

**NEW MEXICO  
EMERGENCY MEDICAL SERVICES  
GUIDELINES**



**DRUGS**

***EMS FIRST RESPONDER  
EMT - BASIC  
EMT- INTERMEDIATE  
EMT-PARAMEDIC***

**Updated November 2012**

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<b>SPECIAL NOTE: ANY MEDICATION THAT CAN BE ADMINISTERED VIA IV CAN ALSO BE ADMINISTERED VIA IO</b>	

## **ACETAMINOPHEN**

### **CLASS OF DRUG**

Analgesic, Antipyretic

### **SCOPE OF PRACTICE**

EMT-Basic, EMT-Intermediate and EMT-Paramedic

### **INDICATIONS**

1. Fever in pediatric patients during long transports

### **CONTRAINDICATIONS**

1. Hypersensitivity to the drug
2. Hepatic failure or impairment

### **DRUG INTERACTION**

1. Phenothiazines - may produce hypothermia
2. Phenobarbital - increase hepatic toxicity

### **ADMINISTRATION**

Pediatric: [10-15 mg/kg] orally  
Not to exceed 50 mg/kg/24 hours

### **SPECIAL NOTES**

1. Acetaminophen use in the scope of practice is intended for fever control in pediatric patients during long transports to prevent febrile seizures.

**ACETYLCYSTEINE (MUCOMYST®)**

**CLASS OF DRUG**

Mucolytic

**SCOPE OF PRACTICE**

EMT-Paramedic - Medication for administration during patient transport.

**INDICATIONS**

1. Antidote to acetaminophen overdose

**CONTRAINDICATIONS**

1. Hypersensitivity

**DRUG INTERACTION**

1. None

**ADMINISTRATION**

1. Follow dosing ordered by sending physician.

**SPECIAL NOTES**

1. Activated charcoal absorbs acetylcysteine if given PO for acetaminophen ingestion.

**ACETYLSALICYLIC ACID (ASA, ASPIRIN)****CLASS OF DRUG**

Anti-inflammatory, analgesic, antipyretic, anticoagulant

**SCOPE OF PRACTICE**

First Responder, EMT-Basic, EMT-Intermediate and EMT-Paramedic

**INDICATIONS**

1. Myocardial infarction patients, including suspected AMI patients.

**CONTRAINDICATIONS**

1. Hypersensitivity
2. Bleeding disorders
3. Asthma (Relative)

**ADMINISTRATION**

1. Adult: [162-324 mg] orally for AMI (prefer chewable).
2. Pediatric: Should not to be given to pediatric patients.

**SPECIAL NOTES**

1. All patients with suspected AMI and without contraindications should receive aspirin.

**ACTIVATED CHARCOAL****CLASS OF DRUG**

Gastrointestinal Adsorbent

**SCOPE OF PRACTICE**

EMT-Basic, EMT-Intermediate and EMT-Paramedic

**INDICATIONS**

1. Activated charcoal is used in the treatment of certain cases of poisoning and over-doses in the alert patient. Most commonly given in the hospital after gastric lavage, but it is appropriate to give in the pre-hospital setting before lavage if a long transport time is anticipated.

**CONTRAINDICATIONS**

1. Acids or alkali ingestion unless other drugs have ingested.
2. GI obstruction.

**DRUG INTERACTION**

1. Contact MCEP before giving in acetaminophen OD's. Charcoal interferes with the function of N-Acetylcysteine, an antidote for acetaminophen.
2. Milk products-decreases effectiveness.

**ADMINISTRATION**

1. Adult: [1 gm/kg] PO.
2. Pediatric: Same as adult

**SPECIAL NOTES**

1. Patients must be capable of protecting their airway over time.

**ADENOSINE (ADENOCARD®)****CLASS OF DRUG**

Endogenous nucleoside; antidysrhythmic

**SCOPE OF PRACTICE**

EMT-Paramedic

**INDICATIONS**

1. Paroxysmal supraventricular tachycardia (PSVT), including PSVT associated with Wolff-Parkinson-White syndrome.

**CONTRAINDICATIONS**

1. Hypersensitivity
2. High degree A-V block and sick sinus syndrome, unless a pacemaker is in place

**DRUG INTERACTION**

1. Carbamazepine - increased likelihood of progressive heart blocks.
2. Dipyridamole - potentiates the effect of adenosine (reduce the dosage).
3. Xanthines - reduces effectiveness (a larger dosage may be required).
4. Nicotine - may increase risk of tachycardia.

**ADMINISTRATION**

1. Adult: [6 mg] rapid IV/IO (1-2 seconds) followed with a 20 cc flush. May be repeated in 1-2 minutes, a second dose of [12 mg] rapid IV/IO followed by a 20 cc flush. Single doses of greater than 12 mg should not be given. May be given up to three times and always follow each bolus with a 20 cc flush.
2. Pediatric: Initial: [0.1 mg/kg] rapid IV/IO. Repeat in 2-3 minutes if no change. Second and third dose at [0.2 mg/kg] rapid IV/IO.

**SPECIAL NOTES**

1. Use on patients with asthma, may induce bronchospasms.
2. Safety in pregnancy is unknown.

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**ADENOSINE** (cont.)

3. Transient dysrhythmias, such as periods of asystole, are common and self-limiting, requiring no treatment unless they persist.
4. Side effects may include: facial flushing, headache, chest pain, dyspnea, lightheadedness, and nausea.
5. Must be given in the IV port most proximal to the patient.
6. Be aware that **ADENOSINE** may not be effective in WPW with atrial fibrillation/flutter.

**ALBUTEROL (PROVENTIL®, VENTOLIN®)****CLASS OF DRUG**

Sympathomimetic, Beta<sub>2</sub> selective adrenergic bronchodilator

**SCOPE OF PRACTICE**

First Responder, EMT-Basic, EMT-Intermediate and EMT-Paramedic

**INDICATIONS**

1. Albuterol is used to treat reversible airway obstruction caused by:
  - a. Wheezing associated with asthma
  - b. COPD (emphysema)
  - c. Chronic bronchitis

**CONTRAINDICATIONS**

1. Hypersensitivity

**DRUG INTERACTION**

1. Beta adrenergic agents - potentiates the effects.
2. MAO inhibitors - may lead to hypertensive crisis.
3. Beta adrenergic blockers - decreases the effectiveness.

**ADMINISTRATION**

1. Adult: [2.5-5.0 mg] (up to 10 mg) in 3 ml of sterile NS given as nebulized inhalation therapy over 5-15 minutes, may be repeated as necessary.
2. Pediatric: [1.25-2.5 mg] (up to 5 mg) in 3 ml of sterile NS given as nebulized inhalation therapy over 5-15 minutes, may be repeated as necessary.

**SPECIAL NOTES**

1. Most side effects are dosage related.
2. May decrease arterial oxygen tension acutely by causing bronchodilation in areas of lung with poor blood perfusion.
3. Care should be taken if patient is already using an inhalant due to possible development of severe paradoxical airway resistance with repeated excessive use.

**AMINOPHYLLINE****CLASS OF DRUG**

Xanthine bronchodilator

**SCOPE OF PRACTICE**

EMT-Paramedic - Drug allowed for monitoring in Transport

Requires an infusion pump when given by continuous infusion unless otherwise specified.

**INDICATIONS**

1. Acute bronchospasm due to asthma
2. Anaphylaxis with bronchospasm
3. Wheezing in older persons, when pulmonary edema is a serious consideration
4. COPD with exacerbation

**CONTRAINDICATIONS**

1. None, when indicated.

**DRUG INTERACTION**

1. Smoking, phenytoin, and rifampin - decreases effectiveness.
2. Erythromycin, steroids, and beta-blockers - increases effectiveness - may lead to toxicity.

**ADMINISTRATION**

1. Adult: [5-7 mg/kg] IV infusion in 50 ml D<sub>5</sub>W or NS over 20 minutes  
[0.5 to 0.9 mg/kg per hour] maintenance dose.
  - a. The lower dose is used for older patients, patients with liver disease, congestive heart failure, hypovolemia, and non-smokers.
  - b. The higher ranges are used for children and smokers.
2. Pediatric: [5-6 mg/kg] IV infusion in 50 ml D<sub>5</sub>W or NS over 20 minutes not to exceed 12 mg/kg in a 24 hour period.

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**AMINOPHYLLINE** (cont.)**SPECIAL NOTES**

1. Aminophylline monitoring is used only during inter-facility transports.
2. If infused too rapidly, may cause nausea, vomiting, seizures, ventricular fibrillation, and circulatory collapse. Monitor constantly. Do not exceed 25 mg/min.
3. Aminophylline may cause an initial drop in arterial oxygen concentration. Always have patient on oxygen before administration.
4. Nausea is an early sign of toxicity. Seizures are a late sign of toxicity.

**AMIODARONE (CORDARONE®)****CLASS OF DRUG**

Antiarrhythmic

**SCOPE OF PRACTICE**

EMT-Paramedic

**INDICATIONS**

1. Pulseless VF/VT refractory to initial electrical therapy
2. Unstable VT refractory to lidocaine and/or electrical therapy

**CONTRAINDICATIONS**

1. None, if the patient is in cardiac arrest with VF or VT.
2. High degree AV blocks or sinus node dysfunction with marked bradycardia unless a functional pacemaker is in place.
3. Congestive heart failure.

**DRUG INTERACTION**

1. Enhanced bradycardia and hypotension when given with other beta-blockers or calcium channel blockers.

**ADMINISTRATION**

1. Adult:
  - a. Pulseless VT/VF: 300 mg initial bolus IV/IO after epinephrine. May re-bolus with 150mg once.
  - b. Sustained VT: 150 mg over 10 minutes. May re-bolus every 10 minutes as needed up to a maximum dose of 15 mg/kg/day.
  - c. Maintenance infusion:[1.0 mg/min] over first 6 hours; [0.5 mg/min], 540 mg IV/IO over 18 hours. Maximum dose is 2.2g in 24 hours.

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**AMIODARONE** (cont.)

## 2. Pediatric:

- a. Pulseless VT/VF [5mg/kg] IV/IO. May re-bolus every 3-5 minutes to a maximum of 15 mg/kg/24 hours
- b. Sustained VT [5 mg/kg] IV/IO over 20-60 minutes. May repeat twice, up to 15 mg/kg /24 hours; maximum single dose 300mg.

**Note: Expert consultation advised prior to administration in pediatrics.**

**SPECIAL NOTES**

1. Must be drawn up slowly to avoid "bubbles" do not shake the ampule for the same reason.
2. Must be given concurrently with epinephrine in the pulseless patient.
3. Can not be administered via ET tube.
4. Hypotension and bradycardia can occur on patients with a pulse.

## ANTIBIOTICS AND OTHER ANTI-INFECTIVE AGENTS

### CLASS OF DRUG

Anti-infective

### SCOPE OF PRACTICE

EMT-Paramedic - Drug allowed for monitoring in patient transport.

No infusion pump required.

### INDICATIONS

(This is not an exhausted list, just a list of the most common antibiotics).

1. Aminoglycosides: Gram negative bacteria, bone and joint, soft tissue, Post-op, UTIs, and intra-abdominal infections.
2. Cephalosporin: Gram positive cocci and limited use against gram negative (*E. coli*).
3. Chloramphenicol: NOT TO BE USED IN TRIVIAL INFECTIONS. Serious infection caused by *Salmonella*, *Rickettsia*, and *Chlamydia*. Meningitis caused by *hemophilus influenza*, and Meningococcal meningitis.
4. Erythromycin (EES)  
And Macrolides: Bacteriostatic against *Streptococcus sp.*, *Staphylococcus aureus*, *Mycoplasma pneumoniae*, *Hemophilus influenza* (when used with sulfonamides), and many others.
5. Penicillin: Bactericidal against Gram negative bacteria such as Hemophilus influenza, Escherichia coli, Proteus mirabilis, Neisseria gonorrhoea; Gram positive organisms such as Streptococcus.
6. Polymyxin: Has potent bactericidal activity against many gram negatives such as Pseudomonas, Proteus, and Hemophilus.
7. Sulfonamide: Wide bacteriostatic spectrum against gram positives and gram negatives.
8. Anti-fungal: Wide fungicidal activity against Candida, Trichophyton, Epidermophyton, and Microsporum.

