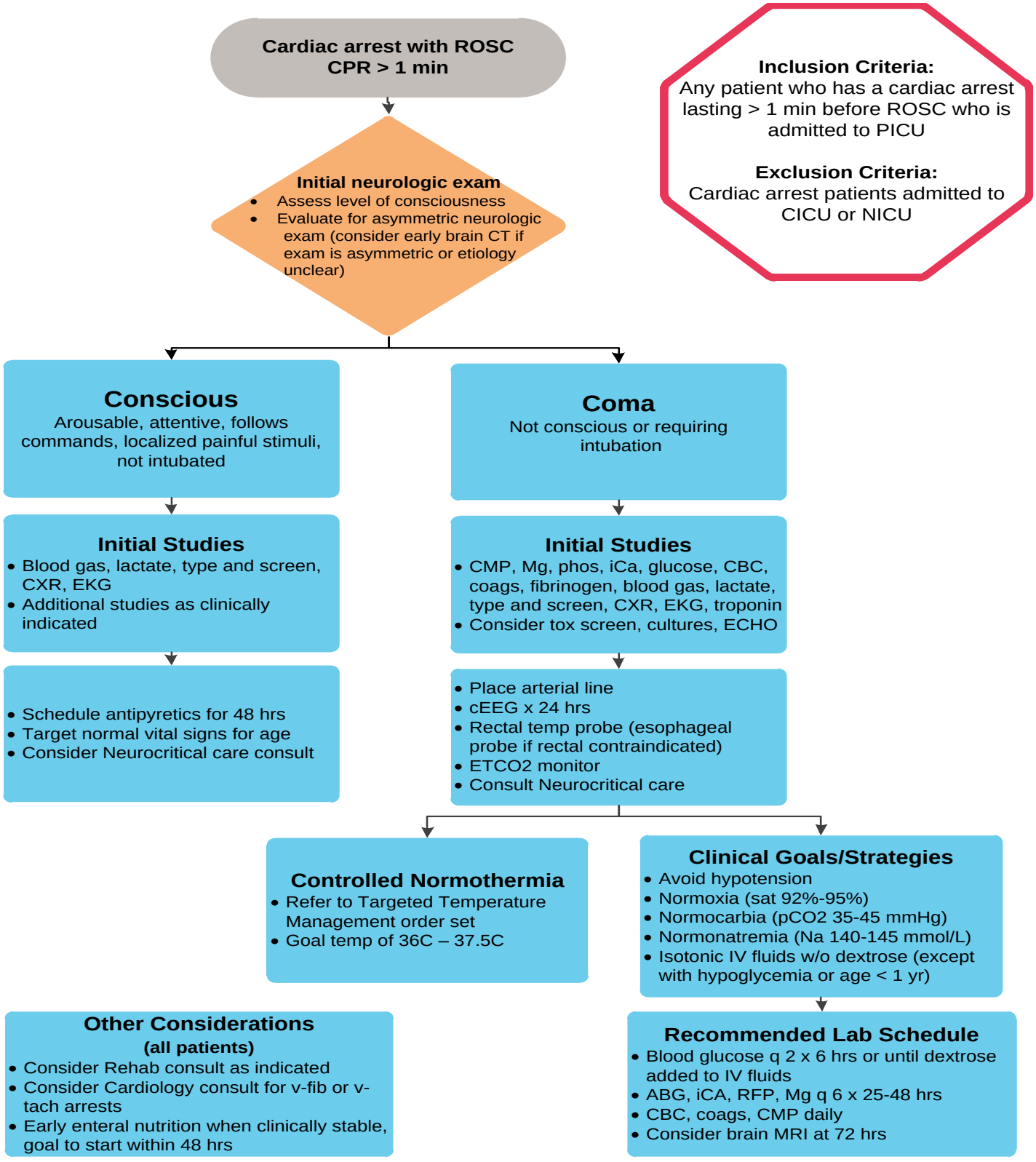
PEDIATRIC POST CARDIAC ARREST

ALGORITHM



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TARGET POPULATION

Inclusion Criteria

- Sustaining cardiac arrest who regains spontaneous circulation after CPR lasting greater than or equal to 1 minute, OR
- Who undergo eCPR (CPR with cannulation to ECMO), AND
- Admitted to the Pediatric Intensive Care Unit (PICU)

Exclusion Criteria

- Admitted to the CICU or NICU

DEFINITIONS

- Cardiac Arrest: The cessation of cardiac mechanical activity as confirmed by the absence of signs of circulation
- Respiratory Arrest: The cessation of spontaneous respiratory effort such that there is ineffective ventilation and oxygenation
- Return of Spontaneous Circulation (ROSC): The restoration of a spontaneous perfusing rhythm that results in more than spontaneous gasp, fleeting palpable pulse or arterial waveform
- Conscious: arousable, attentive, follows commands, localizes painful stimuli, and not intubated
- Coma: not conscious and/or requiring intubation

