

# **Grant County** **PREHOSPITAL FORMULARY**

Updated: November 2013  
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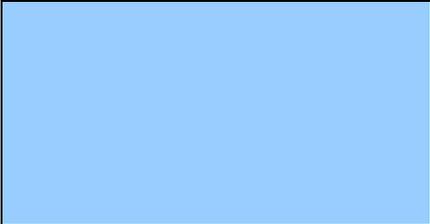
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<b>Acetaminophen</b>	<b>Tylenol</b>
<b>Classification:</b>	Antipyretic
<b>Actions:</b>	Antipyretic effect via direct action on the hypothalamic heat-regulating center
<b>Indications:</b>	Antipyresis
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Hypersensitivity to the drug</li> </ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Nausea</li> <li>• Anaphylaxis (rare)</li> <li>• Angioedema (rare)</li> </ul>
<b>Adult Administration</b>	Not in protocol for adults
<b>Pediatric Administration</b>	15mg/kg PO/PR
<b>Onset:</b>	10-30 minutes
<b>Duration:</b>	3-4 hours
<b>Pregnancy Safety:</b>	N/A
<b>Comments:</b>	To be administered if transport time is greater than 20 minutes and the temperature is greater than 100.5F

<b>Adenocard (Adenosine)</b>	
<b>Classification:</b>	Antidysrhythmic agent
<b>Actions:</b>	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.
<b>Indications:</b>	Supra-ventricular tachycardia (stable)
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Patients with a known history of atrial fibrillation</li> <li>• Patients with a known history of atrial flutter</li> <li>• 2<sup>nd</sup> or 3<sup>rd</sup> degree heart block</li> <li>• Sick sinus syndrome</li> <li>• Hypersensitivity to adenosine</li> </ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Facial flushing</li> <li>• Headache</li> <li>• Dizziness</li> <li>• Dyspnea</li> <li>• Nausea/vomiting</li> <li>• Chest pressure</li> <li>• Transient Asystole</li> <li>• Bronchoconstriction in some asthma patients</li> </ul>
<b>Adult Administration:</b>	6 mg rapid IVP followed with rapid 20mL NS flush. If refractory, repeat doses of 12 mg rapid IVP with 20 mL flush up to 2 times, as indicated.
<b>Pediatric Administration:</b>	5-10 mg/kg rapid IVP followed with 5 mL NS (maximum dose 6 mg). May repeat at 0.2 mg/kg (maximum dose 12 mg.) as indicated.
<b>Onset:</b>	Immediate
<b>Duration:</b>	10 seconds
<b>Pregnancy Safety:</b>	Category C
<b>Comments:</b>	<ul style="list-style-type: none"> <li>• ½ life is “10 seconds.”</li> <li>• A brief period of Asystole (up to 15 seconds) following conversion, followed by resumption of NSR is common after rapid administration.</li> </ul>

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- May induce bronchospasms in reactive airway disease
  - Is to be given in the IV port most proximal to the heart.

<b>Albuterol Sulfate (Proventil, Ventolin)</b>	
<b>Classification:</b>	Beta 2 Bronchodilator
<b>Actions:</b>	Relaxes bronchial smooth muscle by stimulating beta <sub>2</sub> receptors resulting in bronchodilation.
<b>Indications:</b>	<ul style="list-style-type: none"> <li>• Acute asthma</li> <li>• Allergic reaction</li> <li>• COPD/bronchitis</li> <li>• Bronchospasm</li> </ul>
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Prior hypersensitivity reaction to Albuterol</li> <li>• Symptomatic tachycardia</li> <li>• Chest pressure</li> </ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Tachycardia</li> <li>• Hypertension</li> <li>• Palpitations</li> <li>• Dizziness</li> <li>• Dysrhythmias</li> <li>• Restlessness</li> <li>• Nausea</li> </ul>
<b>Adult Administration:</b>	2.5 mg/3 mL NS via nebulizer. May repeat up to 3 doses. May also be administered via facemask, BVM, or ETT.
<b>Pediatric Administration:</b>	2.5 mg in 3 cc NS via nebulizer. May repeat up to 3 doses.
<b>Onset:</b>	Within 5 minutes
<b>Duration:</b>	3 – 4 hours
<b>Pregnancy Safety:</b>	Category C
<b>Comments:</b>	<p>Use with caution in patients with:</p> <ul style="list-style-type: none"> <li>• Heart disease</li> <li>• Hypertension</li> <li>• Tachydysrhythmias</li> <li>• Patients being treated with MAO inhibitors</li> <li>• Patients that are hypersensitive to sympathomimetics</li> </ul>

<b>Amiodarone</b>		<b>Cordarone</b>	
<b>Classification:</b>	Antiarrhythmics		
<b>Actions:</b>	Effects result from blockade of potassium chloride leading to a prolongation of action potential duration		
<b>Indications:</b>	<ul style="list-style-type: none"> <li>• Recurrent ventricular fibrillation</li> <li>• Recurrent hemodynamically unstable ventricular tachycardia</li> <li>• Cardiac Arrest Unresponsive to CPR, Shock, and Vasopressors</li> <li>• Recurrent Life-Threatening Ventricular Arrhythmias.</li> </ul>		
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Hypersensitive to the drug</li> <li>• Cardiogenic shock</li> <li>• 2<sup>nd</sup> or 3<sup>rd</sup> Degree AV Block</li> <li>• Severe SA node disease</li> <li>• Caution in patients receiving other Antiarrhythmics</li> <li>• Caution in patients with pulmonary, hepatic, or thyroid disease.</li> </ul>		
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Peripheral Neuropathy</li> <li>• Ataxia</li> <li>• Paresthesia</li> <li>• Tremors</li> <li>• Headache</li> <li>• Bradycardia</li> <li>• Hypotension</li> <li>• Arrhythmias</li> <li>• Heart Failure</li> <li>• Heart Block</li> <li>• Sinus Arrest</li> <li>• Coagulation abnormalities</li> <li>• Hepatic Failure</li> <li>• Acute respiratory distress syndrome</li> </ul>		
<b>Adult Administration:</b>	<p>Cardiac Arrest:  1<sup>st</sup> Dose: 300mg IV/IO push diluted in 20-30cc D5W  2<sup>nd</sup> Dose: 150mg IV/IO push after 3-5 minutes</p> <p>Recurrent Life Threatening Ventricular Arrhythmias</p> <ul style="list-style-type: none"> <li>• Rapid Infusion: 150mg IV over first 10 minutes (15mg/min).</li> <li>• May repeat rapid infusion 150mg IV every 10 minutes as indicated.</li> </ul>		
<b>Pediatric Administration:</b>	Not Appropriate for Pediatric Administration		

<b>Onset:</b>	Unknown per drug handbook.
<b>Duration:</b>	Variable
<b>Pregnancy Safety:</b>	Category D
<b>Comments:</b>	

<b>Anectine Succinylcholine IV/IO</b>	
<b>Classification:</b>	Depolarizing Neuromuscular Blocker
<b>Actions:</b>	Stimulates motor endplates acetylcholine receptors (depolarizing neuromuscular blocker)
<b>Indications:</b>	Adjunct for RSI to relax skeletal muscles
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Hypersensitivity</li> <li>• Use caution with elderly</li> <li>• Malignant Hyperthermia</li> <li>• Major Trauma or Burns</li> <li>• Penetrating Eye Injury</li> <li>• Upper Motor Neuron Injury</li> <li>• Pseudo cholinesterase deficiency</li> <li>• Myasthenia Gravis</li> <li>• Neuromuscular Disease</li> <li>• Hyperkalemia</li> <li>• Subarachnoid Hemorrhage</li> <li>• Dialysis patients</li> </ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Arrhythmias</li> <li>• Bradycardia</li> <li>• Cardiac Arrest</li> <li>• Tachycardia</li> <li>• Hyper/hypotension</li> <li>• Increased Intraocular Pressure</li> <li>• Excessive Salivation</li> <li>• Hyperkalemia</li> <li>• Muscle Fasciculation</li> <li>• Apnea</li> <li>• Rash</li> <li>• Malignant Hyperthermia</li> <li>• Rhabdomyolysis</li> </ul>
<b>Adult Administration:</b>	1.5-2 mg/kg IV/IO
<b>Pediatric Administration:</b>	2mg/kg IV/IO
<b>Onset:</b>	30-60 Seconds
<b>Duration:</b>	4-10 minutes
<b>Pregnancy Safety:</b>	Category C

<b>Aspirin (ASA, Acetylsalicylic Acid)</b>	
<b>Classification:</b>	Antiplatelet, Analgesic, Antipyretic, Anti-inflammatory
<b>Actions:</b>	Inhibition of platelet aggregation and platelet synthesis. Reduction of risk of death in patients with a history of myocardial infarction or unstable angina.
<b>Indications:</b>	Chest pain
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Allergy to ASA</li> <li>• Peptic ulcer disease</li> <li>• Hypersensitivity to salicylates</li> <li>• Penetrating Chest Trauma</li> </ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Nausea-GI upset</li> <li>• Hepatotoxicity</li> <li>• Occult blood loss</li> <li>• Anaphylaxis</li> </ul>
<b>Adult Administration:</b>	324/325mg PO chewed
<b>Pediatric Administration:</b>	Not recommended for prehospital use.
<b>Onset:</b>	30-60 minutes
<b>Duration:</b>	4-6 Hours
<b>Pregnancy Safety:</b>	Pregnancy safety: Consult M.D., not recommended in third trimester
<b>Comments:</b>	Salicylism signs and symptoms: dizziness, tinnitus, difficulty hearing, nausea, vomiting, and mental confusion.

