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## GENERAL TERMINOLOGY

1. Adrenergic: related to or pertaining to the sympathetic nervous system.  
Primary
2. Antiadrenergic: block the adrenergic (sympathetic) system.
3. Anticholinergic: blocks the cholinergic (parasympathetic) system.
4. Cholinergic: related to or pertaining to the parasympathetic nervous system.
5. Chronotrope: a drug or substance that affects heart rate.
6. Dopaminergic: relating to the dopamine receptors of the adrenergic system.
7. Dromotrope: a drug or other substance that affects cardiac automaticity.
8. Inotrope: a drug or other substance that affects the strength of the cardiac conduction.
9. Parasympathetic Nervous System: the division of the autonomic nervous system that is responsible for controlling vegetative functions.
10. Parasympatholytic: anticholinergic
11. Parasympathomimetic: cholinergic
12. Sympathetic Nervous System: the division of the autonomic nervous system that prepares the body for stress.
13. Sympatholytic: a drug or other substance that blocks the actions of the sympathetic nervous system (also called antiadrenergic).
14. Sympathomimetic: A drug or other substance that causes effects like those of the sympathetic nervous system (also called adrenergic.)
15. Tocolytic: any pharmacological agent used to suppress or arrest uterine contractions.

Actions of Adrenergic Receptors	
<i>Receptor</i>	<i>Actions</i>
$\alpha_1$	<ul style="list-style-type: none"> <li>• Peripheral Vasoconstriction</li> <li>• Positive Inotrope</li> <li>• Negative Chronotrope</li> </ul>
$\alpha_2$	<ul style="list-style-type: none"> <li>• Peripheral vasodilation (block release of NE)</li> </ul>
$\beta_1$	<ul style="list-style-type: none"> <li>• Positive Inotrope</li> <li>• Positive Chronotrope</li> <li>• Positive Dromotrope</li> </ul>
$\beta_2$	<ul style="list-style-type: none"> <li>• Peripheral Vasodilation</li> <li>• Bronchodilation</li> <li>• Uterine smooth muscle relaxant</li> <li>• GI smooth muscle relaxant</li> </ul>
Dopaminergic	<ul style="list-style-type: none"> <li>• Renal vasodilation</li> <li>• Mesenteric vasodilation</li> </ul>

## ACTIVATED CHARCOAL

<b>CLASS:</b>	Absorbent
<b>ACTIONS:</b>	Absorbs toxins by binding to them to prevent GI absorption
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Poisoning following emesis</li><li>2. Emesis contraindicated</li></ol>
<b>CONTRAINDICATIONS:</b>	None in severe poisonings
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Administer following emesis when indicated</li><li>2. Caution in patient with altered LOC</li><li>3. May absorb ipecac before emesis (wait at least 10 minutes after admin of Ipecac before giving)</li></ol>
<b>SIDE EFFECTS:</b>	N&V, Constipation
<b>DOSAGE:</b>	1gm/kg (typically 50-75 gm) mixed in water to form a slurry
<b>ROUTE:</b>	PO
<b>HOW SUPPLIED:</b>	Bottle: 25 gm
<b>PEDIATRIC DOSAGE:</b>	same as adult

## ADENOSINE

<b>CLASS:</b>	Antiarrhythmic
<b>ACTIONS:</b>	Slows AV conduction
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. PSVT</li><li>2. Wide Complex Tach's of uncertain type refractory to Lidocaine</li></ol>
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. 2nd or 3rd degree HB's</li><li>2. Sick sinus syndrome (ECG: Wandering Pacemaker)</li><li>3. Incompatible Meds: Dipyridanole (Persantine - Vasodilator for angina); Tegretol - Epilepsy; Theophylline or other xanthines (coffee)</li></ol>
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Arrhythmias, including blocks, are common during cardioversions</li><li>2. Use with caution in asthma patients</li><li>3. Transient Asystole</li></ol>
<b>SIDE EFFECTS:</b>	Facial flushing, headache, shortness of breath, dizziness, and nausea/vomiting
<b>DOSAGE:</b>	6 mg given rapid IVP over 1-2 sec; If after 1-2 minutes no response, administer 12 mg same as first. Can repeat 2 - 12 mg bolus. Follow each bolus with rapid IV bolus of 20 ml NS. MAXIMUM: 30 mg
<b>ROUTE:</b>	IV
<b>HOW SUPPLIED:</b>	6 mg/2 ml Vials & prefilled syringes
<b>PEDIATRIC DOSAGE:</b>	1st Dose: 0.1 mg/kg to max of 12 mg 2nd and subsequent Doses: 0.2 mg/kg

## ALUPENT (METAPROTERENOL)

<b>CLASS:</b>	Sympathomimetic (Beta 2 selective)
<b>ACTION:</b>	1. Bronchodilation 2. Increases heart rate
<b>INDICATIONS:</b>	1. Asthma 2. Bronchospasm with COPD
<b>CONTRAINDICATIONS:</b>	1. Known allergy 2. Patients with cardiac dysrhythmias or significant tachycardias
<b>PRECAUTIONS:</b>	Vitals and EKG should be monitored
<b>SIDE EFFECTS:</b>	Palpitations, anxiety, headache, dizziness, and sweating
<b>DOSAGE:</b>	1. bullet dose can be repeated as needed
<b>ROUTE:</b>	Inhalation, ET
<b>HOW SUPPLIED:</b>	Metered Dose Inhaler Nebulizer: 0.4% (0.2 ml of Alupent in 2.5 ml NS) OR 0.6% (0.3 ml of Alupent in 2.5 ml NS)
<b>PEDIATRIC DOSAGE:</b>	0.05-0.3 ml in 4 ml NS

# AMINOPHYLLINE

<b>CLASS:</b>	Xanthine bronchodilator
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Smooth muscle relaxant: Bronchodilation &amp; Vasodilation: Indirectly results in increased coronary blood flow.</li><li>2. Increased diaphragmatic contractions</li><li>3. Mild diuresis</li><li>4. Increased cardiac output, chronotropic &amp; inotropic</li><li>5. Stimulates respiratory drive</li><li>6. CNS Stimulant</li></ol>
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Acute asthma</li><li>2. Decompensated COPD</li><li>3. CHF</li><li>4. Pulmonary edema</li><li>5. Bronchoconstriction in anaphylaxis</li></ol>
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Allergy to med</li><li>2. Hypotension</li><li>3. Massive MI</li><li>5. Dysrhythmias</li></ol>
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Do not administer to theophylline patients until theophylline level obtained</li><li>2. NEVER a first line medication due to SEVERE side effects</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Myocardium irritability and dysrhythmias</li><li>2. Convulsions, tremor, anxiety, dizziness</li><li>3. N&amp;V, Headache</li></ol>
<b>DOSAGE:</b>	<p>BOLUS: 5 mg/kg in 50 ml infused over 20 min then check level and begin maintenance drip.</p> <p>MAINTENANCE DRIP: 250 mg in 250 ml OR 1000ml and infuse at 0.5 mg/kg/hr</p>
<b>ROUTE:</b>	Slow IV infusion
<b>HOW SUPPLIED:</b>	Ampule 250 mg/10 ml OR 500 mg/20 ml
<b>PEDIATRIC DOSAGE:</b>	Same as adult but MAX is 12 mg/kg in 24 hrs

## ASPIRIN

<b>CLASS:</b>	Platelet inhibitor/Anti-inflammatory
<b>ACTIONS:</b>	Blocks platelet aggregation
<b>INDICATIONS:</b>	1. Acute chest pain suggestive of MI
<b>CONTRAINDICATIONS:</b>	Known allergies to drug
<b>PRECAUTIONS:</b>	GI bleeding and upset
<b>SIDE EFFECTS:</b>	1. Heartburn 2. N&V 3. Wheezing
<b>DOSAGE:</b>	160 or 325 mg PO or chewed
<b>ROUTE:</b>	PO
<b>HOW SUPPLIED:</b>	tablets, capsules
<b>PEDIATRIC DOSAGE:</b>	Not recommended

# ATROPINE

- CLASS:** Parasympatholytic (anticholinergic)
- ACTIONS:**
1. Blocks acetylcholine receptors (decreases parasympathetic tone and thus increases heart rate)
  2. Decreases gastrointestinal secretions
- INDICATIONS:**
1. Symptomatic Bradycardia (PVC's, Hypotension, or decreased LOC)
  2. Asystole & Symptomatic heart blocks
  3. Organophosphate poisoning
- CONTRAINDICATIONS:** None when used in emergency situations
- PRECAUTIONS:**
1. Total dose of 0.04 mg/kg OR 3 mg should not be exceeded except in cases of Organophosphate poisonings.
  2. A-fib & A-flutter with rapid ventricular response
  3. Glaucoma & COPD: Hypertension can worsen
  4. Use with Caution in 2 degree II and 3 degree Heart blocks in AMI patients
- SIDE EFFECTS:**
1. Palpitations and tachycardia
  2. Headache, dizziness, and anxiety
  3. Dry mouth, pupillary dilation, and blurred vision
  4. Urinary retention (especially older males)
  5. OD: Hot, Blind, Dry, Red, & Mad ***"Hot as a hare, Blind as a bat, Dry as a bone, Red as a beet, and Mad as a hen"***
- DOSAGE:**
1. *Bradycardia:* 0.5-1.0 mg every 3 to 5 minutes to max
  2. *Asystole:* 1 mg every 3 to 5 minutes to max
  3. *Organophosphate Poisoning:* 2-5 mg
- MINIMUM DOSE: 0.5 mg
- ROUTE:** IV, ET, IM
- HOW SUPPLIED:** Prefilled Syringe: 1.0 mg/10 ml
- PEDIATRIC DOSAGE:** ***NOT INDICATED IN NEWBORNS***
1. *Bradycardia:* 0.01-0.03 mg/kg
  2. *Organophosphate Poisoning:* 0.05 mg/kg
- MINIMUM DOSE: 0.1 mg  
MAXIMUM DOSE: 0.5 mg

***NOTE: Reason for avoidance in High Degree HB's***

*Atropine causes an increased atrial rate and can cause*

1. *Decreased Ventricular Escape Beats*
2. *Increased activity from damaged muscle cells. This causes an increased incidence of VF*

*or VT to occurring originated from damaged myocardium tissue, since there is a damage to His and Purkinje Pathways*

## **ATROVENT (IPRATROPIUM)**

<b>CLASS:</b>	Anticholinergic (Parasympatholytic)
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Bronchodilation</li><li>2. Dries Respiratory Tract Secretions</li></ol>
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Bronchial Asthma</li><li>2. Bronchospasm associated with COPD</li></ol>
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. History of drug hypersensitivity</li><li>2. Should not be used as primary acute treatment of bronchospasm</li></ol>
<b>PRECAUTIONS:</b>	Monitor vitals & ECG
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Palpitations</li><li>2. Dizziness</li><li>3. Anxiety</li><li>4. Headache</li><li>5. Nervousness</li></ol>
<b>DOSAGE:</b>	500 mcg in nebulizer usually with a Beta-agonist Typically a “bullet” dose
<b>ROUTE:</b>	Inhaled
<b>HOW SUPPLIED:</b>	Bullet: 0.02% in 2.5ml
<b>PEDIATRIC DOSAGE:</b>	Safety in children has not been established.

