



County of Santa Clara  
Emergency Medical Services Agency  
**ADMINISTRATIVE ORDER**

**Number:** 090305-02  
**Title:** Epinephrine, DuoDote™ and Combitube™ Protocol revisions  
**Effective:** March 5, 2009

The following protocol and inventory changes are effective immediately

### **Epinephrine**

ALS providers are authorized to use Epinephrine 1:1000 concentration in 1mg/1ml ampules as indicated for anaphylaxis and can replace the current use of the EpiPen™ and EpiPen Jr™. However, if an agency wishes to continue to use the EpiPen™ and EpiPen Jr™. they may continue to do so.

The ampules shall be placed in a clear separate bag that is sealed with a label that says:

**“Warning: for IM use only”**

### **DuoDote™**

Mark I kits have been replaced with the DuoDote™ Auto-Injectors. These kits carry the same indications as the Mark I kits for symptomatic nerve agent or organophosphate poisonings.

### **Combitube™ Large-Adult**

The Large-Adult size Combitube™ is probably too large and has been shown to cause unnecessary airway trauma. The Small-Adult size has been found to be sufficient for all patients. Therefore all agencies may remove the Large-Adult Combitube™ from their inventories.

Please see attached revised protocols.

Authorized by:

*D. Ghilarducci MD*

David Ghilarducci, MD  
EMS Medical Director

*Bruce H. Lee*

Bruce H. Lee  
EMS Director

### Authorized Medications – Adult

MEDICATIONS	STANDARD DOSE
<b>Activated charcoal</b>	1 gm/kg (max 50 gm) with or without Sorbitol
<b>Adenosine</b>	6 mg 1 <sup>st</sup> dose; 12 mg 2 <sup>nd</sup> and 3 <sup>rd</sup> doses (rapid IV push)
<b>Albuterol</b>	2.5 – 5 mg
<b>Aspirin</b>	324 mg PO (chewable – not enteric coated)
<b>Atropine sulfate</b>	<b>Cardiac arrest:</b> 1 mg IVP or IO repeat q 5 min.– (max dose 3 mg IVP or IO) or 2 mg ET (max dose 6 mg) if IV or IO unable. <b>Bradycardia:</b> 0.5 mg IVP, IO repeat in 5 min (max. dose 1 mg.) or 1 mg ET Repeat 1 time in 5 min (max dose 2 mg) if IV or IO unable
<b>Calcium Chloride 10%</b>	20-30 mg/kg IVP given over several minutes
<b>Dextrose 50%</b>	25 gm IVP
<b>Diphenhydramine (Benadryl)</b>	50 mg IVP/IM
<b>Dopamine</b>	5-20 mcg/kg/min titrated by 5 mcg/kg/min increments to effect
<b>Epinephrine Auto-injector 0.3 mg</b>	<b>Allergic reaction/Anaphylaxis:</b> use injector <b>Severe Bronchospasm:</b> use injector Use anterior lateral thigh injection site. Avoid deltoid or buttocks.
<b>DuoDote Autoinjector (atropine/pralidoxime)</b>	<b>Organophosphate/WMD nerve agent exposure:</b> : use injector Use anterior lateral thigh injection site. Avoid deltoid or buttocks.
<b>Epinephrine 1:1000 (1mg/1ml ampule)</b>	<b>Allergic reaction/Anaphylaxis:</b> 0.3 mg IM only <b>Severe Bronchospasm:</b> 0.3 mg IM only
<b>Epinephrine 1:10,000</b>	<b>Anaphylaxis:</b> 0.1 mg very slow IVP or IO per base hospital physician order only. <b>Cardiac arrest:</b> 1 mg IVP/IO
<b>Furosemide</b>	<b>Suspected Acute Pulmonary Edema:</b> 40 mg SIVP only if patient is currently taking Furosemide or Bumex
<b>Glucagon</b>	<b>Hypoglycemia:</b> 1 mg IM <b>Calcium channel blocker overdose:</b> 1 mg IM <b>Beta blocker overdose:</b> 1 mg IM
<b>Glucose paste</b>	1-tube (approx. 25 gm) PO, 2 tubes max
<b>Lidocaine</b>	<b>V-Fib or V-Tac:</b> 1-1.5 mg/kg IVP or IO, repeat at 0.5-0.75 mg/kg q 5-10 minutes to a max of 3 mg/kg (2-3 mg/kg ET to a max of 6mg/kg if IV or IO unavailable) <b>PVC's:</b> 1-1.5mg/kg Slow IVP or IO, max of 3 mg/kg (2-3 mg/kg ET can repeat at 1-1.5 mg/kg to a max total dose of 6 mg/kg if IV or IO unavailable)
<b>Midazolam (Versed)</b>	<b>Sedation for Cardioversion:</b> 1-2 mg slow IVP, titrate to effect (max dose 5 mgs) <b>Seizure:</b> 1-2 mg IVP (to a max of 5 mg) 0.1 mg/kg IM (max dose 5 mg) 2.5 mg each nostril IN <b>TCP:</b> 1-2 mg slow IVP in conjunction with Morphine
<b>Morphine sulfate</b>	2-5 mg IVP q 3-5 minutes, to 15 mg max. 5-10 mg IM q 20 minutes to 15 mg max.
<b>Naloxone (Narcan)</b>	1-4 mg IVP/IM/IN/IO
<b>Nitroglycerin</b>	0.4 mg metered spray or 0.4 mg. tab, SL

