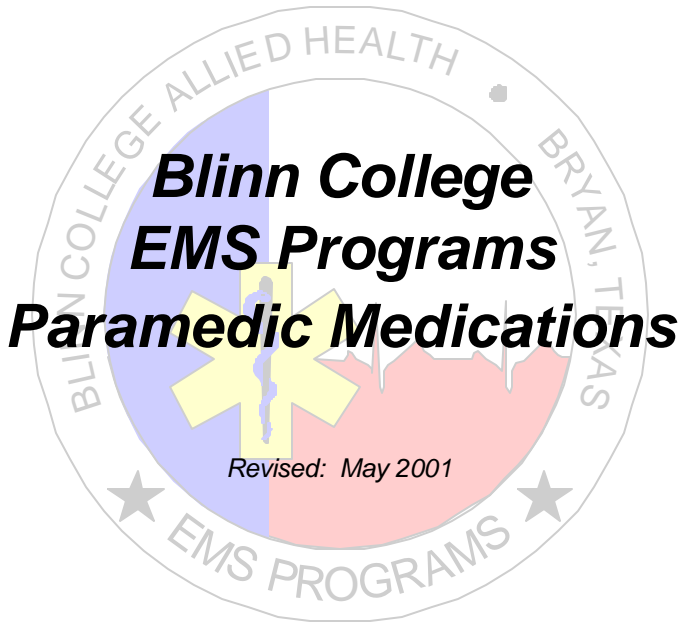


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GENERAL TERMINOLOGY

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

Actions of Adrenergic Receptors	
Receptor	Actions
α1	<ul style="list-style-type: none"> Peripheral Vasoconstriction Positive Inotrope Negative Chronotrope
α2	<ul style="list-style-type: none"> Peripheral vasodilation (block release of NE)
β1	<ul style="list-style-type: none"> Positive Inotrope Positive Chronotrope Positive Dromotrope
β2	<ul style="list-style-type: none"> Peripheral Vasodilation Bronchodilation Uterine smooth muscle relaxant GI smooth muscle relaxant

Dopaminergic • Renal vasodilation
• Mesenteric vasodilation

ACTIVATED CHARCOAL

CLASS: Absorbent

ACTIONS: Absorbs toxins by binding to them to prevent GI absorption

INDICATIONS: 1. Poisoning following emesis
2. Emesis contraindicated

CONTRAINDICATIONS: None in severe poisonings

PRECAUTIONS: 1. Administer following emesis when indicated
2. Caution in patient with altered LOC
3. May absorb ipecac before emesis (wait at least 10 minutes after admin of Ipecac before giving)

SIDE EFFECTS: N&V, Constipation

DOSAGE: 1gm/kg (typically 50-75 gm) mixed in water to form a slurry

ROUTE: PO

HOW SUPPLIED: Bottle: 25 gm

PEDIATRIC DOSAGE: same as adult

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ADENOSINE

CLASS: Antiarrhythmic

ACTIONS: Slows AV conduction

INDICATIONS: 1. PSVT
2. Wide Complex Tach's of uncertain type refractory to Lidocaine

CONTRAINDICATIONS: 1. 2nd or 3rd degree HB's
2. Sick sinus syndrome (ECG: Wandering Pacemaker)
3. Incompatible Meds: Dipyridanole (Persantine - Vasodilator for angina); Tegretol - Epilepsy; Theophylline or other xanthines (coffee)

PRECAUTIONS: 1. Arrhythmias, including blocks, are common during cardioversions
2. Use with caution in asthma patients
3. Transient Asystole

SIDE EFFECTS: Facial flushing, headache, shortness of breath, dizziness, and nausea/vomiting

DOSAGE: 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

ROUTE: IV

HOW SUPPLIED: 6 mg/2 ml Vials & prefilled syringes

PEDIATRIC DOSAGE: 1st Dose: 0.1 mg/kg to max of 12 mg
2nd and subsequent Doses: 0.2 mg/kg

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ALUPENT (METAPROTERENOL)

CLASS: Sympathomimetic (Beta 2 selective)

ACTION: 1. Bronchodilation
2. Increases heart rate

INDICATIONS: 1. Asthma
2. Bronchospasm with COPD

CONTRAINDICATIONS: 1. Known allergy
2. Patients with cardiac dysrhythmias or significant tachycardias

PRECAUTIONS: Vitals and EKG should be monitored

SIDE EFFECTS: Palpitations, anxiety, headache, dizziness, and sweating

DOSAGE: 1. bullet dose can be repeated as needed

ROUTE: Inhalation, ET

HOW SUPPLIED: 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)

PEDIATRIC DOSAGE: 0.05-0.3 ml in 4 ml NS

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AMINOPHYLLINE

CLASS:	Xanthine bronchodilator
ACTION:	1. Smooth muscle relaxant: Bronchodilation & Vasodilation: Indirectly results in increased coronary blood flow. 2. Increased diaphragmatic contractions 3. Mild diuresis 4. Increased cardiac output, chronotropic & inotropic 5. Stimulates respiratory drive 6. CNS Stimulant
INDICATIONS:	1. Acute asthma 2. Decompensated COPD 3. CHF 4. Pulmonary edema 5. Bronchoconstriction in anaphylaxis
CONTRAINDICATIONS:	1. Allergy to med 2. Hypotension 3. Massive MI 5. Dysrhythmias
PRECAUTIONS:	1. Do not administer to theophylline patients until theophylline level obtained 2. NEVER a first line medication due to SEVERE side effects
SIDE EFFECTS:	1. Myocardium irritability and dysrhythmias 2. Convulsions, tremor, anxiety, dizziness 3. N&V, Headache
DOSAGE:	BOLUS: 5 mg/kg in 50 ml infused over 20 min then check level and begin maintenance drip. MAINTENANCE DRIP: 250 mg in 250 ml OR 1000ml and infuse at 0.5 mg/kg/hr
ROUTE:	Slow IV infusion
HOW SUPPLIED:	Ampule 250 mg/10 ml OR 500 mg/20 ml
PEDIATRIC DOSAGE:	Same as adult but MAX is 12 mg/kg in 24 hrs

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ASPIRIN

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

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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 " <i>Hot as a hare, Blind as a bat, Dry as a bone, Red as a beet, and Mad as a hen</i> "
DOSAGE:	1. <i>Bradycardia:</i> 0.5-1.0 mg every 3 to 5 minutes to max 2. <i>Asystole:</i> 1 mg every 3 to 5 minutes to max 3. <i>Organophosphate Poisoning:</i> 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. <i>Bradycardia:</i> 0.01-0.03 mg/kg 2. <i>Organophosphate Poisoning:</i> 0.05 mg/kg MINIMUM DOSE: 0.1 mg MAXIMUM DOSE: 0.5 mg

