

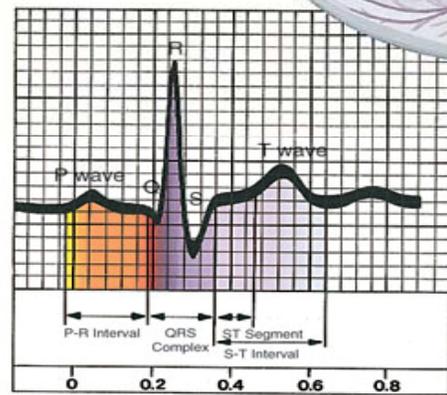
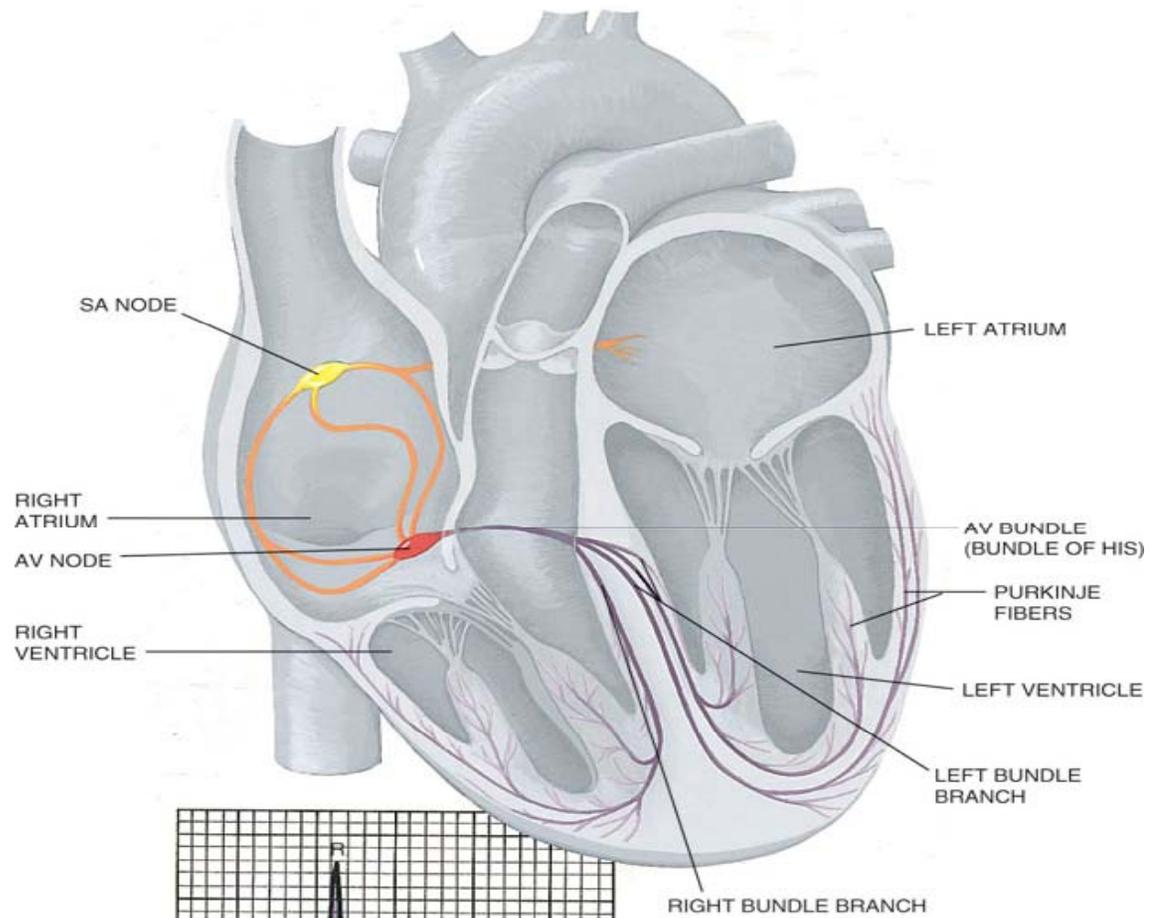
# Cardiac Dysrhythmias