## **BRETHINE (TERBUTALINE)**

<b>CLASS:</b>	Sympathomimetic (Adrenergic) & Tocolytic*
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Beta 2 Selective: Bronchodilator</li><li>2. Beta 1: Chronotropic</li><li>3. Relaxes Uterine Muscles to suppress contractions</li></ol>
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Bronchial Asthma</li><li>2. Bronchospasm with COPD</li><li>3. Preterm Labor</li></ol>
<b>CONTRAINDICATIONS:</b>	Allergy to Medication
<b>PRECAUTIONS:</b>	Constantly monitor Vitals & ECG
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Palpitations</li><li>2. Tachycardia &amp; PVC's</li><li>3. Anxiety</li><li>4. Tremor</li><li>5. Headache</li></ol>
<b>DOSAGE:</b>	<b>Subcutaneous Injections</b> 0.25 mg may be repeated in 15-30 minutes
<b>ROUTE:</b>	SQ
<b>HOW SUPPLIED:</b>	Ampule: 1mg/ml
<b>PEDIATRIC DOSAGE:</b>	0.01 mg/kg subcutaneously

\*Tocolytic: any medication used to arrest uterine contractions. Often used to arrest premature labor contractions.

# BRETYLIUM

<b>CLASS:</b>	Antiarrhythmic
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Increases ventricular fibrillation threshold</li><li>2. Blocks release of norepinephrine from peripheral sympathetic nerves.</li><li>3. May convert VF to effective rhythm without defib: Nickname "Chemical Defibrillator"</li></ol>
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Ventricular fibrillations refractory to lidocaine</li><li>2. Ventricular tachycardia refractory to lidocaine</li><li>3. PVC's refractory to first-line medication</li><li>4. Wide Complex Tachycardias refractory to lidocaine and procainamide</li></ol>
<b>CONTRAINDICATIONS:</b>	None when used in management of life-threatening arrhythmias
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Patient's taking antihypertensives</li><li>2. May interact with sympathomimetics to potentiates their pressor effects</li><li>3. DO NOT use on symptomatic patients in VT. Proceed directly to cardioversion.</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Hypotension, syncope, and bradycardia</li><li>2. Increased frequency of arrhythmias</li><li>3. Dizziness &amp; Vertigo</li><li>4. Nausea &amp; Violent Vomiting</li></ol>
<b>DOSAGE:</b>	<ol style="list-style-type: none"><li>1. <i>VF/VT Pulseless:</i> 5 mg/kg initial bolus followed by 10 mg/kg every 15 minutes to a total of 30 mg/kg</li><li>2. <i>Refractory VT with Pulse:</i> 500 mg in 50 ml and infuse 10 mg/kg over 8-10 minutes</li><li>3. Drip: 500 mg in 250 ml and infuse at 1-2 mg/min</li></ol>
<b>ROUTE:</b>	Rapid IVP
<b>HOW SUPPLIED:</b>	Ampule: 500 mg/10 ml
<b>PEDIATRIC DOSAGE:</b>	Safety in children has not been established

## CALCIUM CHLORIDE 10%

<b>CLASS:</b>	Electrolyte
<b>ACTION:</b>	Increases cardiac contractility
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Acute Hyperkalemia</li><li>2. Acute hypocalcemia</li><li>3. Calcium Channel Blocker (nifedipine, verapamil) overdose</li><li>4. Antidote to Magnesium Sulfate OD</li></ol>
<b>CONTRAINDICATIONS:</b>	Patients receiving digitalis (Can result in sudden cardiac death from VF)
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Extravasation may cause tissue necrosis</li><li>2. Precipitates with Sodium Bicarbonate to form Calcium Carbonate (Chalk). If need to give then flush tubing very well between each.</li><li>3. Slow IV push (rapid push can cause VF)</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Arrhythmias (bradycardia, asystole, VF)</li><li>2. Hypotension &amp; Vasodilation</li><li>3. Nausea &amp; Vomiting</li><li>4. Extravasation causes tissue necrosis</li><li>5. Coronary &amp; Cerebral artery spasm</li><li>6. Metallic or Chalky taste in mouth</li></ol>
<b>DOSAGE:</b>	2-4 mg/kg of 10% solution over 5 minutes repeated every 10 minutes
<b>ROUTE:</b>	IV
<b>HOW SUPPLIED:</b>	Prefilled Syringe: 1 gm/10 ml (10 ml of 10% solution: 13.6 mEq Ca <sup>++</sup> )
<b>PEDIATRIC DOSAGE:</b>	<b><i>NOT INDICATED FOR NEWBORNS</i></b> 20 mg/kg IV or IO slowly, max 500 mg

## **CARDIZEM (DILTIAZEM)**

<b>CLASS:</b>	Calcium Channel Blocker
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Vascular dialation</li><li>2. Slows conduction through AV Node</li><li>3. Slows rapid ventricular rate associated with Atrial Fibrillation and Atrial Flutter</li><li>4. Dilates coronary arteries<ol style="list-style-type: none"><li>a. Negative inotrope</li></ol></li></ol>
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Rapid Ventricular Rates in:<ol style="list-style-type: none"><li>a. A-fib &amp; A-flutter</li><li>b. PSVT refractory to Adenosine</li></ol></li><li>2. Angina</li></ol>
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Hypotension or Cardiogenic shock</li><li>2. VT or Wide-complex Tachycardias</li><li>3. Evaluate for WPW prior to administration</li></ol>
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Can cause systemic hypotension</li><li>2. Calcium chloride should be available to prevent hypotensive effects</li><li>3. Should be refridgerated</li><li>4. Avoid giving to patient's receiving beta-blockers</li></ol> <p><i>INCREASED RISK of CHF, BRADYCARDIA &amp; ASYSTOLE</i></p>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Nausea &amp; Vomiting</li><li>2. Dizziness &amp; Headache</li><li>3. Bradycardia, Heart blocks &amp; Asystole</li><li>4. Hypotension</li></ol>
<b>DOSAGE:</b>	20 mg IV Bolus (0.25 mg/kg) over 2 minutes
	Maintenance Infusion: 5-15mg/hr
<b>ROUTE:</b>	IV: Slow Push and Piggyback
<b>HOW SUPPLIED:</b>	Vials: 25mg/5ml OR 50ml/10ml
<b>PEDIATRIC DOSAGE:</b>	Not Recommended

# **CORDARONE (AMIODARONE)**

<b>CLASS:</b>	Antiarrhythmic
<b>ACTION:</b>	Prolongs action potential duration in all cardiac tissues
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Pulseless VT &amp; Ventricular Fibrillation</li><li>2. Tachycardias refractory to digoxin</li><li>3. Polymorphic Ventricular Tachycardia</li><li>4. Wide complex tachycardias of unknown etiology</li></ol>
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Breast-feeding mothers in cardiogenic shock</li><li>2. Severe sinus node dysfunction indicated by bradycardic condition. (Sinus Bradycardia &amp; 2<sup>nd</sup> &amp; 3<sup>rd</sup> Degree Heart Blocks)</li><li>3. Symptomatic Bradycardia</li><li>4. Allergy to Medication</li></ol>
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Use with caution in patients with latent or manifest heart failure. EXACERBATES CONDITION.</li><li>2. Use with caution in renal failure patients</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. MONITOR ECG</li><li>2. Hypotension</li><li>3. Negative Inotropic &amp; Chronotropic</li><li>4. Increased Ventricular Beats</li><li>5. Prolonged PR Interval, QRS Complex &amp; QT Interval</li><li>6. Be alert for signs of pulmonary toxicity (dyspnea &amp; cough)</li></ol>
<b>DOSAGE:</b>	<b>CARDIAC ARREST</b> 1 <sup>st</sup> Dose: 300 mg Q 5-10 min 2 <sup>nd</sup> Dose: 150 mg MAX CUMULATIVE of 2.2 g/24 hrs  <b>WIDE COMPLEX STABLE TACHYCARDIA</b> 150 mg IVP over 10 min (15 mg/min) Q 10 min  <b>SLOW INFUSION</b> 360 mg. IV over 6 hours (1 mg./min.)
<b>ROUTE:</b>	IVP
<b>HOW SUPPLIED:</b>	150 mg / 3 ml
<b>PEDIATRIC DOSAGE:</b>	5 mg/kg (CAN REPEAT 1x)

## **DIAZEPAM (VALIUM)**

<b>CLASS:</b>	Sedative Hypnotic
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Anticonvulsant</li><li>2. Skeletal muscle relaxant</li><li>3. Sedative</li><li>4. General CNS depressant</li></ol>
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Generalized seizures</li><li>2. Status epilepticus</li><li>3. Premedication prior to cardioversion</li><li>4. Skeletal muscle relaxant</li><li>5. Acute anxiety states</li></ol>
<b>CONTRAINDICATIONS:</b>	Allergy to medication
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Local venous irritation</li><li>2. Short duration of effect</li><li>3. Avoid mixing with other meds due to precipitation</li><li>4. Decreased LOC</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Drowsiness</li><li>2. Hypotension</li><li>3. Respiratory depression, apnea</li></ol>
<b>DOSAGE:</b>	<ol style="list-style-type: none"><li>1. <i>Status Epileptics:</i> 5-10 mg IV</li><li>2. <i>Acute Anxiety:</i> 2-5 mg IM or IV</li><li>3. <i>Premed for Cardioversion:</i> 5-15 mg IV</li></ol>
<b>ROUTE:</b>	IV no faster than 1 ml/min, IM, Rectal, or ET
<b>HOW SUPPLIED:</b>	Ampule & prefilled syringe: 10 mg/2 ml
<b>PEDIATRIC DOSAGE:</b>	<i>Status Epilepticus:</i> 0.2 - 0.5 mg/kg/dose

