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ADENOSINE (ADENOCARD)

CLASS:
• Endogenous nucleoside (occurs naturally in all cells of the body)

ACTION:
• Slows electrical conduction through AV node, and inhibits re-entry pathway, converting SVT to NSR
• ONSET = within 15 seconds
• DURATION= 1-2 minutes

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<th>INDICATION</th>
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<tr>
<td>Symptomatic supraventricular tachycardia (SVT) with Pulses (4403)</td>
<td>Adults: Adenosine 12 mg (4 mL) rapid IV/IO push. Follow immediately with 20 mL normal saline rapid IV/IO push. MAY REPEAT ONCE. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).</td>
</tr>
<tr>
<td>Pediatrics: Adenosine 0.2 mg / kg rapid IV/IO push. Follow immediately with 20 mL normal saline rapid IV/IO push. MAY REPEAT ONCE. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO). For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app.</td>
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</tr>
</tbody>
</table>

CONTRAINDICATIONS:  
• 2nd and 3rd degree AV heart blocks  
• Sick sinus syndrome (without pacemaker)

USE WITH CAUTION:  
• Patients with a history of COPD, asthma, or bronchospasm; Adenosine has been found to stimulate vagal nerve fibers in the lungs, causing an acute onset of difficulty breathing, asthma attacks and/or bronchospasm.

SIDE EFFECTS:  
• SOB / Dyspnea  
• Chest pressure / palpitations; may be acute in some patients for brief period  
• Mild hypotension due to decreased peripheral vascular resistance  
• Dizziness / lightheadedness / headache  
• Nausea  
• Transient arrhythmias; (bradycardia, AV blocks, ventricular ectopy). These are generally not treated and are quickly self-limiting

SPECIAL INFORMATION:  
1. Effective in treating Wolff-Parkinson-White syndrome in adults and pediatrics.  
2. Rapid IV/IO push of Adenosine is necessary because it is metabolized very quickly. Use a large bore IV in a proximal large vein, if able, to assist administration of the rapid IV push.  
3. Obtain ECG documentation before, during, and after giving Adenosine.  
4. Transient arrhythmias (PVC's, PAC's, sinus bradycardia, AV block, sinus tach and possibly asystole) may be witnessed after administration  
5. Discontinue administration if 2nd or 3rd degree block develops.  
6. Adenosine will only convert SVT; it will not convert A-Fib or A-Flutter.  
7. Caffeine and Theophylline act as antagonists; maximum doses may be required.
ALBUTEROL

CLASS:
- Sympathomimetic

ACTION:
- Activates the beta-2 adrenergic receptors to relax bronchial smooth muscles.
- Bronchodilation, relieves bronchospasms, and reduces airway resistance.
- ONSET = 5 minutes
- PEAK = 1 hour
- DURATION = 3-4 hours

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<tr>
<th>INDICATIONS</th>
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<tr>
<td>Suspected hyperkalemia associated with crush injuries (4302)</td>
<td>INITIAL AND REPEAT ADMINISTRATIONS FOR ADULTS AND PEDIATRICS REQUIRE A BASE HOSPITAL ORDER (BHO)</td>
</tr>
<tr>
<td>Suspected hyperkalemia associated with heat illness / hyperthermia (4702)</td>
<td>Adults and pediatrics: 2.5 mg / 3 mL (one pouch), nebulized.</td>
</tr>
<tr>
<td>Bronchospasm (4406)</td>
<td></td>
</tr>
<tr>
<td>Bronchospasm associated with suspected toxic inhalation (4603)</td>
<td>Adults and pediatrics: 2.5 mg / 3 mL (one pouch), nebulized. MAY REPEAT PRN.</td>
</tr>
<tr>
<td>Bronchospasm associated with allergy and/or anaphylaxis (4704)</td>
<td></td>
</tr>
</tbody>
</table>

CONTRAINDICATIONS:
- None

SIDE EFFECTS:
- Tachycardia / palpitations
- Dizziness, headache
- Tremors, nervousness

SPECIAL INFORMATION:
1. One (1) DuoNeb treatment may be given standing order; repeat administration of Albuterol is a standing order. REPEAT ADMINISTRATION OF IPRATROP IUM IS A BASE HOSPITAL ORDER (BHO).
2. Albuterol becomes unstable in moderate to high temperatures. If it appears discolored (it is normally clear) or is precipitated, discard it immediately.
3. Causes minimal cardiac stimulation (tachycardia); monitor ECG & heart rate.
4. Use with caution in pregnancy.
5. Check lung sounds, SpO2, capnography wave forms and respiratory rate before and after administration of Albuterol to determine effectiveness.
AMIODARONE

CLASS:
- Anti-dysrhythmic

ACTION:
- Reduces the maximum rate of depolarization via sodium channel blocking (class I action).
- Raises the threshold for VF by inhibiting sympathetic stimulation via alpha- and beta-blocking properties (class II action).
- Increases the duration of the action potential by blocking potassium channels (class III action).
- Slows AV conduction by blocking calcium channels (class IV action).
- Prolongs the action potential duration and the refractory period of the myocardial electrical conduction system thereby facilitating the termination of sustained VT or VF.
- ONSET = 1-3 minutes
- DURATION = 15-140 days

<table>
<thead>
<tr>
<th>INDICATIONS</th>
<th>DOSAGE/ROUTE</th>
</tr>
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<tbody>
<tr>
<td>Symptomatic Tachycardia with Pulses (4403)</td>
<td>INITIAL AND REPEAT ADMINISTRATIONS FOR ADULTS AND PEDIATRICS REQUIRE A BASE HOSPITAL ORDER (BHO)</td>
</tr>
<tr>
<td>Adults: Amiodarone 150 mg (3 mL) IVPB. Infuse in 50-100 mL normal saline, administer over 10 minutes.</td>
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</tr>
<tr>
<td>Pediatrics: Amiodarone 5 mg / kg IVPB. MAX SINGLE DOSE TO INFUSE IS 150 MG. Infuse in 50-100 mL normal saline, administer over 10 minutes. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app.</td>
<td></td>
</tr>
<tr>
<td>Cardiac arrest with VF or VT (4405)</td>
<td>Adults: 300 mg (6 mL) IV/IO. MAY REPEAT ONCE AT 150 MG (3 ML) 5 MINUTES AFTER FIRST (1ST) DOSE, TO A MAX OF 450 MG. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).</td>
</tr>
<tr>
<td>INITIAL AND REPEAT PEDIATRIC ADMINISTRATION REQUIRES A BASE HOSPITAL ORDER (BHO).</td>
<td></td>
</tr>
<tr>
<td>Pediatrics: 5 mg / kg IV/IO. MAX SINGLE DOSE IS 150 MG. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app.</td>
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</tbody>
</table>

CONTRAINDICATIONS:
- Previous history of liver disease
- Hypersensitivity to iodine
- Cardiogenic shock
- Sinus bradycardia
- 2\textsuperscript{nd} / 3\textsuperscript{rd} degree AV blocks

