



# 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-P  
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 two leads\*  
Epinephrine 0.01mg/kg 1:10,000 IV/ IO (0.1ml/kg)  
Repeat Epinephrine every 3-5 minutes (regardless of route).
- C. Check blood sugar.
- 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.
- E. When transporting, contact receiving hospital as soon as possible.
- F. 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.

Notes:

- Be aware that what may appear to be asystole may be fine ventricular fibrillation which may respond to countershock. Therefore, check alternate leads and consider countershock @ 2 joules /kg.
- Certain patients in asystole are more likely candidates for transport – for example, patients who are hypothermic, drug overdoses, or who have been electrocuted.
- Cardiac arrest in known dialysis patients: paramedics may administer sodium bicarbonate 1 mEq/kg IV/IO along with calcium chloride 20 mg/kg IV/IO to those patients currently receiving dialysis in order to treat possible hyperkalemia.



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EMERGENCY MEDICAL  
SERVICES PROGRAM

Protocol No. C2-P  
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
  - Toxins/Tablets (Drug OD)
  - Trauma
  - Hypoglycemia
- C. Epinephrine 0.01mg/kg 1:10,000 IV/ IO (0.1ml/kg)  
Repeat Epinephrine every 3-5 minutes (regardless of route).
- 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.
- E. When transporting, contact the receiving hospital as soon as possible.
- F. 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 CO<sub>2</sub> 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.

**Note:**

- Cardiac arrest in known dialysis patients: paramedics may administer sodium bicarbonate 1 mEq/kg IV/IO along with calcium chloride 20 mg/kg IV/IO to those patients currently receiving dialysis in order to treat possible hyperkalemia.
- Certain patients in PEA are more likely candidates for transport – for example, patients who are hypothermic, drug overdoses, or who have been electrocuted.



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EMERGENCY MEDICAL  
SERVICES PROGRAM

Protocol No. C3-P  
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 witnessed 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 at 2J/kg.
- C. Epinephrine 0.01mg/kg 1:10,000 IV/IO (0.1 ml/kg)1mg IVP/IO.
- D. Defibrillate at 4J/kg.
- E. Lidocaine 1mg/kg IV/IO. Continue Lidocaine dose maximum 3mg/kg total infused.
- F. Continue to defibrillate at 4J/kg every two minutes.
- 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.
- I. If a return of spontaneous circulation (ROSC) is achieved, paramedics should follow the following 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 concentration 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. Avoid 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.

Notes:

- Certain patients in ventricular fibrillation are more likely candidates for transport – for example, patients who are hypothermic, drug overdoses, or who have been electrocuted.
- Cardiac arrest in known dialysis patients: paramedics may administer sodium bicarbonate 1 mEq/kg IV/IO along with calcium chloride 20 mg/kg IV/IO to those patients currently receiving dialysis in order to treat possible hyperkalemia.



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EMERGENCY MEDICAL  
SERVICES PROGRAM

Protocol No. C4-P  
April 1, 2012

### Emergency Medical Services Program

Approved

Medical Director

Subject: TACHYCARDIA >220 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 >220
- C. Consider 12-lead-ECG. Transmit as needed for treatment guidance.
- D. **Stable (*Adequate perfusion, no altered mental status*)**

1. Transport.
2. Contact Base Station.

**E. Unstable (*Inadequate perfusion*)**

1. If patient is unstable but **conscious with narrow complex**
  - a) Consider Adenosine:
    - 1<sup>st</sup> dose: Adenosine rapid 0.1mg/kg IV/IO (max 6 mg);  
if no change after 1-2 minutes
    - 2<sup>nd</sup> dose: Adenosine rapid 0.2mg/kg IV/IO (max 12 mg);  
if no change after 1-2 minutes
    - 3<sup>rd</sup> dose Adenosine rapid 0.2mg/kg IV/IO (max 12 mg);  
(Maximum single dose: 12mg)
  - b) Transport
  - c) 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 1J/kg; if no change 2J/kg; if no change 2J/kg;
  - d) Transport

- e) Contact Base Station
  - f) Consider Lidocaine 1mg/kg IVP/IO
3. If patient is unstable and **unconscious with wide or narrow complex** \*\*:
- a) Synchronized cardioversion 1J/kg; if no change 2J/kg; if no change 2J/kg;
  - b) Transport
  - c) Contact Base Station
  - d) Consider Lidocaine 1mg/kg IVP/IO