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NOTE: Reason for avoidance in High Degree HB's

Atropine causes an increased atrial rate and can cause

- Decreased Ventricular Escape Beats*
- 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*

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ATROVENT (IPRATROPIUM)

CLASS:	Anticholinergic (Parasympatholytic)
ACTION:	1. Bronchodilation 2. Dries Respiratory Tract Secretions
INDICATIONS:	1. Bronchial Asthma 2. Bronchospasm associated with COPD
CONTRAINDICATIONS:	1. History of drug hypersensitivity 2. Should not be used as primary acute treatment of bronchospasm
PRECAUTIONS:	Monitor vitals & ECG
SIDE EFFECTS:	1. Palpitations 2. Dizziness 3. Anxiety 4. Headache 5. Nervousness
DOSAGE:	500 mcg in nebulizer usually with a Beta-agonist Typically a "bullet" dose
ROUTE:	Inhaled
HOW SUPPLIED:	Bullet: 0.02% in 2.5ml
PEDIATRIC DOSAGE:	Safety in children has not been established.

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BRETHINE (TERBUTALINE)

CLASS:	Sympathomimetic (Adrenergic) & Tocolytic*
ACTION:	1. Beta 2 Selective: Bronchodilator 2. Beta 1: Chronotropic 3. Relaxes Uterine Muscles to suppress contractions
INDICATIONS:	1. Bronchial Asthma 2. Bronchospasm with COPD 3. Preterm Labor
CONTRAINDICATIONS:	Allergy to Medication
PRECAUTIONS:	Constantly monitor Vitals & ECG
SIDE EFFECTS:	1. Palpitations 2. Tachycardia & PVC's 3. Anxiety 4. Tremor 5. Headache
DOSAGE:	Subcutaneous Injections 0.25 mg may be repeated in 15-30 minutes
ROUTE:	SQ
HOW SUPPLIED:	Ampule: 1mg/ml
PEDIATRIC DOSAGE:	0.01 mg/kg subcutaneously

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

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BRETYLIUM

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

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CALCIUM CHLORIDE 10%

CLASS:	Electrolyte
ACTION:	Increases cardiac contractility
INDICATIONS:	1. Acute Hyperkalemia 2. Acute hypocalcemia 3. Calcium Channel Blocker (nifedipine, verapamil) overdose 4. Antidote to Magnesium Sulfate OD
CONTRAINDICATIONS:	Patients receiving digitalis (Can result in sudden cardiac death from VF)
PRECAUTIONS:	1. Extravasation may cause tissue necrosis 2. Precipitates with Sodium Bicarbonate to form Calcium Carbonate (Chalk). If need to give then flush tubing very well between each. 3. Slow IV push (rapid push can cause VF)
SIDE EFFECTS:	1. Arrhythmias (bradycardia, asystole, VF) 2. Hypotension & Vasodilation 3. Nausea & Vomiting 4. Extravasation causes tissue necrosis 5. Coronary & Cerebral artery spasm 6. Metallic or Chalky taste in mouth
DOSAGE:	2-4 mg/kg of 10% solution over 5 minutes repeated every 10 minutes
ROUTE:	IV
HOW SUPPLIED:	Prefilled Syringe: 1 gm/10 ml (10 ml of 10% solution: 13.6 mEq Ca ⁺⁺)
PEDIATRIC DOSAGE:	NOT INDICATED FOR NEWBORNS 20 mg/kg IV or IO slowly, max 500 mg

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CARDIZEM (DILTIAZEM)

CLASS:	Calcium Channel Blocker
ACTION:	1. Vascular dilation 2. Slows conduction through AV Node 3. Slows rapid ventricular rate associated with Atrial Fibrillation and Atrial Flutter 4. Dilates coronary arteries a. Negative inotrope
INDICATIONS:	1. Rapid Ventricular Rates in: a. A-fib & A-flutter b. PSVT refractory to Adenosine 2. Angina
CONTRAINDICATIONS:	1. Hypotension or Cardiogenic shock 2. VT or Wide-complex Tachycardias 3. Evaluate for WPW prior to administration
PRECAUTIONS:	1. Can cause systemic hypotension 2. Calcium chloride should be available to prevent hypotensive effects 3. Should be refrigerated 4. Avoid giving to patient's receiving beta-blockers <i>INCREASED RISK of CHF, BRADYCARDIA & ASYSTOLE</i>
SIDE EFFECTS:	1. Nausea & Vomiting 2. Dizziness & Headache 3. Bradycardia, Heart blocks & Asystole 4. Hypotension
DOSAGE:	20 mg IV Bolus (0.25 mg/kg) over 2 minutes Maintenance Infusion: 5-15mg/hr
ROUTE:	IV: Slow Push and Piggyback
HOW SUPPLIED:	Vials: 25mg/5ml OR 50ml/10ml
PEDIATRIC DOSAGE:	Not Recommended

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CORDARONE (AMIODARONE)

CLASS:	Antiarrhythmic
ACTION:	Prolongs action potential duration in all cardiac tissues
INDICATIONS:	1. Pulseless VT & Ventricular Fibrillation 2. Tachycardias refractory to digoxin 3. Polymorphic Ventricular Tachycardia 4. Wide complex tachycardias of unknown etiology
CONTRAINDICATIONS:	1. Breast-feeding mothers in cardiogenic shock 2. Severe sinus node dysfunction indicated by bradycardic condition. (Sinus Bradycardia & 2 nd & 3 rd Degree Heart Blocks) 3. Symptomatic Bradycardia 4. Allergy to Medication
PRECAUTIONS:	1. Use with caution in patients with latent or manifest heart failure. EXACERBATES CONDITION. 2. Use with caution in renal failure patients
SIDE EFFECTS:	1. MONITOR ECG 2. Hypotension 3. Negative Inotropic & Chronotropic 4. Increased Ventricular Beats 5. Prolonged PR Interval, QRS Complex & QT Interval 6. Be alert for signs of pulmonary toxicity (dyspnea & cough)
DOSAGE:	CARDIAC ARREST 1 st Dose: 300 mg Q 5-10 min 2 nd Dose: 150 mg MAX CUMULATIVE of 2.2 g/24 hrs WIDE COMPLEX STABLE TACHYCARDIA 150 mg IVP over 10 min (15 mg/min) Q 10 min SLOW INFUSION 360 mg. IV over 6 hours (1 mg./min.)
ROUTE:	IVP
HOW SUPPLIED:	150 mg / 3 ml
PEDIATRIC DOSAGE:	5 mg/kg (CAN REPEAT 1x)

