Contra Costa County Emergency Medical Services

Bradycardia

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

Signs and Symptoms
- Heart rate < 60 with:
  - Chest pain
  - Respiratory distress/acute CHF
  - Hypotension or shock
  - Altered mental status
  - Dizziness/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
- Hypothyroidism

P
- Cardiac monitor
- 12-Lead ECG
- $EtCO_2$ monitoring

Is the patient stable?

Stable

P
- Observe and monitor

Unstable due to Bradycardia
Hypotension/shock often with signs of poor perfusion
Altered mental status
Chest pain highly suggestive of ACS:
- Severe crushing chest pain
- Pale/diaphoretic
- With or without evidence of ischemia on ECG (STEMI, T-wave inversion/ depression)

P

Transcutaneous pacing

Establish IV/IO - Do not delay pacing for the unstable patient

Consider ***Atropine 1mg IV/IO*** *while waiting for TCP*
May repeat every 3 – 5 minutes as needed
Should not be used in wide-complex rhythms or in 2° or 3° heart blocks
Maximum 3mg

Consider sedation ***Midazolam 1mg IV/IO***
Titrate in 1-2mg increments may repeat if needed
Maximum 5mg

Consider pain control if BP > 90
Fentanyl 25 – 100mcg IV/IO
in 25 – 50mcg increments
May repeat 25mcg every 20 minutes if needed
Maximum 200mcg

P

Normal Saline bolus 500ml IV/IO, may repeat as needed
Maximum 1L

Consider ***Push Dose Epi 10mcg (1 ml) IV/IO***
Every 3 minutes, titrate to a BP > 90

Notify receiving facility. Contact Base Hospital for medical direction, as needed.

Adult Cardiac Treatment Guidelines

Bradycardia

Pearls

- **Worsening bradycardia in ROSC may indicate signs of impending rearrest.**
- Instability due to bradycardia is typically seen with heart rates < 35 bpm. Prehospital treatment is directed toward the unstable patient, otherwise monitor and reassess frequently.
- Identifying signs and symptoms of poor perfusion caused by bradycardia is paramount.
- Sinus bradycardia in the absence of key symptoms requires no specific treatment; monitor and observe.
- 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 2^{o} or 3^{o} heart block.
- A fluid bolus may address hypotension and lessen the need for pacing or treatment with Atropine.
- 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 2^{o} or 3^{o} heart blocks will not have a response to Atropine because the heart rates are not based on vagal tone. An increase in ventricular arrhythmias may occur.
- For patients who are not in 2^{o} or 3^{o} 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 is often seen in patients with STEMI or ischemia. An early 12-Lead ECG should be obtained to assess for STEMI.
- 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 be prepared to support ventilation as necessary.