## Atropine Sulfate

<b>Classification:</b>	Parasympathetic blocker (Anticholinergic) Antidysrhythmic agent
<b>Actions:</b>	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.
<b>Indications:</b>	<ul style="list-style-type: none"> <li>• Symptomatic bradycardia</li> <li>• Asystole</li> <li>• Pulseless electrical activity HR &lt; 60 (PEA)</li> <li>• Organophosphate poisoning (OPP)</li> <li>• Pre-intubation for patients &lt;20 kg or &lt;5 years of age</li> </ul>
<b>Contraindications:</b>	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.)
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Tachycardia</li> <li>• Increased myocardial O<sub>2</sub> demand</li> <li>• Headache</li> <li>• Dizziness</li> <li>• Palpitations</li> <li>• Dries mucous membranes</li> <li>• Nausea/vomiting</li> <li>• Flushed skins</li> <li>• Dilated pupils</li> <li>• Increased Intraocular pressure</li> </ul>
<b>Precautions:</b>	<ul style="list-style-type: none"> <li>• Use with caution in patients with suspected acute myocardial infarction (AMI) and glaucoma patients</li> <li>• 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)</li> </ul>
<b>Adult Administration:</b>	Bradycardia: 0.5-IVP every 3-5 min to maximum of 0.04 mg/kg. 1 mg via ET* tube every 3-5 minutes to maximum of 0.04 mg/kg

	<p>Asystole/PEA: 1 mg IVP every 3-5 minutes to maximum of 0.04mg/kg. 2 mg via ET* tube every 3-5 minutes to maximum of 0.04 mg/kg</p> <p>OPP: 2 mg IVP or 4 mg ET every 5 minutes until heart rate &gt;80 BPM or symptoms clear. Higher doses may be ordered by Base M.D.</p> <p>*IVP is the preferred route of administration</p>
<b>Pediatric Administration:</b>	<p>Bradycardia: 0.02 mg/kg IVP. Minimum dose of 0.1 mg and a maximum dose of 0.5 mg for a child; 1.0 mg for an adolescent. This dose may be repeated after 5 minutes for a maximum total dose of 1.0 mg for a child and 2.0 mg for an adolescent</p> <p>OPP: Administer per Poison Control guidelines</p> <p>Pre-intubation: In patients &lt;20 kg or &lt;5 years of age, administer Atropine 0.02 mg/kg IV minimum dose – 0.1 mg (Maximum dose 1.0 mg)</p>
<b>Onset:</b>	2 – 5 minutes
<b>Duration:</b>	20 minutes
<b>Pregnancy Safety:</b>	Category C
<b>Comments:</b>	<p>Bradycardia in Pediatrics is usually due to hypoxia.</p> <p>Max adult dosage of Atropine is 3 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 If paradoxical bradycardia develops, wait 2-3 minutes. Neonatal bradycardia often resolves itself quickly without corrective treatment.</p>

<b>Calcium Chloride (CaCl<sub>2</sub>)</b>	
<b>Classification:</b>	Inotropic Agent (electrolyte)
<b>Actions:</b>	Couples electrical and mechanical events of the myocardium. Increases myocardial contractility. Increases ventricular irritability.
<b>Indications:</b>	<ul style="list-style-type: none"> <li>• Hyperkalemia</li> <li>• Overdose of calcium channel blockers</li> <li>• Overdose of Magnesium Sulfate</li> </ul>
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Patients taking digitalis based medications</li> <li>• Hypercalcemia</li> </ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Bradycardia</li> <li>• Hypotension</li> <li>• Syncope</li> </ul>
<b>Adult Administration:</b>	Administer 1gm slow IV
<b>Pediatric Administration:</b>	Administer 0.2 mL/kg slow IV push
<b>Onset:</b>	5 – 15 minutes
<b>Duration:</b>	Dose dependant (effects may persist for up to 4 hours)
<b>Pregnancy Safety:</b>	Category C
<b>Comments:</b>	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.

DIAZEPAM	VALIUM
<b>Classification:</b>	Sedative-hypnotic; anticonvulsant: benzodiazepine: antianxiety.
<b>Actions:</b>	Acts on both limbic and subcortical levels of the CNS Relaxant Induces amnesia
<b>Indications:</b>	<ul style="list-style-type: none"> <li>• Major motor seizures, Status Epilepticus</li> <li>• Premedication for cardioversion</li> <li>• Acute anxiety</li> </ul>
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Hypersensitivity to the drug</li> </ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Hypotension</li> <li>• Drowsiness</li> <li>• Headache</li> <li>• Amnesia</li> <li>• Respiratory depression</li> <li>• Blurred vision</li> <li>• Nausea and vomiting</li> </ul>
<b>Adult Administration:</b>	<b><u>SEIZURES:</u></b> 2-10 mg IV/IO repeat as indicated.
<b>Pediatric Administration:</b>	<b><u>SEIZURES:</u></b> 0.1 mg/kg IV/IO to a max of 0.3 mg/kg If no IV/IO then 0.5 mg/kg rectal to max of 10 mg
<b>Onset:</b>	IV 1-5 min, IM 15-30 min.
<b>Duration:</b>	15-60 min. half life 20-50 min.
<b>Pregnancy Safety:</b>	
<b>Comments:</b>	Observe patient closely and monitor vital signs. Use extreme caution with elderly, very ill, or COPD pts. IM administration- deep in large muscle mass, slowly. Preserve in tight, light-resistant containers.

<b>Dextrose 50% in Water (D<sub>50</sub>W, Glucose)</b>	
<b>Classification:</b>	Hyperglycemic agent, hypertonic solution
<b>Actions:</b>	Provides immediate source of glucose which is rapidly utilized for cellular metabolism.
<b>Indications:</b>	Altered level of consciousness due to suspected hypoglycemia.
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Intra-cranial hemorrhage</li> <li>• Delirium Tremors with dehydration</li> <li>• Administration through the same infusion set as blood</li> <li>• Suspected CVA</li> </ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• CVA</li> <li>• Intra-cranial hemorrhage</li> <li>• Thrombophlebitis</li> <li>• Rhabdomyolysis</li> <li>• May worsen Wernicke's encephalopathy</li> </ul>
<b>Adult Administration:</b>	(b.s. =<60 mg/dL) 25-50gm slow IVP. May repeat once.
<b>Pediatric Administration:</b>	<p>1 mo –2 yrs (b.s. &lt; 60 mg/dL) – D25W 2-4 mL/kg IV/IO (Max. 25 grams).</p> <p>&lt;1 mo (b.s. &lt; 40 mg/dL) D10W 1-2 mL/kg IV/IO (Max. 25 grams).</p>
<b>Onset:</b>	30 – 60 seconds
<b>Duration:</b>	Depends on level of hypoglycemia
<b>Pregnancy Safety:</b>	Category A
<b>Comments:</b>	<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>May increase cerebral ischemia in CVA.</p> <p>Use as large a vein as possible.</p>