SIDE EFFECTS:
- Hypotension
- Bradycardia
- May increase the effects of anti-coagulants as well as Digoxin and Dilantin

SPECIAL INFORMATION:
1. Large bore catheter is recommended in case of hypotension following administration.
2. Fluid resuscitation should be anticipated during the post resuscitation phase.
ASPIRIN

CLASS:
• Salicylate

ACTIONS:
• Inhibits the normal tendency for platelets to accumulate inside injured or occluded cardiac arteries thereby promoting better blood flow through vessels to better perfuse the heart.
• ONSET = 15-30 minutes
• DURATION = days (antiplatelet effects)

### INDICATIONS

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<tr>
<th>INDICATIONS</th>
<th>DOSAGE/ROUTE</th>
</tr>
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<tbody>
<tr>
<td>Acute Coronary Syndrome (ACS) (4401)</td>
<td>Adults: 324 mg (four 81 mg chewable tablets) PO. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO). ADMINISTRATION OF ASPIRIN TO PEDIATRIC PATIENTS IS NOT PERMITTED.</td>
</tr>
</tbody>
</table>

### CONTRAINDICATIONS:
• Administer with caution to pts with Hx of bleeding ulcers / GI bleeds (upper and/or lower)
• Patients with VADs

### SIDE EFFECTS:
• GI upset (indigestion, nausea/vomiting, epigastric pain, heartburn)
• Occult bleeding

### SPECIAL INFORMATION:
1. Aspirin decomposes at high temperatures or with high humidity / moisture. Pills may crumble or have a "vinegar" smell that may be detected when it has deteriorated. If either of these are noted, discard immediately.
ATROPINE SULFATE

CLASS:
• Anticholinergic

ACTION:
• Competes with acetylcholine for receptor sites blocking the PNS response at SA & AV nodes.
• Increases heart rate by increasing electrical conduction through the heart.
• Inhibits secretions by decreasing PNS effect on bronchial, salivary, sweat and GI glands.
• ONSET = 2-4 minutes
• DURATION = 2-6 hours

<table>
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<tr>
<th>INDICATIONS</th>
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<tbody>
<tr>
<td>Symptomatic bradycardia with pulses (4404)</td>
<td>Adults: 1 mg (10 mL) IV/IO. MAY REPEAT EVERY 3-5 MINUTES TO A MAX OF 3 MG (30 mL).</td>
</tr>
<tr>
<td>Cardiac Arrest (4405)</td>
<td>INITIAL AND REPEAT ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).</td>
</tr>
<tr>
<td></td>
<td>Pediatrics: 0.02 mg / kg IV/IO. MAX SINGLE DOSE IS 0.5 MG. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app.</td>
</tr>
<tr>
<td>Nerve agent, organophosphate and carbamate poisoning (4604)</td>
<td>INITIAL AND REPEAT ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).</td>
</tr>
<tr>
<td></td>
<td>Adults: 1 mg (10 mL) IV/IO.</td>
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<tr>
<td></td>
<td>ADMINISTRATION OF ATROPINE TO PEDIATRIC PATIENTS IN CARDIAC ARREST IS NOT PERMITTED.</td>
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<tr>
<td></td>
<td>Adults: 1 mg (10 mL of prefilled syringe) IV/IO push. MAY REPEAT PRN.</td>
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<tr>
<td></td>
<td><strong>OR</strong> 1 mg (2.5 mL of MDV) IM x2. MAY REPEAT PRN.</td>
</tr>
<tr>
<td></td>
<td>Pediatrics: 0.02 mg / kg IV/IO push. MAX SINGLE DOSE IS 1 MG. MAY REPEAT PRN. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app.</td>
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<tr>
<td></td>
<td><strong>OR</strong> 0.05 mg / kg IM x2. MAX SINGLE DOSE IS 1 MG. MAY REPEAT PRN. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app.</td>
</tr>
</tbody>
</table>

CONTRAINDICATIONS:
• None

SIDE EFFECTS:
• Tachycardia / palpitations
• Dry mouth / nausea / vomiting
• Pupil dilation / blurred vision
• Flushed / hot / dry skin
SPECIAL INFORMATION:
1. In true OPP poisonings, multiple doses of Atropine will be needed
2. Assessing the effectiveness of Atropine administration:
   - Unstable Bradycardia—check ECG for increase in HR, palpate pulse and obtain a BP
   - OPP—watch for decreased secretions
**CALCIUM CHLORIDE (CaCl₂)**

**CLASS:**
- Electrolyte

**ACTION:**
- Necessary for the proper function of the nervous, muscular, skeletal, digestive and endocrine systems
- Positive inotropic activity increases the strength of myocardial contractions
- Increases ventricular automaticity
- ONSET = 2-10 mins
- DURATION = 30-60 mins

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<tr>
<td>Suspected hyperkalemia associated with crush injuries (4302)</td>
<td>INITIAL AND REPEAT ADMINISTRATIONS FOR ADULTS AND PEDIATRICS REQUIRE A BASE HOSPITAL ORDER (BHO). Adults: 1 gm (10 mL) IVPB. Infuse in 50-100 mL normal saline, administer over 10 minutes. Pediatrics: 20 mg / kg IVPB. Infuse in 50-100 mL normal saline, administer over 10 minutes. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app.</td>
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<tr>
<td>Suspected beta blocker or calcium channel blocker overdose (4601)</td>
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<tr>
<td>Cardiac dysrhythmias associated with toxic exposure, inhalation, or ingestion (4603)</td>
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</tr>
<tr>
<td>Suspected hyperkalemia associated with heat illness / hyperthermia (4702)</td>
<td></td>
</tr>
<tr>
<td>Cardiac arrest with suspected hypocalcemia, hyperkalemia, hypermagnesemia, or calcium channel blocker overdose (4405)</td>
<td>INITIAL AND REPEAT ADMINISTRATIONS FOR ADULTS AND PEDIATRICS REQUIRE A BASE HOSPITAL ORDER (BHO). Adults: 1 gm (10 mL) IV/IO. Pediatrics: 20 mg / kg IV/IO. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app.</td>
</tr>
<tr>
<td>Cardiac arrest in a known / suspected dialysis patient (4405)</td>
<td>Adults: 1 gm (10 mL) IV/IO. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO). INITIAL AND REPEAT PEDIATRIC ADMINISTRATION Requires A Base Hospital Order (BHO). Pediatrics: 20 mg / kg IV/IO. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app.</td>
</tr>
</tbody>
</table>

**CONTRAINDICATIONS:**
- Digitalis toxicity
- Hypercalcemia
- VF
- Impaired kidney function (suspension contains aluminum which may cause aluminum toxemia)

**SIDE EFFECTS:**
- Hypotension
- Cardiac arrest
- Syncope
- Tingling sensation in the extremities
- Metallic taste in the mouth
- Facial flushing
DEXTROSE

**CLASS:**
- Carbohydrate

**ACTION:**
- Increases blood glucose by introducing free sugar directly into the blood stream
- ONSET approximately 1 minute
- DURATION is dependent on the degree of hypoglycemia

**INDICATIONS** | **DOSAGE/ROUTE**
--- | ---
Symptomatic hypoglycemia with blood glucose less than 80 mg/dL in adults or 70 mg/dL in pediatrics and neonates (4201) | Adults: 25 gm (D10%) IV/IO bolus or drip. **MAY REPEAT PRN.**  
Pediatrics and neonates: 5 mL / kg (D10%) IV/IO bolus or drip. **MAY REPEAT PRN.** For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app.

