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<tr>
<th>Drug Name</th>
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<tr>
<td>ABCIXIMAB</td>
<td>Racemic Epinephrine</td>
<td>Ranitidine</td>
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<tr>
<td>Acetylsalicylic Acid, aspirin, ASA</td>
<td>Sodium Bicarbonate 8.4%</td>
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<td>Acetylsalicylic Acid, aspirin, ASA EMT Administration</td>
<td>Thiamine HCL (vitamin B₁)</td>
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<td>Albumin, normal serum 5% / 25%</td>
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<td>Fentanyl Citrate</td>
<td>Verapamil HCL</td>
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<td>Bumetanide</td>
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<tr>
<td>Calcium Chloride</td>
<td>Ipratropium Bromide</td>
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<tr>
<td>Calcium Gluconate 2.5% topical gel</td>
<td>Lidocaine HCL</td>
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<td>Methylprednisolone Sodium Succinate</td>
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<td>Midazolam Hydrochloride</td>
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Drug Profile for ABCIXIMAB

**GENERIC NAME:** ABCIXIMAB  
**CLASS:** Antiplatelet agent, platelet aggregation inhibitor

**Mechanism of Action:**

- Binds with Glycoprotein (GP) IIb/IIIa receptors on the surface of platelets inhibiting the final common pathway for platelet aggregation.
- Binding with GP IIb/IIIa receptors produces a blockade that interferes with fibrinogen, von Willebrand factor and other platelet aggregation modulators.
- Binding with GP IIb/IIIa receptors effectively prevents the formation of intravascular thrombus and may contribute to the resolution of pre-existing thrombus.

**Indications for Field Use:**

- Infusion monitoring during interfacility transport only.
- Adjunctive to or in preparation of percutaneous transluminal coronary angioplasty (PTCA) for the prevention and treatment of acute coronary syndrome and associated acute cardiac ischemic complications in patients at risk for abrupt closure of the treated coronary vessel.
- Heparin should be concurrently administered and monitored.

**Contraindications:**

- Active internal bleeding or recent history (within 6 weeks) of clinically significant gastrointestinal or genitourinary bleeding
- History of cerebrovascular accident (CVA) with current residual neurologic deficit or within the past 2 years
- Bleeding diathesis (bleeding disorder, condition or predisposition)
- Current use of warfarin (Coumadin) or use within the past 7 days unless prothrombin time is <1.2 times control
- Thrombocytopenia (<100,000 cells/mcl)
- Trauma or major surgery within the past 6 weeks
- Intracranial neoplasm
- Arteriovenous malformation or aneurysm
- Severe uncontrolled hypertension (systolic BP >180mmHg, diastolic BP >110mmHg)
- Concomitant use of another GP IIb/IIIa inhibitor
- History of vasculitis
- Acute pericarditis
- Use or intent to use IV Dextran
- Hypersensitivity to abciximab or murine proteins

**Adverse Reactions:**

- Bleeding - spontaneous bleeding may occur with abciximab administration; most common sites include: venous and arterial access sites (including femoral artery, retroperitoneal, gastrointestinal, genitourinary)
Drug Profile for ABCIXIMAB

- Major bleeds have been demonstrated to occur more often in patients: >65 years old, <75kg, with a history of prior gastrointestinal disease, patients receiving thrombolytics or heparin
- Hemorrhagic stroke and intracranial bleeding
- Thrombocytopenia
- Other adverse effects (incidence greater than 1 percent):
- Cardiovascular - Hypotension, Bradycardia, atrial fibrillation/flutter pulmonary edema
- Central nervous system - abnormal thinking, dizziness
- Genitourinary - urinary tract infection

Notes on Administration:

- Weight-based dosing of both abciximab and concomitant heparin is essential to decrease the incidence of major and minor bleeding episodes. Patients should be managed following an accepted, literature-based standard of practice.
- Abciximab infusions must be administered through a low protein binding 0.2 or 0.22 micron in line filter.
- Infusion pump is required in management of abciximab infusions.

Incompatibilities/Drug Interactions:

- Other medications that effect hemostasis: thrombolytics, oral anticoagulants, nonsteroidal anti-inflammatory agents, dipyridamole, ticlopidine, clopidogrel.
- IV dextran in combination with abciximab results a high incidence of bleeding.

Adult Dosage:

Based on the EPILOG (NEJM. 1997; 336: 1689) and CAPTURE (Lancet. 1997; 349: 1429) studies:

Loading Dose: 0.25mg/kg IV over 5 minutes slow IV push
Infusion: 0.125mcg/kg/min (0.09mg/kg) if patient less than 80kg
10mcg/min (7.2mg) if patient equal to or greater than 80kg
in 250ml D5W or NS at 21ml/hr for 12 hours

Pediatric Dosage:

Safety and efficacy in children have not been established.

Routes of Administration:

Intravenous bolus followed by infusion

Onset of Action:

A few minutes
Drug Profile for ABCIXIMAB

Peak Effects:

In less than 30 minutes

Duration of Action:

Two phased elimination results in restoration of platelet function to >50% after 24 hours, approximately 85% after 48 hours and low levels of GP IIb/IIIa receptor blockade present for up to 10 days post infusion.

Arizona Drug Box Minimum Supply:

None

Special Notes:

- Minimizing vascular and other trauma is important in managing platelet aggregation inhibitors. Due to risk of spontaneous bleeding during abciximab administration, procedures including the following should be avoided whenever possible: arterial and venous punctures, intramuscular injection, placement of urinary catheters, nasogastric tube and nasotracheal intubation. If arterial or venous access is necessary, avoid non-compressible like subclavian and jugular vessels.
- Patients transported with an abciximab infusion should be under the direct care of a cardiologist who is responsible for initiating and monitoring the abciximab therapy.
- Inservice education of paramedic personnel is required prior to managing abciximab during transport.
Drug Profile for ACETYLSALICYLIC ACID, ASPIRIN, ASA

GENERIC NAME: ACETYLSALICYLIC ACID, ASPIRIN, ASA
CLASS: Analgesic, antipyretic, anti-inflammatory

Mechanism of Action:

In small doses aspirin blocks thromboxane A$_2$, a potent platelet aggregate and vasoconstrictor. This property has led to its use in the acute phase of management of the myocardial infarction. Decreased platelet aggregation.

Indications and Field Use:

- Chest pain or other signs/symptoms suggestive of acute myocardial infarction
- ECG changes suggestive of acute myocardial infarction
- Unstable angina
- Pain, discomfort, fever in adult patient only

Contraindications:

- Bleeding ulcer, hemorrhagic states, hemophilia
- Known hypersensitivity to salicylates or other non-steroidal anti-inflammatories that has led to hypotension and/or bronchospasm
- Children and adolescents (prehospital personnel should not administer ASA to this age group)

Adverse Reactions:

- Use with caution in the patient with history of asthma. Anaphylactic reactions in sensitive patients have occurred; skin eruptions
- Other side effects rare with single dose

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

Not applicable with single dose therapy

Adult Dosage:

- Cardiac: 160-325 mg (2-4 pediatric chewable tabs), chew or swallow
- Pain/discomfort/fever: 325 mg po (4 pediatric chewable tablets), chew or swallow

Pediatric Dosage:

Not recommended for prehospital use in children

Revised by PMD, Approved by MDC 1-23-2014
Drug Profile for ACETYLSALICYLIC ACID, ASPIRIN, ASA

Routes of Administration:

Oral

Onset of Action:

20-30 minutes

Peak Effects:

2 hours

Duration of Action:

4-6 hours

Arizona Drug Box Minimum Supply:

324 mg

Special Notes:

Baby ASA is heat and light sensitive. The odor of acetic acid (vinegar-like smell) indicates degradation of product
GENERIC NAME: ACETYLSALICYLIC ACID, ASPIRIN, ASA
CLASS: Analgesic; antipyretic; anti-inflammatory

EMT Administration of Aspirin - This is the Arizona Department of Health Services’ recommendation for the use of this drug by an EMT in the prehospital setting.

Mechanism of Action:

In small doses aspirin blocks thromboxane A₂, a potent platelet aggregate and vasoconstrictor.
This property has led to its use in the acute phase of management of the myocardial infarction.
Decreased platelet aggregation.

Indications and Field Use:

Chest pain or other signs/symptoms suggestive of acute myocardial infarction

Contraindications:

- Bleeding ulcer, hemorrhagic states, hemophilia
- Known hypersensitivity to salicylates or other non-steroidal anti-inflammatories that has led to hypotension and/or bronchospasm
- Children and adolescents (prehospital personnel should not administer ASA to this age group)

Adverse Reactions:

- Use with caution in the patient with history of asthma. Anaphylactic reactions in sensitive patients have occurred; skin eruptions
- Other side effects rare with single dose

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

Not applicable with single dose therapy

Adult Dosage:

Cardiac: 160-325 mg (2-4 81 mg tabs), chew or swallow

Pediatric Dosage:

Not recommended for prehospital use in children

Routes of Administration:

Revised by PMD, Approved by MDC 1-23-2014
Oral

Onset of Action:

20-30 minutes

Peak Effects:

2 hours

Duration of Action:

4-6 hours

Recommended Arizona Drug Box Minimum Supply:

324 mg

Special Notes:

ASA is heat and light sensitive. The odor of acetic acid (vinegar-like smell) indicates degradation of product
Drug Profile for ADENOSINE

GENERIC NAME: ADENOSINE
CLASS: Antiarrhythmic, endogenous nucleoside

Mechanism of Action:

- Slows conduction time through AV node; can interrupt re-entrant pathways through the AV node.
- Slows sinus rate.
- Larger doses decrease BP by decreasing peripheral resistance.

Indications and Field Use:

- Conversion of supraventricular tachycardias with no known atrial fibrillation or atrial flutter.
- Undifferentiated regular monomorphic wide-complex tachycardia

Contraindications:

- Sick sinus syndrome, 2nd or 3rd degree AV blocks; except in patients with a functioning ventricular pacemaker.
- Use cautiously in patients with known asthma (has precipitated acute bronchospasm).
- Patients on theophylline and related methylxanthines.
- Patients on dipyridamole (Persantine) or carbamazepine (Tegretol).
- Cardiac transplant patients are more sensitive to adenosine and require only a small dose (relative).
- Known atrial fibrillation or atrial flutter.
- Pregnancy (no controlled studies)

Adverse Reactions:

CV: Transient dysrhythmias (systole, btrialcardia, PVC's) occur in 55% of patients (none reported as irreversible). Palpitations, chest pressure, chest pain, hypotension, transient hypertension; facial flushing, sweating.
Resp: Dyspnea, hyperventilation, tightness in throat, bronchospasm.
CNS: Lightheadedness, headache, dizziness, paresthesias, apprehension, blurred vision, neck-back pain.
GI: Nausea, metallic taste.

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

- Adenosine is not blocked by Atropine.
- Theophylline and related methylxanthines (caffeine & theobromine-xanthine) in therapeutic concentrations decrease effectiveness. See: CONTRAINDICATIONS

Revised by PMD, Approved by MDC 1-23-2014
Incompatibilities/Drug Interactions (cont’d.):

Dipyridamole (Persantine) & carbamazepine (Tegretol, Atretol) block uptake and potentiate effects. See: CONTRAINDICATIONS.

Adult Dosage:

- Initial: 6 mg rapid IV bolus over 1-3 seconds
- Special administration procedure: Follow immediately with 20 ml normal saline flush. IV site recommended is antecubital fossa (close to central circulation); use injection port nearest hub of IV catheter; arm elevated during procedure; constant ECG monitoring.
- Repeat: If no response in 1-2 minutes (of each dose, respectively) may repeat 12 mg utilizing the same procedure for the repeat dose.

Pediatric Dosage: (Drug of choice for treating SVT in symptomatic infants and children)

- Initial: 0.1 mg/kg as a rapid IV bolus.
- Special administration procedure: Follow immediately with 2-3 ml normal saline flush. Use injection port nearest the hub of IV catheter for procedure; constant ECG monitoring.
- Repeat: If no response, dose may be doubled 1 time (0.2 mg/kg) using same administration procedure.
- Maximum single dose: Should not exceed 12 mg.
- Infants with SVT associated with shock: Adenosine may precede cardioversion if vascular access is available, but cardioversion should not be delayed while IV access is achieved.

Routes of Administration:

Rapid IV push

Onset of Action:

Seconds

Peak Effects:

Seconds

Duration of Action:

10-12 seconds (1/2 life 5 seconds)

Arizona Drug Box Minimum Supply:

18 mg
Drug Profile for ADENOSINE

Special Notes:

- Dysrhythmias may recur (short half-life).
- Dysrhythmias appear in 55% of patients at conversion, lasting for a few seconds, do not usually require intervention.
- Second dose must be prepared and available.
- Check for crystallization in cold climates.
GENERIC NAME: ALBUMIN, normal serum 5% / 25%
CLASS: Blood derivative, placental human plasma

FOR INFUSION USE OF INTER-FACILITY TRANSFERS

Mechanism of action:

Exerts oncotic pressure, which expands volume of circulating blood and maintains cardiac output.

Indications and field use:

- Restores plasma volume in burns
- Hyperbilirubinemia
- Shock
- Hypoproteinemia
- Prevention of cerebral edema
- Cardiopulmonary bypass procedures
- ARDS

Contraindications:

- Hypersensitivity
- CHF
- Severe anemia
- Renal insufficiency

Adverse Reactions:

CV: Fluid overload, hypotension, erratic pulse, tachycardia
Resp: Altered respirations, pulmonary edema
CNS: Fever, chills, flushing, headache
Integ: Rash, urticaria
GI: Nausea, vomiting, increased salivation

Precautions:

Decreased salt intake, decreased cardiac reserve, lack of albumin deficiency, hepatic disease, renal disease, pregnancy.

Notes on Administration:

Needs to be administered IV slowly to prevent fluid overload; dilute with NS for injection or D5W; 5% may be given undiluted; 25% may be given diluted or undiluted, give over 4 hr, use infusion pump.

Revised by PMD, Approved by MDC 1-23-2014
Drug Profile for ALBUMIN, normal serum 5% / 25%

Dosage:

Adult: IV 500 ml of 5% sol Q30 min, as needed
Child: ¼ - ½ adult dose in nonemergencies

Arizona Drug Box Minimum Supply:

None
GENERIC NAME: ALBUTEROL SULFATE
CLASS: Sympathomimetic, bronchodilator

Mechanism of Action:

β agonist (primarily β2); relaxes bronchial smooth muscle, resulting in bronchodilation; also relaxes vascular and uterine smooth muscle; decreases airway resistance

Indications and Field Use:

Treatment of bronchospasm
Treatment of hyperkalemia

Contraindications:

Synergistic with other sympathomimetics
Use caution in patients with diabetes, hyperthyroidism, and cerebrovascular disease

Adverse Reactions:

CV: Dysrhythmias, tachycardia (with excessive use), peripheral vasodilation
Resp: Bronchospasm (rare paradoxical with excessive use)
CNS: Tremors, nervousness
GI: Nausea, vomiting
Endocrine: Hyperglycemia

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

Tricyclic antidepressants (TCA’s) and monoamine oxidase (MAO) inhibitors
Other sympathomimetics (relative)

Adult Dosage:

Give 2.5 mg of premixed solution for inhalation (0.083%) via SVN with a mouth piece, or in-line with a ventilatory device. Repeated according to medical control preference.

Pediatric Dosage: (children <40 lbs)

Give 2.5 mg of premixed solution for inhalation (0.083%) via SVN with a mouth piece, mask, or in-line with a ventilatory device. Repeated according to medical control preference.
May administer up to 5mg per dose according to medical control preference.

Routes of Administration:

Revised by PMD, Approved by MDC 1-23-2014
Drug Profile for ALUTEROL SULFATE

Nebulized, mouth piece or in-line via mask
Inhaler, patients own
ET/NT in-line

Onset of Action:

5-15 minutes

Peak Effects:

30 minutes - 2 hours

Duration of Action:

3-4 hours

Arizona Drug Box Minimum Supply:

10 mg

Special Notes:

Must be sulfite-free
GENERIC NAME: AMIODARONE
CLASS: Antiarrhythmic Agent

Mechanism of Action:

- Multiple effects on sodium, potassium and calcium channels.
- Prolongs action potential, refractory period.
- Ventricular automaticity (potassium channel blockade).
- Slows membrane depolarization and impulse conduction (sodium channel blockade).
- Negative chronotropic activity in nodal tissue, rate reduction, and antisympathetic activity (calcium channel and β-blockade).
- Dilates coronary arteries due to calcium channel and alpha-adrenergic blocking action.

Indications for use:

- Control hemodynamically stable ventricular tachycardia when cardioversion unsuccessful.
- Adjunct to cardioversion of SVT and PSVT.
  Rate control in atrial fibrillation or flutter.

