PEDIATRIC POST-CARDIAC ARREST CARE

Optimize Oxygenation and Ventilation

- Ensure airway patency
- Consider advanced airway
  - If ETT already in place, confirm proper position and patency
- Continuously monitor with capnography and pulse oximetry
- Provide lowest concentration of supplemental oxygen needed to maintain saturation of 94% to 99%; avoid hyperoxia
- Assist ventilation as needed, maintaining normocarbia ($PaCO_2$ between 35 and 45 mmHg or physiological $ETCO_2$) unless clinical condition warrants a carbon dioxide level above or below this range

Assess and Manage Perfusion

- Monitor with cardiac telemetry
- Maintain systolic and mean arterial blood pressure greater than the 10th percentile for age
- Treat hypotension aggressively
- Initiate fluid therapy (to maintain normovolemia) with **crystalloid fluid bolus** of 20 mL/kg IV/IO; repeat as needed
  - Assess for perfusion and signs of heart failure or worsening heart failure (e.g., pulmonary edema, hepatomegaly) after each fluid bolus
  - Consider smaller (5 to 10 mL/kg) fluid bolus volumes in children with poor cardiac function/heart failure
- Initiate pharmacological therapies (e.g., vasopressors, inotropes, inodilators) as indicated for persistent shock
- Consider Extracorporeal Life Support (ECLS)
- Measure perfusion by clinical exam and by assessing urine output, non-invasive and invasive BP, $ScvO_2$, ABG and lactate levels

Initiate Neuroprotective Measures

- Optimize cerebral perfusion (ensure adequate MAP, manage increased ICP, avoid hyperventilation unless indicated)
- Initiate Active Temperature Control (See Active Temperature Control box)
- Assess for seizures (including continuous EEG, especially if unconscious, encephalopathic or sedated) and treat them if they occur
- Provide sedation, anxiolysis and paralysis as needed

Provide Other Interventions

- Manage glucose
  - Treat hypoglycemia
  - Consider insulin for severe or persistent hyperglycemia (but use extreme caution to avoid hypoglycemia and dose based on institutional protocol)
- Identify and continue to assess reversible causes (Hs&Ts), adjust therapy and treat any new conditions
- Continue to assess and correct electrolytes, calcium, CBC, lactic acid and blood gas values as clinically indicated
- Neuroprognostication – See **Pediatric Neuroprognostication After Cardiac Arrest and ROSC: Prediction of Good Neurological Outcome** Reference Card

PEDIATRIC POST-CARDIAC ARREST CARE

Active Temperature Control

- For children and infants who remain unconscious after ROSC from cardiac arrest, it is reasonable to actively prevent fever and maintain a core temperature of 37.5° C (99.5° F) or less.
- This normothermic temperature approach is preferred in the management of postcardiac arrest children and infants with few exceptions.
- Patients with mild hypothermia (36° C to 36.4° C) who remain unconscious after ROSC should not be actively warmed to achieve normothermia.
- When temperature control techniques are used, temperature control devices that include a feedback system based on continuous temperature monitoring are preferred.
- Hypothermic temperature control is not widely recommended in the pediatric population, but may be considered in certain clinical presentations for children and infants who remain unconscious after ROSC.
  - If patient is comatose, apply Targeted Temperature Management (TTM) for up to 5 days. Use either TTM of 32° C to 34° C for 48 hours followed by 36° C to 37.5° C for an additional 72 hours **OR** only TTM of 36° C to 37.5° C for 5 days.
- Rapid infusion of cold intravenous solution immediately after ROSC should not be used for prehospital cooling.

Hs and Ts

- **H**ypovolemia
- **H**ypoxemia
- **H**ydrogen ion excess (acidosis)
- **H**yperkalemia/hypokalemia
- **H**ypothermia
- **H**ypoglycemia
- **T**amponade
- **T**ension pneumothorax
- **T**hrombosis (pulmonary embolism)
- **T**hrombosis (myocardial infarction)
- **T**oxins

Normal Pediatric Blood Pressure

Age Group	Systolic Blood Pressure, mmHg	Diastolic Blood Pressure, mmHg	Mean Arterial Pressure (MAP) Value
Neonate	67–84	35–53	45–60
Infant (1 to 12 months)	72–104	37–56	50–62
Toddler (1 to 2 years)	86–106	42–63	49–62
Preschooler (3 to 5 years)	89–112	46–72	58–69
School Age (6 to 12 years)	97–120	57–80	66–79
Adolescent (13 to 17 years)	110–131	64–83	73–84