Neonatal resuscitation (4801) | **INITIAL AND REPEAT ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO)**  
D10% IV/IO bolus or drip.

**CONTRAINDICATIONS:**
- Hyperglycemia

**SIDE EFFECTS:**
- Local venous irritation / infection
- Hyperglycemia

**SPECIAL INFORMATION:**
1. Tissue necrosis may occur with infiltration; to ensure patency, aspirate before and halfway through administration.
2. Repeat blood sugar if patient is signing AMA
3. Assess the effectiveness of D50W administration:
   - Altered LOC- reassess LOC and skins; recheck BGL if there is no improvement in symptoms
DIPHENHYDRAMINE (BENADRYL)

CLASS:
- Antihistamine

ACTION:
- Binds to histamine receptor sites, suppressing histamine induced allergic symptoms. Does not prevent histamine release.
- ONSET = 15-30 minutes
- DURATION = 6-12 hours

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<tr>
<td>Nausea and/or Vomiting (4203)</td>
<td>INITIAL AND REPEAT ADMINISTRATIONS FOR ADULTS AND PEDIATRICS REQUIRE A BASE HOSPITAL ORDER (BHO). Adults: 25-50 mg (0.5 – 1 mL) IM or slow IV/IO push. Pediatrics: 1 mg / kg slow IV/IO push. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app. <strong>OR</strong> 2 mg / kg IM. MAX SINGLE DOSE IS 50 MG. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app.</td>
</tr>
<tr>
<td>Overdose / Adverse Reaction: suspected dystonic reaction (4601)</td>
<td>Adults: 50 mg (1 mL) IM or slow IV/IO push. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO). Pediatrics: 1 mg / kg slow IV/IO push. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app. <strong>OR</strong> 2 mg / kg IM. MAX SINGLE DOSE IS 50 MG. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).</td>
</tr>
<tr>
<td>Allergy and/or Anaphylaxis (4704)</td>
<td></td>
</tr>
</tbody>
</table>

CONTRAINDICATIONS:
- None

SIDE EFFECTS:
- Drowsiness / sedation (excitement in children)
- Palpitations / tachycardia
- Hypotension
- Dry mouth / thickened bronchial secretions
- Seizures

SPECIAL INFORMATION:
1. Cumulative depressant effects occur in the presence of alcohol and or other sedatives.
2. Use with caution when administering to children with history of asthma who weigh less than 20 lbs (9 kg) due to thickened bronchial secretions.
3. Common drugs which may cause extrapyramidal reactions: Haldol, Compazine, Thorazine, Stelazine, Prolixin
4. Extrapyramidal reaction may be seen up to 7-10 days after ingestion of medication
5. Assessing effectiveness of Benadryl administration:
   - Anaphylaxis and allergic reaction - observe for a decrease in erythema and itching.
   - Extrapyramidal reactions - observe for a decrease in facial and neck spasm
EPINEPHRINE

**CLASS:**
- Sympathomimetic (both alpha and beta effects)

**ACTION**
- On the bronchi: bronchodilation (beta-2).
- On the peripheral vasculature: vasoconstriction (alpha).
- On the heart:
  - increased heart rate (beta-1) / chronotropic
  - increased contractility / inotropic
  - increased AV conduction / dromotropic
  - increased automaticity / dromotropic
- ONSET = IV/IO: 1-2 minutes, IM: 5-10 minutes
- DURATION = 5-10 minutes

**INDICATIONS**

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<tr>
<th>Shock UNRELATED TO TRAUMA (4202)</th>
<th>Adults and pediatrics: 0.01 mg (1 mL, 0.01 mg / mL concentration, Push Dose Epinephrine) IV/IO. MAY REPEAT PRN EVERY 1-5 MINUTES TO MAINTAIN A SYSTOLIC BP GREATER THAN:</th>
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<td>Shock following ROSC (4405)</td>
<td>90 mmHg - adults</td>
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<tr>
<td>Shock associated with allergy and/or anaphylaxis (4704)</td>
<td>70 mmHg - pediatrics</td>
</tr>
<tr>
<td>Shock associated with snakebite (4705)</td>
<td>Adults: 1 mg (10 mL, 0.1 mg / mL concentration) IV/IO. MAY REPEAT EVERY 5 MINUTES TO A MAX OF 5 MG (50 mL). ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).</td>
</tr>
<tr>
<td>Cardiac Arrest (4405)</td>
<td>Pediatrics: 0.01 mg / kg (0.1 mg / mL concentration) IV/IO. MAY REPEAT EVERY 5 MINUTES TO A MAX OF FIVE (5) ADMINISTRATIONS. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app.</td>
</tr>
<tr>
<td>Condition</td>
<td>Adult Dose Description</td>
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<tr>
<td>------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
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</tbody>
</table>
| Shock following ROSC WHEN PATIENT’S SYSTOLIC BP IS LESS THAN 90 MMHG (4405) | **Adults**: 0.4 mg (0.4 mL, 1 mg / mL concentration) IVPB, infused in 100 mL normal saline  
  **OR** 0.2 mg (0.2 mL, 1 mg / mL concentration) IVPB, infused in 50 mL normal saline.  
  **RATE WILL BE CONTROLLED VIA DIAL-A-FLOW.**  
  **INCREASE DOSING EVERY 2-3 MINUTES, TO MAX 10 MCG/MIN, TO ACHIEVE OR MAINTAIN SYSTOLIC BP OF 90 MMHG OR GREATER**  
  • Begin infusion at 1 mcg/min (15 ml/hr) then increase to  
  • 2 mcg/min (30 ml/hr) then increase to  
  • 4 mcg/min (60 ml/hr) then increase to  
  • 10 mcg/min (150 ml/hr)  
  **IF MAX DOSING HAS BEEN REACHED AND A SYSTOLIC BP OF 90 MMHG HAS NOT BEEN ACHIEVED, BEGIN ADMINISTERING 0.01 MG (1 mL) 1:100,000 (PUSH DOSE EPINEPHRINE) PRN EVERY 1-5 MINUTES IN ADDITION TO THE DRIP UNTIL A SYSTOLIC BP OF 90 MMHG OR GREATER IS ATTAINED**  
  **ADMINISTRATION OF EPINEPHRINE BY IVPB DRIP TO PEDIATRIC PATIENTS IS NOT PERMITTED** |
| Respiratory distress (4406)                    | **Adults**: 0.3 mg (0.3 mL, 1 mg / mL concentration) IM.  
  **Pediatrics**: 0.01 mg / kg (1 mg / mL concentration) IM. **MAX SINGLE DOSE IS 0.3 MG.** For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app. |
| Suspected Anaphylaxis (4704)                   | **Adults**: 0.3 mg (0.3 mL, 1 mg / mL concentration) IM. **ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).**  
  **Pediatrics**: 0.01 mg / kg (1 mg / mL concentration) IM. **MAX SINGLE DOSE IS 0.3 MG.** **ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).** For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app. |
**Neonatal Resuscitation (4801)**

INITIAL AND REPEAT ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO)

0.1 mg / mL concentration IV/IO. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app.