Contraindications:

- Bradycardia
- Second or third degree heart block unless a functioning pacemaker is present
- Cardiogenic shock
- Hypotension
- Pulmonary congestion

Adverse Reactions:

- Cardiovascular: bradycardia, hypotension, asystole/cardiac arrest, atrio-ventricular block
- Torsades de Pointes (prolongs QTc interval), congestive heart failure
- GI & Hepatic: nausea, vomiting, abnormal liver function tests
- Skin: slate-blue pigmentation
- Other: fever, headache, dizziness, flushing, abnormal salivation, photophobia

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

- Beta blockers, calcium channel blockers, and other antiarrhythmics are additive and can be proarrhythmic when given in combination with Amiodarone due to similar mechanisms of action.
- Amiodarone precipitates at certain concentrations when mixed at a Y-site with sodium
bicarbonate, furosemide, and heparin.

**Adult Dosage:**

**VF/Pulseless VT**
300 mg IV push over 30 – 60 seconds, may repeat in 3-5 minutes with 150 mg IV push

**Wide-Complex Tachycardias, Atrial Flutter, Atrial Fibrillation, SVT with cardioversion**
150 mg IV over 10 minutes (mix in 50 mL bag of D5W) may repeat every 10 minutes

**Maintenance Infusion Post Resuscitation/Conversion**
After successful defibrillation, follow with up to 1mg/min IV infusion for 6 hours, then up to 0.5 mg/min IV infusion for up to 18 hours, maximum daily dose is 2.2 grams
Mix 450 mg in 250 mL of D5W (special polyolefin bag), concentration 1.8 mg/mL, and run at 33.3 mL/hr for 1 mg/min or 16.7 mL/hr for 0.5 mg/min

**For Other Maintenance infusion**
Rates range from 0.5 mg/min to 1mg/min. Maximum daily dose is 2.2 grams

**Pediatric Dosage:**

**VF/Pulseless VT**
5 mg/kg IV push (max 300 mg single dose), may repeat every 5 minutes two times to a total maximum of 15 mg/kg/day

**Probable VT with pulse**
5 mg/kg IV administered over 20 minutes may repeat two more times to a total of 15 mg/kg/day

**Route of Administration:**

IV/IO bolus, IV/IO infusion

**Onset of Action:**

Variable

**Peak effects:**

Variable

**Duration of Action:**

Half-life may exceed 40 days.

**Arizona Drug Box Minimum Supply:**

Revised by PMD, Approved by MDC 1-23-2014
Optional 300 mg

Special Notes:

- Amiodarone is mixed in a soap-like vehicle in glass or special plastic and is subject to excessive foaming. Draw from ampule with at least an 18 ga. needle. Mix with 20 – 30 mL of D5W prior to administration.
- Use with caution if hepatic failure is present or if administered in combination with other drugs.
- Patient must be on a cardiac monitor—monitor heart rate and rhythm.
- Must be administered on an IV infusion pump during interfacility transports.
- Temperature control is required to carry this drug. Temperature may not exceed 77 degrees F. where the drug is stored.
- Special polyolefin bag is required for maintenance infusion. Regular bags will absorb Amiodarone.
- Amiodarone may not be given via ET Tube.
- Amiodarone is an optional drug.
Drug Profile for ATROPINE SULFATE

GENERIC NAME: ATROPINE SULFATE
CLASS: Anticholinergic agent, antidote, antispasmodic agent, antiarrhythmic, antimuscarinic

Mechanism of Action:

Pharmacological: Blocks the action of acetylcholine as a competitive antagonist at muscarinic receptor sites in smooth muscle, secretory glands, and the CNS. It works by blocking parasympathetic response and allowing sympathetic response to take over, resulting in an increase in cardiac output and the drying of secretions. Atropine reverses the muscarinic effects of cholinergic poisoning by primarily reversing bronchorrhea and bronchoconstriction. At high enough doses, atropine may have an effect on nicotinic receptors responsible for restlessness, hallucinations, disorientation, and/or delirium.

Clinical:

CV: Increased heart rate (positive chronotropic effect); increased conduction velocity; increased force of contraction (slight), increase cardiac output.
Resp: Decreased mucus production; increased bronchial smooth muscle relaxation (bronchodilation).
GI: Decreased GI secretion and motility.
GU: Decreased urinary bladder tone.
Misc: Mydriasis (pupillary dilation); decreased sweat production.

Indications and Field Use:

- Symptomatic bradycardia (sinus, junctional, and AV blocks causing significant hypotension, ventricular ectopy, chest pain, altered level of consciousness, etc.), monitored patient only.
- Acetylcholinesterase inhibitor poisoning (organophosphate, carbamate cholinergic poisoning).

Contraindications:

- Hypersensitivity to atropine or any component of the formulation – Belladonna alkaloid allergy
- Glaucoma, acute narrow angle (relative contraindication for patient with symptomatic bradycardia), adhesions between the iris and lens
- Tachycardia
- Obstructive GI disease, paralytic ileus, intestinal atony of the elderly or debilitated patient, severe ulcerative colitis, or toxic megacolon complicating ulcerative colitis
- Hepatic disease
- Renal disease, obstructive uropathy
- Myasthenia gravis (unless used to treat side effects of acetylcholinesterase inhibitor
- Asthma
- Thyrotoxicosis
- Mobitz type II block
- 3rd degree heart block
Pregnancy Risk Factors/Considerations

Risk category: C. Animal reproduction studies have not been conducted. Atropine has been found to cross the human placenta. Trace amounts of atropine can enter breast milk; use caution. Anticholinergic agents may suppress lactation.

Adverse Reactions:

- Major: Tachydysrhythmias; flushing; ventricular irritability; exacerbation/initiation of angina; acute narrow angle glaucoma; blurred vision; mydriasis; agitation to delirium; bloating; constipation; decreased gastric emptying
- Minor: Dry mouth/mucous membranes; loss of taste; nausea; vomiting; urinary retention; neuromuscular weakness; decreased sweating/increased body temperature.

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

Incompatibilities
- Y-site incompatible with thiopental
- Syringe incompatible with cimetidine, pentobarbital (variable)
- Admixture incompatible with floxacillin, metaraminol, methohexital, norepinephrine
- Sodium bicarbonate (relative)

Drug Interactions
- Atropine may increase the levels/effects of: anticholinergics, cannabinoids, and potassium chloride
- Atropine may decrease the levels/effects of: phenothiazines, acetylcholinesterase inhibitors (central), and secretin
- Concurrent use of atropine with psychotropics may result in additive anticholiergic side effects (dry mouth, blurred vision, constipation)
- Pramlintide may increase the levels/effects of atropine
- Acetylcholinesterase inhibitors (central) may decrease the levels/effects of atropine

Adult Dosage:

Special instructions

- IV/IO – administer undiluted by rapid IV injection; slow injection may result in paradoxical bradycardia. Doses < 0.5 mg may increase vagal tone resulting in paradoxical bradycardia.
- IM – AtroPen should be administered to outer thigh. May be given through clothing as long as pockets at injection site are clear. Hold autoinjector in place for 10 seconds following injection; massage injection site.
Drug Profile for ATROPINE SULFATE

Symptomatic Bradycardia:
- IV/IO – 0.5 mg every 5 minutes. Do NOT exceed a total dose of 3 mg or 0.04mg/kg if symptoms profound.
  - Consider atropine before pacing in mildly symptomatic patients, but do not delay pacing in unstable patients, particularly those with high-degree AV block.
  - Do not rely on atropine in Mobitz type II second or third-degree AV block or in patients with third-degree AV block with a new wide QRS complex. Hemodynamically unstable and clinically deteriorating patients require immediate pacing.

Organophosphate or carbamate poisoning:
- IV/IO – Initially: 1-5 mg. Doses should be doubled every 5 minutes until signs of muscarinic excess abate (clearing of bronchial secretions, bronchospasm, and adequate oxygenation)
- IV infusion – 0.5-1 mg/hour or 10-20% of loading dose/hour
- IM – (AtroPen) mild symptoms: Administer 2 mg as soon as exposure is known or suspected. If severe symptoms develop after first dose, 2 additional doses should be repeated in 10 minutes, not to exceed more than 3 doses. Severe symptoms: Immediately administer three 2 mg doses.

Pediatric Dosage:

Symptomatic Bradycardia:
- IV/IO – 0.02 mg/kg (minimum of 0.1 mg), may repeat at 5 minute intervals to a maximum total dose of 1 mg in children and 2 mg in adolescents.
- Maximum single doses: Child 0.5 mg; Adolescent 1 mg.

For bradycardia in neonates, reserve use for those unresponsive to improved oxygenation and epinephrine.

Organophosphate or carbamate cholinergic poisoning:
- IV/IO – 0.03-0.05 mg/kg every 10 to 20 minutes until cholinergic symptoms minimize, then every 1 to 4 hours for at least 24 hours.
- IM – Administer dose as listed below as soon as exposure is known or suspected. If severe symptoms develop after first dose, 2 additional doses should be repeated in 10 minutes. Do not administer more than 3 doses. For severe symptoms, immediately administer 3 doses as follows:
  - < 6.8 kg (15 lbs): not recommended, administer atropine 0.05 mg/kg
  - 6.8-18 kg (15-40 lbs): 0.5 mg/dose
  - 18-41 kg (40-90 lbs): 1mg/dose
  - 41 kg (> 90 lbs): 2mg/dose

Routes of Administration:

Intravenous, intraosseous, intrathecal, or intramuscular (using AtroPen); okay for endotracheal use if necessary.

Onset of Action:
Drug Profile for ATROPINE SULFATE

Rapid, 1 minute

Peak Effects:

- IV – 2-5 minutes
- IM – 30 minutes

Duration of Action:

- Half-life – 2 to 3 hours
- Terminal half-life – 12.5 hours

Arizona Drug Box Minimum Supply:

- 3 (1 mg/10 ml) prefilled syringes,
  Optional: 1 (8 mg/20 ml, 0.4 mg/ml) multidose vial

Special Notes:

- Administering too small doses or administering too slowly may result in paradoxical bradycardia.
- May accumulate with multiple inhalation administration, particularly in the elderly
- Heat prostration may occur in hot weather
- Signs and symptoms of cholinergic/organophosphate poisoning: excess salivation, lacrimation, urination, defecation (SLUD), bradycardia; coma.
- Signs and symptoms of poisoning of atropine-like drugs: dry mouth; thirst; hot, dry, flushed skin; fever; palpitations, restlessness; excitement; delirium.
- Hint: patient that describes their glaucoma as painful, probably has acute narrow angle glaucoma.
- Atropine should only be utilized when pacer is not immediately available for Second Degree Type II and Third Degree Heart Blocks.
- Do not rely on atropine in Mobitz type II second-degree or third-degree AV block or in patients with third-degree AV block with a new wide QRS complex. Hemodynamically unstable and clinically deteriorating patients require immediate pacing. Awake patients should have sedation before pacing.
- Atropine will affect pupil response and patient will appear to have fixed pupils – do not utilize pupils as clinical marker (ie pupils fixed dilated post resuscitation)
Drug Profile for BUMETANIDE

GENERIC NAME: BUMETANIDE
CLASS: Loop diuretic

Mechanism of Action:

Inhibits electrolyte reabsorption in the ascending loop of Henle leading to diuresis

Indications and Field Use:

Pulmonary edema
Congestive heart failure

Contraindications:

- Hypersensitivity
- Anuria
- Electrolyte deficiencies
- Hepatic coma
- Cautious use: hepatic cirrhosis, ascites, history of gout, hypersensitivity to furosemide

Adverse Reactions:

- Dizziness (most common), headache, muscle cramps
- Hypotension
- EKG changes associated with hypokalemia, hyponatremia, hypocalcemia, hypomagnesemia
- Nausea, vomiting, diarrhea, dry mouth, ringing in ears

NOTES ON ADMINISTRATION

High doses or frequent administration, particularly in the elderly, can cause profound diuresis, hypovolemia, and resulting circulating collapse with development of thrombi and emboli. May precipitate hypokalemia-induced digoxin toxicity.

Incompatibilities/Drug Interactions:

- NSAIDs reduce diuretic effect
- May increase blood levels of lithium increasing risk of lithium poisoning
- Potentiates effects of various antihypertensive drugs

Adult Dosage:

0.5 to 1.0 mg IV slowly over 1 to 2 minutes, or IM

Onset of Action:

Revised by PMD, Approved by MDC 1-23-2014
Drug Profile for BUMETANIDE

IV – immediate

Peak Effect:

IV – 15 to 30 minutes

Duration of Action:

2 to 4 hours

Arizona Drug Box Minimum Supply:

Optional: 4 mg

Special Notes:

- Bumetanide does not have the vasodilatory effects of furosemide
- Patients allergic to sulfa drugs may show hypersensitivity
- May cause a reduction of blood supply to developing fetus
- Safety and effectiveness in pediatric patients is not established
- mg bumetanide = 40 mg furosemide
Drug Profile for CALCIUM CHLORIDE

GENERIC NAME:  CALCIUM CHLORIDE
CLASS:  Electrolyte

Mechanism of Action:

- Increases extracellular and intracellular calcium levels
- Stimulates release of catecholamines
- Increases cardiac contractile state (positive inotropic effect)
- May enhance ventricular automaticity
- Inhibits the effects of adenosine on mast cells

Indications and Field Use:

- Acute hypocalcemia
- Calcium channel blocker OD
- Acute hyperkalemia (known or suspected)
- Hypermagnesemia (Magnesium OD)
- Pre-treatment for IV calcium channel blocker administration

Contraindications:

Hypercalcemia
Concurrent digoxin therapy (relative)

Adverse Reactions:

- Brady-asystolic arrest
- Severe tissue necrosis if solution extravasates
- Use cautiously in patients on digitalis; may cause serious arrhythmias

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

All drugs -- flush line before and after administration

Adult Dosage:

Hypocalcemia, calcium channel blocker OD, hyperkalemia and hypermagnesemia:
5-10 ml (0.5-1 Gm) of 10% calcium chloride. May repeat in 10 minutes.

Pre-treatment for IV calcium channel blocker administration: 3 ml of 10% calcium chloride. May be repeated once.

Pediatric Dosage:

Hypocalcemia, calcium channel blocker OD hyperkalemia and hypermagnesemia:
Drug Profile for CALCIUM CHLORIDE

0.2 - 0.25 ml/kg of a 10% solution infused slowly. Should not be repeated without documented calcium deficiency.

Routes of Administration:

IV bolus

Onset of Action:

Seconds

Peak Effects:

3 - 5 minutes

Duration of Action:

15-30 minutes

Arizona Drug Box Minimum Supply:

1 g

Special Notes:

- For pediatrics, calcium chloride may be diluted with 1-2 ml of NS IV fluid per ml calcium chloride.
- Concurrent administration of sodium bicarbonate and calcium chloride will produce a precipitate, calcium carbonate (chalk).
- Studies have shown no benefit from calcium administration in asystole or PEA. There is increasing evidence that calcium increases damage to cells that have been injured and worsens the neurological outcome.
- Pediatric patients should not receive IV calcium channel blockers such as verapamil, therefore there is no dose for pre-treatment.
- Use of calcium chloride in treatment of hyperkalemia is a part of a combination drug therapy (See profiles for dextrose and sodium bicarbonate). Insulin may be given upon arrival to ED.
- Calcium chloride is not recommended in patients with suspected digitalis toxicity
Drug profile for CALCIUM GLUCONATE GEL, 2.5%

GENERIC NAME:  CALCIUM GLUCONATE GEL, 2.5%
CLASS:  Hydrofluoric acid first aid response

Mechanism of Action:

Calcium gluconate combines with hydrofluoric acid to neutralize the powerful fluoride ion, forming insoluble calcium fluoride. This helps stop the fluoride ion from penetrating into tissue and bone, preventing further damage. The gel does NOT treat or heal HF burns that have already developed.

Indications and Field Use:

Used after contact with hydrofluoric acid to mitigate or prevent the related pain and potential tissue burns and bone damage.

Contraindications:

For external use only.

Adverse Reactions:

None reported.

NOTES ON ADMINISTRATION

- Personnel should wear appropriate HF-protective gloves (neoprene) and other safety equipment before assisting patient with application of gel.
- If possible, the patient should wash area and apply the gel themselves.
- Consider placing surgical glove over gel when applied to distal upper extremities.

Dosage: Adult and Pediatric

If hydrofluoric acid contacts the body, it is highly recommended to wash/flush the area with tepid water for at least 3 minutes to remove HF surface residue. Apply calcium gluconate gel freely to the affected areas and continuously massage into the skin. May reapply gel every 15 minutes until arrival at hospital.

