Medical Procedures **Date: 02/01/2021**

Cardiopulmonary Resuscitation (CPR) **Policy #7170**

I. Purpose:

To establish indications, guidelines, and the standard procedure for performing cardiopulmonary resuscitation (CPR) in the pre-hospital setting.

II. Authority:

Health and Safety Code, Section 1797.220, 1798. Title 22, Section 100169.

III. Policy:

A. Imperial County EMS providers shall follow current American Heart Association ACLS guidelines.

B. High quality CPR and early defibrillation is the key to survival in cardiac arrest and should be prioritized.

C. For medical etiology suspected causes for cardiac arrests, achieving ROSC on scene prior to patient movement should be prioritized

D. Mechanical CPR device application may be considered for patients fulfilling policy #7200. Manual CPR is the preferred method for high performance CPR.

IV. Inclusion:

A. Any patient in cardiac arrest.

B. Pediatric Symptomatic Bradycardia with a heart rate less than 60 BPM.

1. For the purposes of PALS (Pediatric ALS): Child guidelines apply to children approximately 1 year of age until puberty. Puberty is defined as breast development in females and the presence of axillary hair in males.
2. For those with signs of puberty and beyond, adult basic life support guidelines should be followed.

V. Considerations:

A. Scene safety shall be maintained at all times.

B. Continuous monitoring should be done whenever possible. This includes: EtCO2, pulse oximetry, blood pressure, and ECG monitoring.

C. Establish position assignments prior to arriving at patient's side whenever possible.

D. Always use a team approach, first arriving rescuers will own the **BLS CPR**.

E. Place patient supine and in an environment most accessible to perform CPR, with a rigid surface under the thoracic cavity.

F. Limit interruptions of chest compressions by performing continuous compressions throughout resuscitation.

G. Change providers performing compressions every two minutes to ensure depth and quality of compressions is maintained.

H. All attempts should be made to prevent avoidable interruptions in chest compressions, such as pre-charging the defibrillator and hovering over the chest, rather than stepping away during defibrillations

I. The effectiveness of chest compressions decreases when moving patients
   1. Patients should therefore be resuscitated as close to the point at which they are first encountered and should only be moved if the conditions on scene are unsafe or do not operationally allow for resuscitation
   2. Chest compressions are also less effective in a moving vehicle
   3. It is also dangerous to EMS clinicians, patients, pedestrians, and other motorists to perform chest compressions in a moving ambulance
   4. For these reasons and because in most cases the care provided by EMS clinicians is equivalent to that provided in emergency departments, resuscitation should occur on scene

J. Chest compressions shall be performed at a rate of 110 per minute.
   1. Adult chest compressions depth shall equal 2 - 2.4 inches.
   2. Child chest compressions depth shall equal 1/3 the chest size, or about 2 inches.
   3. Infant chest compressions depth shall equal 1/3 the chest size, or 1.5 inches.

K. Ensure the chest has full recoil after each compression, do not lean on chest.

L. Ventilations:
   1. Adult without an advanced airway: 30:2 (30 compressions to 2 breaths)
   2. Pediatric without an advanced airway: 30:2 for single rescue
      a. 15:2 for two rescuers
   3. Adult with an advanced airway: Continuous compressions between 100-120 bpm and 1 breath every 6 seconds (10 breaths per minute)

VI. Role Description and Duties:

A. **Compressor**
   1. Responsible for all quality continuous chest compressions with minimal interruptions.
   2. Assess responsiveness and pulse.

3. Start continuous chest compressions at 110 BPM.
4. Count compressions out loud.
5. Should rotate automatically every two (2) minutes. No compressor should continue beyond two (2) minute intervals.
6. Compressions should be:
   a. Adult chest compressions depth shall equal 2 - 2.4 inches.
   b. Child chest compressions depth shall equal 1/3 the chest size, or about 2 inches.
   c. Infant chest compressions depth shall equal 1/3 the chest size, or 1.5 inches.
7. Full recoil should occur between each compression to maximize filling of the coronary arteries.

