



County of Santa Cruz

HEALTH SERVICES AGENCY

POST OFFICE BOX 962, 1080 EMELINE AVENUE SANTA CRUZ, CA 95061-0962
(831) 454-4120 FAX: (831) 454-4272 TDD: (831) 454-4123

EMERGENCY MEDICAL
SERVICES PROGRAM

Protocol No. C1
April 1, 2012

Emergency Medical Services Program

Approved

Medical Director

Subject: CARDIAC ASYSTOLE

I. BLS Treatment Protocol:

- A. Treat life threats. (See Policy 4000)
- B. Prepare for transport / transfer of care.

II. ALS Treatment Protocol:

- A. Treat life threats. (See Policy 4000)
- B. Cardiac Monitor- confirm asystole in 2 leads.
- C. Epinephrine 1mg IVP/IO. Repeat every 3-5 minutes at 1mg.
- D. If the patient remains unresponsive to treatment despite the thorough implementation of this protocol, paramedics may consider making a field determination of death as outlined in Policy 1140.

Notes:

1. Certain patients in asystole are more likely candidates for transport- for example, patients who are hypothermic, drug-overdosed, or who have been electrocuted.
2. Cardiac arrest in known dialysis patients: paramedics may administer sodium bicarbonate 1 mEq/kg IV/IO along with calcium chloride 1 gram IV/IO to those patients currently receiving dialysis in order to treat possible hyperkalemia.
3. If a return of spontaneous circulation (ROSC) is achieved, paramedics should follow these guidelines for post-arrest management:
 - **Maintain O2 saturations (SpO2) at 95% or better using the lowest concentration of O2 possible.** If the patient has high O2 saturations, titrate O2 concentrations down to the lowest concentration

necessary to achieve this saturation level. Ventilation on room air is optimal if saturations can be maintained.

- **Ventilate the patient** 10-12 breaths per minute to achieve an end tidal CO₂ of 35 – 45 mmHg. **No hyperventilation!**
- **Maintain a minimum systolic BP of 90 mmHg.** Use IV fluids and dopamine starting at 5 – 10 mcg/kg/minute to a total of 20 mcg/kg/minute to achieve this. If the patient's BP is 100 systolic or higher, there is no need for any further circulatory support.
- **Manage post-arrest arrhythmias as needed.**
- **Obtain a 12 lead ECG and transmit as indicated.** Crews in South County should contact Dominican Hospital before transporting a post-arrest STEMI patient north as transport to Watsonville Community Hospital may be more appropriate.



County of Santa Cruz

HEALTH SERVICES AGENCY

EMERGENCY MEDICAL
SERVICES PROGRAM

Protocol No. C2
April 1, 2012

Emergency Medical Services Program

Approved

Medical Director

Subject: PULSELESS ELECTRICAL ACTIVITY

I. BLS Treatment Protocol:

- A. Treat life threats (See Policy 4000)
- B. Prepare for transport/ transfer of care.

II. ALS Treatment Protocol:

- A. Treat life threats (See Policy 4000)
- B. Consider and treat possible causes:
 - Hypovolemia
 - Hypoxia
 - Tension Pneumothorax
 - Hyperkalemia
 - Hypothermia
 - Hypoglycemia
 - Toxins/Tablets (Drug OD)
 - Trauma
- C. Epinephrine 1mg IVP/IO. Repeat every 3-5 minutes at 1mg.
- D. If the patient remains unresponsive to treatment despite the thorough implementation of this protocol, paramedics may consider making a field determination of death as outlined in Policy 1140.

Notes:

1. Certain patients in PEA are more likely candidates for transport- for example, patients who are hypothermic, drug-overdosed, or who have been electrocuted.
2. Cardiac arrest in known dialysis patients: paramedics may administer sodium bicarbonate 1 mEq/kg IV/IO along with calcium chloride 1 gram IV/IO to those patients currently receiving dialysis in order to treat possible hyperkalemia.

3. If a return of spontaneous circulation (ROSC) is achieved, paramedics should follow these guidelines for post-arrest management:
- **Maintain O₂ saturations (SpO₂) at 95% or better using the lowest concentration of O₂ possible.** If the patient has high O₂ saturations, titrate O₂ concentrations down to the lowest concentration necessary to achieve this saturation level. Ventilation on room air is optimal if saturations can be maintained.
 - **Ventilate the patient** 10-12 breaths per minute to achieve an end tidal CO₂ of 35 – 45 mmHg. **No hyperventilation!**
 - **Maintain a minimum systolic BP of 90 mmHg.** Use IV fluids and dopamine starting at 5 – 10 mcg/kg/minute to a total of 20 mcg/kg/minute to achieve this. If the patient's BP is 100 systolic or higher, there is no need for any further circulatory support.
 - **Manage post-arrest arrhythmias as needed.**
 - **Obtain a 12 lead ECG and transmit as indicated.** Crews in South County should contact Dominican Hospital before transporting a post-arrest STEMI patient north as transport to Watsonville Community Hospital may be more appropriate.



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EMERGENCY MEDICAL
SERVICES PROGRAM

Protocol No. C3
April 1, 2012

Emergency Medical Services Program

Approved

Medical Director

Subject: VENTRICULAR FIBRILLATION / PULSELESS VENTRICULAR TACHYCARDIA

I. BLS Treatment Protocol:

- A. Treat life threats (See Policy 4000)
- B. Prepare for transport/ transfer of care.
- C. A precordial thump may be employed to treat confirmed ventricular fibrillation/pulseless ventricular tachycardia only when a defibrillator is not immediately available.

II. ALS Treatment Protocol:

- A. Treat life threats (See Policy 4000)
- B. Cardiac monitor- Defibrillate 1 time @ highest joules setting. Continue to defibrillate as indicated every two minutes.
- C. Epinephrine 1mg IVP/IO. Repeat every 3-5 minutes at 1mg.
- D. Amiodarone 300 mg IV/IO.
- E. Continue administering epinephrine and defibrillate as needed.
- F. Amiodarone 150 mg IV/IO if no response to initial dosing.
- G. If the patient remains unresponsive to treatment despite the thorough implementation of this protocol, paramedics may consider making a field determination of death as outlined in Policy 1140.
- H. When transporting, contact receiving hospital as soon as possible.

Notes:

1. Cardiac arrest in known dialysis patients: paramedics may administer sodium bicarbonate 1 mEq/kg IV/IO along with calcium chloride 1 gram IV/IO to those patients currently receiving dialysis in order to treat possible hyperkalemia.

2. If a return of spontaneous circulation (ROSC) is achieved, paramedics should follow these guidelines for post-arrest management:
 - **Maintain O₂ saturations (SpO₂) above 94% using the lowest concentration of O₂ possible.** If the patient has high O₂ saturations, titrate O₂ concentrations down to the lowest concentration necessary to achieve this saturation level. Ventilation on room air is optimal if saturations can be maintained.
 - **Ventilate the patient** 10-12 breaths per minute to achieve an end tidal CO₂ of 35 – 45 mmHg. **No hyperventilation!**
 - **Maintain a minimum systolic BP of 90 mmHg.** Use IV fluids and dopamine starting at 5 – 10 mcg/kg/minute to a total of 20 mcg/kg/minute to achieve this. If the patient's BP is 100 systolic or higher, there is no need for any further circulatory support.
 - **Manage post-arrest arrhythmias as needed.**
 - **Obtain a 12 lead ECG.** Transmit/transport to Dominican Hospital if a STEMI is identified. Make base station contact if transporting from South County prior to transport.



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EMERGENCY MEDICAL
SERVICES PROGRAM

Protocol No. C4
April 1, 2012

Emergency Medical Services Program

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Medical Director

Subject: TACHYCARDIA >150 WITH PULSES

I. BLS Treatment Protocol:

- A. Treat life threats (See Policy 4000)
- B. Prepare for transport / transfer of care.

II. ALS Treatment Protocol:

- A. Treat life threats (See Policy 4000)
- B. Cardiac Monitor: Confirm rate >150
- C. Consider 12-lead-ECG. Transmit as needed for treatment guidance.
- D. **Stable (*Adequate perfusion*)**
 1. Transport.
 2. Contact Base Station.

E. Unstable (*Inadequate perfusion*)

1. If patient is unstable but **conscious with narrow complex**
 - a) Consider vagal maneuver (no carotid massage)
 - b) Consider adenosine (Age 50 or older – Base Station contact required):
 - 1st dose: Adenosine rapid 6mg IV/IO;
if no change after 1-2 minutes
 - 2nd dose: Adenosine rapid 12mg IV/IO;
if no change after 1-2 minutes
 - 3rd dose Adenosine rapid 12mg IV/IO
 - c) Versed 0.2mg/kg IM (max 10mg) or 0.1 mg/kg IV/IO (max 5 mg)
 - d) Synchronized cardioversion 100J; if no change 200J; if no change 300J; if no change 360J
 - e) Transport.
 - f) Contact Base Station.
2. If patient is unstable but **conscious with wide complex:**
 - a) Consider adenosine administration if there is the possibility that this rhythm is an aberrantly conducted SVT. Do not use if rhythm is irregular or polymorphic. Use adenosine dosing as above.

