



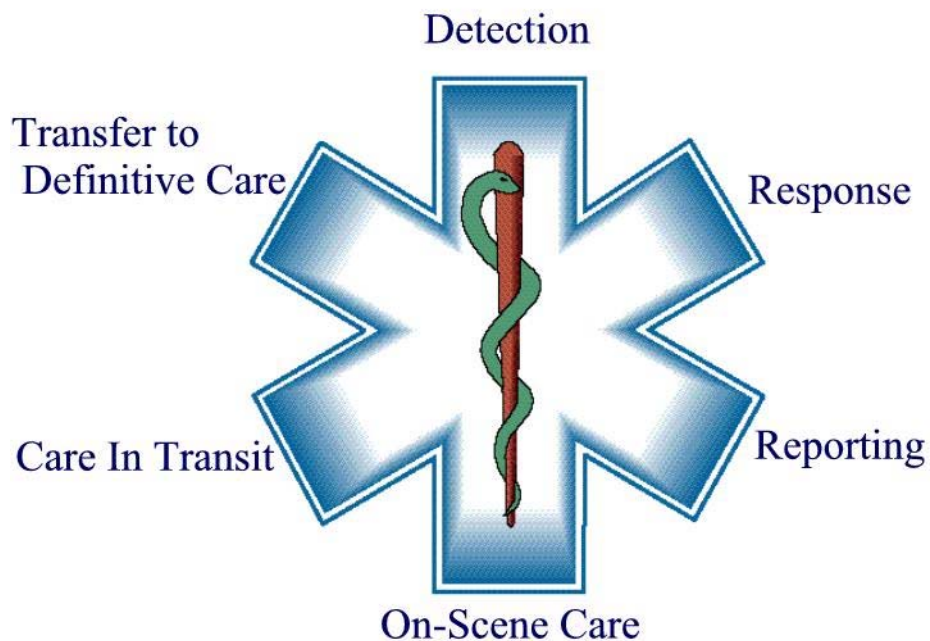
**SOUTHWEST GENERAL HEALTH CENTER**  
*Partnering with* **University Hospitals Health System**

*EMS Services*

***PRE-HOSPITAL CARE***

***MEDICAL CONTROL***

***PROTOCOLS AND PROCEDURES***





**PHARMACOLOGY REVIEW**

**I. ACTIONS OF DRUGS**

1. Local effects
2. Systemic effects

**II. EFFECTS DEPENDS UPON**

1. Age of patient
2. Condition of patient
3. Dosage
4. Route of administration

**III. ROUTE OF ADMINISTRATION**

**1. Intravenous (IV)**

- Most rapidly effective
- Most dangerous
- Give SLOWLY through an established IV line
- I.O. to be given only if IV is unobtainable in an unconscious patient.

**2. Intramuscular (IM)**

- Takes longer to act
- Longer duration of action
- Deltoid or Gluteus Maximus site
- Absorption VERY dependent on blood flow

**3. Subcutaneous (subcut)**

- Slower and more prolonged absorption
- Under skin of upper arms, thigh, abdomen

**4. Inhalation**

- Bronchodilators
- Steroids

**5. Endotracheal (only administer through ET as a last resort)**

- Epinephrine, Atropine, Lidocaine, Narcan, Vasopressin
- The optimal dose of most drugs given by ET is unknown
- ET drugs deliver low blood levels. All drugs except Epi are given 2-3x's normal dose.
- Epi in low levels may produce transient, detrimental vasodilatation thus...  
Epi down the ET Tube are given 10 x's the normal dose.
- Instill the drug while briefly holding compressions, follow with 5mL (smaller with neonates) of NS flush, followed by 5 positive-pressure ventilations.

**6. Sublingual (SL)**

- Rapid absorption

**7. Oral**

- Instant Glucose
- Baby Aspirin

**8. Rectal**

- Rapid but unpredictable absorption

**IV. RATES OF ABSORPTION**

1. "Directly Related to Route of Administration"

- IV (fastest)
- IO
- IM
- Subcut
- Oral (slowest)
- Rectal

**V. ELIMINATION**

1. Many methods
2. Usually metabolized by the liver
3. Eliminated by the kidneys, lungs, skin

6. **TERMS**
  1. Indications – conditions drugs used for
  2. Contraindications – conditions drugs not used for
  3. Depressants - lessens / decreases activity
  4. Stimulant - increases activity
  5. Physiologic action - action from normal body amounts of drug
  6. Therapeutic action - beneficial action expected
  7. Untoward reaction - harmful side effect
  8. Irritation - damage to tissue
  9. Antagonism - opposition between effects of drugs
  10. Cumulative action - increased action after several doses
  11. Tolerance - decreased effects after repeated doses
  12. Synergism - combined effects greater than sum of parts
  13. Potentiation - enhancement of one drug by another
  14. Habituation - drug necessary for feeling of "well being"
  15. Idiosyncrasy - unexpected, abnormal response to a drug
  16. Hypersensitivity - exaggerated response, allergy
  
7. **AUTONOMIC NERVOUS SYSTEM**
  1. Parasympathetic - controls vegetative functions
  2. Sympathetic - "flight or fight"
  
8. **PARASYMPATHETIC NERVOUS SYSTEM**
  1. Mediated by vagus nerve
  2. Acetylcholine is transmitter (cholinergic)
  3. Atropine is Acetylcholine Blocker
  
9. **SYMPATHETIC NERVOUS SYSTEM**
  1. Mediated by nerves from sympathetic chain
  2. Norepinephrine is transmitter (adrenergic)
  3. Epinephrine is released from adrenals
  
10. **SYMPATHETIC RECEPTORS**
  1. Alpha (a)
  2. Beta (b)
  
11. **COMMON SYMPATHETIC AGENTS**
  1. Isoproterenol (Isuprel) - pure BETA
  2. Epinephrine (Adrenalin) - predominately BETA
  3. Dobutamine (Dobutrex) - predominately BETA, slight ALPHA
  4. Norepinephrine (Levophed) - predominately ALPHA
  5. Dopamine (Intropin) - BETA at low dose: ALPHA at high dose
  6. Metaraminol (Aramine) - predominately ALPHA
  7. Phenylephrine (Neo-Synephrine) - pure ALPHA
  
