The electrocardiogram (ECG) is a tool for recording and interpreting cardiac activity through repeated cardiac cycles.

### Anatomy of a normal cardiac cycle

1. **P wave**: atrial depolarization/contraction
2. **PR interval**: electrical impulse passes through AV node, where pace of conduction is slowed, allowing the ventricles to fill before contracting
3. **QRS complex**: ventricular depolarization/contraction
4. **ST segment**: ventricles remain depolarized
5. **T wave**: ventricular repolarization/relaxation

### Normal sinus rhythm (NSR)

NSR is the default, healthy cardiac rhythm. The electrical impulse originates from the sinoatrial (SA) node and the ECG strip will demonstrate the following characteristics:

- **P wave**: present before each QRS complex
- **PR interval**: 0.12–0.20 sec
- **QRS duration**: 0.04–0.44 sec
- **T wave**: present
- **Rate**: 60–100 bpm, measured from R wave to R wave
- **Rhythm**: regular

### Common variations from NSR

**Sinus bradycardia**: All features of a normal cardiac rhythm are present, but rate is slower than 60 bpm.

**Sinus tachycardia**: All features of a normal cardiac rhythm are present, but rate is greater than 100 bpm. T wave may be “buried,” or absent, at increased HR.

### Interpreting the ECG strip

When a client is connected to the ECG monitor, the paper strip will emerge from the ECG machine at a rate of 25 mm per second. This rate and the system of large and small squares on the ECG strip allow measurement and interpretation of the client’s cardiac activity.

- **1 small square** = 40 ms or 0.04 sec
- **1 large square** = 200 ms or 0.20 sec

The example to the right shows a PR interval (from the start of the P wave to the start of the QRS complex) of 0.20 sec, which is normal.