- b) Versed 0.2 mg/kg IM (max 10 mg) or 0.1 mg/kg IV/IO (max 5mg)
 - c) Synchronized cardioversion 100J; if no change 200J; if no change 300J; if no change 360J
 - d) Transport
 - e) Contact Base Station.
 - f) Consider amiodarone drip – 150 mg infused over 10 minutes.
3. If patient is unstable and **unconscious with wide or narrow complex** **:
- a) Synchronized cardioversion 100J; if no change 200J; if no change 300J; if no change 360J
 - b) Transport.
 - c) Contact Base Station.
 - d) Consider amiodarone or adenosine dosing as listed above.

Note: Consider common causes of tachycardia, including hypovolemia, and sepsis. SVT usually occurs in younger patients (i.e., younger than 50 years) with HRs greater than 200 bpm. Confirm a wide complex tachycardia using multiple leads. Consult the Base Station if you are unclear about the cause of the dysrhythmia, and whether or not you should treat it.

Whenever possible, contact Base Station prior to administering synchronized cardioversion in unstable but conscious patients. In the unstable, unconscious patient where rapid synchronized cardioversion is the highest priority, do not hesitate administering cardioversion before initiating transport and contacting the Base Station (see E. 3).

**Unconsciousness should be attributed to a lack of perfusion caused by the tachycardia itself, not due to some other etiology unrelated to the tachycardia.



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EMERGENCY MEDICAL
SERVICES PROGRAM

Protocol No. C5
April 1, 2012

Emergency Medical Services Program

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Medical Director

Subject: FREQUENT PVCs IN THE RESPONSIVE PATIENT

I. BLS Treatment Protocol:

- A. Treat life threats (See Policy 4000)
- B. Prepare for transport/ transfer of care.

II. ALS Treatment Protocol:

- A. Treat life threats (See Policy 4000)
- B. Consider 12-lead-ECG. Transmit as needed for treatment guidance.
- C. Transport.
- D. Contact Base Station.
- E. Consider Amiodarone 150 mg infusion via IVPB over 10 minutes by Base Station order.

Note:

Suppressive drugs are indicated when PVCs are multifocal, bigeminy, trigeminy, coupled or in runs of ventricular tachycardia occurring at six (6) or more per minute.



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EMERGENCY MEDICAL
SERVICES PROGRAM

Protocol No. C6
April 1, 2012

Emergency Medical Services Program

Approved

Medical Director

Subject: CARDIAC CHEST PAIN / ANGINAL EQUIVALENT SYMPTOMS

I. BLS Treatment Protocol:

- A. Treat life threats (See Policy 4000)
- B. Prepare for transport / transfer of care.

II. ALS Treatment Protocol:

- A. Treat life threats (See Policy 4000)
- B. Consider 12-lead-ECG. Transmit as needed for treatment and transport destination guidance. (See Policy 1600).
- C. NTG * 0.4 mg sublingual every 2 minutes. Hold if hypotensive.
- D. Apply 1 inch nitro paste. Hold if hypotensive.
- E. If chest pain / anginal equivalent symptoms cannot be ruled out as cardiac in origin, and the patient is not allergic to aspirin, give chewable aspirin 162mg.
- F. To relieve pain/other symptoms persisting after NTG, Morphine Sulfate may be administered in 2-5mg increments slow IVP/IO. May repeat every 5 min up to 5mg total.
- G. Transport.
- H. If symptomatic hypotension, consider positioning, 250cc fluid bolus.
- I. If persistent hypotension, consider Dopamine 5-10 mcg/kg/min. Start at 5-10 mcg/kg/min. Titrate for effect to a maximum of 20 mcg/kg/min. (See drug list for dosage chart).
- J. Contact Base Station.

Notes:

* Do **NOT** administer NTG if the patient has taken an erectile dysfunction agent within the past 24 hours (i.e., Cialias, Lavitra, Viagra, Revatio, Tadalafil, etc)

** Hold Morphine Sulfate if patient has or develops respiratory depression, bradycardia or hypotension. Narcan should be immediately available to reverse adverse effects.



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EMERGENCY MEDICAL
SERVICES PROGRAM

Protocol No. C7
April 1, 2012

Emergency Medical Services Program

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Medical Director

Subject: BRADYCARDIA/HEART BLOCKS

I. BLS Treatment Protocol:

- A. Treat life threats. (See Policy 4000)
- B. Prepare for transport / transfer of care.

II. ALS Treatment Protocol:

- A. Treat life threats. (See Policy 4000)
- B. Transmit 12-lead-ECG for treatment guidance.
- C. **Pulse less than 60 bpm & asymptomatic:**
 1. Transport.
 2. Contact Base Station.
- D. **Pulse Less Than 60 bpm, with symptomatic hypotension:**
 1. Atropine is a simpler and quicker intervention to initiate than transcutaneous pacing, and in many instances will work as well.
 - a. Atropine 0.5mg IV/IO. May be administered while awaiting pacing set up. May repeat dose in 3-5 minutes as needed to alleviate symptoms or increase pulse to 60 bpm. Not to exceed 3mg maximum total dose IV/IO.
 - b. Establish Transcutaneous Cardiac Pacing. See Procedure 6000.
 2. Transport.
 3. Consider positioning, 250ml fluid bolus.
 4. If persistent hypotension, consider Dopamine 5-10 mcg/kg/min. Start at 5-10 mcg/kg/min. Titrate for effect to a maximum of 20 mcg/kg/min. (See drug list for dosage chart).
 5. Contact Base Station.

Note: This guideline is intended to maintain adequate cerebral perfusion by observing mental status.



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EMERGENCY MEDICAL
SERVICES PROGRAM

Protocol No. E1
Reviewed 01/07

Emergency Medical Services Program

Approved

Medical Director

Subject: HEAT EXPOSURE

I. BLS Treatment Protocol:

- A. Treat life threats. (See Policy 4000)
- B. Implement cooling measures.
- C. Prepare for transport / transfer of care.

II. ALS Treatment Protocol:

A. Heat Exhaustion: *

1. Treat life threats. (See Policy 4000)
2. Transport.
3. Contact Base Station.

B. Heat Stroke: **

1. Treat life threats. (See Policy 4000)
2. Start aggressive cooling measures.
3. Transport.
4. Contact Base Station.

Note:

***Heat Exhaustion:** Usually occurs in healthy individuals who have exercise induced hypovolemia.

Example: Joggers.

Clinical Signs: Normal temperature, wet pale skin, tachycardia, syncope, vomiting/diarrhea.

Treatment: Heat exhausted patients are always fluid depleted. IV fluid therapy can help to correct fluid and electrolyte imbalances.

****Heat Stroke:** The patients most susceptible are the inactive, the elderly or the overactive healthy youth. Phenothiazines, tricyclics, antihistamines, amphetamines, alcohol, and diuretics may potentiate heat stroke.

Clinical Signs: High body temperature with ALOC, dry hot skin, seizures, tachycardia.

Treatment: Heat stroke patients require immediate rapid cooling. The most effective method is evaporative cooling achieved by wetting the skin and moving air across the body.



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EMERGENCY MEDICAL
SERVICES PROGRAM

Protocol No. E2
April 1, 2012

Emergency Medical Services Program

Approved

Medical Director

Subject: COLD EXPOSURE/HYPOTHERMIA

I. BLS Treatment Protocol:

- A. Treat life threats. (See Policy 4000)
- B. Implement warming measures but avoid aggressive external rewarming for pulseless patients.
- C. Prepare for transport / transfer of care.

II. ALS Treatment Protocol: (Moderate Hypothermia* to Severe Hypothermia)**

- A. Treat life threats. (See Policy 4000)
- B. Continue warming measures.
- C. Transport.
- D. Contact Base Station.

Notes:

If patient is pulseless, defibrillate as you would a normothermic patient; however, only a single round of drugs should be administered.

***Moderate Hypothermia-** No shivering, decreased LOC, atrial fibrillation, bradycardia, hypoventilation, dilated pupils, bright pink to pale skin, ventricular fibrillation susceptibility.

****Severe Hypothermia:** Muscle tone resembling rigor mortis, apneic, comatose, ventricular fibrillation or asystole, dilated and fixed pupils, skin is edematous and face is swollen.

Avoid rough movement and excess activity. Stimulation of the patient could significantly cause deterioration of vital signs.



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EMERGENCY MEDICAL
SERVICES PROGRAM

Protocol No. E3
Reviewed 01/07

Emergency Medical Services Program

Approved

Medical Director

Subject: NEAR DROWNING

I. BLS Treatment Protocol:

- A. Treat life threats. (See Policy 4000)
- B. Spinal precautions as indicated.
- C. Prepare for transport / transfer of care.

II. ALS Treatment Protocol:

- A. Treat life threats. (See Policy 4000)
- B. Treat dysrhythmias as indicated.
- C. Transport.
- D. Contact Base Station.

Note:

Near drowning patients are at high risk for experiencing secondary drowning several hours after the initial event. Secondary drowning occurs when the lungs suffer delayed pulmonary edema after being exposed to water.

Severe respiratory distress can also occur due to damage to the alveoli, as well as secondary to infection. Adult Respiratory Distress Syndrome (ARDS) and pneumonia can both occur following the inhalation of water into the lungs. Make every effort to transport these patients to the hospital for further evaluation.



