

12 Lead EKG Application/Practice Handout

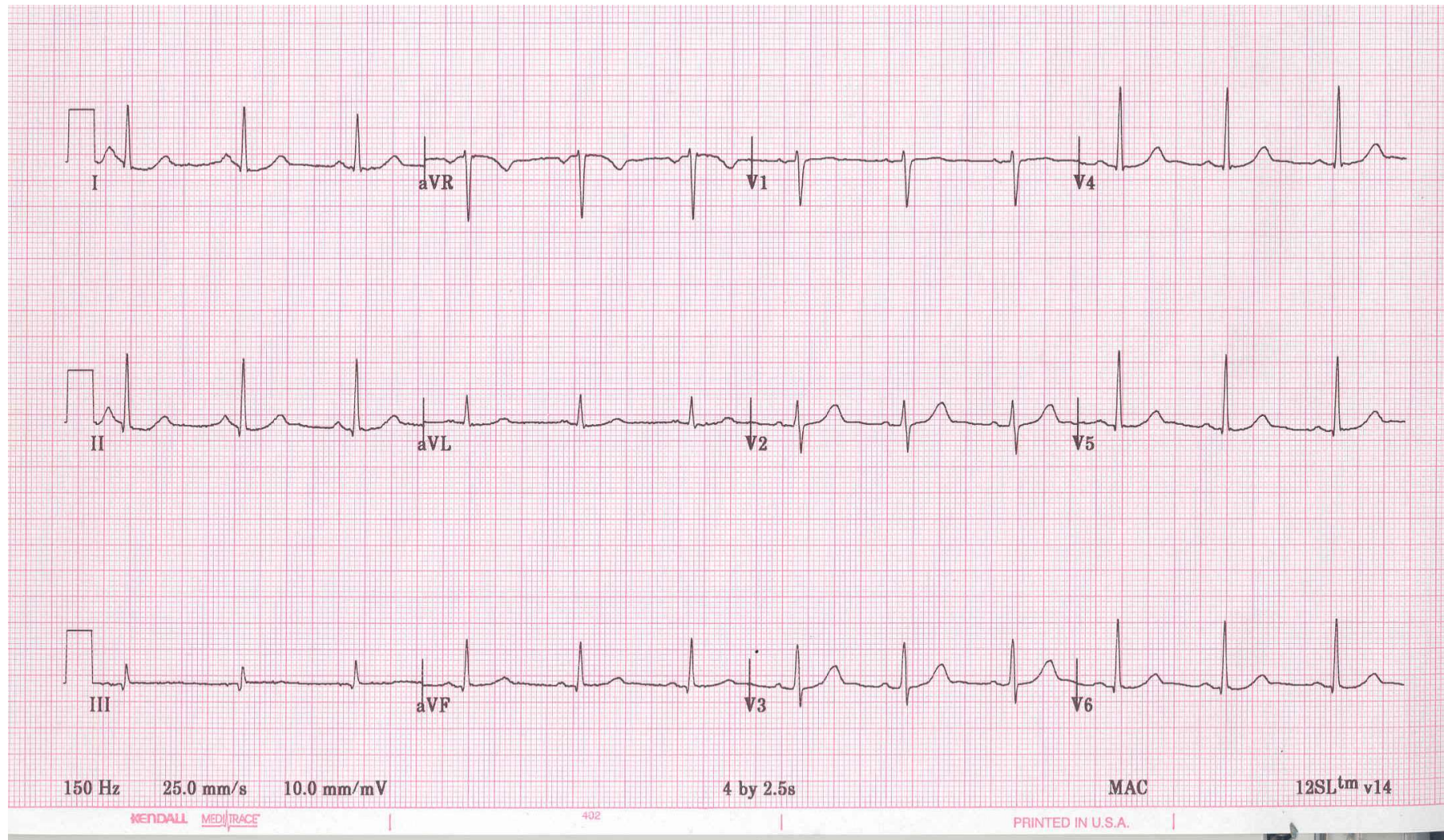
Print out at least 2 per page

Better to print one per page



12 Lead EKG 101

Learn the Normal so you can detect the abnormal





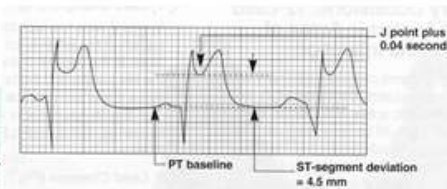
Ischemia: T Wave Inversion



ST Depression



Injury: ST Segment Elevation



I Lateral (Circumflex) ↑	AVR ↓	V1 Septal (LAD) ↓	V4 Anterior (LAD) Biphasic
II Inferior (RCA) ↑	AVL Lateral (Circumflex) ↑ or ↓	V2 Septal (LAD) ↓	V5 Lateral (Circumflex) ↑
III Inferior (RCA) ↑	AVF Inferior (RCA) ↑	V3 Anterior (LAD) Biphasic	V6 Lateral (Circumflex) ↑



Infarction: Significant Q waves
1/3 height of R wave or > 0.03ms wide



New Left Bundle Branch Block needs reperfusion
QRS > 0.12 sec and negative in V1

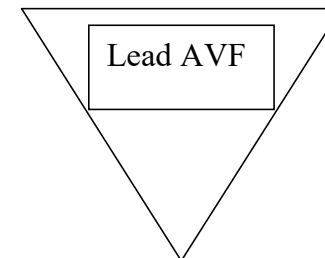
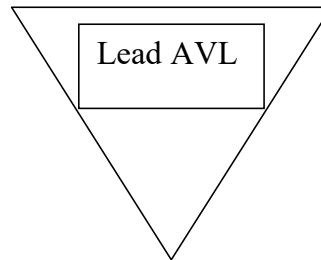
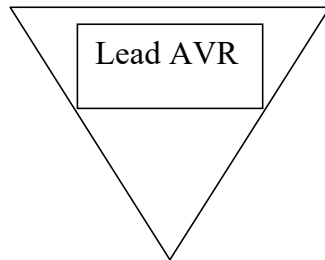
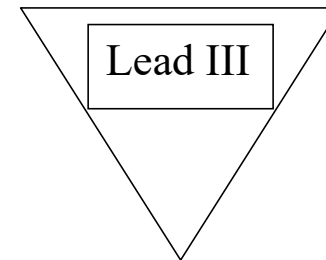