Chapter 25

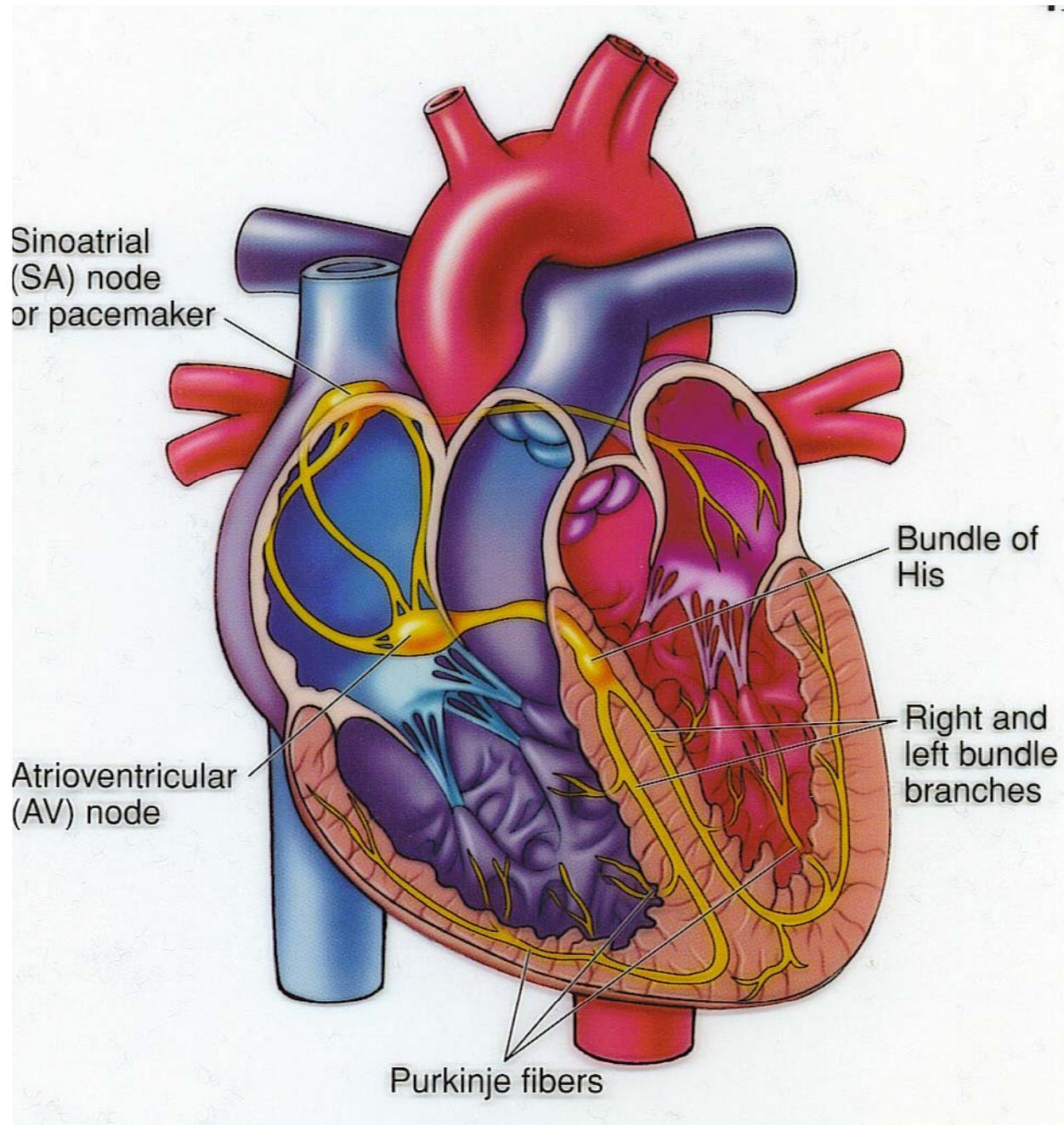
Williams & Hopper

# Cardiac Conduction System

- SA node (60-100 bts/min) = atrial contraction
  - Located in upper posterior wall of right atrium
  - Pacemaker of the heart
- AV node (40-60 bts/min)
  - Also known as nodal or junctional rhythm
  - Body can function in this rhythm
- Bundle of His
  - Rt and Lt bundle branches
  - Ventricular contraction (20-40 bts/min)
  - When this happens heart is in 3<sup>rd</sup> degree heart block



