

Physics of Medical Devices

Lecture 11

Practical I

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Fourth Stage

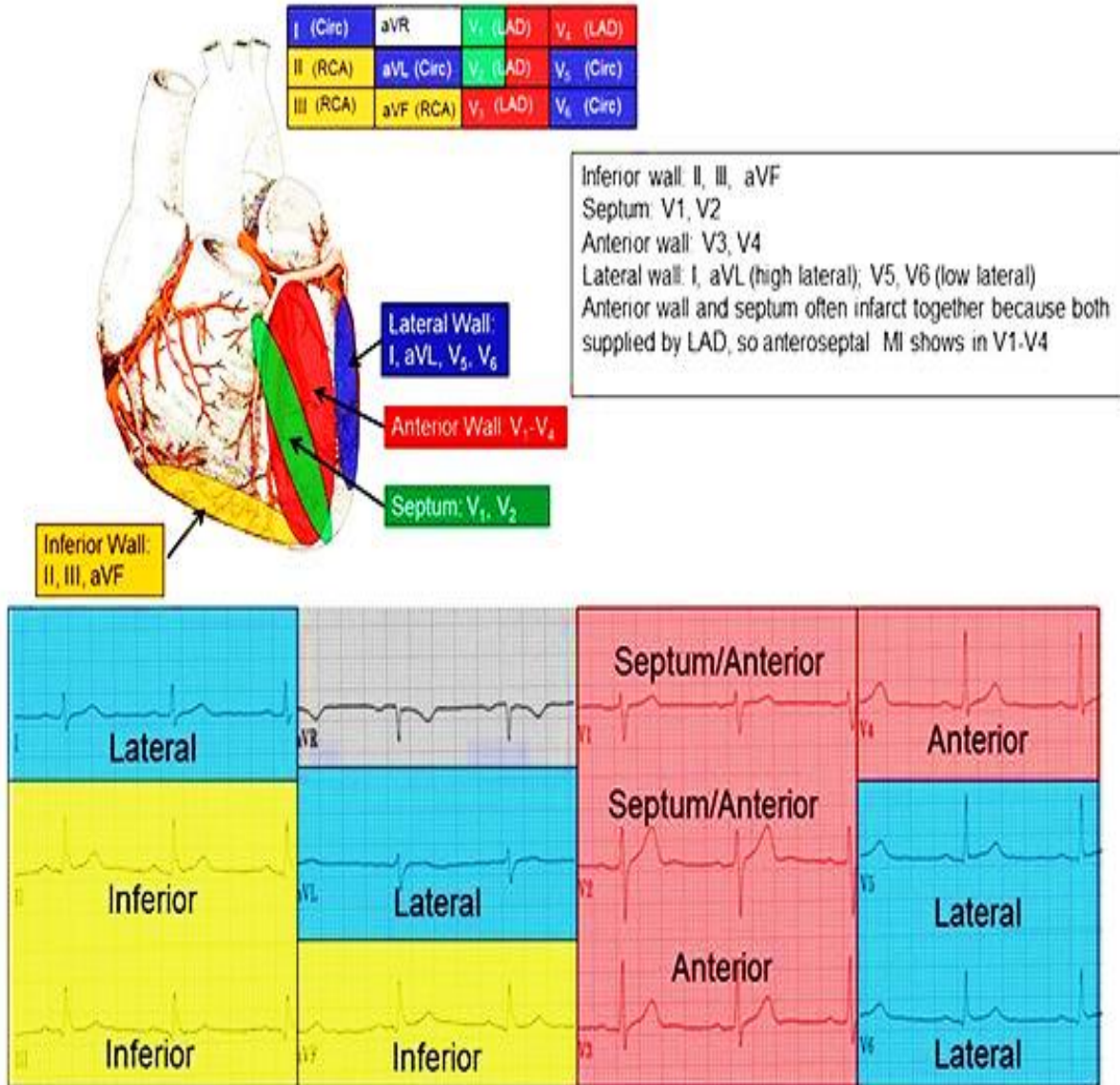
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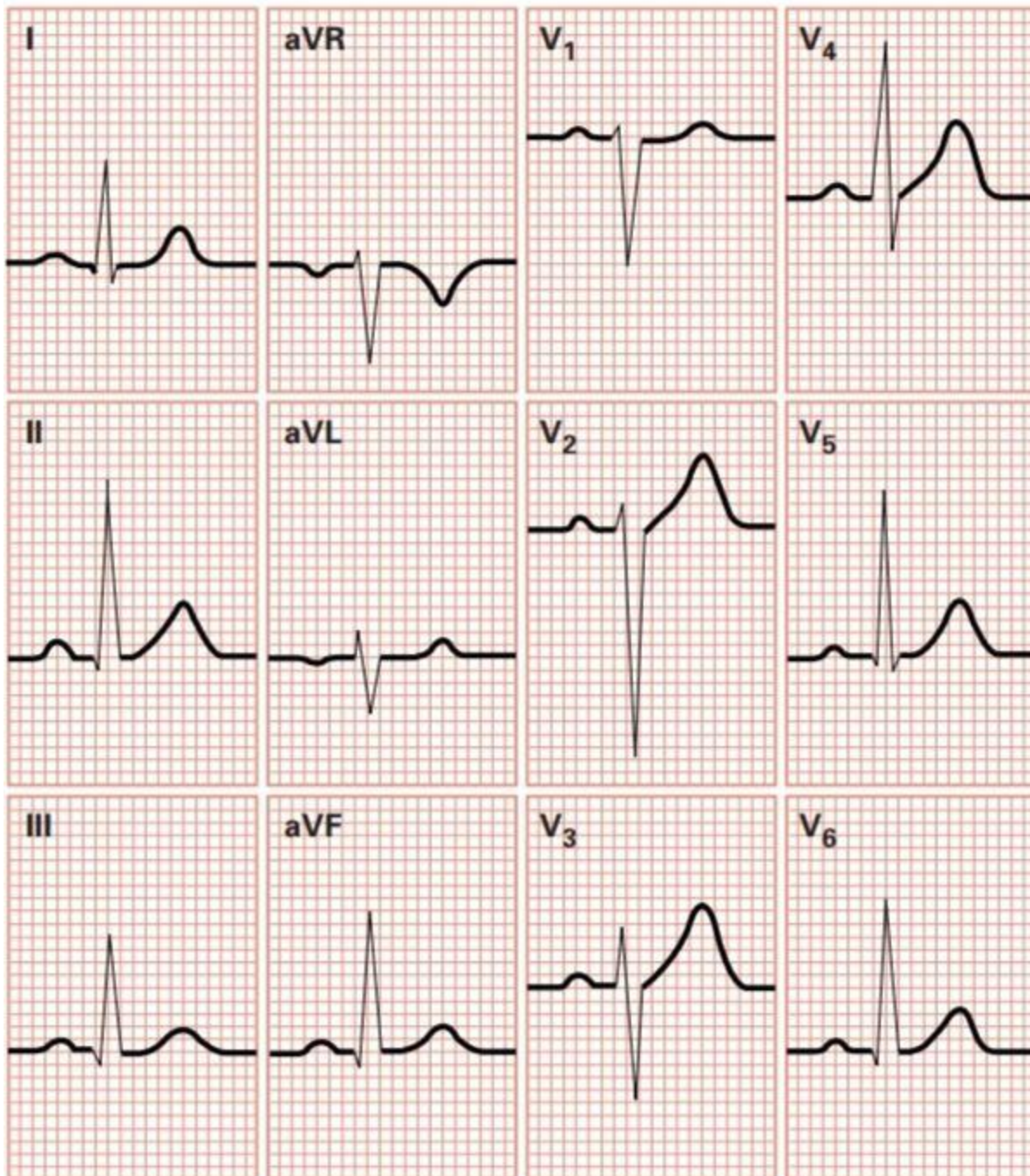
2021- 2022