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**ANTIBIOTICS and other anti-infective agents (cont.)**

9. Fluoroquinolones: Broad spectrum of activity against gram positive and gram negative bacteria including pseudomonas (Ciprofloxacin=Cipro®)
10. Tetracycline: *Rickettsia, Chlamydia, and Mycoplasma.* Use to treat syphilis and gonorrhea for patients who are allergic to PCN.

**CONTRAINDICATIONS**

1. General: Contraindicated if any history of hypersensitivity to the particular class of antibiotics. Must use another class.
2. Aminoglycosides: Can cause renal or hearing impairment.
3. Cephalosporin: Use with caution with renal and hepatic impaired patients.
4. Chloramphenicol: Pregnancy and nursing mothers.
5. Erythromycin (EES)  
And Macrolides: In patients taking Seldane® and other antihistamine(s) may lead to Torsades de Pointes.
6. Penicillin: Use with caution on patients with hay fever or other allergies.
7. Polymyxin: Use in pregnancy if benefits outweigh risks.
8. Sulfonamide: Third trimester pregnancy, nursing mothers, and infants under two months.
9. Anti-Fungal: None when indicated.
10. Fluoroquinolones: Children and nursing mothers.
11. Antitubercular: In Isoniazid use - Liver disease or a history of alcoholism or injection drug use is an important concern.

**ADMINISTRATION**

Refer to manufacturer's information.

**SPECIAL NOTES**

Refer to manufacturer's information.



**ANTI-EMETIC AGENTS*****Promethazine (Phenergan®)*****CLASS OF DRUG**

Anti-emetic

**SCOPE OF PRACTICE**

EMT-Intermediate, EMT-Paramedic

**INDICATIONS**

Treatment and prevention of nausea and vomiting.

**CONTRAINDICATIONS**

1. Hypersensitivity to phenothiazines
2. Comatose patients
3. CNS depression due to drugs
4. Children < 2yrs old, or critically ill or dehydrated.
5. Lactation

**DRUG INTERACTION**

1. CNS depressants -may increase, prolong or intensify the sedative action.
2. Anticholinergics - use caution.
3. MAO inhibitors - use caution.

**ADMINISTRATION**

1. Adults: [6.25 - 25 mg] PO, IM, IV/IO, or Rectal every 4 hours as needed.
2. Children > 2yrs [0.25-0.5 mg/kg] PO, IM or Rectal every 4 hours as needed.  
(Use should be limited to prolonged vomiting of known etiology in children)

**SPECIAL NOTES**

1. Use cautiously in patients with hypertension, epilepsy, sleep apnea, cardiovascular disease, impairment of the liver, and pregnancy.
2. May caused marked drowsiness.

**ANTI-EMETIC AGENTS (cont)*****Ondansetron (Zofran®)*****CLASS OF DRUG**

Anti-emetic , Selective serotonin blocking agent

**SCOPE OF PRACTICE**

EMT-Intermediate, EMT-Paramedic

**INDICATIONS**

Treatment and prevention of nausea and vomiting.

**CONTRAINDICATIONS**

1. Known sensitivity to Ondansetron or related agents.

**DRUG INTERACTION**

1. None

**ADMINISTRATION**

1. Adult: [4mg] IV/IO slow IVP, IM. May repeat in 30 minutes.

\*[8mg] Oral Dissolving Tablets (ODT). Place ODT in patient's mouth and instruct the patient to allow it to dissolve. The tablet dissolves in seconds and any residue may then be swallowed.

2. Pediatric: [0.1 mg/kg] IV/IO slow IVP, IM.

\*[4mg] ODT (12-17 years of age)

**\* Note:** Providers may not administer a second dose of Zofran. ODT, or exceed the adult or pediatric doses listed above. Lower dosing in the elderly is not necessary.

**SPECIAL NOTES**

1. Do not use in patients with known prolonged QT syndrome.

**ATROPINE SULFATE****CLASS OF DRUG**

Anticholinergic (parasympatholytic)

**SCOPE OF PRACTICE**

EMT-Basic<sup>1</sup>, EMT-Intermediate<sup>1</sup> and EMT-Paramedic

<sup>1</sup> *IM injection for treatment of chemical and/or nerve agent exposure, via auto injector only*

**INDICATIONS**

1. Symptomatic sinus bradycardia or A-V Blocks
2. Anticholinesterase poisonings - organophosphate, mushrooms (certain types), and nerve gases
3. Adjunct in the treatment of bronchial asthma

**CONTRAINDICATIONS**

1. None, when indicated.

**DRUG INTERACTION**

1. Antihistamines, tricyclic antidepressants - additive affect.

**ADMINISTRATION**

1. Cardiac Indications:
  - a. Adult: [0.5 mg] IV/IO, every 3-5 minutes: (0.04 mg/kg) for bradycardia.
  - b. Pediatric: [0.02 mg/kg] IV/IO for 1 dose. Minimum of 0.1 mg and maximum of 0.5 mg. [0.03 mg/kg] ET.
2. Anticholinesterase poisoning:
  - a. Adult: 2.0 mg IV, ET, or IO repeated until symptoms abate.
  - b. Pediatric: [0.05 mg/kg] IV, ET, or IO, repeated until symptoms abate.

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**ATROPINE SULFATE** (cont.)

## 3. Mushroom Poisoning:

- a. Adult: 2 mg IV, repeated to doses sufficient enough to control parasympathomimetic signs.

**SPECIAL NOTES**

1. Available evidence suggests that the routine use of Atropine during asystole is unlikely to have a therapeutic benefit. Atropine is no longer recommended for use in asystole or PEA.
2. May be not be effective with high degree AV block (2nd degree type II, 3rd degree) - do not delay pacing.
3. Bradycardia in the setting of an acute MI is common and probably beneficial. Don't treat the rate unless there are signs of poor perfusion (i.e. low blood pressure, mental confusion). Chest pain could be due to an AMI or to poor perfusion caused by the bradycardia itself.
4. Atropine increases the workload and myocardial O<sub>2</sub> consumption of heart. Beware of patients who have an ischemic myocardium. Administer supplemental oxygen.

## **BETA BLOCKING AGENTS**

### **CLASS OF DRUG**

Beta-adrenergic blocker

### **SCOPE OF PRACTICE**

EMT-Paramedic - Drug allowed for monitoring in patient transport.  
Requires an infusion pump when given by continuous infusion.

### **INDICATIONS**

1. Used alone or in combination with other agents in the management of hypertension.
2. Management of angina pectoris.
3. Prevention of myocardial infarction.

### **CONTRAINDICATIONS**

1. Uncompensated congestive heart failure
2. Pulmonary edema
3. Cardiogenic shock
4. Bradycardia or heart block

### **DRUG INTERACTION**

1. General anesthesia, IV Phenytoin, and Verapamil may cause additive myocardial depression.
2. May decrease the beta effects of Dopamine or Dobutamine.
3. Additive bradycardia may occur with digitalis glycosides.
4. Additive hypotension may occur with other antihypertensives, alcohol or nitrates.
5. May alter effectiveness of insulin or oral hypoglycemic agents.
6. May decrease effectiveness of beta-adrenergic bronchodilators.

### **ADMINISTRATION**

1. Selected drug, administration, and drug dosage must be determined by Medical Direction prior to transport.

### **SPECIAL NOTES**

1. Use cautiously within 14 days of MAO inhibitor therapy.

**BENZODIAZEPINES****DIAZEPAM - VALIUM®, MIDAZOLAM - VERSED®, - LORAZEPAM - ATIVAN®****CLASS OF DRUG**

Anticonvulsant, anti-anxiety, sedative, muscle relaxant

**SCOPE OF PRACTICE**

EMT-Paramedic

**INDICATIONS**

1. Control of seizures.
2. Sedation for cardioversion.
3. Used in conjunction with paralytics to facilitate intubation as part of a rapid sequence intubation(RSI) protocol. **With special skills approval only.**
4. Reduction of anxiety.
5. Skeletal muscle relaxant.

**CONTRAINDICATIONS**

1. Hypersensitivity
2. CNS depression

**DRUG INTERACTION**

1. Additive effect to other CNS depressants such as alcohol, narcotics, etc

**ADMINISTRATION**

1. Adults
  - a. Diazepam (Valium®): [2-20 mg] IV/IO, slow with IV running open
  - b. Lorazepam (Ativan®): [2 - 4 mg] (0.05 mg/kg) IV/IO, slow with IV running open
  - c. Midazolam (Versed®): [1-5 mg] IVP, slow (over 2 minutes) with IV running open

**Note: HIGHER DOSES MAY BE REQUIRED**

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**BENZODIAZEPINES (cont.)**

2. Pediatric:
  - a. Diazepam Valium®: [0.05 – 0.1 mg/kg] IV/IO
    - i. Rectal dosage [0.5 mg/kg] may be warranted in seizure patients if no venous access is available. Onset of action by this route may be delayed.
    - ii Apnea in children after diazepam administration may occur.
  - b. Lorazepam: [0.05-0.1 mg/kg to a maximum 4 mg]. Onset 2-3 minutes. Duration 12-24 hours.
  - c. Midazolam (Versed®): [0.05 – 0.1 mg/kg] IV/IO

**SPECIAL NOTES**

1. Should not be mixed with other agents, or diluted with intravenous solutions. Give through the proximal end of IV tubing, then flush well.
2. Most likely to produce respiratory depression in patients who have taken other depressant drugs, especially alcohol and barbiturates.
3. It can cause local venous irritation. Use relatively large veins.
4. Versed has short half- life. Additional doses may be necessary.
5. Utilization of pharmacological agents for the primary purpose of sedation, induction, or muscle relaxation to facilitate placement of an advanced airway requires Medical Direction Committee Special Skills approval.

**BLOOD (PACKED RED CELLS, FRESH PLASMA, WHOLE BLOOD)****CLASS OF DRUG**

Naturally occurring colloid

**SCOPE OF PRACTICE**

EMT-Paramedic - Drug allowed for monitoring in patient transport.  
No pump required.

**INDICATIONS**

1. To maintain blood volume or replenish blood loss.

**CONTRAINDICATIONS**

1. Non-compatible blood

**ADMINISTRATION**

1. [10 ml/kg] or based on H/H

**SPECIAL NOTES**

1. Double check blood ID # and patient ID.
2. Save bags after administration.
3. Save all bags and tubing if there is a reaction, after stopping transfusion.
4. Close monitoring of body temperature is mandatory during infusion.



## **CALCIUM CHANNEL BLOCKERS**

### ***Diltiazem HCL (Cardizem ®)***

#### **CLASS OF DRUG**

Calcium Channel Blocker; Coronary Vasodilator, Antidysrhythmic

#### **SCOPE OF PRACTICE**

EMT-Paramedic - Drug allowed for monitoring in patient transport.  
Requires an infusion pump when given by continuous infusion.

#### **INDICATIONS**

1. Atrial Fibrillation or Atrial Flutter
2. Paroxysmal Supraventricular Tachycardia
3. Angina due to coronary artery spasm

#### **CONTRAINDICATIONS**

1. Sick sinus syndrome except in the presence of a functioning ventricular pacemaker.
2. Patients with second- or third degree AV block except in the presence of a functioning ventricular pacemaker.
3. Patients with severe hypotension or cardiogenic shock.
4. Patients who have demonstrated hypersensitivity to the drug.
5. Intravenous diltiazem and intravenous beta-blockers should not be administered together or in close proximity (within a few hours).
6. Patients with atrial fibrillation or atrial flutter associated with an accessory bypass tract such as in WPW syndrome or short PR syndrome.
7. Patients with ventricular tachycardia.