ELECTROCARDIOGRAPHIC TRACING OF ONE NORMAL HEARTBEAT

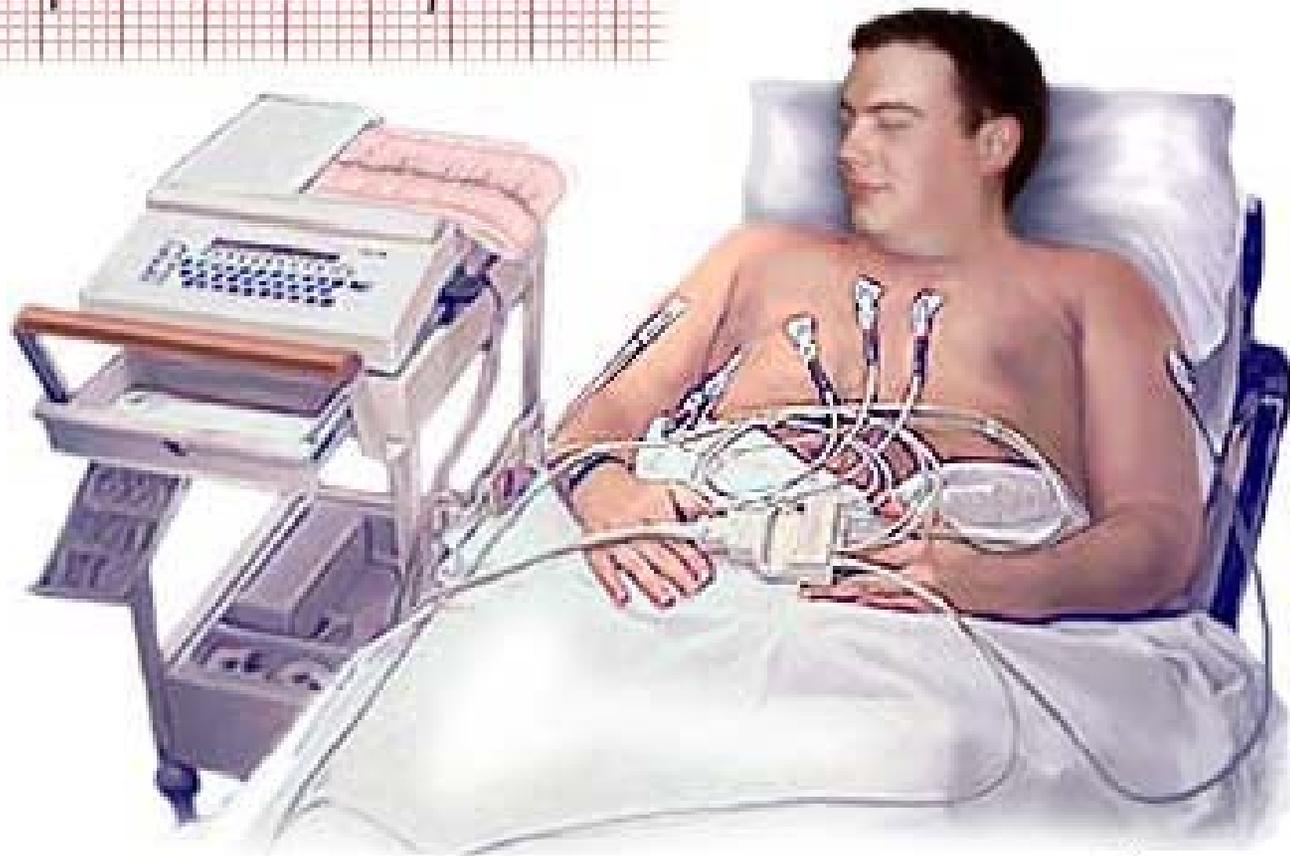


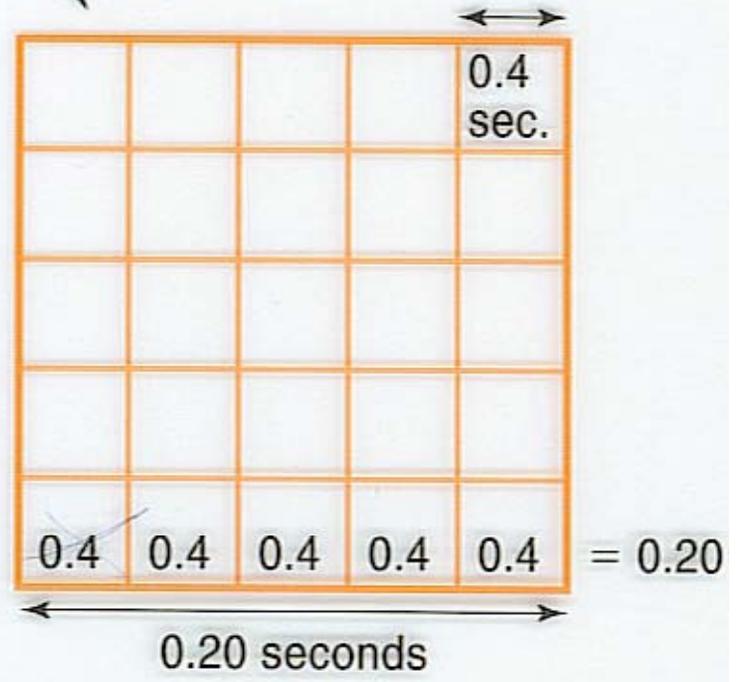
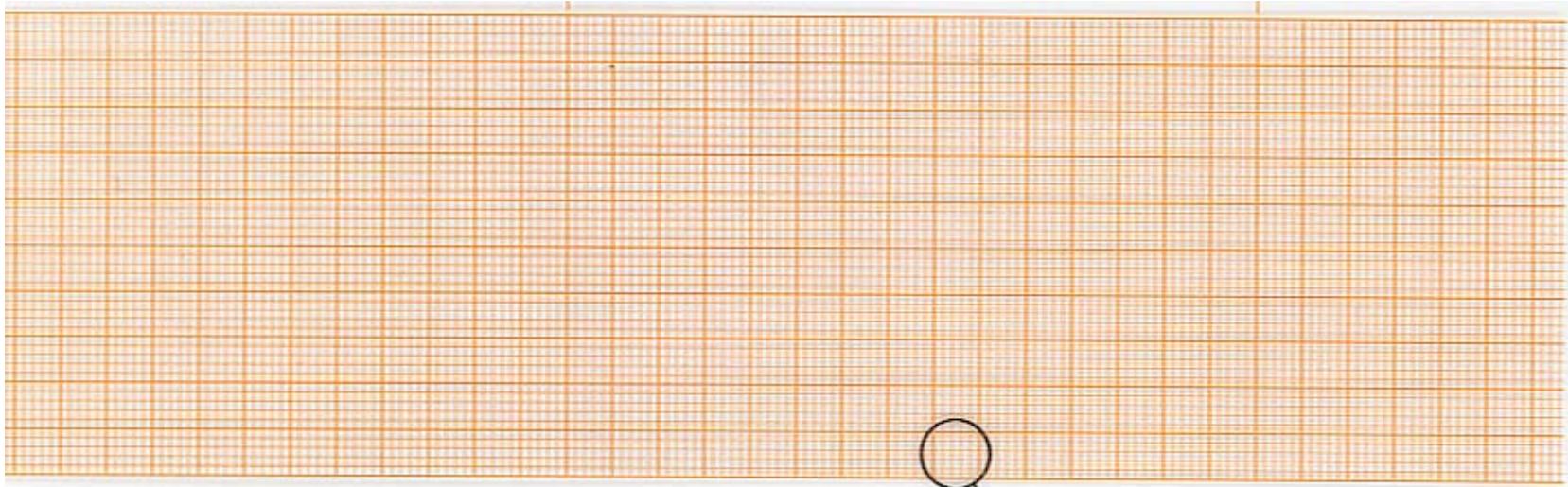
# Cardiac Cycle

- Beginning of one heart beat to the next
- Electrical representation of the impulse that stimulates contraction and then relaxation of the atria and ventricles
- Normal cycle has P wave, QRS complex, T wave



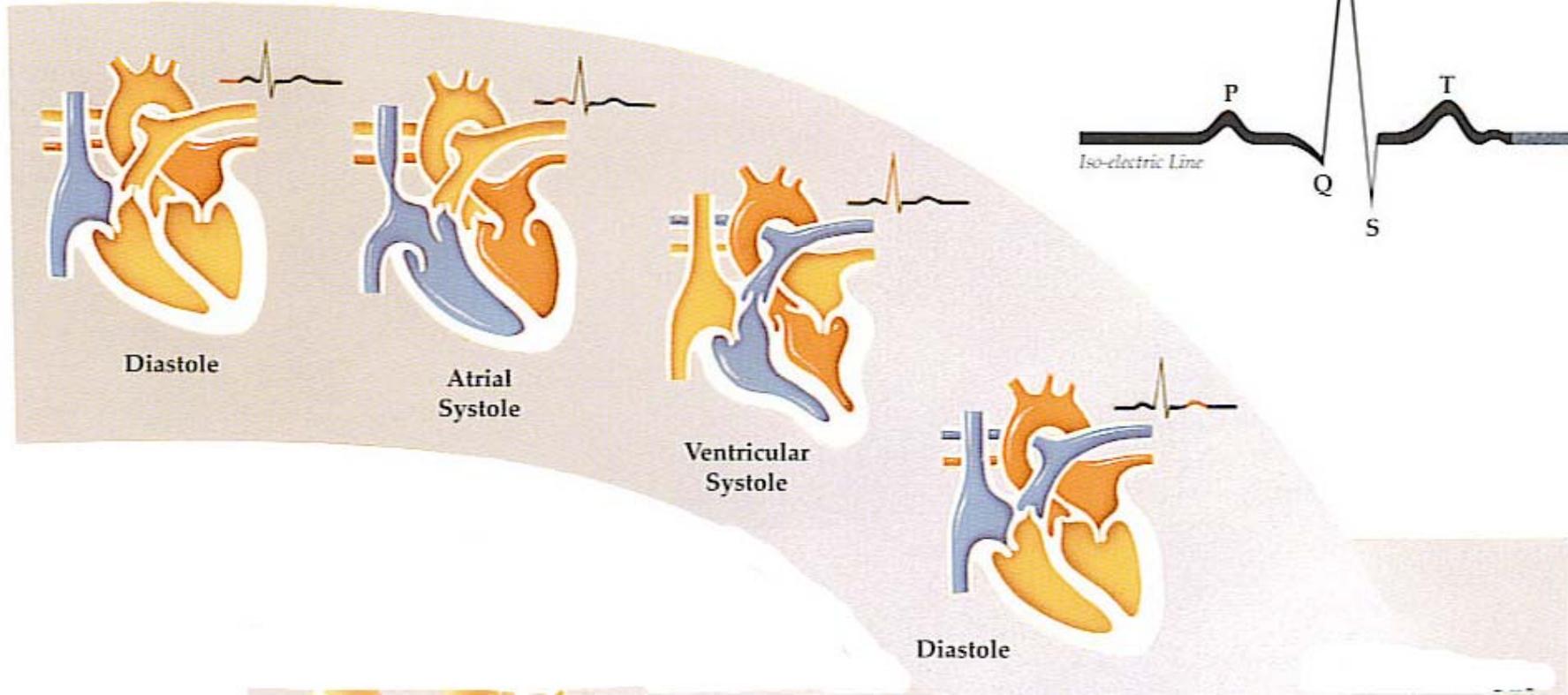
ECG tracing





# Cardiac Cycle & Corresponding EKG

The Cardiac Cycle



# Cardiac Cycle Components

- **P wave**
  - atrial depolarization
  - Appears rounded and symmetrical and one/cycle
- **P-R interval (0.12 to 0.20 secs)**
  - time takes impulse to get to AV node
  - Starts at end of P wave and ends at beginning of QRS interval
- **QRS = 0.04 to 0.11 secs**
  - ventricular depolarization
- **T wave**
  - ventricular repolarization
- **ST segment**
  - Time from ventricular depolarization to repolarization