Notes for ECG

Which Leads Look Where?



The Normal 12-Lead ECG



Q: How can an ECG reading be interpreted?

- Upright P waves all look similar. Note: All ECG strips in Tab 2 were recorded in Lead II.
- PR intervals and QRS complexes are of normal duration.

Normal Sinus Rhythm (NSR)



- Rate:** Normal (60–100 bpm)
- Rhythm:** Regular
- P Waves:** Normal (upright and uniform)
- PR Interval:** Normal (0.12–0.20 sec)
- QRS:** Normal (0.06–0.10 sec)

Sinus Bradycardia

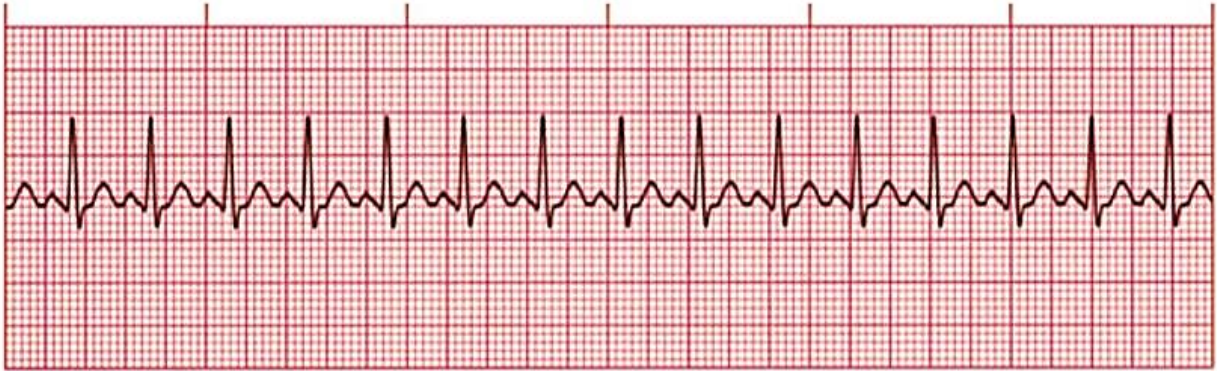
- The SA node discharges more slowly than in NSR.



- Rate:** Slow (<60 bpm)
- Rhythm:** Regular
- P Waves:** Normal (upright and uniform)
- PR Interval:** Normal (0.12–0.20 sec)
- QRS:** Normal (0.06–0.10 sec)

Sinus Tachycardia

- The SA node discharges more frequently than in NSR.



Rate: Fast (>100 bpm)

Rhythm: Regular

P Waves: Normal (upright and uniform)

PR Interval: Normal (0.12–0.20 sec)

QRS: Normal (0.06–0.10 sec)

Sinus Arrhythmia

- The SA node discharges irregularly.
- The R-R interval is irregular.



Rate: Usually normal (60–100 bpm); frequently increases with inspiration and decreases with expiration; may be <60 bpm

Rhythm: Irregular; varies with respiration; difference between shortest RR and longest RR intervals is >0.12 sec

P Waves: Normal (upright and uniform)

PR Interval: Normal (0.12–0.20 sec)

QRS: Normal (0.06–0.10 sec)