*Antagonist: Romazicon*

## DILANTIN (PHENYTOIN)

<b>CLASS:</b>	Anticonvulsant
<b>ACTION:</b>	1. Decreases Neuron Excitability thru increasing Sodium efflux from neurons.
<b>INDICATIONS:</b>	1. Status Epilepticus 2. Digitalis induced dysrhythmias
<b>CONTRAINDICATIONS:</b>	1. Hypersensitivity 2. Bradycardia 3. High Degree HB's (2 & 3)
<b>PRECAUTIONS:</b>	1. Do not administer faster than 50 mg/min. Causes Hypotension. 2. DO NOT mix in D5W. PRECIPITATION OCCURS
<b>SIDE EFFECTS:</b>	1. Hypotension 2. Heart block 3. Dysrhythmias 4. Respiratory Depression 5. CNS Depression 6. Nausea, vomiting, blurry vision
<b>DOSAGE:</b>	<b>Seizures:</b> 10-20 mg/kg SLOW IVP. Do not exceed 1 gm or rate of 50 mg/min. <b>Dysrhythmias:</b> 50-100 mg SLOW IV every 5-15 min as needed to max of 1 gm.
<b>ROUTE:</b>	IV
<b>HOW SUPPLIED:</b>	Ampule 250 mg/5 ml
<b>PEDIATRIC DOSAGE:</b>	<b>Seizures:</b> 10-20 mg/kg SLOW IVP. (1-3 mg/kg/min) Same precautions as adult. <b>Dysrhythmias:</b> 5 mg/kg SLOW IV. Same precautions as adult.

## **DIGITALIS (LANOXIN OR DIGOXIN)**

<b>CLASS:</b>	Cardiac glycoside
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Increases cardiac contractile force</li><li>2. Increases cardiac output</li><li>3. Reduces edema associated with congestive heart failure</li><li>4. Slows AV conduction</li></ol>
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. CHF</li><li>2. Rapid A-fib or A-flutter</li></ol>
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Any patient with signs/symptoms of digitalis toxicity (Any dysrhythmia that often is refractory to traditional antidysrhythmic drugs)</li><li>2. VF</li></ol>
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Monitor for signs of digitalis toxicity</li><li>2. Patients who have recently suffered a myocardial infarction have greater sensitivity to effects of digitalis</li><li>3. Calcium should not be administered to digitalis patients</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Nausea, Vomiting</li><li>2. Arrhythmias</li><li>3. Yellow vision</li></ol>
<b>DOSAGE:</b>	Loading dose: 0.25-0.50 mg Maintenance: 0.125-0.25 mg every 2-6 hrs to total of 0.75-1.5 mg in 24 hrs.
<b>ROUTE:</b>	IV
<b>HOW SUPPLIED:</b>	Ampule: 0.5 mg/2 ml
<b>PEDIATRIC DOSAGE:</b>	25-40 mcg/kg

### **Digitalis Toxicity Signs & Symptoms**

1. Nausea & Vomiting
2. Halos around lights
3. Green or Yellow vision
4. New psychosis
5. New weakness, fatigue & dizziness
6. New dyspnea
7. Multifocal PVC's; VT; Atrial Tachycardias with block; and Atrial fibrillation with decreased ventricular response

## DIPHENHYDRAMINE (BENADRYL)

<b>CLASS:</b>	Antihistamine
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Blocks histamine receptors</li><li>2. Has some sedative effects</li></ol>
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Anaphylaxis in conjunction with Epinephrine</li><li>2. Allergic Reactions</li><li>3. Dystonic reactions (Extrapyramidal effects: uncontrolled muscle twitching) due to phenothiazines (Thorazine, compazine, antipsychotics, narcotic potentiators and antiemetics)</li></ol>
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. COPD including asthma</li><li>2. Pregnant or Nursing mothers</li><li>3. Enlarged prostate</li><li>4. Glaucoma</li></ol>
<b>PRECAUTIONS:</b>	Hypotension
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Sedation</li><li>2. Dries bronchial secretions resulting in wheezing</li><li>3. Blurred vision</li><li>4. Headache</li><li>5. Palpitations</li></ol>
<b>DOSAGE:</b>	25-50 mg
<b>ROUTE:</b>	Slow IVP or Deep IM
<b>HOW SUPPLIED:</b>	Ampule & prefilled syringe: 50 mg/ml
<b>PEDIATRIC DOSAGE:</b>	2-5 mg/kg

## **50% DEXTROSE**

<b>CLASS:</b>	Carbohydrate
<b>ACTION:</b>	Elevates blood glucose level
<b>INDICATIONS:</b>	1. Hypoglycemia 2. Coma of unknown origin
<b>CONTRAINDICATIONS:</b>	None in emergency
<b>PRECAUTIONS:</b>	Blood sample drawn prior to administration
<b>SIDE EFFECTS:</b>	Local venous irritation
<b>DOSAGE:</b>	25 gm (50 ml)
<b>ROUTE:</b>	IV
<b>HOW SUPPLIED:</b>	Prefilled Syringe: 25 gm/50 ml (50% solution)
<b>PEDIATRIC DOSAGE:</b>	0.5 -1 gm/kg slow IV. Dilute 1:1 with sterile water to form a 25% solution.

## **DOPAMINE (INTROPIN)**

<b>CLASS:</b>	Sympathomimetic
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Increases cardiac contractility</li><li>2. Causes peripheral vasoconstriction</li><li>3. Increases chronotropic and inotropic effects</li><li>4. Dilation of mesenteric &amp; renal arteries promoting urination (Reason dopamine is preferred over norepinephrine)</li></ol> <p><b>Low Dose Action &lt;10 mcg/kg/min:</b> Beta effects predominate</p> <p><b>High Dose Action &gt;10 mcg/kg/min:</b> Alpha effects</p>
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Cardiogenic shock</li><li>2. Hypovolemic shock refractory to fluid resuscitation</li><li>3. Hypotension secondary to bradycardia post resuscitation</li></ol>
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Hypovolemic shock in which fluid resuscitation has not been performed</li><li>2. Uncorrected tachycardia or VF</li></ol>
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Ventricular irritability</li><li>2. Do not mix with Sodium Bicarbonate</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. VT</li><li>2. Hypertension</li><li>3. Headache, Angina, N/V</li></ol>
<b>DOSAGE:</b>	2-20 mcg/kg/min increased as needed: <i>Titrate to LOC, BP and Urine output</i> <i>Method:</i> 800 mg into 500 ml of D5W giving 1600 mcg/ml concentration
	<b>SEE DOPAMINE DOSAGE TABLE</b>
<b>ROUTE:</b>	IV drip only
<b>HOW SUPPLIED:</b>	Prefilled syringe, Ampule: 200 mg/5 ml Premix Drips: 400 mg/250 ml
<b>PEDIATRIC DOSAGE:</b>	2-20 mcg/kg/min

# DOPAMINE DOSAGE TABLE AND DOSAGE PHENOMENA

The Effects	2 -5 mcg/kg/min.	5-20 mcg/kg/min.	Over 20 mcg/kg/min.
<b>Cardiac Output</b>	no change	increase	increase
<b>Stroke Volume</b>	no change	increase	increase
<b>Heart Rate</b>	no change	there is an initial increase then a decrease towards normal rates	
<b>Myocardial Contractility</b>	no change	increase	increase
<b>Potential for Excessive Myocardial Oxygen Demands</b>	low <sup>1</sup>	low <sup>1</sup>	
<b>Potential for Tachyarrhythmias</b>	low <sup>1</sup>	low <sup>1</sup>	moderate
<b>Total Systemic Vascular Resistance</b>	slight decrease to no change	no change to slight increase	increase
<b>Renal Blood Flow</b>	increase	increase	decrease <sup>2</sup>
<b>Urine Output</b>	increase	increase	decrease <sup>2</sup>

<sup>1</sup>Low but needs monitoring

<sup>2</sup>Relative to peak values achieved at lower dosages.

2-5 mcg/kg/min has primarily Beta Effects and some minimal Alpha effects.

Sub-therapeutic Doses (any dose less than 2 mcg/kg/min) has Beta effects.

5-20 mcg/kg/min has primarily Alpha Effects, but some Beta effects.

Pediatric patients are more efficient and may require lower dosing whereas Adults require higher dosing

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<sup>1</sup>Low but needs monitoring

<sup>2</sup>Relative to peak values achieved at lower dosages.