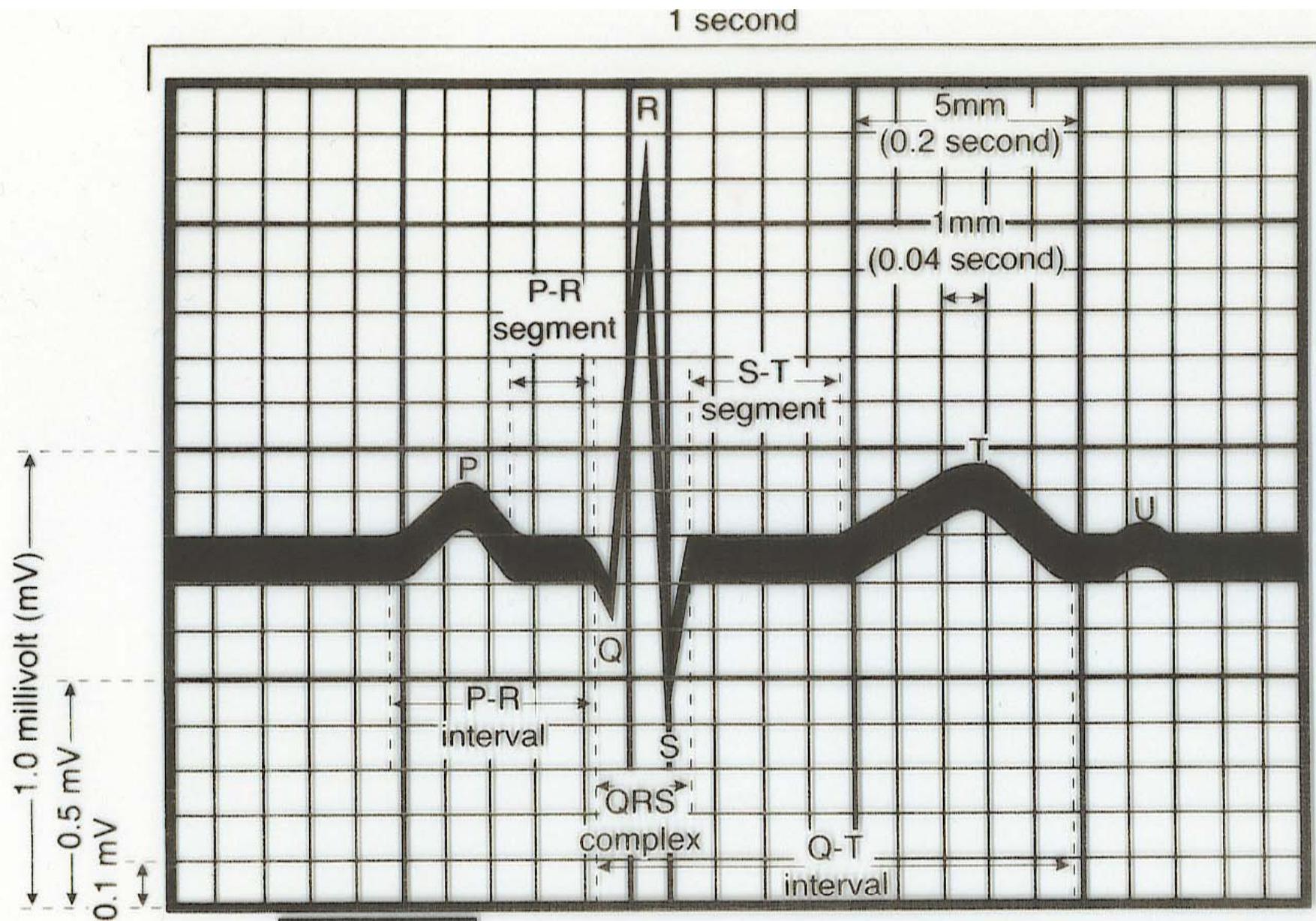


FIGURE 31-26

Normal electrocardiogram (From Black, J. M., & Matassarin-Jacobs, E. [1993]. *Luckmann and Sorensen's medical-surgical nursing: A psychophysiologic approach* [4th ed.]. Philadelphia: W. B. Saunders.)

