

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

Reversible Causes

Hypovolemia
Hypoxia
Hydrogen ion (acidosis)
Hypothermia
Hypo / Hyperkalemia
Hypoglycemia
Tension pneumothorax
Tamponade; cardiac
Toxins
Thrombosis; pulmonary (PE)
Thrombosis; coronary (MI)

AT ANY TIME

Return of
Spontaneous
Circulation



Go to
Post Resuscitation
Protocol

	<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) (Limit changes / pulse checks ≤ 10 seconds)</p> <p>Ventilation rate: 1 breath every 6 seconds 15:2 Compression:Ventilation if no Advanced Airway</p> <p>Automated Defibrillation Procedure CSP 5</p>
P	<p>Defibrillation Manual Procedure CSP 6</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 Access Protocol UP 6
A	<p>Epinephrine 1:10,000 0.01 mg/kg IV / IO Maximum 1mg Repeat every 3 – 5 minutes</p>
P	<p>Amiodarone 5mg/kg IV / IO Maximum Single Dose 300mg May repeat x 2 to a Max of 15mg/kg</p> <p>Or</p> <p>Lidocaine 1.0 mg/kg IV / IO May repeat 0.5 mg/kg if refractory Maximum 3 mg/kg</p> <p>Consider High Energy Defibrillation Procedure <i>if available and rhythm refractory</i></p>

If Rhythm Refractory to defibrillation

- * 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.

Repeat pattern during resuscitation.

Persistent VF / VT
Or
Torsades de Points

Magnesium Sulfate
40 mg/kg IV / IO over
1 – 2 minutes
May repeat
every 5 minutes
Maximum 2 g

 **Notify Destination or**
Contact Medical Control 

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**** Refer to Length Based Medication Tape for Medication Doses IF pediatric patients weight is unknown ****

Pearls

- * **Team Focused Approach / Pit-Crew Approach recommended; assigning responders to predetermined tasks.**
- * **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 at 1 breath every 6 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 BIAID 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.
- * **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.**
- * **Defibrillation:**
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 ≥ 20 mmHg.
If EtCO₂ spikes, typically > 40 mmHg, consider Return of Spontaneous Circulation (ROSC)
- * **Antiarrhythmic agents:**
Amiodarone 5 mg / kg IV / IO (single dose Max 300 mg). May repeat x 2 to a Maximum of 15 mg / kg.
Lidocaine 1 mg / kg IV / IO. Infusion 20 – 50 mcg / kg / min. If infusion is initiate > 15 minutes from first bolus, repeat 1 mg / kg bolus.
Magnesium Sulfate 40 mg / kg IV / IO over 10 – 20 minutes. In Torsades de pointes give over 1 – 2 minutes. Max 2 g
- * **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.**