

## Waveform Identification

### ***Terminology***

- ❑ Waveform: Movement away from isoelectric baseline
- ❑ Segment: A line between two waveforms. Ex. ST segment
- ❑ Interval: A waveform AND a segment. Ex. PR interval
- ❑ Complex: several waveforms. Ex: QRS complex

### ***P Wave Characteristics***

- ❑ Present in a one-to-one relationship with QRS complex
- ❑ Upright in Lead II with antegrade conduction
- ❑ Negative in Lead II indicates retrograde conduction
- ❑ Represents Atrial depolarization

### ***PR Segment Characteristics***

- ❑ Measured from beginning of P wave to beginning of QRS complex.
- ❑ Duration: 0.08 to .20 second
- ❑ Significance: Atrial depolarization AND AV delay
- ❑ Prolonged PRI indicates AV node conduction disturbance.
- ❑ Shortened PRI indicates ectopic focus or bypass mechanism

### ***QRS Complex Characteristics***

- ❑ Q wave represents septal depolarization. First negative deflection after P wave.
- ❑ R wave is first positive deflection after P wave.
- ❑ S wave is first negative deflection after R wave.
- ❑ Measured from beginning of first waveform to end of last waveform in complex
- ❑ Duration: Less than .10 second (use .12 for ease of measurement)
- ❑ Significance: Ventricular depolarization time
- ❑ Prolonged QRS: Disturbance somewhere in conduction pathway

### **ST Segment Characteristics**

- ❑ Measured from J point to beginning of T wave
- ❑ Height: isoelectric relative to PR segment
- ❑ Significance: Elevation or depression may be indicative of myocardial damage

### **T Wave Characteristics**

- ❑ Represents ventricular repolarization
- ❑ Usually deflection is same as that of QRS complex.
- ❑ Peaked, or inverted T waves may represent abnormality

### **Rate Determination**

#### **Six Second Method**

- ❑ Count number of QRS complexes in a 6 second period, multiply by 10
- ❑ At 5 big boxes per second, there are 30 big boxes per 6 seconds

#### **R-R Interval Method(s)**

- ❑ Divide 300 by number of large boxes between consecutive QRS complexes.
- ❑ Divide 1500 by number of small boxes between consecutive QRS complexes.

#### **R-R Interval Method Cheat Sheet**

Large Boxes Between QRS Complexes	Heart Rate
1	300
2	150
3	100
4	75
5	60
6	50
7	43
8	38
9	33
10	30

## **Systematic Rhythm Analysis**

1. Determine rate.
  - Fast or Slow?
2. Determine rhythm.
  - Regular or Irregular?
3. Assess P waves.
  - Present or absent?
  - “Married” to QRS?
  - Upright in Lead II?
4. Assess PR interval.
  - Less than .20 second?
  - Constant or Variable?
5. Assess QRS complex.
  - Narrow or Wide ( $> .12$  second)?
  - Constant or Variable?
6. Identify rhythm.
  - Compare findings to rhythm ‘rules’