## **EPINEPHRINE 1:1000**

<b>CLASS:</b>	Sympathomimetic
<b>ACTION:</b>	1. Alpha: Vasoconstriction: improves coronary blood flow and supports BP in anaphylactic shock 2. Beta 1: Inotropic & Chronotropic effects 3. Beta 2: Bronchodilation
<b>INDICATIONS:</b>	1. Bronchial Asthma 2. Exacerbation of COPD 3. Allergic Reactions
<b>CONTRAINDICATIONS:</b>	1. Patients with history of underlying cardiovascular disease 2. Hypertension 3. Pregnancy 4. Tachyarrhythmias
<b>PRECAUTIONS:</b>	1. Protect medication from light 2. Monitor BP, Pulse, EKG
<b>SIDE EFFECTS:</b>	1. Palpitations and tachycardia 2. Anxiousness 3. Headache 4. Tremor
<b>DOSAGE:</b>	0.3-0.5 mg <i>TO make 1:10,000:</i> <i>1mg/1ml of 1:1000 plus 9ml of NS</i>
<b>ROUTE:</b>	SQ
<b>HOW SUPPLIED:</b>	Ampule & prefilled syringe: 1 mg/ml
<b>PEDIATRIC DOSAGE:</b>	0.1 cc/kg up to 0.3 mg (Can give ET in pediatric cardiac arrest)

***Note: Rapid onset of Action***

## **EPINEPHRINE 1:10,000**

<b>CLASS:</b>	Sympathomimetic
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Alpha: Vasoconstriction: improves coronary blood flow and supports BP in anaphylactic shock</li><li>2. Beta 1: <ol style="list-style-type: none"><li>a. Chronotropic effects</li><li>b. Lowers defibrillation threshold</li><li>c. Inotropic effects: Increase myocardial contractility</li></ol></li><li>3. Beta 2: Bronchodilation</li></ol>
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Cardiac Arrest: VF, VT (pulseless), Asystole and PEA (EMD)</li><li>2. Anaphylactic shock</li></ol>
<b>CONTRAINDICATIONS:</b>	None when indications are present
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Protect medication from light</li><li>2. Can be deactivated by alkaline solutions</li><li>3. When given to patients taking Beta Blockers can cause severe hypertension and reflex bradycardia</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Tachyarrhythmias</li><li>2. Palpitations</li><li>3. Hypertension</li></ol>
<b>DOSAGE:</b>	Cardiac Arrest <ol style="list-style-type: none"><li>1. 0.5-1.0 mg every 3-5 minutes</li></ol>
<b>ROUTE:</b>	IV, ET (When giving ET double the dose)
<b>HOW SUPPLIED:</b>	Prefilled Syringe: 1 mg/10 ml
<b>PEDIATRIC DOSAGE:</b>	0.1 cc/kg every 5 minutes IV/IO; <b><i>NO ET ADMINISTRATION FOR PEDIATRIC.</i></b>

## ETOMIDATE (AMIDATE)

<b>CLASS:</b>	Benzodiazepine (Sedative/Hypnotic)
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Rapid induction of anesthesia with minimal cardiovascular and respiratory effects.</li><li>2. Does not cause histamine release as do other barbiturates</li></ol> <p>ONSET: 10-20 sec DURATION: 3-5 min</p>
<b>INDICATIONS:</b>	Sedation induction for intubation
<b>CONTRAINDICATIONS:</b>	Allergy to medication
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Use with caution in patients with hypotension, asthma, or severe cardiovascular disease</li><li>2. Verapamil may cause prolonged resp. depression</li><li>3. NO ANALGESIC PROPERTIES</li></ol>
<b>SIDE EFFECTS:</b>	CNS: myoclonic skeletal muscle movement RESP: Apnea, hyper/hypo-ventilation, laryngospasm CV: Hyper/hypotension, tachy/bradycardia GI: N/V OTHER: Hiccups, smoring
<b>DOSAGE:</b>	0.1-0.3 mg/kg IVP over 15-30 seconds
<b>ROUTE:</b>	SLOW IVP only
<b>HOW SUPPLIED:</b>	Vial: 20 mg/10 ml
<b>PEDIATRIC DOSAGE:</b>	>10 yoa: 0.1-0.3 mg/kg IVP over 15-30 sec  Safety in children under 10 has not been established

## **FENTANYL (SUBLIMAZE)**

<b>CLASS:</b>	Narcotic analgesic
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. CNS Depressant</li><li>2. Decreases sensitivity to pain</li></ol>
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Acute pain</li><li>2. Premedication for RSI</li></ol>
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Severe hemorrhage</li><li>2. Shock</li><li>3. Known allergy</li></ol>
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. All bradycardias. ATROPINE counteragent</li><li>2. NARCAN as counteragent in respiratory depression</li><li>3. Use with caution in patients with liver and kidney dysfunction</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Respiratory depression &amp; apnea</li><li>2. Muscle rigidity</li><li>3. Bradycardia</li></ol>
<b>DOSAGE:</b>	25-100 mcg (0.025 – 0.1 mg) SLOW IVP over 2-3 minutes
<b>ROUTE:</b>	IV
<b>HOW SUPPLIED:</b>	Ampule: 100 mcg/2 ml (50 mcg/ml)
<b>PEDIATRIC DOSAGE:</b>	1.7 – 3.3 mcg / kg

## FLUMAZENIL (ROMAZICON)

<b>CLASS:</b>	Benzodiazepine antagonist
<b>ACTION:</b>	Blocks actions of Benzodiazepines
<b>INDICATIONS:</b>	1. Benzodiazepine Overdose
<b>CONTRAINDICATIONS:</b>	1. Hypersensitivity 2. Cyclic Antidepressant OD
<b>PRECAUTIONS:</b>	1. Dose is over 30 sec. 2. Care is recommended when reversing a known combative patient.
<b>SIDE EFFECTS:</b>	1. Nausea & Vomiting 2. Dizziness 3. Agitation 4. Blurry Vision 5. Seizures due to DT's
<b>DOSAGE:</b>	<b>1st Dose:</b> 0.2 mg (2 ml) IV over 30 seconds. <b>2nd Dose:</b> 0.3 mg (3 ml) after 30 seconds <b>3rd &amp; Subsequent Doses:</b> 0.5 mg (5 ml) at 1 min intervals
<b>ROUTE:</b>	SLOW IV Bolus
<b>HOW SUPPLIED:</b>	Vial 0.5 mg/5 ml OR 1 mg/10 ml
<b>PEDIATRIC DOSAGE:</b>	Not Indicated

*Note: This medication is not indicated for ETOH, Opiate, or Barbiturate (Narcotic) OD's.*

## **FUROSEMIDE (LASIX)**

<b>CLASS:</b>	Diuretic
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Inhibits reabsorption of NaCl</li><li>2. Promotes prompt diuresis</li><li>3. Vasodilation</li></ol>
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. CHF</li><li>2. Pulmonary edema</li></ol>
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Pregnancy</li><li>2. Dehydration</li><li>3. Hypovolemia</li><li>4. Hypokalemia</li><li>5. Patients taking Lithium (Lasix blocks the renal excretion of this)</li></ol>
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Protect med from light</li><li>2. Dehydration</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. N/V</li><li>2. Hypokalemia</li><li>3. Dehydration</li></ol>
<b>DOSAGE:</b>	40-80 mg
<b>ROUTE:</b>	IV
<b>HOW SUPPLIED:</b>	Vial, ampule, or prefilled syringe: 40 mg/4 ml
<b>PEDIATRIC DOSAGE:</b>	1 mg/kg

## **GLUCOSE (ORAL GLUCOSE)**

<b>CLASS:</b>	Carbohydrate
<b>ACTIONS:</b>	Increases blood sugar level
<b>INDICATIONS:</b>	1. Altered mental status (conscious) 2. History of diabetes controlled by medication
<b>CONTRAINDICATIONS:</b>	1. Unconscious or Semiconscious and unable to follow simple commands
<b>PRECAUTIONS:</b>	Care should be taken to prevent choking or aspiration of med in semiconscious patient.
<b>SIDE EFFECTS:</b>	None
<b>DOSAGE:</b>	1 tube: can be repeated after checking blood sugar
<b>ROUTE:</b>	PO, SL
<b>HOW SUPPLIED:</b>	Tube: 15 gms
<b>PEDIATRIC DOSAGE:</b>	Children able to follow commands: 1/2 tube

## GLUCAGON

<b>CLASS:</b>	Hormone (Antihypoglycemic Agent)
<b>ACTIONS:</b>	<ol style="list-style-type: none"><li>1. Causes breakdown of glycogen to glucose</li><li>2. Inhibits glycogen synthesis</li><li>3. Elevates blood glucose level</li><li>4. Increases cardiac contractile force</li><li>5. Increases heart rate</li></ol>
<b>INDICATIONS:</b>	Hypoglycemia
<b>CONTRAINDICATIONS:</b>	Allergy to medication
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Only effective if there are sufficient stores of glycogen in liver.</li><li>2. Use with caution in patients with cardiovascular or renal disease.</li><li>3. Draw blood glucose sample prior to administering</li></ol>
<b>SIDE EFFECTS:</b>	Few in emergency setting
<b>DOSAGE:</b>	IV: 0.25-0.5 unit IM: 1 mg
<b>ROUTE:</b>	IV or IM
<b>HOW SUPPLIED:</b>	1 mg
<b>PEDIATRIC DOSAGE:</b>	0.03 mg/kg

## IPECAC

<b>CLASS:</b>	Emetic						
<b>ACTIONS:</b>	<ol style="list-style-type: none"><li>1. Irritates the enteric tract</li><li>2. Acts on the vomiting center of the brain</li></ol>						
<b>INDICATIONS:</b>	Poisoning in the conscious patient						
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Altered LOC</li><li>2. Strong Acids, Bases, or Alkalis</li><li>3. Petroleum distillates</li><li>4. Antiemetic OD's</li></ol>						
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Monitor patency of airway to prevent aspiration</li><li>2. Contact Poison control before administration? 1-800-POISON-1</li></ol>						
<b>SIDE EFFECTS:</b>	Rare						
<b>DOSAGE:</b>	30 ml (1 oz) followed by 15 ml/kg of warm water						
<b>ROUTE:</b>	Oral						
<b>HOW SUPPLIED:</b>	Bottle						
<b>PEDIATRIC DOSAGE:</b>	<table><tr><td>&lt;1:</td><td>10 ml</td></tr><tr><td>1-12:</td><td>15 ml</td></tr><tr><td>12&lt;:</td><td>30 ml</td></tr></table>	<1:	10 ml	1-12:	15 ml	12<:	30 ml
<1:	10 ml						
1-12:	15 ml						
12<:	30 ml						

## ISOPROTERENOL (ISUPREL)

<b>CLASS:</b>	Sympathomimetic
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Beta 1: Increases Inotropic &amp; Chronotropic effects</li><li>2. Beta 2: Causes Bronchodilation</li><li>3. Increase heart O<sub>2</sub> demand</li></ol>
<b>INDICATIONS:</b>	Last resort in management of symptomatic bradycardias (Atropine and Pacing should precede this therapy)
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. AMI's</li><li>2. Cardiogenic shock</li><li>3. Do not use with Epinephrine</li></ol>
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Ventricular irritability</li><li>2. Deactivated by alkaline solutions</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Tachyarrhythmias, PVC's, &amp; Angina</li><li>2. Tremor, Palpitations and headache</li><li>3. Anxiety, Sweating, &amp; Hypotension</li><li>4. Can increase size of infarct due to increased myocardium O<sub>2</sub> demand</li></ol>
<b>DOSAGE:</b>	1 mg in 500 ml D5W, (concentration of 2 mcg/ml) infused at 2-10 mcg/min and titrated to effect or until PVC's occur
<b>ROUTE:</b>	IV infusion only
<b>HOW SUPPLIED:</b>	Ampules: 1 mg/ml or 1 mg/5 ml
<b>PEDIATRIC DOSAGE:</b>	0.1 mcg/kg/min