<b>Diltiazem</b>		<b>Cardizem</b>	
<b>Classification:</b>	Calcium Channel Blocker		
<b>Actions:</b>	A calcium channel blocker that inhibits calcium ion influx across cardiac and smooth-muscle cells, decreasing myocardial contractility and oxygen demand. Also dilates coronary arteries and arterioles.		
<b>Indications:</b>	<ul style="list-style-type: none"> <li>• To control ventricular rates in atrial fibrillation and atrial flutter.</li> <li>• Use after adenosine to treat refractory reentry SVT in patients with narrow QRS complex and adequate blood pressure.</li> </ul>		
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Hypersensitivity to the drug</li> <li>• Sick Sinus Syndrome</li> <li>• 2<sup>nd</sup> or 3<sup>rd</sup> Degree AV Block in the absence of an artificial pacemaker</li> <li>• Ventricular Tachycardia</li> <li>• Systolic BP &gt;90</li> <li>• Acute MI</li> <li>• Pulmonary Congestion</li> <li>• IV route is contraindicated in patients who have A-Fib or Flutter with an accessory bypass tract such as WPW or short PR interval syndrome</li> <li>• Use caution in elderly patients and in those with heart failure or impaired hepatic or renal function.</li> <li>• Avoid in patients receiving oral B-Blockers</li> </ul>		
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Headache</li> <li>• Dizziness</li> <li>• Somnolence</li> <li>• Edema</li> <li>• Arrhythmias</li> <li>• Bradycardia</li> <li>• Hypotension</li> <li>• Heart Failure</li> <li>• AV Block</li> <li>• Nausea</li> <li>• Constipation</li> <li>• Acute hepatic injury</li> </ul>		
<b>Adult Administration</b>	0.25 mg/kg SIVP over 2 minutes, may repeat in 15 min at 0.35 mg/kg SIVP over 2 min		
<b>Pediatric Admin</b>	Not available for pediatric administration		
<b>Onset:</b>	IV Route - >3minutes		
<b>Duration:</b>	IV Route – 1-10 hours		
<b>Pregnancy Safety:</b>	Category C		

<b>Diphenhydramine (Benadryl)</b>	
<b>Classification:</b>	Antihistamine, H1 Blocker
<b>Actions:</b>	Competes with histamines at receptor sites Reverses muscle spasms associated with dystonic reactions (phenothiazine).
<b>Indications:</b>	<ul style="list-style-type: none"> <li>• Allergic reactions</li> <li>• Muscle spasms associated with dystonic reactions to phenothiazine</li> </ul>
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Glaucoma</li> <li>• Acute asthma</li> <li>• COPD</li> <li>• Pregnancy</li> </ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Hypotension</li> <li>• Drowsiness</li> <li>• Tachycardia</li> <li>• Bradycardia</li> <li>• Dry mouth</li> </ul>
<b>Adult Administration:</b>	25 – 50 mg slow IVP or deep IM
<b>Pediatric Administration:</b>	1 mg/kg slow IVP/IO/IM (maximum of 100 mg)
<b>Onset:</b>	1-5 minutes if given IVP 15 minutes if given IM
<b>Duration:</b>	3-4 hours
<b>Pregnancy Safety:</b>	Category B
<b>Comments:</b>	May cause depressed level of consciousness in elderly patients. Overdoses result in seizures, coma, and death.

<b>Dopamine (Intropin)</b>	
<b>Classification:</b>	Sympathomimetic agent (Catecholamine)
<b>Actions:</b>	<p><b><u>Low dose (1-2 µg/kg/min)</u></b></p> <p>Dilates renal and mesenteric arteries by stimulating dopaminergic receptors.</p> <p>May decrease BP due to vasodilation.</p> <p><b><u>Moderate dose (2-10 µg/kg/min)</u></b></p> <p>Increases inotropy (force) without increasing chronotropy (heart rate).</p> <p>Increases BP by stimulating beta<sub>1</sub> receptors.</p> <p><b><u>High dose (over 10 µg/kg/min)</u></b></p> <p>Causes vasoconstriction. Increases inotropy and chronotropy.</p> <p>Increases BP by stimulating alpha and beta<sub>1</sub> receptors.</p>
<b>Indications:</b>	<ul style="list-style-type: none"> <li>• Cardiogenic shock</li> <li>• Distributive shock</li> </ul>
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Hypovolemia</li> </ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Hypertension (High doses)</li> <li>• Hypotension (Low doses)</li> <li>• Tachycardia</li> <li>• Dyspnea</li> </ul>
<b>Adult Administration:</b>	5-20 mcg/kg/minute titrated to effect.
<b>Pediatric Administration:</b>	5-10 mcg/kg/min. via volumetric controlled device titrated to effect. Do not exceed 20mcg/kg/min
<b>Onset:</b>	5 minutes
<b>Duration:</b>	5-10 minutes
<b>Pregnancy Safety:</b>	Not well established
<b>Comments:</b>	Causes tissue necrosis if injected into interstitial space. MAO inhibitors may increase the effects of dopamine. IV Infusion Only.

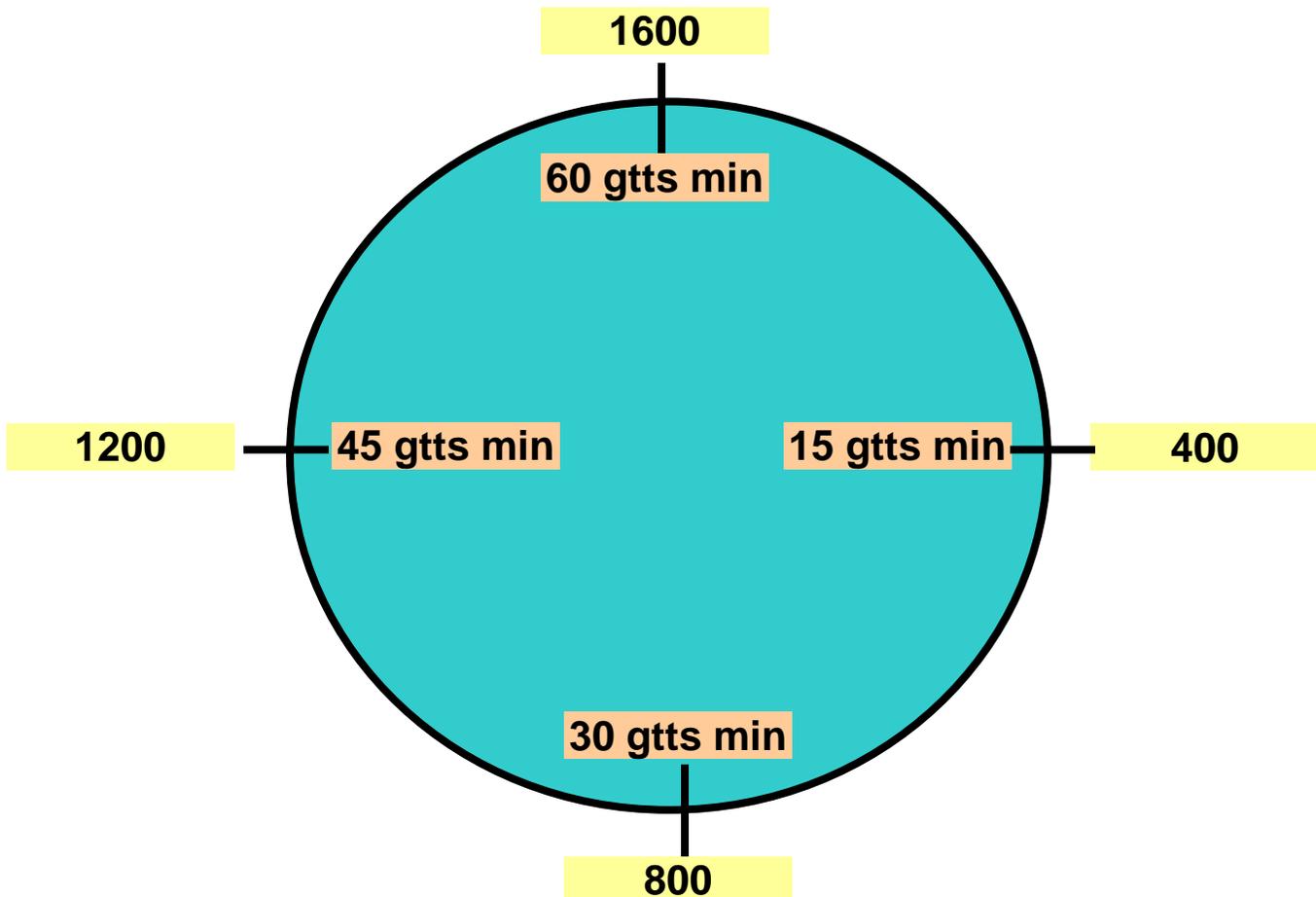
## Dopamine Drip Chart

Run pre-mixed Dopamine 400 mg in 250 cc solution  
via micro drip (60 gtts/cc) 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 administer 5 mcg/kg/min; just divide the inside number in half.
4. To administer 20 mcg/kg/min; double the inside number.
5. Run the dopamine via either micro drip tubing or macro drip tubing with a Dial-a-Flow device.



