	COUNTY OF SACRAMENTO EMERGENCY MEDICAL SERVICES AGENCY	Document #	9005.01
	PROGRAM DOCUMENT: **Pediatric Traumatic Cardiac Arrest**	Initial Date:	TBD
		Last Approval Date:	
		Effective Date:	
		Next Review Date:	

Signature on File
EMS Medical Director

Signature on File
EMS Administrator

Purpose:

A. To serve as the treatment standard for treating pediatric traumatic cardiac arrest patients.

Authority:

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

Protocol:

A. The pathophysiology of traumatic cardiac arrest differs from medical cardiac arrest and is primarily due to one of or a combination of factors: hypovolemia, obstruction of blood flow, and hypoxia.
B. The initial cardiac rhythm for most patients in survivable traumatic cardiac arrest is pulseless electrical activity (PEA). Traumatic cardiac arrest PEA is most often a very low output state due to hypovolemia.
C. Pediatric traumatic cardiac arrest patients undergoing resuscitation shall be transported as quickly as possible to the hospital.
D. Pediatric patients with trauma in cardiac arrest who by prehospital presentation may have suffered a medical event before trauma shall undergo medical cardiac arrest resuscitation per PD# 9006 – Pediatric Cardiac Arrest, with attention and appropriate management to emergent trauma needs (hemorrhage control, pneumothorax decompression as indicated, and orthopedic immobilization as indicated)
E. There is no evidence based medical support for the use of medications in traumatic cardiac arrest. In traumatic arrest, Epinephrine and Amiodarone are **NOT** indicated in traumatic cardiac arrest. Epinephrine will not correct arrest caused by a tension pneumothorax, cardiac tamponade, or hemorrhagic shock. If there is any doubt as to the cause of arrest, treat as a non-traumatic arrest.

Policy:

BLS
1. Treat immediate threats to life 2. External hemorrhage control per PD# 8065 - Hemorrhage Control 3. Airway and Breathing: Clear airway when indicated, place OPA, BVM ventilations 4. Chest Compressions: Chest compressions should be performed when possible without delaying transport or other treatments

ALS

1. Optimize Oxygenation/Ventilation
   - Bag Valve Mask (BVM) ventilations is the airway management of choice in all pediatric patients.
   - ~~Advanced airway as needed per policy~~
   - Endotracheal or Supraglottic intubation may be used when BVM airway management fails to provide adequate ventilation or oxygenation **ONLY** for children ≥ eight (8) years of age. If age is not known, only children who meet or exceed the **GREEN** length on Handtevy or Broselow length based tapes can be intubated.
   - Advanced airway placement shall be confirmed with ETCO2 detection device or waveform Capnography
2. Correct potential obstructive shock - Maintain high Index of suspicion for tension pneumothorax, Bilateral needle thoracostomy per PD# 9017 – Pediatric Trauma
3. Treat potential exsanguination
   - Obtain ~~two (2) large bore~~ IV or IO access
   - 20 ml/Kg normal saline bolus ~~simultaneously~~ via ~~each~~ IV/IO. May repeat once
     - parameters for pediatric patients older than one year can be approximated by the following formulas:
       90mm HG + (2 x age in years)
       70mm HG + (2x age in years) – Lower limit
   - ~~Utilize pressure bag for rapid fluid administration~~
   - ~~May repeat once if Systolic Blood Pressure less than minimum for age~~
   - Reassess lung sounds after each ~~Liter~~ bolus
   - ~~Repeat IV fluid during arrest until SBP>90 or maximum of 4 liters administered~~
4. Treat Cardiovascular Collapse
   - High-quality CPR
   - ECG monitoring and appropriate defibrillation per PD# 9006 – Pediatric Cardiac Arrest

NOTES: Avoiding hypothermia is imperative to the management of the critical pediatric patient. Passive warming measures including warm ambient/environmental temperature, use of blanket, covering head may be used to maintain normal body temperature > 37°C or 98.6°F

Post Resuscitation Considerations:

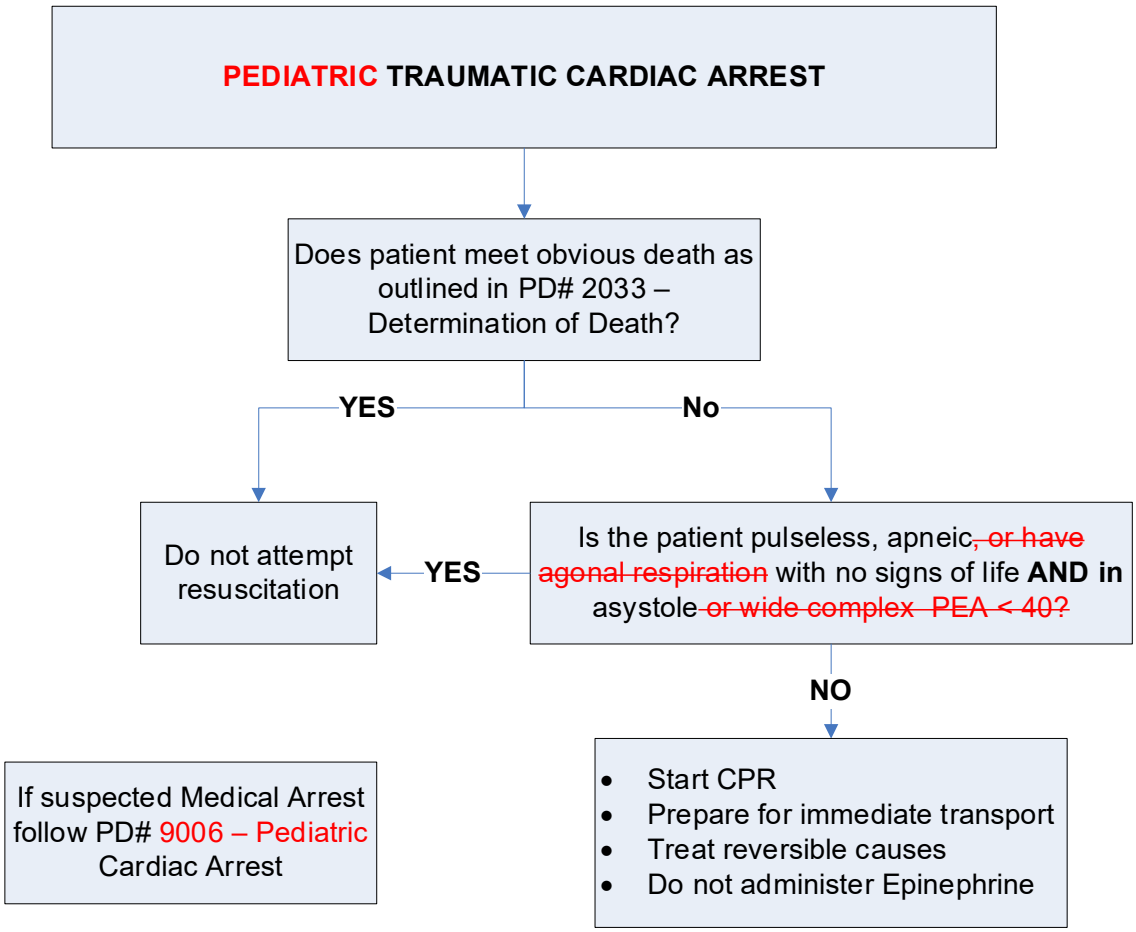
A. Any traumatic cardiac arrest patient who has a Return of Spontaneous Circulation (ROSC) during any part of the resuscitation, and who is transported, shall be transported to a Trauma Center.

~~B. Intravenous (IV) or Intraosseous (IO) fluids should be placed wide open with pressure bags.~~

C. If palpable pulse becomes present:
   - Re-assess for and control external hemorrhage
   - Administer TXA as indicated for patients > 14 years of age per P# 8065 – Hemorrhage Control
   - ~~Titrate normal saline to SBP ≥ 90 mmHg or palpable peripheral pulses~~
   - To determine if shock is present, assess capillary refill (≤ 2 seconds) and brachial and femoral pulses (absent, weak, or present)

Cross Reference:

PD# 2033 – Determination of Death
PD# 5053 – Trauma Triage Criteria
~~PD# 2085 – Do Not Resuscitate~~
PD# 8020 – Respiratory Distress - Airway Management
PD# 8044 – Spinal Motion Restrictions
PD# 8065 – Hemorrhage Control
PD# 8837 – Pediatric Airway Management
PD# 9006 – Pediatric Cardiac Arrest
PD# 9013 – Pediatric Shock
PD# 9016 – Pediatric Parameters
PD# 9017 – Pediatric Trauma
~~PD# 8024 – Cardiac Dysrhythmias~~
~~PD# 8026 – Respiratory Distress~~
~~PD# 8031 – Non-Traumatic Cardiac Arrest~~


PEDIATRIC TRAUMATIC CARDIAC ARREST
Does patient meet obvious death as outlined in PD# 2033 – Determination of Death?
YES
No
Do not attempt resuscitation
YES
Is the patient pulseless, apneic, or have agonal respiration with no signs of life AND in asystole or wide complex PEA < 40?
NO
If suspected Medical Arrest follow PD# 9006 – Pediatric Cardiac Arrest
Start CPR
Prepare for immediate transport
Treat reversible causes
Do not administer Epinephrine