

# 12 Lead ECG Module 7

Jim Lockard, EMT-P, AAS

Module One – The “Starting Point”

Module Two – Rate and Rhythm

Module Three – Conduction

Module Four – Hypertrophy

Module Five – STEMI Part I

Module Six – STEMI Part II

***Module Seven – Practice makes perfect***

Module Eight – Atypical ECG's

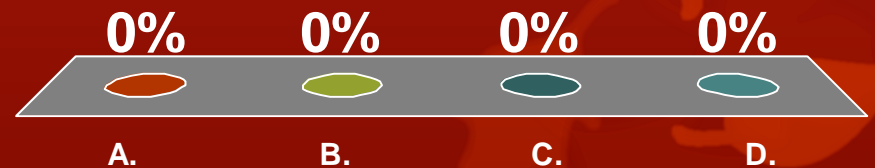
# What do I need to do anytime I acquire a 12 lead ECG?

A. Import to the monitor and submit a paper copy

B. Submit a paper copy only

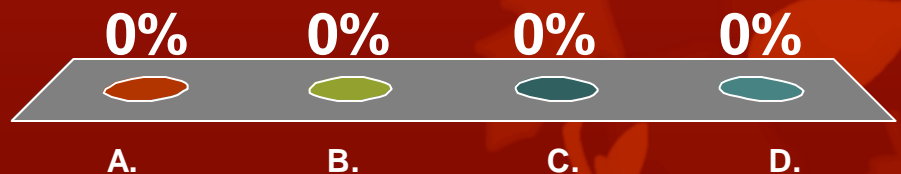
C. Import to the monitor only

D. Don't do anything



You confirm a STEMI patient.  
Who do you need to notify?

- A. C-Med ASAP and the hospital during transport
- B. C-Med and the hospital ASAP
- C. The hospital ASAP
- D. The hospital once in route



The background is a solid orange color with a decorative border of various leaf shapes in a slightly darker shade of orange. The leaves are scattered along the left and right edges of the slide.

Time to read some ECG's...

62 yrs      12:57:46  
Male      ---/---

MECKLENBURG EMS  
Department:  
Room:  
Operator:

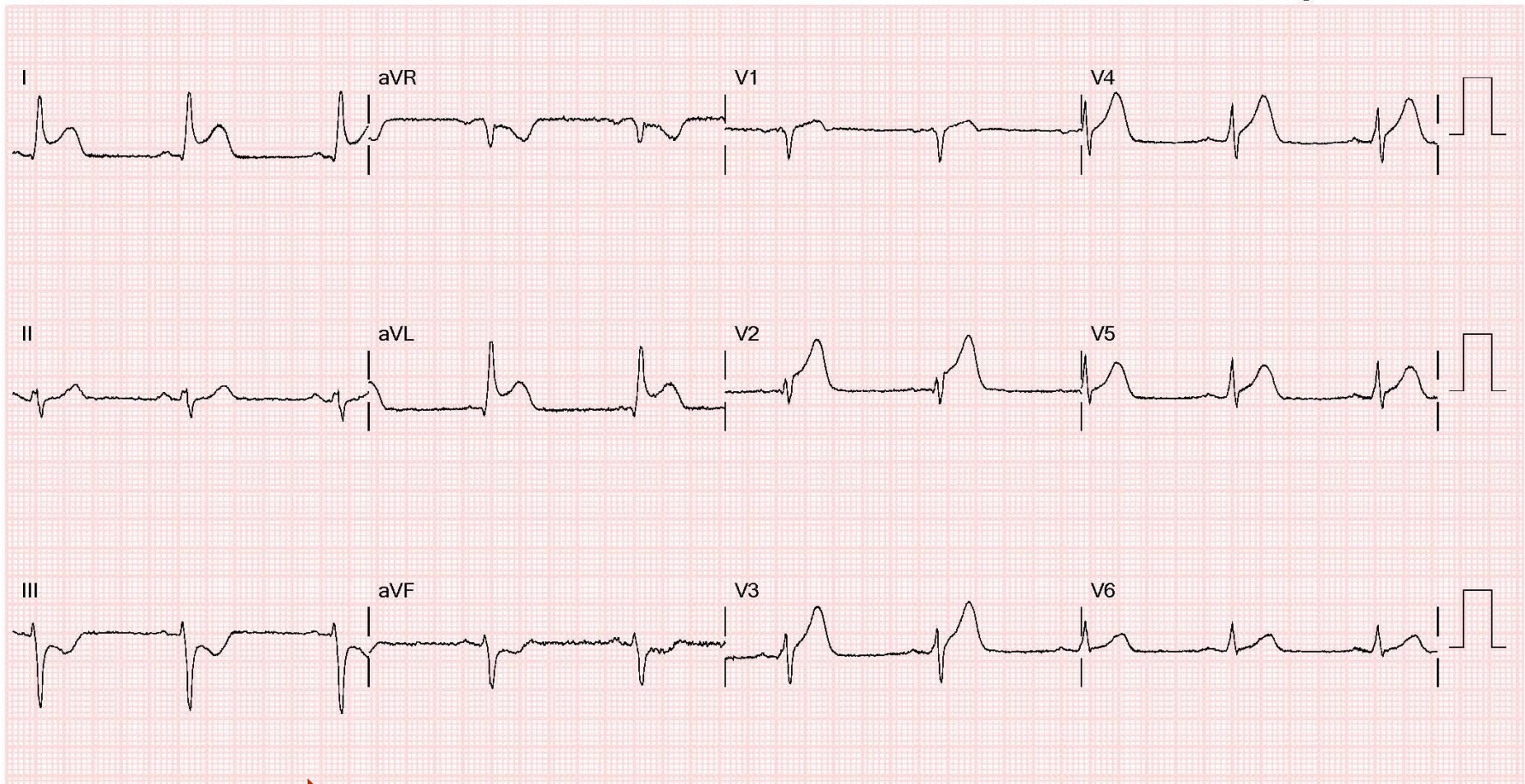
Rate	57	• Sinus rhythm	normal P axis, V-rate 50- 99
PR	168	• Nonspecific intraventricular conduction delay	QRSd >115mS, not LBBB/RBBB
QRSd	118	• Anterolateral infarct, acute (LAD)	ST >0.20mV, V2-V6,I,aVL
QT	405	• >>> Acute MI <<<	
QTc	395		