BURNS

- I. BLS Treatment Protocol:
 - A. Scene Survey - Identify hazard potential - (chemical, electrical, thermal).
 - B. Mitigate hazard and stop burning process. Remove jewelry and constrictive clothing.
 - C. Treat life threats. (See Policy 4000 *Life Threats*).
 - D. Identify extent of burn. Use rule of nines. Refer to PAM criteria (Policy 7070 *Trauma Triage*) when appropriate.
 - E. Cover affected body surface with clean, dry cotton or linen sheet.
 - F. Prepare for transport / transfer of care.
- II. ALS Treatment Protocol:
 - A. Treat life threats. (See Policy 4000). Consider early intubation for patients with evidence of inhalation injury or respiratory distress. Use nebulized saline when indicated.
 - B. If Bronchospasm or wheezes are present:
 1. Albuterol 5mg via nebulizer, may repeat X3 q10 minutes.
 2. If heart rate >160 bpm withhold treatment and contact Base Station.
 - C. To relieve pain, refer to Policy 5600 *Pain Management*. Contact Base Station for additional doses. (See Notes)
 - D. Transport. Consider direct transport to a Burn Center.
 - E. Contact Base Station as needed.

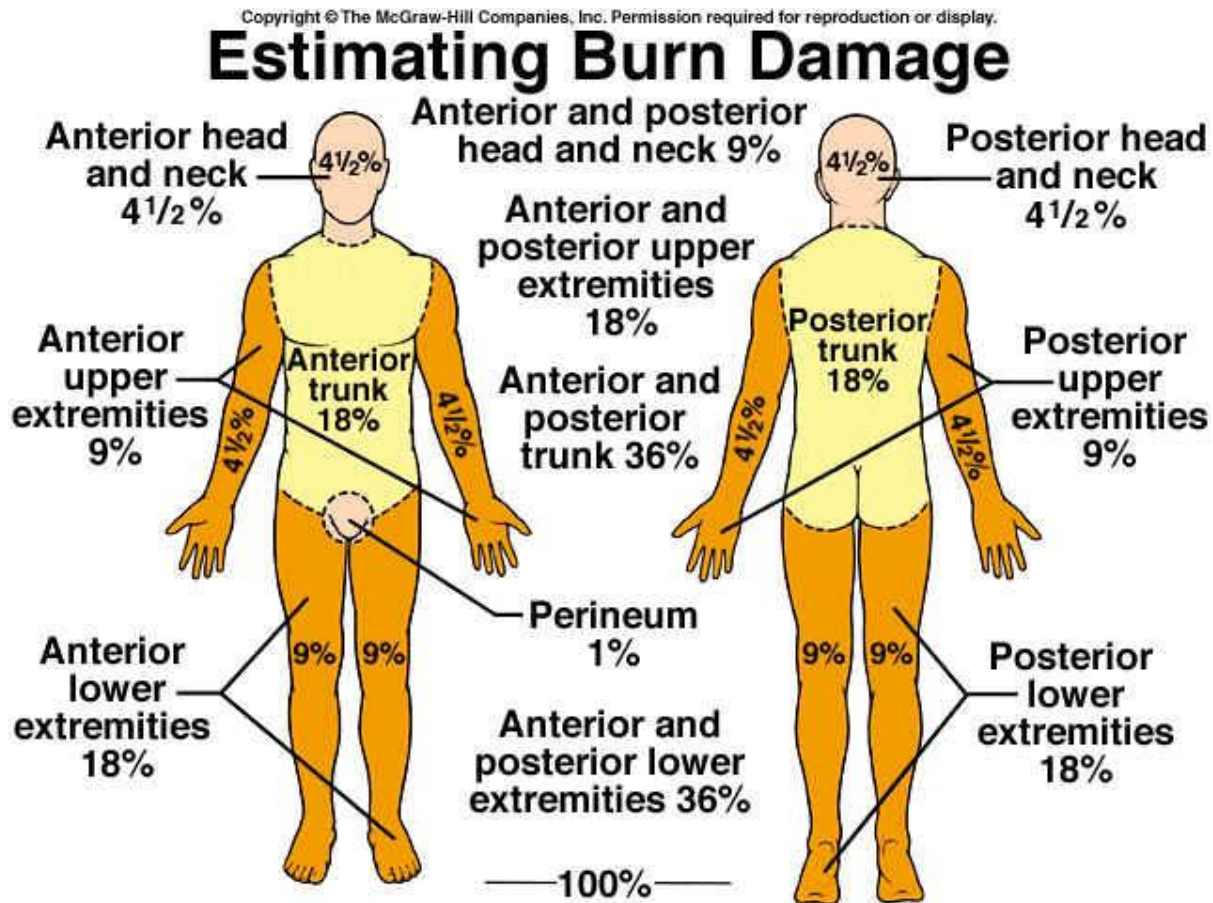
Notes:

- Hold MS or fentanyl if patient has or develops respiratory depression, bradycardia or hypotension. Narcan should be immediately available to reverse adverse effects.
- Remember that hypothermia is much more common than hyperthermia in burn patients. Once burn is properly covered, consider covering patient with additional insulating material
- Enclosed space burn patients are at high risk for respiratory burns



Specific Burn Criteria for direct transport to Burn Center:

1. >10% TBSA 2°/3° burns
2. >2% 3° burns
3. Evidence of respiratory burns
4. Circumferential burns
5. Burns that cross joints
6. Significant electrical burns
7. Burns involving face, hands, feet, perineum





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EMERGENCY MEDICAL
SERVICES PROGRAM

Protocol No. E5
Reviewed 01/07

Emergency Medical Services Program

Approved

Medical Director

Subject: ACUTE VENOMOUS SNAKE BITE

I. BLS Treatment Protocol:

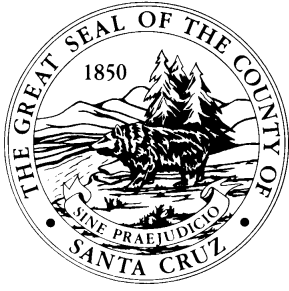
- A. Treat life threats. (See Policy 4000)
- B. Remove any potentially constricting jewelry or clothing. Apply elastic band proximal to bite, tight enough to obstruct lymphatic flow (one should be able to slip an index finger under the band). If the swelling progresses, apply a second band proximal to the first, and remove the first band. Do not apply ice.
- C. Keep the bite area below heart level in a dependent position. If the bite is on an extremity, immobilize the extremity.
- D. Reduce patient physical activity to a minimum.
- E. Get an accurate description of snake. If the snake is dead, bring it in for positive identification in a closed solid container. Avoid the fangs because they are capable of envenomation even when dead. If alive, do not try to capture.
- F. Prepare for transport / transfer of care.

II. ALS Treatment Protocol:

- A. Treat life threats. (See Policy 4000)
- B. Transport.
- C. To relieve pain, Morphine Sulfate may be administered in 3-5 mg increments slow IVP/ IM to a total of 10mg. *
- D. Contact Base Station.

Notes:

- Do not incise envenomations.
- Exotic poisonous snakes such as those in zoos or pet stores have different signs and symptoms than those of the pit vipers. Zoos and legal exotic snake collectors are required to have a starter supply of antivenin on hand for each type of snake. Bring the antivenin with the patient to the hospital.
- Bites from coral snakes, and snakes related to cobras, usually do not have any early symptoms; thus all bites are considered envenomated.
- * Hold Morphine Sulfate if patient has or develops respiratory depression, bradycardia or hypotension. Narcan should be immediately available to reverse adverse effects.



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EMERGENCY MEDICAL
SERVICES PROGRAM

Protocol No. M1
Reviewed 01/07

Emergency Medical Services Program

Approved

Medical Director

Subject: OVERDOSE AND/OR POISON INGESTION

I. BLS Treatment Protocol:

- A. Treat life threats. (See Policy 4000)
- B. Prepare for transport / transfer of care.
- C. Obtain history while waiting for ALS.

II. ALS Treatment Protocol:

- A. Treat life threats (See Policy 4000)
- B. Treat according to ingestion. (See Section III)
- C. Follow ALOC guidelines as needed.
- D. Transport.
- E. Contact Base Station.

III. Specific Poisoning Guidelines:

- A. Organophosphate:
 1. Atropine 2mg IVP/ IO q 5 min as needed.
 2. For seizures refer to N2.
- B. Cyclic Anti-depressants:
 1. Sodium Bicarbonate 1mEq/kg IVP/ IO for widening QRS, hypotension, seizure, tachycardia, or heart block.
- C. Dystonic Reactions (EPS):
 1. Benadryl 1mg/kg IM/ IVP/ IO up to 50mg.
- D. Beta Blocker
 1. Atropine 1mg IVP/ IO. If no response repeat once.
 2. If no response to Atropine, administer Glucagon 1 unit (1mg) IVP/ IM/ IO. If no response repeat once in 5 min.
- E. Calcium Channel Blocker
 1. If symptomatic hypotension or sinus arrest, administer IV fluids as needed.
 2. If no response to fluid bolus, administer Glucagon 1 unit (1mg) IVP/ IM/ IO. If no response repeat once in 5 min.

