Notes/Educational Pearls

Key Considerations

1. Observe for signs of decreased end-organ perfusion: chest pain (CP), shortness of breath (SOB), 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 potential culprit medications including beta-blockers, calcium channel blockers, sodium channel blockers/anti-depressants, digoxin, and clonidine
    a. If medication overdose is considered, refer to appropriate guideline in the Toxins and Environmental Section
4. The differential diagnosis includes the following: 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, 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 dopamine) or transcutaneous pacing
    b. Dopamine is not indicated for pediatric patients
    c. In cases of impending hemodynamic collapse, proceed directly to transcutaneous pacing
    d. For shock that is suspected to be from sepsis, norepinephrine is preferred over dopamine due to its reduced risk of arrhythmias and its lower mortality rate
7. Be aware of acute coronary syndrome as a cause of bradycardia in adult patients
8. When dosing medications for pediatric patients, dose should be weight-based for non-obese patients and based on ideal body weight for obese patients
9. Although dopamine is often recommended for the treatment of symptomatic bradycardia, recent research suggests that patients in cardiogenic or septic shock treated with norepinephrine have a lower mortality rate compared to those treated with dopamine
10. **Caution: Norepinephrine can theoretically cause reflex bradycardia**

Pertinent Assessment Findings

None noted

Quality Improvement

Associated NEMSIS Protocol(s) (eProtocol.01) *(for additional information, go to www.nemsis.org)*

- 9914115 – Medical - Bradycardia

Key Documentation Elements

- Cardiac rhythm/rate
- Time, dose, and response of medications given
- Pacing: Time started or stopped, rate, joules, capture, and response rate
- Patient weight
- Pediatric length-based tape color (for pediatrics who fit on tape)