	<b>COUNTY OF SACRAMENTO</b> EMERGENCY MEDICAL SERVICES AGENCY	Document #	8031.26
	<u>PROGRAM DOCUMENT:</u> <b>Non-Traumatic Cardiac Arrest</b>	Initial Date:	08/12/93
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 EMS Medical Director

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 EMS Administrator

**Purpose:**

- A. To establish the treatment standard for non-traumatic cardiac arrest patients.  
**NOTE:** For traumatic arrest, see PD# 8032 – Traumatic Cardiac Arrest
- B. To serve as the treatment standard for Non-Traumatic Asystole, Pulseless Electrical Activity (PEA), Ventricular Fibrillation (VF), and Pulseless Ventricular Tachycardia (VT).

**Authority:**

- A. California Health and Safety Code, Division 2.5
- B. California Code of Regulations, Title 22, Division 9

**Protocol:**

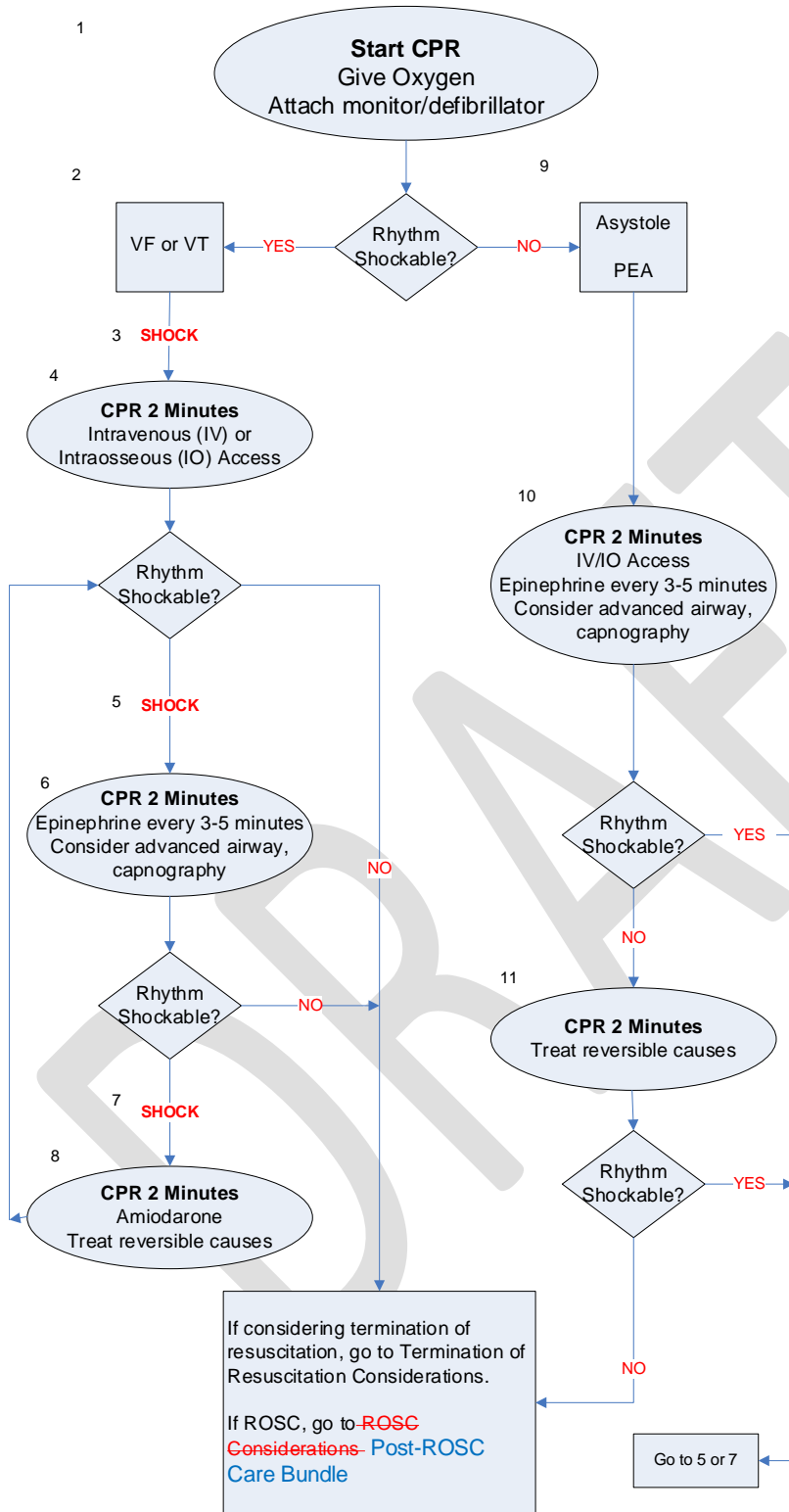
- A. High-quality Cardiopulmonary Resuscitation (CPR) is fundamental to the management of all cardiac arrest rhythms. Periodic pauses in CPR should be as brief as possible and only as necessary to assess rhythm, shock VF/VT, and perform a pulse check when an organized rhythm is detected.
- B. CPR must be performed with a “Chest Compressions, Airway, Breathing” sequence (C-A-B) to emphasize the importance of maintaining blood flow with good compressions.
- C. Performing CPR while a defibrillator is readied for use is strongly recommended for all patients in cardiac arrest.
- D. Advanced airway placement shall be confirmed with ETCO<sub>2</sub> detection device or waveform capnography.
- E. Vascular access, drug delivery, and advanced airway placement should not cause significant interruptions in chest compressions or delay defibrillation.
- F. Treatment on scene- Movement of a patient may interrupt CPR or prevent adequate depth and rate of compressions. Consider resuscitative efforts on scene to maximize chances of Return of Spontaneous Circulation (ROSC).
- G. Patients in persistent/refractory VF/VT at 15 minutes should be transported to the closest receiving facility.
  - **NOTE:** consider changing the vector of defibrillation by changing the pad placement from anterolateral to anteroposterior (or vice versa).
- H. Whenever feasible, and safe to do so, transport the medical Durable Power of Attorney (DPOA) or immediate family member with the patient to the hospital. DPOA and immediate family members can provide medical insight and consent for special therapies or termination of resuscitation to hospital staff.
- I. Perform an early Pre-Alert notification to the receiving hospital.