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DIAZEPAM (VALIUM)

CLASS:	Sedative Hypnotic
ACTION:	1. Anticonvulsant 2. Skeletal muscle relaxant 3. Sedative 4. General CNS depressant
INDICATIONS:	1. Generalized seizures 2. Status epilepticus 3. Premedication prior to cardioversion 4. Skeletal muscle relaxant 5. Acute anxiety states
CONTRAINDICATIONS:	Allergy to medication
PRECAUTIONS:	1. Local venous irritation 2. Short duration of effect 3. Avoid mixing with other meds due to precipitation 4. Decreased LOC
SIDE EFFECTS:	1. Drowsiness 2. Hypotension 3. Respiratory depression, apnea
DOSAGE:	1. <i>Status Epilepticus:</i> 5-10 mg IV 2. <i>Acute Anxiety:</i> 2-5 mg IM or IV 3. <i>Premed for Cardioversion:</i> 5-15 mg IV
ROUTE:	IV no faster than 1 ml/min, IM, Rectal, or ET
HOW SUPPLIED:	Ampule & prefilled syringe: 10 mg/2 ml
PEDIATRIC DOSAGE:	<i>Status Epilepticus:</i> 0.2 - 0.5 mg/kg/dose

Antagonist: Romazicon

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DILANTIN (PHENYTOIN)

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

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DIGITALIS (LANOXIN OR DIGOXIN)

CLASS:	Cardiac glycoside
ACTION:	1. Increases cardiac contractile force 2. Increases cardiac output 3. Reduces edema associated with congestive heart failure 4. Slows AV conduction
INDICATIONS:	1. CHF 2. Rapid A-fib or A-flutter
CONTRAINDICATIONS:	1. Any patient with signs/symptoms of digitalis toxicity (Any dysrhythmia that often is refractory to traditional antidysrhythmic drugs) 2. VF
PRECAUTIONS:	1. Monitor for signs of digitalis toxicity 2. Patients who have recently suffered a myocardial infarction have greater sensitivity to effects of digitalis 3. Calcium should not be administered to digitalis patients
SIDE EFFECTS:	1. Nausea, Vomiting 2. Arrhythmias 3. Yellow vision
DOSAGE:	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.
ROUTE:	IV
HOW SUPPLIED:	Ampule: 0.5 mg/2 ml
PEDIATRIC DOSAGE:	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

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DIPHENHYDRAMINE (BENADRYL)

CLASS:	Antihistamine
ACTION:	1. Blocks histamine receptors 2. Has some sedative effects
INDICATIONS:	1. Anaphylaxis in conjunction with Epinephrine 2. Allergic Reactions 3. Dystonic reactions (Extrapyramidal effects: uncontrolled muscle twitching) due to phenothiazines (Thorazine, compazine, antipsychotics, narcotic potentiators and antiemetics)
CONTRAINDICATIONS:	1. COPD including asthma 2. Pregnant or Nursing mothers 3. Enlarged prostate 4. Glaucoma
PRECAUTIONS:	Hypotension
SIDE EFFECTS:	1. Sedation 2. Dries bronchial secretions resulting in wheezing 3. Blurred vision 4. Headache 5. Palpitations
DOSAGE:	25-50 mg
ROUTE:	Slow IVP or Deep IM
HOW SUPPLIED:	Ampule & prefilled syringe: 50 mg/ml
PEDIATRIC DOSAGE:	2-5 mg/kg

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50% DEXTROSE

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

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DOPAMINE (INTROPIN)

CLASS:	Sympathomimetic
ACTION:	1. Increases cardiac contractility 2. Causes peripheral vasoconstriction 3. Increases chronotropic and inotropic effects 4. Dilation of mesenteric & renal arteries promoting urination (Reason dopamine is preferred over norepinephrine) Low Dose Action <10 mcg/kg/min: Beta effects predominate High Dose Action >10 mcg/kg/min: Alpha effects
INDICATIONS:	1. Cardiogenic shock 2. Hypovolemic shock refractory to fluid resuscitation 3. Hypotension secondary to bradycardia post resuscitation
CONTRAINDICATIONS:	1. Hypovolemic shock in which fluid resuscitation has not been performed 2. Uncorrected tachycardia or VF
PRECAUTIONS:	1. Ventricular irritability 2. Do not mix with Sodium Bicarbonate
SIDE EFFECTS:	1. VT 2. Hypertension 3. Headache, Angina, N/V
DOSAGE:	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
	SEE DOPAMINE DOSAGE TABLE
ROUTE:	IV drip only
HOW SUPPLIED:	Prefilled syringe, Ampule: 200 mg/5 ml Premix Drips: 400 mg/250 ml
PEDIATRIC DOSAGE:	2-20 mcg/kg/min

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DOPAMINE DOSAGE TABLE AND DOSAGE PHENOMENA

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

¹Low but needs monitoring

²Relative 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

¹Low but needs monitoring

²Relative to peak values achieved at lower dosages.

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EPINEPHRINE 1:1000

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

Note: Rapid onset of Action

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EPINEPHRINE 1:10,000

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

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ETOMIDATE (AMIDATE)

CLASS:	Benzodiazepine (Sedative/Hypnotic)
ACTION:	1. Rapid induction of anesthesia with minimal cardiovascular and respiratory effects. 2. Does not cause histamine release as do other barbiturates ONSET: 10-20 sec DURATION: 3-5 min
INDICATIONS:	Sedation induction for intubation
CONTRAINDICATIONS:	Allergy to medication
PRECAUTIONS:	1. Use with caution in patients with hypotension, asthma, or severe cardiovascular disease 2. Verapamil may cause prolonged resp. depression 3. NO ANALGESIC PROPERTIES
SIDE EFFECTS:	CNS: myoclonic skeletal muscle movement RESP: Apnea, hyper/hypo-ventilation, laryngospasm CV: Hyper/hypotension, tachy/bradycardia GI: N/V OTHER: Hiccups, smoring
DOSAGE:	0.1-0.3 mg/kg IVP over 15-30 seconds
ROUTE:	SLOW IVP only
HOW SUPPLIED:	Vial: 20 mg/10 ml
PEDIATRIC DOSAGE:	>10 yoa: 0.1-0.3 mg/kg IVP over 15-30 sec Safety in children under 10 has not been established

