Arrhythmias

Originating in the SINUS node and Atria

Warm-up

What are the responsibilities of the SA (sinus node)? Can you recall what normal heart rate is when the SA node is our primary pacemaker?

Review before beginning this lesson

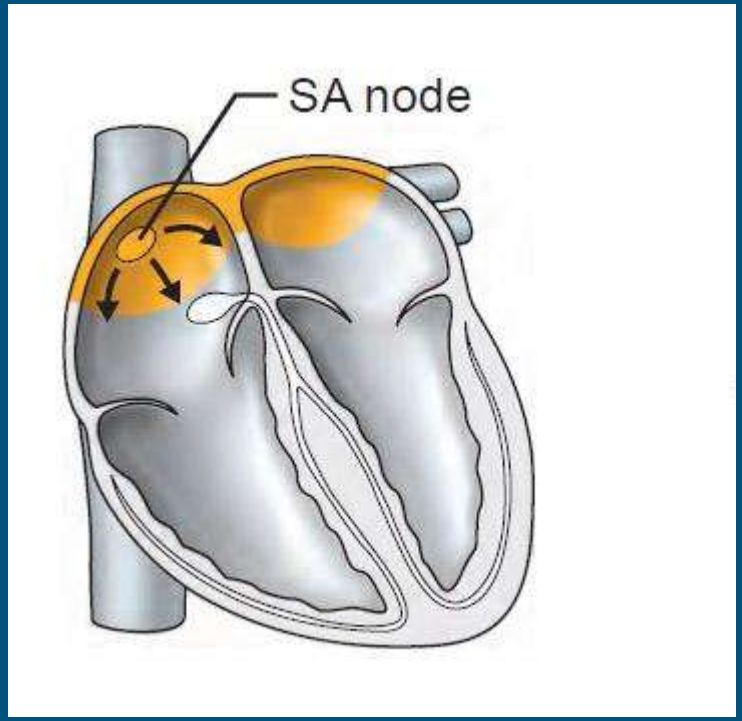
- Parts of the heart/conduction system - pg 23-25
  - Pay close attention to the heart-rate norms for each branch of the conduction system
- Box/paper Sizes - page 26
- Waveforms & their characteristics - pages 45-47

Arrhythmia is defined as

Sinoatrial node (SA)

- Found in the right atrium
- Known as the primary pacemaker
- Fires 60-100x/minute
- Pathway to the left atrium

  via “Bachman’s bundle



Rhythms that originate in the SINUS node:

- Regular sinus rhythm
- Sinus bradycardia
- Sinus tachycardia
- Sinus arrhythmia/Sinus dysrhythmia
- Sinus arrest

EKG findings common to sinus rhythm:

- P wave present
- P wave is upright and rounded
- P wave amplitude less than 2.5 mm
- P wave duration less than 110 milliseconds
- QRS complex usually narrow

Helpful Template

Rate: Atrial _____ Ventricular _____

PR interval: _____

QRS interval: _____

Rhythm: (circle one) Regular Irregular Irregularly irregular

Arrhythmia (interpretation): _____

Helpful Template

P waves present?								
Rate (A/V)								
PR interval								
QRS interval								
Rhythm								

Interpreting Underlying Rhythm-5 steps

1. Calculate the heart rate (atrial and ventricular)
2. Measure the PR interval
3. Measure the QRS duration
4. Determine if the rhythm is regular, irregular, or irregularly irregular
5. Use the findings to interpret the underlying rhythm

