Pediatric Post Resuscitation

History
- Respiratory arrest
- Cardiac arrest

Signs/Symptoms
- Return of pulse

Differential
- Continue to address specific differentials associated with the original dysrhythmia

Transport Destination Decision

Post-resuscitation patient is medically complex.

Consider facility capabilities:
- Pediatric ICU service
- Pediatric Cardiology service
- Pediatric Neurology service
- Targeted Temperature Management

Pediatric Airway Protocol(s) AR 5 - 7 ***as needed***

Monitor Vital Signs / Reassess

Blood Glucose Analysis Procedure

Optimize Ventilation and Oxygenation
- Maintain SpO2 ≥ 92 – 98%
- Advanced airway if indicated
- Age Appropriate Respiratory Rate
- Remove Impedence Threshold Device

DO NOT HYPERVENTILATE

ETCO2 ideally 35 – 45 mm Hg

B — 12 Lead ECG Procedure

IV or IO 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***

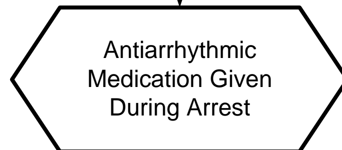
Pediatric Tachycardia Protocol PC 5, 6 ***as indicated***

Hypotension Age Based

0 – 31 Days
< 60 mmHg

1 Month to 1 Year
< 70 mmHg

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



Antiarrhythmic Medication Given During Arrest

YES →

Continue Antiarrhythmic Utilized
Refer to Appropriate Pediatric Arrhythmia Protocol

P

AMIODARONE
5 mg/kg IV / IO
Infuse over 10 minutes

LIDOCAINE
20 – 50 mcg/kg/min
Infusion
See Notes

NO ↓

Arrhythmias are common and usually self limiting after ROSC

If Arrhythmia Persists follow Rhythm Appropriate Protocol

Post-intubation / BIAD Management Protocol AR 8

Notify Destination or Contact Medical Control

Pediatric Cardiac Protocol Section

Contact Medical Control for Lidocaine infusion dosing guidance if needed.

Pediatric Post Resuscitation AMIODARONE INFUSION INSTRUCTIONS:

DOSE: 5 mg/kg infused over 10 minutes

- Withdraw weight-based, desired dose of Amiodarone from vial(s)
- Remove this same volume from a 50 mL bag of Normal Saline
- Inject the withdrawn weight-based, desired dose of Amiodarone into the adjusted bag of Normal Saline to total 50 mL
- Using a 10 gtt IV set, administer 50 gtt/minute

Pediatric Post Resuscitation LIDOCAINE DRIP INSTRUCTIONS:

Remove 10 mL of Normal Saline from a 50 mL bag
Inject 200 mg of Lidocaine (2 x 100mg / 5 mL) into the 40 mL of Normal Saline
Lidocaine concentration: 200 mg/50 mL = 4 mg/mL
This results in a **4000 mcg/mL** concentration
Reminder: Standard unit conversion: **dose** (mg/mL) x 1000 (mcg/mg) = **dose** (mcg/mL)

Calculation formula for **WEIGHT** based dosing:

$$\frac{\textbf{desired dose}\,(mcg/kg) \times \textbf{weight}\,(kg) \times \textbf{drop set}\,(60\ gtt/mL)}{\textbf{concentration}\,(4000\ mcg/mL)} = \textbf{gtt/min}$$

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 FiO_2 to maintain SpO_2 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 has 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 cmH20.**
  - **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 hyperventilation 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.