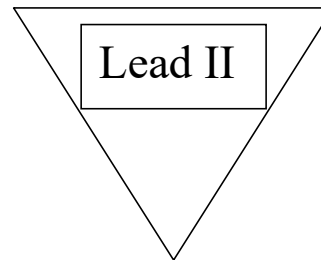
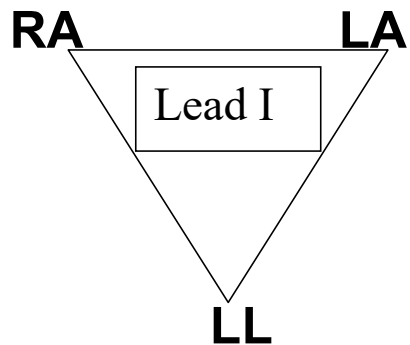
Normal Lead I ↑, AVF ↑ (-30 to +90)
LAD Lead I ↑, AVF ↓ (-30 to -90)
RAD Lead I ↓, AVF ↑ (90 to 180)
Extreme RAD Lead I ↓, AVF ↓ (-90 to ± 180)
LAH: Lead I ↓, Leads II & III ↓
LPH Lead I ↓, Leads II & III ↑

Created by Nancy Neal, MS, RN, CCRN, APN-BC and Cheryl Herrmann, APN, CCRN, CCNS-CSC-CMC, Phone: 309-672-5678

Print 12 Lead EKG Overlay in Color from
www.cherylherrmann.com in the educational downloads tab

Practice & Application Time

1. Label the positive and negative poles in the limb leads
2. Label the positive poles appropriately for the augmented leads



1. List the correct placement of the positive pole in each chest lead.
 - V1
 - V2
 - V4
 - V6
2. Which polarity is the QRS primarily in V1?
Positive Negative
3. Which polarity is the QRS primarily in V6?
Positive Negative
4. In which leads should the R wave transition occur?

