POLICY: 554.11
TITLE: Cardiac Arrest – Non-Traumatic

EFFECTIVE: 02/01/2026
REVIEW: 02/2028
SUPERCEDES:

APPROVAL SIGNATURES ON FILE IN EMS OFFICE

CARDIAC ARREST – NON-TRAUMATIC

I. AUTHORITY
Health and Safety Code, Division 2.5, California Code of Regulations, Title 22, Division 9

II. PURPOSE
To serve as a patient treatment standard for EMRs, EMTs, and Paramedics within their scope of practice.

III. PROTOCOL

Provider Key: F = First Responder/EMR E = EMT O = EMT Local Optional SOP P = Paramedic D = Base Hospital Physician Order Required

	F	E	O	P	D
ASSESSMENT	X	X	X	X	
HP-CPR: including AED with AP pad placement. When available and appropriate, use mechanical compression device or switch CPR providers every 2 minutes.	X	X	X	X	
BLS AIRWAY: okay if airway patent. Support ventilations with appropriate airway adjuncts. Ventilate with 100% oxygen.	X	X	X	X	
OXYGEN: ventilate with 100% oxygen.	X	X	X	X	
ECG MONITOR: lead placement may be delegated. Treat as indicated.				X	
PULSE OXIMETRY: apply and monitor.		X	X	X	
ADVANCED BLS AIRWAY: consider SGA.			X	X	
CAPNOGRAPHY: apply and monitor.				X	
VASCULAR ACCESS: IV/IO, rate as indicated.				X	
EPINEPHRINE: 1 mg (10 mL) 1:10,000 (0.1 mg/mL) IV/IO push. Repeat every 3–5 minutes.				X	
VENTRICULAR FIBRILLATION - PULSELESS VENTRICULAR TACHYCARDIA					
DEFIBRILLATE: 360 J (Biphasic). Reanalyze rhythm every 2 minutes. **AP pad placement.**	X	X	X	X	
ANTIARRHYTHMIC: choose one **a. AMIODARONE:** 300 mg IV/IO over 1–2 minutes, followed by 20 mL NS. Repeat once in 5 minutes at 150 mg IV/IO followed by 20 mL NS. **b. LIDOCAINE:** 1.5 mg/kg IV/IO push. Repeat at 0.75 mg/kg every 5-10 minutes, up to a maximum of 3 mg/kg total. • **Consider as additional if refractory to Amiodarone**.				X	
MAGNESIUM SULFATE: For Torsade de Pointes 2 gm, diluted with NS to a volume of 10 mL over 5 minutes IV/IO.				X	