Onset of Action:

Immediate

Peak Effects:

Unknown

Duration of Action:
Unknown

**Arizona Drug Box Supply Range:**

Optional: 50 g

**Special Notes:**

Store between 15-30 C (59-86 F).
Use directly from tube, one tube per application, then safely discard.
Ensure adequate ventilation at all times.
GENERIC NAME: CHARCOAL, ACTIVATED (without sorbitol)

CLASS: Adsorbent

Mechanism of Action:

**Pharmacological:** Physical binding (adsorption) of toxins from GI tract.

**Clinical effects:** Prevents/reduces systemic absorption of toxins.

Indications and Field Use:

- Sole prehospital therapy of oral ingestion of toxic substances
- Pre-lavage of oral ingestions of toxic substances

Contraindications:

- Ingestion of caustics
- Ingestion of hydrocarbons (relative)
- Oral administration to comatose patient
- Simultaneous administration of other oral drugs

Adverse Reactions:

- May provoke vomiting
- May worsen poison induced ileus

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

- Ineffective for iron, lithium, heavy metals, and other ions.
- May reduce the effectiveness of other treatments (Mucomyst) in pure acetaminophen OD’s.
- Since charcoal bonds with whatever it is mixed with, flavoring with drinks reduces effectiveness.

Adult Dosage:

30-60 Gm (1-2 Gm/kg); if not in pre-mixed slurry, mix one part charcoal with four parts water.

Pediatric Dosage:

0.5 - 1.0 Gm/kg; if not in pre-mixed slurry, mix one part charcoal with four parts water.

Routes of Administration:
Drug Profile for CHARCOAL, ACTIVATED (without sorbitol)

Oral (po), nasogastric tube (ng), orogastric (og)

Onset of Action:
Immediate

Peak Effects:
Not applicable

Duration of Action:
Dependent upon GI function; acts until excreted

Arizona Drug Box Minimum Supply:
Optional: 50 gm

Special Notes:
- Charcoal mixture *should not* contain sorbitol; *carefully* read label of exchange supply.
**Drug Profile for CIMETIDINE**

**GENERIC NAME:** CIMETIDINE  
**CLASS:** GI-Anti Ulcer

**Mechanism of Action:**

Competitively inhibits action of histamine at the H₂ at receptor sites of parietal cells, decreasing gastric acid secretion.

**Indications and Field Use:**

- Infusion monitoring during interfacility transport only
- Short-term treatment of duodenal ulcer; maintenance therapy
- Pathological hypersecretory conditions
- Prevention of upper GI bleeding

**Contraindications:**

- Hypersensitivity to drug

**Adverse Reactions:**

- GI: Mild and transient diarrhea
- Cardiac: Heart block in elderly patients

**NOTES ON ADMINISTRATION**

**Incompatibilities/Drug Interactions:**

- Fosphenytoin, lidocaine, phenytoin, propanolol, some benzodiazepines, theophylline, warfarin: Inhibits hepatic microsomal enzyme metabolism of these drugs.
- Digoxin, fluconazole, indomethacin, iron salts, ketoconazole, tetracycline: Decreases drug absorption.

**Adult Dosage:**

- Pathologic hypersecretory conditions: 300mg in 50 mL normal saline infuse over 30 minutes
- Prevention of upper GI bleeding: 50 mg/hour continuous infusion

**Pediatric Dosage:**

- Can be utilized in children 16 years or older

**Routes of Administration:**
Drug Profile for CIMETIDINE

IV infusion – Piggy back

**Onset of Action:**

Unknown

**Peak Effects:**

Immediate

**Duration of Action:**

Unknown

**Arizona Drug Box Minimum Supply:**

None

**Special Notes:**

- Use cautiously in elderly or debilitated patients because they may be more susceptible to confusion.
- Assess patients for abdominal pain. Note blood in emesis, stool, or gastric aspirate.
GENERIC NAME: DEXAMETHASONE SODIUM PHOSPHATE
CLASS: Synthetic adrenocorticoid/glucocorticoid with a predominance of glucocorticoid action, anti-inflammatory

Mechanism of Action:

Improves lung function and myocardial performance: stabilization of lysosomal and cell membranes, inhibition of compliment-induced granulocyte aggregation, rightward shift in oxygen-hemoglobin dissociation curve, inhibition of prostaglandin and leukotriene production, increase in surfactant production, decrease in pulmonary edema, relaxation of bronchospasm.

Indications and Field Use:

Reactive airway disease: Acute exacerbation of bronchial asthma
   Anaphylaxis
   Cerebral edema (non-traumatic)

Contraindications:

Systemic fungal infections
Hyper sensitivity to any component of dexamethasone, including sulfites
Preterm infants

Adverse Reactions:

Sodium retention, fluid retention, potassium loss, hypokalemic alkalosis, hypertension, convulsions, hyperglycemia, myocardial rupture following recent myocardial infarction

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

Dexamethasone is not compatible with benadryl or versed in IV tubing.

Adult Dosage:

**Reactive Airway Disease, Anaphylaxis:** 8-24 mg

**Cerebral Edema:** 1-5 mg/kg

Pediatric Dosage:

**Reactive Airway Disease, Anaphylaxis:** 0.25-0.5 mg/kg

**Cerebral Edema:** 0.5-1.5 mg/kg

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Drug Profile for DEXAMETHASONE SODIUM PHOSPHATE

Routes of Administration:

IV/IO/IM

Onset of Action:

4-8 hours

Peak Effects:

6-12 hours

Duration of Action:

24-72 hours

Arizona Drug Box Minimum Supply:

Optional: 8 mg
Drug Profile for DEXTROSE 50%

GENERIC NAME: DEXTROSE 50%
CLASS: Carbohydrate, hyperglycemic

Mechanism of Action:

**Pharmacological:** Aerobic metabolic substrate (ATP production).

**Clinical effects:** Reverses CNS effects of hypoglycemia by rapidly increasing serum glucose levels. Provides short-term osmotic diuresis.

Indications and Field Use:

- Known hypoglycemia
- Altered level of consciousness of unknown etiology
- Seizures of unknown etiology
- Hyperkalemia

Contraindications:

- Known thiamine deficiency (relative, if suspected give thiamine close to same time).
- Delirium tremens; use with caution in patients with acute alcoholism. Administer in conjunction with thiamine
- Head injury (unless documented hypoglycemia).
- Intra cranial hemorrhage (relative).
- Severe pain (paradoxical excitement may occur).

Adverse Reactions:

- Cerebral edema in children when given IV undiluted.
- Worsening elevated ICP or cerebral edema from trauma or cerebral vascular accident.
- Extravasation leads to severe tissue necrosis.
- Sclerosing effect on peripheral veins.

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

Sodium bicarbonate
Diazepam will precipitate if given concurrently without flushing

Adult Dosage:

**Hypoglycemia, altered level of consciousness or seizures of unknown etiology:** 25-100 ml of D<sub>50</sub> (12.5-50 Gm, 1/2 to 2 amps) IV.
Drug Profile for DEXTROSE 50%

**Hyperkalemia:** 50 Gm of Dextrose IV administered in conjunction with calcium chloride and sodium bicarbonate. Insulin may be given upon arrival to ED.

**Pediatric Dosage:** (14 yrs and below includes infant)

- Administer 0.5 - 1 Gm/kg of a dextrose 10% solution; recommended to give slowly over a 20 minute period.
- Dilute D$_{50}$ (dextrose 50% containing 25 Gm of dextrose) to a 1:4 solution. To prepare, obtain a 250 ml container of normal saline for IV use; waste 50 ml and add 50 ml of dextrose 50%. The resulting solution is dextrose 10% in normal saline or 10 grams/100ml.

**Routes of Administration:**

- IV bolus (rapid)

**Onset of Action:**

- Seconds

**Peak Effects:**

- Variable

**Duration of Action:**

- Variable

**Arizona Drug Box Minimum Supply:**

- 50 g

**Special Notes:**

- Determine a blood glucose level before initiating administration of dextrose. Inducing an unnecessary hyperosmolar state during certain illness/injury states (i.e. head injuries, cerebral edema, Intracranial bleeds, etc.) may worsen neurological outcome. Additionally dextrose is very necrosing to the vascular system, will cause necrosis if infiltrated and should not be administered through small veins (all drugs may do harm, so does D$_{50}$).
- Emergency treatment of hyperkalemia (clinical presentation, PMH and ECG changes) includes CaCl (or gluconate), sodium bicarbonate, and insulin and dextrose. Insulin may be given upon arrival to ED.
Drugs Profile for DIAZEPAM

GENERIC NAME: DIAZEPAM
CLASS: Benzodiazepine

Mechanism of Action:
Acts on parts of the limbic system, the thalamus, and hypothalamus producing calming effects; decreases seizures by increasing the seizure threshold; transient analgesia; amnesic; sedative.

Indications and Field Use:
- Grand mal seizures, especially status epilepticus.
- Transient analgesia/amnesia for medical procedures (e.g., fracture reduction, cardioversion, pacing).
- Delirium tremens.
- Treat the cause first.

Contraindications:
- Hypersensitivity (allergy)
- Glaucoma, acute narrow angle (relative)

Adverse Reactions:
- CV: Bradycardia, hypotension, cardiovascular collapse; venous thrombosis; phlebitis; vascular spasm
- Resp: Respiratory arrest; may be prolonged in neonate
- CNS: Somnolence, confusion, coma, diminished reflexes; s/s may be prolonged in neonate
- Other: Burning proximal to IV injection site; local irritation; swelling; extravasation will cause tissue necrosis

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:
Do not mix or dilute diazepam with other solutions or drugs in syringe, tubing or IV container.

Adult Dosage:
2 mg increments slow IV push. Administer no faster than 2 mg/minute.

Pediatric Dosage:
IV Dose: 0.2-0.3 mg/kg every 15-30 minutes (max. of 1.0 mg/kg); administer IV over at
Drug Profile for DIAZEPAM

least 3 minutes or until seizure activity subsides.
IV Dose after rectal dose: 0.1 mg/kg with same administration instructions.
**Rectal dose (≤6 years):** 0.3-0.5 mg/kg rectally at IV push rate; may repeat in 15-30 min at 0.25 mg/kg.

**Routes of Administration:**
- Slow IV push
- Rectally for children ≤ 6 years

**Onset of Action:**
- Minutes

**Peak Effects:**
- Minutes

**Duration of Action:**
- 20 minutes to 50 minutes

**Arizona Drug Box Minimum Supply:**
- 20 mg
- Optional: Diazepam Rectal Gel 20 mg

**Special Notes:**
- Valium must be injected slowly and small veins such as those on the dorsum of the hand or wrist should be avoided. Risk of venous thrombosis, phlebitis, local irritation, swelling and vascular spasm is increased.
- Extreme care must be taken to avoid intra-arterial injection or extravasation.
- Diazepam may cause prolonged CNS depression in the neonate (30 days of age or less).
GENERIC NAME: DILTIAZEM  
CLASS: Calcium channel blocker, calcium antagonist

Mechanism of Action:

**Pharmacological:** Inhibits calcium ion influx across cell membranes during cardiac depolarization, decreases SA and AV conduction and dilates coronary and peripheral arteries and arterioles.

**Clinical effects:** Slows the rapid ventricular rate associated with atrial fibrillation and atrial flutter, and reduces coronary and peripheral vascular resistance.

Indications and Field Use:

Rapid ventricular rates associated with atrial fibrillation and atrial flutter, and for PSVT refractory to adenosine.

Contraindications:

- Hypotension (less than 90 mmHg systolic)
- Acute Myocardial infarction
- Cardiogenic shock
- Ventricular tachycardia or wide-complex VT of unknown origin
- Second or third-degree AV block
- Wolff-Parkinson-White (WPW) syndrome
- Sick Sinus syndrome
- Beta Blocker Use

Adverse Reactions:

CV: hypotension, bradycardia, heart block, chest pain, and asystole  
GI: nausea and vomiting  
CNS: headache, fatigue, drowsiness

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

- Avoid use in patients with poison- or drug-induced tachycardia.
- Calcium chloride can be used to prevent the hypotensive effects of this drug and treat patients with a calcium channel blocker poisoning.
- Beta blocker use

Adult Dosage:

Initial: 0.25 mg/kg IVP (usually 20 mg) administered over 2 minutes  
If response is inadequate, repeat in 15 minutes: 0.35 mg/kg IVP administered over 2 mins

Revised by PMD, Approved by MDC 1-23-2014
Drug Profile for DILTIAZEM

Maintenance infusion: 5.0 to 15 mg/hr

Pediatric Dosage:

The safety and efficacy of this drug for use in children has not been established.

Route of Administration:

Intravenous bolus(es) followed by a maintenance infusion

Continuous infusion for maintenance

Dosage: 5 to 10 mg/hr initially; may be adjusted to 15 mg/hr if needed

Onset of Action:

IV - immediately

Peak Effects:

IV - 2 hours or less

Duration of Action:

IV - 4 to 6 hours

Arizona Drug Box Minimum Supply:

25 mg
Drug Profile for DIPHENHYDRAMINE HCL

GENERIC NAME: DIPHENHYDRAMINE HCl
CLASS: Antihistamine; anticholinergic

Mechanism of Action:

Blocks cellular histamine receptors, but does not prevent histamine release; results in decreased capillary permeability and decreased vasodilation, as well as prevention of bronchospasm. Has some anticholinergic effects.

Indications and Field Use:

- Anaphylaxis (2nd line)
- Phenothiazine reactions (extrapyramidal symptoms)
- Antiemetic

Contraindications:

- Known hypersensitivity to diphenhydramine or drugs of similar chemical structure.
- Newborn or premature infants; nursing mothers.
- Considerable caution in patients with glaucoma, acute narrow angle; stenosing or obstructive diseases of the GI tract; bronchial asthma; hyperthyroidism; cardiovascular disease or hypertension; age greater than 60 years (all relative benefit vs risk).

Adverse Reactions:

- CV: Hypotension; palpitations; arrhythmias; hemolytic anemia.
- Resp: Anaphylaxis; thickening of bronchial secretions, tightness in chest; wheezing; nasal stuffiness.
- CNS: Sedation; visual disturbances; seizures.
- GU/GI: Urinary frequency or retention; vomiting.
- Children: In children, may cause paradoxical CNS excitation, seizures, palpitations, thickening of bronchial secretions.

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

- Additive effects with alcohol and other CNS depressants (hypnotics, sedatives, tranquilizers, etc.).
- MAO inhibitors prolong and intensify anticholinergic (drying) effects.

Adult Dosage:

**Anaphylaxis:** 25-50 mg slow IV push or deep IM.

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Extrapyramidal symptoms and antiemetic: 10-50 mg IV or deep IM, dose should be individualized according to the needs and patient response.

Pediatric Dosage:

1.0 - 1.25 mg/kg slow IV push
May also be given deep IM

Routes of Administration:

IV/IO, Deep IM

Onset of Action:

IV 5 - 10 minutes

Peak Effects:

1 hour

Duration of Action:

3-6 hours

Arizona Drug Box Minimum Supply:

50 mg

Special Notes:

- Not used in newborn or premature infants; used in pregnancy only if clearly needed.
- In anaphylaxis, used as a 2nd line treatment after epinephrine and steroids.
Drug Profile for DOPAMINE

GENERIC NAME: DOPAMINE
CLASS: Sympathomimetic

Mechanism of Action:

Immediate metabolic precursor to norepinephrine

**Effects are dose-dependent:**

1-2 mcg/kg/min Acts on dopaminergic receptors to stimulate cerebral, renal and mesenteric vasculature to dilate; HR and B/P are usually unchanged; may increase urine output

2-10 mcg/kg/min β1 stimulant action is primary effect (increases cardiac output and partially antagonizes the a-adrenergic-mediated vasoconstriction. Overall effect is increased cardiac output and only modest increase in systemic vascular resistance (SVR)

10-20 mcg/kg/min a-adrenergic effects predominate resulting in renal, mesenteric and peripheral arterial and venous vasoconstriction with marked increase in SVR, pulmonary vascular resistance and further increased preload

>20 mcg/kg/min Produces hemodynamic effects similar to norepinephrine; may increase HR and O2 demand to undesirable limits

Indications and Field Use:

Symptomatic bradycardias.
Hemodynamically significant hypotension in the absence of hypovolemia (Cardiogenic or septic shock only after fluid administration; assess breath sounds first).

Contraindications:

Hypovolemic shock (relative)
Pheochromocytoma
MAO inhibitors, such as Marplan, Nardil, or Parnate

Adverse Reactions:

CV: Cardiac arrhythmias may occur due to increased myocardial oxygen demand (usually tachydysrhythmias), hypertension, hypotension at low doses.

GI: Nausea and vomiting

GU: Renal shutdown (at higher doses)

Other: Extravasation may cause tissue necrosis

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

Incompatible in any alkaline solution

Revised by PMD, Approved by MDC 1-23-2014
Drug Profile for DOPAMINE

On-board MAO inhibitors will cause hypertensive crisis

Adult Dosage: (dosage range 2-20 mcg/kg/min)

**Preparation:** (If premixed not carried) Add 400 mg/ 250 ml NS or Dextrose = 1600 mcg/ml.

**Bradyardia:** Start at 5 mcg/kg/min
Shock: cardiogenic or septic (non-hypovolemic)
   - **BP < 70 systolic:** Start drip at 5 mcg/kg/min
   - **BP > 70 systolic:** Start drip at 2.5 mcg/kg/min

Pediatric Dosage:

2-20 mcg/kg/min for circulatory shock or shock unresponsive to fluid administration. To prepare infusion for small children: 6 x body wt. in kg = mg added to NS to make 100 ml. With this mixture 1 ml/hr delivers 1 mc/kg/min; titrate to effect.