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FENTANYL (SUBLIMAZE)

CLASS:	Narcotic analgesic
ACTION:	1. CNS Depressant 2. Decreases sensitivity to pain
INDICATIONS:	1. Acute pain 2. Premedication for RSI
CONTRAINDICATIONS:	1. Severe hemorrhage 2. Shock 3. Known allergy
PRECAUTIONS:	1. All bradycardias. ATROPINE counteragent 2. NARCAN as counteragent in respiratory depression 3. Use with caution in patients with liver and kidney dysfunction
SIDE EFFECTS:	1. Respiratory depression & apnea 2. Muscle rigidity 3. Bradycardia
DOSAGE:	25-100 mcg (0.025 – 0.1 mg) SLOW IVP over 2-3 minutes
ROUTE:	IV
HOW SUPPLIED:	Ampule: 100 mcg/2 ml (50 mcg/ml)
PEDIATRIC DOSAGE:	1.7 – 3.3 mcg / kg

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FLUMAZENIL (ROMAZICON)

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

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

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FUROSEMIDE (LASIX)

CLASS:	Diuretic
ACTION:	1. Inhibits reabsorption of NaCl 2. Promotes prompt diuresis 3. Vasodilation
INDICATIONS:	1. CHF 2. Pulmonary edema
CONTRAINDICATIONS:	1. Pregnancy 2. Dehydration 3. Hypovolemia 4. Hypokalemia 5. Patients taking Lithium (Lasix blocks the renal excretion of this)
PRECAUTIONS:	1. Protect med from light 2. Dehydration
SIDE EFFECTS:	1. N/V 2. Hypokalemia 3. Dehydration
DOSAGE:	40-80 mg
ROUTE:	IV
HOW SUPPLIED:	Vial, ampule, or prefilled syringe: 40 mg/4 ml
PEDIATRIC DOSAGE:	1 mg/kg

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GLUCOSE (ORAL GLUCOSE)

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

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GLUCAGON

CLASS:	Hormone (Antihypoglycemic Agent)
ACTIONS:	<ol style="list-style-type: none">1. Causes breakdown of glycogen to glucose2. Inhibits glycogen synthesis3. Elevates blood glucose level4. Increases cardiac contractile force5. Increases heart rate
INDICATIONS:	Hypoglycemia
CONTRAINDICATIONS:	Allergy to medication
PRECAUTIONS:	<ol style="list-style-type: none">1. Only effective if there are sufficient stores of glycogen in liver.2. Use with caution in patients with cardiovascular or renal disease.3. Draw blood glucose sample prior to administering
SIDE EFFECTS:	Few in emergency setting
DOSAGE:	IV: 0.25-0.5 unit IM: 1 mg
ROUTE:	IV or IM
HOW SUPPLIED:	1 mg
PEDIATRIC DOSAGE:	0.03 mg/kg

IPECAC

CLASS:	Emetic
ACTIONS:	<ol style="list-style-type: none">1. Irritates the enteric tract2. Acts on the vomiting center of the brain
INDICATIONS:	Poisoning in the conscious patient
CONTRAINDICATIONS:	<ol style="list-style-type: none">1. Altered LOC2. Strong Acids, Bases, or Alkalis3. Petroleum distillates4. Antiemetic OD's
PRECAUTIONS:	<ol style="list-style-type: none">1. Monitor potency of airway to prevent aspiration2. Contact Poison control before administration? 1-800-POISON-1
SIDE EFFECTS:	Rare
DOSAGE:	30 ml (1 oz) followed by 15 ml/kg of warm water
ROUTE:	Oral
HOW SUPPLIED:	Bottle
PEDIATRIC DOSAGE:	<1: 10 ml 1-12: 15 ml 12<: 30 ml

ISOPROTERENOL (ISUPREL)

CLASS:	Sympathomimetic
ACTION:	<ol style="list-style-type: none">1. Beta 1: Increases Inotropic & Chronotropic effects2. Beta 2: Causes Bronchodilation3. Increase heart O2 demand
INDICATIONS:	Last resort in management of symptomatic bradycardias (Atropine and Pacing should precede this therapy)
CONTRAINDICATIONS:	<ol style="list-style-type: none">1. AMI's2. Cardiogenic shock3. Do not use with Epinephrine
PRECAUTIONS:	<ol style="list-style-type: none">1. Ventricular irritability2. Deactivated by alkaline solutions
SIDE EFFECTS:	<ol style="list-style-type: none">1. Tachyarrhythmias, PVC's, & Angina2. Tremor, Palpitations and headache3. Anxiety, Sweating, & Hypotension4. Can increase size of infarct due to increased myocardium O2 demand
DOSAGE:	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
ROUTE:	IV infusion only
HOW SUPPLIED:	Ampules: 1 mg/ml or 1 mg/5 ml
PEDIATRIC DOSAGE:	0.1 mcg/kg/min

LABETALOL (NORMODYNE/TRANDATE)

CLASS:	Sympathetic blocker
ACTION:	<ol style="list-style-type: none">1. Selectively blocks Alpha 12. Nonselectively blocks Beta receptors.
INDICATIONS:	Hypertensive crisis
CONTRAINDICATIONS:	<ol style="list-style-type: none">1. Bronchial asthma2. Congestive heart failure3. Heart block4. Bradycardia5. Bradycardia6. Cardiogenic shock
PRECAUTIONS:	<ol style="list-style-type: none">1. Constantly monitor Vitals and EKG.2. Atropine should be available
SIDE EFFECTS:	<ol style="list-style-type: none">1. Bradycardia2. Heart block3. Congestive heart failure4. Bronchospasm5. Postural hypotension
DOSAGE:	<ol style="list-style-type: none">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.2. 200 mg placed in 500 ml D5W to deliver 2mg/minute.
ROUTE:	IV infusion or slow IVP as described earlier.
HOW SUPPLIED:	100mg vial (5mg/ml in 20ml)
PEDIATRIC DOSAGE:	Safety in children has not been established.

