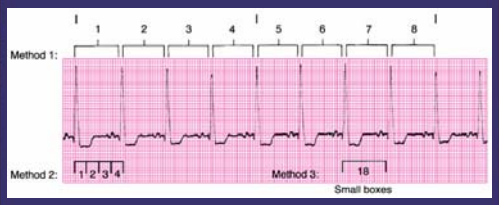
MENU

Rate Measurement



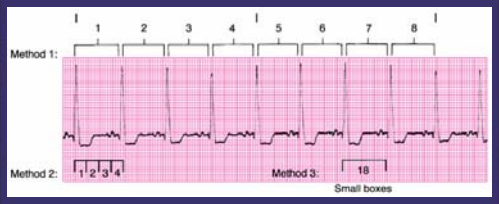
MENU

Six-Second Method

- Ventricular rate
  - Count the number of complete QRS complexes within a period of 6 seconds
  - Multiply that number by 10 to determine the number of QRS complexes in 1 minute
- May be used for regular and irregular rhythms

MENU

Six-Second Method



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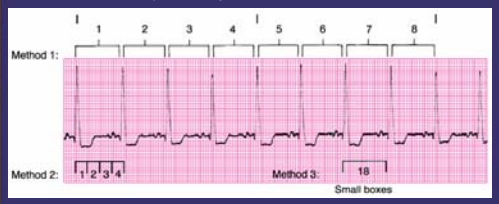
Large Box Method

- Count the number of large boxes between two consecutive waveforms (R-R interval or P-P interval) and divide into 300
- Best used if the rhythm is regular



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Large Box Method

•Number of Large Boxes	•Heart Rate (beats/minute)	•Number of Large Boxes	•Heart Rate (beats/minute)
•1	•300	•6	•50
•2	•150	•7	•43
•3	•100	•8	•38
•4	•75	•9	•33
•5	•60	•10	•30

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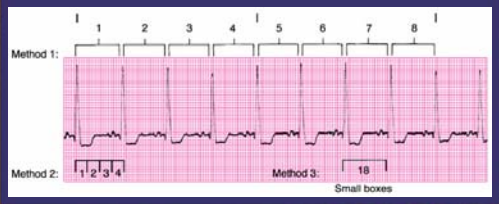
Small Box Method

- Count the number of small boxes between two consecutive waveforms (R-R interval or P-P interval) and divide into 1500
- Time consuming, but accurate



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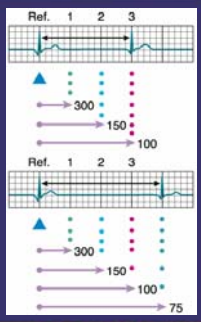
Sequence Method

- Select an R wave that falls on a dark vertical line
  - Number the next 6 consecutive dark vertical lines as follows:
    - 300, 150, 100, 75, 60, and 50
  - Note where the next R wave falls in relation to the 6 dark vertical lines already marked—this is the heart rate



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Rhythm/Regularity

MENU

Rhythm/Regularity

- When analyzing a rhythm strip, determine:
  - Atrial (P-P intervals) rhythm
  - Ventricular (R-R intervals) rhythm
- If the rhythm is regular, the R-R intervals (or P-P intervals if assessing atrial rhythm) are the same
  - Generally, a variation of plus or minus 10% is acceptable

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Terminology

- Essentially regular rhythm
- Irregular rhythm
- Regularly irregular rhythm
- Irregularly irregular rhythm

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Analyzing a Rhythm Strip

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Assess the Rate

- What is the rate?
  - Determine ventricular rate (R-R intervals)
  - Determine atrial rate (P-P intervals)
- A “tachycardia” exists if the rate is greater than 100 bpm
- A “bradycardia” exists if the rate is less than 60 bpm

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Assess Rhythm/Regularity

- Ventricular rhythm
  - Measure the distance between two consecutive R-R intervals
  - Compare with other R-R intervals
- Atrial rhythm
  - Measure the distance between two consecutive P-P intervals
  - Compare with other P-P intervals
- Variation of plus or minus 10% is acceptable

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Identify & Examine P Waves

- Look to the left of each QRS complex
- Normally:
  - One P wave precedes each QRS complex
  - P waves occur regularly and appear similar in size, shape, and position

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PR Interval (PRI)

- Measured from the point where the P wave leaves the baseline to the beginning of the QRS complex
- Normal PR interval is 0.12 to 0.20 second
- If the PR intervals are the same, they are said to be constant
- If the PR intervals are different, is there a pattern?
  - Lengthening
  - Variable (no pattern)

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QRS Complex

- Identify the QRS complexes and measure their duration
  - Narrow (normal) if it measures 0.10 second or less
  - Wide if it measures more than 0.10 second

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QT Interval

- Measure in the leads that show the largest amplitude T waves
  - Measured from the beginning of the QRS complex to end of the T wave
  - If the measured QT interval is less than half the R-R interval, it is probably normal

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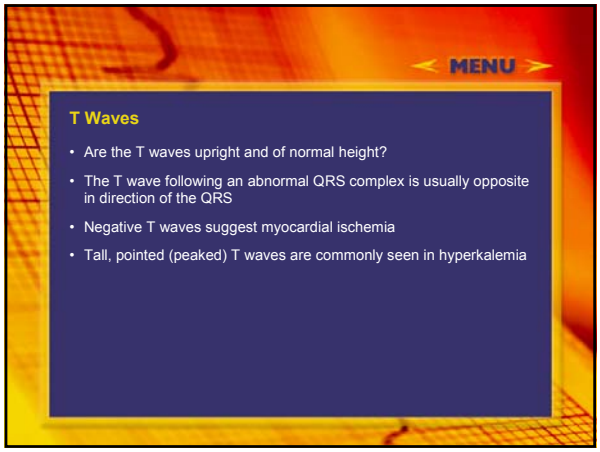
ST Segment

- Usually isoelectric in the limb leads
- To determine ST segment elevation or depression, measure at a point 0.04 second (one small box) after the end of the QRS complex
  - Use the PR segment as the baseline


MENU
T Waves
• Are the T waves upright and of normal height?
• The T wave following an abnormal QRS complex is usually opposite in direction of the QRS
• Negative T waves suggest myocardial ischemia
• Tall, pointed (peaked) T waves are commonly seen in hyperkalemia