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
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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 who 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 the Triangle of Life ▪ Immediate defibrillation (if indicated) ○ If refractory VF/VT [Vector change or Double Sequential Defibrillation (DSD)] ▪ BLS airway interventions as indicated	▪ *BLS Goals of Care* established ▪ Initial dose of Epinephrine administered quickly ▪ ALS airway interventions as indicated

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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 clothing①
- 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.

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If there is a suspected FBAO

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

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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

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"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.

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RESUME CHEST COMPRESSIONS IMMEDIATELY!

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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

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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
- 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

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Rescuer 5 (ALS)

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

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

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Continuous Cardiac Arrest Management

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

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

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RESUME CHEST COMPRESSIONS IMMEDIATELY!

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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 (preferred rate of 112/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.

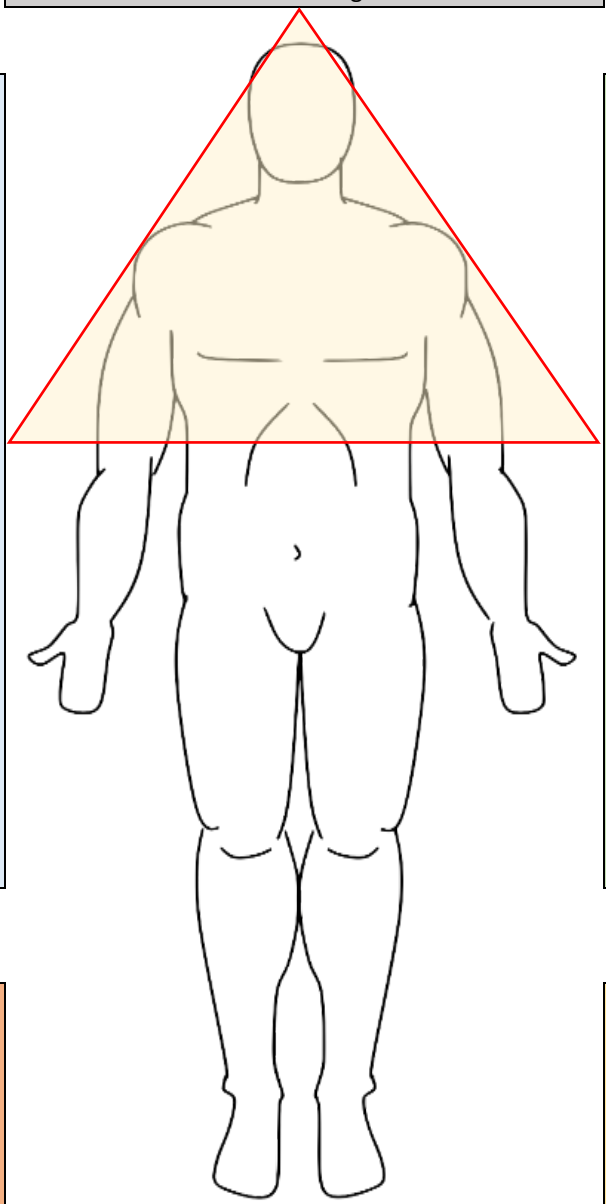
Triangle of Life
Cardiac Arrest Management

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
- 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**

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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

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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

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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

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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

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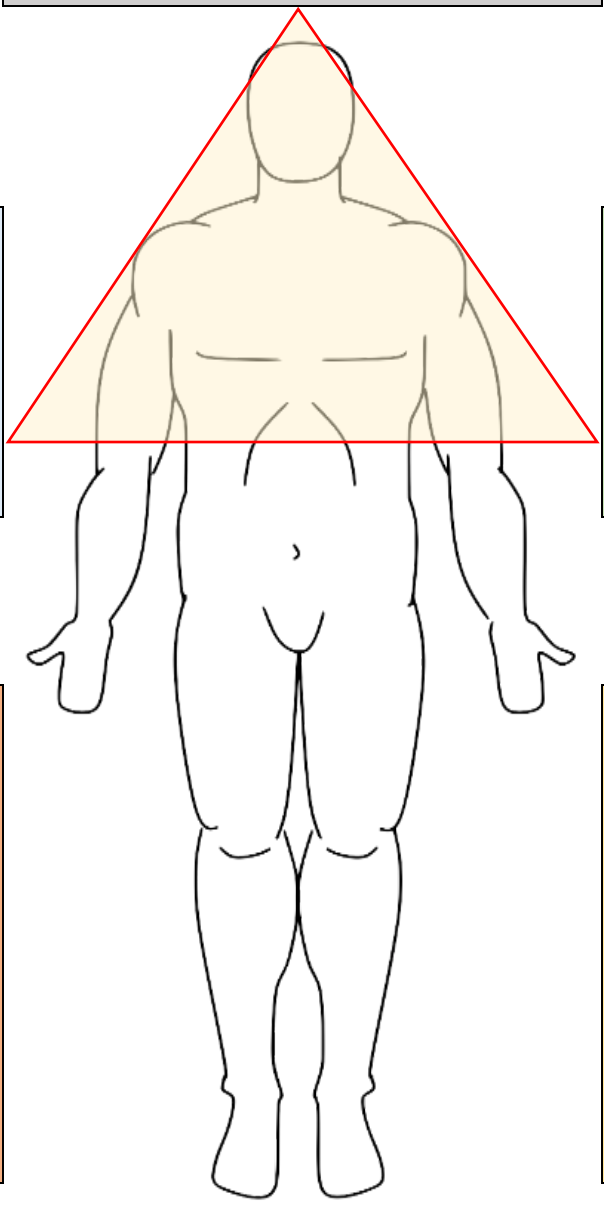
Rescuer 5

- 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

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