

EL DORADO COUNTY EMS AGENCY

PREHOSPITAL PROTOCOLS

Supersedes: Protocols dated July 1, 2011

Effective: **January 1, 2012**

Reviewed: November 2011

Scope: BLS/ALS – Adult/Pediatric



EMS Agency Medical Director

PULSELESS ARREST

BLS TREATMENT (ADULT)

1. Confirm unresponsiveness and check carotid pulse for no more than 10 seconds.
2. **CABs** - Start CPR as per current guidelines. Support ventilation with appropriate airway adjuncts.
3. **Unwitnessed arrest:**

Both BLS and ALS Personnel: If the arrest is not witnessed by EMS personnel while on scene or more than 4 minutes has elapsed since the arrest, perform 2 minutes (5 cycles) of CPR prior to attaching AED/EKG.

Witnessed arrest

ALS Personnel: Attach EKG and refer to ALS PULSELESS ARREST algorithm.

BLS Personnel: Attach AED to patient, if so equipped. If shock advised, deliver shock per *AED Procedure. Immediately follow shock, and each subsequent shock, with 2 minutes of CPR (starting with compressions).

BLS PERSONNEL ONLY:

1. Continue CPR until patient care transfer to ALS personnel.
2. Establish airway with Esophageal Tracheal Airway Device, if so equipped and trained.

ALL PERSONNEL If Return of Spontaneous Circulation (ROSC):

1. Re-assess the patient's vital signs and effectiveness of ventilations frequently.
2. If patient is resuscitated and has:
 - **Effective spontaneous respirations:** Apply high flow oxygen, place patient in left lateral recumbent position and be prepared to suction airway.
 - **Ineffective or absent respirations:** Assist/provide ventilations and be prepared to suction airway.

When supporting ineffective or absent respirations do not over-ventilate the patient. Administer 10-12 ventilations per minute without an advanced airway, 8-10 with an advanced airway.

PROTOCOL PROCEDURE:

Flow of protocol presumes pulseless arrest is continuing. Effective CPR with a minimum of interruptions should be the primary objective. Consider possible cause (H's and T's) and treat accordingly. If correctable cause is suspected or condition changes refer to appropriate protocol.

ADULT ALS ALGORITHM

ASYSTOLE/PEA	PULSELESS VT/VF
<ol style="list-style-type: none"> 1) Do 5 cycles of CPR <u>between each procedure.</u> 2) Establish IV/IO. 3) Give Epinephrine IV/IO: 1 mg 1:10,000 May repeat q 3-5 min. 4) Insert advanced airway. 5) If no IV/or IO give Epinephrine via ET: 2 mg 1:1,000 dilute in 5-10 mL NS or SW followed by 5 normal ventilations. May repeat q 3-5 min. 6) Consider Sodium Bicarbonate 1mEq/kg for known dialysis patient, arrest >20 minutes, or suspected tricyclic OD. 	<ol style="list-style-type: none"> 1) Do 5 cycles of CPR <u>between each procedure.</u> 2) Give 1 shock*, then immediately resume CPR. 3) Establish IV/IO. 4) Give Epinephrine 1 mg 1:10,000 IV/IO. May repeat q 3-5 min. 5) Check rhythm. If indicated give 1 shock*, then immediately resume CPR. Deliver shocks every 2 minutes if VF/VT continues. 6) Give Amiodarone: 300 mg Slow IV/IO push over 1-2 minutes. 7) Consider Magnesium Sulfate 2 Gm IV/IO diluted in 10 mL NS or SW for Torsades de pointes. 8) Check rhythm. If indicated give 1 shock*, then immediately resume CPR. Deliver shocks every 2 minutes if VF/VT continues. 9) Insert advanced airway. 10) If no IV/or IO give Epinephrine via ET: 2 mg 1:1,000 dilute in 5-10 mL NS or SW followed by 5 normal ventilations. 11) Repeat Amiodarone 5 min after first dose: 150 mg Slow IV/IO push over 1-2 minutes.

***Joule settings:**

- **Monophasic:** 360J
- **Physio-Control® Biphasic:** 150J
- **Zoll® Biphasic:** 120J (increase to 150J, then 200J for each subsequent shock)

- Consider **Sodium Bicarbonate** 1mEq/kg for known dialysis patient, arrest >20 minutes, or suspected tricyclic OD
- Consider **Gastric Tube** upon establishing an advanced airway
- Resuscitate on scene until there is return of spontaneous circulation (ROSC), consider pronouncement if resuscitation is not successful or transport per base station order. See Determination of Death Policy
- **If ROSC achieved, contact base station for consideration of therapeutic hypothermia**