REGULAR (NORMAL) SINUS RHYTHM

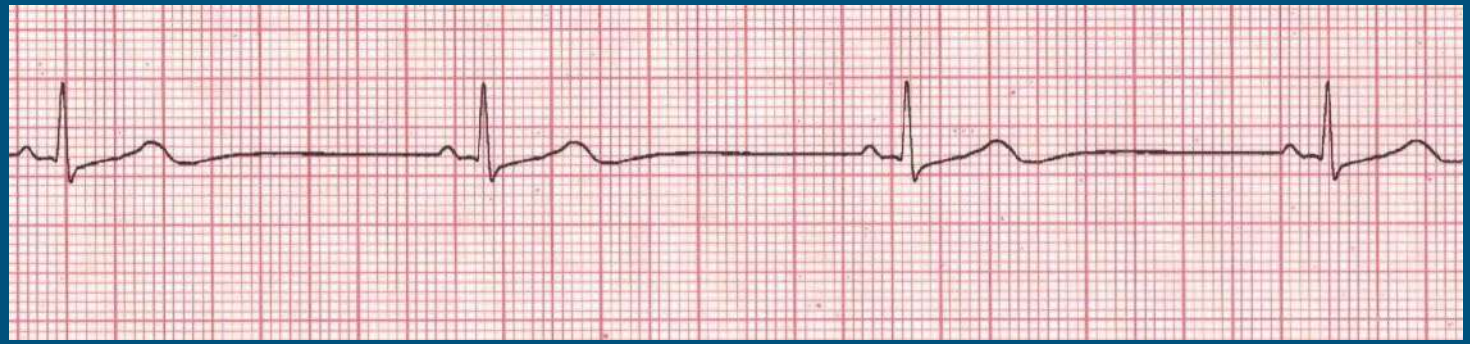
P wave……..upright and normal

PR interval……..0.12 to 0.20 seconds (3-5 tiny boxes)

QRS duration…….0.04 to 0.10 seconds (1-2.5 tiny boxes)

Ventricular rate……60 to 100/min

Rhythm regularity…….Regular



SINUS BRADYCARDIA

P wave……upright, one for every QRS complex

PR interval……0.12 to 0.20 seconds

QRS duration…..0.04 to 0.1 seconds

Ventricular rate……Less than 60/min**

Rhythm regularity…..regular

SINUS TACHYCARDIA

P wave……upright, one for every QRS complex

PR interval……0.12 to 0.20 seconds

QRS duration…..0.04 to 0.10 seconds

Ventricular rate….greater than 100/min**

Rhythm regularity……regular

SINUS ARRHYTHMIA

P wave….upright, one for every QRS complex

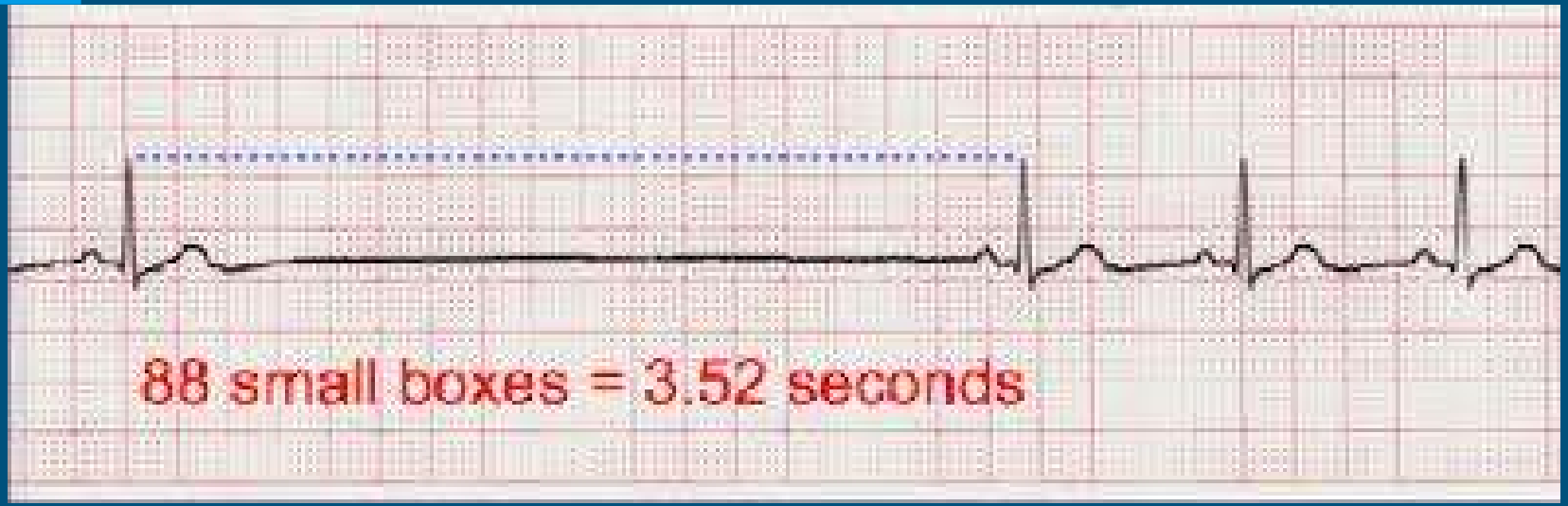
PR interval…..0.12 to 0.20 seconds

QRS duration…..0.04 to 0.10 seconds

Ventricular rate…..usually 60 to 100/min can be slower or faster

Rhythm rate…..Irregular

Sinus Arrest



SA node failed to fire (missing P-QRS-T); Not significant if it lasts less than 6 seconds

Part 2: Arrhythmias originating in the Atria

Warm-up: What is the primary function of the atria? What may be affected if there is blockage in the right main coronary artery causing hypoxia of the surrounding tissue?