#### **DRUG INTERACTION**

1. Additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with diltiazem HCl.

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**DILTIAZEM HCL (cont.)****ADMINISTRATION**

1. Adult:
  - a. [0.25 mg/kg] as a bolus administered over 2 minutes (20 mg is a reasonable dose for the average patient). If response is inadequate, a second dose may be administered after 15 minutes. The second bolus dose of diltiazem HCl injectable should be [0.35 mg/kg] actual body weight administered over 2 minutes.  
**Note: A reasonable dose for the average patient is 25 mg.**
  - b. For continued reduction of the heart rate (up to 24 hours) in patients with atrial fibrillation or atrial flutter, an intravenous infusion of diltiazem HCl injectable may be administered. Immediately following bolus administration of [20 mg] (0.25 mg/kg) or [25 mg] (0.35 mg/kg) diltiazem HCl injectable and reduction of heart rate, begin an intravenous infusion of diltiazem HCl injectable. The recommended initial infusion rate of diltiazem HCl injectable is [10 mg/h]. Some patients may maintain response to an initial rate of 5 mg/h. The infusion rate may be increased in 5 mg/h increments up to 15 mg/h as needed, if further reduction in heart rate is required. The infusion may be maintained for up to 24 hours.
2. Pediatric: Not usually used.

**SPECIAL NOTES**

1. When given to a conscious patient, they will almost always produce nausea, vomiting and hypotension.

**CALCIUM PREPARATIONS**  
**CALCIUM GLUCONATE, CALCIUM CHLORIDE****CLASS OF DRUG**

Electrolyte

**SCOPE OF PRACTICE**

EMT-Paramedic

**INDICATIONS**

1. Used as antidote for calcium channel blocker overdoses
2. Magnesium sulfate overdoses
3. Black Widow spider bite

**CONTRAINDICATIONS**

1. Hypercalcemia
2. Absence of indications

**DRUG INTERACTION**

1. Increase toxicity of cardiac glycoside.
2. Calcium should be given in a dedicated IV line.
3. DO NOT mix with Sodium Bicarbonate.

**ADMINISTRATION**

1. Calcium Gluconate
  - a. Adult: [5 - 10 ml] SLOW IVP (Do Not Exceed 2 ml/minute) repeat if necessary after 5 - 10 min.
  - b. Pediatric: [0.6 ml/kg] SLOW IVP of 10% solution.

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**CALCIUM PREPARATION** (cont.)

## 2. Calcium Chloride:

- a. Adult: [5-10ml] by SLOW IVP. Repeat every 10 minutes as needed (1 ml of 10% = 100 mg of calcium chloride).
- b. Pediatric: [0.2 ml/kg] (10% solution) by SLOW IVP. Repeat once in 10 minutes if needed.

**NOTE: RAPID INJECTION CAN CAUSE HYPOTENSION, BRADYCARDIA AND DEATH.**

**SPECIAL NOTES**

1. It is best to warm the drug to body temperature prior to administration.
2. If heart is beating, rapid administration of calcium salts can produce bradycardia and/or arrest.
3. May increase cardiac irritability, i.e., PVC's, particularly in the presence of digitalis.
4. Local infiltration will cause tissue necrosis.

**CORTICOSTEROIDS*****Dexamethasone (Decadron®)*****CLASS OF DRUG**

Anti-Inflammatory; immunosuppressant

**SCOPE OF PRACTICE**

EMT-Paramedic

**INDICATIONS**

1. Brain injury associated with trauma – **CONTACT MEDICAL CONTROL**
2. Reactive airway disease with no response to Albuterol and other treatments

**CONTRAINDICATIONS**

1. Absolute – Hypersensitivity
2. Relative – Hypothyroidism; thromboembolic disorders; active infection

**DRUG INTERACTION**

1. None

**ADMINISTRATION**

1. Adults – 4-10 mg PO/IV/IM
2. Pediatrics – 0.6 mg/kg (range 0.15-1.0 mg/kg) PO/IV/IM

**SPECIAL NOTES**

1. Compatible in D5W/NS

**CORTICOSTEROIDS*****Methylprednisolone (Solu-Medrol®)*****CLASS OF DRUG**

Anti-Inflammatory; immunosuppressant

**SCOPE OF PRACTICE**

EMT-Intermediate<sup>1</sup> and EMT-Paramedic

<sup>1</sup> For reactive airway disease/acute asthma exacerbation.

**INDICATIONS**

1. Reactive airway disease with no response to Albuterol and other treatments
2. Allergic reactions

**CONTRAINDICATIONS**

1. Absolute – Hypersensitivity
2. Relative – Immunocompromised state; serious infections; psychotic disorders

**DRUG INTERACTION**

1. None

**ADMINISTRATION**

1. Adults – 125-250 mg IV q 6 hours
2. Pediatrics – 1-2 mg/kg IV q 6 hours

**SPECIAL NOTES**

1. Adverse effects – hyperglycemia; psychosis.
2. High dose methylprednisolone is no longer given routinely for spinal cord injury but may occasionally be ordered by a neurosurgeon.

**CORTICOSTEROIDS*****Prednisone*****CLASS OF DRUG**

Synthetic corticosteroid

**SCOPE OF PRACTICE**

EMT-Paramedic

**INDICATIONS**

1. Exacerbated asthma

**CONTRAINDICATIONS**

2. Systemic fungal infections

**DRUG INTERACTION**

1. Additive hypokalemia with thiazides and loop diuretics.
2. May increase requirements for insulin or oral hypoglycemic agents in diabetics.
3. Phenyton, phenobarbital and rifampin may decrease effectiveness.

**ADMINISTRATION**

1. Adult: [1 mg/kg to a max dose of 60 mg] PO

**SPECIAL NOTES**

1. Prednisone suppresses the immune system.
2. Prednisone causes retention of sodium and fluids.

**CROTALIDAE POLYVALENT IMMUNE FAB (OVINE) CROFAB****CLASS OF DRUG**

Anti-venin

**SCOPE OF PRACTICE**

EMT-Paramedic - Drug allowed for monitoring in patient transport.

**INDICATIONS**

To manage patients with minimal or moderate North American crotalid (eg, rattlesnakes, copperheads, cottonmouths/water moccasins) envenomation.

**CONTRAINDICATIONS**

History of papaya or papain allergy

**DRUG INTERACTION**

There are several drugs with known moderate drug interactions. Medical control should be consulted for transport concerns.

**ADMINISTRATION**

CroFab may be monitored during inter-facility transport provided the physician initiated CroFab infusion has been running for a minimum of 30 minutes prior to the paramedic initiating the transfer and assuming responsibility for patient care.

**SPECIAL NOTES**

Risk of anaphylactic reaction (esp. if allergic to sheep protein). Monitor for signs/symptoms of allergic reaction; discontinue if it occurs. Have epinephrine, antihistamine and/or albuterol available.



**DEXTROSE (ORAL/IV/IO – 10%, 25% AND 50%)****CLASS OF DRUG**

Carbohydrate, nutrient, short acting osmotic diuretic

**SCOPE OF PRACTICE**

First Responder<sup>1</sup>, EMT-Basic<sup>1</sup>, EMT-Intermediate and EMT-Paramedic

<sup>1</sup> *Oral Glucose Preparations only*

**INDICATIONS**

1. Symptomatic hypoglycemia
2. Unconsciousness of unknown origin
3. Seizures (*associated with decreased BGL*) of:
  - a. Unknown etiology
  - b. New onset of seizures
  - c. Known diabetic actively seizing
4. Refractory medical cardiac arrest (especially in neonates)

**CONTRAINDICATIONS**

1. Intra-cranial bleeds
2. Delirium tremens with dehydration
3. Administration through the same infusion set as blood.
4. Unconscious (for oral dextrose)
5. Suspected CVA

**DRUG INTERACTION**

1. None

**ADMINISTRATION**

1. Oral: [12-25 gm] of paste, may be spread with a tongue depressor.

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**DEXTROSE (cont.)**

2. IV:
  - a. Adult: [12.5 to 25 gm] slow IV/IO push into patent line, if patient is unable to protect airway or tolerate oral fluids. May be repeated as needed. Be prepared to restrain. May be given rectally (paramedic only).
  - b. Pediatric: Dilute 1:1 with sterile saline to make 25% solution (0.25 mg/ml) Give [0.5 - 1.0 g/kg] slow IV push. May be given rectally (paramedic only).
  - c. Neonates: Use a 10% Dextrose solution (dilute 50ml D50 in 500ml bag of D5W) at [0.2 gm/kg].

**SPECIAL NOTES**

1. Attempts at documenting hypoglycemia via automatic glucometry should be made before administration.
2. Must insure patent IV line, and recheck patency during administration.

**DIPHENHYDRAMINE HCL (BENADRYL®)****CLASS OF DRUG**

Antihistamine, H<sub>1</sub> blocker

**SCOPE OF PRACTICE**

EMT-Intermediate and EMT-Paramedic

**INDICATIONS**

1. Allergic reactions
2. Anaphylaxis
3. Dystonic reaction to phenothiazines
4. Motion sickness (Paramedic only)
5. Anti-emetic (Paramedic only)

**CONTRAINDICATIONS**

1. Acute asthma

**DRUG INTERACTION**

1. Additive CNS depression with alcohol, sedatives, narcotics

**ADMINISTRATION**

1. Adults:[12.5-50 mg], slow IV/IO at a rate of 1ml/min or deep IM injection
2. Pediatric: [1 mg/kg], slow IV/IO; deep IM injection with a maximum dose of 50 mg

**SPECIAL NOTES**

1. May have an immediate effect in dystonic reactions.
2. No early benefit in allergic reactions.

**DOBUTAMINE (DOBUTREX®)****CLASS OF DRUG**

Sympathomimetic, beta agonist

**SCOPE OF PRACTICE**

EMT-Paramedic - Drug allowed for monitoring in patient transport.  
Requires an infusion pump when given by continuous infusion.

**INDICATIONS**

1. Primary indication is cardiogenic shock, with pulmonary edema.

**CONTRAINDICATIONS**

1. None when indicated. Use cautiously in AMI and atrial fibrillation.

**DRUG INTERACTION**

1. Synergistic effect with sodium nitroprusside
2. Reduced effects with Beta-adrenergic blocker
3. Hypertensive crisis with tricyclic antidepressants

**ADMINISTRATION**

1. Adult: [2 - 20 mcg/kg/min] (mix 1 ampule (250 mg) in 250 ml of D<sub>5</sub>W - resulting in a concentration of 1mg/ml = 1000 mcg/ml)
2. Pediatric: [1.0 mcg/kg per minute] (6 x body weight (kg) equals milligrams to add to D<sub>5</sub>W to create a total volume of 100ml). Infuse at 1mL/h.

**SPECIAL NOTES**

1. Dobutamine should be titrated to effect.

**DOPAMINE HYDROCHLORIDE (DOPASTAT®, INTROPIN®)****CLASS OF DRUG**

Potent sympathomimetic, dopaminergic

**SCOPE OF PRACTICE**

EMT-Paramedic

**INDICATIONS**

1. Primary indication is cardiogenic shock.
2. May be useful for other forms of shock.
3. May be useful, at low doses, in renal failure.
4. Used for refractory bradycardia unresponsive to atropine, and when pacing is unavailable.

**CONTRAINDICATIONS**

1. Tachydysrhythmias
2. Pheochromocytoma

**DRUG INTERACTION**

1. Hypotension and/or bradycardia with phenytoin
2. Reduced effects with Beta-adrenergic blocker

**ADMINISTRATION**

1. Adult: IV infusion ONLY – Standard mix 400 mg in 250 ml D<sub>5</sub>W or NS to produce a concentration of 1600 mcg/ml. Infusion rates [2.0-20.0 mcg/kg/min] titrated to desired effect. (Other concentrations are used, so know what you are using). Use microdrip chamber or an infusion pump.
2. Pediatric: [1.0 mcg/kg per minute] (6 x body weight (kg) equals milligrams to add to D<sub>5</sub>W to create a total volume of 100ml). Infuse at 1mL/h.

**SPECIAL NOTES**

1. Higher doses can cause central vasoconstriction limiting renal blood flow.
2. Doses less than 5mcg/kg can lower B/P.

**EPINEPHRINE (ADRENALINE®) (1:1,000 AND 1:10,000 SOLUTIONS)****CLASS OF DRUG**

Sympathomimetic

**SCOPE OF PRACTICE**

First Responder<sup>1</sup>, EMT-Basic<sup>1</sup>, EMT-Intermediate and EMT-Paramedic

<sup>1</sup> 1: 1,000 solution only, by auto injection device, pre-measured syringe or 0.3 ml TB syringe for anaphylaxis or status asthmaticus refractory to other treatments under on-line medical control or written medical protocols.