INITIAL EVALUATION

Initial Evaluation in the PICU

- Comprehensive physical exam including comprehensive neurologic exam
- Specific attention to certain aspects of the neurologic exam:
  - Assess cranial nerves, Glasgow Coma Scale, level of consciousness (careful consideration given to pre-arrest neurologic baseline, as patients who have had short in-hospital cardiac arrest with no change in neurologic status from baseline proceed down the algorithm differently than those with change in neurologic functioning)

- For patients who are conscious with minimal new neurologic impairment (arousable, attentive, follow commands, localize painful stimuli, not intubated)
  - Arterial or Venous Blood Gas
  - Lactate
  - Type and Screen
  - Chest radiograph
  - EKG
  - Other labs to be obtained at the discretion of the attending based on clinical scenario: CMP, Magnesium, Phosphorus, ionized Calcium, CBC, Coagulation panel, fibrinogen, troponin
- For patients who are comatose (unconscious and/or requiring intubation)
  - Complete Metabolic Panel
  - Magnesium
  - Phosphorus
  - Ionized calcium
  - Complete Blood Count
  - Coagulation Panel
  - Fibrinogen
  - Lactate
  - Troponin
  - Arterial Blood Gas
  - Type and Screen
  - Chest radiograph
  - EKG
- Additional studies to be obtained for selected patients at the discretion of the attending physician:
  - Echocardiogram
  - Urine toxicology screen
  - Co-oximetry
  - Blood culture
  - Urine cultures
  - Cortisol
  - Non-contrast head CT to evaluate for acute pathology

CLINICAL MANAGEMENT

For patients who are conscious with minimal new neurologic impairment (arousable, attentive, follow commands, localize painful stimuli, not intubated)

Monitoring

- Routine PICU monitoring

Clinical Goals and Strategies

- Avoidance of fever: schedule antipyretics for 48 hours
- Target normal vital signs for age
- Consider Neurocritical care team consultation if abnormal neurologic findings or change from baseline exam

For patients who are comatose (unconscious and/or requiring intubation)

Monitoring

- Routine PICU monitoring
- Arterial catheter
- Continuous EEG for 24 hours
  - Prolonged monitoring may be indicated based on clinical scenario
- Rectal temperature probe, esophageal probe if rectal contraindicated (refer to normothermia order set)
- Continuous end-tidal CO_2 monitor while intubated

Clinical Goals and Strategies

- Controlled normothermia: use Targeted Temperature Management Order Set
- Normotension: hypotension is associated with worsened outcomes following pediatric cardiac arrest
- Normoxia (sat 92%-95%)
- Normocarbia (pCO_2 35-45 mmHg; can target normal pH if the patient has evidence of chronic CO2 retention)
- Normoglycemia (80-180 mg/dL)
- Normal serum sodium (140-145 mmol/L)
- IV fluids: use isotonic fluids without dextrose initially (recommend dextrose containing fluids in cases of documented hypoglycemia or age < 1 year)
  - Target euvolemia/even fluid balance once hemodynamically stable (defined as no fluid boluses and/or no escalation of vasoactive medications for 6 hours)
  - Add dextrose to IV fluids at 24 hours post-resuscitation or if serum glucose falls below 80 mg/dl
- Early enteral nutrition: recommend placing nasoenteric tube when the patient is clinically stable with a goal of initiating enteral feeding within 48 hours of admission
- Recommended lab schedule:
  - Arterial Blood Gas, iCa, Renal Function Panel, Magnesium every 6 hours for 24-48 hours
  - CBC, coags, CMP daily
- Consult Neurocritical care team at admission

Other Considerations (all patients)

- For patients with documented or suspected ventricular fibrillation or ventricular tachycardia as initial arrest rhythm, consider Cardiology consultation to rule out arrhythmia syndrome
- Rehabilitation Medicine: consider consultation for assistance with tone, prognostication and/or transition of care out of the PICU

IMAGING

- Consider brain MRI as an aid for prognostication if clinical neurologic recovery is concerning
- If MRI brain is desired, do not obtain earlier than 72 hours after admission (wait an additional 48-72 hours if hypothermic arrest and/or if patient has undergone therapeutic hypothermia)

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Neurocritical Care Committee – October 11, 2016
Pharmacy & Therapeutics Committee – November 18, 2016
Clinical Care Guideline and Measures Review Committee – November 29, 2016
Medication Safety Committee – not applicable
Antimicrobial Stewardship Committee – not applicable

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APPROVED BY	 Lalit Bajaj, MD, MPH Medical Director, Clinical Effectiveness

REVIEW REVISION SCHEDULE

Scheduled for full review on November 29, 2020

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