



Bradycardia; Pulse Present

History

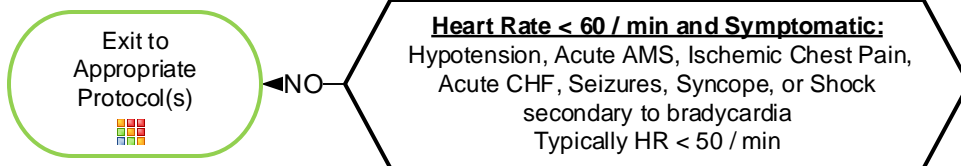
- Past medical history
- Medications
 - Beta-Blockers
 - Calcium channel blockers
 - Clonidine
 - Digoxin
- Pacemaker

Signs and Symptoms

- HR < 60/min with hypotension, acute altered mental status, chest pain, acute CHF, seizures, syncope, or shock secondary to bradycardia
- Chest pain
- Respiratory distress
- Hypotension or Shock
- Altered mental status
- Syncope

Differential

- Acute myocardial infarction
- Hypoxia / Hypothermia
- Pacemaker failure
- Sinus bradycardia
- Head injury (elevated ICP) or Stroke
- Spinal cord lesion
- Sick sinus syndrome
- AV blocks (1°, 2°, or 3°)
- Overdose



YES

	Airway Protocol(s) AR 1, 2, 3 <i>if indicated</i>
	Respiratory Distress Protocol AR 4 <i>if indicated</i>
	Chest Pain: Cardiac and STEMI Protocol AC 4 <i>if indicated</i>
B	Search for Reversible Causes
	12 Lead ECG Procedure
	IV / IO Protocol UP 6
P	Cardiac Monitor
A	Normal Saline Fluid Bolus 500 mL – 2 L NS IV / IO (Unless Acute CHF) Maximum 2 L
	Atropine 1 mg IV / IO May repeat every 3 – 5 minutes Maximum 3 mg
P	Epinephrine 1 - 10 mcg/min IV / IO Titrate to SBP ≥ 90 mmHg Or Dopamine 2 – 20 mcg/kg/min IV / IO Titrate to SBP ≥ 90 mmHg
	Levophed 2mcg-4mcg/min up to 25 mcg/min every 2-5 mins.
	If No Improvement Transcutaneous Pacing Procedure (<i>Consider earlier in 2nd or 3rd AVB</i>)
	Notify Destination or Contact Medical Control

Suspected Beta-Blocker or Calcium Channel Blocker

Follow Overdose/ Toxic Ingestion Protocol TE 7

Reversible Causes

Hypovolemia
Hypoxia
Hydrogen ion (acidosis)
Hypothermia
Hypo / Hyperkalemia

Tension pneumothorax
Tamponade; cardiac
Toxins
Thrombosis; pulmonary (PE)
Thrombosis; coronary (MI)

Consider Sedation

Midazolam 2 – 2.5 mg
IV / IO / IM / IN

Maximum 10 mg



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Pearls

- **Recommended Exam: Mental Status, HEENT, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- **Identifying signs and symptoms of poor perfusion caused by bradycardia are paramount.**
- **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. Give Calcium Chloride or Gluconate in addition to Sodium Bicarbonate if hyperkalemia suspected.**
- **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.
- **Hypoxemia is a common cause of bradycardia. Ensure oxygenation and support respiratory effort.**
- **Atropine:**
Atropine is considered a first line agent in symptomatic bradycardia.
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 atropine and/or epinephrine.
Epinephrine or Dopamine may be considered if no response to Atropine.
- **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.
- Consider treatable causes for bradycardia (Beta Blocker OD, Calcium Channel Blocker OD, etc.)