



Pediatric Ventricular Fibrillation Pulseless Ventricular Tachycardia

History

- Events leading to arrest
- Estimated downtime
- Past medical history
- Medications
- Existence of terminal illness
- Airway obstruction
- Hypothermia

Signs and Symptoms

- Unresponsive
- Cardiac Arrest

Differential

- Respiratory failure / Airway obstruction
- Hyper / hypokalemia, Hypovolemia
- Hypothermia, Hypoglycemia, Acidosis
- Tension pneumothorax, Tamponade
- Toxin or medication
- Thrombosis: Coronary / Pulmonary Embolism
- Congenital heart disease

Pediatric Pulseless Arrest Protocol PC 4

	<p>Begin Continuous CPR Compressions Push Hard ($\geq 1/3$ AP Diameter of Chest) (1.5 inches Infant / 2 inches in Children) Push Fast (100 - 120 / min) Change Compressors every 2 minutes (sooner if fatigued) <i>(Limit changes / pulse checks ≤ 10 seconds)</i></p> <p>Ventilation rate: 1 breath every 2 seconds when age < 1 1 breathe every 3 seconds when age ≥ 1 15:2 Compression:Ventilation if no Advanced Airway</p>
	Automated Defibrillation Procedure
P	<p>Defibrillation Manual Procedure</p> <ul style="list-style-type: none"> • First shock: 2 J / Kg • Second shock: 4 J / Kg • Subsequent shocks ≥ 4 J / kg <p>Maximum 10 J / kg or adult dose</p>
	IV / IO Protocol UP 6
A	<p>Epinephrine 1:10,000 0.01 mg/kg IV / IO Maximum 1mg Or Epinephrine 1:1000 0.1 mg / kg ETT Maximum 2.5 mg No Repeat Dosing – 1 dose total</p>
	<p>If Rhythm Refractory to defibrillation</p> <ul style="list-style-type: none"> • Continue CPR and give Agency specific Anti-arrhythmic(s) in a drug-shock-drug-shock pattern. • Continue CPR up to point where you are ready to defibrillate with device charged. <p>Repeat pattern during resuscitation.</p>
P	<p>Amiodarone IO/IV 5 mg/kg bolus during cardiac arrest. May repeat up to 2 times for refractory VF/pulseless VT Consider Magnesium</p>
A	<p>Magnesium Sulfate 40 mg/kg IV / IO Infuse over 2 – 3 minutes Maximum 2 gm</p>

AT ANY TIME

Return of Spontaneous Circulation

Go to Post Resuscitation Protocol

Reversible Causes

Hypovolemia
 Hypoxia
 Hydrogen ion (acidosis)
 Hypothermia
 Hypo / Hyperkalemia
 Hypoglycemia

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



Notify Destination or Contact Medical Control





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Manual Defib in pediatrics is restricted to a paramedic skill for pediatrics. EMT/AEMT must use AED for pediatrics.

Only 1 code dose Epi – May use Push Dose Epi or Epi Drip in Rosc

Pearls

- **Team Focused Approach / Pit-Crew Approach recommended; assigning responders to predetermined tasks. Refer to optional protocol 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.
- **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.
Charge defibrillator during chest compressions, near the end of 2-minute cycle, to decrease peri-shock pause.
Following defibrillation, provider should immediately restart chest compressions with no pulse check until end of next cycle.
- **End Tidal CO₂ (EtCO₂)**
If EtCO₂ is < 10 mmHg, improve chest compressions. Goal is \geq 20 mmHg.
If EtCO₂ 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.
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.**