12. **SYMPATHETIC BLOCKERS**
  1. Propranolol (Inderal) - BETA BLOCKER
  
13. **DRUG ADMINISTRATION**

**Appropriate:**

  1. Medication selection based on protocol
  2. Visually examine medication for particulates or discoloration and that the medication has not expired
  3. Contraindications are reviewed prior to administration
  4. Route is determined by protocol
  5. Dose selection based on protocol
  6. Dilution is per protocol
  7. Rate is per protocol

<b>MEDICATIONS</b>
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<b>ADENOSINE (Adenocard)</b>
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P	EMT – P	P
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<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Slows conduction time and can interrupt re-entrant pathways through the AV node.</li> <li>2. Slows the sinus rate.</li> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Supra Ventricular Tachycardia</li> <li>2. Paroxysmal Supra Ventricular Tachycardia</li> </ol>
<b>CONTRA-INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Atrial fibrillation</li> <li>2. Atrial flutter</li> <li>3. Ventricular tachycardia</li> <li>4. Wolf Parkinson's White</li> </ol>
<b>PRECAUTIONS</b>	It is helpful to inform the patient of likely side effects prior to medication administration.
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Facial flushing</li> <li>2. Shortness of breath / dyspnea</li> <li>3. Chest discomfort</li> <li>4. Brief period of sinus arrest</li> <li>5. Headache</li> <li>6. Dizziness</li> <li>7. Hypotension</li> </ol>
<b>SUPPLIED</b>	6mg / 2mL and 12mg / 4mL vials or Pre-filled syringes.
<b>ADULT DOSAGE</b>	<p><b>Initial Dose:</b> 6mg rapid IVP (over 1-3 sec.) immediately followed with a 20 mL saline flush.</p> <p><b>Repeat Dose:</b> If no response is observed after 1 min., administer 12mg rapid IVP (over 1-3 sec.) immediately followed with a 20 mL saline flush.</p>
<b>PEDIATRIC DOSAGE</b>	<p><b>Initial Dose:</b> 0.1 mg/kg rapid IVP followed with a 10 mL saline flush.</p> <p><b>Repeat Dose:</b> If no response is observed after 1-2 min., administer 0.2mg/kg rapid IVP followed with a 10 mL saline flush.</p>
<b>GENERAL CONSIDERATIONS</b>	<ul style="list-style-type: none"> <li>• Adenosine has a short half life, and should be administered rapidly followed by a rapid IV flush.</li> <li>• Reassess after each medication administration and refer to the appropriate protocol and treat accordingly.</li> <li>• Perform a 12 Lead EKG prior to the administration of Adenosine and after the rhythm converts.</li> </ul>

<b>MEDICATIONS</b>
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<b>ALBUTEROL (Proventil / Ventolin)</b>
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<b>I</b>	<b>EMT – I</b>	<b>I</b>
<b>P</b>	<b>EMT – P</b>	<b>P</b>

<b>ACTIONS</b>	Acts directly on the beta 2 adrenergic receptors to relax bronchial smooth muscle, resulting in reduced airway resistance and relief of bronchospasm.
<b>INDICATIONS</b>	To reverse bronchospasm (wheezing).
<b>CONTRAINDICATIONS</b>	Known hypersensitivity.
<b>PRECAUTIONS</b>	Use precaution when administering to pregnant women or patients with cardiac history.
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Headache</li> <li>2. Drowsiness</li> <li>3. Dizziness</li> <li>4. Restlessness</li> <li>5. Nausea / Vomiting</li> <li>6. Tachycardia</li> <li>7. Palpitations</li> <li>8. Peripheral vasodilatation</li> <li>9. Tremors</li> <li>10. PVCs</li> </ol>
<b>SUPPLIED</b>	Unit dose 2.5 mg in 3 mL of NS
<b>ADULT DOSAGE</b>	2.5 mg in 3 mL via unit dose nebulizer and 6 lpm oxygen (10 lpm if using a face mask).
<b>PEDIATRIC DOSAGE</b>	2.5 mg in 3 mL via unit dose nebulizer and 6 lpm oxygen (10 lpm if using a face mask) ½ dose if weight is less than 10 kg
<b>GENERAL CONSIDERATIONS</b>	<ul style="list-style-type: none"> <li>• May repeat treatment if relief is obtained</li> </ul>

<b>MEDICATIONS</b>
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<b>AMIODARONE (Cordarone)</b>
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P	EMT – P	P
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<b>ACTIONS</b>	Prolongs the refractory period and action potential duration.
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Ventricular fibrillation</li> <li>2. Pulseless Ventricular Tachycardia</li> <li>3. Supra Ventricular Tachycardia</li> <li>4. Atrial fibrillation (refractory to cardioversion)</li> <li>5. Atrial flutter (refractory to cardioversion)</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hypersensitivity</li> <li>2. Renal failure</li> <li>3. If Lidocaine is used, <b>DO NOT</b> use Amiodarone</li> </ol>
<b>PRECAUTIONS</b>	Second and Third degree AV block
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Vasodilatation</li> <li>2. Hypotension</li> <li>3. Prolonged QT interval</li> </ol>
<b>SUPPLIED</b>	150 mg/mL vial injectable
<b>ADULT DOSAGE</b>	<p><b><i>Ventricular Fibrillation and Pulseless Ventricular Tachycardia:</i></b>  300 mg mixed in 15 – 20 mL D5W IV push  (May be repeated one time at 150 mg IV)</p> <p><b><i>Wide Complex Tachycardia:</i></b>  150 mg IV mixed in 50 mL D5W over 10 minutes</p>
<b>PEDIATRIC DOSAGE</b>	<p><b><i>Ventricular Fibrillation and Pulseless Ventricular Tachycardia:</i></b>  5 mg/kg IV/IO over 2-3 minutes  If the rhythm converts to a perfusing rhythm, then administer 2.5 Wide Complex Tachycardia per Medical Control mg/kg IV/IO over 2-3 minutes.</p>
<b>GENERAL CONSIDERATIONS</b>	<ul style="list-style-type: none"> <li>• Amiodarone is the preferred antiarrhythmic medication to treat ventricular arrhythmias.</li> <li>• Avoid excessive movement and shaking of the medication.</li> <li>• Amiodarone is mixed in D5W (not NS)</li> </ul>