<p>During CPR:</p> <ul style="list-style-type: none"> • Push hard and fast (at least 100/min) • Press at least 2" deep while Ensuring full chest recoil • 1 cycle of CPR: 30/2, minimize interruptions • Avoid hyperventilation • Ventilate at 8 -10 breaths per minute without compression pauses when an advanced airway is in place • Rotate compressors every two minutes • Check rhythm every 2 minutes 	<p>Consider possible correctable causes H's and T's:</p> <ul style="list-style-type: none"> Hypovolemia Hypoxia Hydrogen ion (acidosis) Hypo-/hyperkalemia Hypoglycemia Hypothermia Toxins Tamponade, cardiac Tension pneumothorax Thrombosis (coronary or pulmonary) Trauma
--	--

BLS TREATMENT (PEDIATRIC)

1. Confirm unresponsiveness and check carotid pulse for no more than 10 seconds.
2. **CABs** - Start CPR as per current guidelines. Support ventilation with appropriate airway adjuncts.
3. **Unwitnessed arrest:**

Both BLS and ALS Personnel: If the arrest is not witnessed by EMS personnel while on scene or more than 4 minutes has elapsed since the arrest, perform 2 minutes (5 cycles) of CPR prior to attaching AED/EKG.

Witnessed arrest:

ALS Personnel: Attach EKG and refer to pediatric ALS algorithm.

BLS Personnel: Attach AED to patient if so equipped. If shock advised, deliver shock per *AED Procedure. Immediately follow shock, and each subsequent shock, with 2 minutes of CPR (starting with compressions).

BLS PERSONNEL ONLY:

1. Continue CPR until patient care transfer to ALS personnel.

ALL PERSONNEL If Return of Spontaneous Circulation (ROSC):

1. Re-assess the patient's vital signs and effectiveness of ventilations frequently.
2. If patient is resuscitated and has:
 - **Effective spontaneous respirations:** Apply high flow oxygen, place patient in left lateral recumbent position and be prepared to suction airway.
 - **Ineffective or absent respirations:** Assist/provide ventilations and be prepared to suction airway.

When supporting ineffective or absent respirations do not over-ventilate the patient. Administer 12 -20 ventilations per minute without an advanced airway, 8-10 with an advanced airway.

PROTOCOL PROCEDURE:

Flow of protocol presumes pulseless arrest is continuing. Effective CPR with a minimum of interruptions should be the primary objective. Consider possible cause (H's and T's) and treat accordingly. If correctable cause is suspected or condition changes refer to appropriate protocol.

PEDIATRIC ALS ALGORITHM

ASYSTOLE/PEA	PULSELESS VT/VF
<ol style="list-style-type: none"> 1. Do 5 cycles of CPR <u>between each procedure.</u> 2. Establish IV/IO. 3. Give Epinephrine IV/IO: 0.01 mg/kg (1:10,000: 0.1 mL/kg). May repeat q 3-5 min. 4. Insert advanced airway. 5. If no IV/or IO give Epinephrine via ET: 0.1 mg/kg (1:1,000: 0.1 mL/kg) dilute in 3-5 mL NS or SW followed by 5 normal ventilations. May repeat q 3-5 min. 6. Consider Sodium Bicarbonate 1mEq/kg for known dialysis patient, arrest >20 minutes, or suspected tricyclic OD. 	<ol style="list-style-type: none"> 1) Do 5 cycles of CPR <u>between each procedure.</u> 2) Give 1 shock*, then immediately resume CPR. 3) Establish IV/IO. 4) Give Epinephrine IV/IO 0.01 mg/kg (1:10,000: 0.1 mL/kg). 5) Check rhythm. If indicated give 1 shock*, then immediately resume CPR. Deliver shocks every 2 minutes if VF/VT continues. 6) Give Amiodarone: 5 mg/kg mg Slow IV/IO push over 1-2 minutes. 7) Insert advanced airway. 8) If no IV/or IO give Epinephrine via ET: 0.1 mg/kg (1:1,000: 0.1 mL/kg) dilute in 3-5 mL NS or SW followed by 5 normal ventilations. May repeat q 3-5 min. 9) Repeat Amiodarone q 5 minutes: 5 mg/kg Slow IV/IO push over 1-2 minutes. (Max of 15 mg/kg).

***Joule settings:**
 1st dose: 2 j/kg
 2nd and subsequent doses: 4 j/kg
 Consider increasing joules not to exceed 10J/kg or adult dose for refractory VF.

<p>During CPR:</p> <ul style="list-style-type: none"> • Push hard and fast (at least 100/min) • Press at least 2" deep while Ensuring full chest recoil • 1 cycle of CPR: 30:2 (1 rescuer) - 15/2 (2 rescuer) • Avoid hyperventilation • Ventilate at 8 -10 breaths per minute without compression pauses when an advanced airway is in place • Rotate compressors every two minutes • Check rhythm every 2 minutes 	<p>Consider possible correctable causes (H's and T's):</p> <ul style="list-style-type: none"> - Hypovolemia - Hypoxia - Hydrogen ion (acidosis) - Hypo-/hyperkalemia - Hypoglycemia - Hypothermia - Toxins - Tamponade, cardiac - Tension pneumothorax - Thrombosis (coronary or pulmonary) - Trauma
---	--