

# Atrioventricular Block

CoreNotes by Core Concepts Anesthesia Review, LLC

## What You Must Know

1. Three types of atrioventricular (heart) block exist: first-degree, second-degree and third-degree.
2. First-degree block is said to exist when the PR interval is constant and prolonged ( $> 20$  msec).
3. Two types of second-degree block exist:
  - a. Second-degree block Type 1 (Mobitz I or Wenkebach) is associated with progressive lengthening of the PR interval until a QRS complex is dropped.
  - b. Second-degree block Type 2 (Mobitz II) is associated with normal P waves and a consistent PR interval, but some QRS complexes are dropped.
4. In third-degree block (complete heart block), the atria and ventricles beat independently and there is no correlation between the P waves and QRS complexes.

First-degree atrioventricular (AV) block is an abnormality in the cardiac conduction system, which results in a prolongation in the propagation of the atrial contraction to the ventricles. Electrocardiographically this is shown as an increase of the PR interval beyond the upper limit of normal ( $>0.20$  msec). This block is usually clinically insignificant.



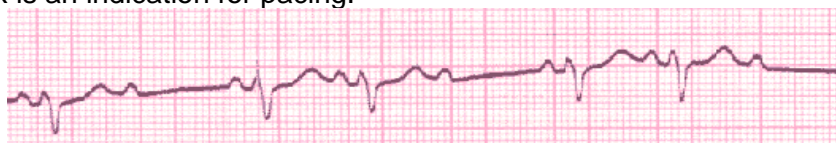
*First-degree block*

Second-degree Type 1 block is associated with abnormal conduction in the AV node resulting in progressive prolongation of the PR interval until a QRS complex is dropped. This block can be seen in trained athletes or may indicate AV node disease or drug toxicity. Since the AV node receives innervation from the vagus, bradycardia may be successfully treated with anticholinergic agents in both 1<sup>o</sup>- and 2<sup>o</sup> type 1 blocks.



*Second-degree type 1 block (Mobitz 1 or Wenkeback block)*

Second-degree Type 2 block is associated with a normal P wave and often a normal PR interval, but occasionally the QRS complex is dropped. There is no variation of the PR interval between beats. This block indicates conduction abnormality distal to the AV node and is unlikely to respond to anticholinergic agents. Most feel a second-degree type 2 block is an indication for pacing.



*Second-degree type 2 block (Mobitz 2 block)*

Third-degree block reflects a complete dissociation between atrial and ventricular activity. Pharmacologic treatment of bradycardia requires a beta-sympathomimetic agent such as isoproterenol. This block is an indication for pacing.



*Third-degree block (complete heart block)*

**Additional Reading:**

Barash, PG, Cullen, BF, Stoelting, RK, Cahalan, MK, Stock, MC, Ortega, R, Sharar, SR, and Holt, NF. Clinical Anesthesia. Philadelphia: Lippincott Williams & Wilkins, 2017:1711-1712