**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. C7-P  
Reviewed 04/01/2010

### Emergency Medical Services Program

Approved

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. **Pulse less than 60 bpm & asymptomatic:**
  1. Treat life threats (See Policy 4000)
  2. Transport.
  3. Consider 12-Lead –ECG. Transmit as needed for treatment guidance.
  4. Contact Base Station.
- B. **Pulse Less Than 60 bpm, and symptomatic** (delayed capillary refill, diminished distal pulses, cool extremities, or altered level of consciousness):
  1. Treat life threats (See Policy 4000)
  2. Consider CPR
  3. Transport
  4. Epinephrine 0.01mg/kg 1:10,000 IV/IO (0.1 ml/kg)  
Repeat Epinephrine every 3-5 minutes.\*
  5. Atropine 0.02 mg/kg IV/IO (minimum dose 0.1 mg or 1 ml,  
maximum total dose 1 mg or 10 ml.
  6. Consider Emergency Transcutaneous Pacing **with Base Station Physician Approval**. *See Procedure 6000*. For patients *in extremis*, Base Station Physician approval is not necessary.
  7. Consider 12-Lead-ECG. Transmit as needed for treatment guidance.

\*Newborns: 0-30 days of age **only** receive Epi 1:10,000, regardless of route and subsequent doses. Start with 1:10,000 and stay with 1:10,000 throughout call.



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EMERGENCY MEDICAL  
SERVICES PROGRAM

Protocol No. C8-P  
Reviewed 4/1/2013

### Emergency Medical Services Program

Approved

Medical Director

Subject: NEONATAL RESUSCITATION

Neonates are defined as newborn infants up to 30 days old or less

#### I. BLS Treatment Protocol:

- A. Suction/Dry/Stimulate/Warm
- B. Evaluate breathing and heart rate – If not breathing adequately, **or** if heart rate is less than 100 bpm, begin bagging with neonatal BVM.
- C. If heart rate is less than 60 bpm, begin compressions.
- D. Evaluate color
- E. APGAR score is assigned at one and five minutes, as circumstances allow (do not delay critical care treatment to score)

#### RESUSCITATIVE ACTIONS **IF HEART RATE IS ABOVE 100 BPM**

- A. Monitor breathing, ventilate with neonatal BVM @ 100 % O<sub>2</sub> if respirations are weak or absent
- B. Administer O<sub>2</sub> @ 100% if lips are blue via BLOW BY oxygen (even if patient has adequate spontaneous respirations)
- C. Prepare for transport/transfer of care
- D. Keep as warm as possible throughout resuscitation.

#### **IF HEART RATE IS BETWEEN 60-100 BPM**

- A. Ventilate with neonatal BVM @ 100% O<sub>2</sub> if respirations are weak or absent
- B. Administer O<sub>2</sub> @ 100% if lips are blue via BLOW BY oxygen (even if patient has adequate spontaneous respirations)
- C. Prepare for transport/ transfer of care.
- D. Keep as warm as possible throughout resuscitation.

**IF HEART RATE IS LESS THAN 60 BPM**

- A. CPR (when heart rate >100 and spontaneous respirations return, discontinue compressions but continue to provide supplemental O<sub>2</sub>).
- B. Prepare for transport/ transfer of care
- C. Keep as warm as possible throughout resuscitation.

**II. ALS Treatment Protocol:**

**IF HEART RATE IS LESS THAN 60 BPM**

- A. Advanced airway management, if ETT confirm with pediatric end-tidal CO<sub>2</sub> detector.
- B. Cardiac monitor.
- C. IV NS bolus 10cc/kg
- D. Administer Epinephrine 0.01mg/kg (0.1ml/kg) 1:10,000 IV/IO. May repeat every 3-5 minutes.
- E. Transport.
- F. Consider Heel Stick Blood Glucose. If BG<70mg/dl give Dextrose 10% 5ml/kg IV/IO.
- G. Contact Base Station.
- H. Keep as warm as possible throughout resuscitation.



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EMERGENCY MEDICAL  
SERVICES PROGRAM

Protocol No. E1-P  
Reviewed 01/07

### Emergency Medical Services Program

Approved

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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. If symptomatic hypotension, IV NS 20ml/kg. Repeat as needed to maintain perfusion.
4. Contact Base Station.

