In-person **2240 E. Gonzales Road #200** **Oxnard, CA**	Pre-hospital Services Committee Agenda	March 12, 2026 9:30 a.m.

I.	**Introductions**	
II.	**Approve Agenda**	
III.	**Approve Minutes**	
IV.	**Old Business**	
	A. 705.07 Cardiac Arrest – Asystole/Pulseless Electrical Activity (PEA)	Dr. Shepherd/Adriane Gil-Stefansen
	B. 705.08 Cardiac Arrest – VF/VT	Dr. Shepherd/Adriane Gil-Stefansen
	C. 733: Cardiac Arrest Management (CAM) and Post Arrest (ROSC) Resuscitation	Dr. Shepherd/Adriane Gil-Stefansen
V.	**New Business or Policy Review *(with Proposed Changes)***	
	A. 735: Push Dose Epinephrine	Adriane Gil-Stefansen
VI.	**Informational/Discussion Topics or Policies Approved at Specialty Care Committees**	
	A. None	
VII.	**Policy Review *(No proposed changes)***	
	A. None	
VIII.	**Agency Reports**	
	A. Fire Departments	
	B. Ambulance Providers	
	C. Base Hospitals	
	D. Receiving Hospitals	
	E. Law Enforcement	
	F. ALS Education Programs	
	G. EMS Agency	
	H. Other	
IX.	Closing	

In Person Only **2240 E. Gonzales Road #200** **Oxnard**	Pre-hospital Services Committee Minutes	February 12, 2026 9:30 a.m.

Topic	Discussion	Action	Approval
Opening Remarks	Please announce your name when voting and remember to sign in.		
I. Introductions	Dr. Hamid Nia (Los Robles Hospital) Matt Armstrong (Premier Ambulance) Jeff Hernandez (Premier Ambulance)		
II. Approve Agenda		Approved	Motion: Dr. Ira Tilles Second: Tom O'Connor Passed: Unanimous
III. Minutes		Approved	Motion: Dr. Ira Tilles Second: Dr. John Gillett Passed: Unanimous
IV. Old Business			
A. Cardiac Arrest Sub-group update	**Dr. Daniel Shepherd (VCEMSA)–** Subgroup is meeting today immediately following PSC.		
V. New Business or Policies for Review *(with Proposed Changes)*			
A. 729: Supraglottic Airway Devices	**Adriane Gil-Stefansen (VCEMSA) –** Additional sentence change not in draft; accredited EMTs approved by VCEMS medical director in accordance with 303 and 303B. Before EMS update, will bring 303 and 303B to better define optional skills agency. **Dr. Daniel Shepherd –** Training for EMTs is outlined in regulation.	Approved	Motion: Dr. Neil Canby Second: Dr. Ira Tilles Passed: Unanimous
VI. Informational/Discussion Topics or Policies Approved at Specialty Care Committees			
A. 614: Spinal Motion Restriction	**Kyle Culkin –** Had recommendations from TORC, changes have been incorporated. Also proposing striking language in the definition. Special considerations have been highlighted earlier in the policy specific to age 65+. **Dr. Todd Larsen –** Expressed concern with current wording as to definition to "trauma patient" and that the language was too broad for c-collar definition. **Dr. Daniel Shepherd -** Had some patients that presented that axial loading injuries, looking back all of them should have been in collars due to policy language. Remove back pain language specific to c-collar.	Approved with changes	Motion: Dr. Neil Canby Second: Dr. Chris Sikes Passed: Unanimous
VII. Policies Due for Review *(No Proposed Changes)*			

A. 607: Hazardous Material Incident	**Chris Rosa (VCEMSA) –** Changes to the reviewed section at the top and California regulations reference. Talked about moving it to the 2000 listings, changing to 2607. **Dr. Todd Larsen –** The last sentence references medical director, agency or county. Requested clarification for that wording. **Chris Rosa -** Clarified to refer to agency policy. HIRT will be replaced HAZMAT.	Approved with changes	Motion: Dr. Todd Larsen Second: Joseph Dullam Passed: Unanimous
B. 612: Notification of Exposure to a Communicable Disease	**Chris Rosa –** Couple situations where VCPH of an outbreak or incident, struggle to get the notification back to home agency. Think how we can account for this situation? VCPH -> back down to the agency. Work with the agency DO's and Hannah Edmonson from VCPH for a solution offline. **Camille Schroepfer (VCFD) –** Does public health know who to contact at the agencies? **Erica Gregson (VCFD) –** VCFD does not fax requests anymore on page 3/9, typically we verbally notify. **Heather Ellis (VFD) –** They have difficulty getting follow-up test results.	Will table and bring back	
C. 627: Fireline Medic	**Chris Rosa –** There are no changes other than the dates and remarks on the first page. **Joseph Dullam & Robert Minor –** VCFD has confirmed they have not seen any changes for firescope.	Approved	Motion: Tom O'Connor Second: Joseph Dullam Passed: Unanimous
D. 705.06: Burns	**Adriane Gil-Stefansen –** No proposed changes. **Dr. Daniel Shepherd –** Will look into future changes regarding running water for 20 minutes.	Approved	Motion: Tom O'Connor Second: Dr. Chris Sikes Passed: Unanimous
E. 724: Brief Resolved Unexplained Event (BRUE)	**Adriane Gil-Stefansen –** No proposed changes.	Approved	Motion: Dr. Todd Larsen Second: Dr. John Gillett Passed: Unanimous
VIII. Agency Reports			
A. Fire departments	**VCFD** – Joseph Dullam - Lifepak 35's and training. Academy started with 18. Tim Phalen 12-lead class next week. **VFD** – Heather Ellis – New Fire Chief Chris McDonald announced two weeks ago. New administrative assistant was also hired. New academy, one lost due to injury. New utility vehicle we rolled and crashed already. City of Ventura is doing Jackalope Skateboarding Event preparation 4/29-30 and event will occur 05/1-3 it will happen in the streets of Ventura. Will be meeting with cooperative partners, we are responsible for writing the medical plan. 10K are expected the Saturday. The main vert skateboard ramp will be in front of the Ventura Inn. **OFD – Jaime Villa –** Our new squad vehicle at 66 was put into service, we expect one more to replace 68 soon. Recently received 100K from the City of Oxnard for the whole blood program. OFD taught TECC course, had representatives from partner agencies that participated in January. Hoping to have 4-6 classes a year if anyone would like to participate. EMS Corps Cohort 3 is in their 3rd week with 33 students. We were able to work with Workforce Development to do phlebotomy, and they acquired funding to pay the students for the hours in additional training. All EMS Corps students have this option. Through feedback, we're going to add EMT/ALS assist training, they will get paid for this time as well.		

	FFD – **John Everlove** – First paramedic intern completed internship. Six new firefighter/paramedics are being added to the department. **VFF** – Not present.
B. Ambulance Providers	**AMR/GCA - Jeffrey Schultz** – First EMS Corps student got accepted to paramedic school at Ventura college. Every spare is now a mod ambulance. Med 451 is no longer a 24-hour unit, it's now a split 12-hour shift. **All Town** – Not present. **MedTrans** – Not present. **Premier Ambulance – Matt Armstrong –** New station is up and running in Thousand Oaks for BLS and CCT transports.
C. Base Hospitals	**AHSV** – **Nicole Fagan -** Case review tomorrow at 8-10 on heat exhaustion. Dr. Ira Tilles – Medical direction and ED physician group will be taken over by Adventist Health Glendale. This may be his last meeting representing AHSV; we have 4-5 talented physicians that will be looking for positions elsewhere. ***John Everlove* –** The partnership between the ED physicians and providers has always been special and the Simi Valley community benefited greatly, thank you. ***Steve Carroll* –** We appreciate all your involvement in all our committees and thank you for your support and friendship. **LRH – Michelle Barry –** Continuing construction, ED and trauma department have partnered for more continuing education training on February 17th and March 17th for 4-hours of CE. **VCMC** – Nothing to report. **SJRMC** – Nothing to report.
D. Receiving Hospitals	**SJHC** – Nothing to report. **SPH** – Nothing to report. **CMH** / **OVCH** – Nothing to report.
E. Law Enforcement	**AIR RESCUE** – Nothing to report. **VCSO –** Not present. **CSUCI PD** – Not present. **State Parks –** Not present.
F. ALS Education Programs	**Ventura College** – **Tom O'Connor -** Cohort 31 is in the final phase of clinical participation and preparing for entering the field internship to begin in March. Cohort 32 is 1/3 of the way through didactic and will be the first cohort to experience having PHTLS incorporated into the classroom. Cohort 33 acceptance letters were distributed. Orientation scheduled for March with a class start date at the end of May. The multi criteria screening process trial continues. Follow up meeting will be scheduled for late March/ early April. LP35 and UE Scopes were received at the college through grants and institutional funding. Training is incorporated into the existing schedule. ***Dr. Larsen* -** Thank you to the ER physicians for the great experience for our interns. **Moorpark College – John Everlove** – Adding to Dr. Todd Larsen's sentiment thanking Field providers, thank you to Joseph Dullam, Robert Minor at VCFD, AMR/GCA for the experience. Paramedic Graduation Ceremony on 2/27 at 1000-1330. Paramedic advisory committee 3/3 in-person and 1030-1300 zoom or in-person, community participation event, everyone is welcome to join the conversation. Thank you for your support.
G. EMS Agency	**Kyle Culkin** - 3/12 Large Mass Care & Sheltering FTX exercise, thank you to Moorpark College for lending nursing and EMT students to be patient actors. **Chris Rosa** – 3/12 MRSE FTX online, Reddinet activation, all 8 ED in participation, 180+ patients will go out. Also be an alternate site drill. Midterm planning meeting is today. 2/15 is the deadline for submitting annual reports for EMT/paramedic/continuing education programs. **Steve Carroll** – EMSAAC registration is open, this year the CQI/Disaster Pre-Conference is May 25th. Keynote Salty Paramedics and Gordon Gramm, May 26-27. No update for the RFP. **Dr. Daniel Shepherd** – Dismayed about AHSV, Thank you Dr. Tilles and appreciate the collaboration. AB1607 was introduced last month.

