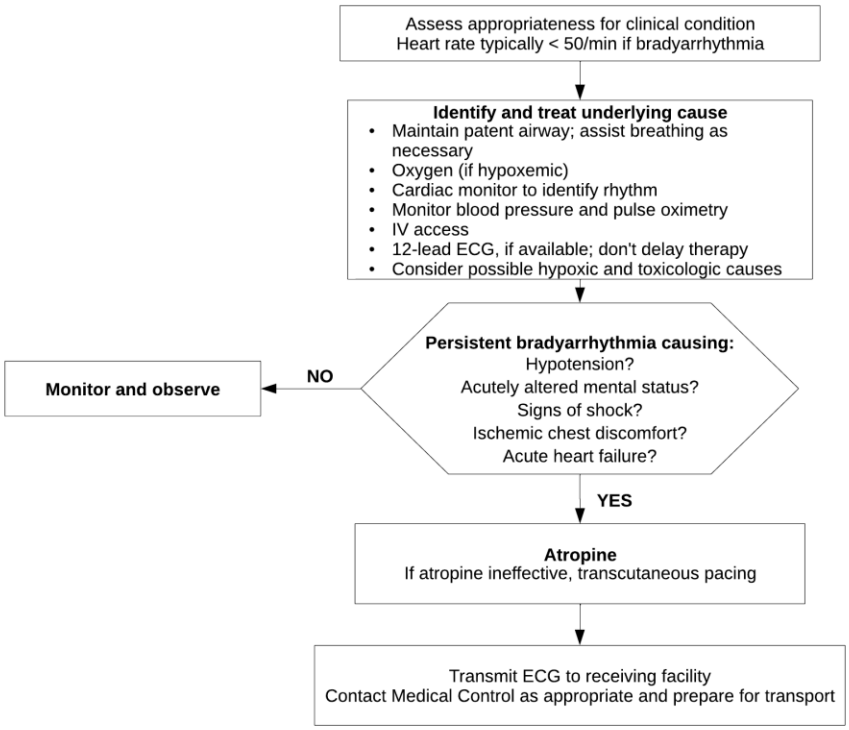
REGION 11 CHICAGO EMS SYSTEM PROTOCOL	Title: Adult Bradycardia – BLS/ALS
	Section: Cardiovascular
	Approved: EMS Medical Directors Consortium
	Effective: March 6, 2025

ADULT BRADYCARDIA – BLS/ALS



Doses/Details

Atropine IV dose:
First dose: 1 mg bolus
Repeat every 3-5 minutes
Maximum: 3 mg

Causes

- Myocardial ischemia/infarction
- Drugs/toxicologic (e.g. calcium-channel blockers, beta blockers, digoxin)
- Hypoxia
- Electrolyte abnormality (e.g. hyperkalemia)

REGION 11 CHICAGO EMS SYSTEM PROTOCOL	Title: Adult Bradycardia – BLS/ALS
	Section: Cardiovascular
	Approved: EMS Medical Directors Consortium
	Effective: March 6, 2025

ADULT BRADYCARDIA – BLS/ALS

I. PATIENT CARE GOALS

1. Maintain adequate perfusion.

2. Treat underlying cause:

    a. Hypoxia
    b. Shock
    c. Second or third-degree atrioventricular (AV) block
    d. Toxin exposure (beta-blocker, calcium channel blocker, organophosphates, digoxin)
    e. Electrolyte disorder
    f. Hypoglycemia
    g. Increased intracranial pressure (ICP)
    h. Other

II. PATIENT PRESENTATION

A. Inclusion Criteria

1. Heart rate less than 50 beats per minute with either symptoms altered mental status chest pain, congestive heart failure, seizure, syncope, shock, pallor, diaphoresis or evidence of hemodynamic instability.

2. The major ECG rhythms classified as bradycardia include:

    a. Sinus bradycardia
    b. Second degree AV block
        - Type I- Wenckebach/Mobitz I
        - Type II- Mobitz II
    c. Third-degree AV block, complete heart block
    d. Ventricular escape rhythms

B. Exclusion Criteria

None

III. PATIENT MANAGEMENT

A. Adult Management

1. Manage airway as necessary.

2. Administer oxygen as appropriate with a target of achieving 94–98% saturation.

3. Initiate cardiac monitoring and perform 12-lead ECG.

4. Establish IV access.

5. Check blood glucose and treat hypoglycemia.

6. Consider the following additional therapies if bradycardia and symptoms or hemodynamic instability continue:

   a. Atropine 1 mg IV every 3-5 minutes (maximum total dose of 3 mg)
   b. If atropine is ineffective, initiate Transcutaneous Pacing Procedure and administer analgesia per Pain Management Protocol

IV. NOTES/EDUCATIONAL PEARLS

A. Key Considerations

1. Evaluate for signs of decreased end-organ perfusion: chest pain, shortness of breath, decreased level of consciousness, syncope, or other signs of shock/hypotension.

2. Patients who have undergone cardiac transplant will not respond to atropine.

3. Consider the effect of medications causing bradycardia including beta-blockers, calcium channel blockers, sodium channel blockers/anti-depressants, digoxin, and clonidine.

4. There are many potential causes of bradycardia including: myocardial infarction (MI), hypoxia, pacemaker failure, hypothermia, sinus bradycardia, athletes, head injury with increased intracranial pressure (ICP), stroke, spinal cord lesion, sick sinus syndrome, AV blocks, overdose, and cholinergic nerve agents.

5. Consider hyperkalemia in the patient with wide complex bradycardia.

6. Bradycardia should be managed via the least invasive manner possible, escalating care as needed.

   a. Third-degree heart block or the denervated heart (as in cardiac transplant) may not respond to atropine, and in these cases proceed quickly to chronotropic agents (such as epinephrine) or transcutaneous pacing.
   b. In cases of impending hemodynamic collapse, proceed directly to transcutaneous pacing.

7. Be aware of acute coronary syndrome as a cause of bradycardia in adult patients.