# 5 Step Process for Dysrhythmia Interpretation

1. Regularity or rhythm
2. Heart rate
3. P waves
4. PR interval
5. QRS complex

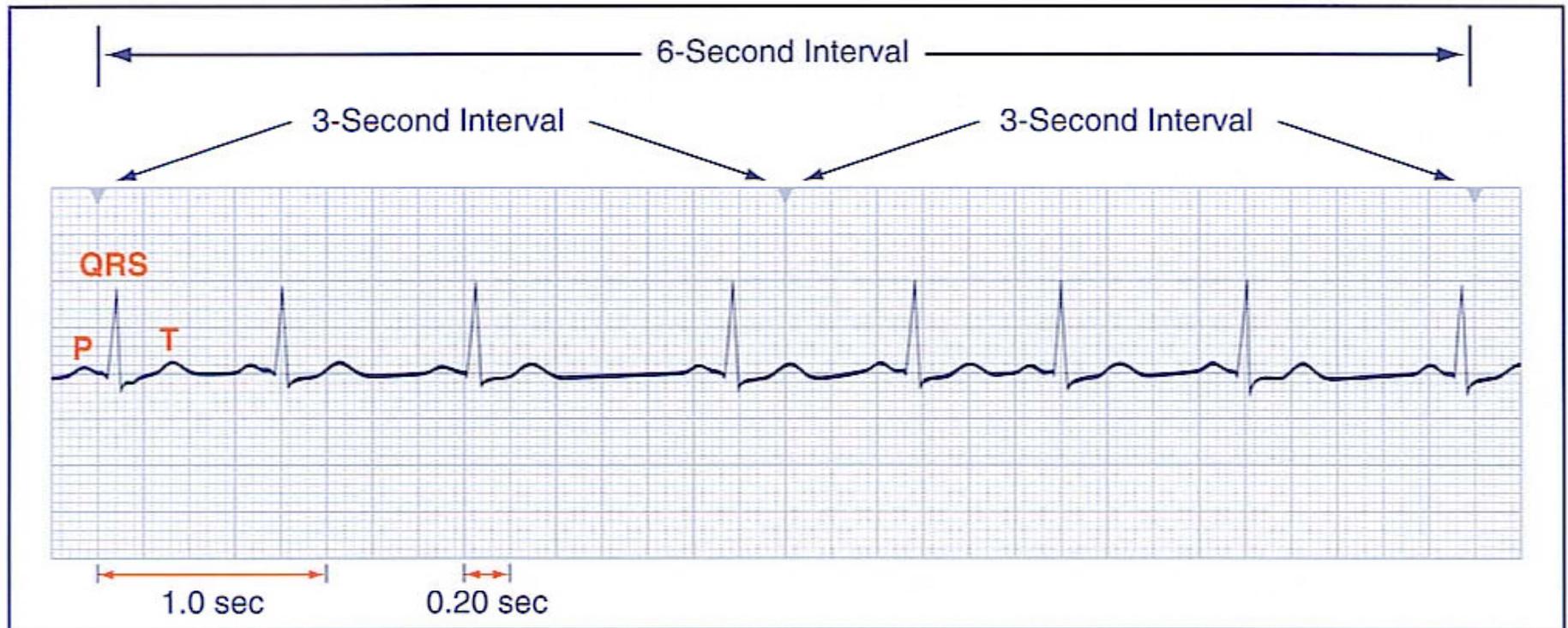


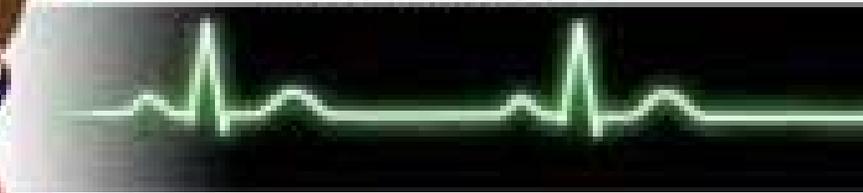
Figure 4-1 Intervals of 3 and 6 seconds at an ECG recording speed of 25 mm per second.



Normal EKG



Bradycardia



Bradycardia is a condition in which the heart beats at an unusually slow rate.

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# Dysrhythmias

- Arrhythmia
  - Irregularity or loss of rhythm of the heart beat
- Dysrhythmia
  - Abnormal, disordered, or disturbed rhythm
- Causes:
  - Disturbance in impulse
    - From atria, AV node, ventricles
    - Increased/decreased, early or late beats, a or v fib
  - Disturbance in conduction
    - May be normal formation of impulse, gets blocked
    - Bundle branch blocks

## Sinus Bradycardia

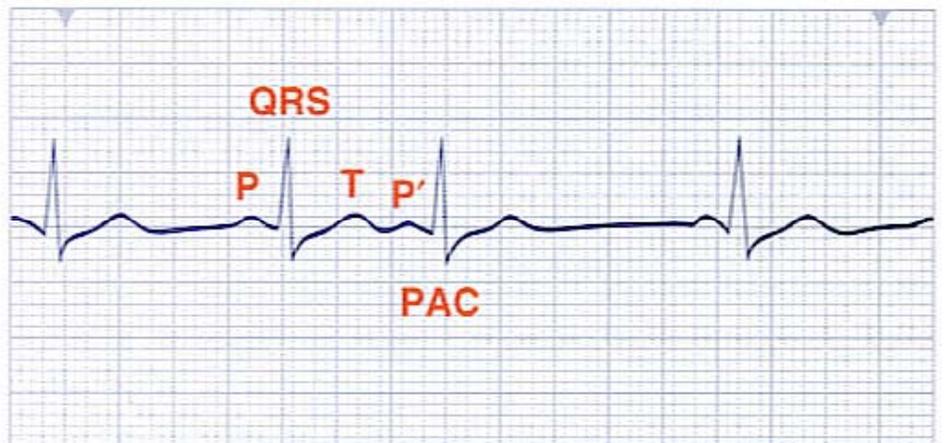
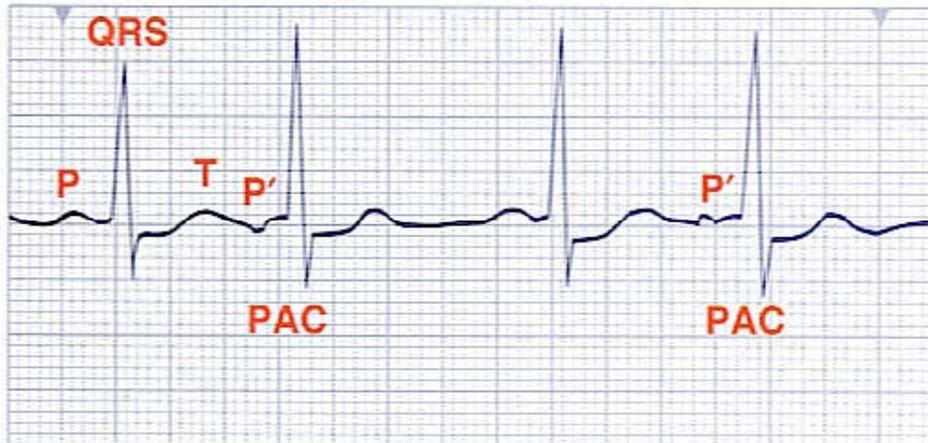


sinus bradycardia

## Sinus Tachycardia



sinus tachycardia



PACs originating from different atrial ectopic pacemaker sites

isolated PAC

**Premature Atrial Contraction • Isolated PAC's: Occur Single**

Heart Rate	Rhythm	P Wave	PR interval (in seconds)	QRS (in seconds)
N/A	Irregular	Premature & abnormal or hidden	<.20	<.12

Atrial Flutter

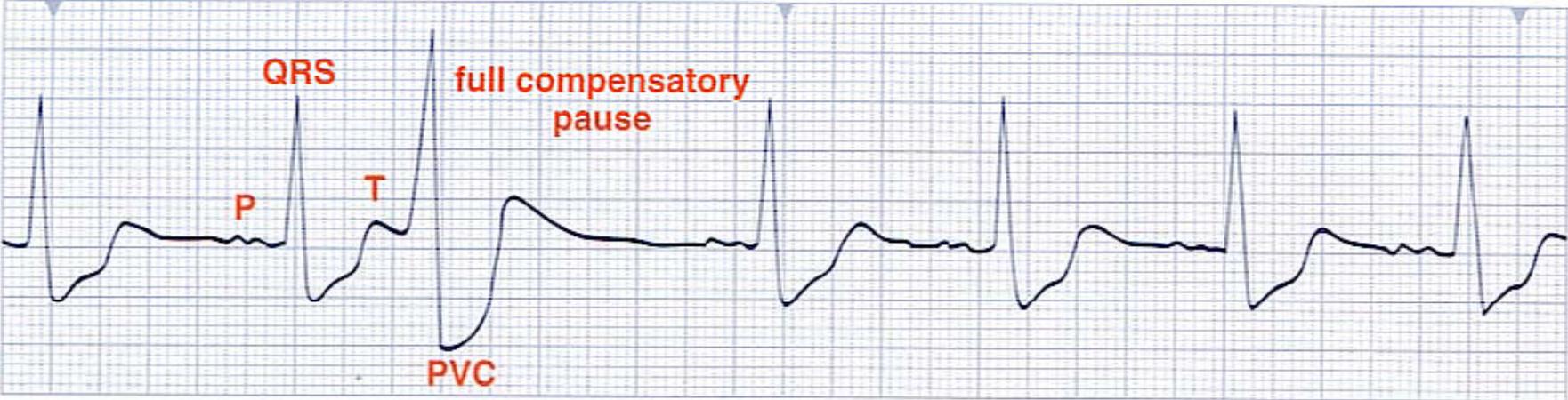


atrial flutter (4:1)