## Epinephrine Hydrochloride (Adrenalin)

<b>Classification:</b>	Sympathomimetic agent (Catecholamine)
<b>Actions:</b>	<p>Acts directly on Alpha &amp; Beta receptors of the SNS. Beta effect is more profound than Alpha effects. Effects include:</p> <ul style="list-style-type: none"> <li>• Increased HR (chronotropy)</li> <li>• Increased cardiac contractile force (inotropy)</li> <li>• Increased electrical activity within myocardium (dromotropy)</li> <li>• Increased systemic vascular resistance</li> <li>• Increased blood pressure</li> <li>• Increased automaticity</li> <li>• Increased bronchial smooth muscle dilation</li> <li>• Increases coronary perfusion during CPR by increasing aortic diastolic pressure</li> </ul>
<b>Indications:</b>	<ul style="list-style-type: none"> <li>• Cardiopulmonary arrest: <ul style="list-style-type: none"> <li>-Ventricular fibrillation</li> <li>-Pulseless ventricular tachycardia</li> <li>-Asystole</li> <li>-Pulseless electrical activity (PEA)</li> </ul> </li> <li>• Allergic reaction/anaphylaxis</li> <li>• Asthma</li> <li>• Refractory pediatric bradycardia, unresponsive to oxygen and ventilation</li> </ul>
<b>Contraindications:</b>	Not significant in the above indications.
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Hypertension-tachycardia</li> <li>• Increases myocardial oxygen demand and potentially increases myocardial ischemia</li> </ul>

<p><b>Adult Administration:</b></p>	<p><b><u>Cardiopulmonary arrest:</u></b>  IV/IO administration*: 1:10,000 1 mg every 3 - 5 minutes  ET administration: 1:1,000 2 mg every 3 - 5 minutes.  Dilute in sterile water to 3-5 mL total volume.</p> <p><b><u>Allergic Reaction:</u></b>  0.5-1.0 mg IV of 1:10,000 or 0.3-0.5 mg IM of 1:1,000, may repeat every 10 minutes (Pulseless/unresponsive - refer to appropriate cardiovascular protocol)</p> <p><b><u>Asthma:</u></b>  0.3 mg of 1:1,000 IM may repeat in 10-minute intervals.  (Pulseless/unresponsive - refer to appropriate cardiovascular protocol)</p> <p><b><u>Beta Blocker Overdose</u></b>  2-10 mcq/min drip if pt is hemodynamically unstable</p> <p>* IV/IO is the preferred route of administration</p>
<p><b>Pediatric Administration:</b></p>	<p><b><u>Cardiac Arrest:</u></b>  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)</p> <p>Repeat doses:  IV/IO: 0.01 mg/kg (1:10,000, 0.1 ml/kg)  ET: 0.1 mg/kg (1:1000, 0.1 ml/kg) every 3 -5 minutes. Dilute in sterile water to a maximum volume of 3-5 mL.</p> <p><b><u>Allergic Reaction/Asthma:</u></b>  0.01 mg/kg of 10,000 IV, or 0.1 mg of 1:1,000 IM, may repeat every 10 minutes  (Pulseless/unresponsive: Refer to appropriate cardiovascular protocol)</p> <p><b><u>Refractive Bradycardia</u></b>  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>* IV is the preferred route of administration</p>

<b>Onset:</b>	Immediate if given IVP 5-10 minutes if given IM
<b>Duration:</b>	3-5 minutes if given IVP 20 minutes if given IM
<b>Pregnancy Safety:</b>	Category C
<b>Comments:</b>	High dose epinephrine is no longer recommended. High doses do not improve survival or neurologic outcome and may contribute to postresuscitation myocardial dysfunction.

## EPI-Pen / EPI-Pen Jr.®

<b>Classification:</b>	Bronchodilators
<b>Actions:</b>	Relaxes bronchial smooth muscles by stimulating beta2 receptors and alpha and beta receptors in the sympathetic nervous system.
<b>Indications:</b>	Anaphylaxis
<b>Contraindications:</b>	<ul style="list-style-type: none"><li>• Use caution in patients with known Heart Disease.</li></ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"><li>• Fast and or irregular heart rate</li><li>• Nausea</li><li>• Difficulty Breathing</li></ul>
<b>Adult Administration:</b>	Epi Pen: 0.3mg of Epinephrine
<b>Pediatric Administration:</b>	Epi Pen Jr.: 0.15mg of Epinephrine
<b>Onset:</b>	IM route is variable
<b>Duration:</b>	1-4 hours
<b>Pregnancy Safety:</b>	Category C
<b>Comments:</b>	Epi-Pen and Epi-Pen Jr. are to be administered intramuscularly into the Anterolateral aspect of the thigh.

<b>Etomidate</b> Amidate, Hypnomidate	
<b>Classification:</b>	Anesthesia Induction / Sedative-Hypnotic
<b>Actions:</b>	Exact mechanism of action is unknown; may have GABA-like effects, depresses brain stem reticular formation activity and produces hypnosis.
<b>Indications:</b>	Induction agent for RSI
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Hypersensitivity to the drug</li> <li>• Use caution in elderly patients</li> </ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Transient myoclonic movements</li> <li>• Injection site pain</li> <li>• Transient tonic movements</li> <li>• Nausea</li> <li>• Vomiting</li> <li>• Apnea</li> </ul>
<b>Adult Administration:</b>	0.3mg/kg IVP/IO Maximum dose 30mg
<b>Pediatric Administration: &gt;2 yrs</b>	0.3mg/kg IVP/IO
<b>Onset:</b>	30-60 sec.
<b>Duration:</b>	10-15 minutes
<b>Pregnancy Safety:</b>	Class C
<b>Comments:</b>	

<b>Fentanyl</b> Sublimaze, Fentanyl Oralet, Duragesic	
<b>Classification:</b>	Narcotic Analgesic
<b>Actions:</b>	Binds to various opioid receptors, producing analgesia and sedation opioid agonist.
<b>Indications:</b>	<ul style="list-style-type: none"> <li>• Moderate to Severe Pain</li> <li>• Adjunct to Procedural Sedation, Rapid Sequence Intubation.</li> </ul>
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Hypersensitivity to the drug</li> <li>• Caution in elderly patients</li> <li>• Caution if impaired liver function</li> <li>• Caution if impaired renal function</li> <li>• Increased ICP</li> <li>• Head injury patients</li> <li>• Hypotension</li> </ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Respiratory Depression</li> <li>• Respiratory Arrest</li> <li>• Hypotension</li> <li>• Bradycardia</li> <li>• Anaphylaxis</li> <li>• Laryngospasms</li> <li>• Bronchoconstriction</li> <li>• Cardiac Arrest</li> <li>• Arrhythmias</li> <li>• Seizures</li> <li>• Muscle Rigidity</li> <li>• Dyspnea</li> <li>• Dizziness</li> <li>• Sweating</li> <li>• Nausea and Vomiting</li> </ul>
<b>Adult Administration:</b>	0.5-1 mcg/kg IV/IO/IM max 2.0 mcg/kg
<b>Pediatric Administration:</b>	0.5-1 mcg/kg IV/IO/IM max 2.0 mcg/kg
<b>Onset:</b>	IV 1-2 minutes IM 7-15 minutes
<b>Duration:</b>	IV .5-1 hour IM 1-2 hours
<b>Pregnancy Safety:</b>	Category C – Excreted in breast milk
<b>Comments:</b>	IV or IM dose of 100 mcg of Fentanyl is equianalgesic to 10mg of morphine.

<b>Furosemide (Lasix)</b>	
<b>Classification:</b>	Loop diuretic
<b>Actions:</b>	Increases urinary output by inhibiting the reabsorption of sodium chloride in renal tubes. Causes venal pooling due to vasodilatation.
<b>Indications:</b>	Pulmonary edema/congestive heart failure
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Hypovolemia</li> <li>• Pregnancy</li> <li>• Hypotension</li> </ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Hypotension</li> <li>• Transient hearing loss</li> <li>• Hypokalemia</li> </ul>
<b>Adult Administration:</b>	40mg SIVP over 2 - 4 minutes, if pt is currently taking Furosemide dose 80 mg SIVP over 2-4 min.
<b>Pediatric Administration:</b>	1.0mg/kg slow IVP
<b>Onset:</b>	5 - 10 minutes
<b>Duration:</b>	2 - 3 hours
<b>Pregnancy Safety:</b>	Category C
<b>Comments:</b>	Rapid administration may cause permanent hearing loss. If patient's blood pressure drops below 100 mmHg, discontinue furosemide administration.