<b>MEDICATIONS</b>
<b>ASPIRIN (ASA)</b>

<b>B</b>	<b>EMT-B</b>	<b>B</b>
<b>I</b>	<b>EMT - I</b>	<b>I</b>
<b>P</b>	<b>EMT - P</b>	<b>P</b>

<b>ACTIONS</b>	Blocks platelet aggregation
<b>INDICATIONS</b>	1. Chest pain suggestive of an MI 2. 12-Lead EKG indicating a possible MI
<b>CONTRAINDICATIONS</b>	1. Hypersensitivity 2. Active ulcer disease
<b>PRECAUTIONS</b>	1. GI bleeding 2. Upset stomach
<b>SIDE EFFECTS</b>	1. Heartburn 2. Nausea and vomiting
<b>SUPPLIED</b>	81 mg per chewable tablet
<b>ADULT DOSAGE</b>	324 mg 4 tablets
<b>PEDIATRIC DOSAGE</b>	Not recommended
<b>GENERAL CONSIDERATIONS</b>	

## MEDICATIONS

### ATROPINE SULFATE

**P**    **EMT – P**    **P**

<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Increases sinus node firing</li> <li>2. Increases conduction through the AV node by blocking activity</li> <li>3. Increases cardiac output</li> <li>4. Decreases ectopic beats or fibrillation of the ventricles</li> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Symptomatic sinus bradycardia</li> <li>2. Junctional escape and idioventricular beats</li> <li>3. Asystole</li> <li>4. Organophosphate poisoning / Nerve agent exposure</li> <li>5. Bradycardic PEA</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hypersensitivity</li> <li>2. Type 2 Second Degree AV Block</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Avoid use in atrial flutter or atrial fibrillation with a rapid ventricular response</li> <li>2. May increase myocardial oxygen demand</li> <li>3. May trigger tachy-dysrhythmias</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Dry mouth</li> <li>2. Blurred vision</li> <li>3. Flushed skin</li> <li>4. Urinary retention</li> <li>5. Headache</li> <li>6. Tachycardia</li> <li>7. Pupillary dilation</li> </ol>
<b>SUPPLIED</b>	Pre-filled syringes containing 1mg in 10 mL
<b>ADULT DOSAGE</b>	<p><b>Bradycardia:</b> 0.5-1 mg IV/IO (2-2.5 mg ETT) every 3-5 minutes (max dose 0.04 mg/kg)</p> <p><b>Asystole or Bradycardic Pulseless Electrical Activity:</b> 1 mg IV/IO (2-2.5 mg ETT) every 3-5 minutes (max dose 0.04 mg/kg)</p> <p><b>Organophosphate Poisoning:</b> 2-5 mg IV, repeat every 15-30 minutes until symptoms improve</p>
<b>PEDIATRIC DOSAGE</b>	<p><b>Bradycardia:</b> First dose - 0.02 mg/kg IV/IO (minimum dose 0.1 mg/kg, maximum single dose of 0.5 mg for a child and 1 mg for an adolescent). May repeat dose every 3 – 5 minutes. (maximum total dose of 1 mg for a child and 2 mg. for an adolescent).</p> <p><b>Organophosphate Poisoning:</b> 0.05 mg/kg IV until vitals improve</p>
<b>GENERAL CONSIDERATIONS</b>	

<b>MEDICATIONS</b>
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<b>DEXTROSE 50 % (D50)</b>
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<b>I</b>	<b>EMT – I</b>	<b>I</b>
<b>P</b>	<b>EMT – P</b>	<b>P</b>

<b>ACTIONS</b>	Restores circulating blood sugar
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Correction of altered mental status due to hypoglycemia</li> <li>2. Adult Blood Glucose less than 80 mg/dL, Child Blood Glucose less than 80 mg/dL, Newborn Blood Glucose less than 40 mg/dL</li> <li>3. Coma with associated hypoglycemia</li> <li>4. Delirium tremens with associated hypoglycemia</li> <li>5. Seizure or status epilepticus with associated hypoglycemia</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hyperglycemia</li> <li>2. No contraindications for hypoglycemic patients with altered mental status</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. A blood sample should be collected prior to dextrose administration (half / quarter dose might be sufficient dependant on blood sugar and patient symptoms and or circumstances)</li> <li>2. Use with caution for stroke patients</li> <li>3. Use a large vein to administer D50</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Extravasation of D50 may cause necrosis</li> <li>2. Hyperglycemia</li> </ol>
<b>SUPPLIED</b>	Pre-filled syringes and vials containing 50 mL of 50% dextrose (= 25g of dextrose)
<b>ADULT DOSAGE</b>	Dextrose 50% (D50) contains 25 grams: IV (half / quarter dose might be sufficient dependant on blood sugar and patient symptoms and or circumstances)
<b>PEDIATRIC DOSAGE</b>	<p><b>Child</b> Dextrose 25% (D25) 50/50% dilution with NS prior to administration 2-4 mL/kg IV/IO</p> <p><b>Infant:</b> D10% (10% dilution prior to administration) 5-10 mL IV/IO</p> <p>*(half / quarter dose might be sufficient dependant on blood sugar and patient symptoms and or circumstances)</p>
<b>GENERAL CONSIDERATIONS</b>	

<b>MEDICATIONS</b>
<b>DIAZEPAM (Valium)</b>

<b>I</b>	<b>EMT – I</b>	<b>I</b>
<b>P</b>	<b>EMT – P</b>	<b>P</b>

<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Sedation</li> <li>2. Anticonvulsant</li> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Status epilepticus</li> <li>2. Sedation prior to transcutaneous pacing and synchronized cardioversion in the conscious patient</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hypersensitivity</li> <li>2. Altered mental status of unknown origin</li> <li>3. Head injury</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Should be used with caution for hypotensive patients and patients with altered mental status</li> <li>2. Diazepam potentate's alcohol or other CNS depressants</li> <li>3. May cause respiratory depression, respiratory effort must be routinely monitored</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Light headed</li> <li>2. Motor impairment</li> <li>3. Impaired mental and psychomotor function</li> <li>4. Confusion</li> <li>5. Slurred speech</li> <li>6. Amnesia</li> <li>7. Irritability</li> <li>8. Respiratory depression</li> </ol>
<b>SUPPLIED</b>	In Pre-filled syringes of 2 mL (in a concentration of 5 mg/mL)
<b>ADULT DOSAGE</b>	<p><b>Status Epilepticus:</b> 5 mg slow IV/IO/IM/Rectally (may repeated 5-10 minutes one time, if seizure persists and patient systolic BP greater than 90 mmHg)</p> <p><b>Sedation Prior to Transcutaneous Pacing and Synchronized Cardioversion:</b> 2.5-5 mg slow IV</p>
<b>PEDIATRIC DOSAGE</b>	<b>Status Epilepticus:</b> 0.2 mg/kg slow IV/IO/IM/Rectally (max dose 10 mg)
<b>GENERAL CONSIDERATIONS</b>	

