The Cardiac Cycle and EKG Cycle

Electrical Conduction System of the Heart

The electrical activity of the AV node, bundle of His, and Purkinje fibers is not recorded on the EKG. What is recorded is the actual depolarization of myocardial fibers.

- The P-wave represents atrial depolarization and is recorded as a positive deflection.
- The QRS complex represents ventricular depolarization.
- The T-wave represents ventricular repolarization. Atrial repolarization occurs during ventricular depolarization. It is obscured by the QRS complex and is not seen on the EKG.
- The U-wave (while not always seen and poorly understood) represents ventricular after-potentials.
- The PR interval is the time from the beginning of the P-wave to the beginning of the QRS complex. It is used to estimate the pause at the AV node prior to ventricular depolarization.
- The ST segment is the segment between the end of the QRS complex and the beginning of the T-wave. It is the pause between ventricular depolarization and repolarization.
- The QT interval is the time between the beginning of the QRS and the end of the T-wave. It represents the total duration of ventricular depolarization and repolarization.
- A segment is a stretch of baseline, and an interval includes at least one wave.
- One P-QRS-T on a normal EKG represents the electrical activity of one cardiac cycle.

A cardiac cycle represents one complete cycle of depolarization (contraction) and repolarization (recovery) of the myocardial cells. This complete cycle is one heartbeat. The EKG cycle is the graphical representation of the complete cardiac cycle.
Positive deflections are recordings above the baseline and negative deflections are recordings below the baseline. The P-wave shows atrial depolarization, which is recorded as a positive deflection. The QRS represents the depolarization of the ventricles. The T-wave represents ventricular repolarization and is a positive deflection.

Depolarization that travels in the positive direction will give a positive deflection. Depolarization that travels in the negative direction will give a negative deflection.