# Glucagon

<b>Classification:</b>	Hyperglycemic agent (pancreatic hormone)
<b>Actions:</b>	<p>Elevates blood glucose by converting liver glycogen into glucose.</p> <p>Increases cardiac output by increasing inotropy and chronotropy.</p> <p>Stimulates the release of catecholamine.</p> <p>Relaxes smooth muscle of the gastrointestinal tract, bronchioles, and blood vessels.</p>
<b>Indications:</b>	<ul style="list-style-type: none"> <li>• Hypoglycemia with no IV access and BGL&lt;60mg/dl.</li> <li>• Beta blocker OD</li> <li>• Allergic reaction</li> </ul>
<b>Contraindications:</b>	May precipitate when mixed with calcium
<b>Adverse effects:</b>	Nausea/vomiting
<b>Adult Administration:</b>	<p><b><u>Severe Anaphylaxis:</u></b> 2-4 mg IV/IO/IM</p> <p><b><u>Hypoglycemia:</u></b> 1 mg IM (pts &gt;20 kg)</p> <p><b><u>Beta/Calcium channel blockers OD:</u></b> 1-5 mg IV push over 1 minute(if pt is hemodynamically unstable)</p>
<b>Pediatric Administration:</b>	<p><b><u>Severe Anaphylaxis:</u></b></p> <p>1 mg IV/IO/IM</p> <p><b><u>Hypoglycemia:</u></b> 0.5 mg IM (pts &lt;20 kg)</p>
<b>Onset:</b>	<p>1 - 3 minutes if given IVP</p> <p>5 - 20 minutes if given IM</p>
<b>Duration:</b>	<p>15 - 20 minutes if given IVP</p> <p>15 - 30 minutes if given IM</p>
<b>Pregnancy Safety:</b>	Category B
<b>Comments:</b>	<ol style="list-style-type: none"> <li>1. Use with caution in patients with cardiovascular disease.</li> <li>2. The patients must be given supplemental glucose ASAP: either PO, IV. If this is not possible patients may be better off without glucagon. Glucagon will release all of the patient's available glycogen. If the patient is not provided with glucose, the subsequent hypoglycemia will be greater than before glucagon.</li> <li>3. Glucagon is supplied in a powder form and must be reconstituted by sterile water or saline. 1ml of NS for each 1mg of powder and shaken well.</li> </ol>

<b>Haloperidol</b>		<b>Haldol</b>
<b>Classification:</b>	Antipsychotic	
<b>Actions:</b>	Unknown. A butyrophenone that probably exerts antipsychotic effects by blocking postsynaptic dopamine receptors in the brain.	
<b>Indications:</b>	Psychotic Disorders / Chemical Restraints	
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Patients hypersensitive to the drug</li> <li>• Parkinsonism</li> <li>• Coma</li> <li>• CNS Depression</li> <li>• Caution with elderly and or debilitated patients</li> <li>• Caution with history of Seizure</li> <li>• Caution with severe CV disorders</li> <li>• Caution with patients taking anticonvulsants, anticoagulants, antiparkinsonians or lithium.</li> </ul>	
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Seizures</li> <li>• Neuroleptic Malignant Syndrome</li> <li>• Torsades de pointes</li> <li>• Leukopenia</li> </ul>	
<b>Adult Administration:</b>	5 mg IM	
<b>Pediatric Administration:</b>	Contact Medical Control	
<b>Onset:</b>	IV or IM Routes are unknown	
<b>Duration:</b>	IV or IM Routes are unknown	
<b>Pregnancy Safety:</b>	Category C	
<b>Comments:</b>	<ol style="list-style-type: none"> <li>1. Use with caution in patients with severe cardiovascular disorders (may cause transient hypotension and or precipitation of angina pain).</li> <li>2. Patients receiving anticonvulsant medications may lower the seizure threshold.</li> </ol>	

<b>Hydromorphone (Dilaudid)</b>	
<b>Mechanism of Action:</b>	Synthetic narcotic analgesic
<b>Indications:</b>	Moderate to severe pain
<b>Precautions:</b>	<ul style="list-style-type: none"> <li>• May cause significant hypotension in the hypovolemic patient.</li> <li>• Use with great caution in the multiple trauma patient at risk for hemorrhagic shock.</li> <li>• Synergistic effect with other CNS/respiratory depressants.</li> <li>• Use with great caution in elderly patients and use lower doses (0.25mg – 0.5 mg).</li> <li>• Respiratory depressant effect may last longer than the analgesic effect, consider supplemental oxygen.</li> </ul>
<b>Drug Interactions:</b>	Other CNS depressants such as alcohol, benzodiazepines, antiemetics, sedative-hypnotics (ie, propofol or etomidate)
<b>Adult Administration:</b>	0.2 – 0.6 mg slow IV push. May repeat every 30 minutes to a maximum of 3 mg.
<b>Pediatric Administration:</b>	0.015 mg/kg slow IV push. May repeat in 1 (one) hour.
<b>Special Notes:</b>	<ul style="list-style-type: none"> <li>• 10 (ten) times more potent than morphine</li> <li>• Duration of analgesic 90 – 120 minutes.</li> <li>• Take blood pressure before, then 2 &amp; 5 minutes after every dose.</li> </ul>

## Ipratropium Bromide (Atrovent)

<b>Mechanism of Action:</b>	Anticholinergic bronchodilator with similar structure to Atropine
<b>Indications:</b>	Used for reversible airway obstruction caused by: <ul style="list-style-type: none"><li>• COPD (emphysema)</li><li>• Severe Asthma</li></ul>
<b>Precautions:</b>	<ul style="list-style-type: none"><li>• Rare cases of paradoxical bronchospasm or known intolerance of this medication in the past.</li><li>• Anticholinergic effect may precipitate acute angle closure glaucoma or urinary retention in susceptible individuals.</li><li>• Use with caution in patients with a known Benadryl allergy (anticholinergic effect)</li></ul>
<b>Drug Interactions:</b>	May potentiate the anticholinergic effects of other concurrent medications.
<b>Adult Administration:</b>	0.5 mg in 3 ml of sterile NS given as inhalation therapy over 5 – 15 minutes. <u>Max of 1 (one) dose in 6 hours.</u>
<b>Special Notes:</b>	<ul style="list-style-type: none"><li>• Not felt to be of great benefit in mild to moderate asthma patients.</li><li>• In severe asthma, often helpful to combine Albuterol and Ipratropium for synergistic effect.</li></ul>

<b>Lidocaine Hydrochloride (Xylocaine)</b>	
<b>Classification:</b>	Antidysrhythmic agent
<b>Actions:</b>	<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>
<b>Indications:</b>	<ul style="list-style-type: none"> <li>• Ventricular dysrhythmias: <ul style="list-style-type: none"> <li>- Ventricular tachycardia (VT)</li> <li>- Ventricular fibrillation (VF)</li> </ul> </li> <li>• Post cardioversion or defibrillation of ventricular rhythms</li> </ul>
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Second-degree heart block, Mobitz II</li> <li>• Third degree (complete) heart block</li> <li>• Junctional bradycardia</li> <li>• Ventricular ectopy associated with bradycardia</li> <li>• Idioventricular or escape rhythms</li> <li>• Hypersensitivity</li> </ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Lightheadedness</li> <li>• Bradycardia</li> <li>• Confusion</li> <li>• Hypotension</li> <li>• Seizures</li> <li>• May be pro-arrhythmic</li> </ul>
<b>Adult Administration:</b>	<p><b><u>VF/VT no pulses:</u></b></p> <p>1.0 - 1.5 mg/kg IV push* or double the dose via ET tube. May repeat in 3 – 5 minutes. (Maximum dose 3 mg/kg.)</p> <p><b><u>VT with pulses:</u></b></p> <p>1.5 mg/kg slow IV push*. If rhythm persists, repeat at 0.75mg/kg dose every 5 –10 minutes. (Maximum dose 3 mg/kg). Continuous infusion at 1- 4 mg/minute may be ordered</p> <p><b><u>PVC &gt;6/min and symptomatic:</u></b></p> <p>1.5 mg/kg IVP, repeat doses at 0.75 mg/kg every 5-10 min up to max of 3 mg/kg, then drip at 1-4 mg/min (30-50 ug/kg/min)</p> <p>*IVP is the preferred route of administration</p>