**Post Resuscitation Considerations:**

- A. Any patient with ~~an initial~~ a shockable rhythm (VF or VT or shocked by an AED) at any time who has a ROSC during any part of the resuscitation and who is transported, shall be transported to a STEMI center.
  1. Any other cardiac arrest patient who is transported, shall be transported to the time closest hospital.
- B. Intravenous (IV) or Intraosseous (IO) fluids should be placed at, to keep open (TKO) unless hypotension is present.
- C. ~~Post-resuscitation bradycardia, hypotension, shock and pulmonary edema.~~ Post-ROSC Care Bundle
  1. ROSC Obtained:
    - a. Manage airway
      - Early placement of supra-glottic airway or endotracheal tube.
    - b. Manage respiratory parameters – SpO2 92-98%. End tidal CO2 measurement between 35-45 mm Hg.
      - Initial respiratory rate, 10/minute.
    - c. Manage hypotension/shock with the goal of Systolic Blood Pressure (SBP)  $\geq$  90 mmHg
      - Normal Saline 1000 ml bolus **AND** concurrent Push Dose Epinephrine 0.01 mg/ml (10mcg/ml). Dose: 0.5-2 ml every 2-5 minutes (5-20mcg).
      - Titrate to SBP  $\geq$  90 mmHg. Reassess vital signs after each bolus.
    - d. Obtain an 12 – Lead ECG approximately 7 minutes post-ROSC.
    - e. Remain on scene for approximately 10 minutes for post-ROSC care to optimize parameters listed in a-d. Evaluate and treat for reversible causes for arrest (H's and T's).
  2. Bradycardia, refer to PD# 8024 – Cardiac Dysrhythmias.
  3. Congestive Heart Failure/Pulmonary Edema refer to PD# 8026 – Respiratory Distress.
  4. ~~Hypotension/Shock~~
    - a. ~~Normal Saline 1000 ml bolus, may repeat once to achieve Systolic Blood Pressure (SBP)  $>$  90 mmHg. Reassess vital signs after each bolus~~
    - b. ~~Push Dose Epinephrine 0.01 mg/ml (10mcg/ml).~~
      - ~~Dose: 0.5-2 ml every 2-5 minutes (5-20mcg). Titrate to SBP  $\geq$  90 mmHg.~~

#### Termination of Resuscitation Considerations:

- A. Consider termination of resuscitation efforts after twenty (20) minutes of Advanced Life Support (ALS) care if BOTH of the following are present:
  1. Pulseless, apneic, or agonal respirations with no signs of life (non-reactive pupils, no response to pain, no spontaneous movement).
  2. Asystole, or wide complex Pulseless Electrical Activity with HR  $<$  40 bpm.



**CPR Quality**

- Push hard ( $\geq 2$  inches [5 cm]) and fast ( $\geq 100$ /min) and allow complete chest recoil
- Minimize interruption in compressions
- Avoid excessive ventilation
- Rotate compressor every 2 minutes
- If no advanced airway, 30:2 compression-ventilation ratio
- Quantitative waveform capnography
- If PETCO<sub>2</sub> <10 mmHg, attempt to improve CPR quality

**Return of Spontaneous Circulation (ROSC)**

- Pulse and blood pressure
- Abrupt sustained increase in PETCO<sub>2</sub> (typically  $\geq 40$  mmHg)

**Shock Energy**

- **Biphasic:** Manufacturer recommendation (eg, initial dose of 120-200 Joules); if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- **Monophasic:** 360 Joules.

**Drug Therapy**

- **Epinephrine IV/IO Dose:** 1 mg every 3-5 minutes up to a total of 3 mg.
- **Amiodarone IV/IO Dose:** First dose: 300 mgs bolus. Second dose: 150 mg

**Advanced Airway**

- Supraglottic advanced airway
- Waveform capnography to confirm and monitor placement
- 8-10 breaths per minute with continuous chest compressions

**Reversible Causes**

- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo/Hyperkalemia
- Hypothermia
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis, pulmonary
- Thrombosis, coronary

**Cross Reference:** PD# 8024 – Cardiac Dysrhythmias  
PD# 8026 – Respiratory Distress