



**ORANGE COUNTY EMERGENCY MEDICAL SERVICES**  
**BASE HOSPITAL TREATMENT GUIDELINES**  
**ADULT/ADOLESCENT**

#: BH-C-20  
 Page: 1 of 2  
 Org. Date: 12/2006  
 Effective Date: 04/01/17

**SYMPTOMATIC OR DETERIORATING BRADYCARDIA**

**BASE GUIDELINES**

1. Determine ALS Standing Order treatments/procedures rendered prior to base hospital contact. Use ALS standing order as guidelines for treatments/procedures not initiated prior to base hospital contact.
2. Symptomatic bradycardia is defined as heart rate less than or equal to 60 bpm and:
  - Signs of poor perfusion (hypotension, poor skin signs, altered level of consciousness)
  - Chest pain
  - Shortness of breath, signs of pulmonary edema.
3. Deteriorating bradycardia is defined as heart rate less than or equal to 60 bpm and:
  - Decreasing heart rate with time (for example drop in rate from 60 bpm to 50 bpm over a few minutes) despite oxygen therapy.
4. Check for Acute MI on 12 lead EKG:
  - If "Acute MI" indicated or suspected, or STEMI is suspected based on paramedic interpretation of 12-lead ECG, patient should be routed to the nearest open Cardiovascular Receiving Center (CVRC).
  - Monitors used in the field provide automated readings of ECGs; paramedics consider an acute MI for the following 12-lead monitor interpretations:
    1. \*\*\*ACUTE MI\*\*\*
    2. \*\*\*STEMI\*\*\*
    3. Acute ST Elevation Infarct
    4. Probable Acute ST Elevation Infarct
    5. Acute Infarction
    6. Infarct, Probably Acute
    7. Infarct, Possible Acute

**ALS STANDING ORDER**

1. Monitor cardiac rhythm and document with rhythm strip.
2. Pulse oximetry; if room air oxygen saturation less than 95%:
  - ▶ *Administer High-flow oxygen by mask or nasal cannula at 6 l/min flow rate as tolerated.*
3. If immediate transcutaneous pacing NOT required:
  - ▶ *Obtain 12-lead ECG; if "Acute MI" indicated or a STEMI is suspected based on paramedic interpretation of 12-lead ECG, make Base Hospital contact for CVRC destination with an open cardiac catheterization lab.*
4. If symptomatic bradycardia:
  - ▶ *Place transcutaneous pacemaker and initiate pacing (see Procedure Guideline # PR-110).*
    - If paced by pacemaker, contact Base Hospital for potential CVRC destination.
    - If paced by pacemaker, blood pressure less than 90 systolic and lungs clear to auscultation, contact Base Hospital for potential CVRC destination and:
      - ▶ *Establish IV access*
      - ▶ *Normal Saline, infuse 250 mL IV, repeat up to maximum 1 liter to maintain adequate perfusion*
    - If transcutaneous pacing causes anxiety and extreme discomfort and blood pressure greater than 90 systolic, establish IV access and administer:
      - ▶ *Midazolam (Versed®) up to 5 mg IV slowly titrated to attain sedation (Assist ventilation and maintain airway if respiratory depression develops)*
    - If IV access cannot be established and blood pressure greater than 90 systolic:
      - ▶ *Midazolam (Versed®) 5 mg IN divided between each nostril, may repeat once after approximately 3 minutes (Assist ventilation and maintain airway if respiratory depression develops).*



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**BASE GUIDELINES**



5. Cardiac pacing, when available, should be deployed without waiting for IV access.
  - Consider midazolam sedation after IV is established.
6. If paced by pacemaker route patient to the Cardiovascular Receiving Center (CVRC).
7. If patient has an **implanted pacemaker** and is bradycardic with heart rate less than 60 bpm, treat in same manner as described for bradycardia without pacemaker in place.
8. For bradycardia with hypotension unresponsive to pacemaker, atropine, and fluid challenge, consider push dose epinephrine:
  - ▶ If available, **Push Dose Epinephrine** (per Procedure #230)

**Mixing instructions:**

  - Take Epinephrine 1 mg of 0.1 mg/mL preparation (cardiac Epinephrine) and waste 9 mL of Epinephrine.
  - Into that syringe, withdraw 9 mL of normal saline from the patient's IV bag. Shake well.
  - Mixture now provides 10 mL of Epinephrine at a 10 mcg/mL concentration.

**Push Dose:**

  - Epinephrine 0.5 mL (5 mcg) IV/IO, every 3 minutes titrate to a SBP > 90.

**ALS STANDING ORDER**



5. If transcutaneous pacer fails to capture and pace heart, stop pacing function of monitor and administer:
  - ▶ *Atropine: 0.5 mg IV / IM approximately every 3 minutes as needed to correct bradycardia to a maximum total dose of 3 mg*
6. For systolic blood pressure less than 90 (paced or if non-capture) or no response to atropine; and lungs clear to auscultation:
  - ▶ *Normal Saline, infuse 250 mL and assess blood pressure and perfusion; may repeat 3 times (total 1 liter) to maintain perfusion.*
  - ▶ If BP < 90 after 1 liter of NS or if evidence of CHF, contact Base Hospital.
7. ALS escort with Base Hospital contact for CVRC destination

Approved:

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