Routes of Administration:

IV infusion

Onset of Action:

Almost immediate, upon presentation to central circulation

Peak Effects:

5-10 minutes

Duration of Action:

Effects cease almost immediately when infusion is shut off

Arizona Drug Box Minimum Supply:

400 mg

Special Notes:

- Always monitor drip rate, **never** run "wide open".
- An infusion pump is required for interfacility transports; a minimum of microdrip tubing is required for field use.
- It is important to remember that even in low dose ranges dopamine elevates pulmonary artery occlusive pressure and may induce or exacerbate pulmonary congestion despite a rise in cardiac output.
- Notify physician if infusion infiltrates for administration of antidote.

Revised by PMD, Approved by MDC 1-23-2014
GENERIC NAME:  EPINEPHRINE AUTO-INJECTOR
CLASS:  Sympathomimetic

Mechanism of Action:

**Vasoconstrictor:** Acts on alpha adrenergic receptors to counter vasodilation and increased vascular permeability that can lead to loss of intravascular fluid volume and hypotension during anaphylactic reaction.

**Bronchodilator:** Acts on beta receptors on bronchial smooth muscle to cause bronchial smooth muscle relaxation, which alleviates wheezing and dyspnea. Alleviates pruritis, urticaria, and angioedema and may be effective in relieving gastrointestinal and genitourinary symptoms associated with anaphylaxis.

Indications and Field Use:

Indicated in the emergency treatment of anaphylaxis.

Contraindications:

There are no absolute contraindications in a life-threatening situation.

Adverse Reactions:

- Ventricular arrhythmia
- Precipitation of angina or myocardial infarction
- Tachycardia
- Anxiety and nervousness
- Hypertension
- Headache
- Pallor
- Sweating
- Dizziness
- Weakness
- Tremor
- Nausea and vomiting

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

Potentiates other sympathomimetics.

Adult Dosage:

Intramuscular: 0.3 mg (one adult auto-injector)
Drug Profile for EPINEPHRINE AUTO-INJECTOR

Pediatric Dosage:

Intramuscular: 0.15 mg (one pediatric auto-injector), for patients ≤30 kg (66 lbs) body weight

Intramuscular: 0.3 mg (one adult auto-injector) for patients >30 kg (66 lbs) body weight

Route of Administration:

IM, only into the anterolateral aspect of the thigh (through clothing if necessary)

Onset of Action:

Seconds

Peak Effects:

Minutes

Duration of Action:

Several minutes

Arizona Drug Box Minimum Supply:

Optional: 2 adult auto-injectors
Optional: 2 pediatric auto-injectors

Special Notes:

Poisoning or inadvertent intravascular injection may cause cerebral hemorrhage resulting from a sharp rise in blood pressure. Fatalities may also result from pulmonary edema because of peripheral vascular constriction together with cardiac stimulation.
Drug Profile for EPINEPHRINE HCL

GENERIC NAME: EPINEPHRINE HCl
CLASS: Sympathomimetic

Mechanism of Action:

Pharmacological Effects: Direct acting a and ß agonist; a-bronchial, cutaneous, renal, and visceral arterial constriction (increased systemic vascular resistance); β₁-positive inotropic and chronotropic actions (increases myocardial workload and oxygen requirements), increases automaticity and irritability; β₂ bronchial smooth muscle relaxation and dilation of skeletal vasculature. Other: blocks histamine release

Clinical Effects: Cardiac Arrest-increases cerebral and myocardial perfusion pressure; increases systolic and diastolic blood pressures; increases electrical activity in the myocardium; can stimulate spontaneous contractions in asystole. Bradycardia-increases heart rate, increases BP; Bronchospasm/Anaphylaxis-reverse signs/symptoms

Indications and Field Use:

- Cardiac arrest - VF/Pulseless VT; asystole; PEA (First line pharmacologic agent for any pulseless dysrhythmia in cardiopulmonary arrest).
- Severe bronchospasm, i.e., bronchiolitis, asthma.
- Anaphylaxis.
- Bradycardia, refractory with profound hypotension, monitored patient only.
- Hypotension unresponsive to other therapy, monitored patient only.
- Croup

Contraindications:

None known for cardiac arrest
Hypothermia, relative contraindication

Adverse Reactions:

CV: Hypertension, ventricular dysrhythmias; tachycardia; angina
CNS: Anxiety, agitation
GI: Nausea/vomiting

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

Potentiates other sympathomimetics.
Reacts with alkaline solutions, such as sodium bicarbonate, should not be mixed with alkaline agents.

Adult Dosage:

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Pulseless Arrest –
**IV/IO:** 1 mg of 1:10,000 solution repeat every 3 - 5 minutes or,
**ET:** Give 2 - 2.5 mg via the ET tube.
May use 1:10,000 or dilute 1:1000 to equal 10 mL via ET tube for adult. (i.e., 2 mg of 1:1,000 epinephrine diluted with 8 mL NS in a 10 mL syringe)

**Continuous Infusion for Hypotension or Symptomatic Bradycardia:** 1 mg added to 500 mL of NS administered at 1 mcg/min titrated to desired hemodynamic response (range 2-10 mcg/min); not first-line therapy.

Anaphylaxis and asthma: Give 0.3 - 0.5 mg of 1:1,000 solution IM (preferred), SC, or inject SL, may repeat every 15 to 20 minutes; or in extreme cases only, may be asked to use 1:10,000 solution and give 0.1 mg every 5 minutes IV/IO or continuous IV/IO infusion of 1 - 4 mcg/min to prevent need for multiple injections.

**Pediatric Dosage:**

**Pulseless Arrest or Refractory Bradycardia:**
**IV/IO:** 0.01 mg/kg of 1:10,000 repeat every 3 - 5 minutes, maximum single dose 1 mg.
**ET:** 0.1 mg/kg of 1:1,000; diluted with NS to a volume of 3 - 5 mL prior to instillation or followed with flush of 3 - 5 mL of NS after instillation repeat every 3 - 5 minutes, maximum single dose 10 mg.

**Asthma/anaphylaxis:** Use 1:1,000 solution; give 0.01 mg/kg IM (preferred), SC (maximum single dose of 0.5 mg/dose).
**IV Infusion:** 0.1 – 1 mcg/kg/min; to prepare for small children 0. 6 x body wt. in kg = mg added to NS to make 100 mL. With this mixture, 1 mL/hr delivers 0.1 mcg/kg/min.

**Croup:** 3 mg 1:1,000 mixed in 3 mL NS via SVN.

**Neonatal Dose for First 12 hours of life:**

**IV/IO Initial and Repeat Dose for Cardiac Arrest or Refractory Bradycardia:** 0.01-0.03 mg/kg of 1:10,000 every 3-5 minutes
**ET:** 0.1 mg/kg of 1:10,000 every 3 – 5 minutes if neonate has no vascular access, fails to respond to positive pressure ventilation with 100% O₂.

**Routes of Administration:**

- **Cardiac:** IV push, IV infusion, ET, or IO
- **Asthma/anaphylaxis/bronchiolitis:** IM, SC, SL injection, IV, ET, IO

**Onset of Action:**
Seconds

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Drug Profile for EPINEPHRINE HCL

Peak Effects:

Minutes

Duration of Action:

Several minutes

Arizona Drug Box Minimum Supply:

1:10,000 prefilled syringes – 5 mg, 1:1,000 - 2 mg
Optional: 1:1,000 multidose vial- 30 mg

Special Notes:

- Total dose for an adult ET (drug plus diluting solution) should equal at least 10 ml to ensure that the drug reaches lung tissue rather than remaining in the tube. Pediatric patient should equal 3 - 5 ml.
- Multi-dose Vial: 1 mg/ml (1:1,000) in 30 ml bottle. May be used for administering the ACLS doses of epinephrine down the endotracheal tube (2-2.5 times the peripheral route dose, diluted with 8 ml NS to make a 1:10,000 solution) or for mixing an epinephrine infusions such as 1 mg in 500 mL NS
- Infusions: An infusion pump is required for interfacility transports. A minimum of microdrip tubing is required for field use.
GENERIC NAME: EPTIFIBATIDE
CLASS: Antiplatelet agent, platelet aggregation inhibitor

Mechanism of Action:

Reversibly binds with Glycoprotein (GP) IIb/IIIa receptors on the surface of platelets inhibiting the final common pathway for platelet aggregation. GP IIb/IIIa receptor blockade interferes with the binding of fibrinogen, von Willebrand factors and other platelet aggregation modulators to the surface of platelets thus preventing aggregation.

Indications for Field Use:

- Infusion monitoring during interfacility transport only.
- For the treatment of acute coronary syndrome, for patients to be managed medically or those undergoing percutaneous transluminal coronary angioplasty (PTCA) or atherectomy.
- Heparin should be concurrently administered and monitored.

Contraindications:

- Active internal bleeding or recent history (within 30 days) of clinically significant gastrointestinal or genitourinary bleeding
- History of cerebrovascular accident (CVA) with current residual neurologic deficit or within the past 2 years
- Bleeding diathesis (bleeding disorder, condition or predisposition)
- Current use of warfarin (Coumadin) or use within the past 7 days unless prothrombin time is <1.2 times control
- Thrombocytopenia (<100,000 cells/mcl)
- Trauma or major surgery within the past 6 weeks
- Intracranial neoplasm
- Arteriovenous malformation, aneurysm or evidence of aortic dissection
- Severe uncontrolled hypertension (systolic BP >200mmHg, diastolic BP >110mmHg)
- History of vasculitis
- Concomitant use of another GP IIb/IIIa inhibitor
- Acute pericarditis
- Hypersensitivity to eptifibatide

Adverse Reactions:

- Bleeding - spontaneous bleeding may occur with eptifibatide administration; most common sites include: venous and arterial access sites (including femoral artery, retroperitoneal, gastrointestinal, genitourinary)
- Major bleeds have been demonstrated to occur more often in patients: >65 years old, <75kg, with a history of prior gastrointestinal disease, patients receiving thrombolytics or heparin
- Hemorrhagic stroke and intracranial bleeding

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Drug Profile for EPTIFIBATIDE

- Thrombocytopenia
- Other adverse effects (incidence greater than 1 percent):
  - Cardiovascular - Bradycardia, Dissection of coronary artery, edema, swelling, vasovagal reaction
  - Central nervous system - dizziness, sweating, pain (leg and pelvic)

Notes on Administration:

Weight-based dosing of both eptifibatide and concomitant heparin is essential to decrease the incidence of major and minor bleeding episodes. Patients should be managed following an accepted, literature-based standard of practice.

Infusion pump is required in management of eptifibatide infusions.

Incompatibilities/Drug Interactions:

- Other medications that effect hemostasis: thrombolytics, oral anticoagulants, aspirin and other nonsteroidal anti-inflammatory agents, dipyridamole, ticlopidine, clopidogrel.
- Not compatible in the same IV line with furosemide
- Compatible in the same IV line with: alteplase, atropine dobutamine, heparin, potassium chloride, lidocaine, meperidine, metoprolol, midazolam, morphine, nitroglycerin and verapamil

Adult Dosage:


Loading Dose: 180mcg/kg
Infusion: 2.0mcg/kg/minute for 72 hours, until discharge or if angioplasty or CABG procedure then 20 to 24 hours post procedure (total 96 hours).

Percutaneous Coronary Intervention in patients not presenting with an acute coronary syndrome: Standard Orders based on the IMPACT-II trial: (Lancet. 1997; 349-28)

Loading Dose: 135mcg/kg immediately prior to PTCA
Infusion: 0.5mcg/kg/minute, following loading dose and continued for 20-24 hours.

Pediatric Dosage:

Safety and efficacy in children have not been established.

Routes of Administration:

Intravenous bolus followed by infusion

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Drug Profile for EPTIFIBATIDE

Onset of Action:

A few minutes

Peak Effects:

Early peak in less than 30 minutes, infusion steady state peak in 4 to 6 hours.

Duration of Action:

Platelet function restores 2 to 4 hours after eptifibatide infusion is discontinued

Arizona Drug Box Minimum Supply:

None

Special Notes:

- Minimizing vascular and other trauma is important in managing platelet aggregation inhibitors.
- Due to risk of spontaneous bleeding during eptifibatide administration, procedures including the following should be avoided whenever possible: arterial and venous punctures, intramuscular injection, placement of urinary catheters, nasogastric tube and nasotracheal intubation. If arterial or venous access is necessary, avoid non-compressible like subclavian and jugular vessels.
- Patients transported with an eptifibatide infusion should be under the direct care of a cardiologist who is responsible for initiating and monitoring the eptifibatide therapy.
- Inservice education of paramedic personnel is required prior to managing eptifibatide during transport.
GENERIC NAME: ETOMIDATE
CLASS: Sedative/hypnotic agent

Mechanism of Action:

- Produces hypnosis rapidly causing CNS depression and anesthesia. No analgesic effect.

Indications and Field Use:

- Induction of anesthesia for rapid sequence intubation (RSI)

Contraindications:

- Hypersensitivity

Adverse Reactions:

- Transient muscle movements
- Apnea
- Causes minimal but not clinically significant suppression of cortisol levels
- May cause myoclonus and tremors that can resemble seizure activity

NOTES ON ADMINISTRATION

Adult Dosage:

- 0.3 mg/kg IV over 30-60 seconds

Route of Administration:

- IV

Onset of Action:

- 1 minute

Duration of Action:

- 3-5 minutes

Arizona Drug Box Minimum Supply:

- Optional: 40 mg

Special Notes

- Other medications should be used for prolonged sedation.

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GENERIC NAME: FAMOTIDINE
CLASS: GI-Anti Ulcer

Mechanism of Action:

Competitively inhibits action of histamine at the H₂ at receptor sites of parietal cells, decreasing gastric acid secretion.

Indications and Field Use:

- Infusion monitoring during interfacility transport only.
- Hospitalized patients who cannot take oral drug or who have intractable ulceration or hypersecretory conditions.

Contraindications:

- Hypersensitivity to drug

Adverse Reactions:

- CV: Palpitations, flushing
- EENT: Tinnitus, orbital edema
- GI: Diarrhea, constipation, anorexia, taste perversion, dry mouth
- Other: Transient irritant at IV site
- Children less than 1 year of age may have vomiting and agitation

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

- None significant

Adult Dosage:

- 20mg in 50 mL normal saline IV every 12 hours infuse over 15-30 minutes

Pediatric Dosage:

- Safety and efficacy of IV infusion of drug have not been established.

Routes of Administration:

- IV infusion – Piggy back

Onset of Action:

- 1 hour

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Peak Effects:

1-4 hours

Duration of Action:

12 hours

Arizona Drug Box Minimum Supply:

None

Special Notes:

Assess patients for abdominal pain. Note blood in emesis, stool, or gastric aspirate.
Drug Profile for FENTANYL CITRATE

GENERIC NAME: FENTANYL CITRATE
CLASS: Narcotic agonist/narcotic analgesic

Mechanism of Action:

- Alleviates pain by acting on the pain receptors in the brain; elevates pain threshold.
- Depresses central nervous system; depresses brainstem respiratory centers; decreases responsiveness to changes in PaC\(_{0}\)\(_{2}\).
- Increases venous capacitance (venous pooling) and vasodilates arterioles thereby reducing preload and afterload.

Indications and Field Use:

- Analgesia, especially in patients with burns or other trauma, myocardial infarction, renal colic.
- Adjunct to sedation in post-intubation state.
- Adjunct to induction in Rapid Sequence Intubation (RSI) or medication assisted intubation.

Contraindications:

- Known allergy or intolerance to drug (assess for medic alert bracelet)
- Respiratory depression if airway and breathing can’t be supported
- Known elevated intracranial pressure e.g. mass lesion
- Head injury with ALOC (relative)
- Asthma (relative)
- Abdominal pain (relative)

Adverse Reactions:

- **MS:** Muscle rigidity, particularly involving muscles of respiration.
- **CV:** Bradydysrhythmias (common) or tachydysrhythmias, hypotension, orthostatic hypotension.
- **Resp:** Respiratory depression (common) or arrest.
- **CNS:** Excess sedation, seizures leading to coma and arrest, pupillary constriction, dizziness, blurred vision.
- **GI:** Nausea and vomiting.
- **Derm:** Histamine release may cause local or generalized urticaria. Diaphoresis.

NOTES ON ADMINISTRATION

RESUSCITATIVE AND INTUBATION EQUIPMENT AND OXYGEN SHOULD BE READILY AVAILABLE.