	F	E	O	P	D
PULSELESS ELECTRICAL ACTIVITY/ASYSTOLE CONSIDER					
SODIUM BICARBONATE: 1 mEq/kg IV/IO for known or suspected hyperkalemia (renal patients) or tricyclic antidepressant overdose.				X	
CALCIUM CHLORIDE: 1000 mg (10 mL of 10% sol.) IV/IO for known or suspected hyperkalemia (renal patients). **Note: Use with caution in patients on digoxin.**				X	
CONSIDER					
TEST FOR GLUCOSE		X	X	X	
D10: infuse 100 mL IV/IO if blood glucose < 70 mg/dL. Recheck blood glucose 10-minutes post infusion. If blood glucose < 70 mg/dL infuse remaining 150mL.				X	
GLUCAGON: If no IV/IO, give 1 mg IM if blood glucose < 70 mg/dL or suspicion of beta blocker or calcium channel blocker overdose. Recheck blood glucose 10 minutes post injection. If blood glucose remains < 70 mg/dL, repeat 1 mg IM.				X	
NALOXONE: one spray pre-packaged IN (typically 2–4 mg) for respiratory depression. If opioid overdose is suspected, repeat every 2 – 3 minutes in alternating nostrils, to a total of 12 mg. Consider alternate cause of obtundation/respiratory depression if ineffective.		X	X	X	
NALOXONE: 0.4–2 mg IV/IO/IM/IN (if opioid use is suspected).				X	
IF NO ROSC					
****TERMINATION of RESUSCITATION:** 1: If EMS did not witness cardiac arrest and 2. No shockable rhythm and 3. No ROSC after 20 minutes of BLS and/or ALS resuscitation	X	X	X	X	
IF ROSC	F	E	O	P	D
ADVANCED AIRWAY: if ROSC achieved and no SGA in place, consider ETI.				X	
***12 LEAD ECG**				X	
PULSE OXIMTRY: target pulse oximetry to ≥ 92-98%.				X	
CAPNOGRAPHY: ventilation should start at 10/minute and titrate target ETCO2 of 35–45 mmHg.				X	
ANTIARRYTHMIC: if persistent dysrhythmia, start infusion of same antiarrhythmic used to achieve ROSC. • **AMIODARONE**: 1 mg/minute • **LIDOCAINE**: 1 – 4 mg/minute				X	
PUSH DOSE EPINEPHRINE: for hypotension – titrate to SBP ≥ 90 • Mix 1 mL of Epi 1:10,000 (0.1mg/mL) with 9 mL of NS = concentration of 1:100,000 (0.01 mg/mL) • Label syringe “epinephrine 10 mcg/mL” • 0.5 – 1 mL (5 – 10 mcg) IVP every 1 – 5 minutes If SBP does not stabilize ≥ 90 after two doses, consider epinephrine drip. Refer to 554.88 RX GUIDELINES.				X	

****Refer to Policy #570.20, DETERMINATION OF DEATH IN THE PREHOSPITAL SETTING**
Reference: 10/17/2022 EMS Termination Of Resuscitation And Pronouncement of Death - StatPearls - NCBI Bookshelf (nih.gov) https://www.ncbi.nlm.nih.gov/books/NBK541113/

CONSIDER CAUSES

- Hypovolemia - volume infusion, 2 liters followed by 250 mL boluses as indicated.
- Cardiac tamponade - volume infusion, 2 liters followed by 250 mL boluses as indicated.
- Hypoxia - provide ventilation. Check for reversible cause of hypoventilation.
- Tension pneumothorax - refer to 554.23 TENSION PNEUMOTHORAX.
- Hypothermia - refer to 554.62 HYPOTHERMIA.
- Drug Overdose - refer to 554.51 POISONING

CPR INDUCED CONSCIOUSNESS (CPRIC)

A patient may move or speak while in cardiac arrest with high quality CPR. This situation may lead clinicians to believe the patient is not in cardiac arrest and lead to delayed defibrillation and/or inappropriate pauses in CPR.

If patient moves or speaks in cardiac arrest:

- Briefly pause CPR to confirm ROSC.
- If the patient remains in cardiac arrest, continue resuscitation.
- Patients exhibiting signs of life while in cardiac arrest may have awareness of the situation and may remember their resuscitation. Provide reassurance and take care with conversations around the patient.
- Patients who have exhibited CPRIC are known to have superior outcomes to other out-of-hospital cardiac arrests. Continue resuscitation and transport.

LEFT VENTRICULAR ASSIST DEVICE (LVAD)

- The absence of a palpable pulse can make confirming cardiac arrest difficult. Signs of adequate perfusion in the absence of a pulse include normal skin color and temperature, normal capillary refill and a MAP of > 50mm Hg.
- CPR should be started in unresponsive patients with an LVAD.
- Treatment includes prioritization of CPR while simultaneously assessing and attempting to restart LVAD function.
- Mechanical CPR should be avoided in patients with LVAD due to the risk of dislodgment.

CARDIAC ARREST IN PREGNANCY

- Provide continuous left lateral uterine displacement when the fundal height is at or above the umbilicus.
- Prioritize early airway management.
- Place IV in upper extremities when possible.
- Transport immediately when patient is visibly pregnant, usually after 20 weeks