



# 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

	<p><b>Begin Continuous CPR Compressions</b>  <b>Push Hard (1.5 inches Infant / 2 inches in Children)</b>  <b>(≥ 1/3 AP Diameter of Chest)</b>  <b>(Push Fast (100 - 120 / min))</b>  <b>Change Compressors every 2 minutes</b>  <i>(Limit changes / pulse checks ≤ 10 seconds)</i></p> <p><b>Ventilate 1 breath every 6 seconds</b>  <b>15:2 Compression:Ventilation if no Advanced Airway</b></p>
A	Defibrillation Automated <i>if available</i>
	IV / IO Procedure
	<p><b>Epinephrine 1:10,000</b>  <b>0.01 mg/kg IV / IO Maximum 1mg</b>          Or  <b>Epinephrine 1:1000 0.1 mg / kg ETT</b>  <b>Maximum 2.5 mg</b>          Repeat every 3 – 5 minutes</p>
P	<p><b><u>If Rhythm Refractory</u></b>  <b>Continue CPR and give Agency specific Anti-arrhythmic(s). Continue epinephrine during compressions.</b>  <b>Continue CPR up to point where you are ready to defibrillate with device charged.</b>  <b>Repeat pattern during resuscitation.</b></p>
P	

**AT ANY TIME**

**Return of Spontaneous Circulation**

**Go to Post Resuscitation Protocol**

**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**



# Pediatric Ventricular Fibrillation Pulseless Ventricular Tachycardia

## Pearls

- **Recommended Exam: Mental Status**
- **Beginning compressions first is recommended in pediatric patients during CPR. However, the majority of pediatric arrests stem from a respiratory insult or hypoxic event. Compressions should be coupled with ventilations.**
- **When 1 provider is present, perform 30 compressions with 2 ventilations.**
- **When 2 providers are present, perform 15 compressions with 2 ventilations.**
- **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. Consider early IO placement if available and / or difficult IV access anticipated.**
- **DO NOT HYPERVENTILATE: If advanced airway in place ventilate 8 – 10 breaths per minute with continuous, uninterrupted compressions.**
- **Do not interrupt compressions to place endotracheal tube. Consider BIAD first to limit interruptions.**
- **Defibrillation:** First defibrillation is 2 J/kg, second defibrillation is 4 J/kg, subsequent shocks  $\geq 4$  J/kg (Maximum 10 J/kg or adult dose)
- **End Tidal CO<sub>2</sub> (EtCO<sub>2</sub>)**
  - If EtCO<sub>2</sub> is  $< 10$  mmHg, improve chest compressions.
  - If EtCO<sub>2</sub> spikes, typically  $> 40$  mmHg, consider Return of Spontaneous Circulation (ROSC)
- **Antiarrhythmic agents:**
  - **Adenosine:** First dose: 0.1 mg / kg (Maximum 6 mg) Second dose: 0.2 mg / kg (Maximum 12 mg)
  - **Amiodarone** 5 mg / kg IV / IO (single dose Maximum 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. Maximum 2 g.
  - **Procainamide** 15 mg / kg IV / IO over 30 – 60 minutes. Monitor for increased QRS and increased QT.
- Success is based on proper planning and execution. Procedures require space and patient access. Make room to work. Consider Team Focused Approach / Pit-Crew Approach assigning responders to predetermined tasks. Refer to optional protocol.
- In order to be successful in pediatric arrests, a cause must be identified and corrected.
- If no IV / IO access may use **Epinephrine 1:1000 0.1 mg/kg (0.1 mL/kg)** via ETT (Maximum 2.5 mg)