcholine receptors Decreases vagal tone resulting in increased heart rate and AV conduction Dilates bronchioles and decreases respiratory tract secretions Decreases gastrointestinal secretions and motility
Indications:	<ul style="list-style-type: none"> • Organophosphate poisoning (OPP) • Nerve agent exposure
Contraindications:	Neonates (bradycardia and asystole/PEA in neonates is usually caused by hypoventilation; also the vagus nerve in neonates is underdeveloped and atropine will usually have no effect upon it.)
Adverse effects:	<ul style="list-style-type: none"> • Tachycardia • Increased myocardial O₂ demand • Headache • Dizziness • Palpitations • Dries mucous membranes • Nausea/vomiting • Flushed skins • Dilated pupils • Increased intraocular pressure
Precautions:	<ul style="list-style-type: none"> • Do not under-dose pediatrics (Min. dose is 0.1 mg)
Adult Administration:	<p><u>Mild Exposure:</u> 1 auto-injector IM or 2 mg IV/IO/IM. May repeat 2 mg every 3-5 minutes until symptoms improve</p> <p><u>Moderate Exposure:</u> 2 auto-injectors IM or 4 mg IV/IO/IM. May repeat 2 mg every 3-5 minutes until symptoms improve</p> <p><u>Severe Exposure:</u> 3 auto-injectors IM or 6 mg IV/IO/IM. May repeat 1 auto-injector or 2 mg every 3-5 minutes until symptoms improve</p>
Pediatric Administration:	<p><u>For All Exposures:</u> 0.02 mg/kg IV/IO/IM (minimum dose of 0.1 mg) May repeat every 3-5 minutes until symptoms improve</p>

	<p>Autoinjector/Atropen information:</p> <ul style="list-style-type: none"> • For children 0-2 y/o (<18 kg) use 0.5 mg Atropen • For children 2-10 y/o (18-30 kg) use 1.0 mg Atropen • For patients \geq10 y/o (>30 kg) use 2 mg atropine autoinjector <p>Atropens and autoinjectors may be repeated every 3-5 min until symptoms improve.</p>
Onset:	2 – 5 minutes
Duration:	20 minutes
Pregnancy Safety:	Category C
Comments:	Atropine should be given prior to 2-Pam.

Pralidoxime Chloride (2-Pam, Protopam)	
Classification:	Cholinesterase reactivator
Actions:	<ul style="list-style-type: none"> Removes organophosphate agent from cholinesterase and reactivates the cholinesterase Re-establishes normal skeletal muscle contractions
Indications:	<ul style="list-style-type: none"> Antidote for organophosphate poisoning (not carbamates) Antidote for nerve agent poisoning
Contraindications:	Hypertension is relative contraindication
Adverse effects:	<ul style="list-style-type: none"> Pain at injection site Hypertension Blurry vision Diplopia Tachycardia Nausea Increases atropine effects
Administration:	<p><u>Auto injector</u> Mild: administer one (1) autoinjector; 600 mg IM. Moderate: administer one (1) autoinjector; 600 mg IM. May repeat in 5-10 min. Severe: administer three (3) autoinjectors; 1800 mg IM.</p> <p>Elderly patients: (>65 years old): Limit to one (1) auto injector. Contact Base MD if additional doses are required</p> <p><u>IV/IO Infusion</u> 1-2 Gram IV/IO over 30 minutes May repeat in 1 hour</p> <p>Elderly patients: (>65 years old): 7.5 mg/kg IV/IO (Max 1 gram) over 30 minutes. Contact Base MD if additional doses are required</p>
Pediatric:	20 mg/kg IM or IV/IO. Maximum of 1 gram given IV over 30 minutes; may repeat in 1 hour. No autoinjectors on children < 10 years (<30 kg)
Onset:	5-15 minutes
Duration:	Half life: 75 minutes
Pregnancy Safety:	Category C
Comments:	Atropine should be given first

Diazepam (Valium)			
Classification:	Benzodiazepine		
Actions:	Decreases neurologic activity Skeletal muscle relaxant Amnesic		
Indications:	<ul style="list-style-type: none"> Seizures as a result of nerve agent exposure 		
Contraindications:	<ul style="list-style-type: none"> Hypersensitivity to benzodiazepines Myasthenia gravis 		
Adverse effects:	<table border="0"> <tr> <td> <ul style="list-style-type: none"> Drowsiness Fatigue Ataxia Confusion Constipation Depression Diplopia Dysarthria Headache Hypotension </td> <td> <ul style="list-style-type: none"> Incontinence Jaundice Nausea Rash Tremor Urinary retention Vertigo Blurred vision Anxiety Injection site reaction </td> </tr> </table>	<ul style="list-style-type: none"> Drowsiness Fatigue Ataxia Confusion Constipation Depression Diplopia Dysarthria Headache Hypotension 	<ul style="list-style-type: none"> Incontinence Jaundice Nausea Rash Tremor Urinary retention Vertigo Blurred vision Anxiety Injection site reaction
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Precautions:	<ul style="list-style-type: none"> Can exacerbate grand mal seizures in epileptics Glaucoma Lung, liver, or heart disease 		
Adult Administration:	5 mg Slow IVP/IO. May repeat every 5 minutes as needed		
Pediatric Administration:	<p>0-5 years old: 0.2 -0.5 mg/kg IV/IO (5 mg max) May repeat every 2-5 minutes as needed</p> <p>>5 years old: 1 mg IV/IO (max 10 mg) May repeat every 2-5 minutes as needed</p>		
Onset:	1 – 5 minutes		
Duration:	15 minutes to 1 hour		
Pregnancy Safety:	Category D		
Comments:	Use with caution in elderly patients or patients that are under the influence of CNS depressants. Does not prevent seizures, do not give prophylactically.		