**B. Heat Stroke:\*\***

1. Treat life threats. (See Policy 4000)
2. Start aggressive cooling measures.
3. Transport.
4. If symptomatic hypotension, IV/IO NS 20ml/kg. Repeat as needed to maintain perfusion.
5. 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:** Patients most susceptible are infants exposed to hot environments and 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-P  
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 external warming measures, unless patient is pulseless.
- C. IV/IO NS 20ml/kg bolus (PRE-WARMED)
- D. Transport.
- E. 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, susceptible to ventricular fibrillation.

**\*\*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.**

**Avoid external rewarming for pulseless patients.**



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EMERGENCY MEDICAL  
SERVICES PROGRAM

Protocol No. E3-P  
Reviewed 01/07

### Emergency Medical Services Program

Approved

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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. Respiratory Distress Syndrome (RDS) and pneumonia can both occur following the inhalation of water into the lungs. Make every effort to have even stable appearing patients transported to the hospital for evaluation over time.



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EMERGENCY MEDICAL  
SERVICES PROGRAM

Protocol No. E4-P  
Reviewed 4/2009

### Emergency Medical Services Program

Approved

Medical Director

Subject: 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) Use humidified O2 source when indicated.
- D. Identify extent of burn. Use rule of nines. Refer to MAP criteria 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:  
Albuterol 2.5mg via nebulizer, may repeat X3 q10 minutes. If heart rate >180 bpm withhold treatment and contact Base Station.
- C. To relieve pain, Morphine Sulfate 0.1mg/kg IV/IM/IO (no more than 5mg per dose) to a total of 10mg. Contact Base Station for additional doses. (See Notes)
- D. Transport. Consider direct transport to the Santa Clara Valley Medical Burn Center.
- E. Contact Base Station as needed.

Notes:

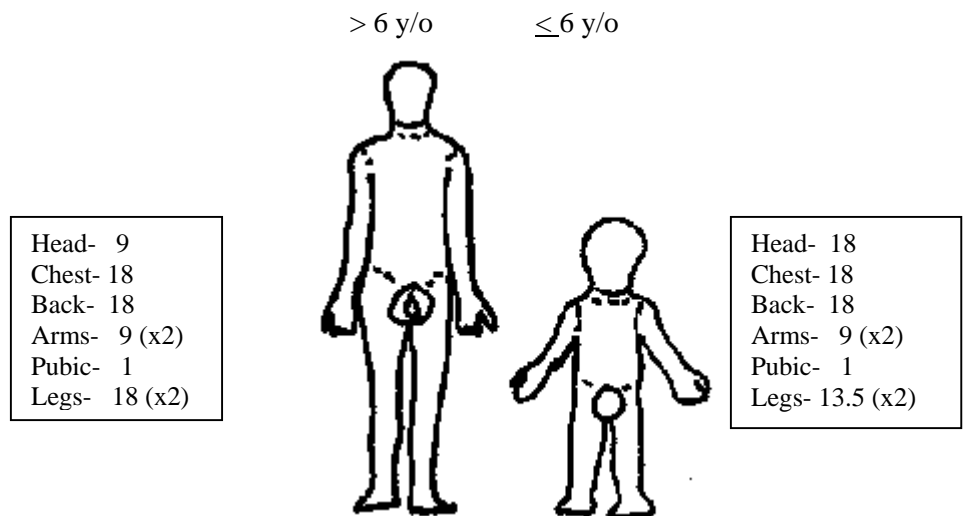
- **Hold MS if patient has or develops respiratory depression, bradycardia or hypotension. Narcan should be immediately available to reverse adverse effects.**

- 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 the SCVMC 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

**Rule of Nines:**







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EMERGENCY MEDICAL  
SERVICES PROGRAM

Protocol No. E5-P  
Reviewed 01/07

### Emergency Medical Services Program

Approved

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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 0.1mg/kg up to 5mg IV/IM/IO.\* Contact Base Station for additional doses.
- D. Contact Base Station.

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

#### Notes:

- Do not incise envenomations.
- Exotic poisonous snakes, such as those in zoos or pet stores, have different signs and symptoms than those of pit vipers. Zoos and legal exotic snake collectors are required to have a starter supply of antivenin on hand for each type of snake in their collection. 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



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EMERGENCY MEDICAL  
SERVICES PROGRAM

Protocol No. M1-P  
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.