<b>Normal Saline Bolus</b>	250 ml IV
<b>Sodium bicarbonate</b>	1 mEq/kg IVP
<b>Sodium Thiosulfate</b>	25% solution, 12.5g/50mL IV over 10 minutes. Can be given in an infusion using the table in procedure M13

## Allergic Reaction/Anaphylaxis (A12)

### BLS Treatment

- Routine Medical Care – Adult (see S04)
  - Treat for signs and symptoms of shock, if necessary (see Shock A10)

### ALS Treatment

- Routine Medical Care – Adult (see S04)
- Rash and/or itching
  - **Diphenhydramine** 50 mg IVP/IM
- Dyspnea
  - **Albuterol** 2.5 – 5 mg via HHN or other FDA approved medication delivery device q 15 min or continuously prn
    - If severe distress and tidal volume decreased, administer Albuterol via in-line BVM or ET
    - Discontinue if HR > 160 bpm, chest pain, dysrhythmias, or acute onset of new symptoms
- Shock
  - Consider 250 ml **Normal Saline** bolus IV. May repeat one time.
  - **Epinephrine**: Auto-injector: Use one injector. Use anterior lateral thigh. (For administration technique see Nerve Agent antidote administration WMD-01) may repeat one time.

or

**Epinephrine (1:1000)** (1mg/1ml ampule): Administer 0.3mg (0.3 ml) IM only

### Base Hospital Physician Order

- Stridor, severe shock and impending respiratory arrest
- **Epinephrine (1:10,000) 0.1mg** very slow IVP/IO, only after direct order from the base hospital physician. Draw up the medication from the preload Epinephrine syringe.
- Using a 3 ml syringe, withdraw 1 ml of Epinephrine 1:10,000 from the preload Epinephrine Syringe.
- Additional doses may be required. Contact the base hospital.

## Poisoning and Overdose (A15)

### BLS Treatment

- Protect yourself. Wear appropriate PPE.
- Routine Medical Care – Adult (see S04)
- Consult with on-scene Hazardous Materials Specialists or Base Hospital as needed to identify Toxin/Toxicant/Substance
- Decontamination should be done by trained personnel. Apply triage tag with contamination status.
- Treat for signs and symptoms
- Identify substance type, amount, and time of ingestion/exposure

### Envenomation


<i>Agent</i>	<i>Treatment</i>
Bee Sting Wasp Sting	<ul style="list-style-type: none"> <li>• Remove stinger by scraping or flicking.</li> <li>• Squeezing or tweezers are contraindicated</li> <li>• Cold packs may be applied to relieve pain</li> </ul>
Spider Bite Scorpion Sting	<ul style="list-style-type: none"> <li>• Cold packs may be applied to relieve pain</li> </ul>
Snake Envenomation	<ul style="list-style-type: none"> <li>• DO NOT apply cold pack, tourniquet, incise wound, or attempt to suck out venom</li> <li>• Avoid movement with the affected extremity, splint as if fractured</li> <li>• Keep extremity at or below heart level</li> <li>• Monitor distal pulse</li> <li>• Circle any swelling around bite marks with a pen and note time</li> <li>• Remove jewelry or restrictive clothing on the affected extremity</li> </ul>