Notes:

- 1.) Rescuer safety is paramount; protect self from hazards and decontaminate patient prior to transport if needed.
- 2.) Symptoms of organophosphate exposure are recalled with the SLUDGE mnemonic: **S**alivation, **L**acrimation, **U**rination, **D**efecation, **G**astrointestinal cramping, **E**mesis.
- 3.) History questions to ask include, What was ingested? How much was ingested? When? With what other substances? Other medical problems?
- 4.) Be prepared to manage airway after Glucagon IV due to possible emesis.



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EMERGENCY MEDICAL
SERVICES PROGRAM

Protocol No. M2
Reviewed January 2008

Emergency Medical Services Program

Approved

Medical Director

Subject: ACUTE ALLERGIC REACTION

I. BLS Treatment Protocol:

- A. Treat life threats. (See Policy 4000)
- B. Prepare for transport / transfer of care.

II. ALS Treatment Protocol:

A. Mild Reaction

1. Treat life threats. (See Policy 4000)
2. Benadryl 1mg/kg IM up to 50mg.
3. Transport.
4. Contact Base Station.

B. Moderate to Severe Reaction (urticaria, itching, raised welts, swelling of mucous membranes of the mouth or eyes, and/or respiratory distress)

1. Treat life threats.* (See Policy 4000)
2. Epinephrine 1:1,000, 0.3mg IM, repeat every 5 minutes as needed.
3. Benadryl 1mg/kg IM/ IVP/ IO up to 50mg.
4. If Bronchospasm or wheezes are present, administer Albuterol 5mg via nebulizer, may repeat as needed. If heart rate > 160 bpm, withhold Albuterol and contact Base Station.
5. Transport.
6. Contact Base Station.
7. In cases of profound shock: Epinephrine 1:10,000, 0.1-0.5mg slow IVP/IO at no more than 0.1mg/minute. Use Epinephrine 1:10,000 only. **This order is by Base Station MD only.**
8. If persistent hypotension, consider Dopamine 5-10 mcg/kg/min. Start at 5-10 mcg/kg/min. Titrate for effect to a maximum of 20 mcg/kg/min. (See drug list for dosage chart).

*The #1 cause of sudden death from severe anaphylaxis is upper airway obstruction secondary to laryngeal edema. Aggressive treatment and airway management is critical in these instances.



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EMERGENCY MEDICAL
SERVICES PROGRAM

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Emergency Medical Services Program

Approved

Medical Director

Subject: ROUTINE MEDICAL CARE

I. BLS Treatment Protocol:

- A. Treat life threats. (See Policy 4000).
- B. Prepare for transport / transfer of care.

II. ALS Treatment Protocol:

- A. Treat life threats. (See Policy 4000).
- B. Consider other treatment protocols as appropriate.
- C. Transport.
- D. Contact Base Station.



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EMERGENCY MEDICAL
SERVICES PROGRAM

Protocol No. M4
April 1, 2012

Emergency Medical Services Program

Approved

Medical Director

Subject: MANAGEMENT OF NAUSEA AND VOMITING

I. BLS Treatment Protocol:

- A. Treat life threats. (See Policy 4000).
- B. Pay particular attention to maintaining a patent airway, and protecting the patient from aspiration.
- C. Consider underlying causes for nausea/vomiting, and treat as appropriate.¹
- D. Attempt non-invasive methods of reducing nausea/vomiting, including reducing environmental stimulation, providing fresh air, applying oxygen, reducing unpleasant odors, and using distracting techniques.
- E. Prepare for transport/transfer of care.

II. ALS Treatment Protocol:

- A. Treat life threats. (See Policy 4000).
- B. Pay particular attention to maintaining a patent airway, and protecting the patient from aspiration.
- C. Consider underlying causes for nausea/vomiting, and treat as appropriate.¹
- D. Ondansetron 4 mg IV/IO/IM or Ondansetron 4 mg ODT. May repeat every 5 - 10 minutes as needed to control nausea and vomiting to a total of 16 mg.²
- E. Transport.
- F. Contact Base Station as needed.

Notes:

- Ondansetron is safe for pregnancy
- Ondansetron rarely causes sedation, and is typically well tolerated by all ages of patients.
- Remember that nausea/vomiting is a symptom. Be aware of underlying causes.
- Zofran is contraindicated in patients with diagnosed Long QT Syndrome, and for those who are currently taking Amiodarone, Haldol, Methadone, Procainamide, or Seroquel.

¹ Common causes of nausea vomiting include administration of narcotics, car sickness, head injury, toxic ingestion, abdominal pain of varying etiologies, gastroenteritis, acute myocardial infarction, and stroke. Consider co-administration of ondansetron with morphine sulfate, particularly in those patients with a history of nausea/vomiting with previous administrations.

² IV/IO administration should occur over 1 minute. IV/IO administration has a faster onset of action than IM/Oral routes.

Zofran
(Ondansetron)

- Class:** Antiemetic (serotonin 5-HT₃ receptor antagonist)
- Action:** Reduces vagus nerve activity, diminishing activation of the vomiting center in the medulla. Blocks serotonin receptors in the chemoreceptor trigger zone.
- Indication:** Nausea/Vomiting
- How Supplied:** 2 mg/ml in 2 ml vial, or as 4 mg Orally Disintegrating Tablet (ODT)
- Dosing:** Adults: 4 mg IV/IO/IM or 4 mg ODT to a total dose of 16 mg.
Pediatrics: 0.1 mg/kg IV/IO/IM to a total of 4 mg, two years of age or more, or ODT as follows:
- 2 - 3 years of age – 2 mg ODT
- 4 years and up – 4 mg ODT
For pediatric patients > 40 kg, may repeat dosing to a total of 8 mg IV/IO/IM/ODT.
- Onset:** Three to five minutes IV/IO, 5 – 10 minutes ODT/IM.
- Duration:** Peak duration is 4 hours.
- Contra-Indications:**
- Patient less than 2 years of age.
 - Patients with allergies to ondansetron, or other 5-HT₃ antagonists such as Granisetron (Kytril), Dolasetron (Anzemet), and Palonosetron (Aloxi)
 - Patients with diagnosed Long QT Syndrome, and for those who are currently taking Amiodarone, Haldol, Methadone, Procainamide, or Seroquel.
- Adverse Reactions:**
- Tachycardia
 - Hypotension
 - Syncope (with rapid administration)
- Comments**
- Rarely causes sedation
 - Side effects/adverse reactions uncommon
 - IV/IO administration should occur slowly, over at least 1 minute



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EMERGENCY MEDICAL
SERVICES PROGRAM

Protocol No. M5
April 1, 2012

Emergency Medical Services Program

Approved

Medical Director

Subject: EXCITED DELIRIUM

I. BLS Treatment Protocol:

- A. Scene Survey – Responder safety is the top priority.
- B. If Law Enforcement not on-scene, call for assistance.
- C. Closely monitor risk level to patient and personnel.
- D. Coordinate patient restraint management with Law Enforcement (see Policy 4060).
- E. Treat life threats. (See Policy 4000)

II. ALS Treatment Protocol:

- A. Treat life threats. (See Policy 4000)
- B. If the patient remains combative, contact Base Station.
- C. Midazolam 5-10mg IM may be used as a standing order if Base contact not practical (see Policy 4060). Larger doses may be required – **this is by Base Station Physician order only.**
- D. Transport. Request Law Enforcement to accompany to hospital. **All patients should be transported on a cardiac monitor and pulse oximeter, at a minimum, and capnography if possible.**
- E. Treat other medical problems (hypoglycemia, vomiting, etc.) as indicated. If the patient appears hyperthermic, initiate cooling measures

Notes:

- **Excited delirium is characterized by extreme agitation, confusion and hallucinations, erratic behavior, profuse diaphoresis, elevated VS, hyperthermia, unexplained strength and endurance, and behaviors that include clothing shedding, shouting out, and extreme thrashing when restrained. It is often found in correlation with alcohol and illicit drug use, and in those patients with preexisting mental illness.**
- **The most immediate threat to patients experiencing this syndrome is sudden apnea and cardiac arrest, usually after thrashing against physical restraint. This is thought to commonly be the cause of “in-custody” sudden death.**
- **It is paramount that patient exhibiting symptoms of this syndrome be effectively and quickly physically restrained, and then calmed using Versed and verbal coaching. *The***

likelihood of sudden apnea and death increases the longer these patients are allowed to struggle against restraint. Managing these patients therefore requires a coordinated effort among all responders and Law Enforcement personnel.

- Because excited delirium patients can quickly progress to apnea and death, responders must monitor their VS closely. When possible this **must** include use of pulse oximetry, ECG monitoring, and if possible, capnography. This latter monitoring tool provides the best, and most immediate, measure of respiratory rate and depth, and ventilatory sufficiency.
- EMS personnel should be especially vigilant if a combative patient suddenly becomes quiet. This will often be the first sign that apnea has occurred. Patients who experience apnea and cardiac arrest may first complain of an inability to breathe.
- Restraint techniques should be utilized which allow patient monitoring, and which can be removed rapidly should apnea and cardiac arrest ensue.
- Excited delirium can mimic several medical conditions, including hypoxia, hypoglycemia, stroke, or intracranial bleeding. Blood glucose should be measured when possible. A thorough exam to rule out other causes should be completed when possible.