	Adriane Gil-Stefansen – Sign-in sheet was updated, positions for some agencies need to be filled. Please send us any updates. All committee invites have been sent out. 4/8 SWTCC virtual 9-11 focusing on the HERT team and hemorrhagic shock. The link to sign up is going out soon. ***Thank you, Dr. Tilles***, thank you for everything you have done professionally and personally to take care of my family.	
H. Other	No additional discussion.	
IX. Closing	**Meeting adjourned at 10:39am** Meeting audio recording and transcript available upon request.	Motion: Dr. Todd Larsen Second: Dr. Chris Sykes Passed: Unanimous

Cardiac Arrest – Asystole/Pulseless Electrical Activity (PEA)

ADULT	PEDIATRIC

BLS Procedures

Initiate Cardiac Arrest Management (CAM) Protocol
Airway management per VCEMS policy

ALS Standing Orders

ADULT

Assess for and treat underlying cause

IV/IO access
- PRESTO Blood Draw

Epinephrine* 0.1 mg/mL
Administer ASAP goal ≤6 minutes
- IV/IO 1 mg (10 mL) q 6 min
- Repeat x 2, max of 3 doses during initial arrest.
- If ROSC then re-arrest an additional 3 doses may be administered.

Normal Saline
- IV/IO bolus- 1 Liter

ALS Airway Management
- If unable to ventilate by BLS measures, initiate appropriate advanced airway procedures in accordance with policy 710.

When one of the following is a suspected cause of arrest:
History of Renal Failure/Dialysis
- **Calcium Chloride**
  - IV/IO – 1 g
  - Repeat x 1 in 10 min
- **Sodium Bicarbonate**
  - IV/IO – 1 mEq/kg
  - Repeat x 2 0.5 mEq/kg q 5 min

Tricyclic Antidepressant Overdose
- **Sodium Bicarbonate**
  - IV/IO – 1 mEq/kg
  - Repeat x 2 0.5 mEq/kg q 5 min

Beta Blocker Overdose
- **Glucagon**
  - IV/IO – 2 mg up to 10 mg when available

Calcium Channel Blocker Overdose
- **Calcium Chloride**
  - IV/IO – 1 g
  - Repeat x 1 in 10 min
- **Glucagon**
  - IV/IO – 2 mg up to 10 mg when available

PEDIATRIC

Assess for and treat underlying cause

IV/IO access
- PRESTO Blood Draw

Epinephrine* 0.1mg/mL
Administer ASAP goal ≤6 minutes
- IV/IO 0.01mg/kg (0.1 mL/kg) q 6 min
- Repeat x 2, max of 3 dose during initial arrest.
- If ROSC then re-arrest an additional 3 doses may be administered.

Normal Saline
- IV/IO bolus- 20 mL/kg

ALS Airway Management
- If unable to ventilate by BLS measures, initiate appropriate advanced airway procedures in accordance with policy 710.

When one of the following is a suspected cause of arrest:
History of Renal Failure/Dialysis
- **Calcium Chloride**
  - IV/IO – 20 mg/kg
  - Repeat x 1 in 10 min
- **Sodium Bicarbonate**
  - IV/IO – 1 mEq/kg
  - Repeat x 2 0.5 mEq/kg q 5 min

Tricyclic Antidepressant Overdose
- **Sodium Bicarbonate**
  - IV/IO – 1 mEq/kg
  - Repeat x 2 0.5 mEq/kg q 5 min

Beta Blocker Overdose
- **Glucagon**
  - IV/IO – 0.1 mg/kg up to 10 mg when available

Calcium Channel Blocker Overdose
- **Calcium Chloride**
  - IV/IO – 20 mg/kg
  - Repeat x 1 in 10 min
- **Glucagon**
  - IV/IO – 0.1 mg/kg up to 10 mg when available

Base Hospital Orders Only

***Consult with ED Physician for further treatment measures**

Additional Information:
- If sustained ROSC (> 30 seconds), activate VF/VT alarm and initiate post arrest resuscitation as outlined in Policy 733: Cardiac Arrest management and Post Arrest Resuscitation.
- For termination of resuscitation, transport decisions, and use of base hospital consult reference Policy 733: Cardiac Arrest Management and Post Arrest Resuscitation.
- If patient is **hypothermic** – only ONE round of medication administration prior to Base Hospital contact. Field determination of death is discouraged in these patients and they should be transported to the most accessible receiving facility.

Effective Date: June 1, 2023
Next Review Date: February 28, 2025

Date Revised: May 14, 2020
Last Reviewed: February 9, 2023

VCEMS Medical Director

Cardiac Arrest – Asystole/Pulseless Electrical Activity (PEA)

ADULT	PEDIATRIC

BLS Procedures

Initiate Cardiac Arrest Management (CAM) Protocol per VCEMS Policy 733
Airway management per VCEMS Policy 710

ALS Standing Orders

IV or IO access & PRESTO Blood draw

Epinephrine 0.1 mg/mL (Administer ASAP)
- IV/IO – 1 mg (10 mL) q 6 min
- Repeat x 2 for max of 3 doses during initial arrest
- If ROSC then re-arrest: additional 3 doses may be administered

Normal Saline
- IV/IO – 1 Liter bolus

Treat underlying causes when identified:
Renal Failure / History of Dialysis
Calcium Chloride
- IV/IO – 1g
- Repeat x 1 in 10 min

Sodium Bicarbonate
- IV/IO – 1 mEq/kg
- Repeat 0.5 mEq/kg x 2 q 5 min

Tricyclic Antidepressant Overdose
Sodium Bicarbonate
- IV/IO – 1 mEq/kg
- Repeat 0.5 mEq/kg x 2 q 5 min

Beta Blocker Overdose
Glucagon
- IV/IO – 2 mg up to 10 mg when available

Calcium Channel Blocker Overdose
Calcium Chloride
- IV/IO – 1 g
- Repeat x 1 in 10 min

Glucagon
- IV/IO – 2 mg up to 10 mg when available

ALS Airway Management
- Ventilate by BLS measures. If indicated, initiate appropriate advanced airway procedures in accordance with VCEMS Policy 710

IV or IO access & PRESTO Blood draw

Epinephrine 0.1 mg/mL (Administer ASAP)
- IV/IO – 0.01mg/kg (0.1 mL/kg) q 6 min
- Repeat x 2 for max of 3 doses during initial arrest.
- If ROSC then re-arrest and additional 3 doses may be administered

Normal Saline
- IV/IO – 20 mL/kg bolus

Treat underlying causes when identified:
Renal failure / History of Dialysis
Calcium Chloride
- IV/IO – 20 mg/kg
- Repeat x 1 in 10 min

Sodium Bicarbonate
- IV/IO – 1 mEq/kg
- Repeat 0.5 mEq/kg x 2 q 5 min

Tricyclic Antidepressant Overdose
Sodium Bicarbonate
- IV/IO – 1 mEq/kg
- Repeat 0.5 mEq/kg x 2 q 5 min

Beta Blocker Overdose
Glucagon
- IV/IO – 0.1 mg/kg up to 10 mg when available

Calcium Channel Blocker Overdose
Calcium Chloride
- IV/IO – 20 mg/kg
- Repeat x 1 in 10 min

Glucagon
- IV/IO – 0.1 mg/kg up to 10 mg when available

ALS Airway Management
- Ventilate by BLS measures. If indicated, initiate appropriate advanced airway procedures in accordance with VCEMS Policy 710

Base Hospital Orders Only

Consult with ED Physician for further treatment measures

Additional Information:
- If sustained ROSC (> 30 seconds), activate VF/VT alarm and initiate post arrest resuscitation as outlined in VCEMS Policy 733.
- For termination of resuscitation, transport decisions, and use of base hospital consult reference VCEMS Policy 733.
- If patient is hypothermic: Limit treatment to ONE round of medication prior to Base Hospital contact. Field determination of death is discouraged in these patients and they should be transported to the most accessible receiving facility.

Effective Date: July 1, 2026

Date Revised: February 12, 2026
Last Reviewed: March 12, 2026

VCEMS Medical Director

Cardiac Arrest – VF/VT

ADULT	PEDIATRIC

BLS Procedures

Initiate Cardiac Arrest Management (CAM) Protocol
Airway management per VCEMS policy

ALS Standing Orders

ADULT

Defibrillate
- Defibrillate q 2 minutes as indicated
  - Lifepak 360 Joules
  - Zoll 200 Joules

IV or IO access & PRESTO Blood draw

Epinephrine* 0.1 mg/mL
Administer ASAP goal ≤6 minutes
- IV/IO –1 mg (10 mL) q 6min
- Repeat x 2 for max of 3 doses during initial arrest.
- If ROSC then re-arrest an additional 3 doses may be administered.

Amiodarone
- IV/IO – 300 mg – after second defibrillation
- If VT/VF persists, 150 mg IV/IO in 3-5 minutes

Normal Saline
- IV/IO bolus 1 Liter

ALS Airway Management
- If unable to ventilate by BLS measures, initiate appropriate advanced airway procedures in accordance with policy 710.

When Torsades de Pointes is identified:
- **Magnesium Sulfate**
  - IV/IO – 2 g over 2 min
  - Repeat x 1 in 5 min

Treat underlying causes when identified:
Renal Failure / History of Dialysis:
- **Calcium Chloride**
- IV/IO – 1g
- Repeat x 1 in 10 min
- **Sodium Bicarbonate**
  - IV/IO – 1 mEq/kg
  - Repeat 0.5 mEq/kg x 2 q 5 min

Tricyclic Antidepressant Overdose:
- **Sodium Bicarbonate**
  - IV/IO – 1 mEq/kg
  - Repeat 0.5 mEq/kg x 2 q 5 min

PEDIATRIC

Defibrillate
- Defibrillate q 2 minutes as indicated using escalating joules doses
  - 2, 4, 6, 8 joules/kg

IV or IO access & PRESTO Blood Draw

Epinephrine* 0.1mg/mL
Administer ASAP goal ≤ 6 minutes
- IV/IO – 0.01mg/kg (0.1 mL/kg) q 6 min
- Repeat x 2 for max of 3 dose during initial arrest.
- If ROSC then re-arrest and additional 3 doses may be administered.

Amiodarone
- IV/IO – 5 mg/kg – after second defibrillation
- If VT/VF-persists, repeat 5 mg/kg x 2 q 3-5 minutes

Normal Saline
- IV/IO 20 mL/kg bolus

ALS Airway Management
- If unable to ventilate by BLS measures, initiate appropriate advanced airway procedures in accordance with policy 710.