**Shock associated with postpartum hemorrhage (4803)**

0.01 mg (1 mL, 0.01 mg / mL concentration, Push Dose Epinephrine) IV/IO. **MAY REPEAT PRN EVERY 1-5 MINUTES TO MAINTAIN A SYSTOLIC BP GREATER THAN 90 MMHG.**

<table>
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<tr>
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<th>CONTRAINDICATIONS (DRIP)</th>
<th>SIDE EFFECTS:</th>
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<tbody>
<tr>
<td>• (Relative) tachycardia</td>
<td>• Administration via IO route</td>
<td>• Anxiety / restlessness</td>
</tr>
<tr>
<td></td>
<td>• Patients 14 years of age or younger</td>
<td>• Palpitations / tachyarrhythmias</td>
</tr>
<tr>
<td></td>
<td>• Shock due to trauma</td>
<td>• Ventricular irritability</td>
</tr>
<tr>
<td></td>
<td>• Unable to obtain a systolic BP</td>
<td>• Hypertension</td>
</tr>
<tr>
<td></td>
<td>• Unable to use a Dial-a-Flow</td>
<td>• Angina</td>
</tr>
<tr>
<td><strong>CONTRAINDICATIONS (PUSH DOSE EPI)</strong></td>
<td>• Shock due to trauma</td>
<td>• Headache</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Nausea</td>
</tr>
</tbody>
</table>

**SPECIAL INFORMATION:**

1. Continuously monitor ECG during any Epinephrine administration
2. Alkalosis or acidosis may decrease the effectiveness of Epinephrine. Flush tubing between Sodium Bicarbonate and Epinephrine administrations.
3. Assessing the effectiveness of epinephrine administration:
   - Arrhythmias - monitor ECG, pulses, and BP.
   - Allergies / anaphylaxis - monitor ECG, pulses, BP, respiratory rate, lung sounds and O₂ saturation
   - Respiratory distress--monitor lung sounds, respiratory rate, SpO₂, capnography, ECG and pulse
**FENTANYL**

**CLASS:**
- Opioid (Synthetic)

**ACTION:**
- Binds with stereospecific receptors at many sites within the CNS.
- Increases pain thresholds and alters pain reception.
- **ONSET = IV/IO:** within seconds, IM/IN: 7-8 minutes
- **DURATION = IV/IO:** 30-60 minutes, IM/IN: 1-2 hours

<table>
<thead>
<tr>
<th>INDICATIONS</th>
<th>DOSAGE/ROUTE</th>
</tr>
</thead>
</table>
| Pain associated with: | Adults: 50 mcg (1 mL) slow IV/IO push or IM/IN. Patient’s systolic BP must be greater than or equal to 90 mmHg at the time of administration. **MAY REPEAT ONCE, IN 5-10 MINUTES, DEPENDENT ON PAIN SEVERITY, TO A MAX OF 100 MCG.** **ADDITIONAL ADMINISTRATIONS AFTER 100 MCG REQUIRE A BASE HOSPITAL ORDER (BHO).**
  - Acute abdominal / flank pain, sickle cell crisis or cancer pain (4204)
  - Acute traumatic injury or injuries (4302)
  - Suspected ACS with persistent chest discomfort unresponsive to Nitroglycerin (4401)
  - Burns (4701)
  - Frostbite (4703)
  - Snakebite (4705) |
| Discomfort associated with transcutaneous cardiac pacing: TCP (4404) | Pediatrics: 1 mcg / kg slow IV/IO push or IM/IN. **MAY REPEAT ONCE.** **ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).** For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app. |
| Pain following ROSC (4405) | **INITIAL AND REPEAT ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO)** |

**ADMINISTRATION OF FENTANYL TO PEDIATRIC PATIENTS FOR POST-ROSC PAIN IS NOT PERMITTED.**
CONTRAINDICATIONS:
- Sensitivity to Fentanyl or other opioids
- Systolic BP less than 90 mmHg

Use with Caution:
- in patients with a known history of opioid abuse. Ketamine is the preferred pain management medication for this population.
- in the elderly and in patients with known hepatic insufficiency. Slow / poor metabolization may results in unintended, exacerbated analgesia and an increase in untoward effects

SIDE EFFECTS:
- Respiratory depression / arrest
- Decreased LOC
- Transient hypotension
- Palpitations / Arrhythmias
- Nausea / Vomiting
- Pinpoint pupils

SPECIAL INFORMATION:
1. The administration of Fentanyl to its max dose followed by the administration of Ketamine – or vice versa – is a standing order. **REPETITION OF ANY ANALGESIC AFTER ALL MAX DOSES HAVE BEEN ADMINISTERED REQUIRES A BASE HOSPITAL ORDER (BHO)**
2. Vitals signs (ECG, SpO₂ and waveform / digital capnography) must be monitored throughout BLS and ALS interventions for pain management
GLUCAGON

CLASS:
• Pancreatic hormone

ACTION:
• Increases blood glucose by converting glycogen stored in the liver to free glucose.
• ONSET = 20 minutes
• DURATION = 60-90 minutes

<table>
<thead>
<tr>
<th>INDICATIONS</th>
<th>DOSAGE/ROUTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptomatic hypoglycemia with blood glucose less than 80 mg/dL in adults or 70 mg/dL in pediatrics and neonates WHEN UNABLE TO ADMINISTER IV/IO DEXTROSE (4201)</td>
<td>Adults: 1 mg (1 mL) IM. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO). Pediatrics and neonates: Weight = 21 kg (=46 lbs) or less: 0.5 mg (0.5 mL) IM. Weight = 22 kg (=48 lbs) or more: 1 mg (1 mL) IM. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).</td>
</tr>
<tr>
<td>Suspected esophageal food impaction (4406)</td>
<td>INITIAL AND REPEAT ADMINISTRATIONS FOR ADULTS AND PEDIATRICS REQUIRE A BASE HOSPITAL ORDER (BHO). Adults: 1 mg (1 mL) IV/IO/IM. Pediatrics: Weight = 21 kg (=46 lbs) or less: 0.5 mg (0.5 mL) IV/IM. Weight = 22 kg (=48 lbs) or more: 1 mg (1 mL) IV/IM.</td>
</tr>
<tr>
<td>Suspected beta blocker or calcium channel blocker overdose (4601)</td>
<td>INITIAL AND REPEAT ADMINISTRATIONS FOR ADULTS AND PEDIATRICS REQUIRE A BASE HOSPITAL ORDER (BHO). Adults: 1 mg (1 mL) IV/IO/IM. Pediatrics: 50 mcg / kg, IV/IO/IM. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app.</td>
</tr>
</tbody>
</table>