Atrial Fibrillation

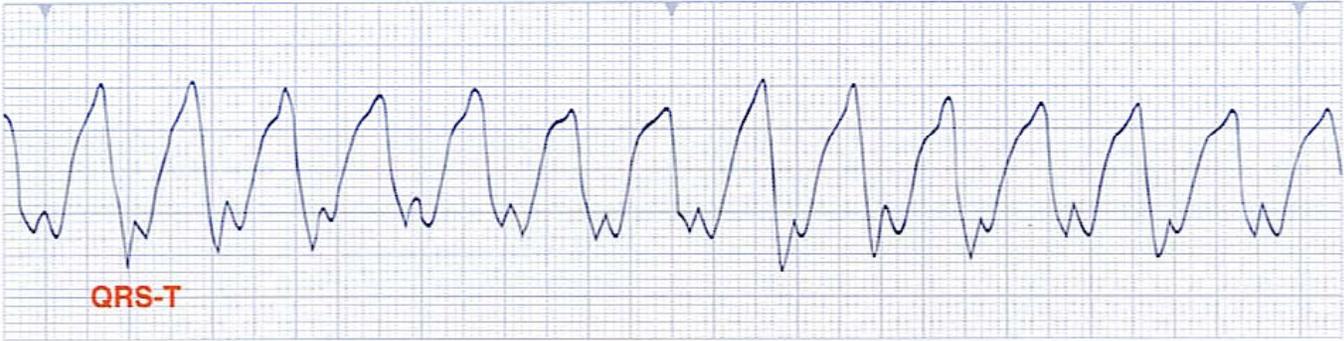


# Premature Ventricular Contractions

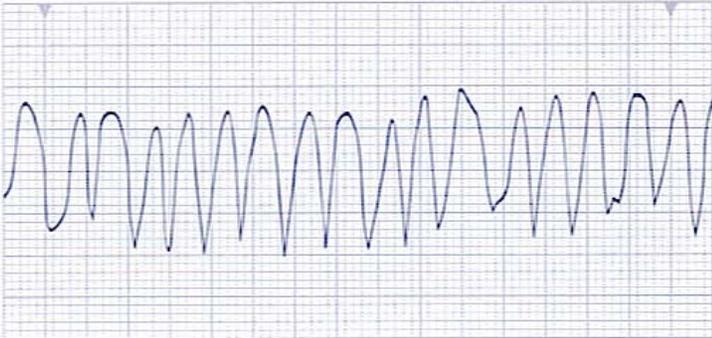


isolated premature ventricular contraction (PVC)

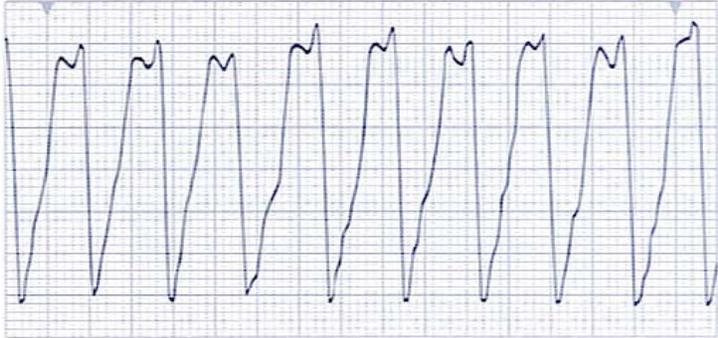
Ventricular Tachycardia



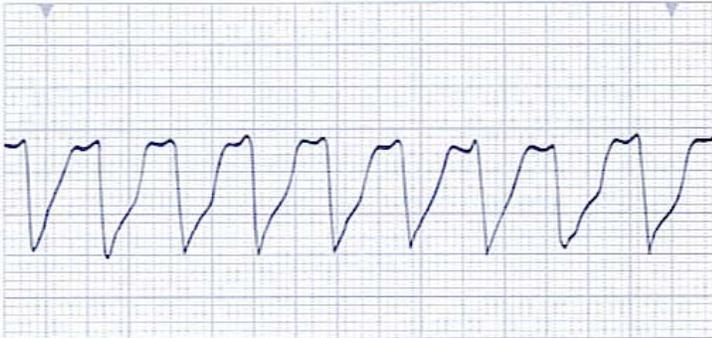
monomorphic ventricular tachycardia (VT)