LIDOCAINE (PAGE 1 OF 2)

CLASS:	Antiarrhythmic
ACTION:	<ol style="list-style-type: none"> 1. Suppress ventricular ectopy 2. Increase VF threshold 3. Reduce electrical impulse through heart
INDICATIONS:	<ol style="list-style-type: none"> 1. Malignant PVC's <ol style="list-style-type: none"> 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:	<ol style="list-style-type: none"> 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:	<ol style="list-style-type: none"> 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:	<ol style="list-style-type: none"> 1. Anxiety, drowsiness, dizziness, and confusion 2. Nausea, vomiting, & Convulsions 3. Widening of QRS 4. Hypotension, numbness, slurred speech, paresthesias

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LIDOCAINE (Page 2 of 2)

DOSAGE:	<p><i>Cardiac Arrest VT/VF:</i> 1.5 mg/kg every 5 min to max of 3.0 mg/kg</p> <p><i>VT with Pulse & Wide Complex Tachycardia:</i> 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</p> <p><i>PVC's:</i> 0.5-1.5 mg/kg every 5-10 min max of 3.0 mg/kg</p> <p><i>Drip:</i> 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</p>
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

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MAGNESIUM SULFATE

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

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MICRONEFRIN / NEO-SYNEPHRINE**(Racemic Epinephrine)
(Phenylephrin Hydrochloride)**

CLASS:	Sympathomimetic (Adrenergic)
ACTION:	<ol style="list-style-type: none"> 1. Beta 2: Bronchodilation: PRIMARY 2. Beta 1: Positive Chronotrope Positive Inotrope
INDICATIONS:	Croup (Laryngotracheobronchitis)
CONTRAINDICATIONS:	<ol style="list-style-type: none"> 1. Epiglottitis 2. Allergy to medication
PRECAUTIONS:	<ol style="list-style-type: none"> 1. Monitor vitals and ECG 2. USE ONLY ONCE IN PREHOSPITAL SETTING due to SEVERE TACHYCARDIAS
SIDE EFFECTS:	<ol style="list-style-type: none"> 1. Palpitations 2. Anxiety 3. Headache
DOSAGE:	0.25-0.75 ml of a 2.25% solution in 2.0 ml of NS
ROUTE:	Inhalation
HOW SUPPLIED:	Drops Spray
PEDIATRIC DOSAGE:	Same as Adult

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MORPHINE SULFATE

CLASS:	Narcotic
ACTION:	1. CNS depressant 2. Vasodilation 3. Analgesic 4. Decrease myocardial O ₂ demand
INDICATIONS:	1. Severe pain (i.e. Chest Pain) 2. Pulmonary edema
CONTRAINDICATIONS:	1. Head injury 2. Volume depletion 3. Undiagnosed abdominal pain 4. Allergy to med 5. Respiratory depression or any COPD 6. Other CNS depressant drugs on board 7. MAO inhibitors, antidepressants, & tricyclics
PRECAUTIONS:	1. Respiratory depression (Narcan should be available) 2. Hypotension
SIDE EFFECTS:	1. Dizziness 2. Altered level of consciousness 3. Severe Nausea & Vomiting 4. Increases vagal tone: Bradycardias 5. Respiratory depression
DOSAGE:	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
ROUTE:	IV, IM
HOW SUPPLIED:	Ampules & Tubex prefilled cartridges: 10 mg/ml
PEDIATRIC DOSAGE:	0.1-0.2 mg/kg IV

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NALOXONE (NARCAN)

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

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NIFEDIPINE (PROCARDIA)

CLASS:	Calcium channel blocker
ACTION:	1. Relaxes smooth muscle causing arteriolar vasodilation. 2. Decreases peripheral vascular resistance 3. Inhibits influx of calcium into the myocardium and smooth muscle and thereby inhibits the contractile process. 4. Decreases myocardial workload
INDICATIONS:	1. Severe hypertension 2. Angina pectoris
CONTRAINDICATIONS:	1. Allergy to med 2. Hypotension 3. Do not give to patients who receive IV beta blockers
PRECAUTIONS:	1. Monitor BP for hypotension 2. May worsen CHF
SIDE EFFECTS:	Dizziness, flushing, nausea, headache, and weakness, hypotension
DOSAGE:	10 mg SL (Puncture capsule and place or squeeze under tongue)
ROUTE:	SL, Oral
HOW SUPPLIED:	Gel Capsules: 10 mg or 20 mg
PEDIATRIC DOSAGE:	0.25-0.5 mg/kg

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NITROGLYCERIN (NITROSTAT)

CLASS:	Antianginal
ACTION:	1. Smooth muscle relaxant 2. Reduces cardiac work 3. Dilates coronary arteries 4. Dilates systemic arteries
INDICATIONS:	1. Angina pectoris 2. Chest pain associated with MI 3. Hypertension (Sys. >200 OR Dias. > 120) 4. CHF
CONTRAINDICATIONS:	1. Children under 12 2. Hypotension
PRECAUTIONS:	1. Monitor BP 2. Syncope 3. Protect med from light 4. Expires quickly once bottle open
SIDE EFFECTS:	Headache (most common), Dizziness and Hypotension
DOSAGE:	1 tab repeated up to 3 times
ROUTE:	SL, IV, Topical
HOW SUPPLIED:	Tablet: 0.4 mg (1/150 grain)
PEDIATRIC DOSAGE:	Not indicated for children under 12

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NITROUS OXIDE

CLASS:	Gas/Analgesic
ACTION:	CNS depressant
INDICATIONS:	1. Musculoskeletal pain especially fractures 2. Burns 3. Suspected ischemic chest pain 4. Severe anxiety including hyperventilation
CONTRAINDICATIONS:	1. Patients who cannot understand verbal orders 2. Intoxication with alcohol or drugs 3. Head-injury patients with altered LOC 4. COPD, Pulm. Edema, or Pulm. Embolism 5. Thoracic injury with suspicious pneumothorax 6. Abdominal pain, distension or possible bowel obstruction 7. Shock
PRECAUTIONS:	1. Use in well ventilated area 2. Gas -scavenging system recommended 3. May not work at low temps 4. Evaluate Breath Sounds prior to administration
SIDE EFFECTS:	Headache, dizziness, giddiness, nausea and vomiting, flushed feeling
DOSAGE:	Self administered using fixed 50% nitrous and 50% O2 blender
ROUTE:	Inhalation only
HOW SUPPLIED:	Gas Cylinders
PEDIATRIC DOSAGE:	Self administered only

NORCURON (VECURIUM)