CONTRAINDICATIONS:
• Hyperglycemia

SIDE EFFECTS:
• Nausea / Vomiting
• Tachycardia
• Hyperglycemia

SPECIAL INFORMATION:
1. Glucagon will not work appropriately if a patient's glycogen stores in the liver are depleted (severe hypoglycemia, malnutrition, adrenal insufficiency).
2. To assess the effectiveness of glucagon administration:
   ➢ Reassess the patient's level of consciousness, skins, and BG level
GLUCOSE (ORAL)

CLASS:
- Carbohydrate

ACTION:
- Increases blood glucose by introducing free sugar directly into the blood stream.
- ONSET approximately 5 minutes
- DURATION is dependent on the degree of hypoglycemia

INDICATIONS | DOSAGE/ROUTE
---|---
BLS care providers: Symptomatic hypoglycemia with blood glucose less than 80 mg/dL in adults or 70 mg/dL in pediatrics (4201) | MAY ONLY BE ADMINISTERED TO ALERT, COOPERATIVE PATIENTS WITH AN INTACT GAG REFLEX.

Adults: 15 gm (1 tube) PO. MAY REPEAT PRN.

Pediatrics:
- ADMINISTRATION OF GLUCOSE (ORAL) TO PATIENTS WEIGHING LESS THAN 10 KG (≈22 LBS) IS NOT PERMITTED.
- Weight is between 10–29 kg (≈22-64 lbs): as tolerated, PO. MAY REPEAT PRN.
- Weight = 30 kg or greater (≈66 lbs+): 15 gm (1 tube) PO. MAY REPEAT PRN.

CONTRAINDICATIONS: 
- Hyperglycemia
- Lack of gag reflex / inability to swallow

SIDE EFFECTS:
- Hyperglycemia
**IPRATROPIUM BROMIDE (ATROVENT)**

**CLASS:**
- Anticholinergic

**ACTION:**
- Antagonizes the action of acetylcholine, preventing the interaction of acetylcholine with muscarinic receptors in bronchial smooth muscle causing bronchodilation
- Bronchodilation, site specific (in lung - not systemic)
- ONSET = 15-30 minutes
- PEAK = 1-2 hours
- DURATION = 4-5 hours

<table>
<thead>
<tr>
<th>INDICATION</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Bronchospasm (4406)</td>
<td>Adults and pediatrics: 0.5 mg / 2.5 mL (one pouch), mixed with one (1) pouch of Albuterol, then nebulized. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).</td>
</tr>
</tbody>
</table>

**CONTRAINDICATIONS:**
- Hypersensitivity to Atropine
- Allergies to peanuts / soybeans

**SIDE EFFECTS:**
- Blurred vision / eye irritation (with direct contact of mist)
- GI distress
- Headache
- Nausea
- Nervous / dizziness
- Palpitations

**SPECIAL INFORMATION:**
1. One (1) DuoNeb treatment may be given standing order; repeat administration of Albuterol is a standing order. **REPEAT ADMINISTRATION OF IPRATROPIUM IS A BASE HOSPITAL ORDER (BHO).**
2. Ipratropium becomes unstable in moderate to high temperatures. If it appears discolored (it is normally clear) or is precipitated, discard it immediately.
3. Causes minimal cardiac stimulation (tachycardia); monitor ECG & heart rate.
4. Check lung sounds, SpO2, capnography wave forms and respiratory rate before and after administration of Ipratropium to determine effectiveness.
KETAMINE (KETALAR)

**CLASS:**
- Anesthetic / dissociative

**ACTION:**
- Noncompetitively antagonizes NMDA receptors, blocking glutamate, producing a cataleptic-like state.
- **ONSET** = IV PB: within 30 seconds, IN: 5-10 minutes
- **DURATION** = IV PB: approximately 10 minutes, IN: 30-60 minutes

<table>
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<tbody>
<tr>
<td>Pain associated with:</td>
<td>Adults: 0.3 mg / kg IV PB. Infuse in 50-100 mL Normal Saline, administer over 5 minutes. <strong>MAY REPEAT ONCE. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).</strong> <strong>OR</strong> 0.5 mg / kg IN. MAY REPEAT ONCE. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO). THE MAX SINGLE DOSE FOR EITHER ROUTE IS 30 MG. ADMINISTRATION OF KETAMINE TO PEDIATRIC PATIENTS IS NOT PERMITTED.</td>
</tr>
<tr>
<td>• Acute abdominal / flank pain, sickle cell crisis or cancer pain (4204)</td>
<td><strong>OR</strong> 0.5 mg / kg IN. MAY REPEAT ONCE. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO). THE MAX SINGLE DOSE FOR EITHER ROUTE IS 30 MG. ADMINISTRATION OF KETAMINE TO PEDIATRIC PATIENTS IS NOT PERMITTED.</td>
</tr>
<tr>
<td>• Acute traumatic injury or injuries (4302)</td>
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<td>• Burns (4701)</td>
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<tr>
<td>• Frostbite (4703)</td>
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<tr>
<td>• Snakebite (4705)</td>
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</table>

**CONTRAINDICATIONS:**
- Patients less than 15 years of age
- Sensitivity to Ketamine
- Pain or discomfort of suspected cardiac origin (ACS)

**SIDE EFFECTS:**
- Nausea and/or vomiting

**SPECIAL INFORMATION:**
1. **PEDIATRIC ADMINISTRATION IS NOT PERMITTED.**
2. Ketamine use in some patients has been known to cause dream-like states, delusions, hallucinations and/or confusion, acute onset excitement / anxiety / aggression, etc. If your patient presents with any of these behaviors, monitor them closely and, if necessary, discontinue administration. The response to Ketamine is transient and usually resolves within minutes of the infusion being stopped.
3. The administration of Ketamine to its max dose followed by the administration of Fentanyl – or vice versa – is a standing order. **REPEITION OF ANY ANALGESIC AFTER ALL MAX DOSES HAVE BEEN ADMINISTERED REQUIRES A BASE HOSPITAL ORDER (BHO).**
4. Vitals signs (ECG, SpO2 and waveform / digital capnography) must be monitored throughout BLS and ALS interventions for pain management.
5. The max single dose for Ketamine is 30 mg regardless of the route.
LIDOCAINE (2% XYLOCAINE)

