Cardiac Arrest: pVTach & VFib

Assessment

Pediatric Pearls:

- Use pediatric dosing of medications or electrical therapy for a pediatric patient < 37 kg and as defined by the PEDIA Tape.
- Focus on rapid and early BLS airway and ventilation tools. Intubation may not be the best option for these patients.
- Pediatric pads should be used in children < 10 Kg or PEDIA tape color purple.

Signs & Symptoms:

- Unresponsive
- Abnormal breathing (gasps)
- Pulseless
- Absent heart sounds
- Obvious death

Differential:

- Respiratory failure
- Foreign body airway obstruction
- Hyperkalemia
- Infection (Croup, epiglottitis)
- Hypovolemia
- Congenital heart disease
- Trauma
- Tension pneumothorax
- Hypothermia
- Toxins or Overdose
- Hypoglycemia
- Acidosis
- Acute MI or PE

Clinical Management Options

PL1 PL2 PL3 PL4 PL5 PL6

- Assess for unresponsiveness, absence of normal breathing, and pulselessness
- Assess for obvious death criteria
- Begin Pit Crew CPR procedure
- BLS Airway Management and BVM with Oxygen as available
- Passive oxygenation with nasal cannula at 25 LPM

PL2 PL3 PL4 PL5

- Airway management with iGel as needed
- Monitor $ETCO_2$

PL3 PL4 PL5

- Vascular access
- Epinephrine
- Fluid bolus with isotonic crystalloid as needed

PL4 PL5

- Monitor and interpret ECG
- Manual Defibrillation
  - Adult: Maximum Joules
  - Pediatric: Initial 2 joules/kg then repeat 4 joules/kg – Refer to Pediatric Dosing Chart
- Amiodarone
- If pVT/VF refractory to Amiodarone, then Lidocaine
- If Torsades de Points or polymorphic pVT, then Magnesium Sulfate
- If treatable cause is identified, move that that treatment up in priority

PL5

- Advance Airway Management as needed. Intubation is not required if iGel is functioning appropriately with continuous waveform capnography.
- Double sequential defibrillation at maximum Joules for Adults Only
  - **IF** refractory to at least 3 shocks pads placed Anterior / Anterior (V1) **AND**
  - Refractory to 1 additional shock pads placed Anterior / Posterior (V2) **AND**
  - pVT / VF **NEVER** converted
- If ROSC then declare a resuscitation alert and use Post Resuscitation Checklist.
- Targeted Temperature Management procedure if patient qualifies.

Consult Online Medical Control As Needed

Pediatric Dosing Chart		3 kg	4 kg	5 kg	6-7 kgs	8-9 kgs	10-11 kgs	12-14 kgs	15-18 kgs	19-23 kgs	24-29 kgs	30-36 kgs
		6.6 lbs	8.8 lbs	11 lbs	13-15 lbs	17-20 lbs	22-24 lbs	26-30 lbs	33-40 lbs	42-50 lbs	53-64 lbs	66-80 lbs
		in18.25-20.25	in20.25-21.5	in21.5-23.25	in23.25-26.25	in26.25-29.25	in29.25-33	in33-37.5	in37.5-42.5	in42.5-47.75	in47.75-51.25	in41.25-56.25
Synchronized Cardioversion	0.5 j	1	2	2	3	4	5	7	8	10	15	15
	1.0 j	3	4	5	6	8	10	15	15	20	30	30
Sync or **Defib**	2.0 j	6	8	10	15	15	20	30	30	50	50	70
Defibrilation	4.0 j	10	15	20	30	30	50	50	70	85	100	120

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Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- In order to be successful in adult or pediatric arrests, a cause must be identified and corrected.
- Respiratory arrest is a common cause of pediatric cardiac arrest. Unlike adults early oxygenation and ventilation is critical.
- In most cases pediatric airways can be managed by basic interventions.
- Effective CPR is critical: 1) Push hard and fast at appropriate rate 2) Ensure full chest recoil 3) Minimize interruptions in CPR. Pause CPR< 10 seconds only.
- Effective CPR and prompt defibrillation are the keys to successful resuscitation.
- Prolonged cardiac arrests may lead to tired providers and decreased compression quality. Ensure compressor rotation, summon additional resources as needed, and ensure provider rest and rehab during and post-event.
- For pediatrics use volume control device (IV Burette) for Dextrose and Fluid infusions
- Always quickly confirm asystole in more than one lead.
- Trouble shoot for Equipment settings/ problems
- PL1, PL2 and PL3 may only use automated defibrillation (AED).
- Reassess and document ETT/BIAD placement continuously after every move and at transfer of patient care.
- Continuous ETCO2 should be initiated as soon as practicable.
- Calcium and sodium bicarbonate should be given early if hyperkalemia is suspected (renal failure, dialysis)
- Adult treatment priorities: uninterrupted compressions, defibrillation, ventilation, then IV/IO and airway management if needed.
- Polymorphic VT (Torsades) may benefit from Magnesium Sulfate.
- Prior to any external shocks providers should verify that defibrillation pads are well-adhered to the patient and that they do not touch.
- Continue to use **primary monitor** for all event recording and data capture.
- All monitor event data and recordings are uploaded into e-PCR.
- Once criteria for DSED are met subsequent shocks should be delivered as DSED
- Ultrasound to determine cardiac wall motion at pulse check; DO NOT interrupt compressions for ultrasound.