### ALS Treatment

- Routine Medical Care – Adult (see S04)
- Withhold charcoal if rapidly decreasing level of consciousness
- Consider pain management (see Pain Management A17)

## Poisoning and Overdose (A15)

Ingestions	
Agent	Treatment
General Ingestion	<ul style="list-style-type: none"> <li>• <b>Activated Charcoal</b> slush 1g/kg PO if time of ingestion is less than 1 hour. Maximum dose is 50 gm.</li> </ul> <p><b>Charcoal</b> is contraindicated if patient lacks gag reflex cannot self-administer or has ingested substance not bound by charcoal (caustics, lithium, metals, ethylene glycol, Iron, Methanol, other Alcohols, and Hydrocarbons).</p>
Narcotics/Opioids	<b>Naloxone</b> 1-4 mg IVP/IM/IN. May repeat twice every 2-3 minutes (max dose 10 mg). (For IN use Procedure M14 IN Administration)
Suspected Ecstasy, Rohypnol, GHB	Ensure airway protection and monitor for signs of aspiration, Monitor body temperature. Use cooling measures as indicated.
Tri-Cyclic Antidepressants	<p><b>Sodium Bicarbonate</b> 1mEq/kg IVP (max dose 100 mEq) for:</p> <ul style="list-style-type: none"> <li>• Hypotension</li> <li>• Seizure</li> <li>• QRS widening &gt;0.10 s</li> </ul>
Organophosphates/Cholinergics/ Pesticides/ WMD nerve agents	<b>DuoDote (atropine 2.1 mg/pralidoxime 600 mg)</b> See WMD-01 procedure note.
Major Tranquilizers/Neuroleptics	<b>Diphenhydramine</b> 50 mg IVP/IM for dystonic reactions
Cyanide	<b>Sodium Thiosulfate</b> 25% solution, 12.5 g (50 ml) IV slowly over 10 minutes. Can be administered via infusion over 10 minutes (M13)

Base Hospital Order	
Agent	Treatment
Tricyclic Anti-Depressants	<ul style="list-style-type: none"> <li>• Additional <b>Sodium Bicarbonate</b></li> </ul>
Calcium Channel Blockers	<ul style="list-style-type: none"> <li>• <b>Glucagon</b> 1 mg IM.</li> <li>• <b>Calcium Chloride</b> 10% 20-30 mg/kg IVP given over several minutes</li> </ul> <div style="border: 1px solid black; padding: 5px; display: inline-block;">  <p><b>Calcium Chloride</b> contraindicated if patient takes digoxin.</p> </div> <ul style="list-style-type: none"> <li>• Manage Symptomatic Bradycardia as necessary</li> </ul>
Beta Blockers	<ul style="list-style-type: none"> <li>• <b>Glucagon</b> 1 mg IM.</li> <li>• Manage Symptomatic Bradycardia as necessary</li> </ul>