**CNS. Respiratory and to a certain extent CV** side effects can be reversed by naloxone.

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Drug Profile for FENTANYL CITRATE

This does not preclude the aggressive support of airway, ventilation and circulation prior to the administration of naloxone if the clinical situation dictates.

**Adult Dosage:**

**IV/IO Dose:** Administer 25-50 mcg (0.5 – 1.0 mL of 50mcg/mL concentration) increments slow IV push (over 1-5 minutes) until desired effect. Consider the lower dose in the elderly, debilitated, or those with chronic lung disease. Onset of analgesic action almost immediate, duration of analgesic action 30-60 minutes.

**IM Dose:** Same as IV/IO dose. Onset of analgesic action seven to eight minutes, duration of analgesic action one to two hours.

**IN Dose:** 25-50 mcg

**Total Dose:** Not to exceed 200 mcg

(Note: Duration of respiratory depressant effect of fentanyl may be longer than analgesic effect.)

**Pediatric Dosage (12 months ≤ 17 years):**

**IV/IO Dose:** 1-2 mcg/kg (0.02-0.04 mL/kg of 50mcg/mL concentration) slow IV/IO push.

**IM Dose:** Same as IV/IO dose.

**IN Dose:** 1-2mcg/kg

**Total Dose:** Not to exceed 50 mcg, Q1hr prn

(Note: Patch for on-line medical direction if Fentanyl citrate use is considered in children <2 or if additional doses are needed.)

**Routes of Administration:**

Usually given IV/IO in the field, can be given IM or IN.

**Peak Effects:**

Within 5-15 minutes when given IV/IO/IN. Less predictable when given IM. Peak respiratory depressant effect within 5-15 minutes after onset of analgesic effect.

**Arizona Drug Box Minimum Supply:**

200 mcg

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Special Notes:

- Schedule II narcotic. EMS providers should take appropriate anti-diversion precautions.
- Literature supports 100 mcg (2 mL) fentanyl citrate is equivalent in analgesic activity to 7-10 mg of morphine sulfate.
- Watch for histamine release effects (wheals, urticaria). Thought to be much less common than with morphine sulfate. Contact medical control if generalized urticaria or other s/sx of anaphylactoid reaction.
- Attempt to correct hypotension before administration with IV fluids and/or vasopressors.
- Although chest wall rigidity is uncommon and usually doesn’t result with small doses and slow IV bolus (over > 1 minute) the provider must have a heightened awareness this complication could result and be prepared to treat appropriately with benzodiazepines and other airway and mechanical ventilation techniques up to and including RSI. Pregnancy Category C. No adequate and well-controlled studies exist in pregnant women. Should be used during pregnancy only if the potential benefit to mother justifies the potential risk to fetus.
- Safe for nursing mothers.
- Recommended storage: Protect from light. 20-25 degrees C (68-77 degrees F) suggested, 15-30 degrees C (59-86 degrees F) permitted. (Source: Drugs.com)
GENERIC NAME: FUROSEMIDE  
CLASS: Loop diuretic  

Mechanism of Action:  

Clinical: Diuresis  

Indications and Field Use:  

Pulmonary edema; congestive heart failure  

Contraindications:  

- Anuria (relative)  
- Hypovolemia  
- Hypotension  

Adverse Reactions:  

- May exacerbate hypovolemia  
- Hyperglycemia (due to hemoconcentration)  
- Hypokalemia  
- May decrease the response to pressors  

NOTES ON ADMINISTRATION  

Incompatibilities/Drug Interactions:  

Increased effects with other antihypertensives  

Adult Dosage:  

On oral furosemide therapy: Consider initial dose of 2 times daily oral dose, if no effect in 20 minutes may double initial dose.  
Not on oral furosemide therapy: 0.5-1 mg/kg to a maximum of 2 mg/kg (usually 20-40 mg) IV slowly.  

Pediatric Dosage:  

1 mg/kg IV slowly  

Routes of Administration:  

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Drug Profile for FUROSEMIDE

Slow IV push

Onset of Action:

5 minutes (vasodilation)

Peak Effects:

20-60 minutes (diuresis)

Duration of Action:

Variable

Arizona Drug Box Minimum Supply:

Optional: 100 mg

Special Notes:

- Ototoxicity and resulting deafness can occur.
- Since furosemide is a sulfonamide derivative, it may induce allergic reactions in patients with sensitivity to sulfonamides (sulfa drugs).
Drug Profile for GLUCAGON

GENERIC NAME: GLUCAGON
CLASS: Pancreatic hormone, polypeptide, hyperglycemic agent

Mechanism of Action:

**Pharmacologic:** Acts only on liver glycogen, converting it to glucose. Counteracts the effect of insulin. Relaxes GI smooth muscle causing dilation and decreased motility. Cardiac inotrope.

**Clinical effects:** May reverse hypoglycemia (if patient has glycogen stored in liver) within 4-8 minutes (could be as long as 15 or more).

Indications and Field Use:

Symptomatic hypoglycemia when IV access is delayed.
Beta blocker poisoning

Contraindications:

- Known hypersensitivity
- Pheochromocytoma
- Insulinoma
- Should not be routinely used to replace dextrose when IV access has been obtained

Adverse Reactions:

- Rare side effects
  - Nausea and vomiting
  - Generalized allergic reactions including urticaria, respiratory distress and hypotension (made from beef/pork pancreas)
  - Palpitations, hypertension, tachycardia

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

Unknown

Adult Dosage: (children and adults greater than 20 kg or 44 lbs)

Hypoglycemia: 1 mg IM, may repeat in 7-10 minutes

Pediatric Dosage: (for children under 20 kg or 44 lbs)

Hypoglycemia: 0.5 mg IM or a dose equivalent to 20-30 $\mu$g/kg, may repeat in 7-10 minutes

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Drug Profile for GLUCAGON

Routes of Administration:

Hypoglycemia: IM or SC administration avoids possibility of inducing encephalopathy in a thiamine-deficient patient

Onset of Action: (dose and route dependent)

1 mg IM, 8-10 minutes
IV, 1 minute

Peak Effects: (does and route dependent)

1 mg IM, 12-14 minutes
IV, 3-6 minutes

Duration of Action: (dose and route dependent)

1 mg IM, 12-27 minutes
IV, 20 minutes

Arizona Drug Box Minimum Supply:

2 mg

Special Notes:

- Blood sugar should be measured rapidly before deciding upon the administration of \(D_{50}\) or glucagon, especially in the non-diabetic patient.
- Documented hypoglycemia is a true medical emergency, IM glucagon should be administered rapidly if IV access is delayed.
- In known alcoholics, administer thiamine in addition to glucagon to prevent inducing an encephalopathy in a thiamine-deficient patient.
- Patients with Type I diabetes do not have as great a response in blood glucose levels as Type II stable patients. For all patients having hypoglycemic episode, supplementary complex carbohydrates should be eaten within 2 hour, especially in a child or adolescent.
Drug Profile for HYDROXOCOBALAMIN

GENERIC NAME: HYDROXOCOBALAMIN
BRAND NAME: CyanoKit

Mechanism of Action:

The action of hydroxocobalamin in the treatment of cyanide poisoning is based on its ability to bind cyanide ions. Each hydroxocobalamin molecule can bind cyanide ion by substituting it for the hydroxo ligand linked to the trivalent cobalt ion, to form cyanocobalamin, which is then excreted in the urine.

Indications for Field Use:

Acute, life-threatening known or suspected cyanide poisoning. Symptoms include altered mental status or shock. Sources of cyanide poisoning include, but are not limited to:

- Smoke inhalation in the setting of a closed space fire
- Ingestion of cyanide salts
- Industrial accidents, such as mining
- Other cyanide exposures

Contraindications:

None

Adverse Reactions:

Emergency Patient Management: In addition to hydroxocobalamin, treatment of cyanide poisoning must include immediate attention to airway patency, adequacy of oxygenation and hydration, cardiovascular support, and management of any seizure activity. Consideration should be given to decontamination measures based on the route of exposure.

Allergic: Anaphylaxis, chest tightness, edema, urticarial, pruritis, dyspnea, and rash.

Cardiovascular: Elevations in blood pressure, usually transient and return to baseline levels within 4 hours.

Interference with Clinical Laboratory Evaluations: Red-colored urine, interference with clinical chemistry, hematology, coagulation, and urine parameters.

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

The 5 g vial of hydroxocobalamin for injection is to be reconstituted with 200 mL of diluent using the supplied sterile transfer spike. The recommended diluent is 0.9% NaCl.

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Drug Profile for HYDROXOCOBALAMIN

Lactated Ringers and 5% dextrose are also compatible. Following the addition of diluent, the vial should be repeatedly inverted or rocked, not shaken, for at least 60 seconds prior to infusion.

Chemically incompatible with sodium thiosulfate and sodium nitrate. Physical incompatibility (particle formation) and chemical incompatibility were observed with the mixture of hydroxocobalamin in solution with select drugs that are frequently used in resuscitation efforts. (Do not administer via same IV line.)

Adult Dosage:

5 grams, administered as IV infusion over 15 minutes. Depending upon the severity of the poisoning, a second dose of 5 g may be administered, over 15 minutes to 2 hours, depending on clinical response.

Pediatric Dosage:

Safety and effectiveness have not been established in this population. A dose of 70 mg/kg has been used to treat pediatric patients.

Routes of Administration:

IV infusion

Onset of Action:

Upon initiation of infusion

Peak Effectiveness:

Unknown

Duration of Action:

Unknown

Arizona Drug Box Supply:

Optional: 5 g

Special Notes:

Store at 25º C (77º F); excursions permitted to 15-30º C (59-86º F).
Reconstituted solution can be stored up to 6 hours at a temperature not exceeding 40º C (104º F).
Do not freeze.
Requires separate IV line for administration.

Revised by PMD, Approved by MDC 1-23-2014
GENERIC NAME: IPRATROPIUM BROMIDE
CLASS: Anticholinergic, bronchodilator

Mechanism of Action:
Anticholinergic (parasympatholytic) agent appears to inhibit vagally-mediated reflexes by antagonizing the action of acetylcholine, the transmitter released from the vagal nerve.
(SEE: Notes)

Indications and Field use:
Treatment of bronchospasm associated with chronic obstructive pulmonary disease (emphysema and chronic bronchitis). To be used either alone or in combination with other bronchodilators especially beta adrenergics (i.e., albuterol).

Contraindications:
Ipratropium bromide is contraindicated in known or suspected cases of hypersensitivity to ipratropium bromide or to atropine and its derivatives. Precaution: should be used with caution in patients with narrow angle glaucoma.

Adverse Reactions:
Resp: Coughing. Sputum increased
GI: Nausea

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:
None. Ipratropium bromide has been shown to be safe and effective bronchodilator when used in conjunction with beta adrenergic bronchodilators (albuterol).

Adult Dosage:
Give 500 mcg in 2.5 ml normal saline (1 unit dose vial) via SVN with a mouth piece or in-line with a ventilatory device. Repeat according to medical control preference. May mix one unit dose vial of ipratropium with one unit dose vial of albuterol.

Pediatric Dosage:
Give 500 mcg in 2.5 ml normal saline (1 unit dose vial) via SVN with a mouth piece or in-line with a ventilatory device. Do not repeat.

Routes of Administration:
Drug Profile for IPRATROPIUM BROMIDE

Nebulized, mouth piece or in-line
Inhaler (patient's own)

Onset of Action:
5-15 minutes

Peak Effects:
60-120 minutes

Duration of Action:
240-480 minutes

Arizona Drug Box Minimum Supply:
5 mL

Special Notes:

- Anticholinergics produce preferential dilatation of the larger central airways, in contrast to beta agonists, which affect the peripheral airways. May be more effective used in combination with beta agonists.
- Should be kept out of light in foil pouch and avoid excessive humidity.
Drug Profile for LIDOCAINE HCL

GENERIC NAME:  LIDOCAINE HCL
CLASS:  Antiarrhythmic, local anesthetic

Mechanism of Action:

- Decreases automaticity by slowing the rate of spontaneous phase 4 depolarization.
- Terminates re-entry by decreasing conduction in re-entrant pathways (by slowing conduction in ischemic tissue, equalizes conduction speed among fibers).
- Increases ventricular fibrillation threshold.

Indications and Field Use:

- Suppression of ventricular arrhythmias (ventricular tachycardia, ventricular fibrillation, PVC's).
- Prophylaxis against recurrence after conversion from ventricular tachycardia or ventricular fibrillation.
- Pain management after IO insertion in conscious patients.

Contraindications:

- Known hypersensitivity/allergy.
- Use extreme caution in patients with conduction disturbance (second or third degree block).
- Do not treat ectopic beats if heart rate is < 60. They are probably compensating for the bradycardia; instead, treat the bradycardia.

Adverse Reactions:

- CV: May also cause SA nodal depression or conduction problems and hypotension in large doses, or if given too rapidly. Excessive doses in pediatric patient may produce myocardial and circulatory depression.
- CNS: In large doses drowsiness, disorientation, paresthesias, decreased hearing acuity, muscle twitching, agitation, focal or generalized seizures.

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

None known

Adult Dosage:

**Pulseless VF/VT:** Initial bolus of 1.0-1.5 mg/kg IV PUSH every 3-5 minutes to a total of 3 mg/kg. An initial bolus of 1.5 mg/kg should be given for cardiac arrest situations. Following the return of a spontaneous rhythm, initiate a drip at 2-4 mg/min. See:

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Maintenance Infusion below.

**Antidysrhythmic or rhythms with a pulse:** Initial boluses can be given as 0.5-0.75 mg/kg, up to 1.0-1.5 mg/kg, IV PUSH and additional boluses can be given as 0.5-0.75 mg/kg every 5-10 minutes to a total dose of 3 mg/kg. Following the return of a spontaneous rhythm, initiate a drip at 2-4 mg/min; see below.

**Maintenance Infusion:** Started after return of spontaneous rhythm for either indication above. Add 1 gm - 2 gms to a 250 ml NS or 5% dextrose solution or use premixed solution (2 gm in 500 ml) and initiate a drip at 2-4 mg/min according to concentration. Patients > 70 years or with hepatic, renal disease or poor perfusion state, reduce maintenance infusion by half.

IO pain management 20-40 mg, very slow IO push.

**Pediatric Dosage:**

**Initial Bolus doses:** 1 mg/kg, may repeat 1 time in 3-5 minutes for VF/Pulseless VT or in 15 minutes if used for refractory dysrhythmias with a pulse (VT with pulse, significant ventricular ectopy).

**Infusion with return of spontaneous rhythm, optional:** 20-50 mcg/kg/min; prepared by adding 120 mg (3mL) of 1 Gm/25 ml (40 mg/ml) solution to 97 ml of NS, yielding 1200 mcg/ml.

1 ml/kg/hr delivers 20 mcg/kg/min. 2.5 ml/kg/hr delivers 50 mcg/kg/min. Reduce to ≤ 20 mcg/kg/min for children with low cardiac output, severe CHF or compromised hepatic blood flow. Infusion should be avoided unless infusion pump available.

IO pain management, 0.1 mg/kg, not to exceed adult dosage.

**Routes of Administration:**

IV bolus, followed by IV infusion. May be given ET if IV access is delayed IO

**Onset of Action:**

1-5 minutes

**Peak Effects:**

5-10 minutes

**Duration of Action:**

Bolus only - 20 minutes

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Drug Profile for LIDOCAINE HCL

Arizona Drug Box Minimum Supply:

- 3 pre-filled syringes, total 300 mg
- 1 g vial or premixed infusion, total 2 g

Special Notes:

- Decrease maintenance infusion by 50% in cases of congestive heart failure, shock, liver disease.
- Cross-allergenicity between local anesthetic "caine" drugs is controversial.
- Consider increased dose for ET administration.
- Infusions: Infusion pump is required for interfacility transports. A minimum of microdrip tubing is required for field use. Lidocaine drip rates established in field should be monitored carefully.
Drug Profile for LORAZEPAM

GENERIC NAME: LORAZEPAM
CLASS: Anxiolytic, benzodiazepine, short or intermediate acting

Mechanism of Action:

Agent has high affinity for the gamma-aminobutyric acid (GABA) benzodiazepine receptor complex without displacing GABA, (GABA is the major inhibitory neurotransmitter in the brain). It exerts tranquilizing action on the central nervous system.

Indications and Field Use:

- Status epilepticus
- Seizure
- Agitation/excited delirium

Contraindications:

- Known sensitivity to the benzodiazepines
- Acute narrow angle glaucoma or myasthenia gravis
- Known hypersensitivity to polyethylene glycol, propylene glycol, or benzyl alcohol
- Pregnancy (relative)

Adverse Reactions:

- Most frequent adverse reaction is sedation
- Transient amnesia or memory impairment
- Confusion
- Hypotension
- Respiratory depression
- Dizziness
- Headache

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

Concomitant use of CNS sedatives such as phenothiazines, narcotic analgesics, barbiturates, antidepressants, and alcohol should be assessed prior to administration of IV Lorazepam.