When Torsades de Pointes is identified:
- **Magnesium Sulfate**
  - IV/IO – 50 mg/kg over 2 min
  - Repeat x 1 in 5 min

Treat underlying causes when identified:
Renal failure / History of Dialysis:
- **Calcium Chloride**
- IV/IO – 20 mg/kg
- Repeat x 1 in 10 min
- **Sodium Bicarbonate**
  - IV/IO – 1 mEq/kg
  - Repeat 0.5 mEq/kg x 2 q 5 min

Tricyclic Antidepressant Overdose:
- **Sodium Bicarbonate**
  - IV/IO – 1 mEq/kg
  - Repeat 0.5 mEq/kg x 2 q 5 min

Base Hospital Orders Only

Consult with ED Physician for further treatment measures*

Additional Information:
- If sustained ROSC (>30 seconds), activate VF/VT alarm and initiate post arrest resuscitation as outlined in Policy 733: Cardiac Arrest management and Post Arrest Resuscitation.
- For termination of resuscitation, transport decisions, and use of base hospital consult reference Policy 733: Cardiac Arrest Management and Post Arrest Resuscitation
- If patient is hypothermic–only ONE round of medication administration and limit *defibrillation to 6 times* prior to Base Hospital contact. Field determination of death is discouraged in these patients and they should be transported to the most accessible receiving facility
- Ventricular tachycardia (VT) is a rate > 150 bpm

Effective Date: December 1, 2020
Next Review Date: October 31, 2022

Date Revised: October 8, 2020
Last Reviewed: October 8, 2020

VCEMS Medical Director

Cardiac Arrest – VF/VT

ADULT

PEDIATRIC

BLS Procedures

Initiate Cardiac Arrest Management (CAM) Protocol per VCEMS Policy 733
Airway management per VCEMS Policy 710

ALS Standing Orders

Defibrillation (AP pad placement)

- q 2 minutes - Lifepak 360 joules, Zoll 200 joules
- If VF/VT refractory to 3 defibrillations
  - *1 defibrillator*: leave AP pads in place, put new pads on opposing vector (AL) and defibrillate using new vector
  - *2 defibrillators*: place additional set of pads on opposing vector (AL) and attach to second defibrillator for Double Sequential Defibrillation (DSD)
    - DSD: defibrillate via both defibrillators sequentially (one after the other without delay)
- If recurrent VF/VT: use last successful defibrillation method and progress as appropriate

IV or IO access & PRESTO Blood draw

Epinephrine 0.1 mg/mL (Administer ASAP)

- IV/IO – 1 mg (10 mL) q 6 min
- Repeat x 2 for max of 3 doses during initial arrest
- If ROSC then re-arrest: additional 3 doses may be administered

Amiodarone

- IV/IO – 300 mg, after second defibrillation
- If VT/VF persists – 150 mg IV/IO in 3-5 minutes

Normal Saline

- IV/IO – 1 Liter bolus

Magnesium Sulfate (For Torsades de Pointes)

- IV/IO – 2 g over 2 min
- Repeat x 1 in 5 min

Treat underlying causes when identified:
Renal Failure / History of Dialysis
Calcium Chloride

- IV/IO – 1g
- Repeat x 1 in 10 min

Sodium Bicarbonate

- IV/IO – 1 mEq/kg
- Repeat 0.5 mEq/kg x 2 q 5 min

Tricyclic Antidepressant Overdose
Sodium Bicarbonate

- IV/IO – 1 mEq/kg
- Repeat 0.5 mEq/kg x 2 q 5 min

ALS Airway Management

- Ventilate by BLS measures. If indicated, initiate appropriate advanced airway procedures in accordance with VCEMS Policy 710

Defibrillation (AP pad placement)

- q 2 minutes - escalating energy: 2, 4, 6, 8 joules/kg
- **If** VF/VT refractory to 3 defibrillations
  - *1 defibrillator*: leave AP pads in place, put new pads on opposing vector (AL) and continue defibrillation using new vector
  - *2 defibrillators*: place additional set of pads on opposing vector (AL) and attach to second defibrillator for Double Sequential Defibrillation (DSD)
    - DSD: defibrillate via both defibrillators sequentially (one after the other without delay)
- If recurrent VF/VT: use last successful defibrillation method and progress as appropriate

IV or IO access & PRESTO Blood Draw

Epinephrine 0.1 mg/mL (Administer ASAP)

- IV/IO – 0.01mg/kg (0.1 mL/kg) q 6 min
- Repeat x 2 for max of 3 doses during initial arrest.
- If ROSC then re-arrest and additional 3 doses may be administered

Amiodarone

- IV/IO – 5 mg/kg, after second defibrillation
- If VT/VF persists – repeat 5 mg/kg x 2 q 3-5 minutes

Normal Saline

- IV/IO – 20 mL/kg bolus

Magnesium Sulfate (For Torsades de Pointes)

- IV/IO – 50 mg/kg over 2 min
- Repeat x 1 in 5 min

Treat underlying causes when identified:
Renal failure / History of Dialysis
Calcium Chloride

- IV/IO – 20 mg/kg
- Repeat x 1 in 10 min

Sodium Bicarbonate

- IV/IO – 1 mEq/kg
- Repeat 0.5 mEq/kg x 2 q 5 min

Tricyclic Antidepressant Overdose
Sodium Bicarbonate

- IV/IO – 1 mEq/kg
- Repeat 0.5 mEq/kg x 2 q 5 min

ALS Airway Management

- Ventilate by BLS measures. If indicated, initiate appropriate advanced airway procedures in accordance with VCEMS Policy 710

Base Hospital Orders Only

Consult with ED Physician for further treatment measures

Additional Information:

- If sustained ROSC (>30 seconds), activate VF/VT alarm and initiate post arrest resuscitation as outlined in VCEMS Policy 733.
- For termination of resuscitation, transport decisions, and use of base hospital consult reference VCEMS Policy 733.
- If patient is hypothermic: Limit treatment to ONE round of medication and SIX defibrillations prior to Base Hospital contact. Field determination of death is discouraged in these patients and they should be transported to the most accessible receiving facility.
- Ventricular Tachycardia (VT) is a rate > 150 bpm

Effective Date: July 1, 2026

Date Revised: February 12, 2026
Last Reviewed: March 12, 2026

VCEMS Medical Director

COUNTY OF VENTURA HEALTH CARE AGENCY	EMERGENCY MEDICAL SERVICES POLICIES AND PROCEDURES
Policy Title: Cardiac Arrest Management (CAM) and Post Arrest (ROSC) Resuscitation	Policy Number 733
APPROVED: Administration: Steven L. Carroll, Paramedic	Date: July 1, 2026
APPROVED: Medical Director: Daniel Shepherd, MD	Date: July 1, 2026
Origination Date: April 30, 2016 Date Revised: ~~March 14, 2019~~February 12, 2026 Date Last Reviewed: ~~March 14, 2019~~ March 12, 2026 ~~Next Review Date: March 31, 2020~~	Effective Date: July 1, 2026

I. PURPOSE: ~~-~~To establish a standardized procedure for the treatment of patients in cardiac arrest, and for those who have a return of spontaneous circulation (ROSC) following treatment for cardiac arrest.

II. AUTHORITY: California Health and Safety Code, Section 1797.220, and 1798. California Code of Regulations, Title 22, Section 100096.03~~100170~~.

III. POLICY: For all patients in cardiac arrest that~~and~~ are greater than ~~4~~28 days~~hours~~ old, Cardiac Arrest Management (CAM) protocol will be followed. ~~-~~Patients less than 2~~4~~8 days~~hours~~ old will follow VC~~-~~EMS ~~Neonatal Resuscitation~~ Policy ~~#~~ 705.16: Neonatal Resuscitation. For patients who are 18-years-old and older, who achieve ROSC following a cardiac arrest that is non-traumatic in nature, ~~p~~Post ~~a~~Arrest (ROSC) Resuscitation protocol outlined in Section V~~-~~.B of this policy will be followed.

IV. DEFINITIONS

A. Cardiac Arrest Management: An organized team-based approach to the management of patients in cardiac arrest.

B. Chest Compression Fraction (CCF): The proportion of total cardiac arrest time spent performing chest compressions. CFF = the cumulative time spent providing chest compressions / the cumulative time of the patient is in cardiac arrest.

C. Post Arrest Resuscitation: An organized team-based approach that prioritizes recognition of re-arrest and management of C-A-B after ROSC has been achieved.

V. CORE PRINCIPLES:

A. The foundation of CAM is high quality, consistent chest compressions with minimal interruptions (CFF ≥ 90%).

B. The next priority is the recognition and defibrillation of malignant rhythms such as ventricular fibrillation.

C. The first dose of epinephrine should be administered as quickly as possible.

D. A methodical, coordinated approach and good communication are essential components of a well-run resuscitation

VI. POLICY:

A. Cardiac Arrest Management

*******PRIORITIES DURING CARDIAC ARREST RESUSCITATION*******

1. **High qQuality cContinuous cChest cCompressions with minimal interruptions**
2. ~~**Low-volume interposed ventilations**~~
2. **ImmediateEarly defibrillation & termination of refractory VF/VT**
3. **Expeditious administration of epinephrine**
4. ~~**Switch Compressors every 2 Minutes**~~ **Low-volume ventilations (on the recoil phase of every 10th compression)**
5. **Communication and Teamwork**

Immediate Goals of Care

BLS Goals of Care	ALS Goals of Care
▪ Establish Triangle of Life ▪ Defibrillation (if indicated) ▪ No immediate BLS airway interventions are indicated	▪ BLS Goals of Care established ▪ Initial dose of Epinephrine has been administered ▪ If refractory VF/VT [Vector change or Double Sequential Defibrillation(DSD) has been attempted] ▪ No immediate ALS airway interventions are indicated

4.