**MEDICATIONS**

10

**Diphenhydramine (Benadryl)**

<b>I</b>	<b>EMT - I</b>	<b>I</b>
<b>P</b>	<b>EMT - P</b>	<b>P</b>

<b>ACTIONS</b>	Blocks effects of histamine at H1- receptor sites.
<b>INDICATIONS</b>	Allergic reactions
<b>CONTRAINDICATIONS</b>	Hypersensitivity to drug
<b>PRECAUTIONS</b>	Assure IV site is patent, will cause tissue irritation
<b>SIDE EFFECTS</b>	1. drowsiness 2. sedation 3. seizures 4. nausea 5. dry mouth 6. thickening of bronchial secretions
<b>SUPPLIED</b>	50 mg / 1 mL vial
<b>ADULT DOSAGE</b>	25-50 mg IV/IM
<b>PEDIATRIC DOSAGE</b>	1 mg/kg IV/IM
<b>GENERAL CONSIDERATIONS</b>	

<b>MEDICATIONS</b>
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<b>DOPAMINE (Intropin)</b>
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P	EMT - P	P
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<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Alpha and beta adrenergic receptor stimulator</li> <li>2. Dopaminergic receptor stimulator</li> <li>3. Dilates renal and mesenteric blood vessels</li> <li>4. Vasoconstriction</li> <li>5. Arterial resistance</li> <li>6. Increase cardiac output</li> <li>7. Increase preload</li> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Bradycardia</li> <li>2. Cardiogenic shock</li> <li>3. Septic shock</li> <li>4. Anaphylactic shock</li> <li>5. Hypovolemic shock (refractory to volume replacement therapy)</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hypersensitivity</li> <li>2. Hypovolemia without fluid replacement therapy</li> <li>3. Pheochromocytoma</li> </ol>
<b>PRECAUTIONS</b>	Extravasation may cause tissue necrosis
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Ectopic beats</li> <li>2. Nausea / Vomiting</li> <li>3. Tachycardia</li> <li>4. Palpitations</li> <li>5. Dyspnea</li> <li>6. Headache</li> <li>7. Angina</li> </ol>
<b>SUPPLIED</b>	Mix solution 400 mg in 250 mL NS <i>or</i> 800 mg in 500 mL NS or D5W
<b>ADULT DOSAGE</b>	2 - 20 micrograms/kg/minute IV/IO infusion titrate to effect
<b>PEDIATRIC DOSAGE</b>	2 - 20 micrograms/kg/minute IV/IO infusion titrate to effect
<b>GENERAL CONSIDERATIONS</b>	

**MEDICATIONS**

**EPINEPHRINE (Adrenaline)**

I	EMT - I	I
P	EMT - P	P

<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Alpha and Beta adrenergic agonist</li> <li>2. Bronchodilation</li> <li>3. Increase heart rate and automaticity</li> <li>4. Increases cardiac contractility</li> <li>5. Increases myocardial electrical activity</li> <li>6. Increases systemic vascular resistance</li> <li>7. Increases blood pressure</li> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Cardiac arrest</li> <li>2. Allergic reaction / Anaphylaxis</li> <li>3. Respiratory distress</li> </ol>
<b>CONTRAINDICATIONS</b>	Known hypersensitivity
<b>PRECAUTIONS</b>	Blood pressure, pulse, and ECG must be routinely monitored for all patients receiving Epinephrine
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Palpitations</li> <li>2. Anxiousness</li> <li>3. Headache</li> <li>4. Tremor</li> <li>5. Nausea / Vomiting</li> </ol>
<b>SUPPLIED</b>	Pre-filled syringes containing 1 mg in 10 mL (1:10,000 solution) Ampules containing 1 mg in 1 mL (1:1000 solution)
<b>ADULT DOSAGE</b>	<p><b>Cardiac Arrest:</b>                      1:10,000, 1 mg IV/IO every 3-5 minutes                      (Epinephrine 1:10,000, 2 - 2.5 mg ETT every 3-5 minutes)</p> <p><b>Anaphylaxis:</b>                      1:1000, 0.3 - 0.5 mg subcut.</p> <p><b>Respiratory Distress Due to Status Asthmaticus:</b>                      1:1000, 0.3 - 0.5 mg subcut.</p>
<b>PEDIATRIC DOSAGE</b>	<p><b>Cardiac Arrest:</b>                      1:10,000, 0.01 mg/kg IV/IO every 3-5 minutes                      (Epinephrine 1:1000, 0.1 mg/kg every 3-5 minutes)</p> <p><b>Anaphylaxis:</b>                      1:1000, 0.01 mL/kg subcut. (max dose 0.5 mg)</p>
<b>GENERAL CONSIDERATIONS</b>	

**MEDICATIONS****FUROSEMIDE (Lasix)****P EMT – P P**

<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Potent diuretic</li> <li>2. Inhibits renal sodium reabsorb ion</li> <li>3. Vasodilation, especially of the pulmonary veins</li> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Acute pulmonary edema secondary to CHF</li> <li>2. Acute pulmonary edema secondary to hypertension</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hypersensitivity</li> <li>2. Known allergy to sulfamides</li> <li>3. Dehydrated patient</li> <li>4. Pregnant patient</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. May cause dehydration</li> <li>2. May cause hypovolemia</li> <li>3. May cause hypotension</li> <li>4. May cause hypokalemia</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Urination</li> <li>2. Hypotension</li> <li>3. Nausea and vomiting</li> <li>4. Dehydration</li> <li>5. Depletion of potassium</li> </ol>
<b>SUPPLIED</b>	Vial of 10 mL in a concentration of 10 mg/mL
<b>ADULT DOSAGE</b>	<p>40 mg slow IV/IM</p> <p>If the patient is already prescribed Furosemide and is compliant, give double their usual dose up to 80 mg</p>
<b>PEDIATRIC DOSAGE</b>	
<b>GENERAL CONSIDERATIONS</b>	Medical Control to be consulted for doses greater than 40 mg