Administration:

- IM: Should be administered deep into the muscle mass
- IV/IO: Do not exceed 2mg/minute or 0.05mg/kg over 2-5 minutes. Dilute IV dose with

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equal volume of compatible diluent (D5W, NS, SWI).

**Inadvertent intra-arterial injection may produce arteriospasm resulting in necrosis and potential amputation.

**

**

Adult Dosage:

Status epilepticus: 2mg to 5mg IV/IO given slowly (over 2-5 minutes) May repeat dose in 10-15 minutes if needed (maximum 10mg). May give IM if no IV/IO access.

Pediatric Dosage:

Status epilepticus: 0.05-0.1 mg/kg IV/IO over 2-5 minutes (maximum 4mg). May repeat in 10-15 minutes.

Routes of Administration:

IV injection is the route of choice
IM injection with large bore needle
IO

Onset of Action:

1-2 minutes if given IV/IO

Peak Effects:

Less than 15 minutes when given IV/IO
Within 3 hours when given IM

Duration of Action:

Approximately 6 - 8 hours

Arizona Drug Box Minimum Supply:

8 mg

Special Notes:

- For age >60 or weight <60 kg: Consideration of lower doses must be made when administering Lorazepam IV to elderly patients, seriously ill patients, and those with limited pulmonary reserve. Apnea and/or cardiac arrest may occur. Patients over the age of 50 years may have a more profound and prolonged sedation with IV Lorazepam.
- All patients should be monitored for respiratory depression and hypotensive effects. Stability above room temperature has not been established.

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GENERIC NAME: MAGNESIUM SULFATE
CLASS: Electrolyte, tocolytic

Mechanism of Action:

**Pharmacology:** Second most plentiful intracellular cation; essential to enhance intracellular potassium replenishment and activity of many enzymes; important role in neurochemical transmission and muscular excitability (may decrease acetylcholine released by nerve impulses); decreases myocardial irritability and neuromuscular irritability.

**Clinical:** Cardiac-reduces ventricular irritability, especially when associated with hypomagnesemia; inhibition of muscular excitability.

Indications and Field Use:

- Torsade de pointes, drug of choice
- Hypomagnesemia
- Pre-term labor (PTL)
- Pregnancy-induced hypertension (PIH, toxemia of pregnancy, pre-eclampsia and/or eclampsia).
- Hyperreactive Airway - Severe Asthma

Contraindications:

- Hypermagnesemia
- Use cautiously in patients with impaired renal function and pre-existing heart blocks (relative).

**Precautions:** Caution when used with barbituates, narcotics, or other hypnotics (or system anesthetics) in conjunction with Magnesium Sulfate due to the additive central depressive effects of magnesium.

Adverse Reactions:

**CV:** Hypotension (may be transient), flushing, circulatory collapse, depressed cardiac function, heart block, asystole, smooth muscle relaxant (antihypertensive effects).

**Resp:** Respiratory depression and/or paralysis. This adverse reaction may occur in both mother and/or infant during or up to 24 hours after the administration of Magnesium Sulfate.

**CNS:** Sweating, drowsiness, hypothermia, depressed reflexes progressing to flaccidity and paralysis. This adverse reaction may occur in both mother and/or infant during the administration of or up to 24 hours after the administration of Magnesium Sulfate.

**GI:** Nausea

**GU:** Mild diuretic

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Drug Profile for MAGNESIUM SULFATE

Meta: Hypocalcemia, hypermagnesemia

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

Concurrent digitalization increases danger of dysrhythmias

Adult Dosage:

Cardiac:

- **Torsade de pointes:** 1-2 Gm IV diluted in 50-100 ml NS or D5W administered over 1-2 minutes, followed by the same amount infused over 1 hour.
- **Hypomagnesemia:** Dilute 1-2 Gm in 50-100 ml NS or D5W administered IV push over 5-60 minutes.
- **Respiratory/Severe Asthma:** Initial Infusion (field) 2 Gm Magnesium Sulfate mixed in 50 ml NS or D5W to be infused IV using microdrip tubing over 5 to 10 minutes. Stop infusion if hypotension, respiratory depression or bradycardia develop.

Pregnancy:

**Pre-term labor (PTL):** Initial bolus (Field and Interfacility): 4-6 Gm over 15-20 minutes (Suggested method is the addition of 4 Gm to 100 ml D3W, LR or NS. Resultant concentration is 40 mg/ml). Maintenance Infusion (Interfacility only): 1-4 Gm/hour infusion rate. (Suggested method for treatment of premature labor is to follow initial bolus with infusion of 2 Gm/hr which may be continued until uterine contractions are reduced to < 1 every 10 minutes. Then, infusion is decreased to 1 Gm/hr and continued for 24-72 hrs. One method for mixing infusion is the addition of 40 Gm to 1000 ml LR. Resultant concentration equals 40 mg/ml. If this concentration is run at 50 ml/hr, Magnesium Sulfate delivered equals 2 Gm/hr).

**Pregnancy induced hypertension, pre-eclampsia/eclampsia, (PIH):** Initial bolus (Field and Interfacility): 3-6 Gm over 10-15 minutes (Suggested method is the addition of 4 Gm to 100 ml D3W, LR or NS. Resultant concentration is 40 mg/ml). Maintenance Infusion (Interfacility only): Follow bolus with 1-3 Gm/hour infusion rate. (Same mixture as for PTL). Rebolus: In an eclamptic emergency may rebolus with Magnesium Sulfate, 2-4 Gm depending on patient size (mixed as an initial bolus) over 10-15 minutes if respirations >12/minute and urine output >30 ml/hr.

Routes of Administration:

- IV infusion
- IO

Onset of Action:
Drug Profile for MAGNESIUM SULFATE

Seconds
20 minutes for IV Infusion (respiratory)

Peak Effects:

Not known

Duration of Action:

24 hours or greater

Arizona Drug Box Minimum Supply:

5 g

Special Notes:

- O₂ should be administered to patients receiving Magnesium Sulfate.
- For specific emergencies:
  - OB emergencies maintenance infusions of Magnesium Sulfate should be administered by infusion pump to prevent toxicity. Therefore, loading bolus therapy only, using a minimum of microdrip tubing is recommended for field to hospital intervention for OB indications.
  - Interfacility transfers may include a loading dose followed by a maintenance infusion of Magnesium Sulfate which requires an infusion pump.
  - Respiratory (Asthma) emergencies: Magnesium Sulfate follows Albuterol & Atrovent SVN and administration of 0.3 IM Epi (1:1000).
- For IV/IO infusions (respiratory) start and stop times should be closely monitored and documented per administration guidelines of 20 minutes or greater.
- Transport gravid patients lying or tilted to left side to prevent restricting venous return to heart.
- Use cautiously in patients with impaired renal function, pre-existing heart blocks and women in labor.
- Evaluate cardiac status and ECG assessing for prolonged PR and widened QRS intervals.
- Do not delay intubation or ventilation for Magnesium Sulfate administration in patients suffering severe asthma episode.
- Keep Calcium Chloride (10%) 10 ml available to reverse magnesium toxicity. See: Calcium Chloride profile. Use extreme caution if the patient is on digoxin.
- Monitor vital signs every 15 minutes in patients receiving Magnesium Sulfate infusion. If respirations less than 12/min, discontinue Magnesium Sulfate infusion, notify medical direction.
- Hourly intake and output should be monitored on long transport; urine output should be greater than 30 mL/hr.

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Drug Profile for MAGNESIUM SULFATE

- When given to toxemic mothers within 24 hours before delivery observe newborn for signs/symptoms of Magnesium Sulfate toxicity (neuromuscular and/or respiratory depression).
- Interfacility maternal transport teams are recommended and available for the transport of patients requiring continuous IV infusions of Magnesium Sulfate.
- In treatment of seizures associated with PIH it may be necessary to use an anticonvulsant such as diazepam.
- Eclampsia may occur up to six weeks after delivery
GENERIC NAME: METHYLPREDNISOLONE SODIUM SUCCINATE
CLASS: Corticosteroid, glucocorticoid, steroid, anti-inflammatory

Mechanism of Action:

Enters target cells and causes many complex reactions that are responsible for its anti-inflammatory and immunosuppressive effects; thought to stabilize cellular and intracellular membranes.

Indications and Field Use:

Reactive airway disease: Acute exacerbation of emphysema, chronic bronchitis, asthma
Anaphylaxis
Burns potentially involving the airway

Contraindications:

Preterm infants

Adverse Reactions:

None from single dose

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

None

Adult Dosage:

Reactive Airway Disease, Anaphylaxis, Burns Potentially Involving the Airway
Usual dose 125 mg slow IV bolus (much larger doses can be used).

Pediatric Dosage:

Reactive Airway Disease, Anaphylaxis, Burns Potentially Involving the Airway
2-4 mg/kg slow IV bolus

Routes of Administration:

IV bolus

Onset of Action:

1 - 6 hours; dogmatic 6 hour time to onset of benefit has decreased markedly during the last few years

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Drug Profile for METHYLPREDNISOLONE SODIUM SUCCINATE

Peak Effects:

8 hours

Duration of Action:

18-36 hours

Arizona Drug Box Minimum Supply:

250 mg

Special Notes:

- Infusions: An infusion pump is required for continuous infusions of corticosteroids during interfacility transports.
GENERIC NAME: MIDAZOLAM HYDROCHLORIDE
CLASS: Central nervous system depressant, benzodiazepine

Mechanism of Action:

- CNS effects are mediated through the inhibitory neurotransmitter gamma-aminobutyric acid (GABA).
- Acts at the limbic, thalamic, and hypothalamic levels of the CNS, producing anxiolytic, sedative, hypnotic, and anticonvulsant effects.
- Capable of producing all levels of CNS depression, from mild sedation to coma.

Indications and Field Use:

- Anti-convulsant
- Sedation
- Management of acute agitation/excited delirium (treat cause as well, if possible)
- Induction for intubation

Contraindications:

- Hypersensitivity to midazolam
- Relative contraindication in: Myasthenia gravis or other neuromuscular disorders; acute alcohol intoxication; severe, chronic obstructive pulmonary disease; and acute pulmonary insufficiency
- Pregnancy (relative)

Adverse Reactions:

CV: Hypotension (especially in patients premedicated with narcotic); cardiac arrest; irregular or fast heartbeat
Resp: Apnea; respiratory depression, respiratory arrest; paradoxical hyperventilation; wheezing or difficulty in breathing; hiccups; coughing
CNS: Emergence delirium; muscle tremor; uncontrolled or jerky movements of body; unusual excitement, irritability, or restlessness; dizziness, light-headedness, or feeling faint; prolonged drowsiness; headache
GI: Nausea and/or vomiting

Notes on Administration:

Midazolam administered intravenously has been associated with respiratory depression and respiratory arrest, especially when used concomitantly with opioid analgesics for conscious sedation or when rapidly administered. Midazolam may cause phlebitis. May need to adjust midazolam dose down for patients on erythromycin.

Incompatibilities/Drug Interactions:

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Midazolam may potentiate the action of other CNS depressants, including opiate agonists or other analgesics, barbiturates or other sedatives, anesthetics, or alcohol.

**Adult Dosage:**

**Patients 14 to 60 years of age:**
- 2 to 5 mg IM
- 1 to 10 mg IV/IO, titrate to effect, administer slowly in small increments of no more than 2.5 mg over at least 2 minutes.

**Patients over 60 years of age:**
- 1 to 5 mg IM
- 1 to 3.5 mg IV/IO, titrate to effect, administer slowly in small increments of no more than 1.5 mg over at least 2 minutes.

**Total dose:**
- Should not exceed 20 mg

**For emergency intubation:**
- 0.1 mg/kg up to 0.3 mg/kg with dosage limit of 20 mg.
- 0.2 mg/kg IM/0.3mg/kg IN if no IV/IO access

**Pediatric Dosage:**

**Pediatric patients:**
- 0.05 to 0.1 mg/kg slow IV/IO push
- 0.2 mg/kg IM/IN if no IV/IO access

IN dose divided equally in each nostril.

**Routes of Administration:**

- For IM administration, inject deep into large muscle mass.
- For IV bolus and infusion, administer slowly in small increments over at least 2 minutes and allow 2 more minutes between doses to evaluate effect.
- For IN administration, use only concentrated Midazolam (5mg/ml). Ideal volume is 0.3-0.5 ml per nostril, maximum is 1ml per nostril. More volume will just run out of nose. Be aware Midazolam causes some nasal burning for 30-45 seconds when administered.

**Onset of Action:**

- IM - 15 minutes
- IV/IO - immediate

**Peak Effects:**

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Drug Profile for MIDAZOLAM HYDROCHLORIDE

IM - 15 to 60 minutes
IV - 3 to 5 minutes

Duration of Action:

2 to 6 hours

Arizona Drug Box Minimum Supply:

10 mg
Drug Profile for MORPHINE SULFATE

GENERIC NAME:  MORPHINE SULFATE
CLASS:  Narcotic agonist

Mechanism of Action:

- Alleviates pain by acting on the pain receptors in the brain; elevates pain threshold.
- Depresses central nervous system; depresses brainstem respiratory centers; decreases responsiveness to changes in PaCO₂.
- Increases venous capacitance (venous pooling), vasodilates arterioles, reducing preload and afterload.
- Histamine release.

Indications and Field Use:

- Analgesia
- Pulmonary edema (cardiogenic).

Contraindications:

- Respiratory depression
- Head injuries
- Elevated Intra cranial pressure
- Asthma, relative
- Abdominal pain, relative

Adverse Reactions:

- CV: Brady or tachydysrhythmias, orthostatic hypotension
- Resp: Respiratory depression or arrest
- CNS: Excess sedation, seizures to coma and arrest, pupillary constriction
- GI: Nausea and vomiting, GI spasm
- Derm: Histamine release may cause local urticaria

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

- CNS side effects (including respiratory depression) can be reversed by naloxone.

Adult Dosage:

- IV Dose: Administer 1-3 mg increments slow IV PUSH (over 1-5 minutes) until desired effect.

Pediatric Dosage:

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Drug Profile for MORPHINE SULFATE

0.1-0.2 mg/kg slow IV push

Routes of Administration:

Usually given IV in the field, can be given IM or SC.

Onset of Action:

Seconds

Peak Effects:

20 minutes

Duration of Action:

2-4 hours

Arizona Drug Box Minimum Supply:

20 mg

Special Notes:

- Schedule II narcotic.
- Watch for histamine effects (wheals, urticaria) proximal to IV site; contact medical control.
- Correct hypotension before administration.
- Maximum respiratory depression 7-10 minutes after administration; can be reversed with naloxone; use caution in patients with emphysema.
- Infusions: IV infusions of morphine sulfate may be transported, however an infusion pump is required.
GENERIC NAME: NALMEFENE HCL
CLASS: Narcotic (opioid) antagonist

Mechanism of Action:
- Competitive inhibition at narcotic receptor sites
- Reverses respiratory depression secondary to narcotics

Indications and Field Use:
- Antidote for: Opioid poisoning when naloxone is not available
  May differentiate opioid-induced coma from other causes

Contraindications:
- Hypersensitivity

Adverse Reactions:
- Withdrawal symptoms: nausea, vomiting, diaphoresis, increased heart rate, pulmonary edema, cardiovascular instability, ventricular fibrillation, hypotension or hypertension, tremors.
  Be prepared for combative patient after administration.

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:
- Should not be mixed with other drugs

Adult Dosage:
- IV, IM, and SC: 0.5 mg to a maximum of 1.5 mg (or 1.5 mg/70 kg)
  Initial dose 0.5 mg/70 kg; then 1 mg/70 kg 2-5 minutes later if needed

Pediatric Dosage:
- Safety and effectiveness of nalmefene HCl in pediatrics and neonates have not been established.

Routes of Administration:
- IV, IM, or SC

Onset of Action:
Drug Profile for NALMEOFENE HCL

IV – within 2 minutes

Peak Effects:

Variable

Duration of Action:

Up to 8 hours

Arizona Drug Box Minimum Supply:

Optional: 4 mg
Drug Profile for NALOXONE HCL

GENERIC NAME: NALOXONE HCL
CLASS: Narcotic (opioid) antagonist

Mechanism of Action:

Competitive inhibition at narcotic receptor sites
Reverses respiratory depression secondary to narcotics

Indications and Field Use:

Antidote for: Opioid poisoning
May differentiate opioid-induced coma from other causes

Contraindications:

Hypersensitivity

Adverse Reactions:

• Withdrawal symptoms, especially in neonates (nausea, vomiting, diaphoresis, increased heart rate, hypotension or hypertension, tremors).
• Be prepared for combative patient after administration.

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

Should not be mixed with other drugs

Adult Dosage:

IV/IO, IM, inject SL, SC, ET: 2.0 mg initial bolus IV or ET, may repeat every 2 minutes as necessary; titrate to effect.