B. **Defibrillator**

1. Responsible for all defibrillations at the appropriate time with correct joule setting.
2. Power on defibrillator.
3. Apply the pads, If AED is used, follow instructions.
   a. Shock immediately if witnessed arrest has occurred.
   b. Hold shock if unwitnessed, to complete two (2) minutes of compressions.
   c. For defibrillation, continue compressions and **pre-charge** defibrillator until ready to defibrillate.
4. If ALS provider, consider establishing IV / IO access and begin administration of medications in the Three Rescuer mode.
5. See the **Defibrillation Policy/AED Policy** for further information.

C. **Ventilator**

1. Responsible for all ventilations at the appropriate tidal volume and time.
2. Insert appropriately sized OPA or NPA.
3. Ventilate using a BVM to initial chest rise on the upstroke of chest compression.
4. Utilize ETCO2.
5. If ALS, provider will consider ALS Airway placement in the Three Rescuer mode.

D. **Coordinator**

1. Serves as the code team leader.
2. Oversees rapid transitions and can alert rescuers of compression fatigue.

E. **Medications**

1. Responsible for establishing and maintaining IV / IO access.
2. Responsible for all drug interventions.
3. Ensure the use of the "6 – Rights of Drug Administration":
    a. Right Patient
    b. Right Drug
    c. Right Dose
    d. Right Route
    e. Right Time
    f. Right Documentation
4. Announce each drug intervention taken at the time administered.

F. **Recorder**

1. Responsible for all documentation of events and timeline of all actions performed.

VII. Role Divisions by Personnel Availability:

A. Single Rescuer:

1. The Single Rescuer acts in the following priority:
    a. **Defibrillator – Compressor**
    b. Continue chest compressions until other rescuers arrive.

B. Two Rescuer:

1. In Dual Rescuer mode each will perform Functions in the following priority:
    a. Rescuer 1: **Compressor**
    b. Rescuer 2: **Ventilator and Defibrillator**
2. Rotate positions after each two (2) minute cycle of compressions.

C. Three Rescuer:

1. With Three (3) Rescuers, each rescuer will take an assignment in the following priority:
    a. Rescuer 1: **Compressor**
    b. Rescuer 2: **Ventilator and Coordinator**
    c. Rescuer 3: **Defibrillator and Medications**
2. Rotate positions after each two (2) minute cycle of compressions.

D. Four Rescuer:

1. With Four (4) Rescuers, each rescuer will take an assignment in the following priority:
    a. Rescuer 1: **Compressor**
    b. Rescuer 2: **Ventilator**
    c. Rescuer 3: **Defibrillator and Medications**
    d. Rescuer 4: **Coordinator and Recorder**
2. Rotate positions after each two (2) minute cycle of compressions.

E. Five Rescuer:
1. Additional Rescuers may be requested as needed for prolonged resuscitation.
2. Functions in the following priority as more rescuers arrive:
    a. Rescuer 5: **Medications**
    b. Rescuer 6: **Recorder**
3. Other incoming rescuers arriving should be assigned as Compressor at the two (2) minute cycle switch.

VIII. Auxiliary Equipment:

A. The use of Capnography Waveform measurements are required at all times.
B. The use of the following devices are encouraged:
1. Metronome
2. CPR feedback devices
3. Rate and tidal volume feedback devices

