



San Benito County Emergency Medical Services Agency

LIFE THREATS

Policy : 4000
Effective : May 1, 2014
Reviewed : March 1, 2014

I. Purpose

The purpose of this policy is to outline the steps EMTs and 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 and 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 and certified to perform those procedures. EMTs will not conduct any ALS interventions listed here.

III. Managing Life Threats

- A. Airway Management - EMTs and paramedics will use the best airway adjunct to secure a patient’s airway given the specific needs of the patient. The goal is airway patency. To this end, EMTs and 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 a left lateral position.
 2. Patients in need of airway procedures or ventilatory support may require Fowler’s, semi-Fowler’s or supine positioning.
 - ◆ 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 and 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 and children >1year in age. In unconscious adults and 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 and remove FBAO (paramedics only).

- ◆ Utilize Versed, as indicated in Policy #5000, to assist with establishing and maintaining an airway (paramedics only).
- ◆ Insert an ETT or King Laryngeal Tube as indicated (paramedics only). Nasotracheal intubation is prohibited.

B. Breathing Management - Secure adequate ventilation using the best airway adjunct for the particular needs of the patient. EMTs and 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.
 2. Specific oxygenation instructions:
 - COPD Patients - observe for respiratory fatigue/depression and assist ventilations as needed. Never withhold O2 from a patient in distress because of COPD history. Begin at 2 lpm and increase as needed. COPD patients are optimally managed by maintaining their O2 saturation at 88 – 92%.
 - Asthma Patients – Even with acute exacerbations, asthma patients should receive titrated O2 to establish an oxygen saturation of 93 – 95%.
 - Acute pulmonary edema (APE) – Administer O2 to maintain an oxygenation of 95%. Provide higher O2 concentrations if the patient remains air hungry.
 - Carbon monoxide exposure – treat with high flow O2 at 15-25 lpm.
 - Uncomplicated Acute Coronary Syndrome (ACS) - ACS patients without profound hypoxia, shortness of breath, CHF, or cardiogenic shock should be maintained on the lowest supplemental oxygen needed to maintain an oxygen saturation of 95%. If this saturation level can be achieved on room air, then no supplemental oxygenation is needed.
 - Neonates – Neonates can initially be positive pressure ventilated on room air; if their heart rates do not improve on room air ventilation after 90 seconds, ventilation with high flow oxygen should be delivered.
 - CVA Patients – Supplemental oxygen need only be delivered to stroke patients if their O2 saturation falls below 95%.
 - ROSC Patients – Post arrest should receive the least amount of supplemental oxygen to maintain an oxygen saturation of 95%.

- ◆ Continuous Positive Airway Pressure (CPAP) Administration Per Policy# 5800
- ◆ Assist Ventilations

1. Assist ventilations with BVM as indicated. Paramedics may insert an ETT, or King Laryngeal Tube to achieve adequate respirations.
2. Ventilatory rates (for patients with pulses):
 - ◆ Neonates (birth to 30 days of age) = 40 – 60 breaths/minute
 - ◆ Infants and children (1 month to puberty) = 20 breaths/minute
 - ◆ Adults = 10 – 12 breaths/minute

NEVER HYPERVENTILATE PATIENTS – the only exception would be the modest hyperventilation of patients who show signs of profound brain injury/herniation.

- ◆ Decompress tension pneumothorax (Policy #5300) as needed (paramedics 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 a 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. Uterine displacement to the left may also be employed in the supine pregnant patient in cardiac arrest.

- ◆ Fluid Administration (paramedics only). Initiate vascular access via IV/IO route:

1. ADULTS: Titrate IV fluids to 90-100 systolic BP in cases of hypovolemic/distributive shock. If cardiogenic shock suspected, limit bolus to 250cc prior to Base Station contact. “Permissive hypotension” in cases of trauma-induced hypovolemia improves trauma patient survival.
2. PEDIATRICS: Initial bolus 20cc/kg. May repeat as needed to maintain/achieve a BP of 90 – 100 systolic.