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EMERGENCY MEDICAL
SERVICES PROGRAM

Prot. No. M6
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Emergency Medical Services Program

Approved

Medical Director

Subject: SEPSIS

I. BLS Evaluation/Treatment:

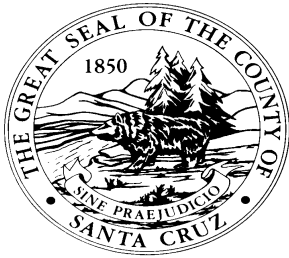
- A. Treat life threats. (See Policy 4000).
- B. Gather accurate patient information including risk factors for sepsis:
 1. >70 years of age
 2. Hx of diabetes
 3. Recent hospitalization or living at a SNF
 4. Recent surgery or invasive procedure
 5. Hx of cancer, kidney disease, malnutrition, alcoholism, other immune compromising diseases
- C. Suspect sepsis in patients with any **two of the following VS and a suspected or confirmed infection (see D):**
 1. Heart rate >90
 2. Respiratory rate >20
 3. Temperature >100.4 or < 96.0
- D. Suspect sepsis in patients with two of the above VS abnormalities and any of the following:
 1. Respiratory symptoms such as shortness of breath, tachypnea, cough
 2. Abdominal pain, vomiting, diarrhea
 3. Urinary pain, urinary frequency, flank pain
 4. A skin infection
 5. General weakness, lethargy, ALOC, especially in the elderly
 6. Current infection diagnosis.
- E. Prepare for transport/transfer of care. Be sure to notify ALS responders of your suspicion for sepsis.

II. ALS Evaluation/Treatment

- A. Treat life threats. (See Policy 4000).
- B. Reconfirm patient history and physical findings as above. In addition:
 1. Check blood sugar. BG >140 mg/dl in a non-diabetic patient may be a sign of sepsis. Less commonly, hypoglycemia can occur with overwhelming sepsis. Treat per Protocol N1.
 2. Check ETCO2. ETCO2 <25mmHg is associated with sepsis.
- C. Transport
- D. Maintain SAO2 at 95% or greater

- E. Initiate fluid resuscitation in patients who present with signs and symptoms of severe sepsis or septic shock. Administer up to 30 ml/kg NS bolus.
- F. Administer fluid cautiously in patients with structural heart disease (cardiomyopathy, severe valvular disease, etc.) or CHF. Administer in 10ml/kg boluses, repeating as indicated as long as the patient shows no signs of fluid overload (pulmonary edema, hypertension).
- G. Contact hospital as soon as possible to report that you are transporting a patient with **“suspected sepsis.”**
- H. Report and handoff at the receiving hospital should include all history and physical exam information, including that the patient has **“suspected sepsis.”**

Note: The single most important element of the prehospital management of sepsis is recognizing that a patient might be septic, and communicating this information to other responders and the receiving hospital as soon as possible.



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EMERGENCY MEDICAL
SERVICES PROGRAM

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Medical Director

Subject: ALTERED LEVEL OF CONSCIOUSNESS

I. BLS Treatment Protocol:

- A. Treat life threats. (See Policy 4000).
- B. Spinal precautions as indicated.
- C. If unconscious, place a dime size amount of glucose paste under the tongue.
- D. If pt can swallow on command, administer glucose paste or let patient self-administer glucose product.
- E. Prepare for transport / transfer of care.

II. ALS Treatment Protocol:

- A. Treat life threats. (See Policy 4000).
- B. Do BG Chem and if less than 70 mg/dl treat as needed.
- C. If conscious, consider giving glucose PO.
- D. If unconscious or unable to take oral sugar, Dextrose 10% IV up to 250 ml. Titrate to clinical response. Following initial infusion, check level of consciousness and BG Chem. If BG Chem < 70 and the patient still has altered mentation, consider repeating Dextrose 10% 250 ml. Recheck patency of IV line frequently.
- E. If no IV can be established and patient presents with altered mentation, give Glucagon 1unit (1mg) IM.
- F. Administer Narcan 0.5mg IVP/ IN or 1 mg IM. Narcan dose may be repeated in 3-5 minutes as indicated to a total of 2 mg. Titrate dose to respiratory effect. If more than 2 mg via any route is needed to support respirations, contact Base Station for additional orders.
- G. Transport.
- H. Repeat BG Chem.
- I. Contact Base Station.

Notes:

- If the patient's history of present illness/clinical presentation suggests acute hypoglycemia, give sugar even if the blood sugar reading is in the "low normal" range (70-80mg/dl).
- Mental status improvement following treatment for hypoglycemia may lag behind improved glucose levels.

- Oral glucose is the preferred treatment for hypoglycemia when the patient is able to take medication orally.
- Insulin pumps administered very small quantities of insulin at any one time. Insulin pumps should not be discontinued when treating hypoglycemia.
- Glucagon often causes nausea and vomiting.
- Glucagon may take 10 – 15 minutes or longer to increase glucose levels. Wait at least 15 minutes to recheck glucose before considering additional therapy.
- Transport of hypoglycemic patients is strongly urged in those patients over 65 years of age or who developed hypoglycemia secondary to oral diabetic medication. Acute hypoglycemia can occur with renal failure, starvation, alcohol intoxication, sepsis, aspirin overdoses, sulfa drug ingestion or following bariatric surgery.
- IN = Intranasal
- Rapid IV administration of high doses of Narcan has been correlated with an increased incidence of severe withdrawal reactions. Patients also tend to awaken with more violent behavior when large IV doses are administered rapidly.



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EMERGENCY MEDICAL
SERVICES PROGRAM

Protocol No. N2
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Emergency Medical Services Program

Approved

Medical Director

Subject: SEIZURES

I. BLS Treatment Protocol:

- A. Treat life threats. (See Policy 4000).
- B. Protect patient from injury. Spinal precautions as indicated
- C. Prepare for transport / transfer of care.

II. ALS Treatment Protocol:

- A. Treat life threats. (See Policy 4000).
- B. Do BG Chem and if less than 70 mg/dl treat as needed.
- C. If persistent seizures, administer Versed, 0.2mg/kg IM (maximum dose 10mg) or 0.1mg/kg IV (maximum dose 5mg). *
- D. Transport.
- E. Contact Base Station.

Notes:

*After max dose, contact Base Station for additional doses. In higher doses Versed may cause respiratory depression.

Status epilepticus is a true medical emergency defined as either continuous seizures lasting at least five minutes or two or more discrete seizures between which there is an incomplete recovery of consciousness.

Continuous EKG, pulse oximetry, and blood pressure monitoring are mandatory during and after administration of Versed.



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EMERGENCY MEDICAL
SERVICES PROGRAM

Protocol No. N3
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Emergency Medical Services Program

Approved

Medical Director

Subject: NON-TRAUMATIC NEURO IMPAIRMENT (SUSPECT CVA)

I. BLS Treatment Protocol:

- A. Treat life threats. (See Policy 4000).
- B. Prepare for transport / transfer of care.

II. ALS Treatment Protocol:

- A. Treat life threats. (See Policy 4000).
- B. If time since symptom onset/last time seen in premorbid state <6 hours assess according to stroke scale *
- C. Do BG Chem and if less than 70 mg/dl treat as needed.
- D. Base station contact.
- E. Transport.

Notes:

*Stroke scale

1. Facial droop
2. Arm drift
3. Abnormal speech

In order to be eligible for thrombolytic therapy the patient must be:

1. Conscious
2. Have persistent neurological deficit(s)
3. The time of onset must be identified (within 6 hours)



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EMERGENCY MEDICAL
SERVICES PROGRAM

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Emergency Medical Services Program

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Medical Director

Subject: UNCOMPLICATED CHILDBIRTH AND EMERGENCY CHILDBIRTH

Uncomplicated Childbirth

I. BLS Treatment Protocol:

- A. Treat maternal life threats. (See Policy 4000).
- B. Assess. Examine for crowning during contractions. Time the contractions. If baby is crowning and mother feels urge to defecate (push), deliver at scene.
- C. If baby is delivered: apply two clamps on cord at 6 and 8 inches from baby. Cut cord between clamps.
- D. Assess using the APGAR scoring matrix. Keep the baby warm.
- E. Treat neonatal life threats as needed.
- F. Prepare for transport / transfer of care.

II. ALS Treatment Protocol:

- A. Treat life threats in both the mother and neonate. (See Policy 4000).
- B. Transport
- C. Contact Base Station.

Notes:

1. See Protocol C8-P for direction regarding neonatal resuscitation. See Emergency Childbirth for postpartum hemorrhage management.
2. Remember that patients in their second and third trimester can suffer from supine hypotensive syndrome when lying supine. When possible position these patients in a left lateral position.

Emergency Childbirth

III. **BLS Treatment Protocol:**

- A. Assess for impending delivery or complications. Examine for crowning during contractions. Time the contractions. If baby is crowning and mother feels urge to defecate (push), deliver at scene.
- B. Treat life threats. (See Policy 4000).
- C. Place mother in position of comfort.
- D. Prepare for transport/ transfer of care.

IV. **ALS Treatment Protocol:**

- A. Treat life threats. (See Policy 4000).
- B. Transport.
- C. Contact Base Station.

