



# PEDIATRIC ASYSTOLE / PEA

## History

- Events leading to arrest
- Estimated downtime
- SAMPLE
- Existence of terminal illness
- Airway obstruction
- Hypothermia
- Suspected abuse

## Signs and Symptoms

- Pulseless
- Apneic
- No electrical activity on ECG
- No heart tones on auscultation

## Differential

- Respiratory failure
- Foreign body
- Infection (croup, epiglottitis)
- Congenital heart disease
- See Reversible Causes below

Pediatric Pulseless Arrest Protocol

Criteria for Death / No Resuscitation  
Review DNR / MOST Form

YES

NO

Decomposition  
Rigor mortis  
Dependent lividity  
Blunt force trauma  
Injury incompatible with life  
Extended downtime with asystole

Do not begin resuscitation

Follow Deceased Subjects Policy

**AT ANY TIME**

Return of Spontaneous Circulation

Go to Post Resuscitation Protocol

	<p><b>Begin Continuous CPR Compressions</b>  <b>Push Hard (Infant-1.5 inches / Child-2 inches)</b>          (≥ 1/3 AP Diameter of Chest)  <b>Push Fast (100 – 120 compressions / min)</b>  <b>Change Compressors every 200 compressions</b>  <i>(Limit changes / pulse checks ≤ 10 seconds)</i>  <b>Ventilation rate:</b>          1 breath every 2 seconds when age &lt; 1          1 breathe every 3 seconds when age ≥ 1  <b>Monitor ETCO2</b></p>
<b>P</b>	<p><b>At compression #180 of each cycle:</b>  <b>Charge defibrillator at Age-Specific Joule settings.</b>  <b>If SHOCKABLE rhythm present, deliver shock and immediately continue chest compressions.</b>  <b>If NONSHOCKABLE rhythm present, utilize DISARM soft key.</b></p>
	AED Procedure <i>if available</i>
<b>P</b>	Cardiac Monitor
	IV or IO Access Protocol UP 6
<b>A</b>	<p><b>EPINEPHRINE 1:10,000</b>  <b>0.01 mg/kg IV / IO</b>  <b>(Maximum Single Dose 1mg)</b>  <b>Repeat every 3 – 5 minutes</b></p>
	<p><b>NORMAL SALINE BOLUS</b>  <b>20 mL/kg IV / IO</b>          May repeat as needed  <b>(Maximum 60 mL/kg)</b></p>
	Search for Reversible Causes
	Blood Glucose Analysis Procedure
<b>P</b>	Consider Chest Decompression-Needle Procedure

**Reversible Causes**

Hypovolemia  
Hypoxia  
Hydrogen ion (acidosis)  
Hypothermia  
Hypo / Hyperkalemia

Tension pneumothorax  
Tamponade; cardiac  
Toxins  
Thrombosis; pulmonary (PE)  
Thrombosis; coronary (MI)

**Notify Destination or Contact Medical Control**

Pediatric Cardiac Protocol Section



# PEDIATRIC ASYSTOLE / PEA

## Pearls

- **Team Focused Approach / Pit-Crew Approach recommended; assigning responders to predetermined tasks.**
- **Refer to optional protocol AC 11 or development of local agency protocol.**
- **Efforts should be directed at high quality and continuous compressions with limited interruptions and early defibrillation when indicated. Compress  $\geq 1/3$  anterior-posterior diameter of chest, in infants 1.5 inches and in children 2 inches.**
- **Majority of pediatric arrests stem from a respiratory insult or hypoxic event. Compressions should be coupled with ventilations.**
- **When advanced airway not in place perform 15 compressions with 2 ventilations.**
- **Use length-based or weight-based pediatric resuscitation system for medication, equipment, cardioversion, and defibrillation guidance. Pediatric paddles should be used in children  $< 10$  kg.**
- **DO NOT HYPERVENTILATE:**  
If advanced airway in place ventilate:
  - **Age  $< 1$  year: 1 breath every 2 seconds with continuous, uninterrupted compressions.**
  - **Age  $\geq 1$  year: 1 breath every 3 seconds with continuous, uninterrupted compressions.**
- **Airway is a more important intervention in pediatric arrests. This should be accomplished quickly with BVM or BIAD.**
- **Patient survival is often dependent on proper ventilation and oxygenation / airway Interventions.**
- **Do not interrupt compressions to place endotracheal tube. Consider BIAD first to limit interruptions.**
- **High-Quality CPR:**
  - Make sure chest compressions are being delivered at 100 – 120 / min.
  - Make sure chest compressions are adequate depth for age and body habitus.
  - Make sure you allow full chest recoil with each compression to provide maximum perfusion.
  - Minimize all interruptions in chest compressions to  $< 10$  seconds.
  - Use AED or apply ECG monitor / defibrillator as soon as available.
- **Defibrillation:** Follow manufacture's recommendations concerning defibrillation / cardioversion energy when specified.
- **End Tidal CO<sub>2</sub> (EtCO<sub>2</sub>)**
  - If EtCO<sub>2</sub> is  $< 10$  mmHg, improve chest compressions. Goal is  $\geq 20$  mmHg.
  - If EtCO<sub>2</sub> spikes, typically  $> 40$  mmHg, consider Return of Spontaneous Circulation (ROSC)
- **IV / IO access and drug delivery are secondary to high-quality chest compressions and early defibrillation.**
- **IV access is preferred route. Follow IV or IO Access Protocol UP 6.**
- **Special Considerations**
  - **Maternal Arrest** - Treat mother per appropriate protocol with immediate notification to Medical Control and rapid transport preferably to obstetrical center if available and proximate. Place mother supine and perform Manual Left Uterine Displacement moving uterus to the patient's left side. IV/IO access preferably above diaphragm. IV access preferred. Defibrillation is safe at all energy levels.
  - **Renal Dialysis / Renal Failure** - Refer to Dialysis / Renal Failure Protocol AM 3 caveats when faced with dialysis / renal failure patient experiencing cardiac arrest.
  - **Opioid Overdose** - If suspected, administer Naloxone per Overdose / Toxic Ingestion Protocol UP 7 while ensuring airway, oxygenation, ventilations, and high-quality chest compressions.
  - **Drowning / Suffocation / Asphyxiation / Hanging / Lightning Strike** – Hypoxic associated cardiac arrest and prompt attention to airway and ventilation is priority followed by high-quality and continuous chest compressions and early defibrillation.
- **Success is based on proper planning and execution. Procedures require space and patient access. Make room to work.**