**Authorized Medications – Pediatric, age less than 15**

MEDICATIONS	STANDARD DOSE
<b>Activated charcoal</b>	1 g/kg PO, or 25 g if > 1 year old (with or without Sorbitol)
<b>Adenosine</b>	0.1 mg/kg rapid IVP/IO. (max dose 6 mg)
<b>Albuterol</b>	2.5 mg in 3 cc NS via FDA approved drug nebulizer device
<b>Atropine sulfate</b>	0.02 mg/kg IVP/IO ET if IV IO unable (0.1 mg minimum dose) 0.4-1mg/ml concentration for ET
<b>Calcium Chloride 10%</b>	20-30 mg/kg IVP/IO given over several minutes
<b>Dextrose 10% (neonate)</b>	3 ml/kg IVP/IO
<b>Dextrose 25% (neonate or &lt; 4 y/o)</b>	2 ml/kg IVP/IO
<b>Dextrose 50% (&gt; 4 y/o)</b>	1 ml/kg IVP/IO
<b>Diphenhydramine (Benadryl)</b>	1 mg/kg IM/IVP. Max dose = 50 mg.
<b>Dopamine</b>	5-20 mcg/kg/min titrated by 5 mcg/kg/min increments to effect
<b>Epinephrine Autoinjector 0.15 mg. (1:2000)</b>	Allergic reaction/anaphylaxis: 1 injector IM
<b>Epinephrine 1:1,000 (1mg/ml ampules)</b>	Allergic reaction/anaphylaxis: 0.01 mg/kg IM only (max initial dose 0.3 mg)
<b>Epinephrine 1:10,000</b>	0.01 mg/kg IVP/IO (max initial dose 1 mg)
<b>Glucagon</b>	Calcium channel/beta blocker overdose: Glucagon 0.05 mg/kg IM Hypoglycemia: 0.1 mg/kg IM (max dose 1 mg)
<b>Glucose paste</b>	1-tube (approx. 25 gm) PO, 2 tubes max
<b>Lidocaine</b>	1 mg/kg IVP/IO or 3 mg/kg ET if IO/IV unable 1mg/kg IO prior to medication administration.
<b>Midazolam (Versed)</b>	Pre-cardioversion/TCP sedation 0.05 – 0.1 mg/kg IVP/ (max dose 2 mg) Seizure: 0.1 mg/kg slow IVP (max dose 4 mg) or 0.1 mg/kg IM (max dose 5 mg) or IN
<b>Morphine sulfate</b>	0.05 mg/kg IVP or 0.1 mg/kg IM
<b>Naloxone (Narcan)</b>	0.1 mg/kg IVP/IO/IM/IN
<b>Normal Saline Bolus</b>	Neonates: 10 ml/kg (max 60 ml/kg) Child > 1 year: 20 ml/kg (max 60 ml/kg)
<b>Sodium bicarbonate</b>	1 mEq/kg IVP/IO
<b>Sodium Thiosulfate</b>	25% solution, 1.65 ml/kg to a max dose of 50mL (12.5 g) slowly IV over 10 minutes. Can be administered via NSS using the standardized drip rate schedule M13.

## Pediatric Allergic Reaction / Anaphylaxis (P16)

### BLS Treatment

- Routine Medical Care – Pediatric (see S05)
- Position of comfort
- If possible, identify underlying cause

### ALS Treatment

- Routine Medical Care – Pediatric (see S05)
- **Diphenhydramine** 1 mg/kg IM/IVP. Max dose = 50 mg.
- Albuterol 2.5 mg in 3 ml NS via nebulizer, q 15 minutes prn and HR < 200 bpm
  - If severe distress and tidal volume decreased, administer Albuterol via in-line BVM or ET
- If severe distress and signs of shock
  - **Epinephrine Auto injector:** 0.15 mg IM

Or

**Epinephrine 1:1000 (1mg/1ml ampule): 0.01 mg/kg IM only**

### Base Hospital Physician Order

For Stridor, severe respiratory distress or shock

**Epinephrine** 0.01 mg/kg (1:10,000) IVP/IO (max dose 0.3 mg) per Base Hospital Physician Order only.

Withdraw Epinephrine from the preload using a 3 ml syringe.

### Special Considerations

- **Epinephrine** should be reserved for those patients who are unable to generate adequate tidal volume to deliver aerosolized drug to the bronchial tree. Do not use Epinephrine excessively, it tends to thicken secretions, deplete glycogen stores, and increase apprehension.
- Base Hospital Contact for additional resources as necessary
- Signs and symptoms of severe distress and signs of shock include:
  - Cool, clammy, mottled skin
  - Pallor due to decreased skin perfusion
  - Altered sensorium due to decreased perfusion to the brain
  - SBP < 70 mmHg
  - Capillary refill > 2 sec
- Signs and symptoms of moderate to severe respiratory distress include:
  - Cyanosis
  - Inability to speak > 2 syllable units
  - Shortness of breath
  - SBP < 70 mmHg
  - Accessory muscle use
  - Severe wheezing
  - Capillary refill > 2 seconds