News You Can Use

NORTHWEST COMMUNITY EMERGENCY MEDICAL SERVICES SYSTEM

EST 1972

System Updates

April 2018

System Memo #371

NORTHWEST COMMUNITY EMERGENCY MEDICAL SERVICES SYSTEM
EST 1972

Northwest Community Hospital
901 W. Kirchoff; EMS offices
Arlington Heights, IL 60005
Phone: 847-618-4480
Fax: 847-618-4489

Post for all EMT-Ps/PHRNs/ ECRNs; OLMC physicians

Date: March 13, 2018

System Memo: # 371

To: All System members

URGENT PRACTICE UPDATE

From: Mathew T. Jordan, MD, FACEP; EMS Medical Director

RE: **Pain management options due to drug shortages**

This memo is a follow-up and extension of System memo #370 on pain management.

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#2: If no FENTANYL: Substitute MORPHINE 10 mg/2mL (if available).

Name	Dose/Routes	Actions	Indication for EMS	Contraindications/ Precautions	Side Effects
MORPHINE 10 mg in 2 mL (preferred)	0.1 mg/kg (no more t… max in… every 2… to 10 m… dose a… or 10 m… IV/IO	- Narcotic analgesic	SBP > 90/MAP > 65)	- Allergy	CNS: Sedation, H/A

#3: If no FENTA…
See dose charts in appendix – Adult (p. 102); Peds (p. 101); May repeat at ½ dose after 10 min.
Max cumulative dose for pain: 100 mg

#4: If no Fentanyl, Morphine or Ketamine: Substitute parenteral KETOROLAC (pre-approved in Region IX)

Name	Dose/Routes (one time dose only)	Actions	Indication for EMS	Contraindications/ Precautions	Side effects
Ketorolac tromethamine injection 30 mg/1mL Carry total of 60 mg	**Age 17-64:** 60 mg IM or 30 mg IVP **Age ≥ 65:** 30 mg IM or 15 mg IVP **Peds 2-16:** 0.5 mg/kg IV or IM to max 15 mg.	Non-steroidal anti-inflammatory agent ; inhibits platelet function	Severe pain Expect longer onset of action than an opiate	Hypotension (due to renal toxicity) **Potential for bleeding (peptic ulcer); renal insufficiency;** recent or impending surgery NSAID Allergy; ASA-sensitive asthma; **pregnant** Caution: If dehydrated or taking ACEIs or ARBs (See HF SOP pg 22.)	Acute kidney injury Bleeding risk

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Issued 3/13/18

SOP p. 5

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NORTHWEST COMMUNITY EMS SYSTEM - Drug/Supply/Equipment List
Last revised: 3/13/18

KEY:
- ALS — Required on all ALS vehicles unless specified otherwise. All other items are required on BLS and ALS vehicles.
- * — Drugs identified by an asterisk (*) are controlled substances and must be accounted for per system policy.
- ** — System hospitals must replace all drugs, supplies, and equipment items EXCEPT those items indicated by a double asterisk (**). These items must be purchased and/or maintained by the EMS provider agency.
- IL — required by IDPH administrative code section 515.830

- EMS agencies shall assign appropriate personnel to inventory ambulances daily at shift change to ensure complete par levels, intact packaging, current dates, and good working order. All controlled substances must be viewed and counted daily per policy.
- The EMS MD or designees will do random unannounced ambulance inspections to measure compliance with these standards.
- All EMS products exchanged at hospitals must be LATEX- FREE. All non-exchange items must be latex free unless a waiver has been granted and a latex-containing kit is maintained. Contain latex: Do NOT use without covering equipment or patient: BP cuffs, stethoscopes, Nellcor pulse oximeter.

KEY	Min.	ITEM	PACKAGING
MEDICATIONS		***(Keep drugs packaged in boxes, in the original box to facilitate correct identification.)***	
ALS	3	Adenosine	6 mg / 2 mL
BLS & ALS	3	Albuterol	2.5 mg / 3 mL (0.083%)
ALS	3	Amiodarone	150 mg / 3 mL amp
BLS & ALS			
ALS			
ALS			
BLS & ALS			
ALS			
Opt			
ALS			
ALS			
BLS & ALS			
ALS			
ALS			
BLS & ALS			
BLS & ALS			
ALS			
ALS			
ALS			
ALS			
ALS*			
BLS & ALS	3	Naloxone	2 mg / 2 mL
ALS	1 bottle	Nitroglycerin	0.4 mg (1/150 gr) tabs
ALS**		Nitrous oxide only by waiver	
ALS	1	Norepinephrine	4 mg / 4 mL (vial preferred)
		OR Dopamine premix (1600 mcg/mL) if norepi unavailable	400 mg / 250 mL or 800 mg / 500 mL D5W
ALS	2	Ondansetron	2 mg / mL (2 mL vial)
BLS & ALS	2	Ondansetron	4 mg ODT
ALS	1	Sodium bicarbonate 8.4%	50 mEq / 50 mL preload
ALS	1	Tetracaine ophthalmic solution	0.5% / 1-2 mL
ALS	2	Verapamil	5 mg
	2	Normal saline (sterile)	1000 mL irrigation bottle
IL	1 quart	Drinking water (may be sterile water bottle)	

