**Symptomatic Bradycardia**

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

**Signs and Symptoms**
- Heart rate < 60 with associated 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
- Pacemaker failure
- Hypothermia
- Sinus bradycardia
- Athletes
- Head injury (elevated ICP) or stroke
- Spinal cord lesion
- Sick sinus syndrome
- AV blocks (e.g. 1°, 2° or 3°)
- Overdose

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**Exit to appropriate TG**

**HR < 60 and symptomatic:**
- Hypotension, acute AMS, chest pain, acute CHF, seizure, syncope, or shock secondary to bradycardia

**Yes**
- Atropine 0.5mg IV/IO
  - May repeat every 3 – 5 minutes as needed
  - Maximum 3mg
  - Should not be used in wide-complex rhythms or in 2° or 3° heart blocks

**P**
- Normal Saline bolus 500ml IV/IO
  - May repeat as needed
  - Maximum 1L
- Transcutaneous pacing
  - If not responsive to Atropine. Pacing may be considered first line therapy for severe symptoms.
  - Consider early in 2° or 3° blocks and patients with suspected cardiac ischemia

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**Dyspnea/increased work of breathing, especially with hypoxia?**

**Yes**
- Consider sedation
  - Midazolam 1mg IV/IO
  - Titrate in 1-2mg increments
  - May repeat if needed
  - Maximum 5mg
- Consider pain control
  - Fentanyl 25 – 100mcg IV/IO in 25 – 50mcg increments if BP > 90
  - May repeat 25mcg every 20 minutes as needed
  - Maximum 200mcg

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**Notify receiving facility.**
- Contact Base Hospital for medical direction

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**Utilize Airway or appropriate Respiratory Distress TG**
Symptomatic Bradycardia

Pearls

- Bradycardia causing symptoms is typically < 50/minutes. Rhythm should be interpreted in the context of symptoms and pharmacological treatment given only when symptomatic, otherwise monitor and reassess frequently.
- Identifying signs and symptoms of poor perfusion caused by bradycardia is paramount.
- Atropine vs. pacing: Caution should be exercised in the setting of a suspected acute MI. The use of Atropine for PVCs in the presence of an acute MI may worsen heart damage. Providers should NOT DELAY transcutaneous pacing for patients with poor perfusion in the setting of an acute MI or 2º or 3º heart block.
- For patients who are not in 2º or 3º heart block, pacing may be considered for bradycardia not responsive to Atropine. Prepare to utilize transcutaneous pacing early if the patient does not respond to Atropine.
- For wide complex, bizarre appearance of QRS complexes with slow rhythm, consider hyperkalemia.
- Consider treatable causes for bradycardia (e.g. beta blocker OD, calcium channel blocker OD, etc.)
- Hypoxemia is a common cause of bradycardia. Be sure to oxygenate the patient and support respiratory effort.
- Sinus bradycardia in the absence of key symptoms requires no specific treatment; monitor and observe.
- Sinus bradycardia is often seen in patients with STEMI or ischemia. An early 12-Lead ECG should be obtained to assess for STEMI.
- A fluid bolus may address hypotension and lessen the need for pacing or treatment with Atropine.
- Sedation prior to starting pacing is not required. Patients with urgent needs should be paced first and sedated afterwards.
- The objective of sedation with pacing is to decrease discomfort, not to decrease level of consciousness. Patients who are in need of pacing are unstable and sedation should be used with extreme caution.
- Monitor respiratory status closely and support ventilation as necessary.
- Atropine is not effective for bradycardia in heart transplant patients as there is no vagus nerve innervation in these patients.
- Patients with wide QRS or 2º or 3º heart blocks will not have a response to Atropine because they heart rates are not based on vagal tone. An increase in ventricular arrhythmias may occur.