↓

Rescuer 1 (Initial Compressor)

- Verify Cardiac Arrest (<10 seconds)
  - Shake and Shout
  - Move the patient to a place that will allow for optimal CPR
  - Open airway with "Shark Hook" maneuver ~~(If trauma, modified jaw thrust)~~
  - Assess for apnea or agonal respirations
  - **If not breathing or agonal breathing:**
    - ~~**Pulse check helpful for heroin OD or cervical spine injury**~~
    - ~~**If suspected FBAO: BLS:** Inspect Airway; **ALS:** Laryngoscopy~~
    - ~~**If not breathing:**~~
    - ~~Move patient to place that will allow optimal CPR~~
    - Immediately sStart hHigh qQuality cContinuous cCompressions oOver clothingShirt①

- Switch with Rescuer 2 each rhythm check (alternating manual compressions/ventilations)

- LUCAS Device Application
  - Under the direction of the LUCAS Device Coordinator-will be responsible for attaching the device to the backplate on their own side. Initial attachment is on the side without compressions being performed.②

↓

If there is a suspected FBAO

- BLS – Inspect Airway, ALS – Laryngoscopy
- Rescuer 1 continues compressions
- Rescuer 2 or 3 focus on FBAO removal

↓

Rescuer 2 (Initial AED/Cardiac Monitor)

- ~~Turn on~~Activate metronome ~~(112/minute)~~
- Remove clothing to expose chest~~over chest.~~
- Apply AED or Cardiac m~~M~~onitor ~~/D~~defibrillator pads in the anterior/posterior (AP) position ②~~③~~

Basic Life Support (AED)	**Advanced Life Support (Manual Defibrillator)**
▪ Turn on AED and follow prompts	▪ Pre-charge monitor③

↓

"Shock Advised"	**"No Shock Advised"**	**VF/VT**	**Non-Shockable rhythm**
Clear patient/deliver immediate shock	Don't shock	Clear patient/deliver immediate shock	Disarm defibrillator charge

- Switch with Rescuer 1 each rhythm check (alternating manual compressions/ventilations)

- LUCAS Device Application
  - Under the direction of the LUCAS Device Coordinator-will be responsible for attaching the device to the backplate on their own side. Initial attachment is on the side without compressions being performed.

↓

~~**Basic Life Support (AED)**~~	~~**Advanced Life Support (Manual Defib)**~~
~~▪ Turn on AED~~ ~~▪ Apply Pads~~ ~~▪ Clear patient then press Analyze~~	~~▪ Turn on Cardiac Monitor~~ ~~▪ Apply Pads~~ ~~▪ Pre-charge monitor④~~

↓

~~**"Shock Advised"**~~	~~**"No Shock Advised"**~~	~~**VF/VT**~~	~~**Non-Shockable rhythm**~~
~~If AED allows , resume chest compressions during charge~~ ~~Clear patient and press "Shock"~~		~~Clear patient and deliver immediate shock~~	~~Disarm defibrillator charge~~

↓

RESUME CHEST COMPRESSIONS IMMEDIATELY!

↓

Rescuer 3 (Airway)

- Insert OPA/NPA
- Assemble BVM/EtCO2, attach BVM to 15 L/min high flow O2
- Deliver 1-Rescuer ventilations until Rescuer 1 or 2 is available for 2-Rescuer ventilations
- ~~Assist ventilation with BVM along with 15L/min high flow O2~~
- Ensure proper seal with BVM mask to the patient with "2 hand ~~T~~thumbs u~~U~~p" technique
-
- ~~Attach waveform capnography sensor, if equipped~~Coach compression quality

- LUCAS Device Application
  - Once LUCAS device is placed monitor for unwanted movement/drift

↓

Rescuer 2

- Deliver 1 brief low-volume ventilation on the recoil phase of every 10th compression (Ventilation delivered with ONE HAND on bag to ensure low volume)

↓

Rescuer 4 (ALS)
TEAM LEAD

- ~~Attach waveform capnography sensor to BVM if not already completed by BLS~~
- Follow VCEMS Policy 705.07 (Asystole/PEA) or 705.08 (VF/VT)
- Rhythm Checks/Defib (including DSD Coordination)
- EtCO2 Monitoring
- IV/IO, Presto
- ALS Medications
- Advanced Airway PRN
- Assess for causes

- LUCAS Device Coordinator (When feasible, this role should be delegated to Rescuer 5, to allow Rescuer 4 to focus on primary tasks of rhythm interpretation & goals of care)

- *May delegate or perform any of these tasks as appropriate~~Establish IV/IO Access~~
- ~~PRESTO Blood Draw~~
- ~~Advanced Airway PRN~~
- ~~Follow VC EMS Policy 705.07 (Asystole/PEA) or 705.08 (VF/VT)~~

↓

Rescuer 5 (ALS)

Rescuer 5 (ALS)

- Assist Rescuer 4
- Gather Information/Meds
- Communicate with Family

- *May be delegated variety of tasks based on scope of practice~~Assist Rescuer 4 with IV/IO, PRESTO draw, medications~~
- ~~Gather patient information/medications~~

- ~~Communicate with family members~~

- ~~Pre-Charge monitor④~~
- ~~Perform rhythm check every 2 min (< 3 seconds)~~
- ~~Perform pulse check if EtCO2 > 20 AND organized rhythm >40~~

↓

Continuous Cardiac Arrest Management

- Pre-Charge monitor③
- Perform rhythm check every 2 min (Goal < 3-5 seconds)4
- Perform pulse check if EtCO2 > 20 AND organized rhythm > 40
- Medications as indicated
- Airway management as indicated

↓

VF/VT	Non-Shockable rhythm
Clear patient and deliver immediate shock	Disarm defibrillator charge

↓

~~**RESUME CHEST COMPRESSIONS IMMEDIATELY!**~~

RESUME CHEST COMPRESSIONS IMMEDIATELY!

↓

LUCAS Device Application (NOT authorized for pediatrics)

Integration of the LUCAS device during CAM requires a methodical & coordinated approach

- After the BLS and ALS Goals of Care have been established the LUCAS device may be applied
- If there will be NO DELAY in starting compressions, the patient may be placed onto a prepositioned backplate when moving them to a workable space

The LUCAS Device Coordinator will direct placement of the device

Staged application: A two-stage method where application of the LUCAS device is done during rhythm checks to minimize pauses in chest compressions*
Stage 1- The backplate is positioned under the patient and manual compressions are resumed
Stage 2- During a subsequent rhythm check, the device is secured to the backplate and mechanical compressions are initiated*

- Initial device attachment to the backplate is on the opposite side of the compressor
- Once attached to both sides of the back plate, pull down the plunger and start the device
- Secure the patient's arms to the device and place the neck strap
- Mark the plunger location to monitor for device shifting**

*If during the application process, there is more than a 10 second pause in compressions, manual compressions are to be resumed before reattempting placement

**If the LUCAS device alarms or shifts it may need to be adjusted. If there are a combined 3 alarms/ adjustments needed, remove the device on the third alarm and resume manual CPR.

Additional Information:

① Chest Compressions:

- Rate: 100-120/min
- Depth:
  - Adult: 2-2.4 inches
  - Child/Infant: 1/3 the anterior-posterior chest dimension
- Full chest recoil after each compression

~~Patients less than 48 hours old will follow VC EMS Neonatal resuscitation Policy 705.16~~

② Cardiac Monitors should be in paddles mode to capture compression data ~~Chest Compressions:~~

Zoll-Utilize puck for cardiac arrest feedback and leave in place with LUCAS device application.

~~Rate: 112/min~~

~~Depth: 2-2.4 inches for an adult~~

~~1/3 the anterior-posterior chest dimension for a child or infant~~

~~Full chest recoil after each compression~~

③ Energy level: Lifepak 360 Joules, Zoll 200 Joules~~LIFEPAK 12/15 must be in paddles mode to capture compression data~~

4 Defibrillate indeterminate rhythms rather than prolong rhythm analysis.

~~④ Energy level per manufacturer or provider medical director~~

~~(If 1 or more AED shocks were delivered, ALS defibrillation at next sequential Joules setting)~~

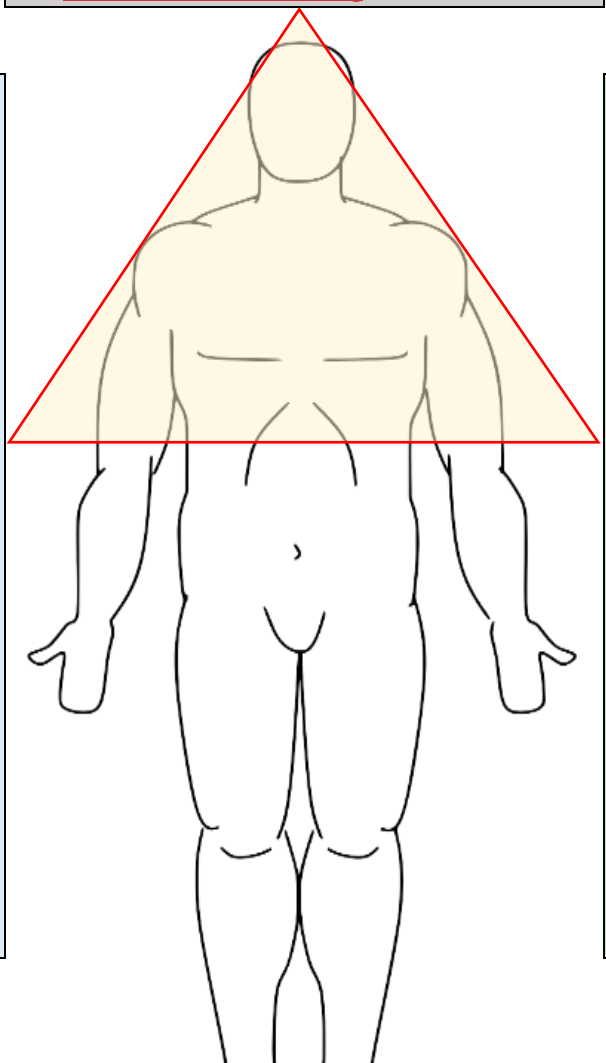
Triangle of Life
Cardiac Arrest Management

Rescuer 3
Airway

- Insert OPA/NPA
- Assemble BVM/EtCO2
- 2 hand thumbs up mask seal
- Coach compression quality

LUCAS Device Application

- Monitors for device shifting



Rescuer 1
Initial Compressor

Initial Interventions

- Shake and Shout
- Move patient to floor
- Shark hook ~~airway~~
- Begin compressions over clothing

Ongoing Interventions

- Switch with Rescuer 2 each rhythm check (alternating manual compressions/ ventilations)

LUCAS Device Application

- Ensures arm is up
- Attaches device to backplate on their side (initial attachment is on the side without compressions being performed)

Rescuer 2
Initial AED/Cardiac Monitor

Initial Interventions

- Activate metronome
- Expose chest ~~Cut shirt~~
- Apply defib pads in AP position & analyze rhythm
- ~~Deliver Ventilations~~

Ongoing Interventions

- Switch with Rescuer 1 each rhythm check (alternating manual compressions/ ventilations)
- ~~Switch with rescuer 1 each rhythm check~~

LUCAS Device Application

- Ensures arm is up
- Attaches device to backplate on their side (initial attachment is on the side without compressions being performed)
- Pulls down plunger and starts device
- Marks plunger on chest

- Secures patient's arms/neck strap

Rescuer 4 (ALS)
Team Lead

- Rhythm Checks/Defib
- EtCO2 Monitoring
- IV/IO, Presto
- ALS Medications
- Advanced Airway PRN
- Assess for causes
- LUCAS Device Coordinator
-

*May delegate or perform as appropriate

Rescuer 5

- Assist Rescuer 4
- Gather Information/Meds
- Communicate with Family

*May be delegated variety of tasks based on scope

~~B.~~ Post Arrest Resuscitation
~~C.~~
~~D.~~B.

