

Adult Bradycardia Administrative Guideline (Age ≥ 14)

History	Signs and Symptoms	Differential
<ul style="list-style-type: none"> Past medical history Medications <ul style="list-style-type: none"> Beta-Blockers Calcium channel blockers Clonidine Digoxin Pacemaker 	<ul style="list-style-type: none"> Chest pain Respiratory distress Hypotension or Shock Altered mental status Syncope Lightheadedness/Dizziness 	<ul style="list-style-type: none"> 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

Bradycardia (HR<60)
with either symptoms or evidence of hemodynamic instability.

Symptomatic Bradycardia
chest pain, shortness of breath, lightheadedness

Hemodynamic instability:
Hypotension with evidence of poor perfusion and end organ compromise (chest pain, shortness of breath, altered mental status, etc.)

Do not delay transcutaneous pacing in patients with severe instability (poor perfusion and altered LOC)

ALS/BLS General

P Administer **20 mL/kg NS/LR** fluid bolus (unless signs of fluid overload).
May repeat x 1

P Consider transcutaneous pacing if refractory to medical management or in patients with poor perfusion and altered LOC

P Consider sedation or pain control as blood pressure allows

Midazolam 0.1 mg/kg IV/IO slowly (max single dose 2 mg) - May repeat every 2-3 minutes, max total dose 5 mg

Continued bradycardia

P Administer **atropine sulfate 0.5 mg** rapid push IV/IO
May repeat every 3-5 minutes to a **max total dose of 3 mg**

P For wide complex bradycardia and history of renal failure, consider hyperkalemia and administer **calcium chloride 1g** IVP

Continued bradycardia

P Consider **Dopamine 2-10 mcg/kg/min** IVPB
Titrate to HR >60 and SBP >90

Education/Pearls

Bradycardia

- Identifying signs and symptoms of poor perfusion caused by bradycardia is paramount.
- Rhythm should be interpreted in the context of symptoms and pharmacological treatment given **ONLY** when symptomatic; otherwise, closely monitor the patient and reassess.
- **Do not delay transcutaneous pacing for patients with evidence of severe hemodynamically instability, with poor perfusion, or altered mental status.**

- Bradycardia typically causes symptoms at a rate of <50 beats/minute.
 - Bradycardia may present with altered mental status, chest pain, congestive heart failure, seizure, syncope, shock, pallor, diaphoresis, or evidence of hemodynamic instability.

- Consider treatable causes for bradycardia
 - Common causes: electrolyte abnormalities (e.g. hyperkalemia), myocardial ischemia, medication overdose (see below for more details), infections, hypoxemia, and hypothyroidism
 - Consider hyperkalemia in patients with ECG evidence of wide complex bradycardic rhythms. Administer calcium chloride 1 g IV/IO for suspicion of hyperkalemia.
 - Hypoxemia is a common cause of bradycardia. Ensure oxygenation and support respiratory efforts.

- Atropine
 - **Do NOT delay Transcutaneous Pacing to administer Atropine in bradycardia with poor perfusion.**
 - Caution in setting of:
 - Acute MI, as elevated heart rate can worsen ischemia.
 - Overdoses, as administration may cause worsening bradycardia in certain scenarios (such as alpha agonist overdose, like Clonidine.)
 - Cardiac transplant, as it may cause paradoxical bradycardia.

- Transcutaneous Pacing Procedure (TCP)
 - Immediately utilize TCP in patients with evidence of poor perfusion or with high-degree AV block (2nd or 3rd degree) without IV/IO access.
 - If time allows, transport to a cardiac receiving center because transcutaneous pacing is a temporizing measure.
 - Consider sedation or pain control for TCP
 - Use EtCO₂ for all patients receiving sedation

- Overdose
 - Bradycardia is a consequence of medication overdoses, including beta blockers, calcium channels, and alpha-2 agonists (Clonidine)
 - In Clonidine overdoses, avoid use of atropine in the setting of normotension, as atropine may cause reflex hypertension in this unique setting