Requested by:

Axes	
P	54
QRS	-33
T	-10

- ABNORMAL ECG -

Unconfirmed diagnosis



25 mm/sec

Limb: 10 mm/mV

Chest: 10 mm/mV

60~ 0.05 - 150 Hz

PH100B

P?

12:57:46

MECKLENBURG EMS



## ASSESS/PLAN



29 yrs

21:44:02  
Male

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MECKLENBURG EMS

Department:

Room:

Operator:

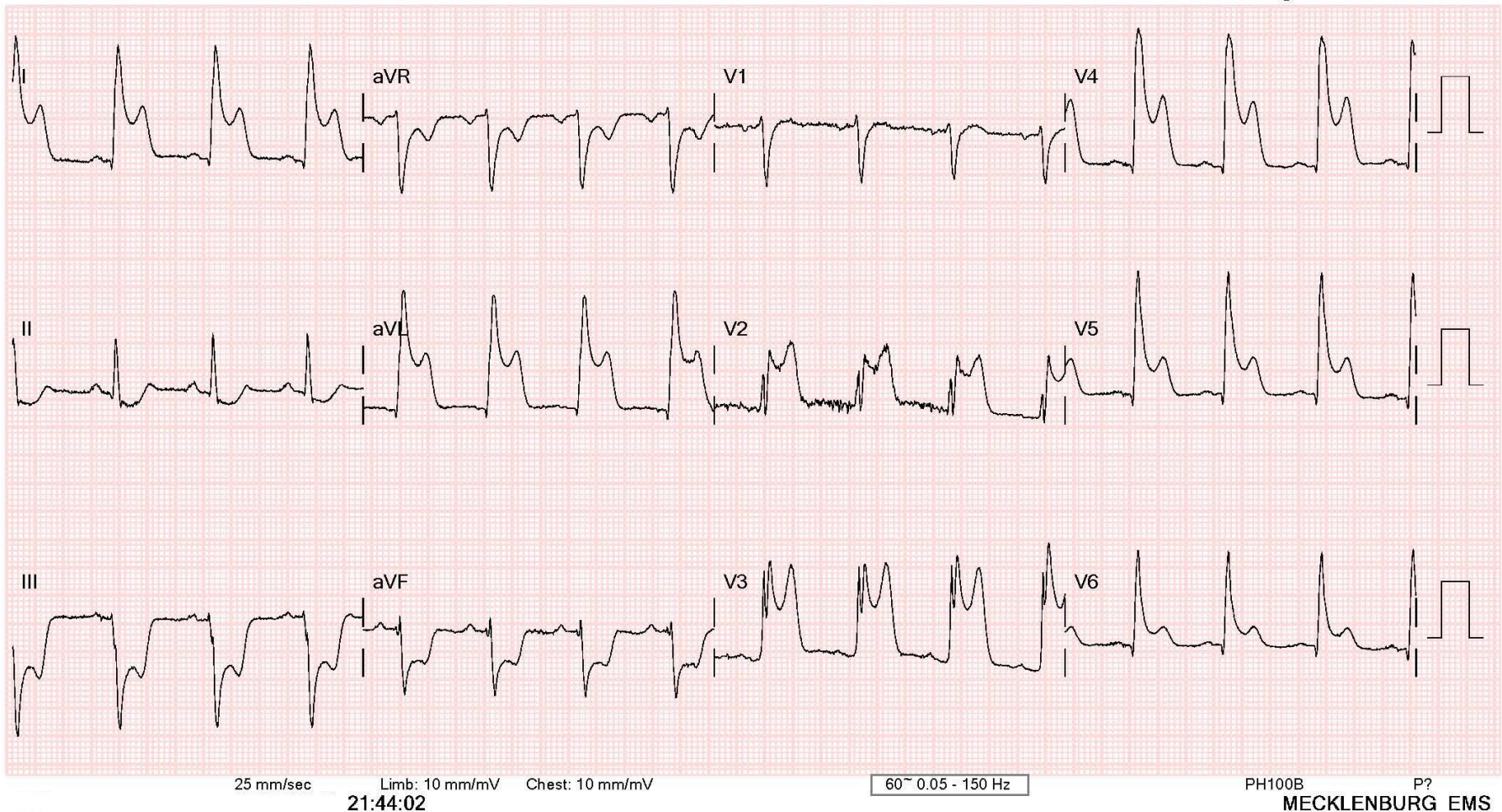
Rate	91	• Sinus rhythm	normal P axis, V-rate 50- 99
PR	154	• Anterolateral infarct, acute (LAD)	ST >0.20mV, V2-V6,I,aVL
QRSd	133	• >>> Acute MI <<<	
QT	350		
QTc	431		