CLASS:	Nondepolarizing Neuromuscular Blocker
ACTION:	1. Competes with acetylcholine for cholinergic receptor sites on the postjunctional membrane. 2. Paralysis of skeletal muscles 3. ONSET: 1 min 4. DURATION: 25-30 minutes
INDICATIONS:	RSI
CONTRAINDICATIONS:	Allergy to medication
PRECAUTIONS:	MUST BE EXPERIENCED WITH MEDICATION 1. Have advanced airway equipment readily available 2. Drugs that enhance effects: Lidocaine, Procainamide, Beta-Blockers, Magnesium Sulfate, other neuromuscular blockers
SIDE EFFECTS:	1. Respiratory depression & Apnea 2. Aspiration 3. Arrhythmias, Bradycardia, Sinus Arrest 4. Increased intracranial pressure
DOSAGE:	1 st Dose: 0.08-0.10 mg/kg
ROUTE:	IV
HOW SUPPLIED:	Vial: 10 mg/10 ml MEDICATION MUST BE RECONSTITUTED
PEDIATRIC DOSAGE:	Same as adult

NOREPINEPHRINE (LEVOPHED)

CLASS:	Sympathomimetic
ACTION:	1. Causes peripheral vasoconstriction 2. Alpha sympathomimetic 3. Mild Beta effects: Increase inotropic effects 4. Increases myocardial O2 requirements
INDICATIONS:	1. Hypotension refractory to other sympathomimetics 2. Neurogenic shock 3. Cardiogenic shock
CONTRAINDICATIONS:	1. Hypotensive states due to hypovolemia 2. Hypoxia & Hypercarbia 3. Patients taking Antidepressants 4. Do not administer with Sodium Bicarbonate
PRECAUTIONS:	1. Deactivated by alkaline solutions 2. Monitor BP 3. Use large vein for administration
SIDE EFFECTS:	1. Palpitations 2. Severe Hypertension 3. Local venous irritation & tissue necrosis 4. Headache, sweating, N/V 5. Ventricular dysrhythmias
DOSAGE:	2-12 mcg/min Method: 4mg in 500ml D5W giving concentration of 8 mcg/ml
ROUTE:	IV infusion only
HOW SUPPLIED:	Ampule: 4 mg/4 ml
PEDIATRIC DOSAGE:	0.01-0.5 mcg/kg/min (very rare)

NUBAIN (NALBUPHINE)

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

OXYGEN

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

PAVULON (PANCURONIUM BROMIDE)

CLASS:	Nondepolarizing Neuromuscular Blocker
ACTION:	1. Competes with acetylcholine for cholinergic receptor sites on the postjunctional membrane. 2. Paralysis of skeletal muscles 3. ONSET: 30-40 seconds 4. DURATION: 35-45 minutes
INDICATIONS:	RSI
CONTRAINDICATIONS:	Allergy to medication
PRECAUTIONS:	MUST BE EXPERIENCED WITH MEDICATION 1. Have advanced airway equipment readily available 2. Drugs that enhance effects: Lidocaine, Procainamide, Beta-Blockers, Magnesium Sulfate, other neuromuscular blockers
SIDE EFFECTS:	1. Respiratory depression & Apnea 2. Aspiration 3. Arrhythmias, Bradycardia, Sinus Arrest 4. Increased intracranial pressure
DOSAGE:	1 st Dose: 0.04-0.1 mg/kg IV Q 20-40 min 2 nd Dose: 0.01-0.02 mg/kg
ROUTE:	IV
HOW SUPPLIED:	Vial: 4 mg/2 ml or 10 mg/5 ml (2 mg/ml)
PEDIATRIC DOSAGE:	Same as adult

PHENERGAN (PROMETHAZINE)

CLASS:	Antihistamine (H1 antagonist)
ACTION:	1. Mild anticholinergic activity 2. Antiemetic 3. Potentiates actions of analgesics
INDICATIONS:	1. Nausea & Vomiting 2. Motion sickness 3. To potentiate the effects of analgesics 4. Sedation
CONTRAINDICATIONS:	1. Comatose states 2. Patients who have received a large amount of depressants (involving alcohol)
PRECAUTIONS:	Avoid accidental intra-arterial injection
SIDE EFFECTS:	1. May impair mental and physical ability. 2. Drowsiness
DOSAGE:	12.5-25.0 mg
ROUTE:	IV and IM
HOW SUPPLIED:	Ampule
PEDIATRIC DOSAGE:	0.5 mg/kg

PROCAINAMIDE (PRONESTYL)

CLASS:	Antiarrhythmic
ACTION:	Slows conduction through myocardium by increasing electrical threshold of ventricle, Bundle of His & Purkinje system.
INDICATIONS:	1. PVC's refractory to Lidocaine 2. VF or VT refractory to Lidocaine 3. Wide Complex tachycardia
CONTRAINDICATIONS:	Should not be administered to patients with severe conduction disorders.
PRECAUTIONS:	1. Should not be used in Complete AV Block, bradycardia. 2. Digitalis Toxicity. 3. Preexisting QT prolongation. 4. Torsades de pointes.
SIDE EFFECTS:	1. Hypotension, ventricular fibrillation, AV block, widened QRS, bradycardia, asystole. 2. CNS depression, hallucination, confusion, dizziness, seizures. 3. Nausea, Vomiting, Fever
DOSAGE:	100 mg over 5 minutes or 20 mg/min for the following problems 1. VT: 20-30 mg/min, IV Push 2. VF Refractory to Lidocaine: 30 mg/min, IVP Note: End point of this med is as follows: 1. Suppression of dysrhythmia 2. Total of 17 mg/kg given 3. QRS widens greater than 50% 4. Hypotension develops If med suppresses VT, start a continuous infusion at 1-4 mg/min. Maintenance dose should be reduced in renal failure.
ROUTE:	IV infusion only.
HOW SUPPLIED:	Vial: 1 gm/10 ml or 1 gm/ 2 ml
PEDIATRIC DOSAGE:	Not indicated

PROPRANOLOL (INDERAL)

CLASS:	Sympatholytic
ACTION:	1. Nonselectively blocks Beta-1 & 2 receptors 2. Decreases sinus rate 3. Slows atrial contractions 4. Delays conduction through AV node 5. Suppresses spontaneous electrical activity & muscle force.
INDICATIONS:	1. Primary indication: SVT 2. Prevents recurrent VT with pulse refractory to lidocaine 3. Tachyarrhythmias due to digitalis toxicity (Slows ventricular rate in A-fib & A-flutter) 4. Reduce the likelihood of VF after AMI in patients not requiring thrombolytic therapy
CONTRAINDICATIONS:	1. Any depressed cardiac function 2. Any Bradycardia 3. COPD or CHF or Asthma 4. Do not give with Sympathomimetics (Epi), Aminophylline or Cardiac Depressants
PRECAUTIONS:	1. Atropine and Isuprel should be readily available
SIDE EFFECTS:	1. Bradycardia & Heart Blocks 2. Hypotension, N/V 3. CHF 4. Bronchospasm
DOSAGE:	1st Dose: 1 mg over 5 min 2nd Dose: 0.5 mg over 5-10 min
ROUTE:	SLOW IV Bolus
HOW SUPPLIED:	Vial: 1 mg/ml
PEDIATRIC DOSAGE:	0.01 mg/kg