**MEDICATIONS****GLUCAGON**

<b>I</b>	<b>EMT – I</b>	<b>I</b>
<b>P</b>	<b>EMT – P</b>	<b>P</b>

<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> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Correction of hypoglycemia when an IV/IO is not able to be established and oral glucose is contraindicated</li> <li>2. Elderly with severe CVD, ACS or pregnancy in anaphylaxis (possible option prior to epinephrine administration)</li> <li>3. Esophageal obstructions</li> </ol>
<b>CONTRAINDICATIONS</b>	Known hypersensitivity
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Glucagon is only effective in patients with sufficient stores of glycogen</li> <li>2. Use caution in patients with renal or cardiovascular disease</li> <li>3. Glucagon can be administered on scene but do not wait for it to take affect</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Nausea and vomiting</li> </ol>
<b>SUPPLIED</b>	Vials of 1 mg Glucagon with 1 mL of diluting solution
<b>ADULT DOSAGE</b>	1 mg IM / IV
<b>PEDIATRIC DOSAGE</b>	<p>Less than 20 kg ½ mg IM/IV</p> <p>Greater than 20 kg 1 mg IM/IV</p>
<b>GENERAL CONSIDERATIONS</b>	Response is usually noticed in 5-20 minutes. If response is delayed, dose may be repeated 1 to 2 times.

**MEDICATIONS****KETOROLAC ( TORADOL)**

<b>I</b>	<b>EMT – I</b>	<b>I</b>
<b>P</b>	<b>EMT – P</b>	<b>P</b>

<b>ACTIONS</b>	1. Nonsteroidal anti-inflammatory / analgesic
<b>INDICATIONS</b>	Short term management of moderate to severe pain (extremity pain, renal colic)
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hypersensitivity</li> <li>2. Head injury or head trauma</li> <li>3. Seizure / Altered LOC</li> <li>4. Asthma</li> <li>5. Undiagnosed abdominal, head or back pain</li> <li>6. Patients with hypotension secondary to volume depletion</li> <li>7. Multiple trauma patients / hemorrhage bleeding disorders</li> <li>8. Advanced renal impairments</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. If given IM, give deep IM injection and hold pressure over site for 30 sec.</li> <li>2. Toradol may mask pain, so conduct a complete assessment prior to administration</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Headache, dizziness</li> <li>2. Tinnitus</li> <li>3. SOB</li> </ol>
<b>SUPPLIED</b>	30 mg mL vials
<b>ADULT DOSAGE</b>	30- 60 mg IM or 30 mg IV Elderly (over age 65 yrs.) may give half the adult dose
<b>PEDIATRIC DOSAGE</b>	If over 8 years of age
<b>GENERAL CONSIDERATIONS</b>	May take 15 – 30 minutes to take effect. Consult Medical Control for patients over 65 years of age.

<b>MEDICATIONS</b>
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<b>LIDOCAINE (Xylocaine) 2%</b>
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P	EMT – P	P
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<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Suppresses ventricular ectopy</li> <li>2. Elevates ventricular tachycardia and ventricular fibrillation threshold</li> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Ventricular tachycardia</li> <li>2. Ventricular Fibrillation</li> <li>3. Reduction of premature ventricular contractions (PVCs)</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hypersensitivity</li> <li>2. AV blocks</li> <li>3. Idioventricular escape rhythms</li> <li>4. Accelerated idioventricular rhythm</li> <li>5. Sinus bradycardia or arrest or block</li> <li>6. Hypotension, Shock</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. A reduced dose should be administered if the patient is over 70 years old or has a history of liver failure, or CHF</li> <li>2. <b>DO NOT</b> use Lidocaine if amiodarone has already been administered.</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. There may be a reduction in the force of ventricular contraction leading to decreased peripheral vascular resistance, cardiac output and blood pressure.</li> <li>2. Dizziness, Numbness, Drowsiness, Confusion</li> <li>3. Seizure, respiratory depression</li> </ol>
<b>SUPPLIED</b>	<p>Pre-filled syringes containing 100 mg in 5 mL (20 mg/mL) for bolus injection</p> <p>Pre-filled bag: 2 GM in 500 mL D5W at 2-4 mg/min.</p>
<b>ADULT DOSAGE</b>	<p><b>Wide Complex Tachycardia With a Pulse:</b> 1-1.5 mg/kg IV (0.5-.75 mg/kg if the patient is over 70 years old or has a history of liver failure, or CHF). If the rhythm converts due to Lidocaine, then initiate a Lidocaine drip at 2-4 mg/min.</p> <p><b>Ventricular Fibrillation or Ventricular Tachycardia Without Pulse:</b> 1-1.5 mg/kg every 5 minutes (0.5-.75 mg/kg if the patient is over 70 years old or has a history of liver failure, or CHF) (max dose 3 mg/kg)</p>
<b>PEDIATRIC DOSAGE</b>	<p><b>Ventricular Fibrillation or Ventricular Tachycardia Without Pulse:</b> 1 mg/kg IV/IO Q 5 minutes repeat dosages of 1 - 1.5 mg/kg. If the patient converts to a perfusing rhythm, then administer Lidocaine 0.5mg IV/IO Q 20 minutes.</p> <p><b>Wide Complex Tachycardia With a Pulse:</b> Lidocaine 1 mg/kg IV. Repeat once at 0.5 mg/kg.</p>
<b>GENERAL CONSIDERATIONS</b>	