V. **Possible Complications (BLS/ ALS):**

A **Significant Bleeding (greater than 500cc):**

Before delivery -Place mother in left lateral position.
After delivery - Massage fundus of uterus and place baby to breast.
Track bleeding by applying peripads.
Add Pitocin 20 units/1000ml, run IV wide open.
If unable to start IV, give Pitocin 10 units IM.

B. **Prolapsed Cord**

Place mother in knee-chest position or elevate hips with pillows or folded blankets.
Insert hand into vagina and attempt to gently push the presenting part upward to release pressure on the cord. **Do not damage cord by attempting to push back inside vagina.**

C **Nuchal cord:**

Attempt to gently slide umbilical cord over neonate's head. If unable to do so, place mother in knee/chest position and transport. Cutting the cord before the neonate's chest is delivered will cause severe hypoxia and anoxia of the neonate.

D **Breech / Limb Delivery:**

Place mother in left lateral or knee/chest position

E **Eclampsia (Actively Seizing):**

Place mother in left lateral position
See Seizure Protocol N2



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EMERGENCY MEDICAL
SERVICES PROGRAM

Protocol No. R2
Updated April 15, 2014

Emergency Medical Services Program

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Medical Director

Subject: **RESPIRATORY DISTRESS WITH WHEEZES (SUSPECTED PULMONARY ORIGIN)**

I. BLS Treatment Protocol:

- A. Treat life threats. (See Policy 4000)
- B. Consider CPAP. (See Policy 5800)
- C. Prepare for transport / transfer of care.

II. ALS Treatment Protocol:

- A. Treat life threats. (See Policy 4000)
- B. If bronchospasm or wheezes are present, administer Albuterol 5mg via nebulizer. May repeat as needed. If heart rate > 160 bpm, contact Base Station.
- C. Consider CPAP (Policy 5800)
- D. Epinephrine: Severe distress (must be status 4-5 and at least one of the following: ALOC, significant accessory muscle use, fatigue, inability to speak, low SA02, poor skin signs) without history of COPD:
 - 1.) Less than 50 years of age without known CAD/HTN – 0.3mg 1:1,000 IM; contact Base Station ASAP after administration.
 - 2.) 50 years or greater and/or known CAD/HTN – contact Base Station prior to administration. If approved, 0.3mg 1:1,000 IM.
- D. Transport
- E. Contact Base Station.

Notes: Refer to Policy 5800 for full details on CPAP



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Medical Director

Subject: **RESPIRATORY DISTRESS - ACUTE CONGESTIVE HEART FAILURE**

I. BLS Treatment Protocol:

- A. Treat life threats. (See Policy 4000)
- B. Consider CPAP (Policy 5800)
- C. Prepare for transport / transfer of care.

II. ALS Treatment Protocol:

- A. Treat life threats. (See Policy 4000)
- B. NTG * 0.4 mg sublingual every 2 minutes. Hold if hypotensive.
- C. Apply 1 inch nitro paste. Hold if hypotensive.
- D. Consider CPAP (Policy 5800)
- E. Transport.
- F. If symptomatic hypotension, consider positioning, 250ml fluid bolus.
- G. Contact Base Station.
- H. If persistent hypotension, Consider Dopamine 5-10 mcg/kg/min. Start at 5-10mcg/kg/min. Titrate for effect to a maximum of 20 mcg/kg/min. (See drug list for dosage chart).

Notes:

- Do **NOT** administer NTG if the patient has taken erectile dysfunction agent within the past 24 hours (i.e., Cialis, Levitra, Viagra, Revatio, Tadalafil, etc.).
- Refer to Policy 5800 for full details on CPAP



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EMERGENCY MEDICAL
SERVICES PROGRAM

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Emergency Medical Services Program

Approved

Medical Director

Subject: RESPIRATORY BORNE ILLNESS

Overview: The presence of Respiratory Borne Illness should be considered for all patients. For those patients presenting with cough, **difficulty** breathing, or an unknown illness, the following protocol should be followed by **ALL** EMS responders – BLS and ALS.

- I. Any EMS responder approaching the patient should wear an N-95 mask.
- II. Obtain an appropriate **history**:
 1. If patient **doesn't have** cough or difficulty breathing, then go to the usual protocol for patient's chief complaint. No Respiratory Borne Illness infection control is needed.
 2. If patient **has** cough or difficulty breathing but has **no risk factors*** for Respiratory Borne Illness exposure then go to the usual protocol for patient's chief complaint. No infection control is needed.
 3. If patient **has** cough or difficulty breathing and **has risk factors** for Respiratory Borne Illness exposure **or risk factors are unknown**, then all **EMS responders should adhere to droplet and contact infection control guidelines**** and go to the usual protocol for patient's chief complaint. Make early Base contact for information purposes.

***Risk Factors:**

- 1) The patient has **traveled** to an area (or passed through the airport) with documented or suspected community transmission of Respiratory Borne Illness in **the 10 days prior** to becoming ill
- Or
- 2) The patient has had **close contact** with a person who is ill with a cough and/or difficulty breathing and **the close contact person has traveled** to an area (or passed through the airport) with documented or suspected community transmission of Respiratory Borne Illness in the **10 days prior** to becoming ill.

**** Droplet and Contact Information Control Guidelines:**

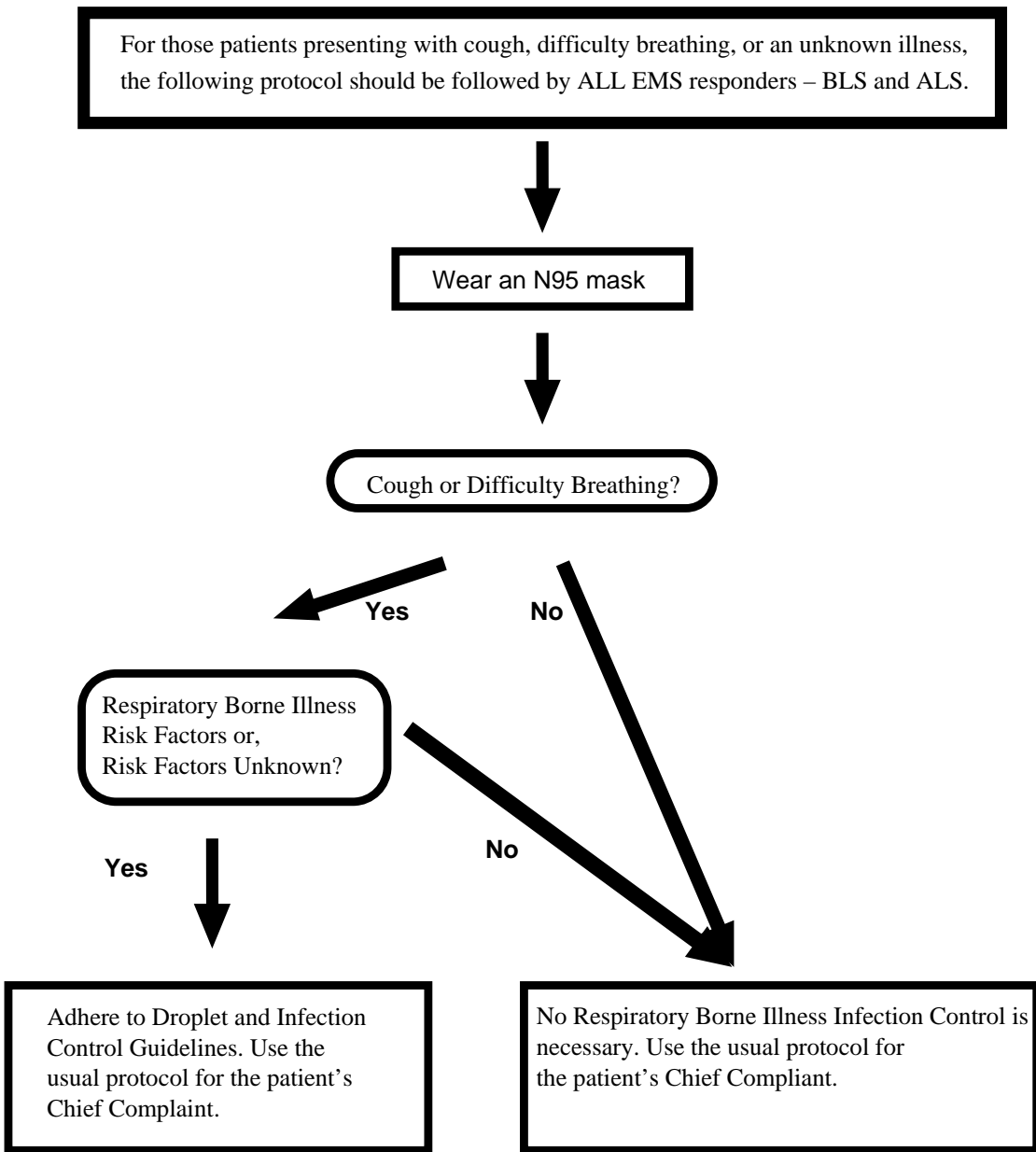
- 1) **For the EMS Responder:** Eye covering, N-95 mask, disposable gown, gloves.
- 2) **For the patient:** A surgical mask, or if this is not tolerated, an oxygen mask or non-rebreather mask with high flow O₂.
- 3) Extensive decontamination is unnecessary but the ambulance interior should be wiped down with the usual cleaning product.
- 4) Clothing or disposable equipment is not considered a biohazard and can be disposed of in a plastic bag in the trash.