	<p><b><u>Stimulant Overdose:</u></b> 1.0-1.5 mg/kg for ventricular arrhythmias</p> <p><b><u>Lidocaine Drip:</u></b> Mix 1gm of Lidocaine in 250ml D5W or NS for a concentration of 4mg/ml</p> <ul style="list-style-type: none"> <li>• If up to 2mg/kg has been administered set drip at 2mg/min</li> <li>• If 2mg/kg has been administered set drip at 3mg/min</li> <li>• If 3mg/kg has been administered set drip at 4mg/min</li> </ul>
<b>Pediatric Administration:</b>	<p><b><u>VF/VT no pulses:</u></b> IV/IO*: 1 mg/kg. If rhythm persists, repeat dose in 10 minutes (maximum dose 3 mg/kg.). Only bolus therapy shall be used in pediatric patients ET: 2mg/kg. If rhythm persists, repeat dose in 10 minutes (maximum dose 3 mg/kg.)</p> <p><b><u>VT with pulses:</u></b> IV/IO*: 1 mg/kg. If rhythm persists, repeat dose in 10 minutes ET: 2 mg/kg. If rhythm persists, repeat dose in 10 minutes</p> <p>*IVP is the preferred route of administration</p> <p><b><u>Lidocaine Drip:</u></b> Mix 120mg of Lidocaine in 100ml D5W</p> <ul style="list-style-type: none"> <li>• Set drip at 20-50 ug/kg per min</li> </ul>
<b>Onset:</b>	45-90 seconds
<b>Duration:</b>	10-20 minutes
<b>Pregnancy Safety:</b>	Category B
<b>Comments:</b>	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.

# Lorazepam

(Ativan)

<b>Mechanism of Action:</b>	Acts as an anticonvulsant, anxiolytic, muscle relaxer
<b>Indications:</b>	<ul style="list-style-type: none"><li>• Cessation of seizure activity with IV access</li><li>• Sedation for cardioversion</li><li>• Treatment of severe agitation from severe intoxication with sympathicomimetic drugs (ie. Amphetamines, Cocaine, Methamphetamine)</li><li>• Skeletal muscle relaxant</li><li>• Chemical restraint</li></ul>
<b>Drug Interactions:</b>	Additive effect to other CNS depressant medications such as alcohol, narcotics, etc.
<b>Adult Administration:</b>	Status Epilepticus: <ul style="list-style-type: none"><li>• 2 – 4 mg IV every 10 – 15 minutes. <u>Max of 6 mg or contact Medical Control for further dosing.</u></li></ul> Sedation: <ul style="list-style-type: none"><li>• 2 mg IV, may repeat every 15 minutes to a <u>max does of 6 mg.</u></li></ul> Agitation/Anxiety: <ul style="list-style-type: none"><li>• 0.5 – 2 mg IV, <u>max dose of 4 mg.</u></li></ul>
<b>Pediatric Administration</b>	Status Epilepticus: <ul style="list-style-type: none"><li>• 0.05 – 0.1 mg IV over 2 minutes. <u>Max dose 4 mg/dose.</u> May repeat 0.05 mg (<u>2mg max</u>) once after 10 – 15 minutes.</li></ul> Sedation: <ul style="list-style-type: none"><li>• 0.05 mg/kg IV over 2 minutes. <u>Max dose 2 mg.</u></li></ul>
<b>Special Notes:</b>	<ul style="list-style-type: none"><li>• Should NOT be mixed with other agents or diluted in IV solution. Administer slowly over 2 minutes in proximal port of IV tubing and flush with sterile NS.</li><li>• Most likely to produce respiratory depression. Be very aware of other medications previously taken by the patient as this will cause an <b>additive</b> respiratory depression (ie. Alcohol, Narcotics, Barbiturates)</li><li>• Can be associated with local venous irritation, use relatively large veins.</li><li>• IV dosing has shorter half-life in comparison to other</li></ul>

	benzodiazepines such as valium (may need repeat dosing)
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<b>Magnesium Sulfate (MgSO<sub>4</sub>)</b>	
<b>Classification:</b>	Antidysrhythmic, Electrolyte, CNS Depressant
<b>Actions:</b>	Controls ventricle response rate. Increases the movement of potassium into cells. Blocks the release of acetylcholine.
<b>Indications:</b>	<ul style="list-style-type: none"> <li>• Ventricular fibrillation pulseless ventricular tachycardia (VF/VT)</li> <li>• Ventricular tachycardia with a pulse</li> <li>• Post conversion of VF/VT</li> <li>• Torsades de Pointes</li> <li>• Seizures related to eclampsia</li> </ul>
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Hypersensitivity</li> <li>• Sinus bradycardia</li> <li>• Pediatrics</li> </ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Hypotension</li> <li>• Hypertension</li> <li>• Dysrhythmias</li> <li>• Facial flushing</li> <li>• Diaphoresis</li> <li>• Depressed reflexes</li> <li>• Bradycardia</li> </ul>
<b>Adult Administration:</b>	<p><b>Refractory VF/Pulseless VT:</b> 2 gm in 10 cc normal saline IVP</p> <p><b><u>post conversion from VF/VT, and VT with a pulse:</u></b> 2-4 gm in 10 cc normal saline slow IV push over 1-2 minutes</p> <p><b><u>Torsade De Pointes</u></b> 1-2 gm in 10cc normal saline SIVP over 5-6 min</p> <p><b><u>Eclampsia:</u></b> 4 gm IV/IO over 5 mins. Maintain with 1 gm in 1000 mL NS at rate of 1 gram per hour</p> <p><b><u>COPD/Asthma:</u></b> <u>Per Med Con-</u> 2 gm in 10cc saline SIVP over 5-10 min</p>
<b>Pediatric Administration:</b>	Not recommended for prehospital use
<b>Onset:</b>	Immediate
<b>Duration:</b>	3-4 hours
<b>Pregnancy Safety:</b>	Category A

<b>Comments:</b>	<ol style="list-style-type: none"><li>1. Magnesium is a naturally occurring positive ion present in all cells of the body.</li><li>2. Use the most proximal port possible for administration.</li><li>3. Calcium Gluconate will reverse the toxic effects of magnesium sulfate.</li></ol>

<b>Methylprednisolone Solu-Medrol</b>	
<b>Classification:</b>	Corticosteroid
<b>Actions:</b>	Not clearly defined. Decreases inflammation, mainly by stabilizing leukocyte lysosomal membranes; suppresses immune response; stimulates bone marrow; and influences protein, fat, and carbohydrate metabolism.
<b>Indications:</b>	<ul style="list-style-type: none"> <li>• Asthma / COPD Exacerbation</li> <li>• Acute Spinal Cord Injury – Medcon Approval</li> </ul>
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Hypersensitivity</li> </ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Potential hypokalemia may increase risk of digitalis toxicity.</li> <li>• May increase insulin requirements</li> <li>• Additive Hypokalemia with diuretics.</li> </ul>
<b>Adult Administration:</b>	2mg/kg up to 125mg
<b>Pediatric Administration:</b>	
<b>Onset:</b>	IV Route – Rapid
<b>Duration:</b>	IV Route – 1 week
<b>Pregnancy Safety:</b>	Category C
<b>Comments:</b>	

<b>Midazolam (Versed)</b>	
<b>Classification:</b>	Short-acting benzodiazepine, CNS depressant
<b>Actions:</b>	Reduces anxiety, Depresses CNS function, Induces amnesia.
<b>Indications:</b>	<ul style="list-style-type: none"> <li>• Seizures</li> <li>• Pre-synchronized cardioversion</li> </ul>
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Hypotension</li> <li>• Hypersensitivity</li> </ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Hypotension</li> <li>• Respiratory depression</li> <li>• Headache</li> <li>• Nausea</li> </ul>
<b>Adult Administration:</b>	<p><b>TCP:</b> 2.5-5.0 mg IV/IM/IO</p> <p><b>Seizures:</b> 2.5-5.0 mg IV/IM/IO/IN</p> <p><b>RSI:</b> 2-5 mg IVP, repeat dose as needed 0.05-0.1 mg/kg IV</p>
<b>Pediatric Administration:</b>	<p><b>Seizures:</b></p> <p>0.1 mg/kg (max. single dose 4 mg) in 3-5 mL NS, slow IV/IO push, intra-nasal, may repeat in 3-4 mins. One time.</p> <p>Or 0.2 mg/kg IM (max. single dose 4mg) may repeat in 10-15 mins. One time.</p> <p><b>SVT Cardioversion:</b></p> <p>0.1 mg/kg IV/IO/intra nasal diluted in 3-5 mL NS</p>
<b>Onset:</b>	IV/IO: 3-5 minutes; dose dependent IM: 15 minutes
<b>Duration:</b>	2-6 hours; dose dependent
<b>Pregnancy Safety:</b>	Category D
<b>Comments:</b>	<p>May cause apnea, especially in children and the elderly.</p> <p>Effects are intensified by ETOH or other CNS depressant medications.</p> <p>Be prepared to support respiration.</p> <p>Carefully monitor the patient's vital signs including EKG and pulse oximetry.</p>