## LABETALOL (NORMODYNE/TRANDATE)

<b>CLASS:</b>	Sympathetic blocker
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Selectively blocks Alpha 1</li><li>2. Nonselectively blocks Beta receptors.</li></ol>
<b>INDICATIONS:</b>	Hypertensive crisis
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Bronchial asthma</li><li>2. Congestive heart failure</li><li>3. Heart block</li><li>4. Bradycardia</li><li>5. Bradycardia</li><li>6. Cardiogenic shock</li></ol>
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Constantly monitor Vitals and EKG.</li><li>2. Atropine should be available</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Bradycardia</li><li>2. Heart block</li><li>3. Congestive heart failure</li><li>4. Bronchospasm</li><li>5. Postural hypotension</li></ol>
<b>DOSAGE:</b>	<ol style="list-style-type: none"><li>1. 20 mg by slow IV infusion over 2 minutes; doses of 40 mg can be repeated in 10 minutes until desired supine BP is obtained or until 300 mg of the drug has been given.</li><li>2. 200 mg placed in 500 ml D5W to deliver 2mg/minute.</li></ol>
<b>ROUTE:</b>	IV infusion or slow IVP as described earlier.
<b>HOW SUPPLIED:</b>	100mg vial (5mg/ml in 20ml)
<b>PEDIATRIC DOSAGE:</b>	Safety in children has not been established.

## LIDOCAINE (PAGE 1 OF 2)

- CLASS:** Antiarrhythmic
- ACTION:**
1. Suppress ventricular ectopy
  2. Increase VF threshold
  3. Reduce electrical impulse through heart
- INDICATIONS:**
1. Malignant PVC's
    - a)  $>6/min$
    - b) *MI*
    - c) *Couplets/Salvos or runs of VT*
    - d) *R-on-T phenomenon*
    - e) *Multifocal*
    - f) *Symptomatic*
  2. VT, VF
  3. Wide complex tachycardias of unknown origin.
- CONTRAINDICATIONS:**
1. High degree HB's (2nd & 3rd)
  2. PVC's with bradycardia
  3. **Allergy to Medication or any "caines"**
  4. Idioventricular rhythms
  5. Do not give with Beta-Blockers or Dopamine
- PRECAUTIONS:**
1. Dosage not exceed 300 mg/hr
  2. Monitor for CNS toxicity
  3. Reduce dose by 50% in patients  $>70$  or who have liver disease
  4. Use bolus therapy in cardiac arrest only
- SIDE EFFECTS:**
1. Anxiety, drowsiness, dizziness, and confusion
  2. Nausea, vomiting, & Convulsions
  3. Widening of QRS
  4. Hypotension, numbness, slurred speech, paresthesias

## LIDOCAINE (Page 2 of 2)

### DOSAGE:

#### Cardiac Arrest VT/VF:

1.5 mg/kg every 5 min to max of 3.0 mg/kg

#### VT with Pulse & Wide Complex Tachycardia:

1-1.5 mg/kg initial followed by 0.5-0.75 mg/kg.

repeat 5-10 min to max of 3.0 mg/kg

#### PVC's:

0.5-1.5 mg/kg every 5-10 min max of 3.0 mg/kg

*Drip:* 2-4 mg/min. Mix 1 gm in 250 and run at

2 mg/min after 1 mg/kg bolus

3 mg/min after 1-2 mg/kg bolus

4 mg/min after 2-3 mg/kg bolus

### ROUTE:

ET (***ET dosing max is 6.0 mg/kg total; When***

***ALL doses are delivered ET***), IV bolus or  
infusion, or IM bolus of 300 mg

### HOW SUPPLIED:

Prefilled Syringe: 100 mg/5 ml

Ampule: 100 mg/5 ml

Premixed: 1 or 2 gm in 500 of D5W

### PEDIATRIC DOSAGE:

1 mg/kg

# MAGNESIUM SULFATE

<b>CLASS:</b>	Anticonvulsant
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. CNS depressant</li><li>2. Anticonvulsant</li><li>3. Stabilize muscle cell membrane by interacting with Na/K pumps</li><li>4. Smooth muscle relaxant (Vaso &amp; Bronchodilation)</li></ol>
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Eclampsia (toxemia of pregnancy)</li><li>2. Torsades de Pointes</li><li>3. Severe refractory pulseless VF/VT</li><li>4. Post MI for prophylaxis of arrhythmias</li><li>5. Management of Acute Asthma Attacks</li></ol>
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Shock</li><li>2. Any heart block</li><li>3. Routine Dialysis</li><li>4. Known decreased calcium level (hypocalcemia)</li></ol>
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Patients receiving digitalis</li><li>2. Hypotension</li><li>3. CaCl should be available as antidote if respiratory depression occurs</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Respiratory depression, hypotension</li><li>2. Drowsiness, itching, rash, hypothermia</li><li>3. Flushing, sweating, bradycardia, arrhythmias</li><li>4. Cardiac arrest</li></ol>
<b>DOSAGE:</b>	<ol style="list-style-type: none"><li>1. Eclampsia: 2-4 gm over 3 minutes</li><li>2. Pulseless VF/VT: 1-2 gm in 10 ml of NS slow IVP over 1-2 minutes</li><li>3. Torsades de Pointes: 5-10 gm in 100 ml IV PB at 1 gm/min</li><li>4. Post MI Prophylaxis: 1-2 gm in 100 ml IV PB over 5-30 minutes</li><li>5. Asthma: 1-2 gm in 50 ml over 20 min</li></ol>
<b>ROUTE:</b>	IV, IM
<b>HOW SUPPLIED:</b>	Vials & prefilled syringe: 10% & 50% solutions
<b>PEDIATRIC DOSAGE:</b>	Not indicated

# MICRONEFRIN / NEO-SYNEFPHINE

## (Racemic Epinephrine) (Phenylephrin Hydrochloride)

<b>CLASS:</b>	Sympathomimetic (Adrenergic)
<b>ACTION:</b>	1. Beta 2: Bronchodilation: PRIMARY 2. Beta 1: Positive Chronotrope Positive Inotrope
<b>INDICATIONS:</b>	Croup (Laryngotracheobronchitis)
<b>CONTRAINDICATIONS:</b>	1. Epiglottitis 2. Allergy to medication
<b>PRECAUTIONS:</b>	1. Monitor vitals and ECG 2. USE ONLY ONCE IN PREHOSPITAL SETTING due to SEVERE TACHYCARDIAS
<b>SIDE EFFECTS:</b>	1. Palpitations 2. Anxiety 3. Headache
<b>DOSAGE:</b>	0.25-0.75 ml of a 2.25% solution in 2.0 ml of NS
<b>ROUTE:</b>	Inhalation
<b>HOW SUPPLIED:</b>	Drops Spray
<b>PEDIATRIC DOSAGE:</b>	Same as Adult

## MORPHINE SULFATE

<b>CLASS:</b>	Narcotic
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. CNS depressant</li><li>2. Vasodilation</li><li>3. Analgesic</li><li>4. Decrease myocardial O<sub>2</sub> demand</li></ol>
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Severe pain (i.e. Chest Pain)</li><li>2. Pulmonary edema</li></ol>
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Head injury</li><li>2. Volume depletion</li><li>3. Undiagnosed abdominal pain</li><li>4. Allergy to med</li><li>5. Respiratory depression or any COPD</li><li>6. Other CNS depressant drugs on board</li><li>7. MAO inhibitors, antidepressants, &amp; tricyclics</li></ol>
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Respiratory depression (Narcan should be available)</li><li>2. Hypotension</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Dizziness</li><li>2. Altered level of consciousness</li><li>3. Severe Nausea &amp; Vomiting</li><li>4. Increases vagal tone: Bradycardias</li><li>5. Respiratory depression</li></ol>
<b>DOSAGE:</b>	IV: 2-5 mg followed by 2 mg every few minutes until pain relieved or resp depression occurs IM: 5-15 mg based on patient weight
<b>ROUTE:</b>	IV, IM
<b>HOW SUPPLIED:</b>	Ampules & Tubex prefilled cartridges: 10 mg/ml
<b>PEDIATRIC DOSAGE:</b>	0.1-0.2 mg/kg IV

## **NALOXONE (NARCAN)**

<b>CLASS:</b>	Narcotic antagonist
<b>ACTION:</b>	Reverses effects of narcotics by competing for opiate receptors
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Narcotic overdoses including: morphine, methadone, dilaudid, heroin, fentanyl, demerol, paregoric, percodan, tylox, nubain, stadol, talwin, and darvon</li><li>2. Alcoholic coma</li><li>3. To rule out narcotics in coma of unknown origin</li></ol>
<b>CONTRAINDICATIONS:</b>	None
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Can result in severe withdrawal effects</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Acute withdrawal syndrome (Give med slow)}</li><li>2. Pulmonary edema in rare cases</li></ol>
<b>DOSAGE:</b>	1-2 mg q 5 min SLOW IVP
<b>ROUTE:</b>	IV, IM, ET
<b>HOW SUPPLIED:</b>	Ampules & prefilled syringe: 2 mg/2 ml or 0.4 mg/ml Vials: 10 mg/10 ml
<b>PEDIATRIC DOSAGE:</b>	0.1 mg/kg

## **NIFEDIPINE (PROCARDIA)**

<b>CLASS:</b>	Calcium channel blocker
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Relaxes smooth muscle causing arteriolar vasodilation.</li><li>2. Decreases peripheral vascular resistance</li><li>3. Inhibits influx of calcium into the myocardium and smooth muscle and thereby inhibits the contractile process.</li><li>4. Decreases myocardial workload</li></ol>
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Severe hypertension</li><li>2. Angina pectoris</li></ol>
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Allergy to med</li><li>2. Hypotension</li><li>3. Do not give to patients who receive IV beta blockers</li></ol>
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Monitor BP for hypotension</li><li>2. May worsen CHF</li></ol>
<b>SIDE EFFECTS:</b>	Dizziness, flushing, nausea, headache, and weakness, hypotension
<b>DOSAGE:</b>	10 mg SL (Puncture capsule and place or squeeze under tongue)
<b>ROUTE:</b>	SL, Oral
<b>HOW SUPPLIED:</b>	Gel Capsules: 10 mg or 20 mg
<b>PEDIATRIC DOSAGE:</b>	0.25-0.5 mg/kg