******PRIORITIES IN POST ARREST RESUSCITATION******

1. **Immediate recognition and treatment of re-arrest**
2. **Preventing re-arrest through effective and continuous management of C – A – B**
3. **Thorough assessment and identification / treatment of correctable causes**
4. **Movement and transport decisions that prioritize ongoing patient care**

~~Procedure – Post Arrest Resuscitation (ROSC)~~

↓

Rescuer 1

- Palpate femoral pulse continuously for first 10 minutes prior to patient movement
- Immediately begin chest compressions if femoral pulse is lost or in question

↓

Rescuer 2

- Continue rescue breathing
- Deliver 1 ventilation every 6 seconds, no more than 10 breaths per minute
- Deliver ventilations with ONE HAND on bag to avoid hyperventilation

↓

Rescuer 3

- Ensure effective mask seal with continuous "2 thumbs up" technique
- Coach rescuer 2 as needed to ensure delivery of ventilations and avoid hyperventilation
- For spontaneously breathing patients apply nasal $EtCO_2$ device

↓

Rescuer 4
TEAM LEAD

- Communicate treatment priorities to team – ensure roles are clear and effective
- Setup cardiac monitor to recognize change in patient status – monitor must remain attached to patient and observed through all phases of care

- Confirm monitor settings
  - VF alarm activated
  - Pads / paddles mode
  - $EtCO_2$ waveform
  - SpO_2 waveform

- Attach adhesive SpO_2 sensor to maintain a consistent and reliable waveform, if available
- Perform a thorough assessment: history, medications, circumstances, physical exam
- Lucas Device Coordinator: if device is not in place, directs placement prior to transport (if available)
- May delegate interventions as appropriate

Rescuer 4
TEAM LEAD

ASSESSMENT

CIRCULATION	AIRWAY-VENTILATION-OXYGENATION

• Evaluate for palpable femoral pulse
• Evaluate MANUAL blood pressure
  ○ repeat every 5 minutes
  ○ manual for patient changes or SBP < 90 mmHg
• Monitor for falling $EtCO_2$ as sign of re-arrest
• Obtain and evaluate 12 lead only after assessment and interventions
	• Confirm $EtCO_2$ waveform present with every
	• Vventilation; normal 35 – 45 mmHg
	• Confirm presence of bilateral lung sounds
	• Evaluate SpO_2, goal is 94% – 99%
	• Consider likelihood of respiratory cause; E.g. choking

SUPPORT

CIRCULATION	AIRWAY-VENTILATION-OXYGENATION

• Obtain peripheral IV – preferred 18g, minimum 20g
• Initiate 1 L fluid bolus, use pressure bag for IO or rapid infusion via peripheral IV
• Epinephrine 10mcg/mL*
  ○ 1mL (10mcg) every 2 minutes, slow IV/IO push
  ○ Titrate to SBP of greater than or equal to 90mm/Hg
• Circulation treatment goals
  ○ Peripheral pulses present
  ○ Systolic BP > 90 mmHg
  ○ Ongoing fluid therapy**
• Consider etiology to direct treatment where possible
  ○ Hypovolemia, sepsis, GI bleeding
  ○ MI, heart failure, idiopathic electrical anomaly
  ○ Hyperkalemia
	• Place advanced airway as needed to
	  ○ Improve ventilation or oxygenation
	  ○ Protect against aspiration
	  ○ Effectively ventilate while moving
	• SpO_2 goal 94%-99% - titrate supplemental oxygen down if SpO_2 is 100%
	• Ventilation treatment goals
	  ○ $EtCO_2$ waveform present with each breath
	  ○ Bilateral breath sounds
	• Consider etiology to direct treatment where possible
	  ○ Tension pneumothorax
	  ○ Bronchoconstriction
	  ○ Pulmonary embolus
	  ○ Upper airway obstruction
	  ○ Opiate overdose

*Refer to VCEMS Policy 735 for additional information on preparing push dose solution
**Fluid therapy indicated unless ~~outward~~ indication of fluid overload or left sided heart failure

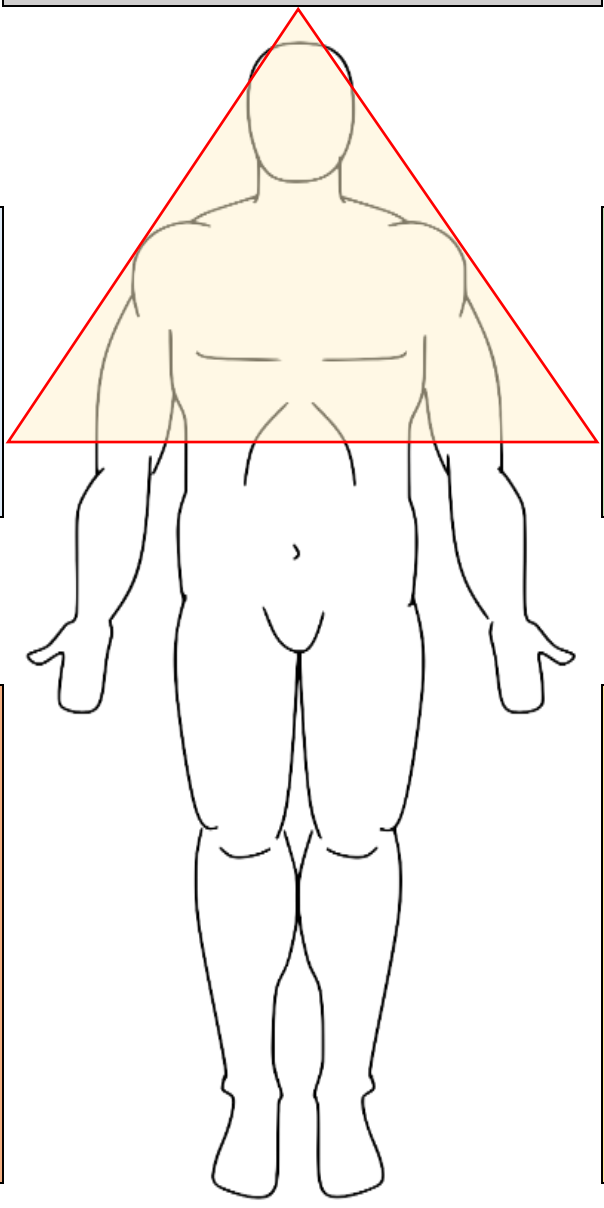
↓

~~Re~~Rescuer 5

- Assist in overseeing triangle of life roles
- Assist ~~r~~Rescuer 4 by preparing medications and equipment
- Obtain manual blood pressure
- Obtain 12-lead EKG once directed; assure monitor is returned to pads / paddles mode
- May be delegated a variety of tasks based on scope

Triangle of Life
Post Arrest Resuscitation

Rescuer 3
- 2~~Two~~ hand~~,~~ thumbs up~~,~~ mask seal
- Coaches to ensure adequate Ventilation
- Coaches to avoid hyperventilation



Rescuer 1
- Palpates femoral pulse continuously for 10 minutes
- Immediately starts compressions if femoral pulse lost or in question
- **PRIORITY** position; does not take on additional tasks

Rescuer 2
- Provides 1 hand BVM ventilations
- 1 breath every 6 seconds
- Avoids hyperventilation
- **PRIORITY** position; does not take on additional tasks

Rescuer 4
Team Lead
- Visually monitors EtCO2, SpO2, & Paddles EKG
- Obtains/delegate~~sd~~ peripheral IV
- Initiates NS bolus
- Provides ALS circulatory assessment and support
- Provides airway assessment and support
- Determines all ALS care-performs/delegates

Rescuer 5
- Directly assists team lead
- Takes manual blood pressure
- Assists in obtaining 12-lead
- Most mobile position

*May be delegated variety of tasks based on scope

POST ARREST RESUSCITATION CHECKLIST	
☑	**Initial Actions**
☐	Initiate 10-minute continuous femoral pulse check
☐	Continue rescue breathing as needed
☐	Paddles attached and EKG waveform visible
☐	VF alarm set, SpO_2 and $EtCO_2$ waveforms visible
	Circulation
☐	Obtain peripheral IV access (18 g preferred, 20 g minimum)
☐	Initiate NS fluid bolus
☐	Assess for peripheral pulses
☐	Obtain manual blood pressure
☐	Push dose epinephrine IN ADDITION TO fluids for systolic BP < 90 mmHg
	Airway / Ventilation
☐	Assess for responsiveness and spontaneous ventilations
☐	Assess $EtCO_2$, lung sounds, SpO_2
☐	Maintain BLS airway or place advanced airway as indicated
☐	Place advanced airway if needed to ventilate while moving patient
☐	Oxygenate to SpO_2 94% to 99%
☐	Oxygen flow rate titrated to prevent SpO_2 100%
	12 Lead EKG
☐	Obtain 12-lead EKG only after managing C-A-B and prior to movement
	Prior to Moving Patient, Confirm
☐	~~Patient has sustained ROSC approximately ≥ 10 minutes~~
☐	Patient has sustained ROSC approximately ≥ 10 minutes
☐	C-A-B have been effectively stabilized or appropriate efforts made
☐	LUCAS device is in place (if available)
☐	Team has planned how to effectively ventilate during move
☐	Team is prepared to recognize re-arrest: • STOP MOVING • RESUME CAM ON SCENE

Post Arrest Resuscitation Transport
• Transport is indicated after a patient has sustained ROSC for approximately 10 minutes and effective efforts have been made to stabilize airway, breathing, and circulation • Continuous patient assessment and treatment must remain the priority during transport. • Recognizing hypotension, inadequate ventilation, or re-arrest, will have a large impact on patient outcome.

