

SECTION: PC-01

PROTOCOL TITLE: PEDIATRIC CARDIAC/RESPIRATORY  
ARREST

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**BLS SPECIFIC CARE: See General Pediatric Care Protocol PM-1**

- For *unwitnessed arrest*: Consider 2 minutes of good, sustained, and effective CPR prior to defibrillation or AED attachment
- For *witnessed Arrest*, or after 2 minutes of good, effective and sustained CPR: AED use per current AHA guidelines and manufacturer recommendations
  - Adult AED's can be used in children less than 1 year of age
  - Single shocks are recommended to reduce interruption of CPR
- For a **suspected DROWNING/SUBMERSION**, providers should begin with five high quality ventilations, then proceed standard resuscitation practices.
  - Ignore any "foam", sputum, or copious oral secretions (other than obvious vomit) in the mouth during initial ventilations. Suction only after initial 5 ventilations but do not interrupt high quality resuscitation to do so.
- When possible, reduce interruptions of chest compressions
- When VF/pulseless ventricular tachycardia (VT) is present, deliver 1 shock and immediately resume CPR, beginning with chest compressions. *Do not delay resumption of chest compressions to recheck the rhythm or pulse.*
- After 10 cycles (about 2 minutes) of CPR, analyze the cardiac rhythm and deliver another shock if indicated. If a non-shockable rhythm is detected, resume CPR immediately
- Careful use of BVM, airway adjuncts. Ventilations should occur over 1-2 seconds
- Avoid hyperventilation/hyperinflation
- Notify responding ALS unit ASAP

**AEMT/ O.M. SPECIFIC CARE: See General Pediatric Care Protocol PM-1**

- IV/IO access as soon as possible
  - 10-20 ml/kg normal saline bolus, repeat as needed for 3 total boluses

# Protocol PC-01

## PED CARDIAC ARREST

### ALS SPECIFIC CARE: See General Pediatric Care Protocol PM-1

- Consider underlying causes of cardiac arrest and treat as well
- Defibrillation settings: (after 2 minutes of CPR unless witnessed arrest)
  - 2 - 4 J/kg SINGLE shock as needed
  - Subsequent single defibrillations at 4 J/kg
  - Higher energy levels may be considered, not to exceed 10 J/kg or the adult maximum dose

#### *Cardio-active Drugs*

- Epinephrine (for all Pulseless Rhythms)
  - IV/IO: 0.01 mg/kg 1:10,000 concentration every 3-5 minutes
  - ETT: 0.1 mg/kg 1:1,000 concentration every 3-5 minutes

#### *Antiarrhythmic therapy:*

- Amiodarone (VF/VT)
  - 5 mg/kg
  - May repeat doses up to 15 mg/kg (max dose 300 mg)
- Lidocaine (VF, V-Tach, Refractory Torsades)
  - IV/IO: 1 mg/kg to a max of 3 mg/kg every 3-5 min
  - ET: 2 mg/kg diluted in NS
- Magnesium Sulfate (for refractory VF/VT, First Line for Torsades)
  - IV/IO: 25-50 mg/kg
  - Max 2 g

#### *Consider as appropriate:*

- Sodium Bicarbonate for known hyperkalemia, metabolic acidosis (DKA, TCA), prolonged resuscitation after ROSC
  - IV: 1 meq/kg repeated in 10 minutes at 0.5 meq/kg. Follow DKA/TCA recommendations if DKA or TCA OD is suspected
- Narcan (Naloxone) for suspected narcotic overdose
  - IV/ETT: 0.1 mg/kg repeated PRN
  - Max of 2.0 mg/dose
- Dextrose for hypoglycemia
  - Birth to 3 months; use D10 10ml/kg slow IV/IO push
  - >3 months; use D25 4 ml/kg slow IV/IO push
  - See Pediatric Hypo/hyper glycaemia Protocol (PM-6)

**PHYSICIAN PEARLS:**

Consider underlying Pathologies (H's and T's)

- Hypovolemia,
- Hypoxia,
- Hydrogen ion (acidosis),
- Hyper-/hypokalemia,
- Hypoglycemia,
- Hypothermia.
- Tension pneumothorax,
- Toxins,
- Tamponade(cardiac),
- Thrombosis (coronary and pulmonary), and
- Trauma

Outside of the POST/DNR situations (Appendix 26), once ALS intervention is initiated, medical control should be called prior to ceasing efforts. In addition, BLS interventions, an advanced airway, and at least 20 minutes of rhythm-appropriate therapy should have been performed prior to considering termination of efforts.

The American Heart Association (AHA) current guidelines for CPR and Emergency Cardiac Care recommends:

- Good, sustained, and effective CPR. **“Push hard and fast”**.
- **Sustained coronary perfusion is believed essential for the heart to respond to defibrillation, any interruption in compressions should be minimized or avoided.** Even brief interruptions of compressions (such as seen in the pause for ventilations or defibrillation) result in a rapid decrease of coronary perfusion.
- Change to a 1-shock protocol. Frequent or long interruptions in precordial chest compressions for rhythm analysis or rescue breathing were associated with post resuscitation myocardial dysfunction and **reduced survival rates**. The AHA notes that: *“...if 1 shock fails to eliminate VF, the incremental benefit of another shock is low, and **the resumption of CPR is likely to confer a greater value than another shock.**”* Therefore, when a shockable rhythm is found, **only one shock, instead of three stacked shocks, is recommended.**

**ETT vs. IO Access:** The AHA notes that *“...administration of epinephrine by the IV route was associated with a higher rate of ROSC and survival to discharge than administration of the drugs by the endotracheal route”*.

**Therefore, while ETT administration of drugs in cardiac arrest is not prohibited, IO is encouraged when peripheral venous access is unsuccessful.**