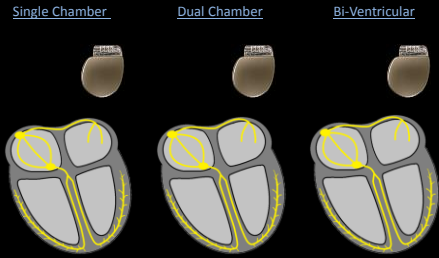


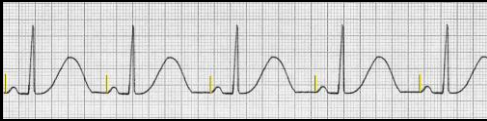
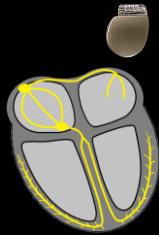
# Pacemakers

## Lead Configurations



## Atrial Pacing

- Atrial Pacing Characteristics
- Pacing spike before P wave
  - Narrow QRS unless BBB



## Ventricular Pacing

- Ventricular Pacing Characteristics
- Single pacing spike before QRS
  - Wide QRS



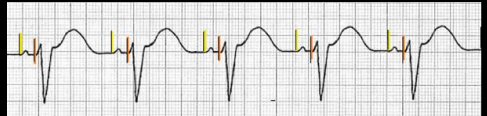
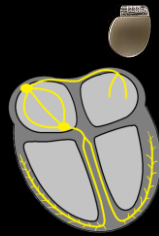
## Ventricular Pacing

- A-Synchronous Ventricular Pacing
- P wave before each pacing spike
  - Single pacing spike before each QRS



## AV Pacing

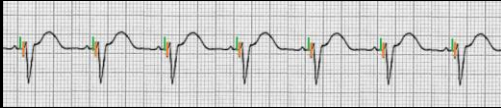
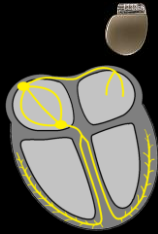
- AV Pacing Characteristics
- Pacing spike before P wave
  - Pacing spike before QRS
  - Wide QRS
  - Ensures AV synchrony



## Bi-Ventricular Pacing

### Bi-Vent Pacing Characteristics

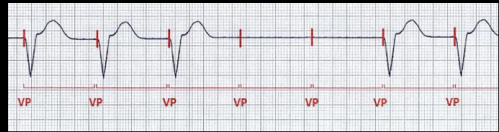
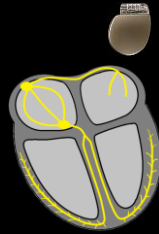
- 2 Pacing spikes before QRS
- QRS may be wide or slightly narrow
- Cardiac Resynchronization Therapy (CRT)



## Pacemaker Problems

### Failure to Capture

- Pacemaker paces but no cardiac response
- Insufficient Voltage Output
- Lead Displacement



## Pacemaker Problems

### Failure to Pace

- Pacemaker fails to pace when necessary
- Oversensing
- EMI



## Pacemaker Problems

### Undersensing

- Pacemaker does not sense the hearts intrinsic rhythm
- Paces through already present activity
- Ventricular Pacing on the T wave



## Cardioversion

### Implantable Cardioverter Defibrillator (ICD)

- Senses for lethal arrhythmia
- Delivers electrical shock to reset the heart