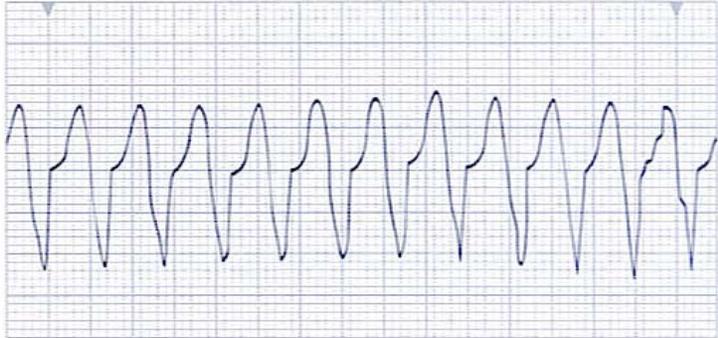
ventricular flutter



VT



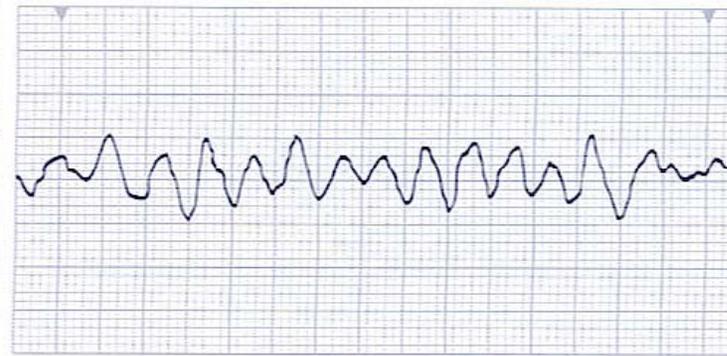
VT



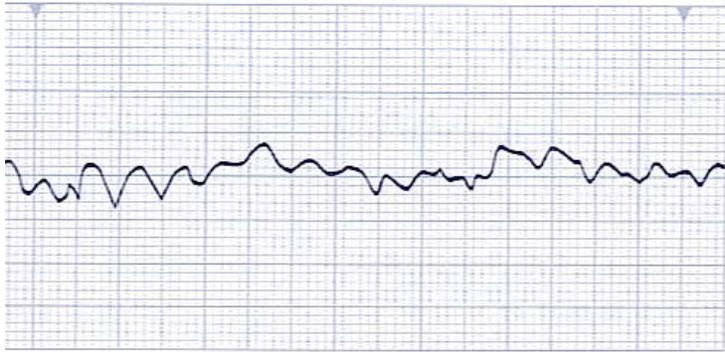
VT



coarse ventricular fibrillation



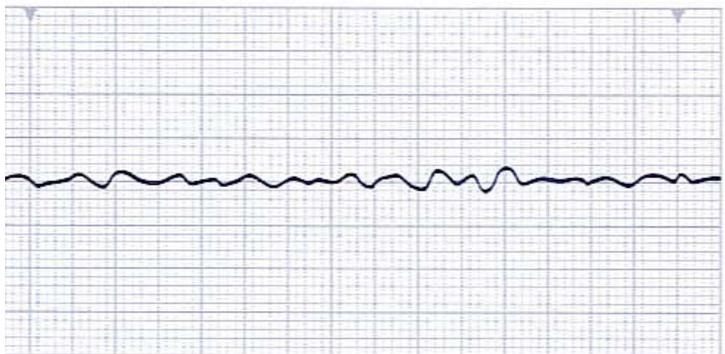
coarse ventricular fibrillation



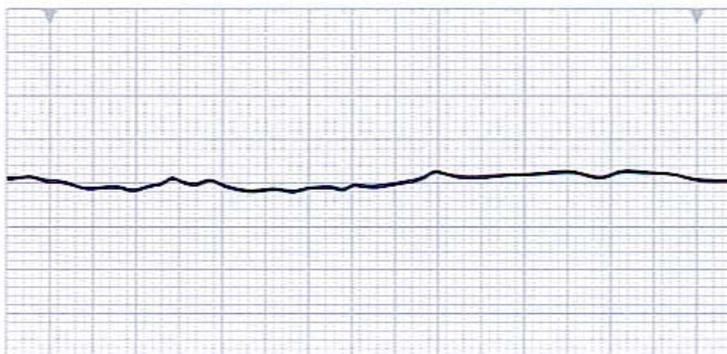
coarse ventricular fibrillation



coarse ventricular fibrillation



fine ventricular fibrillation



fine ventricular fibrillation

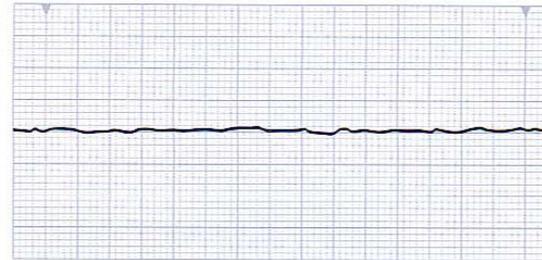
Ventricular Asystole (Cardiac Standstill)