CLASS:
• Amide Derivative

ACTION:
• Decreases ventricular excitability by suppressing automaticity in the His-Purkinje system
• ONSET = 1-2 minutes
• DURATION = 10-20 minutes

<table>
<thead>
<tr>
<th>INDICATIONS</th>
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<tbody>
<tr>
<td>Pain during IO infusion in the conscious patient</td>
<td>Adults: 50 mg (2.5 mL) slow IO push over 1 minute. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).</td>
</tr>
<tr>
<td>Symptomatic tachycardia with pulses (4403)</td>
<td>Pediatrics: 0.5 mg / kg slow IO push over 1 minute. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO). For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app.</td>
</tr>
<tr>
<td>Cardiac arrest with VF or VT WHEN AMIODARONE IS UNAVAILABLE (4405)</td>
<td>INITIAL AND REPEAT ADMINISTRATIONS FOR ADULTS AND PEDIATRICS REQUIRE A BASE HOSPITAL ORDER (BHO). Adults: 1 mg / kg slow IV/IO push followed by the second dose (0.5 mg / kg) 8-10 minutes later, to a max of 3 mg / kg. Pediatrics: 1 mg / kg slow IV/IO push followed by the second dose (1 mg / kg) 8-10 minutes later. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app.</td>
</tr>
</tbody>
</table>

CONTRAINDICATIONS:
• 2nd & 3rd degree heart blocks
• Idioventricular rhythms

SIDE EFFECTS: (TOXICITY)

EARLY SIGNS
➢ Combative
➢ Anxiety
➢ Nausea
➢ Numbness
➢ Euphoria
➢ Twitching

LATE SIGNS
➢ Decreased BP
➢ Prolonged PRI
➢ Widening QRS
➢ VF
➢ Seizures
➢ Coma

SPECIAL INFORMATION:
1. Do not push faster than 50 mg / minute in an awake patient.
2. Toxicity and delayed effects are more likely in the elderly and patients with CHF / liver disease due to a reduced ability to metabolize Lidocaine. Repeat doses in this patient population should be given at 10-minute intervals.
3. Use with caution in AV blocks (suppressing automaticity may cause further block).
4. Assess effectiveness of Lidocaine:
   ➢ conversion from ventricular rhythms
   ➢ improvement in cardiac output, improved BP, skins, cap refill and LOC
   ➢ reduced or eliminated cardiac discomfort / palpitations
MAGNESIUM SULFATE

**CLASS:**
- Electrolyte / anti-convulsant

**ACTION:**
- Reduces striated muscle contractions and blocks peripheral neuromuscular transmission by reducing acetylcholine release at the myoneural junction
- Central nervous system depressant
- Onset = immediate
- Peak = 30 mins
- Duration = 3-4 hours

<table>
<thead>
<tr>
<th>INDICATIONS</th>
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</tr>
</thead>
</table>
| Cardiac arrest with VF or VT WHEN ASSOCIATED WITH TOSRADES DE POINTES / POLYMORPHIC VT (4405) | INITIAL AND REPEAT ADMINISTRATIONS FOR ADULTS AND PEDIATRICS REQUIRE A BASE HOSPITAL ORDER (BHO).
- Adults: 2 gm (4 mL) slow IV/IO push.
- Pediatrics: 50 mg / kg slow IV/IO push. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app. |
| Asthma exacerbation unresponsive to Albuterol and Ipratropium breathing treatments (4406) | INITIAL AND REPEAT ADMINISTRATIONS FOR ADULTS AND PEDIATRICS REQUIRE A BASE HOSPITAL ORDER (BHO).
- Adults: 2 gm (4 mL) slow IV/IO push.
- Pediatrics: 50 mg / kg IVPB. Infuse in 50-100 mL normal saline, administer over 10 minutes. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app. |
| Cardiac dysrhythmias associated with toxic exposure, inhalation, or ingestion (4603) | 5 gm (10 mL) IVPB. Infuse in 50-100 mL normal saline, administer over 10 minutes. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO). **OR**
- 2.5 gm (5 mL) IM x2. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO). |
| Suspected pre-eclampsia or eclampsia (4802) | **OR**
- 2.5 gm (5 mL) IM x2. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO). |
CONTRAINDICATIONS:
• Heart block
• Recent myocardial infarction

SIDE EFFECTS:
• Constipation
• Flushing
• General Muscle Weakness
• Headache
• Lethargy
• Nausea/Vomiting
• Palpitations

SPECIAL INFORMATION:
1. Magnesium IVPB may be given prophylactically for suspected eclampsia
2. With IVPB administration, the onset of anticonvulsant action is immediate and lasts about 30 minutes
3. With IM administration, the onset of action occurs in about one (1) hour and persists for three to four (3-4) hours.
**MIDAZOLAM (VERSED)**

**CLASS:**
- Benzodiazepine

**ACTION:**
- CNS depressant
- Produces retrograde amnesia then sedation
- Stops and prevents seizures
- ONSET = IV / IO / IN: 2-5 minutes, IM: 15 minutes
- DURATION = 1-4 hours

<table>
<thead>
<tr>
<th>INDICATIONS</th>
<th>DOSAGE/ROUTE</th>
</tr>
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<tbody>
<tr>
<td>Amnesic effect in the conscious VAD patient prior to synchronized cardioversion (4402)</td>
<td>CONSIDER: 2.5 mg (0.5 mL) slow IV/IO push. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO). <strong>OR</strong> 5 mg (1 mL) IM/IN. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).</td>
</tr>
<tr>
<td>Amnesic effect prior to synchronized cardioversion (4403)</td>
<td>Adults: 2.5 mg (0.5 mL) slow IV/IO push. MAY REPEAT ONCE. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO). <strong>OR</strong> 5 mg (1 mL) IM/IN. MAY REPEAT ONCE. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).</td>
</tr>
<tr>
<td>Amnesic effect prior to Transcutaneous Cardiac Pacing (TCP) (4404)</td>
<td>INITIAL AND REPEAT PEDIATRIC ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO). Pediatrics: 0.1 mg / kg slow IV/IO push. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app. <strong>OR</strong> 0.2 mg / kg IM/IN. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app.</td>
</tr>
<tr>
<td>Anxiety following ROSC (4405)</td>
<td>INITIAL AND REPEAT ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO)</td>
</tr>
<tr>
<td>Shivering associated with heat illness / hyperthermia (4703)</td>
<td>Adults: 1 mg (0.2 mL) slow IV/IO push or IM/IN. ADMINISTRATION OF MIDAZOLAM TO PEDIATRIC PATIENTS FOR POST-ROSC ANXIETY OR HEAT ILLNESS-RELATED SHIVERING IS NOT PERMITTED.</td>
</tr>
<tr>
<td>Condition</td>
<td>Adults</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Anxiety related to the use of CPAP (4406)</td>
<td>1 mg (0.2 mL) slow IV/IO push or IM/IN. Patient’s systolic BP must be greater than or equal to 90 mmHg at the time of administration. <strong>ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).</strong></td>
</tr>
<tr>
<td>Continuous or recurrent tonic-clonic seizures unrelated to eclampsia (4501)</td>
<td>2.5 mg (0.5 mL) slow IV/IO push. <strong>MAY REPEAT ONCE.</strong> <strong>ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).</strong></td>
</tr>
<tr>
<td>Eclampsia unresponsive to Magnesium Sulfate administration (4802)</td>
<td>2.5 mg (0.5 mL) slow IV/IO push</td>
</tr>
</tbody>
</table>