<b>Morphine Sulfate (M.S., M.S.O.)</b>	
<b>Classification:</b>	Narcotic analgesic
<b>Actions:</b>	<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>
<b>Indications:</b>	<ul style="list-style-type: none"> <li>• Moderate to severe pain</li> <li>• Pain associated with transcutaneous pacing</li> </ul>
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Patients with ALOC</li> <li>• Pain of unknown etiology</li> <li>• Patients at risk of respiratory depression</li> <li>• Head injury</li> <li>• Hypovolemia</li> <li>• Blood pressure &lt;100</li> <li>• Multi-system trauma</li> <li>• Non-traumatic Chest Pain</li> </ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Respiratory depression</li> <li>• Hypotension</li> <li>• Seizures</li> <li>• Bradycardia</li> <li>• Altered mental status</li> </ul>
<b>Adult Administration:</b>	<p><b>CHF/Pulmonary edema:</b> 2-4 mg IV every 5 mins.max dose 8 mg. (Maintain systolic BP &gt;100)</p> <p><b>Pain Management:</b> 2-4 mg IV/IO titrate 2mg every 2 minutes to a maximum of 20 mg.</p> <p>IM: 5-10 mg (one time only)</p>
<b>Pediatric Administration:</b>	<p>&gt;6 months old = 0.1 mg/kg slow IVP or IM</p> <p>&lt;6 months old = 0.05 mg/kg slow IVP or IM</p> <p>(Maximum dose 6 mg)</p>
<b>Onset:</b>	Immediate if given IVP, 5-30 minutes if given IM or SQ
<b>Duration:</b>	3-5 hours
<b>Pregnancy Safety:</b>	Category C
<b>Comments:</b>	Controlled substances act of 1970 Category II drug.

## Naloxone (Narcan)

<b>Classification:</b>	Narcotic antagonist
<b>Actions:</b>	Reverses the effects of narcotics by competing for opiate receptor sites in the central nervous system.
<b>Indications:</b>	<ul style="list-style-type: none"> <li>• Protocol indications</li> </ul>
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• None</li> </ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Hypertension</li> <li>• Tremors</li> <li>• Nausea/vomiting</li> <li>• Dysrhythmias</li> <li>• Diaphoresis</li> </ul>
<b>Adult Administration:</b>	0.4-2.0 mg IV/IO/IM/IN in 0.4 mg increments
<b>Pediatric Administration:</b>	
<b>Onset:</b>	Immediate if given IVP 5-10 minutes if given IM
<b>Duration:</b>	20-30 minutes
<b>Pregnancy Safety:</b>	Category B
<b>Comments:</b>	<p>Rapid reversal of narcotic effects may lead to combative behavior.</p> <p>May not reverse hypotension.</p> <p>Observe for: seizures, hypertension, chest pain, and severe headache.</p>

**Nitroglycerin**

(Nitrostat, NTG)

<b>Classification:</b>	Vasodilator
<b>Actions:</b>	<ul style="list-style-type: none"><li>• Dilates arterial and venous vessels resulting in venous pooling</li><li>• Reduces preload and afterload resulting in decreased myocardial workload and reduced oxygen demand</li><li>• Relaxes all smooth muscle</li><li>• Dilates coronary vessels resulting in increased perfusion of the myocardium</li><li>• Relieves coronary vasospasm</li></ul>
<b>Indications:</b>	<ul style="list-style-type: none"><li>• Chest pain of suspected myocardial origin</li><li>• Congestive heart failure/cardiogenic pulmonary edema</li></ul>
<b>Contraindications:</b>	<ul style="list-style-type: none"><li>• Signs/symptoms of neurological deficit</li><li>• Systolic blood pressure of &lt;100 mm/Hg</li><li>• Recent use of ED therapy drugs (Viagra, Sildenafil, Vardenafil, Tadalafil within 48 hours)</li></ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"><li>• Hypotension</li><li>• Nausea/vomiting</li><li>• Headache</li><li>• Postural syncope</li></ul>
<b>Adult Administration:</b>	Chest pain: 0.4 mg SL. May repeat q 5 minutes until pain free. CHF/pulmonary edema: 0.4 mg SL. May repeat q 5 minutes to a maximum of 3 doses  <u>IV Infusion:</u> Contact MEDCON.
<b>Pediatric Administration:</b>	Not recommended for prehospital use
<b>Onset:</b>	1-2 minutes
<b>Duration:</b>	15-30 minutes
<b>Pregnancy Safety:</b>	Category C
<b>Comments:</b>	Healthcare provider may experience adverse effects if accidentally inhaled or absorbed.

## Nitroglycerine Drip Chart

Nitroglycerin IV (TRIDIL) Mix 25mg in 250 ml D5W (100 ug/ml)

Dose In (ug/min)	ugtts/minute (ml/hr)	Dose in (ug/min)	ugtts/minute (ml/hr)
5 ug	3 ugtts/min	110 ug	66 ugtts/min
10 ug	6 ugtts/min	120 ug	72 ugtts/min
20 ug	12 ugtts/min	130 ug	78 ugtts/min
30 ug	18 ugtts/min	140 ug	84 ugtts/min
40 ug	24 ugtts/min	150 ug	90 ugtts/min
50 ug	30 ugtts/min	160 ug	96 ugtts/min
60 ug	36 ugtts/min	170 ug	102 ugtts/min
70 ug	42 ugtts/min	180 ug	108 ugtts/min
80 ug	48 ugtts/min	190 ug	114 ugtts/min
90 ug	54 ugtts/min	200 ug	120 ugtts/min
100 ug	50 ugtts/min		

<b>Ondansetron</b>		<b>Zofran IV/IN/IO</b>	
<b>Classification:</b>	Antiemetic		
<b>Actions:</b>	Serotonin Receptor Antagonist		
<b>Indications:</b>	Treatment for Nausea/ Vomiting		
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Hypersensitivity to the Drug or other 5-HT3 Antagonists: Granisetron (Kytril), Dolasetron (Anzemet), and Palonosetron (Aloxi)</li> </ul>		
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Extra-pyramidal Reaction (rare)</li> <li>• Tachycardia</li> <li>• Hypotension</li> <li>• Syncope (if given too fast)</li> </ul>		
<b>Administration:</b>	<ul style="list-style-type: none"> <li>• IV: 4mg IV/IM/IO</li> <li>• Slow administration over 30 seconds or more</li> <li>• May repeat once in 10 minutes if no effect</li> <li>• IV is the preferred route</li> <li>• Contact Medical Control for more doses</li> </ul>		
<b>Onset:</b>	<ul style="list-style-type: none"> <li>• IV: Up to 30 minutes (usual response is 5-10 minutes)</li> </ul>		
<b>Duration:</b>	<ul style="list-style-type: none"> <li>• Half Life is 4 hours</li> </ul>		
<b>Pregnancy Safety:</b>	Category B		
<b>Comments:</b>	<ul style="list-style-type: none"> <li>• If initial does is not effective within 10 minutes consider contacting Medical Control and request additional does(s).</li> </ul>		

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

## Oxygen Devices

<b>Nasal Cannula:</b>	<ul style="list-style-type: none"> <li>• Starting device; provides up to 44% oxygen</li> <li>• 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</li> <li>• 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"> <li>○ 1 L/min: 24%</li> <li>○ 2 L/min: 28%</li> <li>○ 3 L/min: 32%</li> <li>○ 4 L/min: 36%</li> <li>○ 5 L/min: 40%</li> <li>○ 6 L/min: 44%</li> </ul> </li> </ul>
<b>Face Mask:</b>	<p>Up to 60% oxygen can be supplied through the oxygen port at 6 to 10 L/min.</p>
<b>Face Mask with Oxygen Reservoir:</b>	<ul style="list-style-type: none"> <li>• Provides up to 90% to 100% oxygen</li> <li>• 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"> <li>○ 6L/min: 60% oxygen</li> <li>○ 7L/min: 70% oxygen</li> <li>○ 8L/min: 80% oxygen</li> <li>○ 9L/min: 90% oxygen</li> <li>○ 10L/min: almost 100% oxygen</li> </ul> </li> </ul> <p><b>Use a face mask with a reservoir for:</b></p> <ul style="list-style-type: none"> <li>• Patients who are seriously ill, responsive, and spontaneously breathing and require high oxygen concentrations</li> <li>• Patients who may avoid tracheal intubation if acute interventions produce a rapid clinical effect (patients with acute pulmonary edema, COPD, severe asthma)</li> <li>• 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)</li> </ul> <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>