ATRIA

Rhythms that originate in the ATRIA:

- Atrial fibrillation
- Atrial fibrillation with rapid ventricular response
- Atrial flutter
- Premature atrial complex
- Supraventricular tachycardia (SVT)

EKG findings common to atrial rhythms:

- P wave absent or abnormal shape
- Fibrillatory (f) waves present
- Flutter (F) waves present
- QRS complex usually narrow

ATRIAL FIBRILLATION

P wave….none, fibrillatory waves (f)

PR interval….none

QRS duration……Less than 0.12 seconds

Ventricular rate…..60 to 100/min

Atrial rate (if different than V-rate).....300 to 600/min**

Rhythm regularity……Irregularly irregular

ATRIAL FIBRILLATION WITH RAPID VENTRICULAR RESPONSE (AF-RVR)

P wave….none, fibrillatory waves (f)

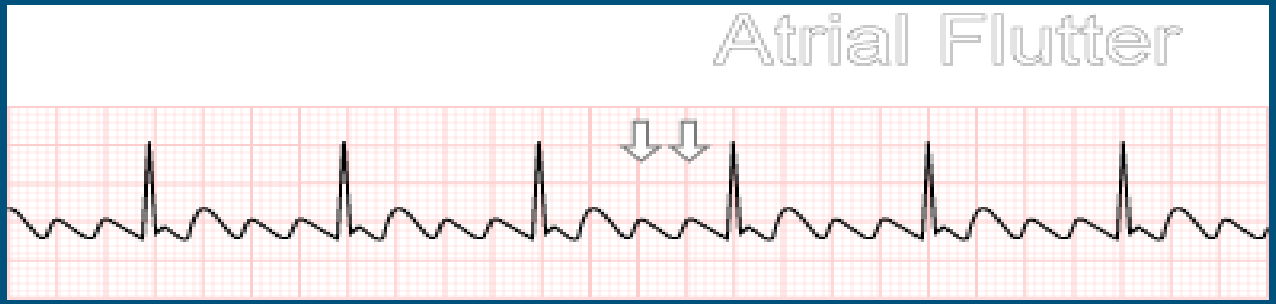
PR interval….none

QRS duration…..less than 0.12 seconds

Ventricular Rate…..greater than 100/min**

Atrial rate…..300 to 600/min**

Rhythm regularity….Irregularly irregular



ATRIAL FLUTTER

P wave….none, flutter waves (f)

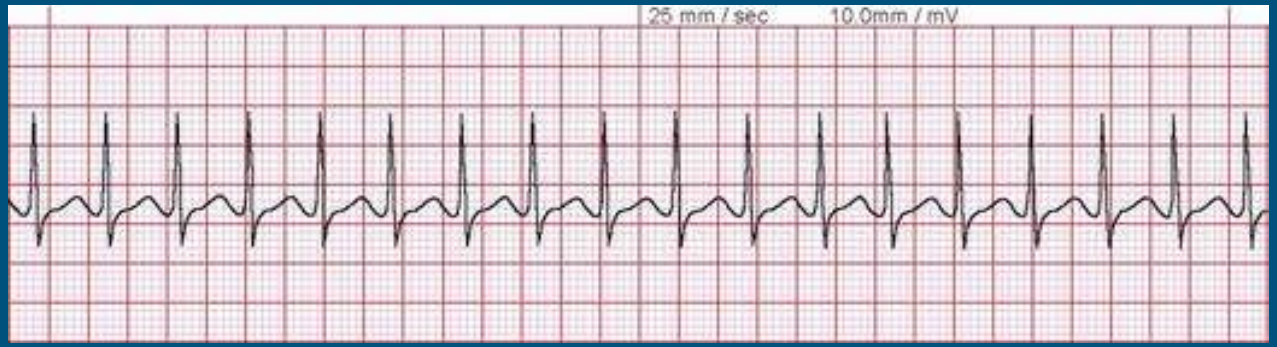
PR interval….none

QRS duration….less than 0.12 seconds

Ventricular rate….usually 60 to 100/min,often seen at 130, 150, 160

Atrial rate...240 to 320/min**

Rhythm irregularity…..Regular (irregular with variable conduction



SUPRAVENTRICULAR TACHYCARDIA (SVT)

P wave….may be hard to find, if present, one per QRS

PR interval….usually not measurable

QRS duration….0.04 to 0.10 seconds

Ventricular rate….150 to 240/min

Rhythm regularity….regular

ECG basics; arryhthmias

Sinus Rhythms: stop at 10:20

Atrial arrhythmias begin at 9 min