- ◆ 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 at least 2 inches.
- ◆ When possible, change compressors every 2 minutes.
- ◆ Limit pauses in compressions to no more than 2 – 4 seconds when switching compressors or performing other procedures.
- ◆ When utilizing a BLS or ALS airway, ventilate the patient every 10th 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 the AP diameter of the chest, or 2 inches in children and 1.5 inches in infants.
- ◆ When possible, change compressors every 2 minutes.

- ◆ Limit pauses in compressions to 2 - 4 seconds when switching compressors or performing other procedures.
- ◆ When utilizing a BLS airway or ALS airway, ventilate the patient every 10th 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. If not available, use adult pads. (Consider anterior/posterior pad placements on chest).
2. Manual defibrillator may be used for all ages (paramedics only).
3. Defibrillate the patient as soon as possible:
 - ◆ ADULTS: Apply single defibrillation at highest recommended energy setting (e.g. 360 joules on LP-12) and 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.
4. Following any defibrillation, always conduct 2 minutes of CPR prior to checking for a pulse and evaluating the EKG.
5. Treat resulting rhythm per EMS protocol.
6. When responders witness cardiac arrest, precordial thump may be employed to quickly treat confirmed ventricular fibrillation/pulseless ventricular tachycardia if a defibrillator is not readily available.

◆ Return of Spontaneous Circulation:

If a return of spontaneous circulation (ROSC) is achieved, paramedics should follow these guidelines for post-arrest management:

1. **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.
2. **Ventilate the patient** 10-12 breaths per minute to achieve an end tidal CO2 of 35 – 45 mmHg. **No hyperventilation!**
3. **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.
4. **Manage post-arrest arrhythmias as needed.**

NOTES:

1. The #1 cause of traumatic death in all patients, as well as cardiovascular collapse in the pediatric population, is hypoxia. Anticipatory airway and ventilatory support is the best way to prevent this.
2. Patients with unstable or compromised ABCs require constant re-evaluation.
3. Contact the receiving hospital as early as possible when you are transporting a patient with compromised ABCs.

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 and advanced life support interventions. These patients will be transported to the closest Emergency Department, regardless of red, yellow or green status.

IV. Managing Medical Cardiac Arrest

- The initial emphasis in managing cardiac arrest patients is in establishing circulation via high quality, uninterrupted chest compressions.
- Continuous compressions and defibrillation are more important than vascular access, medications, and ventilation.
- 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 be immediately defibrillated. Chest compressions should be initiated while the defibrillator is being readied.
- Ventilation may be accomplished with BVM, King Tube, or ETT intubation. No specific airway adjunct has proven to increase cardiac arrest survival. Establishing an ALS airway becomes a higher priority if a ROSC is achieved. Maintaining continuous compressions during cardiac arrest is more important than deploying a specific airway.
- 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.

- Vascular access should be established quickly using either IV or IO routes.
- Patients should be transported from the scene in the following circumstances:
 - ROSC is achieved.
 - The scene is deemed unsafe or an inappropriate location for a field determination/pronouncement of death.
 - 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 San Benito County EMS Policy 1140, Determination/Pronouncement of Death in the Field.
- All patients in cardiac arrest should have end tidal capnographic monitoring. This is the single best tool to recognize a ROSC.

**“Pit Crew”
Cardiac Arrest Sequence of Care**

1. Scene safety and universal precautions.
2. Determine unresponsiveness & pulselessness (no more than 5 seconds).
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3. Begin chest compressions @ 100 compressions/minute.
4. Attach ECG quick patches, turn on ECG monitor, evaluate rhythm and treat as indicated.
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5. Begin ventilations via BVM/ETI/LTD at one ventilation every 6 seconds, ventilating during every 10th compression upstroke. Do not stop compressions for more than 2 – 4 seconds to deploy an airway adjunct.
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6. Establish vascular access. If venous access is not readily available, establish IO access. Administer drug therapy in accordance with the appropriate protocol.
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7. Switch compressors every 2 minutes. Do not interrupt compressions for more than 2 – 4 seconds to accomplish this. During this pause, check the ECG to determine if defibrillation is indicated. If so, defibrillate.
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8. ROSC? Stop CPR and continue to ventilate 10-12/min (adult) or 20/min (peds). Follow post-arrest instructions above.