<b>Racemic Epinephrine</b>	
<b>Classification:</b>	Bronchodilator
<b>Actions:</b>	Alpha and Beta stimulant with equal amounts of d and l isomer of Epinephrine.
<b>Indications:</b>	<ul style="list-style-type: none"> <li>• Severe pediatric respiratory distress with stridor.</li> </ul>
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Adults</li> <li>• Obvious Respiratory Failure/ Need for Bag Valve Mask/ Intubation</li> </ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Tachycardia</li> </ul>
<b>Pediatric Administration:</b>	<ul style="list-style-type: none"> <li>• Patient &lt; 2 year old: 0.25 ml (2.25%) diluted in 3 ml NS Neb.</li> <li>• Patient &gt; 2 year old: 0.5 ml (2.25%) diluted in 3 ml NS Neb.</li> </ul>
<b>Onset:</b>	Immediate
<b>Duration:</b>	1-3 hours
<b>Comments:</b>	

<b>Sodium Bicarbonate (NaHCO<sub>3</sub>)</b>	
<b>Classification:</b>	Alkalinizing agent
<b>Actions:</b>	Combines with hydrogen ions to form carbonic acid Increases blood pH.
<b>Indications:</b>	<ul style="list-style-type: none"> <li>• Overdose of Tricyclic antidepressants (cardiac toxicity)</li> <li>• Cardiopulmonary arrest states when drug therapy and/or defibrillation have not been successful</li> </ul>
<b>Contraindications:</b>	Not significant in the above indications
<b>Adverse effects:</b>	<ul style="list-style-type: none"> <li>• Metabolic alkalosis</li> <li>• Pulmonary edema</li> <li>•</li> </ul>
<b>Adult Administration:</b>	<p><b><u>Cardiac arrest:</u></b> 1 mEq/kg IVP. May repeat ½ initial dose every 10-15 minutes throughout arrest</p> <p><b><u>TCA Overdose:</u></b> 1-2 mEq/kg over 1-2 mins. If pt improves start IV infusion for TCA Overdose, contact MEDCON Drip: Mix 50 mEq in 1000cc NS run Wide Open</p>
<b>Pediatric Administration:</b>	1 mEq/kg IVP
<b>Onset:</b>	Immediate
<b>Duration:</b>	30-60 minutes
<b>Pregnancy Safety:</b>	Category C
<b>Comments:</b>	Flush IV tubing before and after administration.

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

# Vasopressin

<b>Classification:</b>	
<b>Actions:</b>	
<b>Indications:</b>	<ul style="list-style-type: none"> <li>• May be used as an alternative pressor to Epinephrine in the treatment of adult shock-refractory VF</li> <li>• May be a useful alternative to Epinephrine in Asystole, or PEA</li> </ul>
<b>Contraindications:</b>	<ul style="list-style-type: none"> <li>• Potent peripheral vasoconstrictor. Increased peripheral vascular resistance may provoke cardiac ischemia and angina.</li> <li>• Not recommended for responsive patients with coronary artery disease.</li> </ul>
<b>Adverse effects:</b>	
<b>Adult Administration:</b>	40 Unites IV/IO push may replace either first or second dose of Epinephrine.
<b>Pediatric Administration:</b>	Not appropriate for Pediatric Administration.
<b>Onset:</b>	
<b>Duration:</b>	
<b>Pregnancy Safety:</b>	
<b>Comments:</b>	

# Vecuronium

<b>Classification:</b>	Non-depolarizing Neuromuscular Blocker
<b>Actions:</b>	Antagonizes motor endplate acetylcholine receptors (non-depolarizing neuromuscular blocker)
<b>Indications:</b>	Adjunct to Anectine to facilitate endotracheal intubation and relax skeletal muscles during mechanical ventilation.
<b>Contraindications:</b>	<ul style="list-style-type: none"><li>• Hypersensitive to the drug</li><li>• Use caution with elderly patients</li><li>• Malignant Hyperthermia</li><li>• Not recommended for the use in infants younger than 7 weeks</li></ul>
<b>Adverse effects:</b>	<ul style="list-style-type: none"><li>• Skeletal Muscle Weakness</li><li>• Prolonged Respiratory Insufficiency or Apnea</li><li>• Prolonged Paralysis</li><li>• Bronchospasms (rare)</li></ul>
<b>Adult Administration:</b>	0.1 mg/kg IVP/IO may repeat once
<b>Pediatric Administration:</b>	0.1 mg/kg IVP/IO may repeat once
<b>Onset:</b>	2-3 Minute
<b>Duration:</b>	30-90 minutes
<b>Pregnancy Safety:</b>	Category C
<b>Comments:</b>	

To calculate the amount of drug to be drawn up or administered, the following information is required:

- ⇒**WHAT**                    Type and amount of drug ordered
- ⇒**QUANTITY**            Volume of fluid in the container
- ⇒**HAVE**                    Amount of drug in the container

To calculate the amount of drug to be drawn up or administered, use the following formula:

**WHAT** multiplied by the **QUANTITY** divided by **HAVE** = the amount to be administered.

Example:

The Base Hospital orders Benadryl 75 mg IVP. Benadryl comes as an ampule containing 50mg/mL. How many mL should be given?

$$\frac{\text{WHAT} \times \text{QUANTITY}}{\text{HAVE}} = \frac{75\text{mg} \times 1 \text{ mL}}{50\text{mg}} = 1.5 \text{ mL}$$

Another way of conversion is:

$$\frac{\text{DOCTOR'S ORDERS} \div \text{WHAT'S ON HAND} \times \text{VOLUME}}{\text{OH}} = \frac{75\text{mg} \times 1 \text{ mL}}{50\text{mg}} = 1.5 \text{ mL}$$

To calculate the desired dose to be administered according to **body weight**, convert the pounds to kilograms and multiply by the given dose.

Example:

The Base Hospital orders Sodium Bicarbonate 2 mEq/kg for a patient weighing approximately 200 pounds. How many mEq will be administered:

Divide 200 lb. by 2 = 100kg, then multiply by 2 mEq.  
100 kg x 2 mEq = 200 mEq.

To calculate the flow rate of an IV in gtts per minute, you must have the following information:

- ⇒ **VOLUME**                      The amount of fluid to be infused  
⇒ **DRIP FACTOR**                Number of drops per milliliter  
⇒ **MINUTES/TIME**              Time of the infusion

To calculate the flow rate of an IV solution use the following formula:

$$\frac{\text{VOLUME} \times \text{DRIP FACTOR}}{\text{MINUTES}} = \begin{array}{l} \text{Number of drops/minute} \\ \text{to the solution} \\ = \\ = \end{array}$$

Example:

The Base Hospital orders a fluid challenge of 100 mL NS to be infused over 20 minutes. The IV tubing drip factor is 20 drops/milliliter. The flow rate should be adjusted to how many drops per minute:

$$\frac{100 \text{ cc} \times 20 \text{ gtts/mL}}{20 \text{ minutes}} = \frac{2000 \text{ gtts}}{20 \text{ min}} = 100 \text{ gtts min}$$

The Base Hospital orders an IV of 1000 mL NS to run at 120 mL/hr. The drip factor of the IV tubing is 10 drops/mL. The flow rate should be adjusted to how many drops per minute:

$$\frac{120 \text{ cc} \times 10 \text{ gtts/mL}}{60 \text{ minutes}} = \frac{1200 \text{ gtts}}{60 \text{ min}} = 20 \text{ gtts/min}$$

**Reference  
Section**

**Key to Controlled Substances Categories**

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.

**CATEGORY**

**INTERPRETATION**

**II**

**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.

**III**

**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.

**IV**

**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.

**V**

Subject to state and local regulation. Abuse potential is low; a prescription may not be required.

**Reference  
Section**

**Key to FDA Use-In-Pregnancy Ratings**

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.

**CATEGORY**

**INTERPRETATION**

- 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.

**Reference  
Section****Formulary Abbreviations\***

\* This list of abbreviations only covers this Prehospital Formulary. For a complete list of County approved abbreviations refer to the Grant County EMS Agency Policy and Procedure Manual.

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
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

Reference Section	Fahrenheit to Celsius Conversion