**II. ALS Treatment Protocol:**

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

**III. SPECIFIC POISONING GUIDELINES:**

- A. Organophosphates:
  - 1. Atropine 0.05 mg/kg (Never administer less than 0.1mg due to paradoxical bradycardia effect).
  - 2. For seizure refer to N2-P
- B. Ingestions:
  - 1. Do not induce vomiting
- C. Cyclic Anti-depressants:
  - 1. Sodium Bicarbonate 1mEq/kg IV/IO (only) for widening QRS, hypotension, seizure, tachycardia, or heart block
- D. Dystonic Reactions (EPS):
  - 1. Benadryl 1mg/kg IV/IM/IO (maximum dose 50mg.)
- E. Beta Blocker or Calcium Channel Blocker
  - 1. If symptomatic hypotension or sinus arrest, administer NS 20ml/kg bolus.
  - 2. If no response to fluid bolus, administer Glucagon:
    - \* If child is under 1 year of age, Glucagon is not used. Contact Base Station\*
    - If child < 20kg give 0.5 unit (= 0.5mg) IV/IM/IO.
    - If child > 20kg give 1unit (= 1 mg) IV/IM/IO

**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-P  
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. Transport.
  3. 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. Transport.
  3. Epinephrine 0.01 mg/kg of 1:1000 IM. May repeat x2, to a maximum of 0.3 ml.
  4. Benadryl 1mg/kg IM/IV/IO to a maximum of 50 mg.
  5. If symptomatic hypotension, administer 20 cc/kg fluid bolus.
  6. If Bronchospasm or wheezes are present:  
Albuterol 2.5mg via nebulizer, may repeat X3 q 10 minutes. If heart rate > 180 bpm withhold treatment and contact Base Station.
  7. Contact Base Station for further orders.
  8. In cases of anaphylactic shock: Epinephrine 0.01 mg/kg slow IVP/IO at no more than 0.1mg/minute. Use epinephrine 1:10,000 only. **This order is by Base Station MD only.**

Note: 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.



# County of Santa Cruz

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## HEALTH SERVICES AGENCY

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EMERGENCY MEDICAL  
SERVICES PROGRAM

Protocol No. M3-P

Reviewed 01/07

### Emergency Medical Services Program

Approved

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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.



# County of Santa Cruz

## HEALTH SERVICES AGENCY

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EMERGENCY MEDICAL  
SERVICES PROGRAM

**Protocol No. M4-P**  
**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.<sup>1</sup>
- 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.<sup>1</sup>
- D. Ondansetron 0.1 mg/kg IV/IO/IM to a total of 4 mg, two years of age or more, or Orally Disintegrating Tablet (ODT) as follows:
  - 2 – 3 years of age – 2 mg ODT
  - 4 years and up – 4 mg ODT
- E. For patients > 40 kg, may repeat to a total of 8 mg IV/IO/IM/ODT.
- F. Transport.
- G. 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.

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

## Zofran (Ondansetron)

- Class:** Antiemetic (serotonin 5-HT<sub>3</sub> 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 ODT.
  - Patients with allergies to ondansetron, or other 5-HT<sub>3</sub> antagonists such as Granisetron
  - Patients with Long QT Syndrome, and for those taking Amiodarone, Methadone, Procainamide, Serequel, or Haldol.
- 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

# AMIODARONE

- Class-** Antidysrhythmic
- Action-** Prolongs refractory period, Blocks Na<sup>+</sup>, Ca<sup>++</sup> channels  
Alpha & Beta (adrenergic) blocker.
- Indication-** Rapid ventricular rate in atrial arrhythmias (refractory PSVT, atrial tach, atrial fib), VF/ pulseless VT, Stable VT.
- Dose/ Route-**
  - Stable VT: 150mg over 10 min MR q 10 min followed by 1mg/ min infusion.
  - VF / Pulseless VT: 300mg rapid IVP MR 150mg in 3-5 min.
- Peds Dose-**
  - SVT / Stable VT: 5mg/kg over 20min.
  - VF / Pulseless VT: 5mg/kg IV / IO.
- Contra-** Hypersensitivity to the drug  
2<sup>nd</sup> & 3<sup>rd</sup> degree heart blocks  
Bradycardia
- Adverse-  
Effects**
  - CV= bradycardia, hypotension, negative inotropy
  - RESP= pulmonary toxicity (pneumonitis, aveolitis)
  - SKIN= photosensitivity
- Precautions-**
  - Monitor EKG & VS
  - Slow or stop infusion if significant hypotension or bradycardia occurs
  - Ca channel blockers & beta blockers may potentiate sinus bradycardia, sinus arrest or AV block.
- Supplied-** 50mg/ml





