



# County of Santa Cruz

## HEALTH SERVICES AGENCY

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EMERGENCY MEDICAL  
SERVICES PROGRAM

**Policy No. 4000**  
**Rev. April 15, 2014**

### **Emergency Medical Services Program**

Approved

Medical Director

Subject: **LIFE THREATS**

#### **I. Purpose:**

The purpose of this policy is to outline the steps EMTs & paramedics will take to manage possible life threats in any child or adult patient they encounter. This policy is in effect for all treatment protocols & is to be referred to when "Treat Life Threats" appears in each document.

#### **II. Scope of Practice**

The interventions listed in this Policy will only be enacted by providers licensed & certified to perform those procedures.

#### **III. Managing Life Threats**

A. Airway Management - EMTs & paramedics will use the least invasive airway adjunct to secure a patient's airway. The goal is airway patency. To this end, EMTs & paramedics may perform the following interventions:

- ◆ Position the patient to maintain optimum air exchange.
  1. Patients with depressed mentation or decreased gag reflex should be placed in left lateral position.
  2. Patients in need of airway procedures or ventilatory support may require Fowler's, semi-Fowler's or supine position.
- ◆ Open the airway – head tilt/chin lift
  1. If spinal injury suspected, use modified jaw thrust.
- ◆ Insert an OPA/NPA as indicated. The NPA is contraindicated in patients with possible intracranial head injuries & neonates.
- ◆ Suction as needed utilizing a stiff tip or French tip suction device.
- ◆ Utilize BLS methods (abdominal thrusts/Heimlich maneuver) to relieve choking in conscious adults & children >1 year in age. In unconscious adults & children >1 year in age start CPR.
- ◆ Conscious airway obstructed infants <1 year of age use back blows/chest thrust. If unconscious, start CPR. No blind finger sweeps, only sweep if able to visualize object. Do not use abdominal thrusts to relieve choking in infants.

- ◆ Utilize direct laryngoscopy/MaGill forceps to further evaluate airway & remove FBAO (paramedics only).
- ◆ Utilize Versed, as indicated in Policy #5000, to assist with establishing & maintaining an airway (paramedics only).
- ◆ Insert an ETT or King Laryngeal Tube as indicated. Nasotracheal intubation is prohibited.

B. Breathing Management - Secure adequate ventilation using the least invasive airway adjunct necessary. EMTs & paramedics may perform the following interventions:

- ◆ Assist patient into position (Fowler's, left lateral, supine, etc.) as needed to support adequate ventilations.
- ◆ Oxygen therapy
  1. Administer O2 at rate appropriate to patient's condition. All patients should receive O2 based on overall clinical condition & complaint, regardless of O2 saturation reading.
  2. If there is a history of COPD, observe for respiratory fatigue/depression & assist ventilations as needed. Never withhold O2 from a patient in distress because of COPD history. Begin at 2 lpm and increase as needed.
  3. Patients presenting with signs & symptoms of pulmonary edema, or other severe respiratory distress should have O2 administered at 15-25 liters/minute via non-rebreather mask.
  4. Patients exposed to carbon monoxide should be treated similarly with high flow O2 administered continuously.
- ◆ Continuous Positive Airway Pressure (CPAP) Administration Per Policy# 5800.
- ◆ Assist Ventilations
  1. Assist ventilations with BVM as indicated. Providers may insert an ETT, King Laryngeal Tube, or trans-tracheal jet insufflation (Policy #5200) to achieve adequate respirations.
  2. Ventilatory rates (for patients with pulses):
    - ◆ Neonates (birth to 30 days of age) = 40 – 60 breaths/minute
    - ◆ Infants & children (1 month to puberty) = 20 breaths/minute
    - ◆ Adults = 10 – 12 breaths/minute
- ◆ Decompress tension pneumothorax (Policy #5300) as needed (paramedic only).

C. Circulatory Management - The goal of circulatory management is to maintain adequate perfusion to all vital organs.

- ◆ Position
  1. If stable, patient should be allowed to maintain position of comfort. Position patients with signs or symptoms of shock in supine or shock position.
  2. Patients >20 weeks pregnant, should be placed in left lateral position. If spinal immobilization is required, secure the patient to the backboard first, then tilt the board 20-30 degrees to the left.
- ◆ Fluid Administration (paramedics only). Initiate vascular access via IV/IO route:
  1. ADULTS: Titrate IV fluids to adequate perfusion in instances of hypovolemic/distributive shock. If cardiogenic shock suspected, limit bolus to 250cc prior to Base Station contact.
  2. PEDIATRICS: Initial bolus 20cc/kg. May repeat as needed to maintain/achieve adequate perfusion (not to exceed 4 boluses total without Base contact).
- ◆ Initiate CPR as indicated:
  1. ADULTS:
    - ◆ Push hard, push fast at rate of 100 compressions/minute. Allow for complete chest recoil between compressions.
    - ◆ Compress the chest 1.5 – 2.0 inches.
    - ◆ When possible, change compressors every 2 minutes.