- 5) Use good hand hygiene and wash hands after removing gloves. If hands are not visibly contaminated may use waterless hand wash.

DEFINITIONS:

- 1) **Close contact:** Close contact is defined as having cared for, having lived with, or having direct contact with respiratory secretions and/or body fluids of a person.

Respiratory Borne Illness EMS Algorithm:





TRAUMA

Refer to PAM Triage Tool (Policy 7070 *Trauma Triage*) during assessment and treatment.

- I. BLS Treatment Protocol:
 - A. Treat immediate life threats. (See Policy 4000 *Life Threats*)
 - B. Control bleeding using:
 1. Direct Pressure.
 2. Tourniquets.
 3. Pressure Bandages.
 4. Hemostatic Gauze.
 - C. Spinal precautions as indicated.
 - D. Splint as appropriate.
 1. Splint in position of comfort.
 2. A traction splint is indicated for mid-shaft femur fractures.
 - E. Cover eviscerations with moist, sterile dressings.
 - F. Cover open chest wounds with approved chest seal dressings. Evaluate frequently.
 - G. Prepare for transport/ transfer of care.
- II. ALS Treatment Protocol:
 - A. Treat life threats. (See Policy 4000 *Life Threats*)
 - B. Transport.
 - C. Contact Base Station as indicated.

Note:

- If a trauma patient is being transported to a local hospital, make early notification.
- Most fractures on multi-systems trauma patients should be splinted to the backboard.
- Remember that the top causes of preventable trauma fatality include hypoxia, open chest wounds, and uncontrolled external hemorrhage.
- Try to adhere to the “time rule” when managing critical trauma:

If the intervention is not critical for managing an immediate life threat, then it should not be done on scene as time is always more important.



ISOLATED LIMB INJURIES (INCLUDING HIP)

- I. BLS Treatment Protocol:
 - A. Treat life threats. (See Policy 4000 *Life Threats*).
 - B. Control bleeding.
 - C. Spinal precautions as indicated.
 - D. Splint as appropriate. Traction splints are indicated for mid-shaft femur fractures.
 - E. Manage amputated part. Place in a water tight plastic bag and keep cool. Do not allow ice to come in direct contact with the amputated part. Freezing will destroy tissue.
 - F. Prepare for transport / transfer of care.
- II. ALS Treatment Protocol
 - A. Treat life threats. (See Policy 4000 *Life Threats*)
 - B. For pain control refer to pain management policy (Policy 5600 *Pain Management*)
 - C. Transport.
 - D. Contact Base Station as indicated.

Note:

* Hold Morphine Sulfate or Fentanyl if patient has or develops respiratory depression, bradycardia or hypotension. Narcan should be immediately available to reverse adverse effects. Contact the Base Station for additional morphine sulfate or fentanyl.



CRUSH INJURY SYNDROME

- I. BLS Treatment Protocol:
 - A. Treat life threats. (See Policy 4000 *Life Threats*).
 - B. Spinal Precautions as indicated.
 - C. Prepare for transport / transfer of care.
 - D. Consider consult with ALS level care prior to removing compression.
- II. ALS Treatment Protocol:
 - A. Treat life threats. (See Policy 4000 *Life Threats*)
 - B. For pain control refer to pain management policy (Policy 5600 *Pain Management*)
 - C. Contact Base Hospital
 - D. Prior to Release of Compression
 1. IV NS 1000 ml bolus prior to release of compression.
 2. Albuterol up to 5mg via nebulizer.
 - E. After Release of Compression
 1. If hyperkalemia is suspected (compression >4 hours with abnormal EKG-peaked "T" wave, absent "P" wave, or widened "QRS" complexes, discuss with Base Hospital physician prior to administering any of the following:
 - a) Calcium Chloride 1gm slow IVP followed by 20ml saline flush.
 - b) Sodium Bicarbonate 1mEq/kg in 1000ml NS set to wide open.

Notes:

Crush Injury Syndrome is the name given to the systemic manifestations of muscle crush injury and cell death. Crush injury syndrome should be suspected in patients with an extensive area of involvement such as a lower extremity and/or pelvis. It requires more involvement than just one hand or foot. Also, the crushing force must be present for some time before crush injury syndrome can occur. The syndrome may develop after one hour in a severe crush situation, but usually takes 4 – 6 hours of compression for the processes that cause crush injury syndrome to take place. The end goal of treatment outlined in E, F, G, and H above is to prevent the life-threatening hyperkalemia which can result when crush injuries occur.

Hold Morphine Sulfate and/or Fentanyl if patient has or develops respiratory depression, bradycardia or hypotension. Narcan should be immediately available to reverse adverse effects.



MANAGEMENT OF SIGNIFICANT EXTERNAL HEMORRHAGE

- I. BLS Treatment Protocol:
 - A. Treat life threats. (See Policy 4000 *Life Threats*).
 - B. Apply substantial direct pressure using 4x4 gauze pads, abdominal, or trauma dressings. If bleeding saturates the dressing, leave in place the dressing material that is in contact with the wound, and replace outer layers with fresh dressing. Secure with pressure dressing.
 - C. Hemorrhage to a limb:
 1. In cases where substantial bleeding to a limb cannot be controlled with direct pressure and plain gauze, apply a tourniquet 2-3 inches above the wound and tighten until bleeding stops. Assess distal circulation for absence of a pulse and bleeding control. Apply a visible tag (using two inch tape, a triage tag, etc.) and mark it with a large "T" and the time that the tourniquet was applied. Inform all subsequent care providers of the location of the tourniquet, its effectiveness and its time of application.
 2. If the initial tourniquet does not control bleeding, a second tourniquet may be applied 2-3 inches above the first, and marked accordingly.
 3. If substantial bleeding persists despite the use of direct pressure, tourniquets, and pressure dressings, consider the patient in extremis and transport to the closest, most appropriate facility.
 4. Prepare for transport/transfer of care.
 - D. Hemorrhage to the head, neck, or trunk:
 1. Large, gaping wounds to the patient's head, neck, or trunk should have pooled blood cleared out and then packed with gauze and secured as needed.
 2. Avoid bulky dressings that do not allow isolation of the actual location of the bleeding, and merely act as a blood sponge. It is possible for a patient to exsanguinate into bulky dressings applied without regard to hemostasis.
 3. If substantial bleeding persists despite the use of direct pressure and gauze, consider the patient in extremis and transport to the closest, most appropriate facility.
- II. ALS Treatment Protocol:
 - A. Treat life threats. (See Policy 4000 *Life Threats*).
 - B. Continue all BLS interventions listed above.



1. If substantial bleeding persists despite use of direct pressure, place hemostatic gauze directly on the source of the bleeding and apply direct pressure for at least 3 minutes, Secure with a pressure dressing.
- C. Triage the patient and expedite transport to the appropriate facility.
- D. Treat other injuries and complaints as needed.
- E. For pain control refer to pain management policy (Policy 5600 *Pain Management*)
- F. Transport.
- G. Contact Base Station as needed.

III. Notes:

- A. Elevating bleeding extremities or applying pressure to arteries (“pressure points”) has not been found to reduce substantial bleeding. These actions are not recommended in the treatment of significant external bleeding.
- B. Life threatening hemorrhage to a limb is better managed if it is splinted to reduce movement.
- C. Patients with major arterial bleeding can bleed to death in as little as two or three minutes. It is important to control external bleeding before the patient experiences shock.
- D. When a tourniquet is applied to an isolated wound on a patient that does not meet PAM criteria, consult with the base station hospital for direction regarding patient destination.
- E. Any patient with a tourniquet applied should be considered to have a time dependent injury, and should be transported C/3 to the appropriate hospital.
- F. Hemostatic gauze can be used prior to, or after, the use of tourniquets in managing severe limb hemorrhage.
- G. Tourniquets can be safely applied for at least 2 hours without causing irreversible, limb-threatening ischemia. In some cases, tourniquets have been applied for as long as four hours without causing irreversible limb ischemia.
- H. Most patients who require a tourniquet to manage bleeding should be transported to a trauma center.
- I. Tourniquets need to be accounted for on all patient hand-offs, and in all prehospital documentation. It is critical that the time of tourniquet application be accurately communicated to all care providers.



- J. Pressure dressings, tourniquets and hemostatic gauze should be reevaluated every time there is a change in the patient's status, or the patient is moved.



County of Santa Cruz

HEALTH SERVICES AGENCY

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EMERGENCY MEDICAL
SERVICES PROGRAM

Policy No. 7070
Reviewed 4/2009

Emergency Medical Services Program

Approved

Medical Director

Subject: **MAP TRAUMA TRIAGE**

Authority for this policy is noted in Division 2.5, California Health and Safety Code, Sections 1797.222, 1798.162, 1798.163 California Code of Regulations Section 100255

I. Purpose

To establish guidelines for evaluating trauma patients to determine the most appropriate receiving hospital.