Re-Arrest Guidelines (Loss of ROSC)	
• Re-arrests require the same high-quality CAM and ALS care as the initial arrest: ○ Remain on scene ○ Ensure adequate workspace ○ Begin CAM Procedure ○ Defibrillate VF / VT ASAP • Provide an additional 20 minutes of high-quality CAM prior to any further movement or initiating transport. • If ROSC is obtained again, reassess, stabilize C – A – B as indicated, then continue with previous transport plan. • If no ROSC, or multiple re-arrests, through 20 minutes from initial re-arrest, consider underlying cause, circumstances, and presentation, then contact base for consultation.	
Prioritizing Care in Re-Arrest	
Re-Arrest On Scene	**Re-Arrest During Transport**

• If re-arrest occurs during movement to gurney or ambulance, resume CAM on scene outside of ambulance • If re-arrest occurs after loading but prior to leaving scene, unload patient from ambulance, resume CAM, and move to workable space	• Prioritize immediate and continuous chest compressions • Prioritize immediate and q 2 min defib for VF/VT • Reassess patient considering correctable causes and previous interventions • Confirm advanced airway effective and in place if supraglottic airway ~~air-Q~~ or ETT was used
NOTE: Most re-arrests occur in the first 10 minutes after ROSC is achieved. Most delayed identification of re-arrest occurs during movement of the patient and during transport.	

NO ROSC - NO ROSC AFTER RE-ARREST - FREQUENT RE-ARREST		
Base Consultation		
• Base consultation is indicated when considering DOD vs continuing resuscitation. • Assessment findings, observations, and clinical circumstances should be clearly communicated during base hospital consultation. • Direct consultation with base hospital physician is recommended in cases where the clinical scenario may warrant prolonged resuscitation or “early” termination of resuscitation.		
Patient Factors	**Base Consult Takes Place**	**DOD**

• Asystole / PEA • Never defibrillated, no shockable rhythm observed	After 20 minutes of resuscitation efforts	Consider after 20 minutes; base consult
• VF / VT • Defibrillated at least once during arrest	After 40 minutes of resuscitation efforts without ROSC	Consider after 40 minutes; base consult
• Bystander witnessed collapse • EMS witnessed collapse or loss of pulse	After 40 minutes of resuscitation efforts without ROSC	Consider after 40 minutes; base consult

• Signs of survivability
  ○ EtCO2 > 30
  ○ Spontaneous breathing attempts
  ○ Spontaneous movement
  ○ Frequent / persistent VF / VT
	After 40 minutes of resuscitation efforts without ROSC	Consider DOD after 40 minutes; base consult
		
		Physician consult preferred

• Re-arrest without ROSC • Frequent re-arrest	After 20 minutes of re-arrest, or 20 minutes of intermittent ROSC	Consider after base consult Consider rhythm and signs of survivability

COUNTY OF VENTURA HEALTH CARE AGENCY	EMERGENCY MEDICAL SERVICES POLICIES AND PROCEDURES
Policy Title: Cardiac Arrest Management (CAM) and Post Arrest (ROSC) Resuscitation	Policy Number 733
APPROVED: Administration: Steven L. Carroll, Paramedic	Date: July 1, 2026
APPROVED: Medical Director: Daniel Shepherd, MD	Date: July 1, 2026
Origination Date: April 30, 2016 Date Revised: March 12, 2026 Date Last Reviewed: March 12, 2026	Effective Date: July 1, 2026

I. PURPOSE: To establish a standardized procedure for the treatment of patients in cardiac arrest, and for those who have a return of spontaneous circulation (ROSC) following treatment for cardiac arrest.

II. AUTHORITY: California Health and Safety Code, Section 1797.220, and 1798. California Code of Regulations, Title 22, Section 100096.03.

III. POLICY: For all patients in cardiac arrest that are greater than 28 days old, Cardiac Arrest Management (CAM) protocol will be followed. Patients less than 28 days old will follow VCEMS Policy 705.16: Neonatal Resuscitation. For patients who are 18-years-old and older, who achieve ROSC following a cardiac arrest that is non-traumatic in nature, Post Arrest (ROSC) Resuscitation protocol outlined in Section V.B of this policy will be followed.

IV. DEFINITIONS

A. Cardiac Arrest Management: An organized team-based approach to the management of patients in cardiac arrest.

B. Chest Compression Fraction (CCF): The proportion of total cardiac arrest time spent performing chest compressions. CFF = the cumulative time spent providing chest compressions / the cumulative time of the patient is in cardiac arrest.

C. Post Arrest Resuscitation: An organized team-based approach that prioritizes recognition of re-arrest and management of C-A-B after ROSC has been achieved.

V. CORE PRINCIPLES:

A. The foundation of CAM is high quality, consistent chest compressions with minimal interruptions (CFF ≥ 90%).

B. The next priority is the recognition and defibrillation of malignant rhythms such as ventricular fibrillation.

C. The first dose of epinephrine should be administered as quickly as possible.

D. A methodical, coordinated approach and good communication are essential components of a well-run resuscitation

VI. POLICY:

A. Cardiac Arrest Management

******PRIORITIES DURING CARDIAC ARREST RESUSCITATION******

1. **High quality continuous chest compressions with minimal interruptions**
2. **Immediate defibrillation & termination of refractory VF/VT**
3. **Expeditious administration of epinephrine**
4. **Low-volume ventilations (on the recoil phase of every 10th compression)**
5. **Communication and Teamwork**

Immediate Goals of Care

BLS Goals of Care	ALS Goals of Care
▪ Establish Triangle of Life ▪ Defibrillation (if indicated) ▪ No immediate BLS airway interventions are indicated	▪ BLS Goals of Care established ▪ Initial dose of Epinephrine has been administered ▪ If refractory VF/VT [Vector change or Double Sequential Defibrillation(DSD) has been attempted] ▪ No immediate ALS airway interventions are indicated

↓

Rescuer 1 (Initial Compressor)

- Verify Cardiac Arrest (<10 seconds)
  - Shake and Shout
  - Move the patient to a place that will allow for optimal CPR
  - Open airway with "Shark Hook" maneuver
  - Assess for apnea or agonal respirations
  - **If not breathing or agonal breathing:**
    - Immediately start high quality continuous compressions over clothing ①
- Switch with Rescuer 2 each rhythm check (alternating manual compressions/ventilations)
- LUCAS Device Application
  - Under the direction of the LUCAS Device Coordinator-will be responsible for attaching the device to the backplate on their own side. Initial attachment is on the side without compressions being performed.

↓

If there is a suspected FBAO

- BLS – Inspect Airway, ALS – Laryngoscopy
- Rescuer 1 continues compressions
- Rescuer 2 or 3 focus on FBAO removal

↓

Rescuer 2 (Initial AED/Cardiac Monitor)

- Activate metronome
- Remove clothing to expose chest
- Apply AED or Cardiac monitor defibrillator pads in the anterior/posterior (AP) position ②

Basic Life Support (AED)	Advanced Life Support (Manual Defibrillator)
▪ Turn on AED and follow prompts	▪ Pre-charge monitor③

↓

"Shock Advised"	"No Shock Advised"	VF/VT	Non-Shockable rhythm
Clear patient/deliver immediate shock	Don't shock	Clear patient/deliver immediate shock	Disarm defibrillator charge

- Switch with Rescuer 1 each rhythm check (alternating manual compressions/ventilations)

- LUCAS Device Application
  - Under the direction of the LUCAS Device Coordinator-will be responsible for attaching the device to the backplate on their own side. Initial attachment is on the side without compressions being performed.

↓

RESUME CHEST COMPRESSIONS IMMEDIATELY!

↓

Rescuer 3 (Airway)

- Insert OPA/NPA
- Assemble BVM/EtCO2, attach BVM to 15 L/min high flow O2
- Deliver 1-Rescuer ventilations until Rescuer 1 or 2 is available for 2-Rescuer ventilations
- Ensure proper seal with BVM mask to the patient with "2 hand thumbs up" technique
- Coach compression quality

- LUCAS Device Application
  - Once LUCAS device is placed monitor for unwanted movement/drift

↓

Rescuer 4 (ALS)
TEAM LEAD

- Follow VCEMS Policy 705.07 (Asystole/PEA) or 705.08 (VF/VT)
- Rhythm Checks/Defib (including DSD Coordination)
- EtCO2 Monitoring
- IV/IO, Presto
- ALS Medications
- Advanced Airway PRN
- Assess for causes

- LUCAS Device Coordinator (When feasible, this role should be delegated to Rescuer 5, to allow Rescuer 4 to focus on primary tasks of rhythm interpretation & goals of care)

*May delegate or perform any of these tasks as appropriate

↓

Rescuer 5 (ALS)

- Assist Rescuer 4
- Gather Information/Meds
- Communicate with Family

*May be delegated variety of tasks based on scope of practice

↓

Continuous Cardiac Arrest Management

- Pre-Charge monitor ③
- Perform rhythm check every 2 min (Goal < 3-5 seconds) ④
- Perform pulse check if EtCO2 > 20 AND organized rhythm > 40
- Medications as indicated
- Airway management as indicated

↓

VF/VT	Non-Shockable rhythm
Clear patient and deliver immediate shock	Disarm defibrillator charge

↓

RESUME CHEST COMPRESSIONS IMMEDIATELY!

↓

LUCAS Device Application (NOT authorized for pediatrics)

Integration of the LUCAS device during CAM requires a methodical & coordinated approach

- After the BLS and ALS Goals of Care have been established the LUCAS device may be applied
- If there will be NO DELAY in starting compressions, the patient may be placed onto a prepositioned backplate when moving them to a workable space

The LUCAS Device Coordinator will direct placement of the device

Staged application: A two-stage method where application of the LUCAS device is done during rhythm checks to minimize pauses in chest compressions*
Stage 1- The backplate is positioned under the patient and manual compressions are resumed
Stage 2- During a subsequent rhythm check, the device is secured to the backplate and mechanical compressions are initiated*

- Initial device attachment to the backplate is on the opposite side of the compressor
- Once attached to both sides of the back plate, pull down the plunger and start the device
- Secure the patient's arms to the device and place the neck strap
- Mark the plunger location to monitor for device shifting**

*If during the application process, there is more than a 10 second pause in compressions, manual compressions are to be resumed before reattempting placement

**If the LUCAS device alarms or shifts it may need to be adjusted. If there are a combined 3 alarms/ adjustments needed, remove the device on the third alarm and resume manual CPR.

Additional Information:

① Chest Compressions:

- Rate: 100-120/min
- Depth:
  - Adult: 2-2.4 inches
  - Child/Infant: 1/3 the anterior-posterior chest dimension
- Full chest recoil after each compression

② Cardiac Monitors should be in paddles mode to capture compression data
Zoll-Utilize puck for cardiac arrest feedback and leave in place with LUCAS device application.