Intra-nasal: 1.0 mg each nostril using a Mucosal Atomizer Device for a total of 2 mg. May repeat every 2 minutes as necessary. Titrate to effect.

Continuous IV Infusion: 2/3 of the initial bolus/hr (bolus that it took to reverse) administered as a continuous infusion; i.e., if 2 mg Narcan resulted in opioid reversal initially, then it can be maintained by continuous infusion of 1.4 mg/hr. Put 1.4 mg Narcan in 250 ml NS and run at 250 ml/hr. A repeat IV bolus of 2 the initial bolus administered 15 minutes after the initial bolus is recommended.

Pediatric Dosage:

< 5 years or < 20 kg: 0.1 mg/kg IV, ET, inject SL, SC, IO, IN (includes neonate)

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Drug Profile for NALOXONE HCL

> 5 years or > 20 kg:  2 mg IV, ET, inject SL, SC or IO, IN

Routes of Administration:

IV, ET, SC, inject SL, IO or constant IV infusion, IN

Onset of Action:

IV - within 2 minutes

Peak Effects:

Variable

Duration of Action:

Approximately 45 minutes

Arizona Drug Box Minimum Supply:

10 mg

Special Notes:

- Large amounts of the drug may be needed for oral opioid ingestion.
- For adult intra-nasal administration, 1 mg/1ml is the preferred solution.
- 0.4 mg/1 ml may be used as an alternative.
Drug Profile for NITROGLYCERIN

GENERIC NAME: NITROGLYCERIN
CLASS: Vasodilator, organic nitrate, antianginal

Mechanism of Action:

- Smooth muscle relaxant acting on vascular, uterine, bronchial, and intestinal smooth muscle
- Reduces workload on the heart by causing blood pooling (decreased preload)
- Arteriolar vasodilation (decreased afterload)
- Coronary artery vasodilation
- Increases blood flow to myocardium
- Decreases myocardial O$_2$ demand

Indications and Field Use:

- Angina
- Myocardial infarction
- Congestive heart failure with pulmonary edema

Contraindications:

- Hypovolemia
- Increased Intra cranial pressure
- Hypotension (relative)

Adverse Reactions:

CV: Hypotension, reflex tachycardia, bradycardia, decreased coronary perfusion at high doses (secondary to hypotension), headache secondary to dilation of meningeal vessels.

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

Other vasodilators
Phosphodiesterase-5 inhibitors such as: Erectile dysfunction: Viagra, Cialis, Levitra
Pulmonary hypertension: Revatio (Sildenafil), Adcirca (Tadalafil), Staxyn ODT (Vardenafil).

Adult Dosage:

SL for Chest pain: 1/150 gr (0.4 mg) tablet or one full spray, may repeat x 3
SL for Pulmonary edema: 1-2 of the 1/150 gr (0.4 mg) tablets may be given SL every 5-10 minutes as long as the systolic BP is greater 90-100 systolic

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Drug Profile for NITROGLYCERIN

IV infusion during interfacility transport must be given via infusion pump: Start at low range of 5 µg/min and increase in increments of 5 µg, monitoring pain and blood pressure until desired hemodynamic or clinical response is achieved (fall in SVR, relief of chest pain); most patients respond to 50-200 µg/min

Pediatric

Not used

Routes of Administration:

IV or SL
IV infusion on interfacility transports; special training and infusion pump required

Onset of Action:

Seconds

Peak Effects:

5-10 minutes

Duration of Action:

1-10 minutes after IV discontinued

Arizona Drug Box Minimum Supply:

1 bottle of tablets, or 1 spray bottle

Special Notes:

- NTG is heat and light sensitive; stock rotation assures fresh supply.
- SL: Cautiously administer NTG to a patient who has never received it, consider establishing an IV prior to administration.
- Patients with hypotension should be administered this drug with caution.
- Closely monitor vital signs, cardiac rhythm.
- Bradydysrhythmias and hypotension usually respond to Trendelenburg position; atropine and vasopressors may be administered if needed.
- Monitoring IV nitroglycerin on patients during interfacility transport requires an infusion pump and is limited to prehospital providers that have completed a special training curriculum in accordance with their medical control authorities.

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GENERIC NAME: NITROUS OXIDE 50%
CLASS: Analgesic, inhalation

Mechanism of Action:

Centrally acting agent that produces CNS depression and elevation of the pain threshold

Indications for Field Use:

Moderate to severe pain from musculoskeletal trauma, burns, AMI

Contraindications:

- Unconscious patient
- Poor respiratory drive, compromise of respiratory status (i.e. pneumothorax)
- Abdominal pain unless intestinal obstruction has been completely ruled out
- Severe head injury

Adverse Reactions:

**Resp:** Worsening of pre-existing pneumothorax; may cause hypercarbia in oxygen sensitive patients (CO2 retainers).

**GI:** Nausea and vomiting, may lead to rupture of intestine if administered to patient with intestinal obstruction

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

Analgesic effect of nitrous oxide is potentiated by parenteral analgesics and sedatives (i.e. morphine, diazepam).

Adult Dosage:

Self-administer and self-regulated by the patient, who must hold the mask to face to create an airtight seal until the pain is significantly relieved or the patient drops the mask.

Pediatric Dosage:

Must be old enough to follow the instructions for use and large enough that the mask creates an airtight seal.

Routes of Administration:

Self-administered via mask

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Drug Profile for NITROUS OXIDE 50%  

Onset of Action:

Within a few breaths

Peak Effects:

Not available

Duration of Action:

1-2 minutes

Arizona Drug Box Minimum Supply:

Optional: Nitrous oxide 50%/oxygen 50% fixed ratio setup with O2 fail safe device and self-administration mask, 1 set up

Special Notes:

- Does not work well for short periods of intense pain
- Does not mask serious conditions
- Must be self-administered by the patient
GENERIC NAME: ONDANSETRON
CLASS: Antiemetic agent

Mechanism of Action:

Selectively blocks serotonin 5-HT$_3$ receptors located in the CNS at the chemoreceptor trigger zone and in the peripheral nervous system on nerve-terminals of the vagus nerve

Indications for use:

Nausea and vomiting

Contraindications:

- Hypersensitivity
- Use with caution in patients with hepatic impairment
- Avoid use in patients with long QT syndrome

Adverse Reactions:

CNS: Headache, malaise, fatigue, dizziness, fever, sedation, extrapyramidal syndrome
CV: Chest pain, arrhythmias
Resp: Hypoxia
GI/Hepatic: Diarrhea, constipation, abdominal pain, xerostomia, decreased appetite
Skin: Rash

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

Inducers or inhibitors of P450 drug metabolizing enzymes may alter the clearance of Ondansetron. No dosage adjustment is recommended.

Adult Dosage:

4 – 8 mg IV slow push over 2 – 5 minutes
8 mg PO ODT or tablet

Pediatric Dosage: (1 month to 12 years old)

Greater than 40 kg- 4 mg IV slow push over 2 – 5 minutes
Less than 40 kg- 0.1 mg/kg IV slow push over 2 – 5 minutes
4-12 years old 4 mg PO ODT or ODT

Route of Administration:

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Drug Profile for ONDANSETRON

IV, IM, PO

Onset of Action:

Unknown but probably 10 to 30 minutes

Peak effects:

Unknown

Duration of Action:

Half-life is approximately 4 hours. Exact duration unknown but appears to be prolonged compared to half-life

Arizona Drug Box Minimum Supply:

Optional: 4 mg

Special Notes:

- Instructions for Use/Handling ZOFRAN ODT Orally Disintegrating Tablets: Do not attempt to push ZOFRAN ODT Tablets through the foil backing. With dry hands, PEEL BACK the foil backing of 1 blister and GENTLY remove the tablet. IMMEDIATELY place the ZOFRAN ODT Tablet on top of the tongue where it will dissolve in seconds, then swallow with saliva. Administration with liquid is not necessary.
- Bottles: Store between 2°and 30°C (36°and 86°F). Protect from light. Dispense in tight, light-resistant container as defined in the USP.
- Unit Dose Packs: Store between 2°and 30°C (36°and 86°F). Protect from light.
- Store blisters in cartons.
- ECG monitoring for patients with electrolyte abnormalities (e.g., hypokalemia or hypomagnesemia), congestive heart failure, bradyarrhythmias, or for patients taking other medications that can lead to QT prolongation, is recommended.
Drug Profile for OXYTOCIN

GENERIC NAME: OXYTOCIN  
CLASS: Pituitary hormone, polypeptide, uterine stimulant

Mechanism of Action:

Binds to oxytocin receptor sites on surface of uterine smooth muscles: increases force and frequency of uterine contractions

Indications and Field Use:

Postpartum hemorrhage due to uterine atony

Contraindications:

Hypersensitivity

Adverse Reactions:

CV: Shock, tachycardia, dysrhythmias
Resp: Anaphylaxis
GI: Nausea and vomiting
GU: If used prior to delivery, can cause uterine rupture, uterine spasm, lacerations, and fetal damage.
Other: Clotting disorders, electrolyte disturbances

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

None in prehospital arena

Adult Dosage:

Postpartum hemorrhage: 10-20 USP units added to 1000 mL NS or LR and run at a rate necessary to control uterine atony or 10 USP units may be given IM after delivery of placenta.

Pediatric Dosage:

Not applicable

Routes of Administration:

IV infusion, IM
IV infusion on interfacility transfers requires infusion pump

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Drug Profile for OXYTOCIN

Onset of Action:

Seconds

Peak Effects:

Variable

Duration of Action:

1 hour after discontinued

Arizona Drug Box Minimum Supply:

Optional: 10 units

Special Notes:

- Post-partum hemorrhage is defined as blood loss in excess of 500 ml at delivery and during the first 24 hours after delivery. It should be remembered that all blood seen at delivery is the mother's unless there is a spill of cord blood or trauma to the placenta.
- Do not use if solution is discolored or contains a precipitate.
- In addition to oxytocin, fundal massage is also indicated to remove clot formation and stimulate uterine contraction.
- IV fluids are necessary to correct hypovolemia; if post partum hemorrhage is due to other causes such as vaginal or cervical lacerations or retained placental fragments, oxytocin and fundal massage will not be effective.
- Oxytocin is an optional drug.
GENERIC NAME: PHENYLEPHRINE NASAL SPRAY 0.5%
CLASS: Topical vasoconstrictor

Mechanism of Action:

Stimulates $\alpha$ receptors in the blood vessels of the nasal mucosa which causes their constriction and thereby decreases the risk of nasal bleeding.

Indications and Field Use:

Facilitation of nasotracheal intubation

Contraindications:

Known allergy to medication

Adverse Reactions: (rare with single dose, rarely absorbed systemically from nasal instillation)

CV: Hypertension, palpitations
CNS: Tremors

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

None

Adult Dosage:

2-4 sprays in each nostril before attempting tube insertion

Pediatric Dosage:

None

Routes of Administration:

Mucosal; spray in each nostril

Onset of Action:

Seconds

Peak Effects:

30 minutes
Drug Profile for PHENYLEPHRINE NASAL SPRAY 0.5%

Duration of Action:

30 minutes to 4 hours

Arizona Drug Box Minimum Supply:

Optional: 1 bottle

Special Notes:

Single patient use only.

- Air or strong light causes potency loss; do not use solution if brown in color or precipitate is in bottle.
- Nasal intubation tips: examine nares for most patent side; administer topical vasoconstrictor, use ETT 0.5-1.0 mm smaller than for oral intubation; lubricate nostril and tube; tube bevel face nasal septum to avoid abrading Kieselbach's Plexus; advance tube along nasal floor of more patent side.
Drug Profile for PROPARACAINE HYDROCHLORIDE OPTHALMIC

GENERIC NAME: PROPARACAINE HYDROCHLORIDE OPTHALMIC
CLASS: Topical Ophthalmic Anesthetic

Mechanism of Action:

Site of action is at the ophthalmic pain nerve cell membrane. Alleviates pain by limiting the sodium ion permeability in these nerve cell membranes; this elevates the threshold stimulus needed to trigger action potential in these cells. When the action is sufficiently well developed, block of conduction is produced.

Indications and Field Use:

Induction of topical anesthesia prior to irrigation of eyes with or without adjuncts e.g. Morgan’s lens.

Contraindications:

Known hypersensitivity to Proparacaine.

Adverse Reactions:

**OCULAR:** Pupillary dilation, local irritation, softening and erosion of cornea (rare). Severe hyperallergic corneal reaction with corneal sloughing (extremely rare).

**Derm:** Allergic dermatitis conjunctiva and eyelids (rare).

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions/Precautions:

- Should be used cautiously in patients with cardiac disease or hyperthyroidism.
- Protection of eye from irritating chemicals, foreign bodies and rubbing during the period of anesthesia is very important.
- Do not touch dropper tip to any surface as this may contaminate the solution.
- Must be kept cooled to 2-8 degrees C (36-46 degrees F).
- Pregnancy Category C.
- Nursing Mothers: Unknown transmission in breast milk. Use caution.
- Single patient use appropriate for EMS.

Dosage: Adult and Pediatric

Administer 1 or 2 drops 1-2 minutes before irrigation. May repeat every 5-10 minutes for 5 doses.

Onset of Action:
Drug Profile for PROPARACAINE HYDROCHLORIDE OPTHALMIC

30-120 seconds

**Peak Effects:**

30-120 seconds

**Duration of Action:**

5-10 minutes

**Arizona Drug Box Minimum Supply:**

1 bottle, 15 mL

**Special Notes:**

- Do not use if solution shows more than a faint yellow color.
GENERIC NAME: RACEMIC EPINEPHRINE
CLASS: Sympathomimetic

Mechanism of Action:

- Alpha-receptor stimulation: causes vasoconstriction, which results in reduction of mucosal and submucosal edema
- Beta-receptor stimulation: bronchodilation, reduction in airway smooth muscle spasm

Indications (interfacility use only):

- Croup
- Chronic Obstructive Lung Disease, Chronic Bronchitis, Bronchiolitis, Bronchial Asthma, and other peripheral airway disease

Contraindications:

- Allergy to any of the ingredients (may contain sulfites)
- Coronary Artery Disease/Insufficiency
- Arrhythmias
- Epiglottitis
- Hypertension

Adverse Reactions:

- Tachycardia
- Dysrhythmias
- Headache
- Nausea
- Palpitations
- Angina

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

- May potentiate other sympathomimetics
- MAO inhibitors – may cause hypertensive crisis
- Alpha-adrenergic blockers – may cause hypotension
Drug Profile for RACEMIC EPINEPHRINE

Adult Dosage/Pediatric Dosage:

0.5 mL (2.25%) in 2.5 to 4.5 mL normal saline via nebulizer

Routes of Administration:

Inhaled via small volume nebulizer

Onset of Action:

Within 5 minutes

Duration of Action:

1 to 3 hours

Arizona Drug Box Minimum Supply:

None

Special Notes:

- If heart rate increases by more than 20 beats per minute from initial rate, discontinue use.
- Closely monitor vital signs – may produce tachycardia, other dysrhythmias, and hypertension.
- Excessive use may cause bronchospasm
Drug Profile for RANITIDINE

GENERIC NAME: RANITIDINE
CLASS: GI-Anti Ulcer

Mechanism of Action:

Competitively inhibits action of histamine at the H₂ at receptor sites of parietal cells, decreasing gastric acid secretion.

Indications and Field Use:

- Infusion monitoring during interfacility transport only
- Short-term treatment of duodenal ulcer; maintenance therapy
- Pathological hypersecretory conditions

Contraindications:

Hypersensitivity to drug and patient with acute porphyria

Adverse Reactions:

- CNS: Headache, vertigo, malaise
- EENT: Blurred vision
- Hepatic: Jaundice
- CV: Bradycardia, heart block
- Other: Anaphylaxis, angioedema

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

- Glipizide: May increase hypoglycemic effect.
- Procainamide: May decrease renal clearance of procainamide. Monitor patient closely for toxicity.

Adult Dosage:

50 mg in 50-100 mL normal saline infuse over 15-20 minutes every 6-8 hours.

Pediatric Dosage:

Safety and efficacy of IV infusion of drug have not been established.

Routes of Administration:

Revised by PMD, Approved by MDC 1-23-2014
IV infusion – Piggy back

Onset of Action:
Unknown

Peak Effects:
Unknown

Duration of Action:
Unknown

Arizona Drug Box Minimum Supply:
None

Special Notes:

- Use cautiously in patients with hepatic dysfunction. Dosage should be adjusted in patients with impaired renal function.
- Assess patients for abdominal pain. Note blood in emesis, stool, or gastric aspirate.
Drug Profile for SODIUM BICARBONATE 8.4%

GENERIC NAME:  SODIUM BICARBONATE 8.4%
CLASS:  Buffer

Mechanism of Action:

Buffers H⁺ and increases pH

Indications and Field Use:

- Pre-existing metabolic acidosis
- Poisoning of aspirin, cyclic antidepressants (alkalinization of blood)
- Cardiac arrest after other interventions and ventilation is adequate

Contraindications:

Alkalosis

Adverse Reactions:

CV:  Congestive heart failure, edema secondary to sodium overload.
Metabolic:  Hyperosmolarity, metabolic alkalosis, hypernatremia, in cardiac arrest may cause extracellular alkalosis and intracellular acidosis.