II. Definitions

- “Major Trauma Victim” (MTV) is an individual who meets at least two (2) MAP criteria.
- “MAP” refers to the (M)echanism, (A)natomic injuries, and (P)hysiologic (vital signs) status of the patient.

III. Policy

All trauma patients will be triaged using the following trauma triage tool. After completing this evaluation, prehospital personnel will transport patients in accordance with Policy 7050, “Trauma Patient Transport and Hospital Destination.”

MAP Triage Criteria

- **(M)echanism of injury**
 - _____ Significant Impact =====>> Significant Impact Criteria:
 - _____ Gunshot Wound _____ 1. Ejection of patient from any vehicle
 - _____ Stab Type Wound _____ 2. Vehicle roll-over
 - _____ Significant Fall _____ 3. Fatality in same vehicle
 - _____ Submersion Event _____ 4. Intrusion of MV into passenger compartment
 - _____ _____ 5. Prolonged extrication
 - _____ _____ 6. Auto vs. pedestrian with significant impact
 - _____ _____ 7. Other: _____

- **(A)natomic Injury (ies)**
 - _____ Significant Penetrating Injury (head, neck, chest, trunk, pelvis, thighs)
 - _____ Significant Blunt Injury (head, neck, chest, trunk, pelvis, thighs)
 - _____ Burns =====>>=====>>=====>> Specific Burn Criteria
 - _____ Neuro Injury==>>Specific Neuro Injury _____ 1. >10% TBSA 2°/3° burns
 - _____ 1. Sensory loss _____ 2. >2% 3° burns
 - _____ 2. Motor deficit _____ 3. Evidence of respiratory burns
 - _____ 3. Paralysis _____ 4. Circumferential burns
 - _____ _____ 5. Burns that cross joints
 - _____ _____ 6. Significant electrical burns
 - _____ _____ 7. Burns involving face, hands, feet, perineum

- **(P)hysiologic Criteria**
 - _____ Altered level of consciousness (at time of evaluation)
 - _____ Respiratory distress
 - _____ Inadequate perfusion

- **Other Criteria For Determining Patient Destination**
 - _____ Base Hospital Physician Judgment (may choose a local or regional destination regardless of MAP hits)
 - _____ Patient “In-extremis” (transport to closest facility)
 - _____ Co-morbidities (the following criteria may be used to increase the index of suspicion that a patient has significant injuries):
 - _____>> _____ 1. Pediatric patients
 - _____ 2. Elderly patients
 - _____ 3. 2nd/3rd trimester pregnancy
 - _____ 4. Significant environmental exposure
 - _____ 5. Significant pre-existing medical problems
 - _____ 6. Inability to adequately assess patient due to:
 - developmental impairment
 - patient compliance
 - communication barriers
 - drug or alcohol intoxication

Emergency Medical Services Program

Approved



Medical Director

Subject: ADULT DRUG LIST

Name	Indication	Dose & Route	Max Dose
Adenosine	Narrow Tachycardia	6 mg 1 st dose, 12 mg subsequent doses Rapid IVP/ IO	30 mg
Albuterol	Bronchoconstriction/ Wheezing	5 mg via Nebulizer	As Needed HR<160
Aspirin	Chest Pain of Cardiac Origin	162 mg PO	162 mg
Atropine Sulfate	Cardiac Arrest Symptomatic Bradycardia Organophosphate poisoning	1 mg IVP/ IO 1 mg IVP/ IO 2 mg IVP/ IO	3 mg 3 mg As Needed
Calcium Chloride Solution	Crush Injury	10 ml (10%) Slow IVP/ IO	10 ml (1 gm)
Dextrose 50%	Hypoglycemia	25 grams IVP/ IO	50 grams
Diphenhydramine (Benadryl)	Allergic Reaction Dystonic Reaction	1 mg/ kg IVP/ IM 1 mg/ kg IVP/ IM	50 mg 50 mg
Epinephrine	Anaphylactic Shock Cardiac Arrest Severe Allergic Reaction Severe Bronchospasm	0.1-0.5 mg IVP/ IO (1:10,000) 1 mg IVP/ IO (1:10,000) 0.3 mg IM (1:1,000) 0.3 mg IM (1:1,000)	Base MD None As Needed 0.3 mg
Dopamine	Persistent Hypotension	5-10 mcg/kg/min	5-20 mcg/kg/min
Glucagon	Hypoglycemia Calcium Channel Blocker OD	1 unit (1 mg) IM 1 unit (1 mg) IVP/ IM/ IO	2 mg 2 mg
Glucose Paste	Hypoglycemia	As Needed PO	As Needed
Lidocaine	V Fib, Pulseless V Tach Wide Complex V Tach	1 mg/kg IVP/ IO 1 mg/kg IVP/ IO	3 mg/kg 3 mg/kg

Lidocaine Drip	Symptomatic PVC's IO Anesthesia Post Bolus as indicated	1 mg/kg IVP may repeat 0.5 mg/kg 40 mg IO 2-4 mg/min IV	3 mg/kg 40 mg 4 mg/min
Midazolam (Versed)	Sedation for Cardioversion Seizures Airway Management Chemical Restraint	0.2 mg/kg IM or 0.1 mg/kg IVP/ IO 0.2 mg/kg IM or 0.1 mg/kg IVP/ IO 0.2 mg/kg IM or 0.1 mg/kg IVP/ IO 0.2 mg/kg IM or 0.1 mg/kg IVP/ IO	10 mg/ 5 mg 10 mg/ 5 mg 10 mg/ 5 mg Base MD
Morphine Sulfate	Cardiac Chest Pain Non Traumatic Pain IO Fluid Administration Extremity Trauma/ Burns Snake Bite	2-5 mg SLOW IVP 2-5 mg SLOW IVP 2-5 mg SLOW IO 2-5 mg SLOW IVP/ IM 2-5 mg SLOW IVP/ IM	5 mg 5 mg 5 mg 10 mg 10 mg
Narcan (Naloxone)	Narcotic Overdose	2 mg IVP/ IN/ IM/ IO	As Needed
Nitroglycerine Spray Nitroglycerine Paste	Cardiac Chest Pain & Pulmonary Edema	0.4 mg SL 1 Inch	As Needed 1 Application
Pitocin	Post Partum Hemorrhage	20 units in 1000cc NS IVP/ IO 10 units IM when no IV	20 units 10 units
Sodium Bicarbonate	Cyclic Antidepressant OD	1 mEq/kg IVP	1 mEq/kg

DOPAMINE DOSAGE CHART- For Concentration 400 mg in 250 cc (1600 mcg/cc)

Find pt weight at top, move down to proper dosage that pt is to receive, move to left for corresponding drip rate

Drip Rate	Lbs.	88	99	110	121	132	143	154	165	176	187	198	209	220	231	242
Gtts/min	Kgs.	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110
5		3.4	2.9	2.6	2.4	2.2	2.0	1.9	1.8	1.6	1.55	1.5	1.4	1.4	1.25	1.2
10		6.7	5.9	5.3	4.9	4.5	4.1	3.8	3.6	3.3	3.1	3.0	2.8	2.7	2.5	2.4
15		10.0	8.9	8.0	7.3	6.6	6.1	5.7	5.3	5.0	4.7	4.4	4.2	4.0	3.8	3.6
20		13.3	11.8	10.7	9.7	8.9	8.2	7.6	7.1	6.7	6.3	5.9	5.6	5.3	5.1	4.9
25		16.6	14.8	13.4	12.1	11.1	10.2	9.5	8.9	8.4	7.8	7.4	7.0	6.6	6.3	6.0
30		20.0	17.8	16.0	14.6	13.3	12.3	11.4	10.7	10.0	9.4	8.9	8.4	8.0	7.6	7.3
35		23.3	20.7	18.6	17.0	15.5	14.3	13.3	12.4	11.6	11.0	10.3	9.8	9.3	8.9	8.5
40		26.7	23.7	21.3	19.4	17.8	16.4	15.2	14.2	13.3	12.6	11.9	11.2	10.7	10.2	9.7
45		30.0	26.6	24.0	21.8	20.0	18.4	17.1	16.0	15.0	14.1	13.3	12.6	12.0	11.4	10.9
50		33.3	29.6	26.7	24.2	22.2	20.5	19.0	17.8	16.7	15.7	14.8	14.0	13.3	12.7	12.1
55		36.6	32.6	29.3	26.6	24.4	22.5	20.9	19.5	18.3	17.2	16.3	15.4	14.6	13.9	13.3
60		40.0	35.6	32.0	29.1	26.7	24.6	22.9	21.3	20.0	18.8	17.8	16.8	16.0	15.2	14.6
70		46.7	41.5	37.3	34.0	31.1	28.7	26.7	24.9	23.3	22.0	20.7	19.6	18.7	17.8	17.0
80		53.3	47.4	42.7	38.8	35.6	32.8	30.5	28.4	26.7	25.1	23.7	22.5	21.3	20.3	19.4
90		60.0	53.3	48.0	43.6	40.0	36.9	34.3	32.0	30.0	28.2	26.7	25.3	24.0	22.9	21.8
100		66.7	59.3	53.3	44.5	41.0	41.0	38.1	35.6	33.3	31.4	29.6	28.1	26.7	25.4	24.3

mcg/kg/min