<b>MEDICATIONS</b>
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<b>MAGNESIUM SULFATE</b>
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P	EMT – P	P
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<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Central Nervous System Depressant</li> <li>2. Anticonvulsant</li> <li>3. Antiarrhythmic</li> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Eclampsia</li> <li>2. Severe refractory ventricular fibrillation / pulseless ventricular tachycardia</li> <li>3. Torsades de pointes</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Shock</li> <li>2. Heart block</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Patients who are receiving digitalis</li> <li>2. Hypotension</li> <li>3. Patients with renal failure</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Flushing</li> <li>2. Respiratory depression</li> <li>3. Drowsiness</li> </ol>
<b>SUPPLIED</b>	50% solution, 1 gram in 1 mL vial, injectable
<b>ADULT DOSAGE</b>	<p><b>Cardiac Arrest / Torsades or Hypomagnesia:</b> 1-2 g IV diluted in 10 mL saline over 5 minutes</p> <p><b>Eclampsia:</b> 4 g in 10 mL of Normal Saline IV over 2-3 minutes</p>
<b>PEDIATRIC DOSAGE</b>	25 – 50 mg /kg IV for Torsades only
<b>GENERAL CONSIDERATIONS</b>	

**MEDICATIONS**

**MARK 1 KIT (Atropine and 2 PAM Chloride)**

<b>B</b>	<b>EMT-B</b>	<b>B</b>
<b>I</b>	<b>EMT - I</b>	<b>I</b>
<b>P</b>	<b>EMT - P</b>	<b>P</b>

<b>ACTIONS</b>	<p><b>Atropine:</b></p> <ul style="list-style-type: none"> <li>Blocks a nerve agents effect of overstimulation and relieves smooth muscle constriction in the lungs and gastrointestinal tract.</li> </ul> <p><b>2-PAM:</b></p> <ul style="list-style-type: none"> <li>Acts to restore normal functions at the nerve ending by removing the nerve agent and affecting toxin irreversibility.</li> </ul>
<b>INDICATIONS</b>	Suspected or confirmed nerve agent exposure.
<b>CONTRAINDICATIONS</b>	Both drugs in the kit should be used with caution (but not withheld) in patients with preexisting cardiac disease, HTN, or CVA history.
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>Chest pain</li> <li>Exacerbation of angina</li> <li>Induction of myocardial infarction</li> <li>Blurred vision</li> <li>Headache</li> <li>Drowsiness</li> <li>Nausea</li> <li>Rapid heart rate</li> <li>Increased blood pressure</li> <li>Hyperventilation</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>Dry mouth</li> <li>Blurred vision</li> <li>Flushed skin</li> <li>Urinary retention</li> <li>Headache</li> <li>Tachycardia</li> <li>Pupillary dilation</li> </ol>
<b>SUPPLIED</b>	Up to 3 auto injectors may be administered to one patient as seen acceptable by Medical Control based upon signs and symptoms.
<b>ADULT DOSAGE</b>	<p><b>Atropine:</b> 2 mg Auto Injection</p> <p><b>2-PAM:</b> 600 mg Auto Injection</p>
<b>PEDIATRIC DOSAGE</b>	Mark 1 Kits are not authorized for the use of children under the age of 9 years.
<b>GENERAL CONSIDERATIONS</b>	Mark 1 Kits are for first responders only. *Call Ohio State Highway Patrol for CHEM Pak delivery.

<b>MEDICATIONS</b>
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<b>MORPHINE SULFATE</b>
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I	EMT - I	I
P	EMT - P	P

<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Increases venous capacity reducing venous return</li> <li>2. Mild vasodilatation</li> <li>3. Decreases sensitivity to pain</li> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Cardiac chest discomfort and acute MI</li> <li>2. Pain management</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hypersensitivity</li> <li>2. Head injury or head trauma</li> <li>3. Seizure</li> <li>4. Altered LOC</li> <li>5. Undiagnosed abdominal pain</li> <li>6. Patients with hypotension secondary to volume depletion</li> <li>7. Multiple trauma patients</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. If the patient responds with respiratory depression or hypotension, then administer Narcan to reverse the effects</li> <li>2. Routinely monitor the patient's respiratory effort</li> <li>3. All patients <b>MUST</b> have supplemental oxygen administration</li> <li>4. Morphine may mask pain, so conduct a complete assessment prior to administration</li> <li>5. Routinely monitor oxygen saturation</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Respiratory depression</li> <li>2. Altered LOC</li> <li>3. Bradycardia</li> <li>4. Nausea and vomiting</li> <li>5. Constricted pupils</li> </ol>
<b>SUPPLIED</b>	Pre-filled (tubex) 5 syringes containing 2 mg/mL 10mg.
<b>ADULT DOSAGE</b>	<p><b>Cardiac Chest Discomfort and Acute Pain Management and MI:</b></p> <p>2 mg every 4-5 min IV/IM titrate to response and resp. status (max dose 10 mg)</p>
<b>PEDIATRIC DOSAGE</b>	<p><b>Pain Management:</b></p> <p>0.05-0.1 mg/kg slow IV (max dose 2 mg) only per Medical Control</p>
<b>GENERAL CONSIDERATIONS</b>	Give morphine to patient's with chest pain only after all three nitroglycerin have been administered.

<b>MEDICATIONS</b>
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<b>NALOXONE (Narcan)</b>
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<b>I</b>	<b>EMT – I</b>	<b>I</b>
<b>P</b>	<b>EMT – P</b>	<b>P</b>

<b>ACTIONS</b>	Reverses all effects from opioid agents such as respiratory depression and all central and peripheral nervous system effects.
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Respiratory depression due to opioids</li> <li>2. Altered mental status of unknown origin</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hypersensitivity</li> <li>2. Caution when using on heroin overdose patients</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Naloxone may induce acute opiate withdrawal in patients who are physically dependent. Be prepared for a potentially combative patient.</li> <li>2. Should be used and titrated to desired respiratory effect and not intended to restore full consciousness.</li> <li>3. The effects of Naloxone do not usually last as long as the effects of opiates, therefore subsequent doses may need to be administered.</li> </ol>
<b>SIDE EFFECTS</b>	Tachycardia, seizures, vomiting
<b>SUPPLIED</b>	2 mg in 2 mL pre-filled syringe
<b>ADULT DOSAGE</b>	2 - 4 mg IV/IM may be repeated every 5 minutes to maintain respiratory effect
<b>PEDIATRIC DOSAGE</b>	0.1 mg/kg IV/IM may be repeated every 5 minutes to maintain respiratory effect
<b>GENERAL CONSIDERATIONS</b>	