**CONTRAINDICATIONS:**
- Anxiety related to CPAP: systolic blood pressure of 90 mmHg or less

**SIDE EFFECTS:**
- Respiratory depression / apnea
- Drowsiness / confusion
- Hypotension

**SPECIAL INFORMATION:**
1. Carefully monitor adequacy of respiratory status and SpO₂ during administration
2. Versed induced respiratory depression may be potentiated when combined with the use of ETOH, other sedative hypnotics and other CNS depressants.
3. When used for cardioversion, amnesia is the desired effect, not sedation. The dosage administered may produce lethargy even though it is not the intended effect.
NALOXONE (NARCAN)

CLASS:
- Opioid Antagonist

ACTION:
- Reverses respiratory depression, sedation, and hypotensive effects of opioid overdose by occupying opiate receptor sites
- ONSET = IV / IN: 1-2 minutes, IM: 2-5 minutes
- DURATION = IV / IN: 30-60 minutes, IM: longer

**REMSA Authorized Public Safety Personnel AND first response agency BLS providers in the absence of ALS providers – LOSOP Approval Required**
Respiratory depression / respiratory arrest with suspected narcotic overdose (4601)

**Agency LOSOP Approval Required for BLS Providers**
Respiratory depression / respiratory arrest with suspected narcotic overdose (4601)

**INDICATION**

**DOSAGE/ROUTE**

MAY REPEAT ONCE. Use REMSA approved intranasal administration device with REMSA approved pre-loaded dose

**INDICATION**

**DOSAGE/ROUTE**

Adults: 0.5 mg (0.5 mL) IV/OI/IM/IN. MAY REPEAT PRN. TITRATE TO IMPROVEMENT OF RESPIRATORY DEPRESSION, NOT RESOLUTION OF AMS

**INDICATION**

**DOSAGE/ROUTE**

Pediatrics: 0.1 mg / kg IV/OI/IM/IN. MAX SINGLE DOSE IS 0.5 MG. MAY REPEAT PRN. TITRATE TO IMPROVEMENT OF RESPIRATORY DEPRESSION, NOT RESOLUTION OF AMS. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app.

**INDICATION**

**DOSAGE/ROUTE**

INITIAL AND REPEAT ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).

**INDICATION**

**DOSAGE/ROUTE**

IV/OI/IM/IN. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app.

**CONTRAINDICATIONS:**
- None

**SIDE EFFECTS:**
- Acute withdrawal symptoms, may be severe
- Nausea / vomiting
- Tachycardia / hypertension

**SPECIAL INFORMATION:**
1. The duration of Narcan is generally less than any opioid. Watch for relapse as long as opioid is still in the patient’s system and be prepared to continue administrations
2. Assessing effectiveness of Narcan:
   - increase in LOC, respiratory status, SpO₂ and pupil response
   - Effective against:
     - Codeine
     - Darvon
     - Demerol
     - Dilaudid
     - Fentanyl
     - Heroin
     - Lomotil
     - Methadone
     - Morphine
     - Nubain
     - Oxycontin
     - Paragoric
     - Percodan
     - Stadol
     - Talwin
     - Vicodin
**NITROGLYCERIN (NTG, NITRO)**

**CLASS:**
- Nitrate

**ACTION:**
- Relaxes systemic venous & arterial vessels causing vasodilatation thereby:
  - Decreases preload & afterload
  - Decreases myocardial workload.
  - Decreases myocardial O₂ consumption.
- Dilates coronary arteries
- **ONSET = 2 minutes**
- **DURATION = 30-60 minutes**

<table>
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<tr>
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<tbody>
<tr>
<td>Suspected ACS (4401)</td>
<td>0.4 mg (1 tablet or 1 metered spray) SL when the patient’s systolic BP is greater than 90 mmHg. <strong>MAY REPEAT TWICE AT 3-5 MINUTE INTERVALS. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).</strong> <strong>AND</strong> <strong>1 gm (1 inch) transdermal paste when the patient’s systolic BP is greater than 90 mmHg. If systolic BP falls below 90 mmHg, wipe away paste. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).</strong> Administration following the patient’s use of a PDE5 inhibitor (ex: Cialis / tadalafil, Levitra / vardenafil, Stendra / avanafil or Viagra / sildenafil) requires a base hospital physician order (BHPO). <strong>ADMINISTRATION OF NITROGLYCERIN TO PEDIATRIC PATIENTS IS NOT PERMITTED.</strong></td>
</tr>
<tr>
<td>Dyspnea with suspected CHF (4406)</td>
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</tbody>
</table>

**CONTRAINdications:**
- Suspected intracranial bleed
- Patient who has taken a sexual performance enhancing medication (Viagra® / Cialis® / Levitra® / Stendra®) within the last 48 hours
- Patients with VADs

**SIDE EFFECTS:**
- Facial flushing
- Orthostatic hypotension (can be profound)
- Reflex tachycardia
- Dizziness / syncope
- Temporary pulsating headache
NORMAL SALINE (0.9% SODIUM CHLORIDE SOLUTION, NS)

CLASS:
• Electrolyte / Isotonic crystalloid

ACTION:
• Electrolyte solution which is osmotically equivalent to blood.
• Increases the circulating volume of the vascular system (2/3 of infused volume leaves vascular space within 1 hour)

INDICATIONS | DOSAGE/ROUTE
---|---
Loosen thickened secretions during suctioning (4104) | 3 mL. MAY REPEAT PRN.
Shock unrelated to Trauma (4202 / 4403 / 4405 / 4701 / 4702 / 4802) | 
Shock due to Trauma (4301) | 
Suspected hyperkalemia associated with crush injuries (4302) | Adults: 250 mL IV/IO bolus. MAY REPEAT AS CLINICALLY INDICATED TO A MAX ADMINISTRATION OF 2 L.
Hyperthermia or heat illness symptoms related to severe agitation / aggression / distress (4602) | Pediatrics: 20 mL / kg IV/IO bolus. Use a volume control administration set for accurate dosing. MAY REPEAT AS CLINICALLY INDICATED. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app.
Significant burns (4701) | 
Heat illness / hyperthermia (4702) | 
Hypothermia (4703) | CONSIDER: 250 mL IV/IO bolus. MAY REPEAT AS CLINICALLY INDICATED TO A MAX ADMINISTRATION OF 2 L.
Hemodynamically unstable VAD patient (4402) | 