Identify the Normal EKG Depolarization in each of the 12 Leads

I	AVR	V1	V4
II	AVL	V2	V5
III	AVF	V3	V6

Practice & Application Time

Axis Summary

Indicate the degree of axis

Indicate if Lead I and AVF are \uparrow or \downarrow



Axis Degrees	Normal	Left	Right	Extreme right
Lead I				
AVF				

Alterations in Axis

Match Column A with B

Column A

Axis shifts AWAY

Axis shifts TOWARDS

Column B

- area of increased muscle mass – hypertrophy
- from area of AMI
- from hemiblocks
- bundle branch blocks

Practice & Application & Break Time 20 minutes



For each EKG

- Identify if the depolarization is correct
- Identify any BBB present
- Identify any hemiblocks
- Determine the axis
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There may be no audio during this break time. There is nothing wrong with your computer – the audio will return once the presentation resumes.

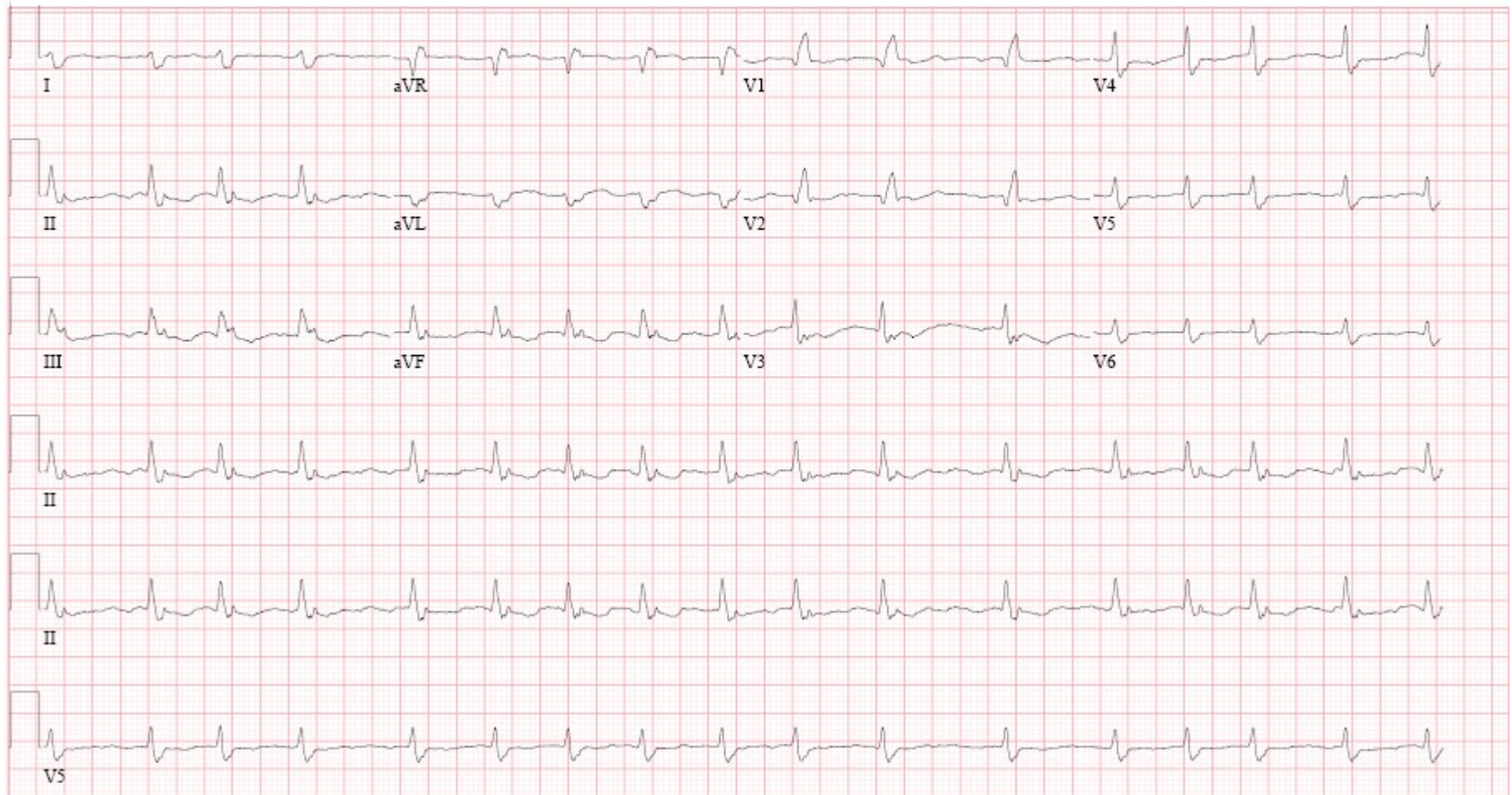
EKG 1

Vent. rate	69	BPM
PR interval	188	ms
QRS duration	108	ms
QT/QTc	380/407	ms
P-R-T axes	15 -49 -34	