**MEDICATIONS**

**NITROGLYCERIN**

<b>B</b>	<b>EMT-B</b>	<b>B</b>
<b>I</b>	<b>EMT - I</b>	<b>I</b>
<b>P</b>	<b>EMT - P</b>	<b>P</b>

<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Vasodilatation</li> <li>2. Coronary artery dilation</li> <li>3. Decreases myocardial oxygen demand</li> <li>4. Decreases vascular resistance</li> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Cardiac chest discomfort, angina and acute MI</li> <li>2. Pulmonary edema</li> <li>3. Hypertension</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hypersensitivity</li> <li>2. Hypotension</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Avoid use in patients with intracranial pressure, glaucoma, hypotension</li> <li>2. If the patient becomes hypotensive after Nitro administration, then place the patient in a semi-reclined position with legs elevated</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Throbbing headache</li> <li>2. Hypotension</li> <li>3. Dizzy</li> <li>4. Weakness</li> </ol>
<b>SUPPLIED</b>	<p>Many forms, including ointment, spray, tablets, sustained release capsules</p> <p>*** Basic EMT's may assist a patient with their own nitro.</p> <p>For use in the field, tablets of 0.4mg</p>
<b>ADULT DOSAGE</b>	<p><b>Cardiac Chest Discomfort:</b> 0.4 mg SL every 5 minutes x 3 if BP greater than 90</p> <p><b>Pulmonary Edema:</b> 0.4 mg SL every 5 minutes x 3 if BP greater than 110</p> <p><b>Hypertensive Crisis:</b> .04 mg SL x 1 <b>ONLY If:</b> <b>BP greater than 120 Diastolic</b> <b>Repeat BP x 2 in both arms</b></p> <p><b><u>ALONG WITH:</u></b> <b>signs and symptoms of CHF or Cardiac Ischemic chest pain</b></p> <p><b><u>ALONG WITH:</u></b> <b>headache, blurred vision, focal deficit or altered LOC</b></p>
<b>PEDIATRIC DOSAGE</b>	Not recommended in pre-hospital setting
<b>GENERAL CONSIDERATIONS</b>	May repeat up to 3 doses if BP systolic greater than 90 with IV established or 110 without IV established.

<b>MEDICATIONS</b>
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<b>NITROUS OXIDE: OXYGEN</b>
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I	EMT – I	I
P	EMT – P	P

<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Nitrous oxide: oxygen is a blended mixture of 50% nitrous oxide and 50% oxygen</li> <li>2. When inhaled, nitrous oxide / oxygen depresses the central nervous system, causing anesthesia. In addition, the high concentration of oxygen delivered along with the nitrous oxide increases oxygen tension in the blood, thereby reducing hypoxia.</li> <li>3. Nitrous Oxide: oxygen is self-administered</li> <li>4. Provides rapid, easily reversible relief of pain</li> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Abdominal pain</li> <li>2. Chest pain secondary to infarction or angina</li> <li>3. Acute urinary retention</li> <li>4. Fractures / dislocations</li> <li>5. Severe exterior burns</li> <li>6. Kidney stones</li> <li>7. Musculoskeletal trauma</li> </ol>
<b>CONTRA-INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Decreased level of consciousness for any reason</li> <li>2. History of drug or alcohol ingestion</li> <li>3. History of COPD, emphysema, or any condition that may compromise respiratory efforts including: chest trauma, CHF, respiratory tract burns, or other trauma</li> <li>4. Possible bowel obstruction or traumatic abdominal injury (gas might accumulate in the abdominal cavity or bowel)</li> <li>5. Maxillofacial injuries or Head Injuries</li> <li>6. OB patient not in the process of delivery</li> <li>7. Pediatric patient less than 12 yrs. or less than 75 pounds</li> <li>8. Intoxication</li> <li>9. Psychiatric problems</li> <li>10. Respiratory distress</li> </ol>
<b>PRECAUTIONS</b>	In the United States, nitrous oxide for field use is supplied as Nitronox, a set containing an oxygen cylinder and a nitrous oxide cylinder joined by a valve that regulates flow to provide a 50:50 mixture of the two gasses. The mixture is piped to a demand valve apparatus.
<b>SIDE EFFECTS</b>	Dizziness, Apnea, Cyanosis, Nausea, Vomiting. Ambulance crew may experience giddiness if the vehicle is not properly vented.
<b>SUPPLIED</b>	Invert cylinder several times before use; instruct the patient to inhale deeply through a patient-held demand valve and mask or mouthpiece.
<b>ADULT DOSAGE</b>	
<b>PEDIATRIC DOSAGE</b>	
<b>GENERAL CONSIDERATIONS</b>	<ul style="list-style-type: none"> <li>• Self-administered by mask: a good seal around mouth and nose is important; the gas is breathed deeply and may give relief after about two minutes; the patient should stop when relief is obtained.</li> <li>• The paramedic should not hold the face mask in place for the patient.</li> </ul>

<b>MEDICATIONS</b>
<b>ORAL INSTANT GLUCOSE</b>

<b>B</b>	<b>EMT-B</b>	<b>B</b>
<b>I</b>	<b>EMT - I</b>	<b>I</b>
<b>P</b>	<b>EMT - P</b>	<b>P</b>

<b>ACTIONS</b>	Elevates blood glucose level
<b>INDICATIONS</b>	Correction of hypoglycemia
<b>CONTRAINDICATIONS</b>	Known hypersensitivity
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Patient must be alert and able to sufficiently swallow</li> <li>2. Be alert for difficulty swallowing or choking due to the thick consistency</li> </ol>
<b>SIDE EFFECTS</b>	Nausea and vomiting
<b>SUPPLIED</b>	One complete tube (15-25 g)
<b>ADULT DOSAGE</b>	One half to one complete tube (15-25 g)
<b>PEDIATRIC DOSAGE</b>	Half a tube
<b>GENERAL CONSIDERATIONS</b>	The patient must be alert and have the ability to swallow

**MEDICATIONS****OXYGEN (O<sub>2</sub>)**

<b>B</b>	<b>EMT-B</b>	<b>B</b>
<b>I</b>	<b>EMT - I</b>	<b>I</b>
<b>P</b>	<b>EMT - P</b>	<b>P</b>