						preloaded syringes during drug shortage
ALS	BLS & ALS	4	Epinephrine 1mg/1mL VIAL			1 mg / 1 mL
ALS	ALS	40 mg	Etomidate (store w/ benzocaine)			40 mg / 20 mL
ALS	ALS	3 if able*	Fentanyl	*CONTROLLED SUBSTANCE LOCKED CONTAINER	YES NO	100 mcg / 2 mL (ampule pref, keep padded)
			OR (2 if able) Morphine 10 mg – if fentanyl unavailable			
ALS	BLS & ALS	1	Glucagon			1 mg powder / 1 mL diluent
ALS	BLS & ALS	3	Ipratropium bromide 0.02% (Atrovent)			0.5 mg in 2.5 mL NS
ALS	ALS	500 mg*	Ketamine	*CONTROLLED SUBSTANCE LOCKED CONTAINER	YES NO	500 mg/10 mL (50mg/mL concentration)
ALS	ALS	60 mg	Ketorolac tromethamine			30 mg/mL
ALS	ALS	2	Lidocaine 2%			100 mg / 5 mL preload
ALS	ALS	Need total of 4 Gm	Magnesium sulfate 50%			(1ea) 5 Gm / 10 mL OR (2ea) 1 Gm / 2 mL or (2 ea) 2 Gm in 50 mL NS IVPB
ALS	ALS*	2*	Midazolam	*CONTROLLED SUBSTANCE LOCKED CONTAINER	YES NO	10 mg / 2 mL
			OR (2) Diazepam 10 mg – if midazolam unavailable			