- ◆ Limit pauses in compressions to ~ 5-10 seconds when switching compressors or performing other procedures.
  - ◆ When utilizing a BLS airway or ALS airway, ventilate the patient every 10<sup>th</sup> compression on the upstroke of the compression.
2. CHILDREN / INFANTS:
- ◆ Push hard, push fast at rate of 100 compressions/minute. Allow for complete chest recoil between compressions.
  - ◆ Compress the chest 1/3 to 1/2 the depth of the chest.
  - ◆ When possible, change compressors every 2 minutes.
  - ◆ Limit pauses in compressions to ~ 5-10 seconds when switching compressors or performing other procedures.
  - ◆ When utilizing a BLS airway or ALS airway, ventilate the patient every 10<sup>th</sup> compression on the upstroke of the compression.
- ◆ Defibrillation :
1. AED approved for use in children >1 year. Apply pediatric pads if available for children 1-8 years of age.
  2. Manual defibrillator may be used for all ages (paramedics only).
  3. History of cardiac arrest  $\leq 5$  minutes: attach defibrillator/AED and defibrillate as indicated. Resume CPR immediately post defibrillation.
  4. History of cardiac arrest  $\geq 5$  minutes: perform 2 minutes of CPR prior to considering defibrillation.
    - ◆ ADULTS: Apply single defibrillation at highest recommended energy setting (e.g. 360 joules on monophasic defibrillators, 200 joules on biphasic defibrillators) & resume CPR for two minutes immediately following the shock prior to checking for a pulse.
    - ◆ CHILD/INFANT: Apply single defibrillation at 2 joules/kg (4 joules/kg thereafter) and resume CPR for two minutes immediately following the shock prior to checking for a pulse.
  5. Following any defibrillation, always conduct 2 minutes of CPR prior to checking for a pulse and evaluating the EKG.
  6. Treat resulting rhythm per EMS protocol.
  7. When responders witness cardiac arrest, precordial thump may be employed to quickly treat confirmed ventricular fibrillation/pulseless ventricular tachycardia, prior to defibrillation. Precordial thump may also be used to treat witnessed cardiac arrest when no defibrillator is available.

**NOTES:**

1. Use the least invasive adjunct necessary to maintain ABCs.
2. The #1 cause of traumatic death in all patients, as well as cardiovascular collapse in the pediatric population, is hypoxia. Anticipatory airway & ventilatory support is the best way to prevent this.
3. Patients with unstable or compromised ABCs require constant re-evaluation.
4. Contact the receiving hospital as early as possible when you are transporting a patient with compromised ABCs.
5. In-Extremis Patients  
In-extremis patients are those patients in cardiac arrest or with life-threatening airway, breathing or circulatory compromise, despite pre-hospital basic & advanced life support interventions. These patients will be transported to the closest Emergency Department.

#### IV. Managing Medical Cardiac Arrest

- The initial emphasis in managing cardiac arrest patients is in establishing circulation via high quality, uninterrupted chest compressions.
- Circulation must be re-established first, followed by adequate ventilation and, when indicated, defibrillation.
- Ventilating patients, placing advanced airways, and establishing vascular access should not interfere with continuous chest compressions.
- All cardiac arrest management should be handled in a sequential and orderly fashion, with all job tasks clearly defined and delegated to resuscitation team members.
- The team leader should be the first on-scene paramedic when possible. The team leader should delegate all BLS tasks when possible, and should maintain overall patient care management. Overall scene management should be coordinated and supervised using the precepts of the Incident Command System.
- Patients who develop ventricular fibrillation while being monitored may receive a precordial thump prior to CPR compressions and defibrillation.
- Patients who develop ventricular defibrillation while being monitored may be immediately defibrillated. Chest compressions should be initiated while the defibrillator is being readied.
- High quality bystander CPR (e.g. - performed by a capable, off-duty responder) may suffice for the initial round of CPR prior to a rhythm and pulse check.
- King Tubes are the advanced airway of choice in managing cardiac arrest patients. Endotracheal intubation requires interruptions in chest compression that have been correlated with poorer overall survival rates. Endotracheal intubation may be used if it is deemed necessary to maintain airway patency.
- Vascular access should be established quickly using either intravenous or intraosseous routes. Vascular access and advanced airway access should be established simultaneously when possible, and with no appreciable interruption in chest compressions.
- BVM ventilation may be utilized throughout the resuscitation if adequate ventilation is achieved. In cases where BVM ventilation is used, the two-person method is preferred.
- Patients should be transported from the scene in the following circumstances:
  - A ROSC is achieved
  - The scene is deemed unsafe or an inappropriate location for a field determination/pronouncement of death..
  - In instances where on-scene survivors insist on transport of the patient.
  - The patient is deemed to be severely hypothermic.
  - The patient appears to be in the second or third trimester of pregnancy.
- Patients may be determined/pronounced dead on scene after following criteria established in Santa Cruz County EMS Policy 1140, Determination/Pronouncement of Death in the Field.

## Cardiac Arrest Sequence of Care

**1**

- Scene safety and universal precautions



**2**

- Determine unresponsiveness and check patient's airway, breathing and circulation



**3**

- Begin chest compressions @ 100 compressions/minute for two minutes
- Begin ventilations via BVM/OPA at one ventilation every 6 seconds, ventilating during every 10<sup>th</sup> compression upstroke
- Attach EKG quick patches/combo patches and turn on EKG monitor



**4**

- After delivering 200 compressions, stop CPR for no more than 10 seconds, analyze rhythm
- Ventricular fibrillation → defibrillate once at highest energy setting (adults) or 2 joules/kg (peds), restarting CPR while EKG monitor is charging.
  - Resume CPR for two minutes immediately following defibrillation.
  - Asystole/PEA → Immediately resume CPR for two minutes.



**5**

- Place a King LTD. King Tube should be placed and inflated during chest compressions. Seat the tube and confirm placement when CPR is stopped to reconfirm pulselessness, EKG rhythm, and necessity for defibrillation after 2 minutes of CPR.
  - Endotracheal intubation should only be used if the patient's airway cannot be managed using a King Tube.
    - Ventilate the patient every six seconds.



**6**

- Establish vascular access. If venous access is not easily established, establish intraosseous access.
  - Administer drug therapy in accordance with the appropriate protocol.



**7**

- Continue CPR; check for pulses, need for defibrillation every two minutes.
- Alternate compressors, when possible, after delivering 200 compressions.
- ROSC? Stop CPR and continue to ventilate 10-12/min (adult) or 20/min (peds)