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SODIUM BICARBONATE

CLASS:	Alkalinizing agent
ACTION:	1. Neutralizes excess acids 2. Increases pH
INDICATIONS:	1. Metabolic Acidosis a) Poisoning: Ethylene Glycol OR Tricyclics b) Post Resuscitation 2. Hyperkalemia 3. Promote excretion of barbiturates 4. Promote excretion of myoglobin after crush injury or electrocution. 4. Status Asthmatics 5. prolonged CPR 6. Severe acidosis refractory to hyperventilation
CONTRAINDICATIONS:	1. Hypokalemia 2. CHF
PRECAUTIONS:	1. Correct dosage essential to avoid elevating pH to high 2. Deactivates catecholamines 3. Precipitates with calcium 4. Delivers large sodium load
SIDE EFFECTS:	1. Alkalosis 2. Increases vascular volume (hypertonic) resulting in Pulmonary Edema 3. Hypokalemia & Dysrhythmias 4. Can transiently increase PCO2 so hyperventilation is still required
DOSAGE:	1 mEq/kg followed by 0.5 mEq/kg every 10 minutes as indicated by blood gases
ROUTE:	IV
HOW SUPPLIED:	Prefilled Syringe: Adult: 50 mEq/50 ml 8.4% Pedi: 10 mEq/10 ml 8.4%
PEDIATRIC DOSAGE:	1 mEq/kg followed by 0.5 mEq/kg every 10 minutes as indicated by blood gases

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SOLU-MEDROL (METHYLPREDNISOLONE)

CLASS:	Steroid
ACTION:	1. Anti-inflammatory 2. Suppresses immune response (especially in allergic reactions)
INDICATIONS:	1. Severe anaphylaxis 2. Asthma/COPD 3. Possibly effective as an adjunctive agent in the management of spinal cord injury
CONTRAINDICATIONS:	None in emergency setting
PRECAUTIONS:	1. Must be reconstituted and used promptly. 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)
SIDE EFFECTS:	1. GI Bleeding 2. Prolonged wound healing 3. Suppression of natural steroids
DOSAGE:	General Usage 125-250 mg IVP over 5-10 minutes Spinal Cord Injury Initial bolus of 30mg/kg administered over 15 minutes; followed by a maintenance infusion of 5.4 mg/kg/hr
ROUTE:	IV and IM
HOW SUPPLIED:	125 mg Vial unmixed
PEDIATRIC DOSAGE:	30 mcg/kg

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SUCCINYLCHOLINE (ANECTINE)

CLASS:	Depolarizing Neuromuscular Blocker
ACTION:	1. Depolarizes skeletal muscle 2. ONSET: 60-90 seconds 3. DURATION: 4-5 minutes
INDICATIONS:	RSI
CONTRAINDICATIONS:	1. Allergy to medication 2. Penetrating eye trauma
PRECAUTIONS:	MUST BE EXPERIENCED WITH MEDICATION 1. Have advanced airway equipment readily available 2. Drugs that enhance effects: Lidocaine, Procainamide, Beta-Blockers, Magnesium Sulfate, other neuromuscular blockers
SIDE EFFECTS:	1. Respiratory depression & Apnea 2. Aspiration 3. Arrhythmias, Bradycardia, Sinus Arrest 4. Increased intracranial pressure
DOSAGE:	1-1.5 mg/kg
ROUTE:	IV (preferred) or IM
HOW SUPPLIED:	Vial: 200 mg/10 ml (20 mg/ml)
PEDIATRIC DOSAGE:	Same as adult

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THIAMINE (B1)

CLASS:	Vitamin
ACTION:	Assists in converting glucose into energy
INDICATIONS:	<ol style="list-style-type: none">1. Coma of unknown origin.2. Chronic Alcoholism with associated coma3. Delirium tremens4. Precursor of D50 to prevent Wernicke's Encephalopathy (problem with neurotransmitters in brain which results in retained altered LOC) in alcoholics5. Beriberi (Thiamine deficiency)
CONTRAINDICATIONS:	None
PRECAUTIONS:	(When giving with D50 & Narcan, give in following order: 1. Thiamin, 2. D50, 3. Narcan)
SIDE EFFECTS:	<ol style="list-style-type: none">1. Slight vasodilation & hypotension2. Overdoses may result in weakness, dyspnea and respiratory failure (RARE)
DOSAGE:	100 mg
ROUTE:	IV or IM
HOW SUPPLIED:	Vial: 100 mg/1 ml
PEDIATRIC DOSAGE:	Not Indicated

VASOPRESSIN (ADH: ANTI-DIURETIC HORMONE)

CLASS:	Anti-Diuretic Hormone
ACTION:	<ol style="list-style-type: none">1. Vasoconstriction <p>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.</p> <ol style="list-style-type: none">2. Contraction of smooth muscles of the gut
INDICATIONS:	<ol style="list-style-type: none">1. VF/Pulseless VT2. Slow or Stop GI bleeding3. Diabetes Insipidus
CONTRAINDICATIONS:	Allergy to medication
PRECAUTIONS:	Use with caution in patients with impaired renal function, CHF, Asthma, liver disease, active seizure activity, and elderly.
SIDE EFFECTS:	<ol style="list-style-type: none">1. Bradycardia, Hypertension2. Arrhythmias, Bronchospasm3. Angioedema, N/V, Abdominal Cramping
DOSAGE:	40 units (2 ml) q 30 min (20 min half life) SINGLE DOSE RECOMMENDED
ROUTE:	IV ONLY
HOW SUPPLIED:	Vial or Ampule (20 u / ml)
PEDIATRIC DOSAGE:	Not Indicated (Efficacy has yet to be established)

VERAPAMIL (ISOPTIN, CALAN)