CONTRAINDICATIONS:
• Fluid challenges in patients with rales

SIDE EFFECTS:
• None

SPECIAL INFORMATION:
1. When the administration of medication(s) or the need for fluid replenishment is not indicated but is anticipated, placement of a saline lock ONLY is appropriate. Administration of IV fluids should always be clinically indicated and given as a bolus, not at a TKO rate.
2. In the absence of 10 mL Normal Saline prefilled syringes and 10 mL Normal Saline vials, or when 50 mL or 100 mL Normal Saline IV bags are unavailable for use as multi-dose medication reservoirs, two (2) 5 mL Normal Saline prefilled syringes will be drawn into an empty 10 mL syringe which may then be used for medication administration. Single 5 mL Normal Saline prefilled syringes are not permitted for use when medication administration is required.
   a. Direct dilution of Epinephrine to concentrations of 0.1 mg / 1 mL and/or 0.01 mg / 1 mL from a 5 mL NS prefilled syringe is not permitted.
ONDANSETRON (ZOFRAN)

**CLASS:**  
- Serotonin 5-HT3 receptor antagonist / anti-emetic

**ACTION:**  
- Reduces activity of the vagus nerve, deactivating the vomiting center in the medulla oblongata.  
- Blocks serotonin receptors in the chemoreceptor trigger zone.  
- ONSET = IV: 2-3 minutes, IM: 10-15 minutes, PO: 20-30 minutes  
- DURATION = 1.5 – 2 hours

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| Nausea and/or vomiting (4203) | Adults:  
4 mg PO (1 ODT). **MAY REPEAT TWICE TO MAX 12 MG. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).**  
**OR**  
4 mg (2 mL) IV solution slow IV/IO push or IM. **MAY REPEAT TWICE TO MAX 12 MG. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).**  
Pediatrics:  
ADMINISTRATION OF ONDANSETRON ODT TO PATIENTS WEIGHING LESS THAN 10 KG (=22 LBS) IS NOT PERMITTED.  
Weight = 10 kg or greater: 4 mg PO (1 ODT). **MAY REPEAT TWICE TO MAX 12 MG. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).**  
**OR**  
0.1 mg / kg IV solution slow IV/IO push or IM. **MAX SINGLE DOSE IS 4 MG. MAY REPEAT TWICE. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).** For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app. |

**USE WITH CAUTION:**  
- in patients with a history of congenital long QT syndrome  
- in patients with a history of hepatic injury or impairment

**SIDE EFFECTS:**  
- Headache  
- Dizziness

**SPECIAL INFORMATION:**  
1. Use with caution in patients with a history of congenital long QT syndrome; studies have shown that these patients are at higher risk for spontaneous episodes of Torsades de Pointes at very high doses (16 mg at a time or higher)  
2. Zofran is heavily metabolized in the liver, use with caution in patients with a significant history or hepatic impairment.
SODIUM BICARBONATE (BICARB, NaHCO₃)

**CLASS:**
- Electrolyte

**ACTION:**
- Reduces acidosis or causes alkalosis by direct release of bicarbonate ions into the blood stream
- ONSET = 2-10 minutes
- DURATION = 30-60 minutes

<table>
<thead>
<tr>
<th>INDICATIONS</th>
<th>DOSAGE/Routes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspected hyperkalemia associated with crush injuries (4302)</td>
<td>INITIAL AND REPEAT ADMINISTRATIONS FOR ADULTS AND PEDIATRICS REQUIRE A BASE HOSPITAL ORDER (BHO).</td>
</tr>
<tr>
<td>Altered mental status and/or dysrhythmia with suspected cyclic antidepressant overdose (4601)</td>
<td>Adults: 50 mEq (50 mL) IV/IO push.</td>
</tr>
<tr>
<td>Suspected hyperkalemia associated with heat illness / hyperthermia (4602 / 4702)</td>
<td>Pediatrics: 1 mEq / kg IV/IO push. For assistance with accurate dosing, refer to the REMSA PMDR or REMSA app.</td>
</tr>
<tr>
<td>Cardiac arrest with suspected metabolic acidosis, hyperkalemia, or tricyclic antidepressant overdose (4405)</td>
<td>Adults: 50 mEq (50 mL) IV/IO push. MAY REPEAT ONCE. ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).</td>
</tr>
<tr>
<td>Neonatal resuscitation (4801)</td>
<td>INITIAL AND REPEAT ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).</td>
</tr>
</tbody>
</table>

**CONTRAINDICATIONS:**
- Metabolic / respiratory alkalosis
- Hypocalcemia

**SIDE EFFECTS:**
- Electrolyte / Ph imbalances

**SPECIAL INFORMATION:**
1. Alkalosis or acidosis may decrease the effectiveness of Epinephrine. Flush tubing between Sodium Bicarbonate and Epinephrine administrations.
**TRANEXAMIC ACID (TXA)**

**CLASS:**
- Antifibrinolytic agent / amino acid derivative (synthetic)

**ACTION:**
- Competitively inhibits the activation of plasminogen to plasmin, resulting in inhibition of fibrinolysis
- ONSET = approximately 10 minutes
- DURATION approximately 2-4 hours

<table>
<thead>
<tr>
<th>INDICATIONS</th>
<th>DOSAGE/ROUTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traumatic injuries within three (3) hours with signs and symptoms of hemorrhagic shock with:</td>
<td></td>
</tr>
<tr>
<td>Systolic BP less than 90 mmHg</td>
<td>Adults: 1 gm (10 mL) IVPB. Infuse in 50-100 mL normal saline, administer over 10 minutes. <strong>OR</strong></td>
</tr>
<tr>
<td>Significant hemorrhage with heart rate greater than or equal to 120</td>
<td><strong>OR</strong></td>
</tr>
<tr>
<td>Uncontrolled bleeding despite tourniquet application (4301 / 4302)</td>
<td><strong>OR</strong></td>
</tr>
</tbody>
</table>

**CONTRAINDICATIONS:**
- Shock that is unrelated to trauma (post-partum hemorrhage, GI bleeding, etc.)
- Traumatic injuries that occurred more than three (3) hours prior
- Signs and symptoms of hemorrhagic shock but systolic BP is greater than 90 mmHg
- Significant hemorrhage but heart rate is less than or equal to 120
- Bleeding that is controlled after the application of a tourniquet
- Patients less than 15 years of age

**SIDE EFFECTS:**
- Nausea / vomiting / diarrhea
- Dizziness / light-headedness
- Mild itching or rash

**SPECIAL INFORMATION:**
1. If the patient’s condition allows, application of a tourniquet prior to TXA administration is recommended
2. TXA is a synthetic hemostatic agent that contains no blood products. It is safe to use in patients that are practicing Jehovah’s Witnesses

ADMINISTRATION OF TRANEXAMIC ACID (TXA) TO PEDIATRIC PATIENTS IS NOT PERMITTED.