Requested by:

Axes	
P	54
QRS	-22
T	-33

- ABNORMAL ECG -

Unconfirmed diagnosis





54 yrs 22:52:17 Female ---/---

MECKLENBURG EMS  
Department:  
Room:  
Operator:

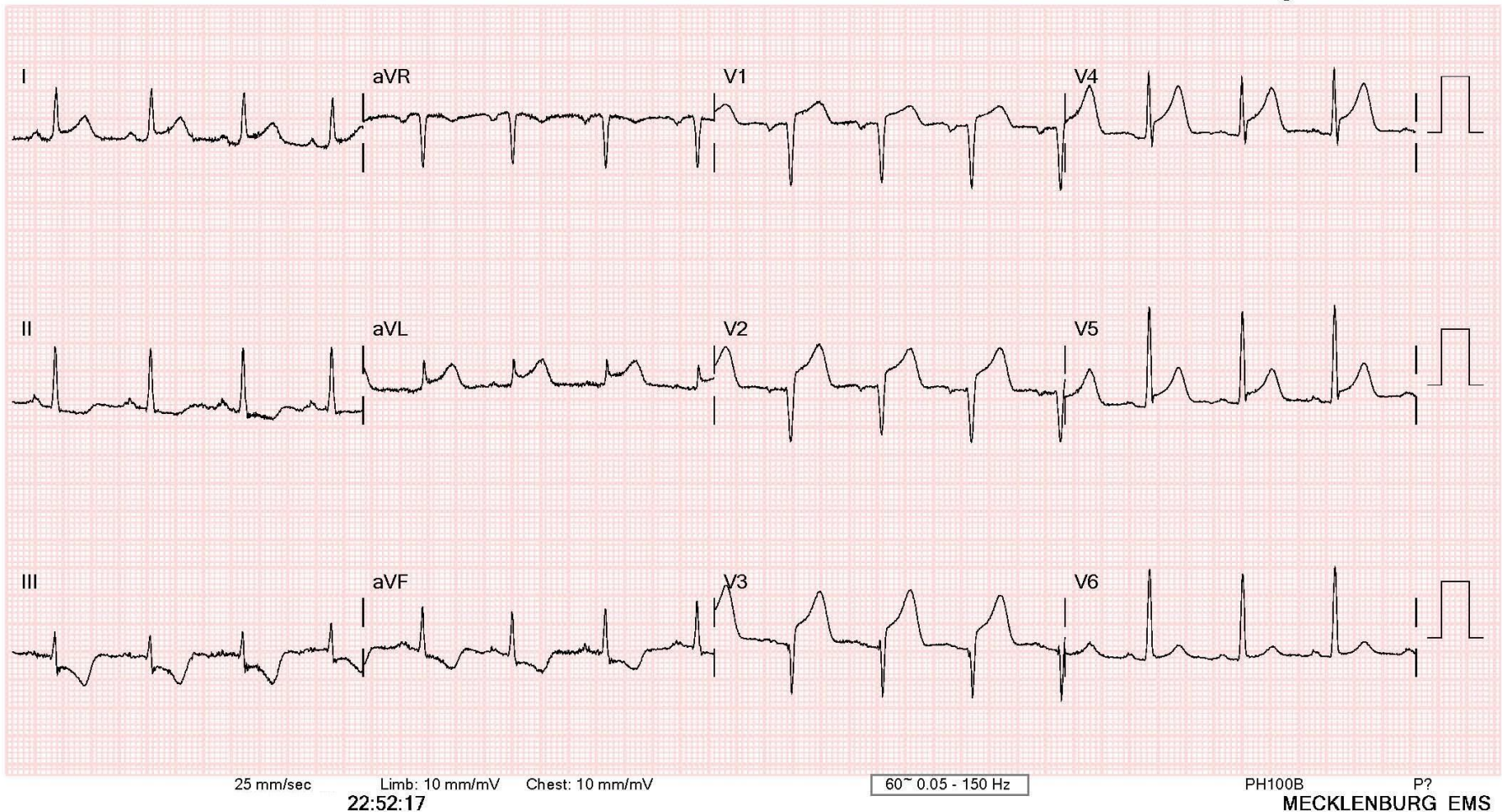
Rate	92	• Sinus rhythm	normal P axis, V-rate 50- 99
PR	163	• Probable left atrial enlargement	P >50mS, <-0.10mV V1
QRSd	77	• Anterolateral infarct, acute (LAD)	ST >0.20mV, V2-V6,I,aVL
QT	361	• >>> Acute MI <<<	
QTc	447		