**INDICATIONS**

1. Severe Bronchospasm
2. Bronchospasms unresponsive to albuterol
3. Anaphylaxis
4. Cardiac Arrest
5. Symptomatic bradycardia after other treatments

**CONTRAINDICATIONS**

1. None when indicated.

**DRUG INTERACTION**

1. Reduced effects with Beta-adrenergic blocker

**ADMINISTRATION**

1. Cardiac Arrest
  - a. Adult: [1 mg](1:10,000) every 3 - 5 minutes IV/IO preferred, may be given ET (2 - 2 1/2 times IV dose)
  - b. Pediatric: IV/IO 0.01 mg/kg (1:10,000) every 3-5 minutes. ET 0.1 mg/kg (1:1000)

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**EPINEPHRINE** (cont.)

2. Bradycardia
  - a. Adult: [1 mg/ 1:1,000] in 250 cc NS or D<sub>5</sub>W administered at 2 - 10 mcg/min
  - b. Pediatric: [0.01 mcg/kg] IV/IO every 3-5 minutes or; [0.1-0.2 mcg/kg/minute] (0.6 x body weight (kg) equals milligrams to add to D<sub>5</sub>W to create a total volume of 100 m). Infuse at 1mL/h
3. Bronchospasm/Anaphylaxis
  - a. Adult: [0.3 mg] (1:1,000) SQ or IM using a 0.3 ml syringe or pre-filled device. [0.1 mg] (1:10,000) IV/IO over 5 minutes. Infusion of [1-4 mcg/min].
  - b. Pediatric: [0.01 mg/kg (1:1000)], SQ or IM To a maximum dose of 0.3 mg/dose

**SPECIAL NOTES**

1. When used for allergic reactions, increased cardiac workload can precipitate angina and/or AMI in susceptible individuals.
2. Due to peripheral vasoconstriction, it should be used with caution on patients with peripheral vascular insufficiency.
3. Consider pulmonary edema or pulmonary embolus in wheezing patients with a history of RAD.
4. EMT-Intermediates and EMT-Paramedics are not required to use a pre-filled device or 0.3 cc syringe.

**EPOPROSTENOL SODIUM (FLOLAN®)****CLASS OF DRUG**

Prostaglandin (vasodilator)

**SCOPE OF PRACTICE**

EMT-Paramedic - Administration of the patient's own medication.

**INDICATIONS**

1. Management of primary pulmonary hypertension in patients currently being treated with continuous Flolan® infusion.

**CONTRAINDICATIONS**

1. Patients with a known hypersensitivity.
2. Patients with CHF secondary to left ventricular systolic dysfunction.
3. Patients who develop pulmonary edema secondary to Flolan® use.

**DRUG INTERACTION**

1. Flolan® is incompatible with all other medications and must be administered through a designated IV line.
2. Added hypotension may occur with antihypertensive, diuretics or other vasodilators.

**ADMINISTRATION**

1. Flolan® must be reconstituted from powder form with a specific diluent.
2. Specific dosing must be obtained from the patient.

**SPECIAL NOTES**

1. Most patients treated with Flolan® utilize an ambulatory infusion pump.
2. In the event the patient is found unconscious the patient should be assessed for continuous infusion through a central line. If not, a designated peripheral line should be initiated and infusion continued.



**FUROSEMIDE (LASIX®)****CLASS OF DRUG**

Potent loop diuretic

**SCOPE OF PRACTICE**

EMT-Paramedic

**INDICATIONS**

1. Pulmonary edema
2. Hypertensive emergencies (AMI, APE, or encephalopathy)

**CONTRAINDICATIONS**

1. Hypovolemia
2. Hypokalemia
3. Hypotension

**DRUG INTERACTION**

1. Severe hypotension with antihypertensives and nitrates

**ADMINISTRATION**

1. Adult: For patients not currently taking furosemide, [20 - 40 mg] slow IVP or [0.5 - 1.0 mg/kg] slow IV/IO. If the patient is currently taking furosemide, double their current dose and administer IV/IO. You may repeat one dose in 2 hours.
2. Pediatric: [1.0 mg/kg] slow IVP. It may be repeated in 6 - 8 hours.

**SPECIAL NOTES**

1. It can lead to profound diuresis with resultant shock and electrolyte depletion (particularly  $K^+$ ). Therefore, do not use in hypovolemic states and monitor closely, particularly after IV administration.
2. It should be used cautiously in children or pregnant women.
3. If patient unconscious, must have Foley catheter in place and unobstructed urine outflow. Advise the physician if urine is bloody. Trauma to kidneys and urinary system makes the use of furosemide more hazardous.

**GLUCAGON****CLASS OF DRUG**

Hormone- hyperglycemic agent

**SCOPE OF PRACTICE**

EMT-Intermediate, EMT-Paramedic

**INDICATIONS**

1. Documented symptomatic hypoglycemia (BGL less than 60 mg/dl) when an IV/IO cannot be started.
2. Beta blocker overdose with serious signs and symptoms.
3. Anaphylaxis refractory to epinephrine, or in patients who have history of serious coronary arterial disease and cannot receive epinephrine.

**CONTRAINDICATIONS**

1. Patients who will be unable to receive supplemental glucose, orally, IV or rectally after administration of glucagon.
2. Hypersensitivity to pork and/or beef.
3. Use with caution on patients with pheochromocytoma.

**DRUG INTERACTION**

1. Hyperglycemic effects intensified and prolonged by epinephrine.
2. Will precipitate when mixed with calcium preparation.

**ADMINISTRATION****Note: 1 mg = 1 unit**

1. Hypoglycemia
  - a. Adult: [0.5 - 1 mg] IM, may repeat in 10 - 20 minutes if no response.
  - b. Pediatric: [0.1 mg/kg] IM may repeat in 10 - 20 minutes if no response.

(Continued next page)

**GLUCAGON** (cont.)

## 2. Beta Blocker Overdose

- a. Adult: [3 to 10 mg] IV/IO over 1 minute. It. may be followed by an infusion of 2 - 5 mg/hr.
- b. Pediatric: [0.1 mg/kg] IV/IO over 1 minute, repeat in 5 minutes, if needed.

## 3. Anaphylaxis

- a. Adult: [1 to 2 mg] slow IV/IO, may be repeated every 5 to 10 minutes.
- b. Pediatric: [0.1 mg/kg up to 1 mg]. IV/IO, may be repeated every 5 to 10 minutes. Rarely indicated.

**SPECIAL NOTES**

1. **The patient must be given supplemental glucose ASAP; PO, IV, or Rectal.** If this is not possible, the patient may be better off without glucagon. Glucagon will release all of the patient's available glycogen. If the patient is not provided with glucose, the subsequent hypoglycemia will be greater than before glucagon.
2. Glucagon is supplied in a powder and must be reconstituted with sterile water or saline, 1 ml of normal saline for each 1 mg of powder and shaken well.

## **GLYCOPROTEIN INHIBITORS**

### **AGGRASTAT -TIROFIBAN®, INTEGRILIN - EPIFIBATIDE®**

#### **CLASS OF DRUG**

Glycoprotein (GP) IIb/IIIa Inhibitor

#### **SCOPE OF PRACTICE**

EMT-Paramedic - Drug allowed for monitoring in patient transport.  
Requires an infusion pump when given by continuous infusion.

#### **INDICATIONS**

1. In combination with heparin, it is indicated for the treatment of acute coronary syndrome, including patients who are to be managed medically and in patients that are undergoing PTCA or atherectomy.

#### **CONTRAINDICATIONS**

1. Known hypersensitivity to any component of the product.
2. Active internal bleeding or a history of bleeding diathesis within the previous 30 days.
3. A history of intracranial hemorrhage, intracranial neoplasm, arteriovenous malformation, or aneurysm.
4. A history of thrombocytopenia following prior exposure to a Glycoprotein (GP) IIb/IIIa Inhibitor.
5. A history of stroke within 30 days or any history of hemorrhagic stroke.
6. Major surgical procedure or severe physical trauma within the previous month.
7. History, symptoms, or findings suggestive of aortic dissection.
8. Severe hypertension (systolic blood pressure >180 mmHg and/or diastolic blood pressure >110 mmHg).
9. Concomitant use of another parenteral GP IIb IIIa inhibitor.
10. Acute pericarditis.

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**GLYCOPROTEIN INHIBITORS (cont.)****DRUG INTERACTION**

1. In combination with heparin and aspirin, it has been associated with an increase in bleeding, compared to heparin and aspirin alone.

**ADMINISTRATION**

1. Requires an infusion pump.
2. **AGGRASTAT** should be administered intravenously, at an initial rate of [0.4 mg/kg/min] for 30 minutes and then continued at [0.1 mg/kg/min]. For patients with severe renal insufficiency (creatinine clearance <30 ml/min), they should receive half the usual rate of infusion.

**SPECIAL NOTES**

1. Percutaneous (coronary intervention care of the femoral artery access site) therapy with Glycoprotein (GP) IIb/IIIa Inhibitors is associated with an increase in bleeding rates, particularly at the site of arterial access for femoral sheath placements.
2. Minimize vascular and other trauma. Other arterial and venous punctures, intramuscular injections, and the use of urinary catheters, nasotracheal intubation and nasogastric tubes should be minimized. When obtaining intravenous access, non-compressible sites (e.g., subclavian or jugular veins) should be avoided.

**H2 ANTAGONISTS**

Cimetidine® Famotidine® Nizatidine® Ranitidine®

**CLASS OF DRUG**

H2 Antagonist

**SCOPE OF PRACTICE**

EMT-Paramedic - Drug allowed for monitoring in patient transport.  
Requires an infusion pump when given by continuous infusion.

**INDICATIONS**

1. Treatment of duodenal or gastric ulcers
2. Reduce risk of upper GI bleeding in critically ill patients
3. Uncomplicated GERD

**CONTRAINDICATIONS**

1. Hypersensitivity

**DRUG INTERACTION**

1. Dofetilide

**ADMINISTRATION**

1. Cimetidine 300 mg IV q. 6-8 hours
2. Famotidine 20 mg IV q. 12 hours
3. Nizatidine 75 mg PO q. 12 hours
4. Ranitidine 50 mg IV q. 6-8 hours

**SPECIAL NOTES**

1. Confusion and dizziness may occur in elderly patients.
2. Use with caution in patients with renal and hepatic impairment.
3. Blood dyscrasias including thrombocytopenia.

**HEPARIN****CLASS OF DRUG**

Anticoagulant

**SCOPE OF PRACTICE**

EMT-Paramedic - Drug allowed for monitoring in patient transport.  
Requires an infusion pump when given by continuous infusion.

**INDICATIONS**

1. Adjunct to treatment for coronary occlusion
2. Thrombosis in deep vein phlebitis
3. Pulmonary emboli
4. Atrial fibrillation to prevent emboli
5. Low dose to maintain IV patency
6. Disseminated Intra-vascular Coagulation (DIC)

**CONTRAINDICATIONS**

1. Uncontrolled bleeding, except in DIC
2. Severe thrombocytopenia
3. Hypersensitivity to heparin, and to pork and/or beef
4. Severe hepatic disease with hypoprothrombinemia

**DRUG INTERACTION**

1. Increased risk of bleeding when used with aspirin, non-steroidal anti-inflammatory agents, dipyridamole, dextran, quinidine, cefamandole, cefmetazole, cefoperazone, cefotetan, thrombolytics, and warfarin.

**ADMINISTRATION:**

1. Infusion pump required.
2. Follow physician's orders for transport.

**(Continued next page)**

**HEPARIN** (cont.)

**SPECIAL NOTES**

1. It must be administered by an infusion pump.
2. Monitor all puncture sites (catheter, incision, etc) for bleeding.
3. Avoid new puncture sites, incisions or injections.
4. Have all dosages double-checked by another Paramedic or RN.
5. Protamine Sulfate must be carried on long transports with patients receiving heparin.



