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# ECG Rhythm Interpretation

## Module II

### How to Analyze a Rhythm

# Course Objectives

- To recognize the normal rhythm of the heart - “Normal Sinus Rhythm.”
- To recognize the 13 most common rhythm disturbances.
- To recognize an acute myocardial infarction on a 12-lead ECG.

# Learning Modules

- ECG Basics
- How to Analyze a Rhythm
- Normal Sinus Rhythm
- Heart Arrhythmias
- Diagnosing a Myocardial Infarction
- Advanced 12-Lead Interpretation

# Rhythm Analysis



- Step 1: Calculate rate.
- Step 2: Determine regularity.
- Step 3: Assess the P waves.
- Step 4: Determine PR interval.
- Step 5: Determine QRS duration.

# Step 1: Calculate Rate



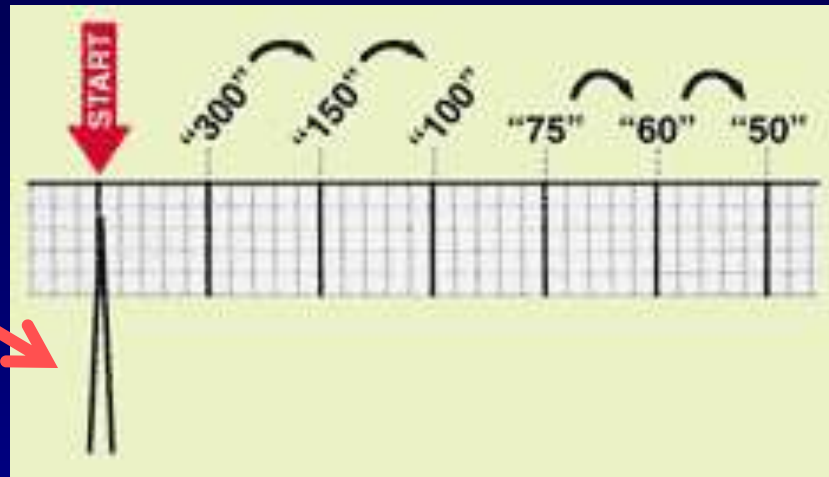
- Option 1

- Count the # of R waves in a 6 second rhythm strip, then multiply by 10.
- Reminder: all rhythm strips in the Modules are 6 seconds in length.

Interpretation?  $9 \times 10 = 90 \text{ bpm}$

# Step 1: Calculate Rate

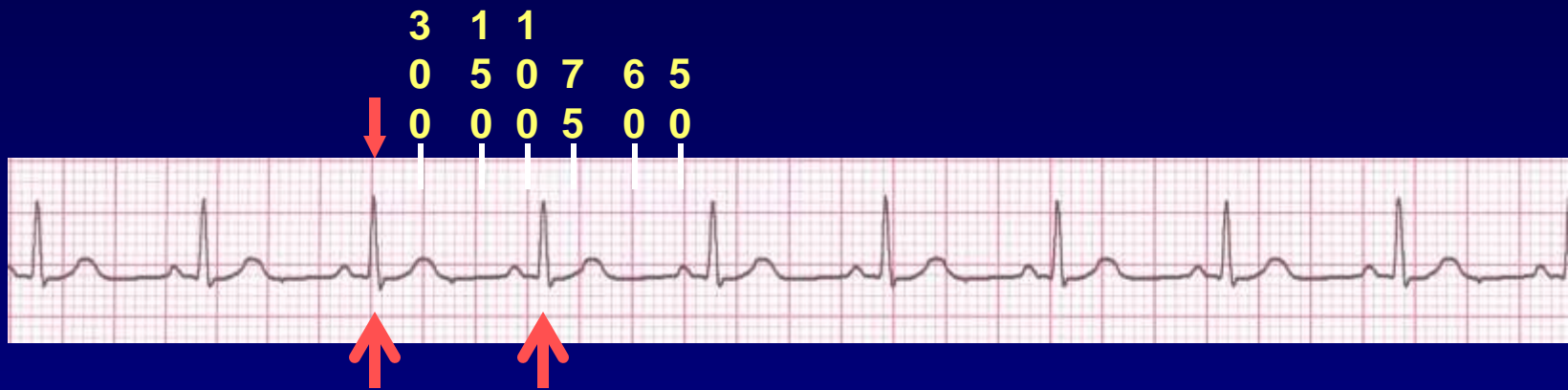
R wave



- Option 2

- Find a R wave that lands on a bold line.
- Count the # of large boxes to the next R wave. If the second R wave is 1 large box away the rate is 300, 2 boxes - 150, 3 boxes - 100, 4 boxes - 75, etc. (cont)

# Step 1: Calculate Rate



- Option 2 (cont)

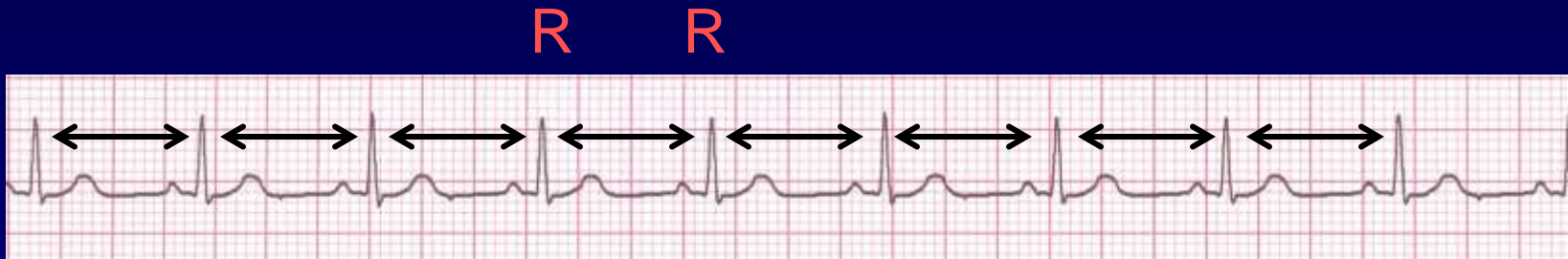
- Memorize the sequence:

300 - 150 - 100 - 75 - 60 - 50

Interpretation? *Approx. 1 box less than 100 = 95 bpm*



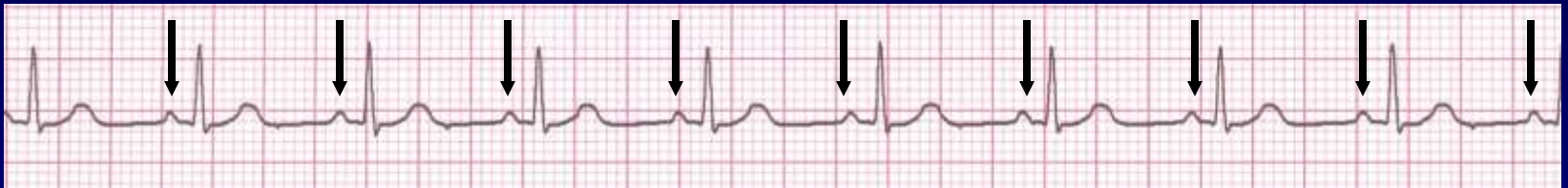
# Step 2: Determine regularity



- Look at the R-R distances (using a caliper or markings on a pen or paper).
- Regular (are they equidistant apart)?  
Occasionally irregular? Regularly irregular?  
Irregularly irregular?

Interpretation? *Regular*

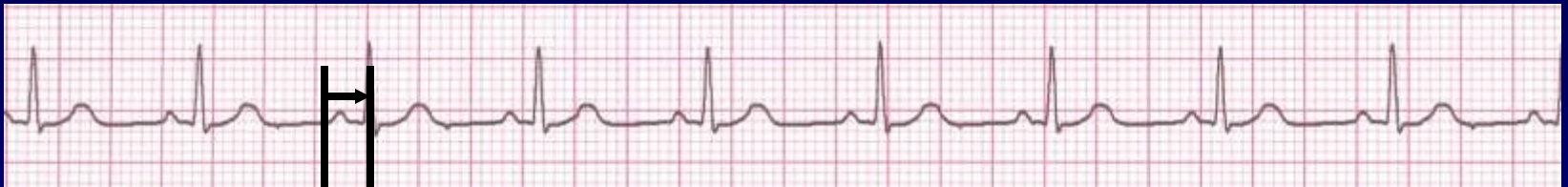
# Step 3: Assess the P waves



- Are there P waves?
- Do the P waves all look alike?
- Do the P waves occur at a regular rate?
- Is there one P wave before each QRS?

Interpretation? *Normal P waves with 1 P wave for every QRS*

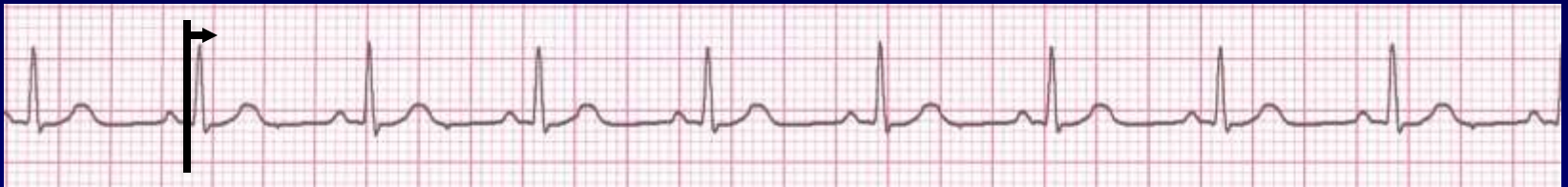
# Step 4: Determine PR interval



- Normal: 0.12 - 0.20 seconds.  
(3 - 5 boxes)

Interpretation? *0.12 seconds*

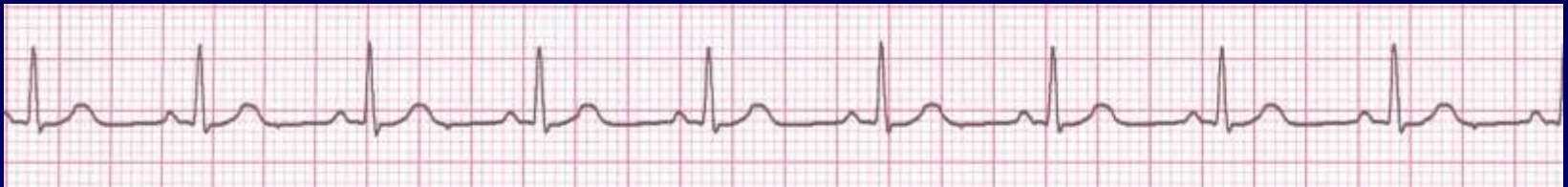
# Step 5: QRS duration



- Normal: 0.04 - 0.12 seconds.  
(1 - 3 boxes)

Interpretation? *0.08 seconds*

# Rhythm Summary



- Rate 90-95 bpm
- Regularity regular
- P waves normal
- PR interval 0.12 s
- QRS duration 0.08 s

Interpretation?

*Normal Sinus Rhythm*

# End of Module II

## How to Analyze a Rhythm

Proceed to Module II Practice Quiz  
on *WebCT*

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