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EMERGENCY MEDICAL  
SERVICES PROGRAM

**Prot. No. M6-P**  
**Reviewed 7-2014**

### **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. Less than 10 years. \*Less than 3 months of age very high risk
  2. Hx of diabetes
  3. Recent hospitalization
  4. Recent surgery or invasive procedure
  5. Hx of cancer, kidney disease, malnutrition, alcoholism, other immune compromising diseases
- C. Any child with a fever and age under 3 months should be considered septic until proven otherwise
- D. Suspect sepsis in patients with any **two of the following VS and a suspected or confirmed infection (see D):**
  1. Heart rate:
    - Newborns >200
    - Infants >170
    - Toddlers & School Aged (up to 18 yrs.) >130
  2. Respiratory rate:
    - Newborns >60
    - Infants >40
    - Toddlers & School Aged (up to 18 yrs.) >25
  3. Temperature >100.4 or < 96.0
- E. 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
  6. Current infection diagnosis.
- F. 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 > 140mg/dl in a non-diabetic patient may be a sign of sepsis. Less commonly, hypoglycemia can occur with overwhelming sepsis. Treat per Protocol N1-P.
  - 2. Check ETCO<sub>2</sub>. ETCO<sub>2</sub> ≤25mmHg is associated with sepsis.
- C. Transport
- D. Maintain SAO<sub>2</sub> 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 three (3) 20ml/kg boluses of NS, reevaluating patient between boluses. Further fluid should be administered only after obtaining a Base Hospital Physician order.
- F. Administer fluid cautiously in patients with congenital heart disease. Administer in 10ml/kg boluses, repeating as indicated as long as the patient shows no signs of fluid overload (bulging fontanel, 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

**Protocol No. N1-P**  
**Reviewed 4/1/2013**

### **Emergency Medical Services Program**

Approved

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. Unconscious/unable to take oral dextrose, Dextrose 10% 5 ml/kg up to 250 ml IV. Titrate to level of consciousness. Recheck patency of IV line frequently. 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% 5 ml/kg up to 250 ml.
- E. If no IV can be established and patient presents with altered mentation, give Glucagon if greater than 30 days old:
  - If child < 20kg, give 0.5 unit (=0.5mg) IM
  - If child > 20kg give 1 unit (=1mg) IM
- F. Administer Narcan 0.01mg IVP/IM/IN with a minimum of 0.1 mg to a maximum of 0.5 mg total first dose IV/IN/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 dosing.
- G. Transport.
- H. Repeat BG Chem, treat as needed.
- 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 hypoglycemia patients is strongly urged in those patients 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-P  
Reviewed 01/07

### Emergency Medical Services Program

Approved

\_\_\_\_\_  
Medical Director

Subject: SEIZURES

**I. BLS Treatment Protocol:**

- A. Treat life threats. (See Policy 4000). Consider cooling measures if febrile (loosen/remove excess clothing/blankets).
- 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 dl/ml proceed with Dextrose.
- C. If persistent seizures, administer Versed 0.1 mg/kg IV/IO to a maximum of 3mg total, or 0.2mg/kg IM to a maximum of 3mg total. \*
- 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. R1-P**  
**Updated April 15, 2014**

### **Emergency Medical Services Program**

Approved

Medical Director

**Subject: Respiratory Distress Without Wheezes**

#### **I. BLS Treatment Protocol:**

- A. Treat life threats. (See Policy 4000)
- B. Consider CPAP. (See Policy 5800)
- C. Keep patient upright or in position of comfort.
- D. Keep patient and family calm.
- E. Remember to keep the child in the lap of a caregiver whenever possible on scene. This will keep the child more calm, help to prevent further worsening of symptoms, and allow for better evaluation of the child's respiratory status.
- F. Prepare for transport/ transfer of care.