**HYDROXOCOBALAMIN****CLASS OF DRUG**

Antidote

**SCOPE OF PRACTICE**

EMT-Intermediate and EMT-Paramedic

**INDICATIONS**

1. Treatment of cyanide poisoning

**CONTRAINDICATIONS**

1. Rare anaphylactic reactions

**DRUG INTERACTION**

1. Used in combination with sodium thiosulfates to treat methemoglobinemia. No more effective than sodium nitrite.

**ADMINISTRATION**

1. Adult: [5 grams] IV/IO over 30 minutes
2. Pediatrics (<70kg): [70 mg/kg] IV/IO

**SPECIAL NOTES**

1. Transient hypertension.
2. Reddish discoloration of skin and mucous membranes.

**INSULIN****CLASS OF DRUG**

Hormone (natural or synthetic)

**SCOPE OF PRACTICE**

EMT-Paramedic - Drug allowed for monitoring in patient transport.  
Requires an infusion pump when given by continuous infusion.

**INDICATIONS**

1. Diabetic ketoacidosis
2. Hyperglycemia
3. Hyperkalemia

**CONTRAINDICATIONS**

1. Hypersensitivity

**DRUG INTERACTION**

1. Beta-adrenergic blocker may block signs and symptoms of hypoglycemia.
2. Increase insulin requirements: alcohol, glucocorticoids, and thyroid preparations
3. Decreased insulin requirements: anabolic steroids, tricyclic antidepressants, and MAO inhibitors.

**ADMINISTRATION**

1. Dosages vary dependent on the type of insulin, BGL, physical demands and food intake of the patient.

**FOLLOW PHYSICIAN'S ORDERS FOR TRANSPORT.**

2. Insulin is sometimes added to TPN, dosage is usually 1- 5 u/liter of Regular insulin, or dosage dependent on blood sugar levels and orders of the transferring physician.

**SPECIAL NOTES**

1. It must be monitored by infusion pump.

**IPRATROPIUM (ATROVENT®)****CLASS OF DRUG**

Anticholinergic

**SCOPE OF PRACTICE**

First Responder, EMT-Basic, EMT-Intermediate and EMT-Paramedic

**INDICATIONS**

1. Bronchial asthma
2. Reversible bronchospasm associated with chronic bronchitis and emphysema.

**CONTRAINDICATIONS**

1. Hypersensitivity to the drug, especially with Atropine products, soy and peanuts
2. Acute treatment of bronchospasm where rapid response is required.

**DRUG INTERACTION**

1. Oxivent and Spiriva

**ADMINISTRATION**

1. Should be administered in conjunction with beta agonist therapy.

Adult: [1 – 2 inhalations] via metered dose inhaler  
[250 – 500mcg (.25 - .5 mg)] via nebulization

**SPECIAL NOTES**

1. The vital signs must be monitored during therapy.
2. Caution should be used when administering it to elderly patients and those with cardiovascular disease or hypertension.

**LEVALBUTEROL (XOPENEX®)****CLASS OF DRUG**

Isomer, Beta 2 Agonist

**SCOPE OF PRACTICE**

First Responder, EMT-Basic, EMT-Intermediate and EMT-Paramedic

**INDICATIONS**

1. Xopenex is used to treat reversible airway obstruction caused by:
  - a. Wheezing associated with asthma
  - b. COPD (emphysema)
  - c. Chronic bronchitis

**CONTRAINDICATIONS**

1. Hypersensitivity to the drug class.
2. MAO inhibitor use w/in 14 days.
3. Hypersensitivity to peanuts.

**DRUG INTERACTION**

1. Phenothiazines

**ADMINISTRATION**

1. Nebulizer
  - a. Adult: [1.25 mg] in 3 ml of sterile NS given as inhalation therapy over 5-15 minutes, may be repeated as necessary.
  - b. Pediatric: [0.63-1.25 mg] in 3 ml of sterile NS given as inhalation therapy over 5-15 minutes, may be repeated as necessary.

**SPECIAL NOTES**

1. Drug of choice for patients that you are concerned with having an increased myocardial oxygen demand. However this drug can still cause an increase in heart rate and BP.
2. It is not recommended that this drug be mixed with Atrovent.

**LIDOCAINE HYDROCHLORIDE (XYLOCAINE®)****CLASS OF DRUG:**

Antidysrhythmic, local anesthetic

**SCOPE OF PRACTICE**

EMT-Intermediate<sup>1</sup>, EMT-Paramedic

<sup>1</sup>*Lidocaine 2% for administration into the intraosseous space on pain responsive patients prior to receiving intraosseous fluids or medications.*

**INDICATIONS**

1. Symptomatic ventricular dysrhythmias
2. Sustained ventricular tachycardia
3. Ventricular fibrillation/pulseless ventricular tachycardia
4. Local anesthetic for nasal intubation

**CONTRAINDICATIONS**

1. Hypersensitivity
2. High AV Blocks

**DRUG INTERACTION**

1. Additive cardiac depression with phenytoin, quinidine, procainamide, and propranolol

**ADMINISTRATION**

1. IV/IO Bolus technique
  - a. Adult:
    - i. Ventricular tachycardia: [1 -1.5 mg/kg] IV/IO. If VT persists, [0.5-0.75 mg/kg] every 3 to 5 minutes, up to 3.0 mg/kg total. Start lidocaine infusion if VT converts (see below).

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**LIDOCAINE HYDROCHLORIDE (cont.)**

- ii Ventricular fibrillation and pulseless VT: [1-1.5 mg/kg] IV/IO (2-2 1/2 times normal dose, ET) followed by defibrillation. If VF or VT persists - repeat [0.5-0.75mg/kg] (up to 3.0 mg/kg total) followed by defibrillation. Start lidocaine infusion if VF converts (see below).
  - b. Pediatric: [1 mg/kg] IV/IO
2. IV Drip technique
- a. Adult:
    - i. Mix 1gm of lidocaine in 250 ml D<sub>5</sub>W or NS for a concentration of 4 mg/ml.
      - a). If up to 2 mg/kg has been administered Set drip at 2 mg/min
      - b). If 2 mg/kg has been administered Set drip at 3 mg/min
      - c). If 3 mg/kg has been administered Set drip at 4 mg/min
    - ii A second bolus after 10 minutes may be given per physician order.
  - b. Pediatric:
    - i. Mix 120 mg of lidocaine in 100 ml D<sub>5</sub>W
      - a). Set drip at 20-50 µg/kg per min. (1-2.5 cc/kg/hr at above dilution)
3. ET 2 - 2 /12 times the bolus dose

**SPECIAL NOTES**

1. For patients over 70 years of age, or with hepatic or renal failure, the loading dose remains the same, but maintenance infusion is run at half the normal rate.

**MAGNESIUM SULFATE****CLASS OF DRUG**

CNS depressant; antidysrhythmic; electrolyte; smooth muscle relaxant

**SCOPE OF PRACTICE**

EMT-Paramedic

**INDICATIONS**

1. Initial treatment of seizures associated with eclampsia, and seizures, refractory to benzodiazepines.
2. Second-line antidysrhythmic in the treatment of ventricular fibrillation/pulseless ventricular tachycardia, refractory to lidocaine.
3. First-line antidysrhythmic in the treatment of Torsades de Pointes.
4. To control contractions in pre-term labor.
5. Acute asthma refractory to other more conventional treatment, or when the effects of beta-adrenergic medications contraindicate their use.

**CONTRAINDICATIONS**

1. Hypermagnesemia
2. Hypocalcemia
3. Anuria
4. Heart blocks

**DRUG INTERACTION**

1. Potentiates neuromuscular blocking agents

**ADMINISTRATION**

1. Ventricular ectopy refractory to lidocaine: [2 gm] slow IVP.
2. Pulseless ventricular fibrillation and ventricular tachycardia refractory to lidocaine and bretylium: [2 gm] IVP followed by defibrillation at 360 to 400 joules.

(Continued next page)

**MAGNESIUM SULFATE** (cont.)

3. Ventricular tachycardia, or wide complex tachycardia, unresponsive to lidocaine: [2 gm] slow IVP or IO.
4. To control contractions in pre-term labor: [2 gm] slow IVP or IO, followed by maintenance infusion of 1 - 2 gm per hour.
5. Treatment of pre-eclampsia and/or seizures associated with eclampsia: [2 - 4 gm] slow IVP or IO followed by maintenance infusion of 1- 2 gm per hour.
6. Acute asthma: [1 - 2 gm] slow IVP or IO, or IV/IO infusion over 10 minutes.
7. Torsades de Pointes: [1 - 2 gm] diluted in 10ml of D5W IV/IO push.

**SPECIAL NOTES**

1. Monitor deep tendon reflexes often, especially those patients receiving a maintenance infusion.
2. Calcium gluconate will reverse the toxic effects of magnesium sulfate.
3. Monitor for hypotension.



**MANNITOL (OSMITROL®)****CLASS OF DRUG**

Osmotic diuretic

**SCOPE OF PRACTICE**

EMT-Paramedic - Drug allowed for monitoring in patient transport.  
Requires an infusion pump when given by continuous infusion.

**INDICATIONS**

1. Cerebral edema
2. Increased intra-cranial pressure

**CONTRAINDICATIONS**

1. Hypersensitivity
2. Anuria
3. Hypovolemia/dehydration
4. Active intra-cranial bleeding
5. Pulmonary edema

**DRUG INTERACTION**

1. None

**ADMINISTRATION**

1. Follow Physician's orders

**SPECIAL NOTES**

1. Must have Foley in place.
2. Should be run through an in-line filter.
3. Incompatible with most other drugs.
4. May crystallize at low temperature.

**NALOXONE (NARCAN®)****CLASS OF DRUG**

Narcotic antagonist

**SCOPE OF PRACTICE**

EMT-Basic, EMT-Intermediate and EMT-Paramedic

**INDICATIONS**

1. Reversal of narcotic effects, particularly respiratory depression, due to narcotic drugs, whether ingested, injected, or administered in the course of treatment. Narcotic drugs include agents such as morphine, Demerol®, heroin, Dilaudid®, Percodan®, codeine, Lomotil®, propoxyphene (Darvon®), pentazocine (Talwin®).
2. For unconsciousness of unknown etiology to rule out (or reverse) narcotic depression of CNS.

**CONTRAINDICATIONS**

1. Hypersensitivity
2. Absences of indication

**DRUG INTERACTION**

1. May induce narcotic withdrawal

**ADMINISTRATION**

1. Adult: [0.4 mg – 2.0 mg] IV/IO (2.0 mg total dose) - [0.4 – 2.0 mg] if IM, SQ, ET  
Titrate to respiratory effort/rate. May be repeated at 2 - 3 minutes, if needed.  
[2mg (1mg per naris)] IN.
2. Pediatric: [0.1 mg/kg]< 5 yrs or ≤ 20 kg, [2 mg] ≥5 yr or > 20kg IV, ET, IM, SQ, IO,  
May be repeated at 0.1 mg/kg if no response.
3. Neonate: [0.1 mg/kg] slow IVP, ET, IM, SQ, IO; repeat in 2-3 minutes, if needed  
(mix 1 ml of naloxone, 0.4 mg in 9 ml of D<sub>5</sub>W, which gives 0.04 mg/ml).

**Note: Much higher doses should be given to patients with suspected propoxyphene (Darvon®), pentazocine (Talwin®), and fentanyl overdoses.**

**SPECIAL NOTES**

1. The patient may quickly become conscious and combative.

## NARCOTIC ANALGESICS

### *Hydromorphone (Dilaudid)*

#### CLASS OF DRUG

Opiate analgesic

#### SCOPE OF PRACTICE

EMT-Intermediate<sup>1</sup> and EMT-Paramedic

<sup>1</sup> *With approval of online medical control*

#### INDICATIONS

1. Analgesia for patients with moderate to severe pain
2. Treatment of acute pulmonary edema (Paramedic only)
3. Sedation for procedures (Paramedic only)

#### CONTRAINDICATIONS

1. Hypersensitivity.
2. Hypotension is a relative contraindication to use. Remember that some people will be hypotensive in response to pain itself. Be cautious.
3. Head or abdominal injuries also contraindicated, since the analgesic effect removes the clinical signs that need to be watched.
4. Do not use in persons with respiratory difficulties because their respiratory drive might be depressed, except in pulmonary edema.
5. In the presence of major blood loss, the body's compensatory mechanisms may be suppressed by the use of morphine, and the hypotensive effect will become very prominent. Do not use it in these circumstances.

