

## BRADYCARDIA

- **Symptoms of bradycardia**
  - General: altered level of consciousness, fatigue, lightheadedness, dizziness, syncope
  - Hemodynamic instability: hypotension, poor end-organ perfusion, respiratory distress/failure, sudden collapse
- **Causes of bradycardia**
  - 1°: congenital abnormality or postsurgical injury to pacemaker/conduction system, cardiomyopathy, myocarditis
  - 2° (Hs & Ts): hypoxia, acidosis, hypotension, hypothermia,  $\uparrow K^+$ , heart block, toxins/poisons/drugs, head trauma
- **Types of bradycardia**
  - Sinus bradycardia – can be physiologic (sleep, athletic conditioning) or pathologic (increased vagal tone, hypothyroidism, hypoglycemia, drugs/ingestions)
  - Sinus node arrest – absent sinus node pacemaker activity with subsidiary pacemakers leading to atrial, junctional, and idioventricular escape rhythms
  - AV block – disturbance of electrical conduction through AV node
    - 1<sup>st</sup> degree: prolonged PR interval; caused by electrolyte abnormalities, increased vagal tone, myocarditis, acute rheumatic fever, drugs; usually asymptomatic
    - 2<sup>nd</sup> degree, Mobitz type I/Wenchebach phenomenon: progressive prolongation of the PR interval until an atrial impulse is not conducted to the ventricles; caused by increased parasympathetic tone, drugs; typically transient and benign with mild or no symptoms
    - 2<sup>nd</sup> degree, Mobitz type II: constant prolongation of PR interval, consistent inhibition of a set proportion of atrial impulses; usually caused by defect in conduction pathway or acute coronary syndrome; can be symptomatic with palpitations, syncope, presyncope; can progress to 3<sup>rd</sup> degree heart block and often requires pacemaker
    - 3<sup>rd</sup> degree, “complete”: none of the atrial impulses are conducted to the ventricle; can be congenital or caused by conduction system disease or injury; most symptomatic form of heart block with fatigue, syncope, presyncope; potential medical emergency; usually requires pacemaker
- **Management of bradycardia**
  - ABCs
    - Support or open airway, attach pulse oximeter, provide oxygen, assist ventilation as needed
    - Check electrode pad position, attach monitor/defibrillator, perform chest compressions if HR < 60 bpm & poor perfusion; push hard & fast 100x/min, establish vascular access, obtain 12 lead EKG and appropriate labs
  - Further management per PALS algorithms
  - Address reversible causes (Hs & Ts)