

Pediatric Bradycardia With a Pulse

History

- · Past medical history
- Foreign body exposure
- Respiratory distress or arrest
- Apnea
- Possible toxic or poison exposure
- Congenital disease
- Medication (maternal or infant)

Signs and Symptoms

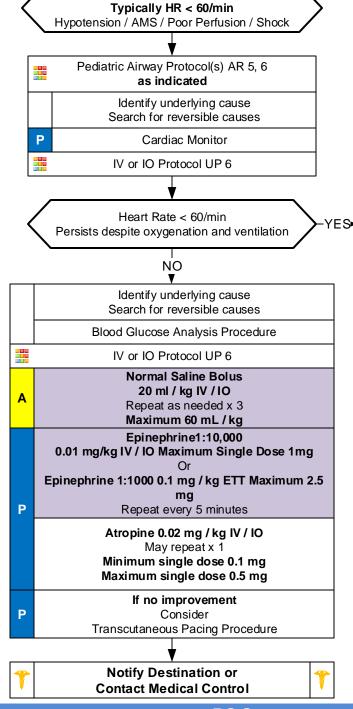
- Decreased heart rate
- Delayed capillary refill or cyanosis
- Mottled, cool skin

Bradycardia

- Hypotension or arrest
- Altered level of consciousness

Differential

- Respiratory failure, Foreign body, Secretions, Infection (croup, epiglotitis)
- Hypovolemia (dehydration)
- Congenital heart disease
- Trauma
- Tension pneumothorax
- Hypothermia
- Toxin or medication
- Hypoglycemia
- Acidosis



Exit to
Pediatric Cardiac Arrest
Protocol(s) PC 1, 4, 7

Reversible Causes

Hypovolemia Hypoxia

Hydrogen ion (acidosis)

Hypothermia

Hypo / Hyperkalemia Hypoglycemia

Tension pneumothorax Tamponade; cardiac Toxins

Thrombosis; pulmonary

Thrombosis; coronary (MI)

Suspected Beta-Blocker or Calcium Channel Blocker

Follow Pediatric Toxicology Protocol



Pediatric Bradycardia With Poor Perfusion

Pediatric Cardiac Protocol Section

Pearls

- Recommended Exam: Mental Status, HEENT, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro
- Bradycardia is often associated with hypoxia so insure patent airway, breathing, and circulation as needed.
- Begin CPR immediately with persistent bradycardia and poor perfusion despite adequate oxygenation and ventilation.
- 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.
- Rhythm should be interpreted in the context of symptoms and pharmacological treatment given only when symptomatic, otherwise monitor and reassess.
- Consider hyperkalemia with wide complex, bizarre appearance of QRS complex, and bradycardia.
- 12-Lead ECG:

12 Lead ECG not necessary to diagnose and treat

Obtain when patient is stable and/or following rhythm conversion.

• Unstable condition

Condition which acutely impairs vital organ function and cardiac arrest may be imminent.

If at any point patient becomes unstable move to unstable arm in algorithm

- Epinephrine is first drug choice for persistent, symptomatic bradycardia.
- Atropine:

Second choice, unless there is evidence of increased vagal tone or a primary AV conduction block, then give atropine first.

Ineffective and potentially harmful in cardiac transplantation. May cause paradoxical bradycardia.

Symptomatic bradycardia causing shock or peri-arrest condition:

If no IV or IO access immediately available, start Transcutaneous Pacing, establish IV / IO access, and then administer epinephrine.

Epinephrine should be administered followed Atropine if no response.

• Symptomatic condition

Arrhythmia is causing symptoms such as palpitations, lightheadedness, or dyspnea, but cardiac arrest is not imminent.

Symptomatic bradycardia usually occurs at rates < 50 beats per minute.

Search for underlying causes such as hypoxia or impending respiratory failure.

Serious Signs / Symptoms:

Hypotension. Acutely altered mental status. Signs of shock / poor perfusion. Chest pain with evidence of ischemia (STEMI, T wave inversions or depressions.) Acute CHF.

• Transcutaneous Pacing Procedure (TCP)

Indicated with unstable bradycardia unresponsive to medical therapy.

If time allows transport to specialty center because transcutaneous pacing is a temporizing measure.

Transvenous / permanent pacemaker will probably be needed.

Immediate TCP with high-degree AV block (2d or 3d degree) with no IV / IO access.

- Most maternal medications pass through breast milk to the infant so maintain high-index of suspicion for OD-toxins.
- Hypoglycemia, severe dehydration and narcotic effects may produce bradycardia. Many other agents a child ingests can cause bradycardia, often is a single dose.