③ Energy level: Lifepak 360 Joules, Zoll 200 Joules

④ Defibrillate indeterminate rhythms rather than prolong rhythm analysis.

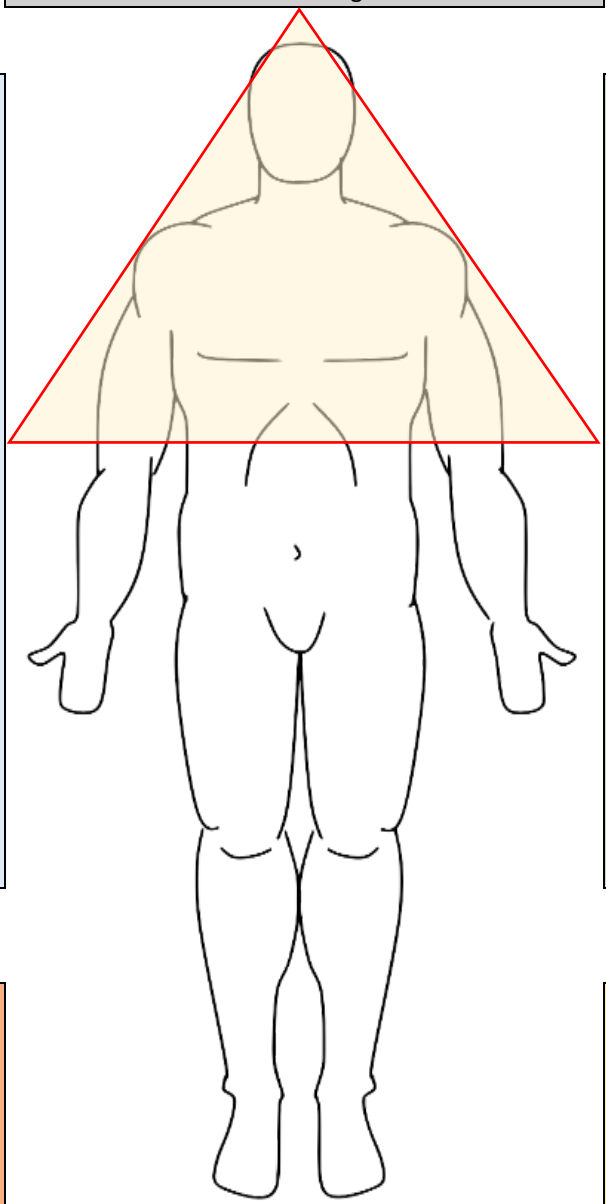
Triangle of Life
Cardiac Arrest Management

Rescuer 3
Airway

- Insert OPA/NPA
- Assemble BVM/EtCO2
- 2 hand thumbs up mask seal
- Coach compression quality

LUCAS Device Application

- Monitors for device shifting



Rescuer 1
Initial Compressor

Initial Interventions

- Shake and Shout
- Move patient to floor
- Shark hook
- Begin compressions over clothing

Ongoing Interventions

- Switch with Rescuer 2 each rhythm check (alternating manual compressions/ ventilations)

LUCAS Device Application

- Ensures arm is up
- Attaches device to backplate on their side (initial attachment is on the side without compressions being performed)

Rescuer 2
Initial AED/Cardiac Monitor

Initial Interventions

- Activate metronome
- Expose chest
- Apply defib pads in AP position & analyze rhythm

Ongoing Interventions

- Switch with Rescuer 1 each rhythm check (alternating manual compressions/ ventilations)

LUCAS Device Application

- Ensures arm is up
- Attaches device to backplate on their side (initial attachment is on the side without compressions being performed)
- Pulls down plunger and starts device
- Marks plunger on chest
- Secures patient's arms/neck strap

Rescuer 4 (ALS)
Team Lead

- Rhythm Checks/Defib
- EtCO2 Monitoring
- IV/IO, Presto
- ALS Medications
- Advanced Airway PRN
- Assess for causes
- LUCAS Device Coordinator

*May delegate or perform as appropriate

Rescuer 5

- Assist Rescuer 4
- Gather Information/Meds
- Communicate with Family

*May be delegated variety of tasks based on scope

B. Post Arrest Resuscitation

******PRIORITIES IN POST ARREST RESUSCITATION******

1. **Immediate recognition and treatment of re-arrest**
2. **Preventing re-arrest through effective and continuous management of C – A – B**
3. **Thorough assessment and identification / treatment of correctable causes**
4. **Movement and transport decisions that prioritize ongoing patient care**

↓

Rescuer 1

- Palpate femoral pulse continuously for first 10 minutes prior to patient movement
- Immediately begin chest compressions if femoral pulse is lost or in question

↓

Rescuer 2

- Continue rescue breathing
- Deliver 1 ventilation every 6 seconds, no more than 10 breaths per minute
- Deliver ventilations with ONE HAND on bag to avoid hyperventilation

↓

Rescuer 3

- Ensure effective mask seal with continuous "2 thumbs up" technique
- Coach rescuer 2 as needed to ensure delivery of ventilations and avoid hyperventilation
- For spontaneously breathing patients apply nasal $EtCO_2$ device

↓

Rescuer 4
TEAM LEAD

- Communicate treatment priorities to team – ensure roles are clear and effective
- Setup cardiac monitor to recognize change in patient status – monitor must remain attached to patient and observed through all phases of care

- Confirm monitor settings
  - VF alarm activated
  - Pads / paddles mode
  - $EtCO_2$ waveform
  - SpO_2 waveform

- Attach adhesive SpO_2 sensor to maintain a consistent and reliable waveform, if available
- Perform a thorough assessment: history, medications, circumstances, physical exam
- Lucas Device Coordinator: if device is not in place, directs placement prior to transport (if available)
- May delegate interventions as appropriate

Rescuer 4
TEAM LEAD

ASSESSMENT

CIRCULATION

- Evaluate for palpable femoral pulse
- Evaluate MANUAL blood pressure
  - repeat every 5 minutes
  - manual for patient changes or SBP < 90 mmHg
- Monitor for falling $EtCO_2$ as sign of re-arrest
- Obtain and evaluate 12 lead only after assessment and interventions

AIRWAY-VENTILATION-OXYGENATION

- Confirm $EtCO_2$ waveform present with every
- Ventilation; normal 35 – 45 mmHg
- Confirm presence of bilateral lung sounds
- Evaluate SpO_2; goal is 94% – 99%
- Consider likelihood of respiratory cause; E.g. choking

SUPPORT

CIRCULATION

- Obtain peripheral IV – preferred 18g, minimum 20g
- Initiate 1 L fluid bolus, use pressure bag for IO or rapid infusion via peripheral IV
- Epinephrine 10mcg/mL*
  - 1mL (10mcg) every 2 minutes, slow IV/IO push
  - Titrate to SBP of greater than or equal to 90mm/Hg
- Circulation treatment goals
  - Peripheral pulses present
  - Systolic BP > 90 mmHg
  - Ongoing fluid therapy**
- Consider etiology to direct treatment where possible
  - Hypovolemia, sepsis, GI bleeding
  - MI, heart failure, idiopathic electrical anomaly
  - Hyperkalemia

AIRWAY-VENTILATION-OXYGENATION

- Place advanced airway as needed to
  - Improve ventilation or oxygenation
  - Protect against aspiration
  - Effectively ventilate while moving
- SpO_2 goal 94%-99% - titrate supplemental oxygen down if SpO_2 is 100%
- Ventilation treatment goals
  - $EtCO_2$ waveform present with each breath
  - Bilateral breath sounds
- Consider etiology to direct treatment where possible
  - Tension pneumothorax
  - Bronchoconstriction
  - Pulmonary embolus
  - Upper airway obstruction
  - Opiate overdose

*Refer to VCEMS Policy 735 for additional information on preparing push dose solution
**Fluid therapy indicated unless indication of fluid overload or left sided heart failure

↓

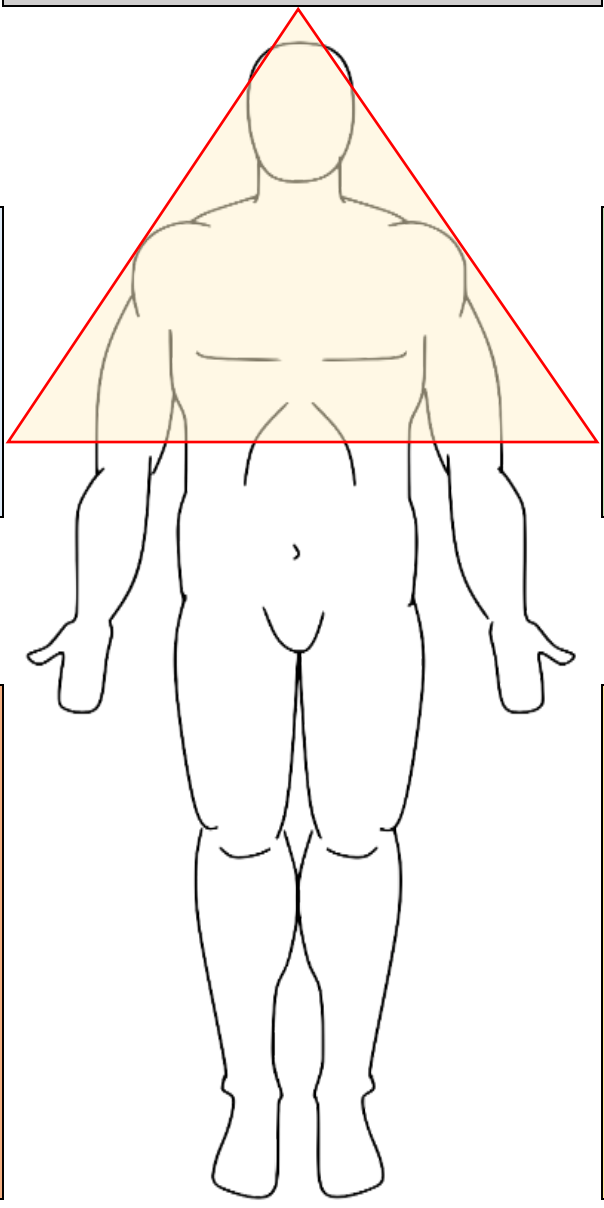
Rescuer 5

- Assist in overseeing triangle of life roles
- Assist Rescuer 4 by preparing medications and equipment
- Obtain manual blood pressure
- Obtain 12-lead EKG once directed; assure monitor is returned to pads / paddles mode
- May be delegated a variety of tasks based on scope