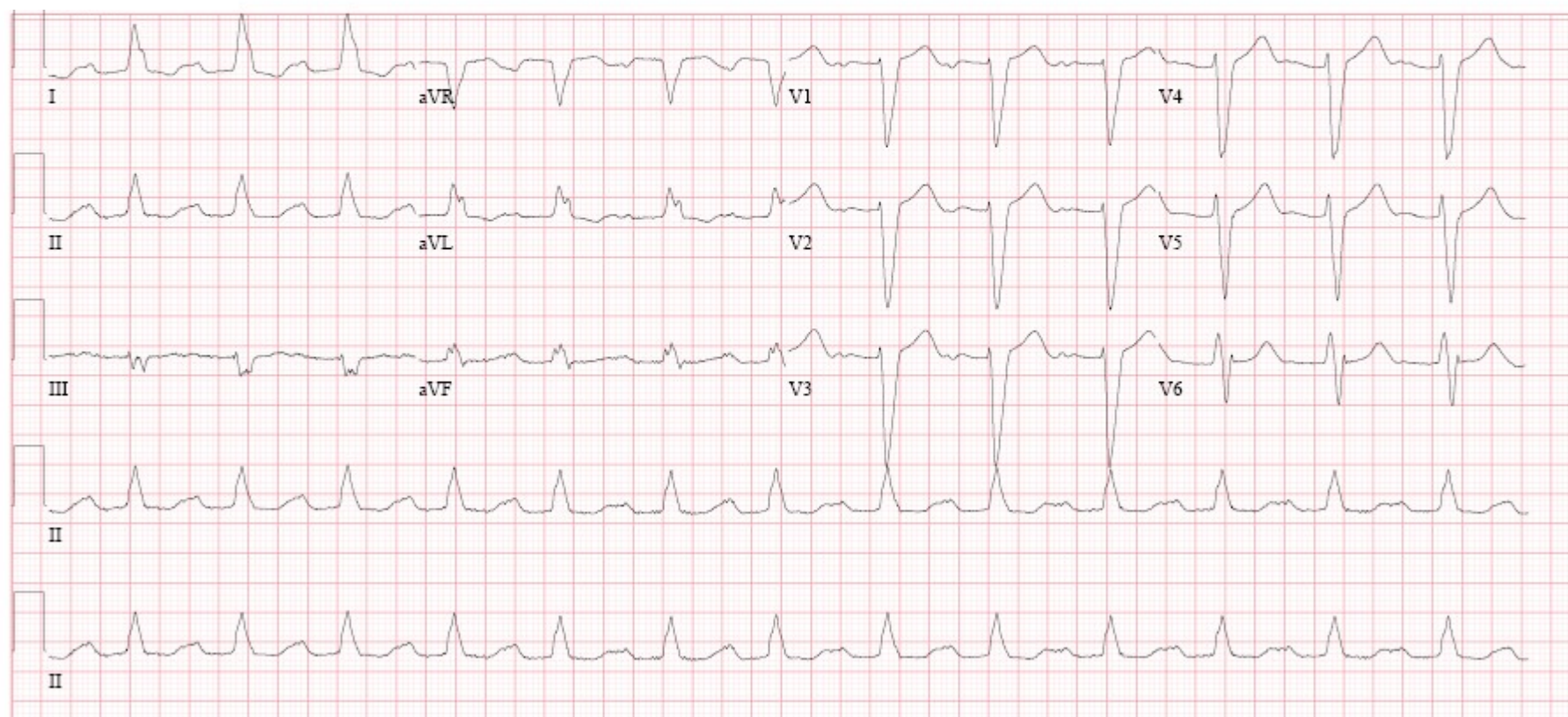
EKG 2

Vent. rate	99	BPM
PR interval	*	ms
QRS duration	144	ms
QT/QTc	384/492	ms
P-R-T axes	* 104	-79