Requested by:

Axes	
P	58
QRS	35
T	-44

- ABNORMAL ECG -

Unconfirmed diagnosis





11/07/2014 09:45:11  
57 yrs Female ---/---

MECKLENBURG EMS  
Department:  
Room:  
Operator:

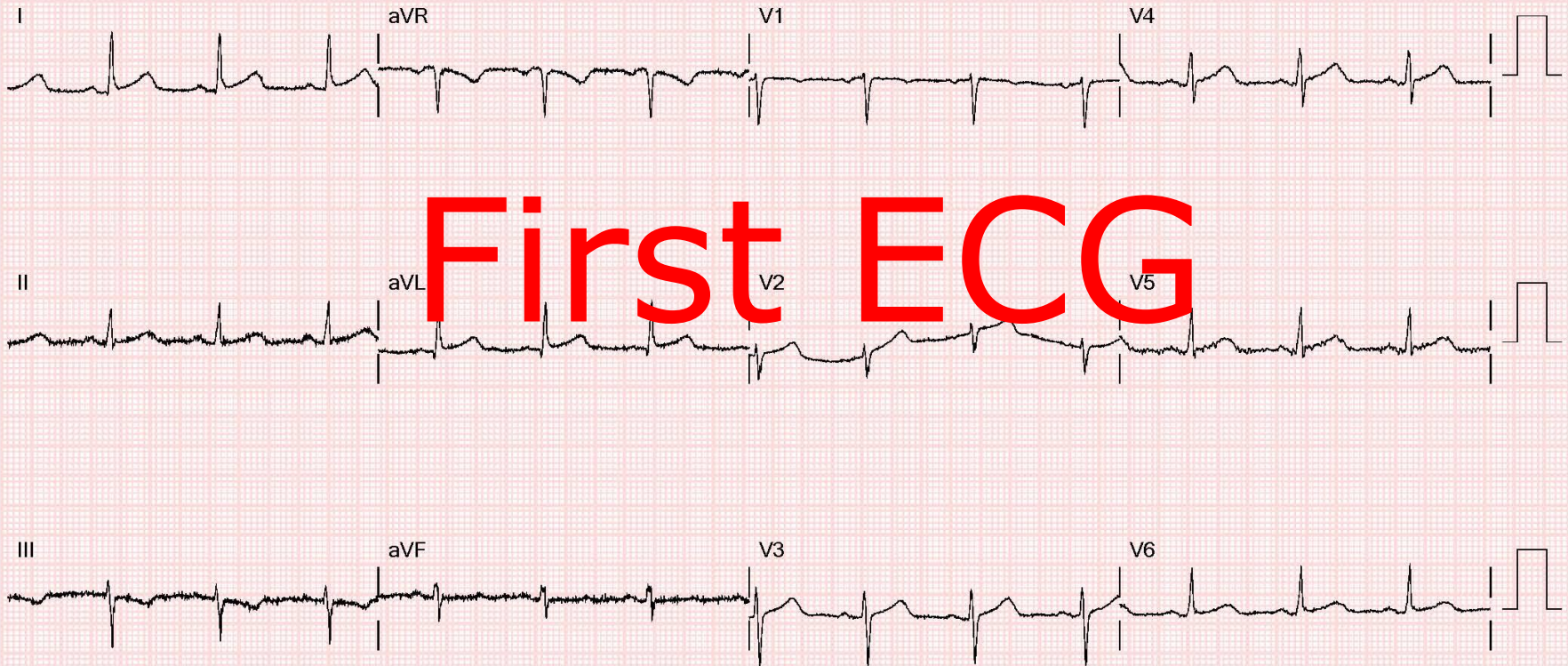
Rate 82 • Sinus rhythm normal P axis, V-rate 50- 99  
PR 150  
QRSd 73  
QT 365  
QTc 427

Axes  
P 46  
QRS 8  
T 4

Requested by:

- NORMAL ECG -

Unconfirmed diagnosis



25 mm/sec Limb: 10 mm/mV Chest: 10 mm/mV  
11/07/2014 09:45:11

60~ 0.05 - 150 Hz

PH100B P?  
MECKLENBURG EMS



11/07/2014 10:16:42  
57 yrs Female ---/---

MECKLENBURG EMS  
Department:  
Room:  
Operator:

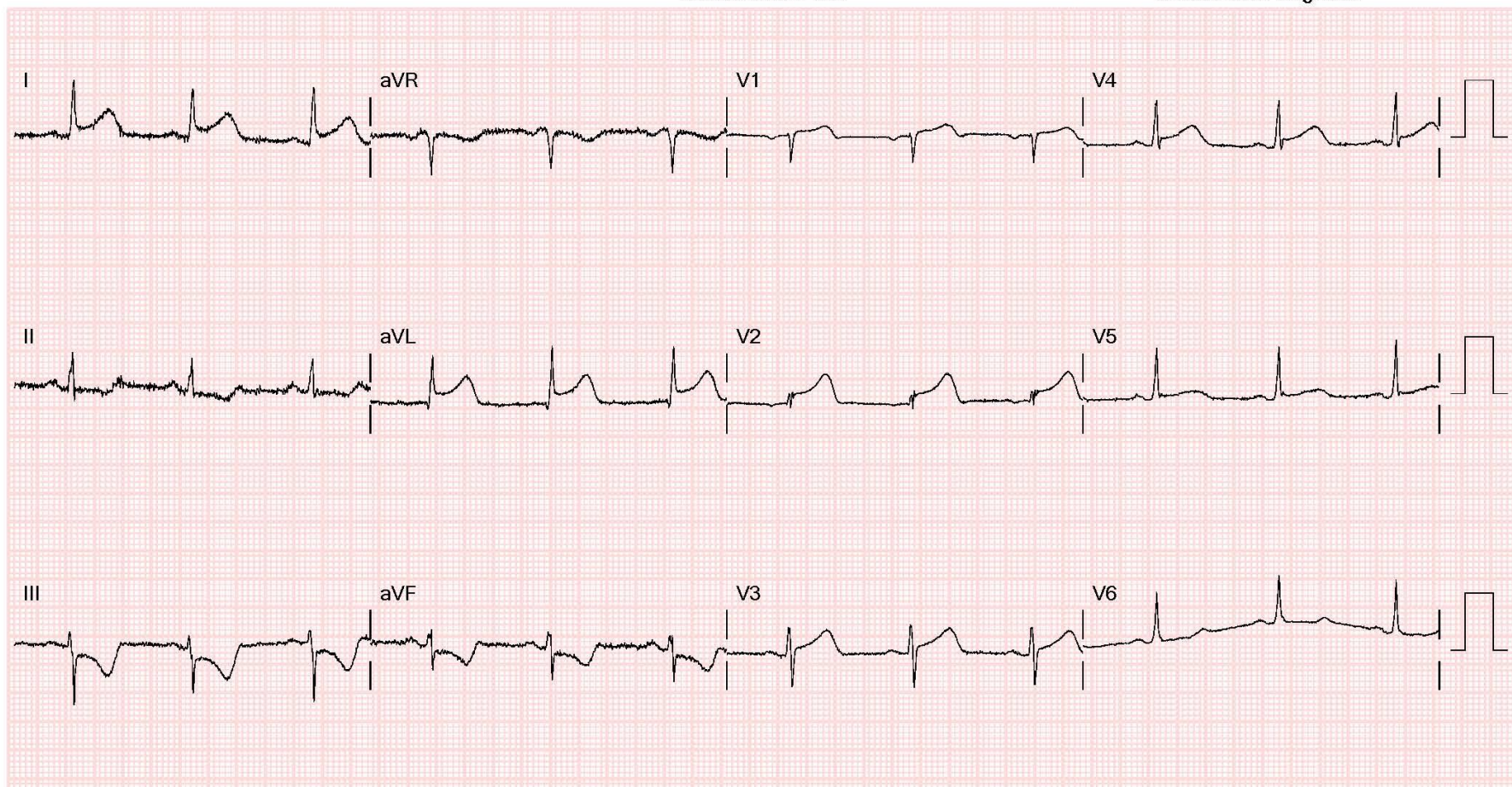
Rate	71	• Sinus rhythm	normal P axis, V-rate 50- 99
PR	148	• Lateral infarct, acute (LAD)	ST >.10mV, V5 V6 I aVL
QRSd	73	• Borderline ST elevation, anterior leads	ST >0.15mV in V1-V4
QT	413	• >>> Acute MI <<<	
QTc	449		

Requested by:

Axes	
P	65
QRS	-1
T	-34

- ABNORMAL ECG -

Unconfirmed diagnosis



25 mm/sec Limb: 10 mm/mV Chest: 10 mm/mV  
11/07/2014 10:16:42

60~ 0.05 - 150 Hz

PH100B P?  
MECKLENBURG EMS



01/26/2015 10:02:01  
47 yrs Male

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MECKLENBURG EMS  
Department:  
Room:  
Operator:

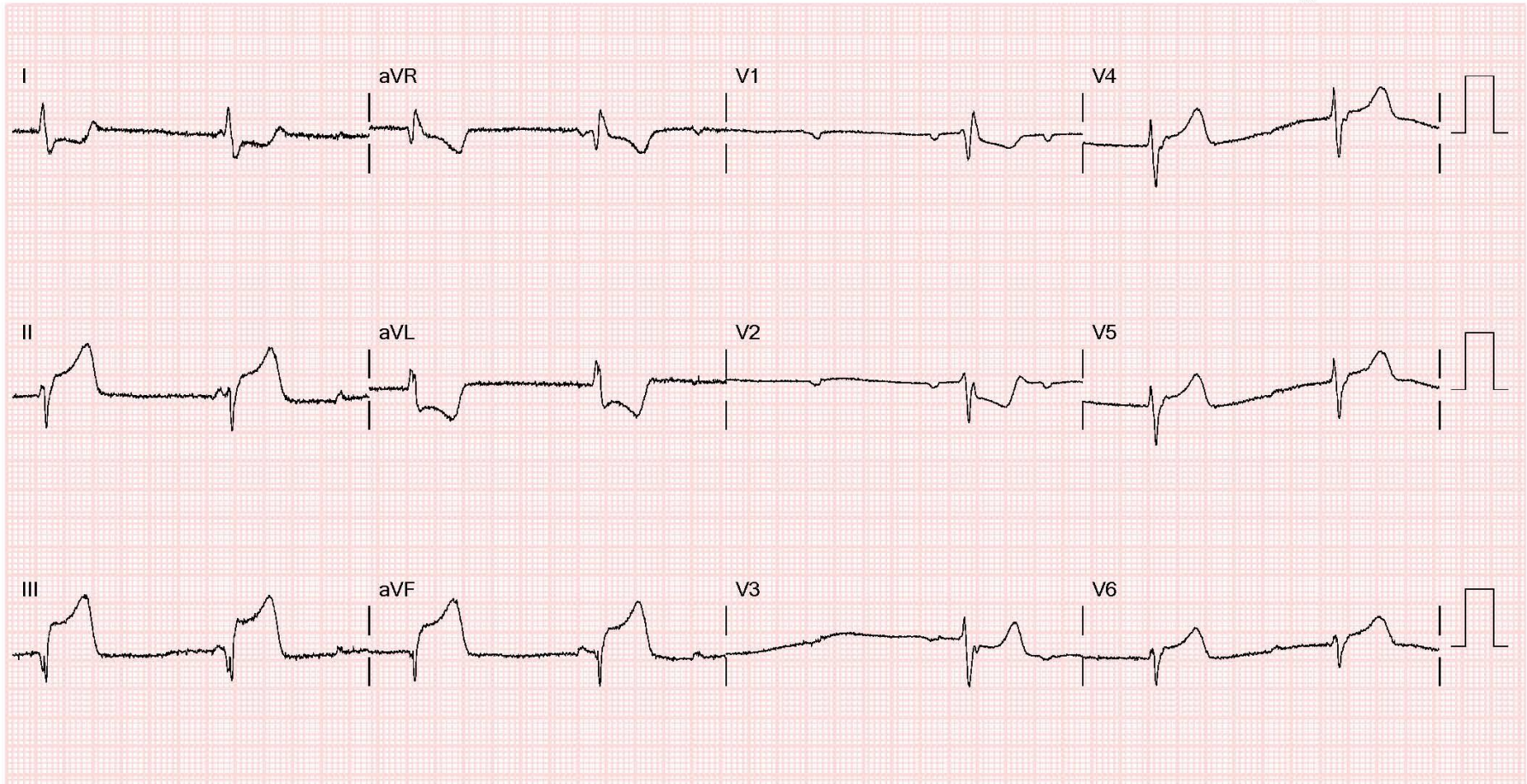
Rate	46	• AV block, complete (third degree)	V-rate < 50, AV dissociation
PR		• Right bundle branch block	QRSd > 120, terminal axis(90,270)
QRSd	137	• Abnormal T, probable ischemia, lateral leads	T < -0.50mV, I aVL V5 V6
QT	488	• ST elevation, consider lateral injury	ST > 0.10mV, I aVL V5 V6
QTc	427	• >>> Complete Heart Block <<<	

Requested by:

Axes	
P	-1
QRS	-87
T	95

- ABNORMAL ECG -

Unconfirmed diagnosis



25 mm/sec Limb: 10 mm/mV Chest: 10 mm/mV  
01/26/2015 10:02:01

60~ 0.05 - 150 Hz

PH100B P?  
MECKLENBURG EMS



01/20/2015 14:51:59

41 yrs Male

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MECKLENBURG EMS

Department:

Room:

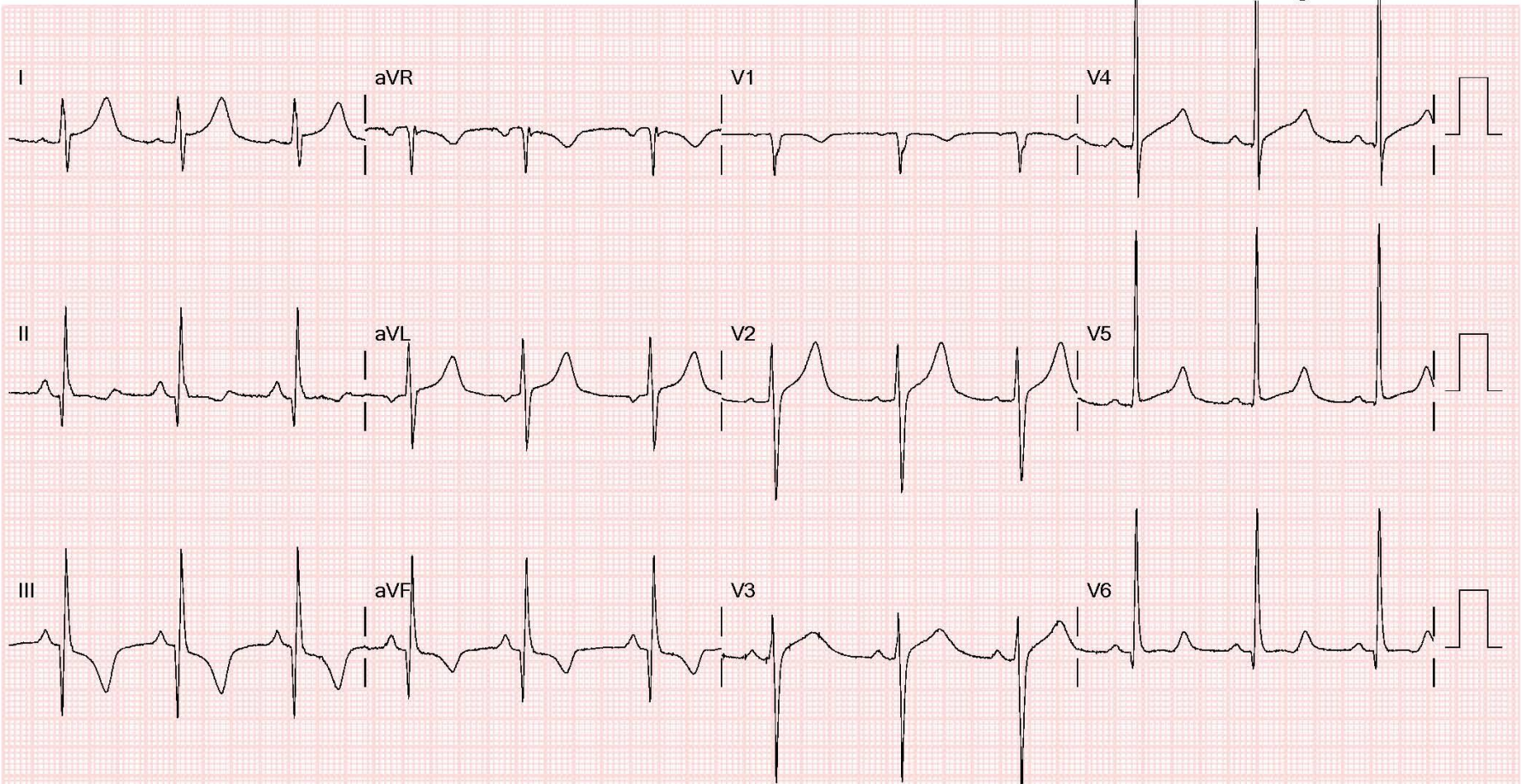
Operator:

Rate	72	• Sinus rhythm	normal P axis, V-rate 50- 99
PR	159	• Right atrial enlargement	$P > 0.25\text{mV}$ 2 lds or $< -0.24\text{mV}$ aVR/aVL
QRSd	102	• Left ventricular hypertrophy	multiple voltage criteria
QT	475	• Inferior infarct, age indeterminate	$Q > 35\text{mS}$ , T neg, II III aVF
QTc	520	• Lateral infarct, acute (LAD)	$ST > .10\text{mV}$ , V5 V6 I aVL
Axes		• Anterior ST elevation, probably due to LVH	$ST > 0.20\text{mV}$ in V1-V4 & LVH
P	83	• Prolonged QT interval	QTc $> 500\text{ms}$
QRS	65	• >>> Acute MI <<<	
T	-31		

Requested by:

- ABNORMAL ECG -

Unconfirmed diagnosis



25 mm/sec Limb: 10 mm/mV Chest: 10 mm/mV

60~ 0.05 - 150 Hz

PH100B

P?