#### DRUG INTERACTION

1. Additive effects with other CNS depressants.
2. MAO inhibitors can cause unpredictable and severe reactions reduce dose to 25% of a usual dose.

#### ADMINISTRATION

1. Adult: [0.5-1.0 mg] slow IV/IO push until desired effect achieved.
2. Pediatrics: not recommended.

#### SPECIAL NOTES

1. Take vital signs before and 2 minutes after administration.
2. IV/IO only (unless you cannot start an IV/IO and/or are directly ordered to administer IM).
3. Often causes vomiting; administer slowly.
4. On-line medical control should be contacted before administering to the non-cardiac patient.

**NARCOTIC ANALGESICS (cont.)*****Fentanyl (Sublimaze®)*****CLASS OF DRUG**

Opiate analgesic

**SCOPE OF PRACTICE**

EMT-Intermediate<sup>1</sup> and EMT-Paramedic

<sup>1</sup> *With approval of online medical control*

**INDICATIONS**

1. Analgesia for patients with moderate to severe pain
2. Short term sedation (Paramedic only)
3. Anesthesia (Paramedic only)

**CONTRAINDICATIONS**

1. Hypersensitivity/known intolerance
2. Patients particularly sensitive to respiratory depression
3. Myasthenia gravis
4. Pregnancy

**DRUG INTERACTION**

1. Benzodiazepines Diazepam - increased risk of CV depression.
2. Sedatives/Hypnotics, other opioids, CNS depressants and alcohol - increased risk of hypotension.
3. Avoid use in patients who have received MAO inhibitors within the previous 14 days - may produce unpredictable, potentially fatal reactions.

**ADMINISTRATION**

1. Adult: [25-50 mcg] IV/IO
2. Pediatric: 2-12 yrs of age – [0.5 - 1 mcg/kg] IV/IO

**SPECIAL NOTES**

1. Use cautiously in geriatric or debilitated patient (use lower doses), diabetics, patients with pulmonary or hepatic disease, head trauma, increased ICP, undiagnosed abdominal pain and cardiac disease.
2. Abdominal distension, muscle rigidity, and/or urinary retention may be seen at high doses.

**NARCOTIC ANALGESICS (cont.)*****Meperidine (Demerol®)*****CLASS OF DRUG**

Opiate analgesic

**SCOPE OF PRACTICE**

EMT-Paramedic

**INDICATIONS**

1. Moderate to severe pain
2. Sedation for procedures

**CONTRAINDICATIONS**

1. Hypersensitivity
2. Recent MAO inhibitor use
3. Use cautiously in:
  - a. Head injury
  - b. Severe hepatic, renal, and pulmonary disease
  - c. Undiagnosed abdominal pain
  - d. Elderly or debilitated patients
  - e. Multi-system trauma patients

**DRUG INTERACTION**

1. Fatal reactions with MAO inhibitors and procarbazine (seizures)
2. Additive effects with other CNS depressants

**ADMINISTRATION**

1. Adult: [25-50 mg] IV/IO, [50-100 mg] IM
2. Pediatric: Not recommended

## **NARCOTIC ANALGESICS (cont.)**

**Note: For IV/IO use diluted in NS to 10 mg/ml, give very slow IV/IO to reduce nausea and vomiting**

### **SPECIAL NOTES**

1. Nausea and vomiting are the most common side effect; however hypotension and respiratory depression may occur.
2. On-line medical control should be contacted before administering to the non-cardiac patient.

**NARCOTIC ANALGESICS (cont.)*****Morphine Sulfate*****CLASS OF DRUG**

Opiate analgesic

**SCOPE OF PRACTICE**

EMT-Intermediate<sup>1</sup> and EMT-Paramedic

<sup>1</sup> *With approval of online medical control*

**INDICATIONS**

1. Analgesia for patients with moderate to severe pain
2. Treatment of acute pulmonary edema (Paramedic only)
3. Sedation for procedures (Paramedic only)

**CONTRAINDICATIONS**

1. Hypersensitivity.
2. Hypotension is a relative contraindication to use. Remember that some people will be hypotensive in response to pain itself. Be cautious.
3. Head or abdominal injuries also contraindicated, since the analgesic effect removes the clinical signs that need to be watched.
4. Do not use in persons with respiratory difficulties because their respiratory drive might be depressed, except in pulmonary edema.
5. In the presence of major blood loss, the body's compensatory mechanisms may be suppressed by the use of morphine, and the hypotensive effect will become very prominent. Do not use it in these circumstances.

**DRUG INTERACTION**

1. Additive effects with other CNS depressants
2. MAO inhibitors can cause unpredictable and severe reactions, reduce dose to 25% of a usual dose.

**(Continued next page)**

**NARCOTIC ANALGESICS (cont.)****ADMINISTRATION**

1. Adult: [2 - 10 mg] slow IV/IO push until desired effect achieved (Use lowest effective dose to avoid complications).
2. Pediatric: [0.05 - 0.1 mg/kg] slow IV/IO titrated to effect.

**SPECIAL NOTES**

1. Take vital signs before and 2 minutes after administration.
2. IV/IO only (unless you cannot start an IV/IO and/or are directly ordered to administer IM).
3. Often causes vomiting; administer slowly.
4. On-line medical control should be contacted before administering to the non-cardiac patient.



**NESIRITIDE (NATRECOR®)****CLASS OF DRUG**

Vasodilator

**SCOPE OF PRACTICE**

EMT-Paramedic - Drug allowed for monitoring in patient transport.  
Requires an infusion pump when given by continuous infusion.

**INDICATIONS (For administration by IV/IO infusion during patient transfer only)**

1. For intravenous treatment of patients with acutely decompensated congestive heart failure.

**CONTRAINDICATIONS**

1. Should not be used as primary therapy for patient with cardiogenic shock or in patients with a systolic blood pressure  $\leq$  90 mm hg.

**DRUG INTERACTION**

1. Increase in symptomatic hypotension in patients receiving oral ACE inhibitors.

**ADMINISTRATION**

1. Follow dosing orders of sending physician.

**SPECIAL NOTES**

1. The dose-limiting side effect of Nesiritide is hypotension.

**NEUROMUSCULAR BLOCKING AGENTS – NON DEPOLARIZING****CLASS OF DRUG**

Non-depolarizing neuromuscular blocking agent

**SCOPE OF PRACTICE**

EMT-Paramedic<sup>1</sup> - Medication for administration during patient transport.

<sup>1</sup> *In patients that are intubated prior to transport*

**INDICATIONS**

1. Facilitation of compliance during mechanical ventilation.

**CONTRAINDICATIONS**

1. Hypersensitivity to the drug.

**DRUG INTERACTION**

1. Intensity and duration of paralysis may be prolonged by pre-treatment with succinylcholine, lidocaine, quinidine, procainamide, beta-adrenergic blocking agents, potassium-losing diuretics or magnesium.

**ADMINISTRATION**

1. Selected drug, administration, and drug dosage must be determined by transferring MD prior to transport.

**SPECIAL NOTES**

1. Patient must be intubated prior to transport.
2. Paralytics do not provide sedation or analgesia.

**(See chart next page)**

<b>NON-DEPOLARIZING NEURO MUSCULAR BLOCKING AGENTS</b>		
<b>AGENT</b>	<b>ONSET OF ACTION</b>	<b>DURATION OF ACTION</b>
<b>Short Acting</b>		
Mivacurium (Mivacron)	2-5 min.	15-20 min.
Rapacuronium (Raplon)	35 - 219 sec. (mean 90 sec.)	6 – 30 min. (mean 15 min.)
Rocuronium (Zemeron)	1-3 min.	31 min.
<b>Intermediate Acting</b>		
Atracurium (Tracrium)	2.5 – 5 min.	20 – 45 min.
Cisatracurium (Nimbex)	2 - 3 min.	30 – 40 min
Pancuronium (Pavulon)	2 – 3 min.	60 – 90 min.
Vecuronium (Norcuron)	2 – 3 min.	25 – 40 min.
<b>Long Acting</b>		
Doxacurium (Nuromax)	2.5 – 13 min. (mean 6 min.)	39 – 232 min. (mean 100 min.)
Pipecuronium (Arduan)	2.5 – 5 min.	35 – 175 min. (mean 75 min.)
Tubocurarine	3 -5min.	70-90 min.

**NITROGLYCERIN****CLASS OF DRUG**

Anti-anginal agent/vascular dilating agent

**SCOPE OF PRACTICE**

EMT-Basic<sup>1</sup>, EMT-Intermediate<sup>2</sup> and EMT-Paramedic

<sup>1</sup>*Patients own medication with on line medical control only.*

<sup>2</sup>*Must have intravenous access established prior to administration or approval of online medical control if IV/IO access is unavailable.*

**INDICATIONS**

1. Chest pain, anginal pain
2. Congestive heart failure with severe pulmonary edema

**CONTRAINDICATIONS**

1. Hypersensitivity
2. Severe hypotension
3. Pericardial tamponade
4. Increased intra-cranial pressure
5. Hypovolemia/severe anemia

**DRUG INTERACTION**

1. Additive hypotension with beta-adrenergic blockers, antihypertensives, calcium channel blockers, and phenothiazines.
2. Tricyclic antidepressants and antihistamines may interfere with buccal absorption.
3. Can cause a lethal drop in blood pressure in patients taking Sildenafil citrate (Viagra) within 48 hours of ingestion.

**(Continued next page)**

**NITROGLYCERIN** (cont.)**ADMINISTRATION**

1. Adult:
  - a. Sublingual: [0.3 - 0.4 mg] tablet. Repeat at 3 - 5 minutes as needed to a total of three tabs (or more by MCEP order).
  - b. Lingual Spray: [0.4 mg] metered dose, sprayed directly under the tongue; additional one or two sprays every 3 - 5 minutes for a total of three sprays (or more by MCEP order).
  - c. Infusion: [5 - 20 mcg/min] the infusion may be increased by 5 mcg/min every 3 - 5 minutes to 50 - 200 mcg/min. The infusion dose is leveled off when desired effect is reached or a decrease in blood pressure of more than 10 mm Hg over baseline or less than 90 mm Hg systolic is observed. (Infusions may be initiated or monitored by Paramedics Only)

**Note: The most common method for mixing Nitroglycerin is 50 mg Nitroglycerin in 250 ml of normal saline. This yields a concentration of 200 mcg/ml (0.2 mg/ml) in glass or non-absorbable container and non-PVC tubing.**

2. Pediatric: Not recommended for pre-hospital use.

**SPECIAL NOTES**

1. Common side effects may include: throbbing headache, flushing, dizziness, and burning under the tongue (if these side effects are noted, the pills may be assumed potent, not outdated).
2. Less common effect: marked hypotension, particularly orthostatic.
3. Paramedics should use their supply of nitroglycerin, not the patient's.
4. Use with caution with patient not previously receiving nitroglycerin.
5. Generalized vasodilation may cause profound hypotension and reflex tachycardia.
6. NTG tablets lose potency easily, should be stored in a dark glass container with a tight lid, and not exposed to heat. NTG spray does not have this problem.
7. Use only with Medical Control on patients with systolic BP below 100 mm Hg.

**NOREPINEPHRINE (LEVOPHED®)****CLASS OF DRUG**

Sympathomimetic

**SCOPE OF PRACTICE**

EMT-Paramedic - Drug allowed for monitoring in patient transport.  
Requires an infusion pump when given by continuous infusion.

**INDICATIONS**

1. Second - line vasopressor for cardiogenic shock during inter-facility transports.
2. Forms of shock with low or normal peripheral vascular resistance (e.g., spinal shock, sepsis).

