DYSRHYTHMIAS: BRADYCARDIA - PEDIATRIC

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Information Needed:

- Bradycardia, in pediatric patients, typically is the result of some form of respiratory depression and initial treatment should be directed to ensuring that the patient is breathing adequately and providing supplemental oxygenation and ventilation as needed.
- Clinically significant bradycardia is defined as heart rate less than 60 bpm with signs of instability or a rapidly dropping heart rate associated with poor systemic circulation despite adequate oxygenation or ventilation
- History, onset and duration of symptoms, mental status, and neurologic baseline
- History of respiratory insufficiency, failure, obstruction, or respiratory arrest
- History of cardiac disease or etiology, previous episode, treatment required, medications or possibility of ingestion
- Antecedent symptoms: dizziness, syncope, or other related chief complaint
- For neonates (<29 days) refer to the Neonatal Resuscitation Protocol

Objective Findings:

- Assess rhythm as bradycardia and determine if any of the following signs of instablity are present:
  - Poor perfusion
  - Hypotension
  - Respiratory difficulty
  - Altered mental status
- Identify and treat (as appropriate) any of the following possible causes:
  - Hydrogen Ion (Acidosis)
  - Hypoglycemia
  - Hypoxemia
  - Hypovolemia
  - Hypothermia
  - Hyper/hypokalemia and metabolic disorders
  - Tamponade
  - Tension pneumothorax
  - Toxins/poisonings/drugs
  - Thromboembolism
  - Trauma

Treatment:

- For unstable patients: deliver high flow O_2 via non-rebreather mask. Consider BVM with 100% oxygen.
- Confirm rhythm as bradycardia. If heart rate remains < 60/min with continued signs of instability after oxygenation and ventilation, begin cardiac compressions.
- Endotracheal intubation should be considered only if unable to:
  - maintain a patent airway
  - provide adequate oxygenation with BVM
- Establish IV/IO
- Give epinephrine
  - IV/IO: epinephrine (1:10,000). May repeat q 3-5 minutes
- If no response, give atropine IV/IO. May repeat once.
- Give IV fluid bolus of normal saline for persistent decreased perfusion or suspected hypovolemia. Reassess. May repeat twice as needed.
- If rhythm changes, check for pulses, and proceed to appropriate Pediatric Cardiac Arrest or Dysrhythmia Protocol as indicated.

Precautions and Comments:

- Utilize the Broselow Tape for determination of drug dosages, fluid volumes, defibrillation/cardioversion joules, and appropriate equipment sizes.
- Bradycardia in infants < 6 months of age is more likely to cause symptoms as cardiac output is more dependent on heart rate in this age group.
- Buretrols should be used for all pediatric fluid challenges of 140 ml or less.