## **NITROGLYCERIN (NITROSTAT)**

<b>CLASS:</b>	Antianginal
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Smooth muscle relaxant</li><li>2. Reduces cardiac work</li><li>3. Dilates coronary arteries</li><li>4. Dilates systemic arteries</li></ol>
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Angina pectoris</li><li>2. Chest pain associated with MI</li><li>3. Hypertension (Sys. &gt;200 OR Dias. &gt; 120)</li><li>4. CHF</li></ol>
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Children under 12</li><li>2. Hypotension</li></ol>
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Monitor BP</li><li>2. Syncope</li><li>3. Protect med from light</li><li>4. Expires quickly once bottle open</li></ol>
<b>SIDE EFFECTS:</b>	Headache (most common), Dizziness and Hypotension
<b>DOSAGE:</b>	1 tab repeated up to 3 times
<b>ROUTE:</b>	SL, IV, Topical
<b>HOW SUPPLIED:</b>	Tablet: 0.4 mg (1/150 grain)
<b>PEDIATRIC DOSAGE:</b>	Not indicated for children under 12

## NITROUS OXIDE

<b>CLASS:</b>	Gas/Analgesic
<b>ACTION:</b>	CNS depressant
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Musculoskeletal pain especially fractures</li><li>2. Burns</li><li>3. Suspected ischemic chest pain</li><li>4. Severe anxiety including hyperventilation</li></ol>
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Patients who cannot understand verbal orders</li><li>2. Intoxication with alcohol or drugs</li><li>3. Head-injury patients with altered LOC</li><li>4. COPD, Pulm. Edema, or Pulm. Embolism</li><li>5. Thoracic injury with suspicious pneumothorax</li><li>6. Abdominal pain, distension or possible bowel obstruction</li><li>7. Shock</li></ol>
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Use in well ventilated area</li><li>2. Gas-scavenging system recommended</li><li>3. May not work at low temps</li><li>4. Evaluate Breath Sounds prior to administration</li></ol>
<b>SIDE EFFECTS:</b>	Headache, dizziness, giddiness, nausea and vomiting, flushed feeling
<b>DOSAGE:</b>	Self administered using fixed 50% nitrous and 50% O2 blender
<b>ROUTE:</b>	Inhalation only
<b>HOW SUPPLIED:</b>	Gas Cylinders
<b>PEDIATRIC DOSAGE:</b>	Self administered only

## **NORCURON (VECURONIUM)**

<b>CLASS:</b>	Nondepolarizing Neuromuscular Blocker
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Competes with acetylcholine for cholinergic receptor sites on the postjunctional membrane.</li><li>2. Paralysis of skeletal muscles</li><li>3. ONSET: 1 min</li><li>4. DURATION: 25-30 minutes</li></ol>
<b>INDICATIONS:</b>	RSI
<b>CONTRAINDICATIONS:</b>	Allergy to medication
<b>PRECAUTIONS:</b>	<b>MUST BE EXPERIENCED WITH MEDICATION</b> <ol style="list-style-type: none"><li>1. Have advanced airway equipment readily available</li><li>2. Drugs that enhance effects: Lidocaine, Procainamide, Beta-Blockers, Magnesium Sulfate, other neuromuscular blockers</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Respiratory depression &amp; Apnea</li><li>2. Aspiration</li><li>3. Arrhythmias, Bradycardia, Sinus Arrest</li><li>4. Increased intracranial pressure</li></ol>
<b>DOSAGE:</b>	1 <sup>st</sup> Dose: 0.08-0.10 mg/kg
<b>ROUTE:</b>	IV
<b>HOW SUPPLIED:</b>	Vial: 10 mg/10 ml <b>MEDICATION MUST BE RECONSTITUTED</b>
<b>PEDIATRIC DOSAGE:</b>	Same as adult

## **NOREPINEPHRINE (LEVOPHED)**

<b>CLASS:</b>	Sympathomimetic
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Causes peripheral vasoconstriction</li><li>2. Alpha sympathomimetic</li><li>3. Mild Beta effects: Increase inotropic effects</li><li>4. Increases myocardial O<sub>2</sub> requirements</li></ol>
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Hypotension refractory to other sympathomimetics</li><li>2. Neurogenic shock</li><li>3. Cardiogenic shock</li></ol>
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Hypotensive states due to hypovolemia</li><li>2. Hypoxia &amp; Hypercarbia</li><li>3. Patients taking Antidepressants</li><li>4. Do not administer with Sodium Bicarbonate</li></ol>
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Deactivated by alkaline solutions</li><li>2. Monitor BP</li><li>3. Use large vein for administration</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Palpitations</li><li>2. Severe Hypertension</li><li>3. Local venous irritation &amp; tissue necrosis</li><li>4. Headache, sweating, N/V</li><li>5. Ventricular dysrhythmias</li></ol>
<b>DOSAGE:</b>	2-12 mcg/min Method: 4mg in 500ml D5W giving concentration of 8 mcg/ml
<b>ROUTE:</b>	IV infusion only
<b>HOW SUPPLIED:</b>	Ampule: 4 mg/4 ml
<b>PEDIATRIC DOSAGE:</b>	0.01-0.5 mcg/kg/min (very rare)

## **NUBAIN (NALBUPHINE)**

<b>CLASS:</b>	Synthetic narcotic analgesic
<b>ACTION:</b>	1. CNS Depressant 2. Decreases sensitivity to pain
<b>INDICATIONS:</b>	1. Moderate to severe pain.
<b>CONTRAINDICATIONS:</b>	1. Allergy to medication
<b>PRECAUTIONS:</b>	1. Use with caution in patients with impaired renal function. 2. Respiratory depression (NARCAN available)
<b>SIDE EFFECTS:</b>	1. Dizziness 2. Altered Mental Status
<b>DOSAGE:</b>	5-10 mg
<b>ROUTE:</b>	IV or IM
<b>HOW SUPPLIED:</b>	Ampule: 10 mg/ml or 20 mg/ml
<b>PEDIATRIC DOSAGE:</b>	Not Indicated

## OXYGEN

<b>CLASS:</b>	Gas
<b>ACTION:</b>	Necessary for cellular metabolism
<b>INDICATIONS:</b>	Hypoxia
<b>CONTRAINDICATIONS:</b>	None
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Use cautiously in COP patients</li><li>2. Humidify when providing high-flow</li></ol>
<b>SIDE EFFECTS:</b>	Drying of mucous membranes
<b>DOSAGE:</b>	<ol style="list-style-type: none"><li>1. Cardiac Arrest: 100%</li><li>2. COPD: 24-35%</li></ol>
<b>ROUTE:</b>	Inhalation
<b>HOW SUPPLIED:</b>	Gas Cylinders
<b>PEDIATRIC DOSAGE:</b>	24-100% as required

## PAVULON (PANCURONIUM BROMIDE)

<b>CLASS:</b>	Nondepolarizing Neuromuscular Blocker
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Competes with acetylcholine for cholinergic receptor sites on the postjunctional membrane.</li><li>2. Paralysis of skeletal muscles</li><li>3. ONSET: 30-40 seconds</li><li>4. DURATION: 35-45 minutes</li></ol>
<b>INDICATIONS:</b>	RSI
<b>CONTRAINDICATIONS:</b>	Allergy to medication
<b>PRECAUTIONS:</b>	<b>MUST BE EXPERIENCED WITH MEDICATION</b> <ol style="list-style-type: none"><li>1. Have advanced airway equipment readily available</li><li>2. Drugs that enhance effects: Lidocaine, Procainamide, Beta-Blockers, Magnesium Sulfate, other neuromuscular blockers</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Respiratory depression &amp; Apnea</li><li>2. Aspiration</li><li>3. Arrhythmias, Bradycardia, Sinus Arrest</li><li>4. Increased intracranial pressure</li></ol>
<b>DOSAGE:</b>	1 <sup>st</sup> Dose: 0.04-0.1 mg/kg IV Q 20-40 min 2 <sup>nd</sup> Dose: 0.01-0.02 mg/kg
<b>ROUTE:</b>	IV
<b>HOW SUPPLIED:</b>	Vial: 4 mg/2 ml or 10 mg/5 ml (2 mg/ml)
<b>PEDIATRIC DOSAGE:</b>	Same as adult

## **PHENERGAN (PROMETHAZINE)**

<b>CLASS:</b>	Antihistamine (H1 antagonist)
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Mild anticholinergic activity</li><li>2. Antiemetic</li><li>3. Potentiates actions of analgesics</li></ol>
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Nausea &amp; Vomiting</li><li>2. Motion sickness</li><li>3. To potentiate the effects of analgesics</li><li>4. Sedation</li></ol>
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Comatose states</li><li>2. Patients who have received a large amount of depressants (involving alcohol)</li></ol>
<b>PRECAUTIONS:</b>	Avoid accidental intra-arterial injection
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. May impair mental and physical ability.</li><li>2. Drowsiness</li></ol>
<b>DOSAGE:</b>	12.5-25.0 mg
<b>ROUTE:</b>	IV and IM
<b>HOW SUPPLIED:</b>	Ampule
<b>PEDIATRIC DOSAGE:</b>	0.5 mg/kg