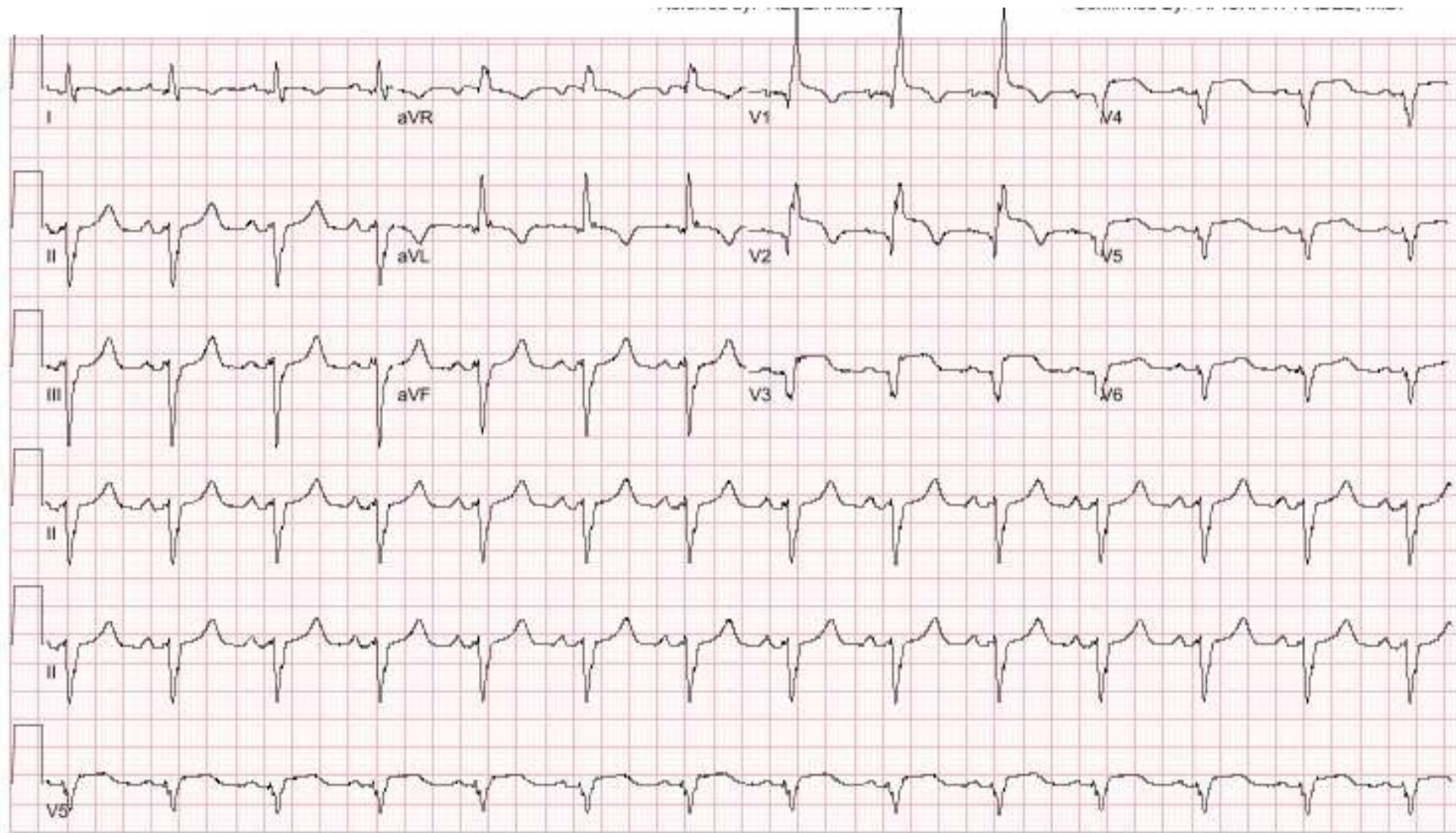
EKG 3

Vent. rate	81	BPM
PR interval	296	ms
QRS duration	156	ms
QT/QTc	476/552	ms
P-R-T axes	47 18	93



EKG 4

Vent. rate	82	BPM
PR interval	152	ms
QRS duration	146	ms
QT/QTc	452/528	ms
P-R-T axes	61 -74	91



Answers

1. LAD, incomplete LBBB, LAH
2. RAD, RBBB, LPH
3. Normal axis, LBBB
4. LAD, RBBB, LAH