<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Increases oxygen content of blood</li> <li>2. Improves tissue oxygenation</li> <li>3. Decreases energy expended for respirations</li> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Cardiac chest discomfort</li> <li>2. Hypoxemia</li> <li>3. Cardiopulmonary arrest</li> <li>4. Trauma</li> <li>5. Shortness of breath / dyspnea</li> <li>6. Sedative drug administrations</li> </ol>
<b>CONTRAINDICATIONS</b>	None in the pre-hospital setting
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Never withhold oxygen to those who need it</li> <li>2. Be aware for respiratory depression in COPD patients on prolonged high flow oxygen</li> <li>3. All sedative medication administration must have oxygen administration</li> <li>4. Simple or partial rebreather face masks must be supplied with a minimum 10 L per minutes</li> <li>5. Non-rebreather face masks must be supplied with a minimum 12 L per minute</li> <li>6. T-Piece Nebulizers must be supplied with 6 lpm</li> </ol>
<b>SIDE EFFECTS</b>	High concentrations of oxygen may reduce the respiratory drive in some COPD patients; these patients should be carefully monitored.
<b>SUPPLIED</b>	As a compressed gas in cylinders of varying sizes
<b>ADULT DOSAGE</b>	12-15 lpm via NRB mask or 2-6 lpm via nasal cannula, 6-10 lpm via small volume nebulizer, unless otherwise indicated.
<b>PEDIATRIC DOSAGE</b>	12-15 lpm via NRB mask or 2-6 lpm via nasal cannula, or 6-10 lpm via unit dose nebulizer, unless otherwise indicated.
<b>GENERAL CONSIDERATIONS</b>	Scheduled hydrostatic tank checks

<b>MEDICATIONS</b>
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<b>SODIUM BICARBONATE</b>
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<b>P</b>	<b>EMT – P</b>	<b>P</b>
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<b>ACTIONS</b>	Restores buffering capacity of the body and neutralizes excess acid.
<b>INDICATIONS</b>	Cardiac arrest, metabolic acidosis
<b>CONTRAINDICATIONS</b>	Metabolic or respiratory alkalosis
<b>PRECAUTIONS</b>	Use caution in patients with renal insufficiency. Heart failure, or edematous or sodium retaining condition.
<b>SIDE EFFECTS</b>	Tetany, edema, metabolic alkalosis
<b>SUPPLIED</b>	50 mEq pre-filled syringe
<b>ADULT DOSAGE</b>	1 mEq/kg IV/IO
<b>PEDIATRIC DOSAGE</b>	1 mEq/kg IV/IO
<b>GENERAL CONSIDERATIONS</b>	<ul style="list-style-type: none"> <li>• Not routinely recommended for cardiac arrest because it may produce paradoxical acidosis from carbon dioxide production.</li> <li>• <b>DO NOT</b> administer through same IV line as Dopamine because it inactivates the Catecholamine effect.</li> </ul>

**MEDICATIONS**

26

**TETRACAINE****P EMT - P P**

<b>ACTIONS</b>	Topical ophthalmic anesthetic
<b>INDICATIONS</b>	1. Application prior to eyes irrigation for anesthetic / pain management
<b>CONTRAINDICATIONS</b>	Hypersensitivity to “caine” family
<b>PRECAUTIONS</b>	Eye infections
<b>SIDE EFFECTS</b>	Local irritation
<b>SUPPLIED</b>	1 single dose bottle
<b>ADULT DOSAGE</b>	2 drops instilled in both eyes 30 seconds before eye irrigation and every 5 minutes during irrigation
<b>PEDIATRIC DOSAGE</b>	Not recommended
<b>GENERAL CONSIDERATIONS</b>	

**MEDICATIONS**

**VASOPRESSIN (Pitressin)**

**P      EMT – P      P**

<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Alpha agonist</li> <li>2. Causes vasoconstriction</li> <li>3. Increases smooth muscle activity</li> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Ventricular fibrillation</li> <li>2. Pulseless Ventricular tachycardia</li> <li>3. Asystole / PEA</li> </ol>
<b>CONTRAINDICATIONS</b>	Known hypersensitivity
<b>PRECAUTIONS</b>	Risk of hyponatremia
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Nausea / Vomiting</li> <li>2. Diarrhea</li> <li>3. Confusion</li> <li>4. Pain at IV site</li> </ol>
<b>SUPPLIED</b>	20 units / mL in a vial
<b>ADULT DOSAGE</b>	<p><b>Cardiac Arrest / Ventricular Fibrillation / Pulseless Ventricular Tachycardia:</b> 40 units IV push</p>
<b>PEDIATRIC DOSAGE</b>	Vasopressin is not recommended for pediatric use
<b>GENERAL CONSIDERATIONS</b>	<ul style="list-style-type: none"> <li>• The half-life of Vasopressin is approximately 10- 20 min.</li> <li>• May be used in place of 1<sup>st</sup> or 2<sup>nd</sup> dose of epinephrine</li> </ul>

**MEDICATIONS****ZOFRAN (Ondansetron Hydrochloride)****P EMT - P P**

<b>ACTIONS</b>	1. Antiemetic
<b>INDICATIONS</b>	1. Nausea 2. Vomiting
<b>CONTRAINDICATIONS</b>	1. Hypersensitivity 2. Hepatic impairment
<b>PRECAUTIONS</b>	1. Renal and hepatic disease 2. Pregnancy 3. Breast-feeding women
<b>SIDE EFFECTS</b>	1. Headache 2. Dizziness 3. Drowsiness 4. Fatigue 5. Diarrhea
<b>SUPPLIED</b>	2 - 2mg/mL vial    2mL vial
<b>ADULT DOSAGE</b>	Starting dose 2-4 mg slow IV / IM    (0.15 mg/kg)
<b>PEDIATRIC DOSAGE</b>	2-12 yrs (greater than 40 kg)    (0.15 mg/kg)
<b>GENERAL CONSIDERATIONS</b>	<ul style="list-style-type: none"> <li>• IV route / assure patent IV in a large / patent vein, monitor for infiltrates</li> <li>• IM route, give deep IM (not subcut.) May give undiluted IM</li> </ul>