## PROCAINAMIDE (PRONESTYL)

<b>CLASS:</b>	Antiarrhythmic
<b>ACTION:</b>	Slows conduction through myocardium by increasing electrical threshold of ventricle, Bundle of His & Purkinje system.
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. PVC's refractory to Lidocaine</li><li>2. VF or VT refractory to Lidocaine</li><li>3. Wide Complex tachycardia</li></ol>
<b>CONTRAINDICATIONS:</b>	Should not be administered to patients with severe conduction disorders.
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Should not be used in Complete AV Block, bradycardia.</li><li>2. Digitalis Toxicity.</li><li>3. Preexisting QT prolongation.</li><li>4. Torsades de pointes.</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Hypotension, ventricular fibrillation, AV block, widened QRS, bradycardia, asystole.</li><li>2. CNS depression, hallucination. confusion, dizziness, seizures.</li><li>3. Nausea, Vomiting, Fever</li></ol>
<b>DOSAGE:</b>	<p><b>100 mg over 5 minutes or 20 mg/min for the following problems</b></p> <ol style="list-style-type: none"><li>1. VT: 20-30 mg/min, IV Push</li><li>2. VF Refractory to Lidocaine: 30 mg/min, IVP</li></ol> <p><b>Note: End point of this med is as follows:</b></p> <ol style="list-style-type: none"><li>1. Suppression of dysrhythmia</li><li>2. Total of 17 mg/kg given</li><li>3. QRS widens greater than 50%</li><li>4. Hypotension develops</li></ol> <p><b>If med suppresses VT, start a continuous infusion at 1-4 mg/min. Maintenance dose should be reduced in renal failure.</b></p>
<b>ROUTE:</b>	IV infusion only.
<b>HOW SUPPLIED</b>	Vial: 1 gm/10 ml or 1 gm/ 2 ml
<b>PEDIATRIC DOSAGE:</b>	Not indicated

## PROPRANOLOL (INDERAL)

<b>CLASS:</b>	Sympatholytic
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Nonselectively blocks Beta-1 &amp; 2 receptors</li><li>2. Decreases sinus rate</li><li>3. Slows atrial contractions</li><li>4. Delays conduction through AV node</li><li>5. Suppresses spontaneous electrical activity &amp; muscle force.</li></ol>
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Primary indication: SVT</li><li>2. Prevents recurrent VT with pulse refractory to lidocaine</li><li>3. Tachyarrhythmias due to digitalis toxicity (Slows ventricular rate in A-fib &amp; A-flutter)</li><li>4. Reduce the likelihood of VF after AMI in patients not requiring thrombolytic therapy</li></ol>
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Any depressed cardiac function</li><li>2. Any Bradycardia</li><li>3. COPD or CHF or Asthma</li><li>4. Do not give with Sympathomimetics (Epi), Aminophylline or Cardiac Depressants</li></ol>
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Atropine and Isuprel should be readily available</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Bradycardia &amp; Heart Blocks</li><li>2. Hypotension, N/V</li><li>3. CHF</li><li>4. Bronchospasm</li></ol>
<b>DOSAGE:</b>	1st Dose: 1 mg over 5 min 2nd Dose: 0.5 mg over 5-10 min
<b>ROUTE:</b>	SLOW IV Bolus
<b>HOW SUPPLIED:</b>	Vial: 1 mg/ml
<b>PEDIATRIC DOSAGE:</b>	0.01 mg/kg



## **SOLU-MEDROL (METHYLPREDNISOLONE)**

<b>CLASS:</b>	Steroid
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Anti-inflammatory</li><li>2. Suppresses immune response (especially in allergic reactions)</li></ol>
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Severe anaphylaxis</li><li>2. Asthma/COPD</li><li>3. Possibly effective as an adjunctive agent in the management of spinal cord injury</li></ol>
<b>CONTRAINDICATIONS:</b>	None in emergency setting
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Must be reconstituted and used promptly.</li><li>2. Onset of action may be 2-6 hrs and thus should not be expected to be of use in the critical first hour following an anaphylactic reaction, unless in a sequence of medications (i.e.: epinephrine 1:1000 then Benadryl, then Solu-Medrol)</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. GI Bleeding</li><li>2. Prolonged wound healing</li><li>3. Suppression of natural steroids</li></ol>
<b>DOSAGE:</b>	<b>General Usage</b> 125-250 mg IVP over 5-10 minutes <b>Spinal Cord Injury</b> Initial bolus of 30mg/kg administered over 15 minutes; followed by a maintenance infusion of 5.4 mg/kg/hr
<b>ROUTE:</b>	IV and IM
<b>HOW SUPPLIED:</b>	125 mg Vial unmixed
<b>PEDIATRIC DOSAGE:</b>	30 mcg/kg

## SUCCINYLCHOLINE (ANECTINE)

<b>CLASS:</b>	Depolarizing Neuromuscular Blocker
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Depolarizes skeletal muscle</li><li>2. ONSET: 60-90 seconds</li><li>3. DURATION: 4-5 minutes</li></ol>
<b>INDICATIONS:</b>	RSI
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Allergy to medication</li><li>2. Penetrating eye trauma</li></ol>
<b>PRECAUTIONS:</b>	<p>MUST BE EXPERIENCED WITH MEDICATION</p> <ol style="list-style-type: none"><li>1. Have advanced airway equipment readily available</li><li>2. Drugs that enhance effects: Lidocaine, Procainamide, Beta-Blockers, Magnesium Sulfate, other neuromuscular blockers</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Respiratory depression &amp; Apnea</li><li>2. Aspiration</li><li>3. Arrhythmias, Bradycardia, Sinus Arrest</li><li>4. Increased intracranial pressure</li></ol>
<b>DOSAGE:</b>	1-1.5 mg/kg
<b>ROUTE:</b>	IV (preferred) or IM
<b>HOW SUPPLIED:</b>	Vial: 200 mg/10 ml (20 mg/ml)
<b>PEDIATRIC DOSAGE:</b>	Same as adult

## THIAMINE (B1)

<b>CLASS:</b>	Vitamin
<b>ACTION:</b>	Assists in converting glucose into energy
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Coma of unknown origin.</li><li>2. Chronic Alcoholism with associated coma</li><li>3. Delirium tremens</li><li>4. Precursor of D50 to prevent Wernicke's Encephalopathy (problem with neurotransmitters in brain which results in retained altered LOC) in alcoholics</li><li>5. Beriberi (Thiamine deficiency)</li></ol>
<b>CONTRAINDICATIONS:</b>	None
<b>PRECAUTIONS:</b>	(When giving with D50 & Narcan, give in following order: 1. Thiamin, 2. D50, 3. Narcan)
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Slight vasodilation &amp; hypotension</li><li>2. Overdoses may result in weakness, dyspnea and respiratory failure (RARE)</li></ol>
<b>DOSAGE:</b>	100 mg
<b>ROUTE:</b>	IV or IM
<b>HOW SUPPLIED:</b>	Vial: 100 mg/1 ml
<b>PEDIATRIC DOSAGE:</b>	Not Indicated

# VASOPRESSIN (ADH: ANTI-DIURETIC HORMONE)

<b>CLASS:</b>	Anti-Diuretic Hormone
<b>ACTION:</b>	1. Vasoconstriction  NOTE: This vasoconstriction has been shown to increase the effectiveness of CPR and increase myocardial responsiveness to standard resuscitative measures. NO cardiac stimulatory properties, thus it may be preferable over epinephrine in cases of pulseless ventricular fibrillation or ventricular tachycardia where excessive cardiac stimulation is the rule.  2. Contraction of smooth muscles of the gut
<b>INDICATIONS:</b>	1. VF/Pulseless VT 2. Slow or Stop GI bleeding 3. Diabetes Insipidus
<b>CONTRAINDICATIONS:</b>	Allergy to medication
<b>PRECAUTIONS:</b>	Use with caution in patients with impaired renal function, CHF, Asthma, liver disease, active seizure activity, and elderly.
<b>SIDE EFFECTS:</b>	1. Bradycardia, Hypertension 2. Arrhythmias, Bronchospasm 3. Angioedema, N/V, Abdominal Cramping
<b>DOSAGE:</b>	40 units (2 ml) q 30 min (20 min half life) SINGLE DOSE RECOMMENDED
<b>ROUTE:</b>	IV ONLY
<b>HOW SUPPLIED:</b>	Vial or Ampule (20 u / ml)
<b>PEDIATRIC DOSAGE:</b>	Not Indicated (Efficacy has yet to be established)

## VERAPAMIL (ISOPTIN, CALAN)

<b>CLASS:</b>	Calcium channel blocker
<b>ACTION:</b>	<ol style="list-style-type: none"><li>1. Delays conduction through AV node</li><li>2. Slows SA no discharge</li><li>3. Decreases ventricular response rate</li><li>4. Decreases myocardial O<sub>2</sub> demand</li><li>5. Antagonizes Calcium effects</li></ol>
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. PSVT refractory to Adenosine &amp; Vagal maneuvers</li><li>2. A-Fib &amp; A-Flutter with rapid ventricular response</li></ol>
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Cardiogenic shock</li><li>2. Heart failure</li><li>3. Hypotension due to tachycardias</li><li>4. Sick Sinus Syndrome (Wandering pacemaker)</li><li>5. Patient's on Beta-Blockers: Potentiates effects of verapamil and may cause heart failure</li><li>6. AMI</li><li>7. Wide complex tachycardias</li></ol>
<b>PRECAUTIONS:</b>	Patients taking Digitalis
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Nausea, Vomiting, Hypotension, and dizziness</li><li>2. Headache</li><li>3. Pulmonary edema due to heart failure</li><li>4. AV Blocks, Bradycardias and Cardiac Arrest</li></ol>
<b>DOSAGE:</b>	2.5-5.0 mg SLOW IVP (Over 1-2 minutes) repeated 20-30 minutes if PSVT does not convert
<b>ROUTE:</b>	IV
<b>HOW SUPPLIED:</b>	Ampule: 5 mg/2 ml
<b>PEDIATRIC DOSAGE:</b>	Not Indicated

## **VERSED (MIDAZOLAM)**

<b>CLASS:</b>	Tranquilizer
<b>ACTION:</b>	Sedative / Hypnotic
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Premedication prior to Cardioversion</li><li>2. Premedication prior to RSI</li><li>3. Acute anxiety states</li></ol>
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Allergy to medication</li><li>2. Narrow angle glaucoma</li><li>3. Shock</li></ol>
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Advanced airway equipment <b>MUST</b> be readily available</li><li>2. <b>BE PREPARED FOR RESPIRATORY DEPRESSION</b></li><li>3. <b>FLUMAZENIL</b> should be available</li><li>4. Dilute with NS prior to administration</li></ol>
<b>SIDE EFFECTS:</b>	<ol style="list-style-type: none"><li>1. Respiratory Depression and Apnea</li><li>2. Drowsiness</li><li>3. Hypotension</li><li>4. Amnesia</li></ol>
<b>DOSAGE:</b>	Slow IV: 1.0-2.5 mg IV Titrated to effect IM: 0.07-0.08 mg/kg
<b>ROUTE:</b>	IV or IM
<b>HOW SUPPLIED:</b>	5 mg/ml
<b>PEDIATRIC DOSAGE:</b>	0.03 mg/kg