#### **II. ALS Treatment Protocol:**

- A. Treat life threats. (See Policy 4000)
- B. Observe respirations, auscultate lung fields, listen for "croupy cough" and/or wheezes. If wheezes are present, proceed to "Respiratory Distress With Wheezes" (R2-P) protocol.
- C. If child presents with symptoms consistent with croup (history of upper respiratory infection, fever, "seal bark" cough, or stridor) consider blow by nebulized NS to cool inflamed subglottic tissues.
- D. Consider CPAP
- E. Transport.
- F. Contact Base Station.

#### **Notes:**

- An increased work of breathing - typified by retractions, grunting, head bobbing and nasal flaring is the most specific indicator of respiratory distress.
- Fatigue is the most specific indicator for impending respiratory failure.
- Respiratory failure is the number one cause of pediatric cardiac arrest. Bradycardia is almost always caused by hypoxia in children and is a ominous and late finding.
- **CPAP** is authorized for use **only** in patients that are 8 years and older.



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EMERGENCY MEDICAL  
SERVICES PROGRAM

**Protocol No. R2-P**  
**Updated April 15, 2014**

### **Emergency Medical Services Program**

Approved

Medical Director

Subject: **RESPIRATORY DISTRESS WITH WHEEZES**

#### **I. BLS Treatment Protocol:**

- A. Treat life threats. (See Policy 4000).
- B. Consider CPAP. (See Policy 5800).
- C. Keep patient upright or in position of comfort.
- D. Keep patient and family calm.
- E. Prepare for transport / transfer of care.

#### **II. ALS Treatment Protocol:**

**MILD DISTRESS** (no accessory muscle use, able to speak without difficulty, skin pink, warm, dry)

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

**MODERATE DISTRESS** (tachypneic, able to speak 4-5 words, no retractions)

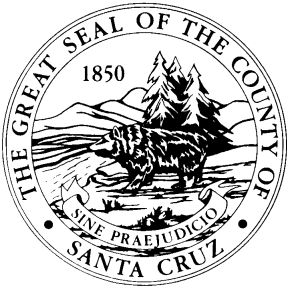
- A. Treat life threats. (See Policy 4000)
- B. Transport.
- C. Albuterol 2.5 mg via nebulizer, may repeat x3 q 10 minutes.  
If heart rate > 180 BPM, withhold treatment and contact Base Station
- D. Consider CPAP.
- E. Contact Base Station.

**SEVERE DISTRESS** (status 4 or 5, accessory muscle use, retractions, able to speak only 1-2 words, tachypneic, cyanotic)

- A. Treat life threats. (See Policy 4000)
- B. Transport.
- C. Albuterol 2.5 mg via nebulizer, may repeat x3 q 10 minutes.  
If heart rate > 180 BPM, withhold treatment and contact Base Station
- D. Epinephrine 0.01 mg/kg of 1:1000 IM. May repeat dose x2, to a maximum of 0.3ml total.
- E. Consider CPAP
- F. **Contact Base if severe distress continues.**

**Notes:** CPAP is authorized for use only in patients that are 8 years and older.





# County of Santa Cruz

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EMERGENCY MEDICAL  
SERVICES PROGRAM

Protocol No. S1-P  
Reviewed 01/07

### Emergency Medical Services Program

Approved

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Medical Director

Subject: SUDDEN INFANT DEATH SYNDROME (SIDS)

**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. Refer to appropriate protocol/s as needed.
- C. Transport.
- D. Contact Base Station.

**Notes: BLS & ALS**

- In the event that rigor mortis/dependent lividity is present resuscitation is not appropriate.
- Treat as a crime scene and limit movement of the infant and disturbance of the scene.
- Appropriate law enforcement personnel shall be notified and a Fire/EMS representative shall stay on scene until law enforcement arrives and assumes scene control.
- In cases where transport occurs law enforcement must be notified.
- Consult with the Base Hospital for appropriate family referrals as needed.
- All cases of suspected child abuse must be reported.
- Save clothing and diapers for possible law enforcement investigation.



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EMERGENCY MEDICAL  
SERVICES PROGRAM

**Protocol No. S2-P**  
**Reviewed 01/07**

### **Emergency Medical Services Program**

Approved

\_\_\_\_\_  
Medical Director

Subject: **APPARENT LIFE-THREATENING EVENT (ALTE)**

**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. Refer to appropriate protocol/s as needed.
- C. Transport.
- D. Contact Base Station.

