



Pediatric Post Resuscitation



History

- Respiratory arrest
- Cardiac arrest

Signs/Symptoms

- Return of pulse

Differential

- Continue to address specific differentials associated with the original dysrhythmia

	Pediatric Airway Protocol(s) AR 5 - 7 as needed
	Monitor Vital Signs/ Reassess
	Blood Glucose Analysis Procedure
	Optimize Ventilation and Oxygenation <ul style="list-style-type: none">• Maintain SpO2 \geq 92 – 98%• Advanced airway if indicated• Age Appropriate Respiratory Rate• Remove Impedance Threshold Device DO NOT HYPERVENTILATE
	ETCO2 ideally 35 – 45 mm Hg
B	12 Lead ECG Procedure
	IV or IO Access Protocol UP 6
P	Cardiac Monitor
	Pediatric Diabetic Protocol PM 2 if indicated
	Pediatric Hypotension/ Shock Protocol PM 3 if indicated
	Pediatric Bradycardia Protocol PC 2 if indicated
	Pediatric Tachycardia Protocol PC 5, 6 as indicated

Hypotension Age Based

0 – 31 Days
< 60 mmHg

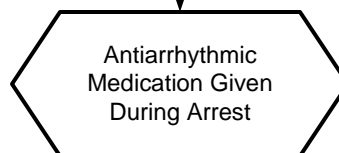
1 Month to 1 Year
< 70 mmHg

\geq than 1 Year
< 70 + (2 x age) mmHg

Arrhythmias are common
and usually self limiting
after ROSC



If Arrhythmia Persists
follow Rhythm
Appropriate Protocol



YES

NO

	Continue Antiarrhythmic Utilized Refer to Appropriate Pediatric Arrhythmia Protocol
P	Lidocaine 1 mg/kg IV / IO Repeat every 10 minutes as needed Maximum single dose 100 mg Maximum 3 mg/kg total Or Amiodarone 5 mg / kg IV / IO Repeat every 5 minutes as needed Maximum single dose 150 mg Maximum 300 mg / kg

	Post-intubation/ BIAD Management Protocol AR 8
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	Notify Destination or Contact Medical Control	
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Pediatric Post Resuscitation



Immediate concerns following Return of Spontaneous Circulation:

1. Optimize oxygenation and ventilation to maintain oxygen saturation at 92 % or greater. Hyperventilation must be avoided due to induced hypotension, decreased cardiac output and oxygen injury.
2. Optimize cardiopulmonary function and vital organ perfusion.
3. Search for and treat correctable / reversible causes:
*Hypovolemia, Hypoxia, Hydrogen ion, Hypo / Hyperkalemia, Hypothermia, Hypoglycemia
Tension Pneumothorax, Tamponade; cardiac, Toxins / Ingestions, Thrombosis; pulmonary,
Thrombosis; coronary*
4. Transport to facility capable of caring for post arrest patients.

Sedation/ Paralysis with BIA/ ETT in place:

- In the post-resuscitative phase the patient may require sedation and paralysis.
- The primary focus is to sedate the patient adequately with Fentanyl preferably, or Morphine, which addresses pain.
- Pain is the primary cause of agitation in the intubated patient.
- Opioid and/ or Ketamine are the first line agents for sedation.
- Midazolam may be used after an 2 to 3 doses of opioid and/ or ketamine is given,.
- The patient should not be paralyzed unless they are sedated first as this causes tremendous psychic and physical stress.

Airway:

- The post-cardiac arrest patient is typically hypotensive and acidotic which creates a high-risk situation for RSI and potentially will lead to re-arrest.

Pearls

- **Recommended Exam: Mental Status, Neck, Skin, Lungs, Heart, Abdomen, Extremities, Neuro**
- **Goals of care are to preserve neurologic function, prevent secondary organ damage, treat the underlying cause of illness, and optimize prehospital care. Frequent reassessment is necessary.**
- **Hyperventilation is a significant cause of hypotension and recurrence of cardiac arrest in the post resuscitation phase and must be avoided. Titrate FiO₂ to maintain SpO₂ of 92 - 98%.**
- **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.**
- **Pain/sedation:**
Patients requiring advanced airways and ventilation commonly experience pain and anxiety. Unrelieved pain can lead to increased catecholamine release, ischemia, immunosuppression, and prolonged hospitalization.
Ventilated patients cannot communicate pain / anxiety and providers are poor at recognizing pain / anxiety.
Vital signs such as tachycardia and / or hypertension can provide clues to inadequate sedation, however they both are not always reliable indicators of patient's lack of adequate sedation.
Pain must be addressed first, before anxiety. Opioids are typically the first line agents before benzodiazepines. Ketamine is also a reasonable first choice agent.
- **Ventilator / Ventilation strategies:**
Tailored to individual patient presentations. Medical Control can indicate different strategies above.
In general ventilation with BVM should cause chest rise. With mechanical ventilation a reasonable tidal volume should be about 6 mL/kg and peak pressures should be < 30 cmH₂O.
Continuous pulse oximetry and capnography should be maintained during transport for monitoring.
Head of bed should be maintained at least 10 – 20 degrees of elevation when possible to decrease aspiration risk.
- **EtCO₂ Monitoring:**
Initial End tidal CO₂ may be elevated immediately post-resuscitation, but will usually normalize.
Goal is 35 – 45 mmHg but DO NOT hyperventilate to achieve.
EtCO₂ should be continually monitored with advanced airway in place.
- Administer resuscitation fluids and vasopressor agents to maintain SBP at targets listed on page 1. This table represents minimal SBP targets.
- Targeted Temperature Management is recommended in pediatrics, but prehospital use is not associated with improved outcomes. Transport to facility capable of intensive pediatric care.
- Consider transport to facility capable of managing the post-arrest patient including hypothermia therapy, cardiology / cardiac catheterization, intensive care service, and neurology services.
- The condition of post-resuscitation patients fluctuates rapidly and continuously, and they require close monitoring. Appropriate post-resuscitation management may best be planned in consultation with Medical Control.