**CONTRAINDICATIONS:**

1. Hypovolemia (relative)
2. Vascular thrombosis, unless no alternative
3. Hypoxia or hypercapnia

**DRUG INTERACTION**

1. Cyclopropane or halothane anesthesia, cardiac glycosides, doxapram and cocaine may increase myocardial irritability.
2. MAO inhibitors, methyl dopa, doxapram, and tricyclic antidepressant may produce severe hypertension.
3. Alpha-adrenergic blockers may negate effects.
4. Beta-adrenergic blockers may exaggerate hypertension, and block cardiac stimulation.
5. Ergot alkaloids or oxytocin may result in enhanced vasoconstriction.

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**NOREPINEPHRINE** (cont.)

**ADMINISTRATION**

- 1 Follow Physician's Order.

**SPECIAL NOTES**

1. Use with an infusion pump only.
2. Incompatible with alkaline solutions, aminophylline, barbiturates, phenytoin.

## **NUTRITIONAL SUPPLEMENTS**

### **CLASS OF DRUG**

Nutritional Supplement

### **SCOPE OF PRACTICE**

EMT-Paramedic - Drug allowed for monitoring in patient transport.  
Requires an infusion pump when given by continuous infusion.

### **INDICATIONS**

1. Undernourished patients who cannot ingest large volumes of oral feedings.
2. Patients being prepared for surgery, radiation therapy, or chemotherapy.
3. Patients with disorders requiring complete bowel rest.

### **CONTRAINDICATIONS**

1. Hypersensitivity

### **DRUG INTERACTION**

1. Dependant on the solution being administered.

### **ADMINISTRATION**

1. Most solutions are prepared using sterile techniques. Solutions may be modified based on laboratory results, underlying disorders, hypermetabolism, or other factors.
2. Administration should be based on manufacturer's recommendations and medical control.
3. Route of administration will be dependent on patient condition and needs.
4. Progress should be carefully monitored and documented on a flowchart.

### **COMPLICATIONS**

1. If given IV/IO, complications may be related to the venous catheter (occlusion, infiltration, etc).
2. Bacterial infection is usually due to the increased infection risk from indwelling central venous catheters.
3. Venous thrombosis.
4. Priapism.



**OCTREOTIDE ACETATE (SANDOSTATIN®)****CLASS OF DRUG**

Hormone (gastrointestinal)  
Antidiarrheal

**SCOPE OF PRACTICE**

EMT-Paramedic - Drug allowed for monitoring in patient transport.  
Requires an infusion pump when given by continuous infusion.

**INDICATIONS**

1. Treatment of active GI bleeds during transport.

**CONTRAINDICATIONS**

1. Hypersensitivity

**DRUG INTERACTION**

1. May alter insulin and oral hypoglycemic agent requirements.
2. May interfere with beta-adrenergic blocking agents, calcium channel blockers, and agents to control fluid and electrolyte balance.

**ADMINISTRATION**

1. Follow physician's order.

**SPECIAL NOTES**

1. Use with caution in diabetics, patients with gallbladder disease, severe renal failure requiring dialysis and during lactation.

**OXYGEN****CLASS OF DRUG**

Class III Gas, Oxidizer

**SCOPE OF PRACTICE**

First Responder, EMT-Basic, EMT-Intermediate and EMT-Paramedic

**INDICATIONS**

1. Suspected hypoxia or respiratory distress from any cause
2. Acute chest pain in which myocardial infarction is suspected
3. Shock (decreased oxygenation of tissue) from any cause
4. Trauma
5. Carbon monoxide poisoning

**CONTRAINDICATIONS**

1. None

**DRUG INTERACTION**

1. None

**ADMINISTRATION**

1. Adult & Pediatric:

<b>Dosage</b>	<b>Indications</b>
Low Flow (NC 1 -2 L/Min)	Patients with chronic lung disease with unusual dyspnea or other problems
Moderate Flow (NC 4 6 L/Min)	Precautionary use for trauma, chest pain, etc.
High Flow (NRB 10 – 15 L/Min)	Severe respiratory distress, either medical or traumatic, shock, or a t providers discretion.

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**OXYGEN** (cont.)**SPECIAL NOTES**

1. If the patient is not breathing adequately on his/her own, the treatment of choice is assisted ventilation, not just supplemental O<sub>2</sub>.
2. A very small percentage of patients with chronic lung disease lack sensitivity to carbon dioxide levels and breathe only because of their hypoxic drive. Administration of O<sub>2</sub> **MAY** depress their respiratory drive. **DO NOT WITHHOLD OXYGEN IN CRITICALLY ILL PATIENTS BECAUSE OF THIS POSSIBILITY. BE PREPARED TO ASSIST VENTILATION, IF NEEDED.**
3. Oxygen toxicity (overdose) is not a hazard from acute administration.
4. Nasal prongs work equally well on nose and mouth breathers.
5. Giving 100 % oxygen to all patients is unnecessary. If the patient has 96% O<sub>2</sub> saturation and is in no acute distress, a NRB is not necessary.

**OXYTOCIN (PITOCIN®)****CLASS OF DRUG**

Pituitary hormone - uterine vasoconstrictor

**SCOPE OF PRACTICE**

EMT-Paramedic

**INDICATIONS**

1. Control of post-partum hemorrhage, when other methods fail

**CONTRAINDICATIONS**

1. Potential of a remaining fetus

**DRUG INTERACTION**

1. Hypertension with vasopressors

**ADMINISTRATION**

**Note: Injectable oxytocin (PITOCIN®) contains 10 USP units (20 mg) per ml**

1. Adult
  - a. Intravenous dose: [10 - 20 USP units] in 500 ml volume expander (NS or LR). Flow rate of [10 - 15 drops/min] titrated to severity of hemorrhage and uterine response.
  - b. Intramuscular dose: [10 USP units] (1 ml) IM only if unable to start IV/IO

**SPECIAL NOTES**

1. None

**PHENYLEPHRINE (NEO-SYNEPHRINE®) NASAL SPRAY****CLASS OF DRUG**

Alpha-adrenergic agent

Vasoconstrictor (nasal)

**SCOPE OF PRACTICE**

EMT-Paramedic

**INDICATIONS**

Used as an agent to reduce bleeding during nasal intubation.

**CONTRAINDICATIONS**

1. Known hypersensitivity
2. Severe hypertension
3. Ventricular tachycardia

**DRUG INTERACTION**

1. May decrease effectiveness of insulin, and oral hypoglycemic agents.
2. Use with beta blockers may result in initial hypertension followed by bradycardia.
3. MAO inhibitors – hypertension.

**ADMINISTRATION**

1. Adults: [2 "squirts"] intranasal, in the selected nostril, prior to insertion of nasal tube.

**SPECIAL NOTES**

1. Use with extreme caution in geriatric patients, severe arteriosclerosis, bradycardia, partial heart block, pregnancy and lactation.

## POTASSIUM

### CLASS OF DRUG

Electrolyte

### SCOPE OF PRACTICE

EMT-Intermediate<sup>1</sup>, EMT-Paramedic<sup>2</sup> - Drug allowed for monitoring in patient transport.

<sup>1</sup>*IV solutions that contain potassium during transport (not to exceed 20 mEq/1000cc or more than 10 mEq/hour).*

<sup>2</sup>*No infusion pump needed if concentration not greater than 20mEq/1000cc.*

### INDICATIONS

1. IV preparations are used for treatment or prophylaxis of hypokalemia.

### CONTRAINDICATIONS

1. Severe renal impairment
2. Hyperkalemia
3. Untreated Addison's disease
4. Severe tissue trauma

### DRUG INTERACTION

1. None

### ADMINISTRATION

1. Adult: [10 to 20 mEq/hour] IV/IO drip is standard dose dependent upon patient presentation. **Paramedics only** can transport a patient receiving concentration of greater than 20 mEq/1000 ml with an infusion pump.
2. Pediatric: [2 - 3 mEq/kg/day] IV

### SPECIAL NOTES

1. Cardiac Monitoring required.

**PRALIDOXIME (2PAM®)****CLASS OF DRUG**

Cholinesterase re-activator

**SCOPE OF PRACTICE**

First Responder<sup>1</sup>, EMT-Basic<sup>1</sup>, EMT-Intermediate<sup>1</sup> and EMT-Paramedic<sup>1</sup>

<sup>1</sup> *IM injection for treatment of chemical and/or nerve agent exposure, via auto injector only.*

**INDICATIONS**

1. Organophosphate pesticide or nerve agent poisoning after Atropine has been administered.
2. Unknown cholinesterase inhibitor poisoning.

**CONTRAINDICATIONS**

1. Relative
  - a. Myasthenia gravis
  - b. Renal Failure
2. Absolute
  - a. Inability to perform endotracheal intubation, if neuromuscular blockade were to occur (a rare, dose and rate related complication).

**DRUG INTERACTION**

1. None

**ADMINISTRATION**

1. Adult
  - a. [600mg] IM by auto injector such as the “Mark I” antidote kit. May be repeated in 3 to 5 minutes after the first dose, if weakness or fasciculations have not been resolved.

**SPECIAL NOTES**

1. Neuromuscular blockade, laryngospasm, muscular rigidity, and tachycardia have occurred with rapid IV administration, or with doses much higher than those usually administered.
2. Will not work for pesticides of the carbamate class.
3. Morphine, aminophylline, succinylcholine and phenothiazine-type tranquilizers should be avoided in patients with organophosphate poisoning.
4. Must be given concurrent with Atropine.

**PROCAINAMIDE HYDROCHLORIDE (PRONESTYL®)****CLASS OF DRUG**

Antidysrhythmic

**SCOPE OF PRACTICE**

EMT-Paramedic - Drug allowed for monitoring in patient transport.  
Requires an infusion pump when given by continuous infusion.

**INDICATIONS** (Authorized for monitoring during inter-facility transport)

1. Sustained ventricular tachycardia (with pulse) refractory to lidocaine
2. Premature ventricular contractions refractory to lidocaine
3. Management of ventricular dysrhythmias when lidocaine contraindicated

**CONTRAINDICATIONS**

1. Pre-existing QT prolongation or torsades de pointes
2. High AV blocks unless a pacemaker is in place.
3. Hypersensitivity

**DRUG INTERACTION**

1. Additive effect with other antidysrhythmics.
2. Antihypertensives may produce hypotension.
3. Additive anticholinergic effects with other anticholinergics.
4. Neurological toxicity with lidocaine.

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**PROCAINAMIDE HYDROCHLORIDE (cont.)****ADMINISTRATION**

1. Follow physician's orders.
2. Stop administration if:
  - a. The arrhythmia disappears.
  - b. Hypotension ensues.
  - c. The QRS is widened by 50% of its original width.
  - d. A total of 17 mg/kg of the medication has been administered.
3. Adult: Infusion [1 gm] in 250 ml D<sub>5</sub>W or NS at 1 to 4 mg per minute.
4. Pediatric: Not currently recommended or given in pre-hospital settings.

**SPECIAL NOTES**

1. May cause severe hypotension, bradycardia and heart blocks.
2. Nausea and vomiting are common.

**PROPOFOL (DIPRIVAN®)****CLASS OF DRUG**

Anesthetic

**SCOPE OF PRACTICE**

EMT-Paramedic<sup>1</sup> - Medication for administration during patient transport.

<sup>1</sup> *In patients that are intubated prior to transport*

**INDICATIONS (For administration by IV/IO infusion during patient transfer only)**

1. Maintenance of sedation in intubated, mechanically ventilated patients.

**CONTRAINDICATIONS**

1. Not recommended in children  $\leq 3$  years old.
2. Avoid in patients with severe systemic disease.

**DRUG INTERACTION**

1. Additive CNS and respiratory with alcohol, antihistamines, opiates and sedative/hypnotics.

**ADMINISTRATION**

1. Follow physician's orders.

**SPECIAL NOTES**

1. Avoid rapid IV/IO bolus in the elderly, debilitated or ASA III/IV patients.
2. May cause hypotension.
3. Patient should be continuously monitored for early signs of hypotension, apnea, airway obstruction, and/or oxygen desaturation.

**PROTAMINE SULFATE****CLASS OF DRUG**

Antagonist to heparin

**SCOPE OF PRACTICE**

EMT-Paramedic - Medication for administration during patient transport.