Triangle of Life
Post Arrest Resuscitation

Rescuer 3

- 2 hand thumbs up mask seal
- Coaches to ensure adequate Ventilation
- Coaches to avoid hyperventilation



Rescuer 1

- Palpates femoral pulse continuously for 10 minutes
- Immediately starts compressions if femoral pulse lost or in question
- **PRIORITY** position; does not take on additional tasks

Rescuer 2

- Provides 1 hand BVM ventilations
- 1 breath every 6 seconds
- Avoids hyperventilation
- **PRIORITY** position; does not take on additional tasks

Rescuer 4
Team Lead

- Visually monitors EtCO2, SpO2, & Paddles EKG
- Obtains/delegates peripheral IV
- Initiates NS bolus
- Provides ALS circulatory assessment and support
- Provides airway assessment and support
- Determines all ALS care-performs/delegates
- LUCAS Device Coordinator

Rescuer 5

- Directly assists team lead
- Takes manual blood pressure
- Assists in obtaining 12-lead
- Most mobile position

*May be delegated variety of tasks based on scope

POST ARREST RESUSCITATION CHECKLIST	
☑	**Initial Actions**
☐	Initiate 10-minute continuous femoral pulse check
☐	Continue rescue breathing as needed
☐	Paddles attached and EKG waveform visible
☐	VF alarm set, SpO_2 and $EtCO_2$ waveforms visible
	Circulation
☐	Obtain peripheral IV access (18 g preferred, 20 g minimum)
☐	Initiate NS fluid bolus
☐	Assess for peripheral pulses
☐	Obtain manual blood pressure
☐	Push dose epinephrine IN ADDITION TO fluids for systolic BP < 90 mmHg
	Airway / Ventilation
☐	Assess for responsiveness and spontaneous ventilations
☐	Assess $EtCO_2$, lung sounds, SpO_2
☐	Maintain BLS airway or place advanced airway as indicated
☐	Place advanced airway if needed to ventilate while moving patient
☐	Oxygenate to SpO_2 94% to 99%
☐	Oxygen flow rate titrated to prevent SpO_2 100%
	12 Lead EKG
☐	Obtain 12-lead EKG only after managing C-A-B and prior to movement
	Prior to Moving Patient, Confirm
☐	Patient has sustained ROSC approximately ≥ 10 minutes
☐	C-A-B have been effectively stabilized or appropriate efforts made
☐	LUCAS device is in place (if available)
☐	Team has planned how to effectively ventilate during move
☐	Team is prepared to recognize re-arrest: • STOP MOVING • RESUME CAM ON SCENE

Post Arrest Resuscitation Transport
• Transport is indicated after a patient has sustained ROSC for approximately 10 minutes and effective efforts have been made to stabilize airway, breathing, and circulation • Continuous patient assessment and treatment must remain the priority during transport. • Recognizing hypotension, inadequate ventilation, or re-arrest, will have a large impact on patient outcome.

Re-Arrest Guidelines (Loss of ROSC)	

• Re-arrests require the same high-quality CAM and ALS care as the initial arrest:
  ○ Remain on scene
  ○ Ensure adequate workspace
  ○ Begin CAM Procedure
  ○ Defibrillate VF / VT ASAP
• Provide an additional 20 minutes of high-quality CAM prior to any further movement or initiating transport.
• If ROSC is obtained again, reassess, stabilize C – A – B as indicated, then continue with previous transport plan.
• If no ROSC, or multiple re-arrests, through 20 minutes from initial re-arrest, consider underlying cause, circumstances, and presentation, then contact base for consultation.	

Prioritizing Care in Re-Arrest	
Re-Arrest On Scene	**Re-Arrest During Transport**
• If re-arrest occurs during movement to gurney or ambulance, resume CAM on scene outside of ambulance • If re-arrest occurs after loading but prior to leaving scene, unload patient from ambulance, resume CAM, and move to workable space	• Prioritize immediate and continuous chest compressions • Prioritize immediate and q 2 min defib for VF/VT • Reassess patient considering correctable causes and previous interventions • Confirm advanced airway effective and in place if supraglottic airway or ETT was used
NOTE: Most re-arrests occur in the first 10 minutes after ROSC is achieved. Most delayed identification of re-arrest occurs during movement of the patient and during transport.	

NO ROSC - NO ROSC AFTER RE-ARREST - FREQUENT RE-ARREST		
Base Consultation		
• Base consultation is indicated when considering DOD vs continuing resuscitation. • Assessment findings, observations, and clinical circumstances should be clearly communicated during base hospital consultation. • Direct consultation with base hospital physician is recommended in cases where the clinical scenario may warrant prolonged resuscitation or “early” termination of resuscitation.		
Patient Factors	**Base Consult Takes Place**	**DOD**
• Asystole / PEA • Never defibrillated, no shockable rhythm observed	After 20 minutes of resuscitation efforts	Consider after 20 minutes; base consult
• VF / VT • Defibrillated at least once during arrest	After 40 minutes of resuscitation efforts without ROSC	Consider after 40 minutes; base consult
• Bystander witnessed collapse • EMS witnessed collapse or loss of pulse	After 40 minutes of resuscitation efforts without ROSC	Consider after 40 minutes; base consult
• Signs of survivability ○ EtCO2 > 30 ○ Spontaneous breathing attempts ○ Spontaneous movement ○ Frequent / persistent VF / VT	After 40 minutes of resuscitation efforts without ROSC	Consider DOD after 40 minutes; base consult Physician consult preferred
• Re-arrest without ROSC • Frequent re-arrest	After 20 minutes of re-arrest, or 20 minutes of intermittent ROSC	Consider after base consult Consider rhythm and signs of survivability

COUNTY OF VENTURA HEALTH CARE AGENCY	EMERGENCY MEDICAL SERVICES POLICIES AND PROCEDURES
Policy Title: Push Dose Epinephrine	Policy Number 735
APPROVED: Administration: Steve L. Carroll, Paramedic	Date: December 1, 2024
APPROVED: Medical Director: Daniel Shepherd, M.D.	Date: December 1, 2024
Origination Date: January 10, 2019 Date Revised: September 8, 2022 Date Last Reviewed: October 10, 2024 Review Date: October 31, 2026	Effective Date: December 1, 2024

I. PURPOSE: To define the indications, contraindications, and procedure related to administration of push dose epinephrine

II. AUTHORITY: Health and Safety Code, Sections 1797.220 and 1798. California Code of Regulations, Title 22, Sections 100091.01 and 100096.02

III. POLICY: Paramedics may administer push dose epinephrine to adult and pediatric patients as defined by VCEMSA treatment protocols.

IV. Procedure:

A. Classification

1. Sympathomimetic agent (catecholamine)

B. Indications

1. Anaphylaxis with shock (ref: 705.02 – Allergic reaction / anaphylaxis)
2. Hypotension secondary to presumed cardiogenic shock (ref: 705.09 – Chest Pain – Acute Coronary Syndrome, 705.21 – SOB – Pulmonary Edema)
3. Hypotension secondary to Crush Injury (ref: 705.11 – Crush Injury)
4. Symptomatic bradycardia (ref: 705.24 – Symptomatic Bradycardia)
5. Sepsis Alert (ref: 705.27 – Suspect Shock)
6. Deteriorating patient condition with unknown shock etiology

C. Contraindications

1. None

D. Adverse Effects

Cardiovascular	**Neurological**	**Gastrointestinal**
Tachycardia	Anxiety	Nausea / Vomiting
Hypertension	Dizziness	
Chest Pain	Headache	
Palpitations	Tremors	
Arrhythmias		

E. Actions

Increases blood pressure and cardiac output via stimulation of alpha and beta adrenergic receptors.

F. Preparing the Concentration

1. Adults and Pediatrics

	Using a Preload	Using a Vial
Epinephrine	0.1 mg/mL (Preload)	1 mg/mL (Vial)
Normal Saline	100 mL bag of 0.9%	100 mL bag of 0.9%
Final Concentration	essentially 10 mcg/mL	essentially 10 mcg/mL
Syringe needed for Push Dose	1 mL	1 mL

- ~~Using a "cardiac preload": 1 mg/10mL (0.1 mg/mL or 100 mcg/mL)~~
  - ~~Supplies Needed~~
    - ~~1 – 0.1 mg/mL epinephrine preload syringe~~
    - ~~1 – 100 mL bag of 0.9% normal saline~~
    - ~~1 – 1 mL syringe~~
  - Mixing Instructions
    - Preload: Push 10 mL of 0.1 mg/mL epinephrine from preload into 100mL bag of normal saline
    - Vial: Push 1 mL of 1 mg/mL epinephrine from vial into 100mL bag of normal saline
    - Final concentration is essentially 10 mcg/mL (0.01 mg)

2. Points to Remember

- Confirm your concentration prior to mixing
- Maintain sterile technique
- Label the bag with the drug name and final concentration
  - Example: "Epinephrine 10 mcg/mL"
- DO NOT administer epinephrine and sodium bicarbonate in the same vascular access line and/or location unless that line has been flushed with at least 10mL of normal saline.

G. Dosing

1. Adults

- 1mL (10mcg) every 2 minutes, slow IV/IO push
  - Titrate to SBP of greater than or equal to 90 mm/Hg

2. Pediatrics
    - 0.1 mL/kg (1 mcg/kg) every 2 minutes, slow IV/IO push
        - Max single dose of 1 mL or 10 mcg
        - Titrate to SBP of greater than or equal to 80 mm/Hg

H. Communication and Documentation

1. Communicate the use of push dose epinephrine to base hospital
    - Include final concentration delivered
    - Report total amount of push dose epinephrine administered, total elapsed time of administration, and patient response
2. Administration of epinephrine and any/all associated fields will be documented in the Ventura County electronic Patient Care Report (VCePCR)

I. Alternative Concentrations

1. In the event of a shortage that limits a provider agency from obtaining the necessary 100 mL bags of normal saline solution, please see below for acceptable alternatives:
    - Discard 1 mL from 10 mL saline flush syringe and draw 1 mL from epinephrine preload into flush syringe. This creates a solution of 10 mcg per 1 mL.
    - Draw 5 mL of from epinephrine preload into 50 mL bag of normal saline. This essentially creates a solution of 10 mcg per 1 mL.