# ***Intravenous Fluids***

## **LACTATED RINGER'S (LR)** **(HARTMAN'S SOLUTION)**

<b>CLASS:</b>	Isotonic Crystalloid Solution
<b>DESCRIPTION:</b>	Frequently used on management of hypovolemic shock. It is an isotonic crystalloid solution containing electrolytes in the following concentration. <ol style="list-style-type: none"><li>1. Sodium (Na<sup>+</sup>) 130 mEq/L</li><li>2. Potassium (K<sup>+</sup>) 4 mEq/L</li><li>3. Calcium (Ca<sup>++</sup>) 3mEq/L</li><li>4. Chloride (Cl<sup>-</sup>) 109 mEq/L</li><li>5. Lactic Acid (Lactate) 28 mEq/L (This acts as a buffer)</li></ol>
<b>MECHANISM OF ACTION:</b>	Replaces water and electrolytes
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Hypovolemic Shock</li><li>2. TKO/KVO IV</li><li>3. Burn Patients</li></ol>
<b>CONTRAINDICATIONS:</b>	<ol style="list-style-type: none"><li>1. Use with caution in patients with CHF and Renal Failure</li><li>2. Do not hang with blood</li></ol>
<b>PRECAUTIONS:</b>	Monitor patient to prevent circulatory overload
<b>SIDE EFFECTS:</b>	Rare
<b>INTERACTIONS:</b>	Few in emergency situations
<b>DOSAGE:</b>	<ol style="list-style-type: none"><li>1. 1 L blood lost = 3 L of LR to infuse</li><li>2. Attempt to achieve SBP of 100 mmHg</li><li>3. Use IV catheter 18 ga or larger</li><li>4. Use in conjunction with PASG in severe hypovolemia.</li><li>5. Can use with any IV set but in hypovolemia hang on Blood "Y" or 10 gtt/ml set</li></ol>
<b>ROUTE:</b>	IV infusion
<b>HOW SUPPLIED:</b>	250, 500 & 1000 ml bags and bottles

## **5% DEXTROSE IN WATER (D5W)**

<b>CLASS:</b>	Hypotonic dextrose-containing solution
<b>DESCRIPTION:</b>	When vigorous fluid replacement is not indicated, can be used as a medication route. Since it is hypotonic, it prevents circulatory overload in patients with CHF and renal failure
<b>MECHANISM OF ACTION:</b>	Provides nutrients in the form of dextrose and free water
<b>INDICATIONS:</b>	<ol style="list-style-type: none"><li>1. IV access for emergency drugs</li><li>2. For dilution of concentrated drugs for IV infusion</li></ol>
<b>CONTRAINDICATIONS:</b>	Do Not use in patients that are hypovolemic
<b>PRECAUTIONS:</b>	<ol style="list-style-type: none"><li>1. Dextrose containing solutions are acidic and may produce local venous irritation.</li><li>2. SQ. administration from extravasation may result in tissue necrosis.</li><li>3. Monitor for signs of circulatory overload.</li><li>4. When using on hypoglycemic patient, draw blood prior to administration.</li></ol>
<b>SIDE EFFECTS:</b>	Rare
<b>INTERACTIONS:</b>	Do Not use with Dilantin (Phenytoin) or Inocor (Amrinone). Medications precipitate out.
<b>DOSAGE:</b>	Administer with a 60gtt/ml (Mini) set at KVO/TKO
<b>ROUTE:</b>	IV infusion
<b>HOW SUPPLIED:</b>	50, 100, 150, 250, 500, 1000 ml bags or bottles

## **0.9% SODIUM CHLORIDE (NS)** **(NORMAL SALINE)**

<b>CLASS:</b>	Isotonic Crystalloid Solution
<b>DESCRIPTION:</b>	Contains the following 1. 154 mEq/L of Na <sup>+</sup> 2. 154 mEq/L of Cl <sup>-</sup> Concentration is near that of blood, the solution is considered Isotonic.
<b>MECHANISM OF ACTION:</b>	Replaces water and electrolytes
<b>INDICATIONS:</b>	1. Heat related problems 2. Freshwater drowning 3. Hypovolemia 4. Diabetic Ketoacidosis 4. TKO/KVO IV
<b>CONTRAINDICATIONS:</b>	Use with caution in patients with CHF and Renal Failure
<b>PRECAUTIONS:</b>	In cases where large amounts of fluid are needed, it might be prudent to use LR to avoid depletion of other electrolytes.
<b>SIDE EFFECTS:</b>	Rare
<b>INTERACTIONS:</b>	Few in emergency setting
<b>DOSAGE:</b>	<b><i>Hypolemia</i></b> 1. 1 L blood lost = 3 L of NS to infuse 2. Attempt to achieve SBP of 100 mmHg 3. Use IV catheter 18 ga or larger 4. Use in conjunction with PASG in severe hypovolemia. 5. Can use with any IV set but in hypovolemia hang on Blood "Y" or 10 gtt/ml set <b><i>Medical Patients (Non-hypovolemic)</i></b> 1. Can use smaller IV catheter (20-22 ga) 2. Consider using with 60 gtt/ml set
<b>ROUTE:</b>	IV infusion
<b>HOW SUPPLIED:</b>	50, 100, 250, 500, and 1000 ml bags and bottles

# MEDICATION QUIZ

Name: \_\_\_\_\_ Date: \_\_\_\_\_

DRUG NAME: \_\_\_\_\_

CLASS: \_\_\_\_\_

ACTION: \_\_\_\_\_

INDICATIONS: \_\_\_\_\_

CONTRAINDICATIONS: \_\_\_\_\_

PRECAUTIONS: \_\_\_\_\_

SIDE EFFECTS: \_\_\_\_\_

DOSAGE: \_\_\_\_\_

ROUTE: \_\_\_\_\_

HOW SUPPLIED: \_\_\_\_\_

PEDIATRIC DOSAGE: \_\_\_\_\_

# APPENDIX

## The Sympathomimetics

The term sympathomimetic means to mimic the actions of the sympathetic nervous system. Drugs in this group do exactly that. They will either act directly on receptors of the sympathetic nervous system or will act indirectly by stimulating the release of endogenous catecholamines. **Catecholamine** is the name used to describe several drugs that are chemically similar. These drugs are listed below. All of these agents, except Isoproterenol and dobutamine, can be found naturally in the body. Here are some terms:

### **Adrenergic system:**

“Fight or Flight” system. It prepares the body to deal with different stresses. This is the sympathetic system.

### **Cholinergic:**

Parasympathetic system is sometimes called this.

### **Adrenergic Receptors:**

#### ***Alpha 1 & 2***

Causes peripheral vasoconstriction and occasionally mild bronchoconstriction.

#### ***Beta 1***

Causes increased chronotropic and inotropic.

#### ***Beta 2***

Causes vasodilatation and bronchodilation.

#### ***Dopaminergic Receptors***

Not fully understood, believed to cause renal, coronary, and cerebral vasodilatation.

### **Medications in This Class:**

Epinephrine 1:10,000

Isoproterenol

Dopamine

## The Sympathetic Blockers

These are unique drugs that antagonize adrenergic receptor sites. Certain drugs in this category will block only alpha receptors while others only beta. Some of the beta blockers are selective enough to block only beta 1 or beta 2 receptors. The beta blockers are the most commonly used medications in this category. They are useful in the treatment of hypertension, cardiac arrhythmias, and angina pectoris.

### **Medications in This Class:**

Propranolol

## The Antiarrhythmics

Many different drugs are useful in the treatment and prevention of cardiac arrhythmia. Some drugs are useful in the treatment of atrial arrhythmia, while others treat ventricular anomalies.

### **Medications in This Class:**

Lidocaine  
Bretylium  
Procainamide  
Verapamil  
Dilantin

## The Parasympatholytics

These are drugs that inhibit the actions of the parasympathetic nervous system. Sometimes they are referred to as the anticholinergics.

### **Medications in This Class:**

Atropine

## The Cardiac Glycosides

Digitalis is the principal drug in this category and is one of the oldest medications known to humans. When given to patients experiencing CHF, it significantly increases inotropic effects of the myocardium. It increases cardiac output, reducing left ventricular diameter, decreases venous pressure, and hastens reduction of peripheral and pulmonary edema. Several digitalis preparations are available. These include:

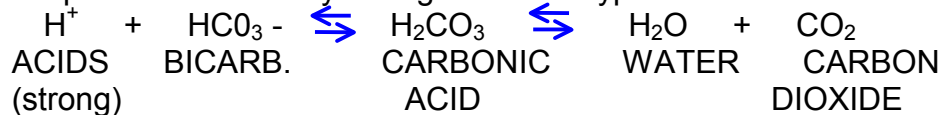
1. Digitoxin - the longest-acting cardiac glycoside.
2. Digoxin (Lanoxin<sup>®</sup>) - the most popular cardiac glycoside.
3. Ouabain - has a rapid onset and a relatively short duration of effect.
4. Deslanoside (Cedilanid - D<sup>®</sup>) - the most rapidly acting of all the digitalis preparations.

### **Medications in This Class:**

Digoxin

## The Alkalinizing Agent

Used to buffer the acid present in the body during and after hypoxia.



### **Medications in This Class:**

Sodium Bicarbonate

## **The Analgesics**

The drugs that alleviate pain. Although these drugs are used for pain, many of them are utilized for the cardiovascular system, especially during an acute MI.

### **Medications in This Class:**

Morphine Sulfate  
Nitronox

## **The Diuretics**

In the treatment of CHF, diuretics are used to reduce preload by reducing pulmonary and vascular edema.

### **Medications in This Class:**

Furosemide (Lasix)

## **The Antianginal Agents**

Sublingual antianginal drugs give immediate relieve to patients suffering from angina pectoris.

### **Medications in This Class:**

Nitrostat