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

Incompatible with other drug infusions

Adult Dosage:

Pre-existing Metabolic Acidosis or Alkalization of Blood:  50-100 mEq IV per medical control authority.
Infusion:  50 mEq of sodium bicarbonate/250 ml of NS or as determined by medical control.
Cardiac arrest:  First dose usually 1 mEq/kg (or as determined by blood gas analysis), with subsequent doses of 0.5 mEq/kg every 10 minutes in cardiac arrest after other standard treatment (defibrillation, CPR, intubation, ventilation and more than one trial of epinephrine) has been used.

Pediatric Dosage:

1 mEq/kg IV or IO slowly, if ventilation is adequate according to medical control authority. Can contribute to acidosis and cause fluid overload.

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Neonatal Dosage:

1 mEq/kg IV or IO of 4.2% slowly. Waste 25 ml of 8.4% solution and add 25 ml of NS from IV bag, each ml will contain 0.5 mEq of sodium bicarbonate

Routes of Administration:

IV bolus; IV infusion
For IV infusion to be monitored on interfacility transports, infusion pump is required

Onset of Action:

Seconds

Peak Effects:

1-2 minutes

Duration of Action:

10 minutes

Arizona Drug Box Minimum Supply:

Optional: 100 mEq

Special Notes:

- Flush tubing before and after administration, especially with concurrent use of calcium chloride.
- Sodium bicarbonate administration should be considered only for treatment of documented severe acidosis associated with prolonged cardiac arrest or an unstable hemodynamic state, hyperkalemia or certain poisonings (i.e. cyclic antidepressants, ASA, phenobarbital, etc.).
- In premature infants hyperosmolarity from undiluted sodium bicarbonate has been correlated with an increased risk for periventricular-intraventricular hemorrhage.
- Severe tissue necrosis will occur with extravasation.
GENERIC NAME: SUCCINYLCHOLINE
CLASS: Ultra-short-acting depolarizing-type skeletal muscle relaxant

Mechanism of Action:

Combines with cholinergic receptors of the motor end plate to produce depolarization
Hydrolyzed by acetylcholinesterase

Indications and Field Use:

Endotracheal intubation requiring paralysis (RSI) by a qualified Paramedic with
authorization from the Paramedic’s administrative medical director

Contraindications:

- Muscle disorders
- Personal or family history of malignant hyperthermia
- History of hyperkalemia
- Burn injured patients*
- Ocular injuries
- Patients in whom successful endotracheal intubation is doubtful

Adverse Reactions:

- Vagal stimulation leading to bradycardia or asystole
- Hyperkalemia
- Rhabdomyolysis
- Hypersalivation
- Elevated intraocular pressure
- Release of histamine
- Malignant hyperthermia
- Dysrhythmias
- Hypotension

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

Beta-blockers, procainamide, lithium, and quinidine prolong the effects.

Adult Dosage:

0.6-2 mg/kg IV push, may repeat once in 2-3 minutes if inadequate response to initial
dose to achieve paralysis. If additional dosing is needed, contact medical direction.
Drug Profile for SUCCINYLCHOLINE

Pediatric Dosage:

1-2 mg/kg IV push, may repeat once in 2-3 minutes if inadequate response to initial dose to achieve paralysis. If additional dosing is needed, contact medical direction.

Route of Administration:

IV/IO

Onset of Action:

<1 minute

Duration of Action:

Muscle paralysis lasting 4-6 minutes

Arizona Drug Box Minimum Supply:

Optional: 400 mg

Special Notes:

*Succinylcholine should not be given to patients for the period from 24 hours to 21 days after significant burns or crush injury due to elevated potassium levels and potential for cardiac dysrhythmias.
Drug Profile for THIAMINE HCL (VITAMIN B1)

GENERIC NAME: THIAMINE HCL (vitamin B1)
CLASS: Vitamin

Mechanism of Action:

- Required for carbohydrate metabolism.
- Deficiency leads to anemia, polyneuritis, Wernicke's encephalopathy, cardiomyopathy.
- Administration may reverse symptoms of deficiency, but effects are dependent upon duration of illness and severity of disease.

Indications and Field Use:

- Alcoholism, delirium tremens
- Coma of unknown origin, especially if alcohol or malnourishment may be involved.
- Suspect Wernicke or Korsakoff Syndrome
- Other thiamine deficiency syndromes
- Severe congestive heart failure

Contraindications:

Do not give intra-arterial

Adverse Reactions:

- Hypotension (rare)
- Nausea/vomiting

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

None

Adult Dosage:

100 mg

Pediatric Dosage:

Rarely used

Routes of Administration:

- IM
- IV/IO over several minutes

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Drug Profile for THIAMINE HCL (VITAMIN B₁)

Onset of Action:
Hours

Peak Effects:
3-5 days

Duration of Action:
Unavailable

Arizona Drug Box Minimum Supply:
100 mg

Special Notes:
- In the known alcoholic patient dextrose should not be administered without thiamine.
- Thiamine has been shown to be useful in severe congestive heart failure.
Drug Profile for TIROFIBAN

**GENERIC NAME:** TIROFIBAN  
**CLASS:** Antiplatelet agent, platelet aggregation inhibitor

**Mechanism of Action:**

Reversibly binds with Glycoprotein (GP) IIb/IIIa receptors on the surface of platelets inhibiting the final common pathway for platelet aggregation. GP IIb/IIIa receptor blockade interferes with the binding of fibrinogen, von Willebrand factors and other platelet aggregation modulators to the surface of platelets thus preventing aggregation.

**Indications for Field Use:**

- Infusion monitoring during interfacility transport only.
- For the treatment of acute coronary syndrome, for patients to be managed medically or those undergoing percutaneous transluminal coronary angioplasty (PTCA) or atherectomy.
- Heparin should be concurrently administered and monitored.

**Contraindications:**

- Active internal bleeding or recent history (within 30 days) of clinically significant gastrointestinal or genitourinary bleeding
- History of cerebrovascular accident (CVA) with current residual neurologic deficit or within the past 2 years
- Bleeding diathesis (bleeding disorder, condition or predisposition)
- Current use of warfarin (Coumadin) or use within the past 7 days unless prothrombin time is <1.2 times control
- Thrombocytopenia (<100,000 cells/mcl)
- Trauma or major surgery within the past 6 weeks
- Intracranial neoplasm
- Arteriovenous malformation, aneurysm or evidence of aortic dissection
- Severe uncontrolled hypertension (systolic BP >180mmHg, diastolic BP >110mmHg)
- History of vasculitis
- Concomitant use of another GP IIb/IIIa inhibitor
- Acute pericarditis
- Hypersensitivity to tirofiban

**Adverse Reactions:**

- Bleeding - spontaneous bleeding may occur with tirofiban administration; most common sites include: venous and arterial access sites (including femoral artery, retroperitoneal, gastrointestinal, genitourinary)
- Major bleeds have been demonstrated to occur more often in patients: >65 years old, <75kg, with a history of prior gastrointestinal disease, patients receiving thrombolytics or heparin

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Drug Profile for TIROFIBAN

- Hemorrhagic stroke and intracranial bleeding
- Thrombocytopenia
- Other adverse effects (incidence greater than 1 percent):
  - Cardiovascular - Bradycardia, Dissection of coronary artery, edema, swelling, vasovagal reaction
  - Central nervous system - dizziness, sweating, pain (leg and pelvic)

Notes on Administration:

- Weight-based dosing of both tirofiban and concomitant heparin is essential to decrease the incidence of major and minor bleeding episodes. Patients should be managed following an accepted, literature-based standard of practice.
- Infusion pump is required in management of tirofiban infusions.

Incompatibilities/Drug Interactions:

Other medication that effects hemostasis: thrombolytics, oral anticoagulants, aspirin and other nonsteroidal anti-inflammatory agents, dipyridamole, ticlopidine, clopidogrel.

Adult Dosage:

Loading Dose: 0.4mcg/kg/min for 30 minutes
Infusion: 0.1mcg/kg/min, for a minimum of 48 hours and 12 to 24 hours post angioplasty.
Standard Solution: 50mcg/ml NS or D5W 500ml

Pediatric Dosage:

Safety and efficacy in children have not been established.

Routes of Administration:

Intravenous bolus followed by infusion

Onset of Action:

A few minutes

Peak Effects:

Early peak in less than 30 minutes, infusion steady state peak in approximately 6 hours.

Duration of Action:

Platelet function restores 4 to 8 hours after tirofiban infusion is discontinued
Drug Profile for TIROFIBAN

Arizona Drug Box Standard Supply:

None

Special Notes:

- Minimizing vascular and other trauma is important in managing platelet aggregation inhibitors. Due to risk of spontaneous bleeding during tirofiban administration, procedures including the following should be avoided whenever possible: arterial and venous punctures, intramuscular injection, placement of urinary catheters, nasogastric tube and nasotracheal intubation. If arterial or venous access is necessary, avoid non-compressible like subclavian and jugular vessels.
- Patients transported with an tirofiban infusion should be under the direct care of a cardiologist who is responsible for initiating and monitoring the tirofiban therapy.
- Inservice education of paramedic personnel is required prior to managing tirofiban during transport.
Drug Profile for TOTAL PARENTERAL NUTRITION

GENERIC NAME: TOTAL PARENTERAL NUTRITION
CLASS: Intravenous Hyperalimentation

Indications:

Patients with long-term needs for intravenous feeding, who cannot receive nutrients adequate enough to meet physiologic needs through the gastrointestinal system, including hypercatabolic states (burns, trauma, sepsis, etc.), various gastrointestinal diseases, renal failure, pancreatitis, etc.

Field use:

Inter-facility transport only.

Route of administration:

Administered through a central venous line, either subclavian, internal jugular, or a peripherally inserted central venous line (PICC line) for dextrose concentrations >10%. Dextrose solutions <10% may be given by a standard peripheral line.

Adult and pediatric dose:

Each container of solution is individually formulated for a specific patient. This medication must be transported on an infusion pump, and the indicated drip rate must be carefully observed.

Adverse reactions:

- Adverse reactions are related to TPN's components:
- Water--fluid overload
- Insulin and dextrose--hypoglycemia or hyperglycemia
- Heparin--hemorrhage
- Electrolytes--abnormal levels of sodium, chloride, potassium, magnesium
- Vitamins--deficiency in vitamin D, excess of vitamin A
- Dextrose--respiratory distress, liver dysfunction

A partial list of symptoms caused by the above: body swelling, respiratory distress, high or low blood glucose, bleeding, changes in level of consciousness, cardiac arrhythmias, diaphoresis, confusion, lethargy, headache, hunger, tremors, fever, sepsis. Should a problem develop during transport, contact medical control for direction.

Notes on Administration:

- Total parenteral nutrition (TPN) is an individualized mixture of dextrose (15% to 35%), crystalline amino acids (2.5% to 5.0%), electrolytes, water, vitamins, trace elements, and

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may include insulin, heparin, an H₂ antagonist (cimetidine or ranitidine), antibiotics or fat
emulsions (lipids).

- TPN may be administered with a separate fat emulsion (looks like milk) flowing on a Y-
site distal to the infusion pump, or on a peripheral line. Prior to paramedic transport, the
separate fat emulsion infusion should be turned off with the tubing roller clamp, but not
removed from the tubing Y-site attachment.

- Paramedics may transport patients receiving other medications contained within the TPN
solution that are usual and normal components of TPN and are in usual and normal
concentrations in the solution.

- Strict aseptic precautions are observed in preparing TPN mixtures using a filtered-air,
laminar flow hood to avoid bacterial contamination--the high sugar content of these
products supports prolific bacterial growth. Sepsis is a potentially severe patient
problem.

- When patients are removed from an infusion pump in the transferring facility and placed
on the transport infusion pump, the procedure is accomplished quickly to avoid buildup
of potentially harmful organisms at the IV-tubing connection site. All tubing connections
should be taped to avoid separation and consequent contamination. Dressing changes at
the catheter insertion site require sterile technique, and are best done at the transferring
agency prior to transport.

- No TPN solution should be abruptly discontinued, but should the solution be entirely
consumed or need to be removed during transport, dextrose 10% should be administrated
in place of the TPN to avoid rebound hypoglycemia.

- Never exceed the prescribed rate of infusion. Do not attempt to "catch up" if the infusion
falls behind schedule.

- Particulate matter in clear TPN solutions or visible separation of oil droplets in lipid-
containing solutions indicate the solution should be immediately replaced.

**Arizona Drug Box Minimum Supply:**

None
GENERIC NAME: VASOPRESSIN  
CLASS: Pituitary (antidiuretic) hormone

Mechanism of Action:
Causes vasoconstriction (pressor effect) of peripheral, cerebral, pulmonary, and coronary vessels

Indications and Field Use:
Adult shock-refractory ventricular fibrillation/pulseless ventricular tachycardia

Contraindications:
- Responsive patient with coronary artery disease
- Hypertension

Adverse Reactions:
- Can increase peripheral vascular resistance and provoke cardiac ischemia and angina pectoris
- Abdominal distress
- Nausea and vomiting
- Tremors
- Tissue necrosis if extravasation occurs

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:
None in the emergency setting

Adult Dosage:
For ventricular fibrillation/pulseless ventricular tachycardia: 40 U one time—may replace the FIRST or SECOND dose of epinephrine.

Pediatric Dosage:
The efficacy of this drug for use in children has not been established

Routes of Administration:
IV, IO, ET

Onset of Action:
Drug Profile for VASOPRESSIN

1-3 minutes

Peak Effects:

5-10 minutes

Duration of Action:

10-35 minutes

Arizona Drug Box Minimum Supply:

Optional: 40 units
GENERIC NAME: VERAPAMIL HCl
CLASS: Calcium channel blocker

Mechanism of Action:

- Blocks calcium ion influx into cardiac and smooth muscle cells causing a depressant effect on the contractile mechanism resulting in negative inotropy.
- Reduces contractile tone in vascular smooth muscle resulting in coronary and peripheral vasodilation.
- Slows conduction and prolongs refractory period in the AV node due to calcium channel blocking.
- Slows SA node discharge.
- In summary, decreases myocardial contractile force and slows AV conduction.

Indications and Field Use:

- Supraventricular tachycardia
- Atrial fibrillation and atrial flutter with rapid ventricular response

Contraindications:

- AV block
- Sick sinus syndrome
- Any wide QRS complex tachycardia
- WPW
- Shock
- Severe CHF
- IV beta blocker
- Hypotension

Adverse Reactions:

- Extreme bradycardia
- Asystole
- AV block
- Hypotension
- Congestive heart failure

NOTES ON ADMINISTRATION

Incompatibilities/Drug Interactions:

- IV Beta-blockers

Adult Dosage:
Drug Profile for VERAPAMIL HCL

2.5 - 5 mg slow IV push over 2-3 minutes. May rebolus in 15-30 minutes with 5-10 mg IV push until a maximum dose of 30 mg

Pediatric Dosage:

IV form not used in children in the field

Routes of Administration:

IV slow push (See: Special Notes)

Onset of Action:

1-3 minutes

Peak Effects:

3-5 minutes

Duration of Action:

2-5 hours

Arizona Drug Box Minimum Supply:

10 mg

Special Notes:

- May be used in conjunction with cardioversion.
- Vagal maneuvers may be tried first (Valsalva maneuver).
- Monitor closely for hypotension and AV block during administration.
- Slow IV push: Verapamil is generally given over a 1-2 minute period. In middle age or older patients the IV dose should be administered over a 3 minute period. Peak effects occur within 3-5 minutes of bolus injection.
- Hypotension may be treated with fluids, supine position, and/or calcium chloride.
- Cautious administration is recommended when IV verapamil is given to a patient receiving oral Beta blockers or oral calcium channel blockers (not a contraindication).
- The ventricular response to atrial fibrillation in patients with Wolff-Parkinson-White (WPW) syndrome may be accelerated in response to verapamil and VF can occur. Verapamil should be used cautiously, if at all, in patients with WPW syndrome associated with atrial fibrillation and flutter.
- Verapamil is not effective for the treatment of most types of VT. It may induce severe hypotension and predispose the patient to the development of VF. Avoid verapamil in patients with wide-QRS tachycardia unless it is known with certainty to be supraventricular in origin.
In patients with acute pump failure (not severe), therapy with verapamil is indicated (used cautiously) *if* resolution of the tachycardia will remove the cause of the hemodynamic compromise. IV calcium has been recommended as pretreatment therapy against hypotension in patients with marginal blood pressure or with left ventricular dysfunction. Because of the shorter duration of action, adenosine is preferable in PSVT.