**Notes: BLS & ALS**

- An Apparent Life threatening Event (ALTE) was formally known as a “near miss-SIDS” episode.
- An ALTE is an episode that is frightening to the observer (may think infant has died) and involves some combination of:
  1. apnea
  2. color change
  3. marked change in muscle tone (limpness, loss of tone)
  4. choking or gagging.
- Usually occurs in infants <12 months old. However, any child <2 years who exhibits symptoms of apnea may be considered an ALTE.
- 50% have a possible identifiable etiology (e.g. abuse, SIDS, swallowing dysfunction, infection, bronchitis, seizures, CNS anomalies, tumors, cardiac disease, chronic respiratory disease, upper airway obstruction, metabolic abnormalities, anemia, etc.)
- Gather accurate history of the episode, including severity, duration, provocation, as well as an accurate patient history.
- **If the parent or guardian refuses medical care/transport, Base Station MD contact is mandatory prior to completing a refusal of medical care.**



## PEDIATRIC 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 1- 2 - 3 hit PAM 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 watertight 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.



## 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.





APPROX AGE	Neonate	3 mo	6 mo	1 yr	3 yr	6 yr	10 yr
WEIGHT IN KG	3	5	7	10	15	20	30
<b>LIDOCAINE 2% (INITIAL DOSE)</b> (1 mg/kg) 0.05 ml/kg	3 mg 0.15 cc	5 mg 0.25 cc	7 mg 0.35 cc	10 mg 0.5 cc	15 mg 0.75 cc	20 mg 1.0 cc	30 mg 1.5 cc
<b>LIDOCAINE 2% (IO Anesthesia)</b> (0.5 mg/kg) 0.025 ml/kg	1.5 mg 0.075 cc	2.5mg 0.125 cc	3.5 mg 0.175 cc	5 mg 0.25 cc	7.5 mg 0.375 cc	10 mg 0.5 cc	15mg 0.75 cc
<b>MORPHINE IV/IO/IM</b> (0.1 mg/kg) 0.01 ml/kg	0.3 mg 0.03 cc	0.5 mg 0.05 cc	0.7 mg 0.07 cc	1 mg 0.1 cc	1.5 mg 0.15 cc	2 mg 0.2 cc	3 mg 0.3 cc
<b>NARCAN</b> (0.1 mg/kg) 0.1 ml/kg	<b>Not Used</b>	0.5 mg 0.5 cc	0.7 mg 0.7 cc	1 mg 1 cc	1.5 mg 1.5 cc	2 mg 2 cc	2 mg 2 cc
<b>MIDAZOLAM IM Only</b> (0.2 mg/kg) (0.04 ml/kg)	0.6 mg 0.12 cc	1 mg 0.2 cc	1.4 mg 0.28 cc	2 mg 0.4 cc	3 mg 0.6 cc	3 mg 0.6 cc	3 mg 0.6 cc
<b>SODIUM BICARBONATE 8.4%</b> 1 mEq/kg (1ml/kg)	3 mEq 3 cc	5 mEq 5 cc	7 mEq 7 cc	10 mEq 10 cc	15 mEq 15 cc	20 mEq 20 cc	30 mEq 30 cc

### DEFIBRILLATION, CARIOVERSION and FLUID RESUSCITATION

APPROXIMATE AGE	Neonate	3 mo	6 mo	1 yr	3 yr	6 yr	10 yr
WEIGHT IN KG	3	5	7	10	15	20	30
<b>DEFIBRILLATION ENERGY</b> 2J/Kg - MR @ 4 J/Kg	6 J 12 J	10 J 20 J	14 J 28 J	20 J 40 J	30 J 60 J	40 J 80 J	60 J 120 J
<b>SYNCHRONIZED CARIOVERSION</b> 1J/Kg - MR @ 2 J/Kg	3 J 6 J	5 J 10 J	7 J 14 J	10 J 20 J	15 J 30 J	20 J 40 J	30 J 60 J
<b>IV FLUID CHALLENGE</b> 20 cc/kg *10 cc/kg in neonates	*30cc	100cc	140cc	200cc	300cc	400cc	600cc

Volume amounts are calculated based on medication concentrations carried on local paramedic units.

Other preparations may vary the volume amount.