01/20/2015 14:51:59

MECKLENBURG EMS



02/27/2015 00:43:59  
49 yrs Female ---/---

MECKLENBURG EMS  
Department:  
Room:  
Operator:

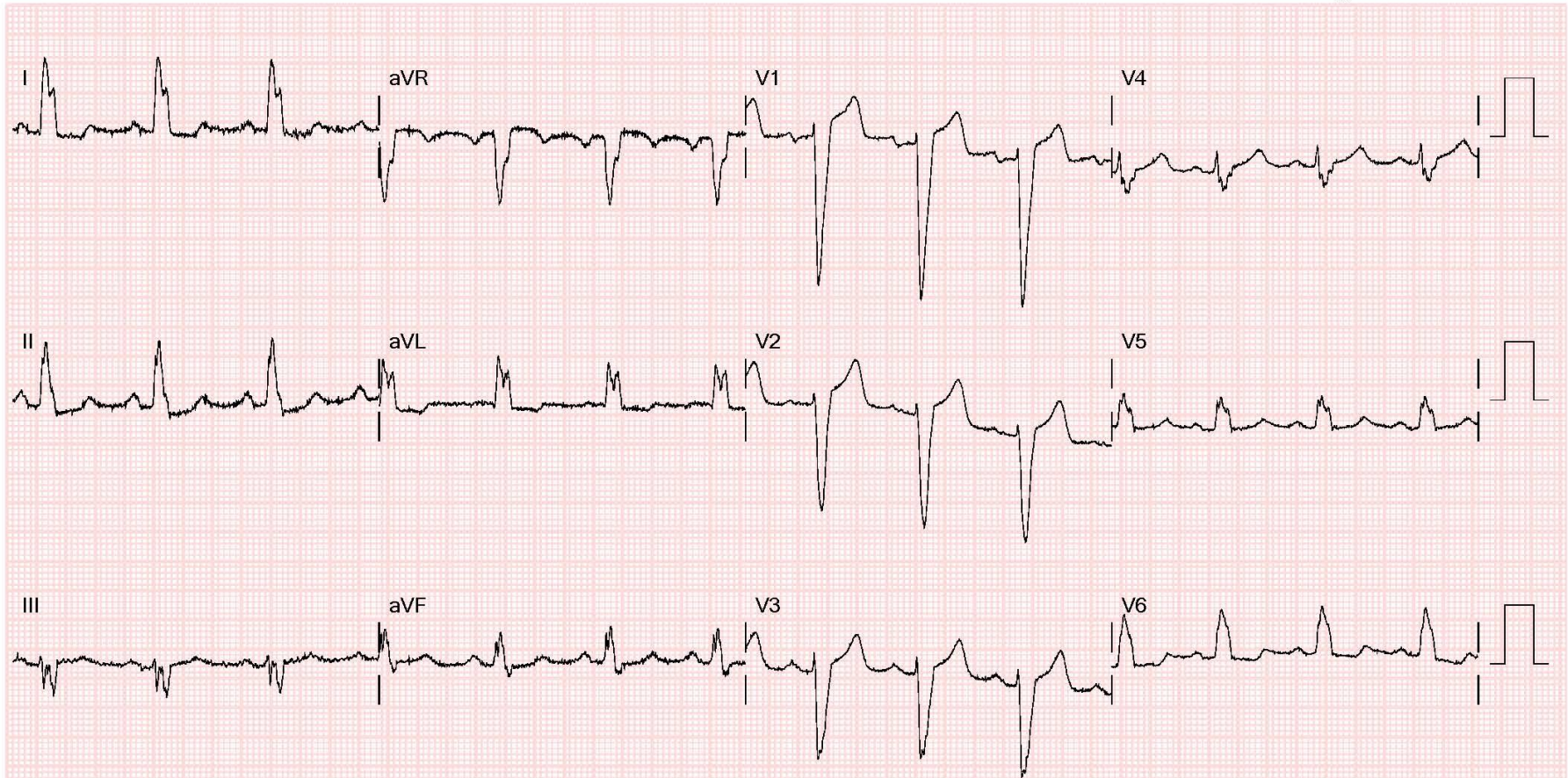
Rate	83	• Sinus rhythm	normal P axis, V-rate 50- 99
PR	188	• Probable left atrial enlargement	P >50mS, <-0.10mV V1
QRSd	140	• Left bundle branch block	QRSd>120, broad/notched R
QT	400		
QTc	470		

Requested by:

Axes	
P	59
QRS	16
T	97

- ABNORMAL ECG -

Unconfirmed diagnosis



25 mm/sec Limb: 10 mm/mV Chest: 10 mm/mV  
02/27/2015 00:43:59

60~ 0.05 - 150 Hz

PH100B P?  
MECKLENBURG EMS



A sneak peak at next month's 12  
Lead Module...

**Can you guess  
who this is?**



**Henrick Joan Jooast (Hein) Wellens, M.D**



**Can you guess  
who this is?**



**Elena B. Sgarbossa, M.D**

**Can you guess  
who this is?**



**Pedro**



**Can you guess  
who this is?**



**Josep**

**Can you guess  
who this is?**



**Ramon**



**Can you guess  
who this is?**



**Dr's Josep, Ramon, and Pedro Brugada**

The background is a solid orange color with various leaf shapes scattered around the edges. The leaves are in different shades of orange and brown, some with detailed veins. They are mostly concentrated on the left and right sides, framing the central text.

Questions?