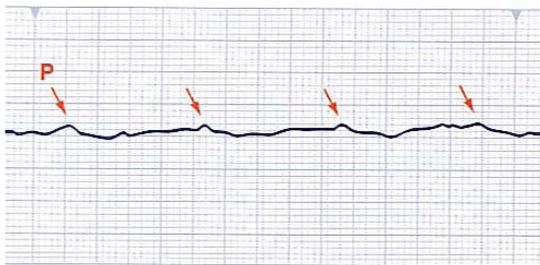
ventricular asystole



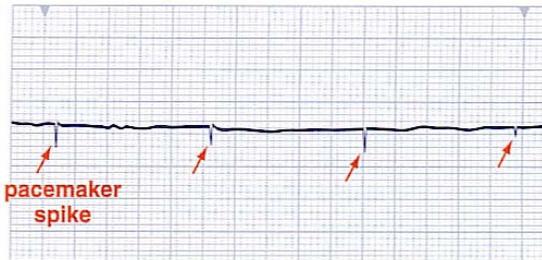
ventricular asystole



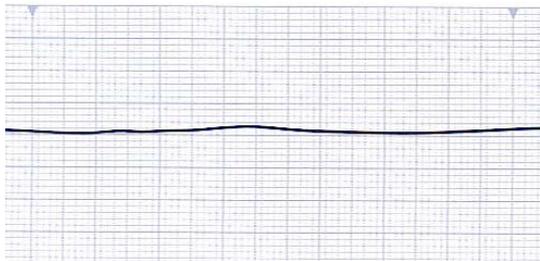
ventricular asystole



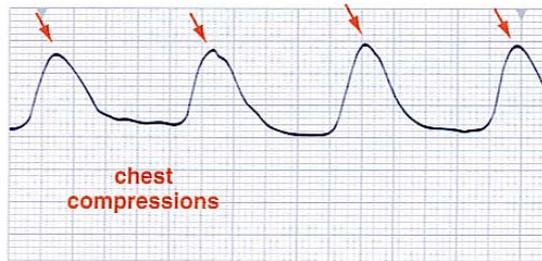
ventricular asystole with P waves



ventricular asystole with pacemaker spikes



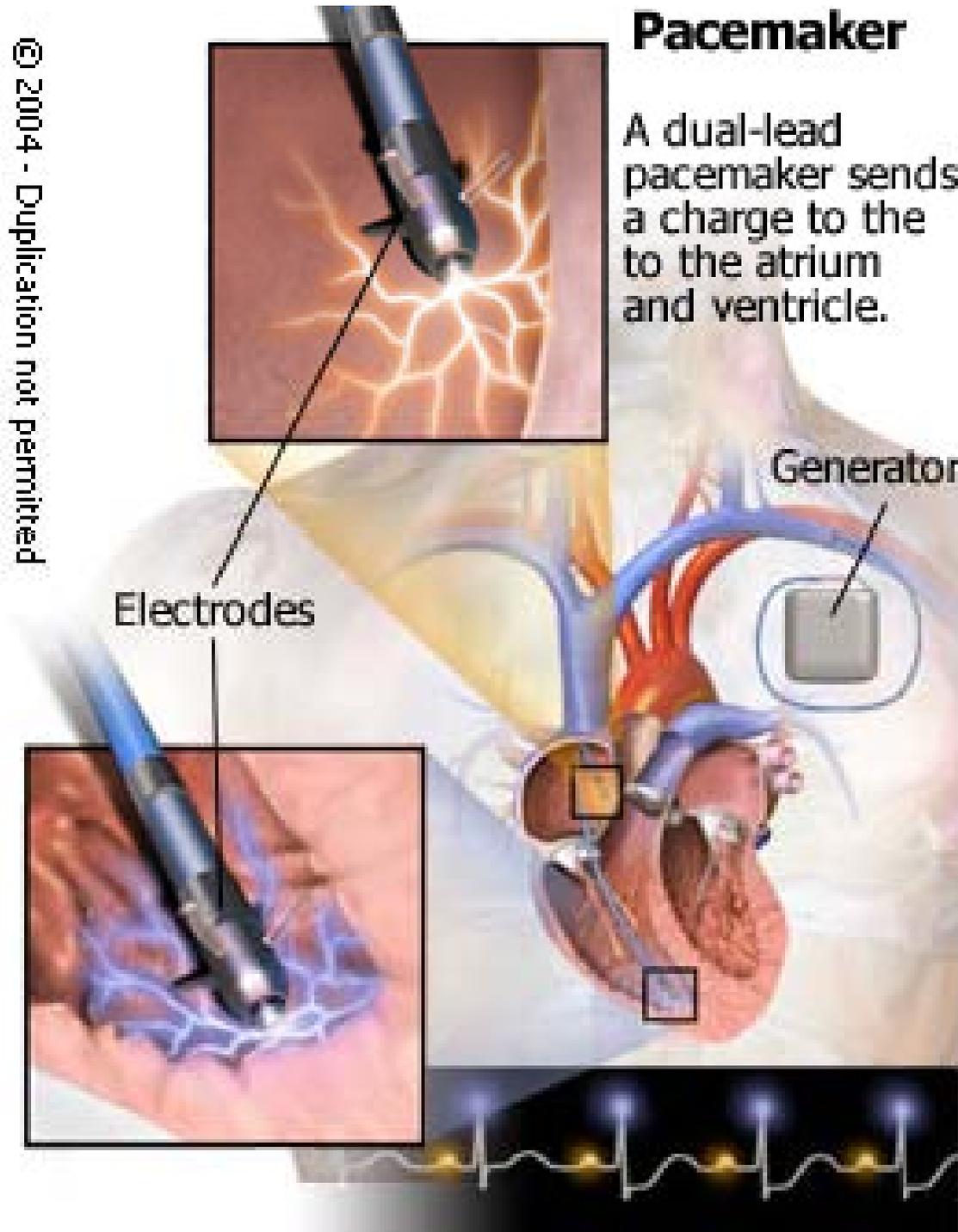
ventricular asystole



ventricular asystole with chest compressions

# Pacemaker

A dual-lead pacemaker sends a charge to the atrium and ventricle.



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### Atrial Pacemaker (single chamber)



**One spike producing an abnormal P wave (atrial capture) followed by a normal QRS**

### AV Sequential Pacemaker (dual chamber)



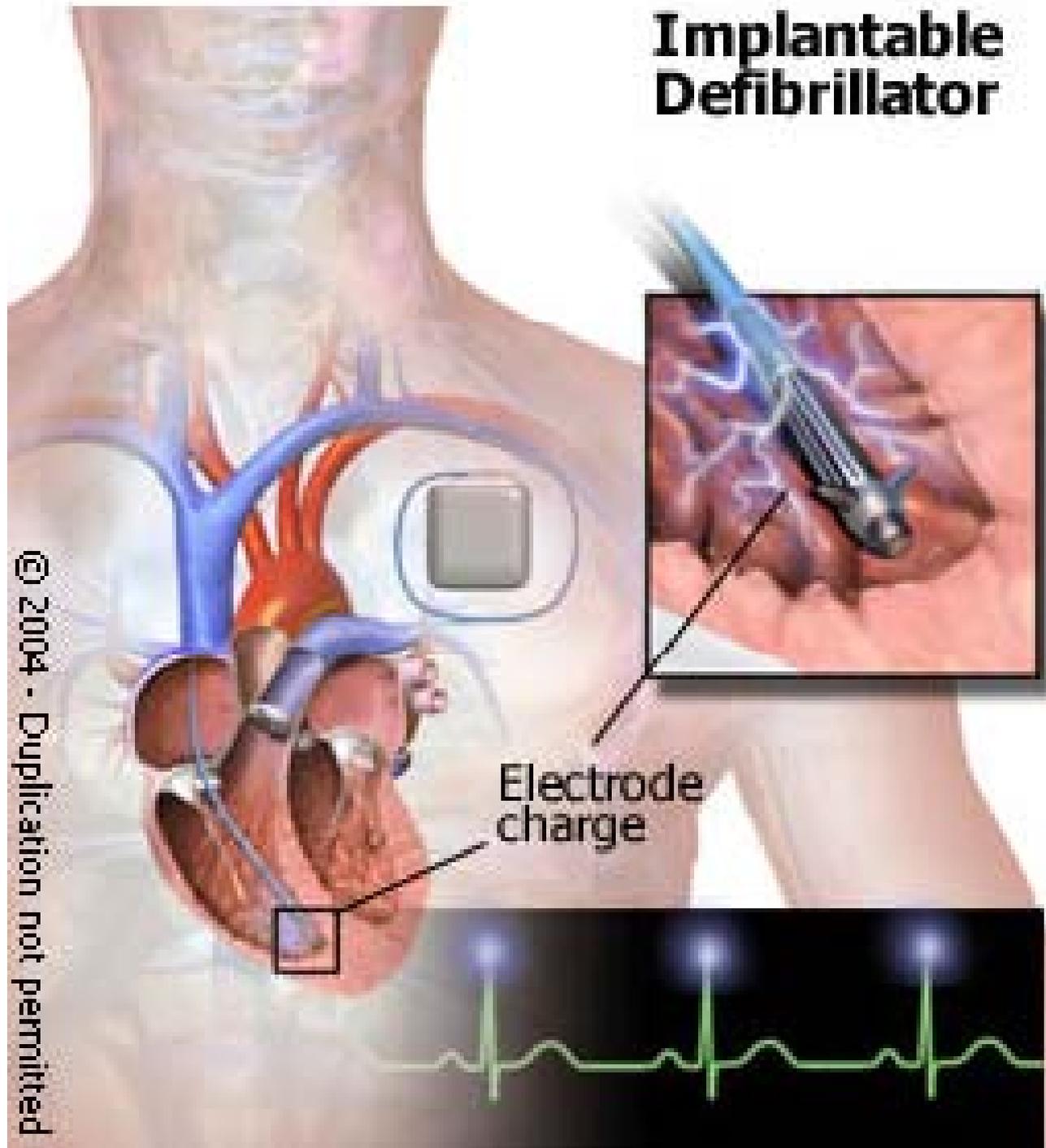
**One spike followed by an abnormal P (atrial capture) followed by a Second spike producing a wide QRS (ventricular capture).**



# Other methods to correct dysrhythmias

- AED
  - Automatic external device that analyzes rhythms and delivers shocks to ventricular fibrillation
  - Available in most public places
- Implantable Cardioverter Defibrillator
  - See next slide
- Cardioversion
  - Used for afib, aflutter, supraventricular tachycardia
  - Conscious sedation
  - Gives synchronized shock to R wave to convert abnormal rhythm
- Ablation
  - Alters cardiac conduction pathway
  - Mechanical, chemical, radio frequency

# Implantable Defibrillator



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# Nursing process

- Assessment
- Nursing diagnosis
- Planning
- Nursing interventions
- Evaluation