IX. Documentation

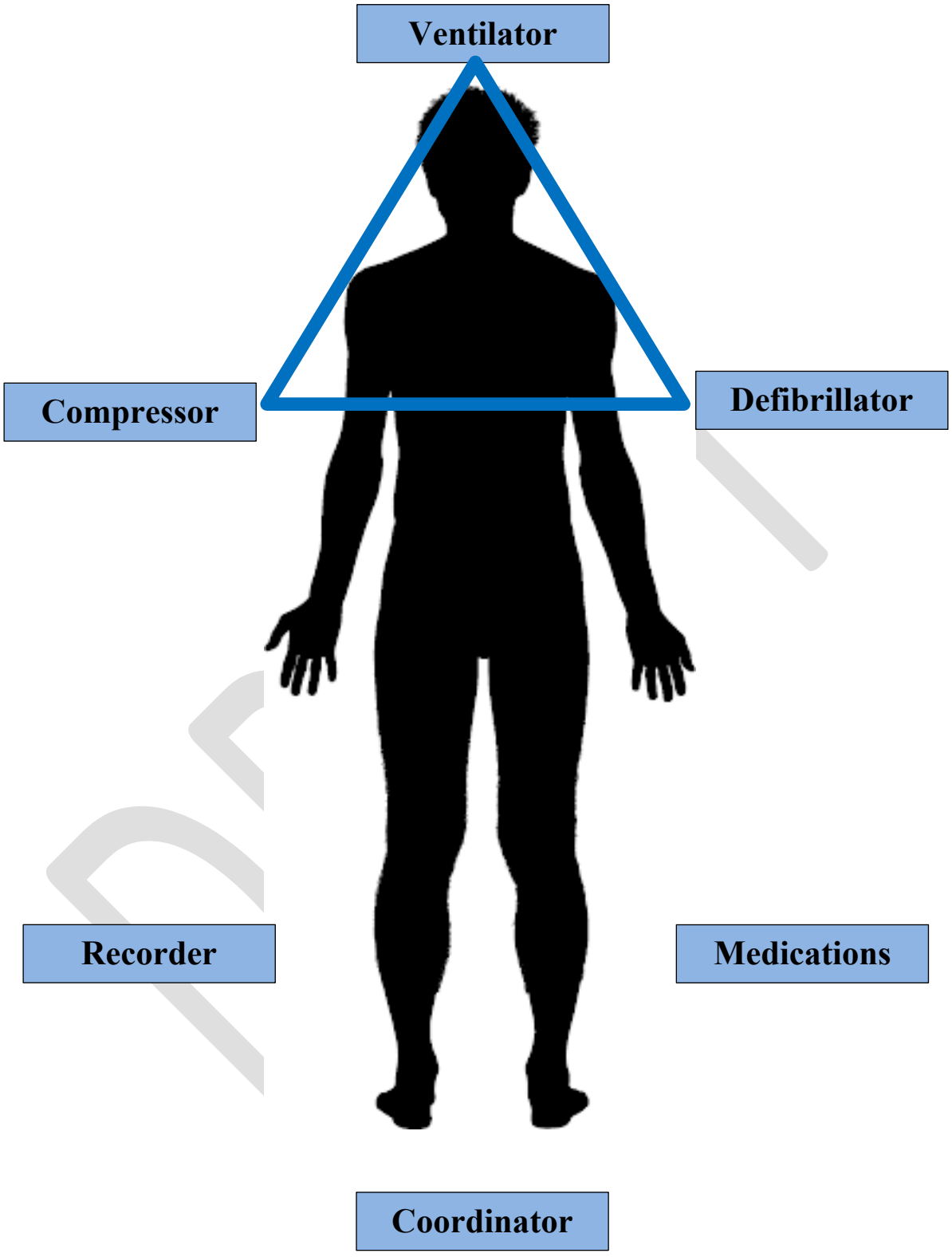
A. Time of CPR onset
B. Interventions performed
C. Response to interventions
D. Personnel on scene
E. Device feedback including:
1. Rhythm printouts
2. EtCO2 tracing
3. Pulse oximetry tracing
4. ECGs performed
5. CPR quality

6. Defibrillation data

F. Ultimate disposition of patient (termination of resuscitation, ROSC, hand-off to hospital, etc.)

APPROVED:

SIGNATURE ON FILE – *DATE*
Katherine Staats, M.D.
EMS Medical Director


Ventilator
Compressor
Defibrillator
Recorder
Medications
Coordinator