**INDICATIONS**

1. Excessive heparin treatment

**CONTRAINDICATIONS**

1. Hypersensitivity to protamine or fish

**DRUG INTERACTION**

1. None

**ADMINISTRATION**

1. Contact Medical Control.
2. [1 mg] of protamine for every 100 units of heparin remaining in body  
Given by IV/IO route only; slowly, not more than 20 mg/min or up to 50 mg  
in 10 minutes.

**SPECIAL NOTES**

1. Should be available when transporting any patient on heparin drip.
2. There is a high incidence of anaphylaxis to this drug.

**PROTON PUMP INHIBITORS**

Esomeprazole (Nexium®) Lansoprazole (Prevacid®) Omeprazole (Prilosec®)

**CLASS OF DRUG**

Proton pump inhibitor – diminishes daily production of acid

**SCOPE OF PRACTICE**

EMT-Paramedic - Drug allowed for monitoring in patient transport.  
Requires an infusion pump when given by continuous infusion.

**INDICATIONS**

1. Acid related gastrointestinal disorders
2. Reduce risk of upper GI bleeding in critically ill patients

**CONTRAINDICATIONS**

1. Hypersensitivity

**DRUG INTERACTION**

1. Reduced clearance of diazepam
2. Reduced bioavailability of drugs dependant on gastric pH
3. Interacts with warfarin and cyclosporin

**ADMINISTRATION**

1. Follow physician's orders.

**SPECIAL NOTES**

1. Use with caution in severe liver disease.

**SODIUM BICARBONATE****CLASS OF DRUG**

Alkalinizing agent

**SCOPE OF PRACTICE**

EMT-Paramedic

**INDICATIONS**

1. To correct metabolic acidosis found during prolonged cardiac arrest, after initial interventions.
2. May be used as an adjunct in other causes of metabolic acidosis.
3. Overdoses of tricyclic antidepressants or phenobarbital.

**CONTRAINDICATIONS**

1. Suspected metabolic or respiratory alkalosis

**DRUG INTERACTION**

1. Inactivates most drugs, and must not be given in the same IV at the same time.
2. Causes calcium preparations to precipitate.

**ADMINISTRATION**

1. Cardiac Arrest
  - a. Adult & Pediatric: [1 mEq/kg] IV/IO initially, then [0.5 mEq/kg] no more than 50 mEq every 10 minutes until a pulse is restored or as indicated by ABGs.
2. Other special circumstances, such as tricyclic antidepressant overdose
  - a. Adult & Pediatric [1 mEq/kg] IV/IO single dose per physician order.

**SPECIAL NOTES**

1. This agent is no longer a first-line drug for cardiac arrest as per ACLS algorithms.
2. Each amp of bicarbonate contains 44 or 50 mEq of Na<sup>++</sup>. In persons with cardiac disease this will increase intra-vascular volume and further stress the heart.

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**SODIUM BICARBONATE** (cont.)

3. Hyperosmolarity of the blood can occur because the  $\text{NaHCO}_3$  is concentrated. This results in cerebral impairment.
4. These dosages are a very rough guide. Blood gasses should be obtained as soon as possible to direct further therapy.
5. Correct CPR, hyperventilation, defibrillation and drug therapy are more important than bicarbonate.

**SODIUM NITROPRUSSIDE (NIPRIDE®)****CLASS OF DRUG**

Potent antihypertensive agent; vasodilator

**SCOPE OF PRACTICE**

EMT-Paramedic - Drug allowed for monitoring in patient transport.  
Requires an infusion pump when given by continuous infusion.

**INDICATIONS**

1. Hypertensive emergencies
2. Reduction of cardiac pre-load and after-load
3. It is often used with vasopressor agents to maintain a blood pressure while decreasing the pre-load and after-load.

**CONTRAINDICATIONS**

1. Hypersensitivity
2. Decreased cerebral perfusion

**DRUG INTERACTION**

1. Additive effect with other antihypertensives

**ADMINISTRATION**

1. Follow physician's orders.

**SPECIAL NOTES**

1. Solution bag line must be covered in opaque material.
2. Solution is stable for only 24 hours.

## **SPECIAL CIRCUMSTANCES**

Situations may arise involving patients with uncommon conditions requiring specific out of hospital administered medications or procedures; family members or the designated caregiver trained and knowledgeable of the special needs of the patient should be recognized as the expert regarding the care of the patient; EMS can offer assistance in airway management appropriate to their level of licensure, and administer the patient's prescribed medications where appropriate only if the medication is in the EMS provider's scope of practice; EMS services are not expected to provide the prescribed medications for these special needs patient.



**TERBUTALINE (BRETHINE®)****CLASS OF DRUG**

Bronchodilator, uterine smooth muscle relaxant

**SCOPE OF PRACTICE**

EMT-Paramedic - Drug allowed for monitoring in patient transport.  
Requires an infusion pump when given by continuous infusion.

**INDICATIONS**

1. Asthma
2. Control of pre-term labor

**CONTRAINDICATIONS**

- 1 Hypersensitivity

**DRUG INTERACTION**

1. Additive effect with other adrenergic drugs.
2. Beta-adrenergic blockers may negate effects.

**ADMINISTRATION**

1. Follow physician's orders.

**SPECIAL NOTES**

1. None

**THIAMINE****CLASS OF DRUG**

Vitamin (B<sub>1</sub>)

**SCOPE OF PRACTICE**

EMT-Paramedic

**INDICATIONS**

1. Coma of unknown origin, delirium tremens, chronic alcoholism, signs of malnourishment.

**CONTRAINDICATIONS**

1. None in the emergency setting.

**DRUG INTERACTION**

1. There are no significant drug interactions with other emergency medications.

**ADMINISTRATION**

1. Adult: [100 mg] slow IV/IO or IM.
2. Pediatric: [10-25 mg] slow IV/IO or IM.

**SPECIAL NOTES**

1. Large IV doses may cause respiratory difficulties.

**THROMBOLYTICS (FIBRINOLYTICS)*****Alteplase - {tPA}®, Streptokinase, Anistreplase, Urokinase*****CLASS OF DRUG**

Thrombolytics/fibrinolytics

**SCOPE OF PRACTICE**

EMT-Paramedic - Drug allowed for monitoring in patient transport.  
Requires an infusion pump when given by continuous infusion

**INDICATIONS**

1. Myocardial infarction
2. CVA – non-hemorrhagic
3. Pulmonary embolus
4. Femoral occlusion

**CONTRAINDICATIONS**

1. Hypersensitivity
2. Recent surgery (within 10 days)
3. GI/GU bleeding
4. Uncontrolled hypertension (systolic BP >180, or diastolic BP > 110)
5. Active internal bleeding
6. History of CVA (within 2 months)
7. Recent brain, or spinal surgery (within 2 months)
8. Recent trauma

**DRUG INTERACTION**

1. Additive effect on bleeding with other anticoagulants, ASA, NSAID.

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**THROMBOLYTICS (FIBRINOLYTICS) (cont.)****ADMINISTRATION****NOTE: Doses vary per physician direction**

1. Follow physician's orders.

**SPECIAL NOTES**

1. Monitor all puncture sites (e.g., catheters, incisions, etc.) during therapy, and subsequent heparin administration.
2. Avoid new puncture sites or injections.
3. When administering to the patient with AMI, (the most likely to receive this medication), watch the ECG closely for re-perfusion dysrhythmias.
4. Allergic reactions and anaphylaxis can occur when administering this medication.

**THROMBOLYTICS (FIBRINOLYTICS) (cont.)*****Reteplase - Retavase®*****CLASS OF DRUG**

Thrombolytic

**SCOPE OF PRACTICE**

EMT-Paramedic - Medication for administration during patient transport. Second dose only.

**INDICATIONS**

1. Myocardial Infarction

**CONTRAINDICATIONS**

1. Hypersensitivity
2. Recent surgery (within 10 days)
3. GI/GU bleeding
4. Uncontrolled hypertension (SBP > 180, or DBP > 110)
5. Active internal bleeding
6. History of CVA (within 2 months)
7. Recent brain, or spinal surgery (within 2 months)
8. Recent trauma

**DRUG INTERACTION**

1. Additive effect on bleeding with other anticoagulants, ASA, NSAID.

**ADMINISTRATION**

1. Follow physician's orders.

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**THROMBOLYTICS (FIBRINOLYTICS) (cont.)****SPECIAL NOTES**

1. Monitor all puncture sites (e.g., catheters, incisions, etc.) during therapy, and subsequent heparin administration.
2. Avoid new puncture sites or injections.
3. When administering to the patient with AMI, (the most likely to receive this medication), watch the ECG closely for reperfusion dysrhythmias.
4. Allergic reactions and anaphylaxis can occur when administering this medication.

**TOPICAL OPHTHALMIC ANESTHETIC (PROPARACAINE® - OPTHAIN®,  
ALACAINE ®)****CLASS OF DRUG**

Topical/local ophthalmic anesthetic

**SCOPE OF PRACTICE**

EMT-Paramedic

**INDICATIONS**

1. Ocular pain relief prior to irrigation of the eyes

**CONTRAINDICATIONS**

1. Hypersensitivity
2. Known or suspected trauma that may have produced intraocular injury.

**DRUG INTERACTION**

1. None

**ADMINISTRATION**

1. [1 - 2 drops] of 0.5% solution in each eye. May repeat one time at 15 minutes.

**SPECIAL NOTES**

1. Assess visual acuity as soon as possible.

## VACCINES

***DPT (Diphtheria, Tetanus (Acellular), Pertussis),***

***TT (Tetanus Toxoid), DT (Diphtheria, Tetanus)***

***DTP/DTaP***

***Hepatitis B Vaccine (RECOMBIVAX HB®, ENGERIX-B®)***

***Hepatitis A Vaccine (HAVRIX®, VAQTA®)***

***Measles, Mumps, Rubella (MMR)***

***Poliovirus Vaccine - live, Orimune (OPV)***

***Poliomyelitis Vaccine, Inactivated, IPV, Salk***

***Pneumococcal Vaccine (PNEUMOVAX®)***

***Varicella (chicken pox) vaccine***

## SCOPE OF PRACTICE

EMT-Basic<sup>1</sup>, EMT-Intermediate<sup>2</sup> and EMT-Paramedic<sup>2</sup>

*<sup>1</sup>Administration of Immunizations, Vaccines, Biologicals, and TB skin testing is authorized under the following circumstances:*

- a. In the event of a disaster or emergency, the State EMS Medical Director or Chief Medical Officer of the Department of Health may temporarily authorize the administration of pharmaceuticals or tests.

*<sup>2</sup>Administration of Immunizations, Vaccines, Biologicals, and TB skin testing is authorized under the following circumstances:*

- a. To the general public as part of a Department of Health initiative or emergency response, utilizing Department of Health protocols. The administration of immunizations is to be under the supervision of a physician, nurse, or other authorized health provider.
- b. Administer vaccines to EMS and public safety personnel.
- c. TB skin tests may be applied and interpreted if the licensed provider has successfully completed required Department of Health training.
- d. In the event of a disaster or emergency, the State EMS Medical Director or Chief Medical Officer of the Department of Health may temporarily authorize the administration of pharmaceuticals or tests not listed above.

## ADMINISTRATION

1. Follow physician's orders.



**VASOPRESSIN (PITRESSIN®)****CLASS OF DRUG**

Hormone (antidiuretic)

**SCOPE OF PRACTICE**

EMT-Paramedic

**INDICATIONS**

1. May be used as an alternative pressor to epinephrine in the treatment of adult shock-resistant Ventricular Fibrillation.
2. Useful in hemodynamic support in vasodilatory shock (e.g. septic shock).

**CONTRAINDICATIONS**

1. Chronic renal failure
2. Known hypersensitivity to beef or pork proteins

**DRUG INTERACTION**

1. Vasopressor effect may be increased by concurrent administration of ganglionic blocking agents.

**ADMINISTRATION**

1. Adult: One time only dose: [40 units] IV/IO; may replace either 1<sup>st</sup> or 2<sup>nd</sup> dose of epinephrine.

**SPECIAL NOTES**

1. Potent vasoconstrictor. Increased peripheral vascular resistance may provoke cardiac ischemia and angina.
2. Do not use in responsive patients with coronary artery disease.