CLASS:	Calcium channel blocker
ACTION:	<ol style="list-style-type: none">1. Delays conduction through AV node2. Slows SA no discharge3. Decreases ventricular response rate4. Decreases myocardial O2 demand5. Antagonizes Calcium effects
INDICATIONS:	<ol style="list-style-type: none">1. PSVT refractory to Adenosine & Vagal maneuvers2. A-Fib & A-Flutter with rapid ventricular response
CONTRAINDICATIONS:	<ol style="list-style-type: none">1. Cardiogenic shock2. Heart failure3. Hypotension due to tachycardias4. Sick Sinus Syndrome (Wandering pacemaker)5. Patient's on Beta-Blockers: Potentiates effects of verapamil and may cause heart failure6. AMI7. Wide complex tachycardias
PRECAUTIONS:	Patients taking Digitalis
SIDE EFFECTS:	<ol style="list-style-type: none">1. Nausea, Vomiting, Hypotension, and dizziness2. Headache3. Pulmonary edema due to heart failure4. AV Blocks, Bradycardias and Cardiac Arrest
DOSAGE:	2.5-5.0 mg SLOW IVP (Over 1-2 minutes) repeated 20-30 minutes if PSVT does not convert
ROUTE:	IV
HOW SUPPLIED:	Ampule: 5 mg/2 ml
PEDIATRIC DOSAGE:	Not Indicated

VERSED (MIDAZOLAM)

CLASS:	Tranquilizer
ACTION:	Sedative / Hypnotic
INDICATIONS:	<ol style="list-style-type: none">1. Premedication prior to Cardioversion2. Premedication prior to RSI3. Acute anxiety states
CONTRAINDICATIONS:	<ol style="list-style-type: none">1. Allergy to medication2. Narrow angle glaucoma3. Shock
PRECAUTIONS:	<ol style="list-style-type: none">1. Advanced airway equipment MUST be readily available2. BE PREPARED FOR RESPIRATORY DEPRESSION3. FLUMAZENIL should be available4. Dilute with NS prior to administration
SIDE EFFECTS:	<ol style="list-style-type: none">1. Respiratory Depression and Apnea2. Drowsiness3. Hypotension4. Amnesia
DOSAGE:	Slow IV: 1.0-2.5 mg IV Titrated to effect IM: 0.07-0.08 mg/kg
ROUTE:	IV or IM
HOW SUPPLIED:	5 mg/ml
PEDIATRIC DOSAGE:	0.03 mg/kg

Intravenous Fluids

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

CLASS:	Isotonic Crystalloid Solution
DESCRIPTION:	Frequently used on management of hypovolemic shock. It is an isotonic crystalloid solution containing electrolytes in the following concentration. 1. Sodium (Na ⁺) 130 mEq/L 2. Potassium (K ⁺) 4 mEq/L 3. Calcium (Ca ⁺⁺) 3mEq/L 4. Chloride (Cl ⁻) 109 mEq/L 5. Lactic Acid (Lactate) 28 mEq/L (This acts as a buffer)
MECHANISM OF ACTION:	Replaces water and electrolytes
INDICATIONS:	1. Hypovolemic Shock 2. TKO/KVO IV 3. Burn Patients
CONTRAINDICATIONS:	1. Use with caution in patients with CHF and Renal Failure 2. Do not hang with blood
PRECAUTIONS:	Monitor patient to prevent circulatory overload
SIDE EFFECTS:	Rare
INTERACTIONS:	Few in emergency situations
DOSAGE:	1. 1 L blood lost = 3 L of LR 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
ROUTE:	IV infusion
HOW SUPPLIED:	250, 500 & 1000 ml bags and bottles

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5% DEXTROSE IN WATER (D5W)

CLASS:	Hypotonic dextrose-containing solution
DESCRIPTION:	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
MECHANISM OF ACTION:	Provides nutrients in the form of dextrose and free water
INDICATIONS:	1. IV access for emergency drugs 2. For dilution of concentrated drugs for IV infusion
CONTRAINDICATIONS:	Do Not use in patients that are hypovolemic
PRECAUTIONS:	1. Dextrose containing solutions are acidic and may produce local venous irritation. 2. SQ. administration from extravasation may result in tissue necrosis. 3. Monitor for signs of circulatory overload. 4. When using on hypoglycemic patient, draw blood prior to administration.
SIDE EFFECTS:	Rare
INTERACTIONS:	Do Not use with Dilantin (Phenytoin) or Inocor (Amrinone). Medications precipitate out.
DOSAGE:	Administer with a 60gtt/ml (Mini) set at KVO/TKO
ROUTE:	IV infusion
HOW SUPPLIED:	50, 100, 150, 250, 500, 1000 ml bags or bottles

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0.9% SODIUM CHLORIDE (NS) (NORMAL SALINE)

CLASS:	Isotonic Crystalloid Solution
DESCRIPTION:	Contains the following 1. 154 mEq/L of Na ⁺ 2. 154 mEq/L of Cl ⁻ Concentration is near that of blood, the solution is considered Isotonic.
MECHANISM OF ACTION:	Replaces water and electrolytes
INDICATIONS:	1. Heat related problems 2. Freshwater drowning 3. Hypovolemia 4. Diabetic Ketoacidosis 4. TKO/KVO IV
CONTRAINDICATIONS:	Use with caution in patients with CHF and Renal Failure
PRECAUTIONS:	In cases where large amounts of fluid are needed, it might be prudent to use LR to avoid depletion of other electrolytes.
SIDE EFFECTS:	Rare
INTERACTIONS:	Few in emergency setting
DOSAGE:	Hypolemia 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 Medical Patients (Non-hypovolemic) 1. Can use smaller IV catheter (20-22 ga) 2. Consider using with 60 gtt/ml set
ROUTE:	IV infusion
HOW SUPPLIED:	50, 100, 250, 500, and 1000 ml bags and bottles

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MEDICATION QUIZ

Name: _____ Date: _____

DRUG NAME: _____

CLASS: _____

ACTION: _____

INDICATIONS: _____

CONTRAINDICATIONS: _____

PRECAUTIONS: _____

SIDE EFFECTS: _____

DOSAGE: _____

ROUTE: _____

HOW SUPPLIED: _____

PEDIATRIC DO SAGE: _____

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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:

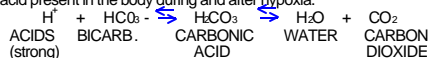
1. Digitoxin - the longest-acting cardiac glycoside.
2. Digoxin (Lanoxin) - the most popular cardiac glycoside.
3. Ouabain - has a rapid onset and a relatively short duration of effect.
4. Deslanoside (Cedilanid - D[®]) - the most rapidly acting of all the digitalis preparations.

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

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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

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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

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