Cardiac Arrest Data

Cardiac Arrest Calls

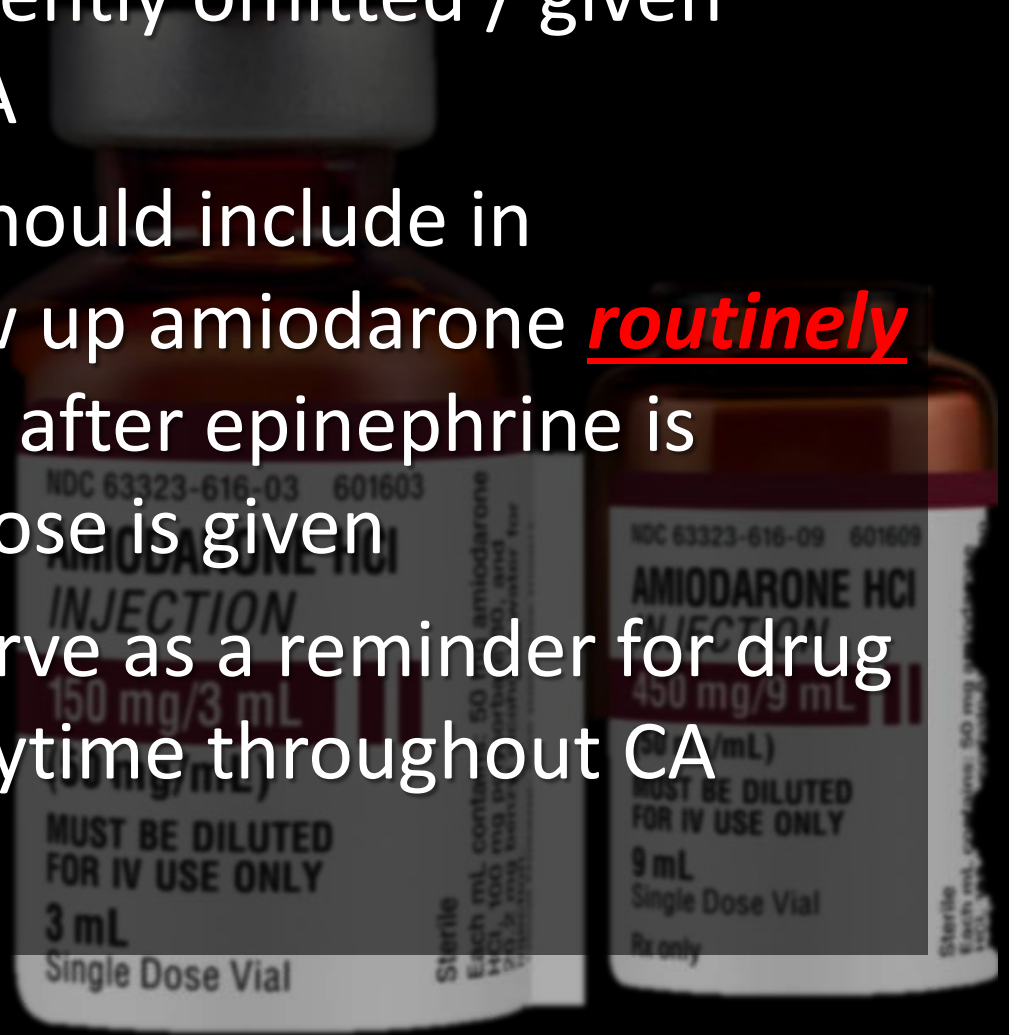
Yearly Comparison 2014 - 2017

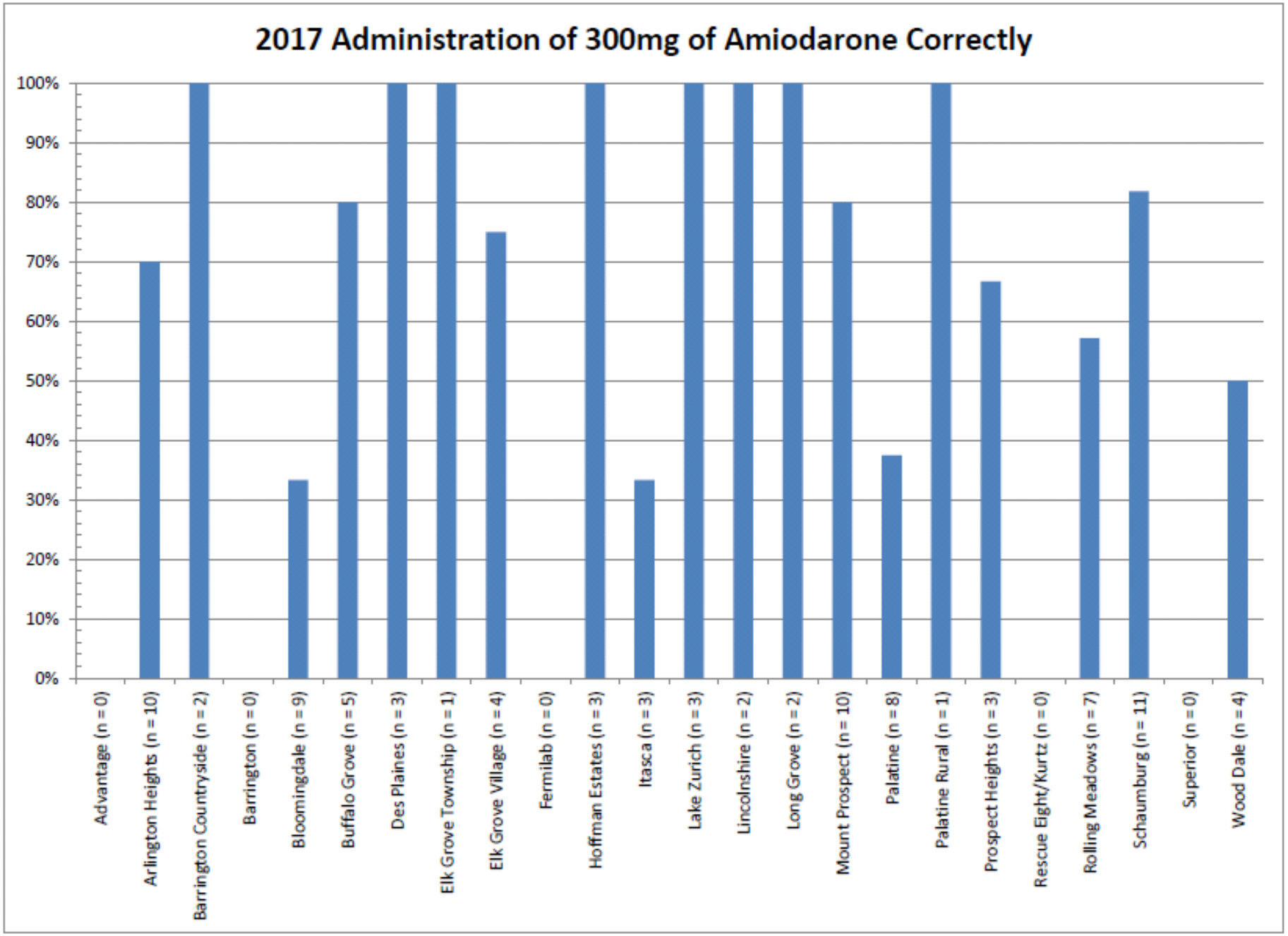
Objective	2017	2016	2015
CPR chest compressions initiated prior to other interventions, unless contraindicates per SOP	89%	93%	91%
BLS airway adjuncts used in conjunction with assisted ventilations prior to ALS airways	50%	56%	51%
Documented evidence of quality CPR documented throughout resuscitation	76%	67%	70%
As long as a shockable rhythm persisted, pulseless VT or V-fib patients were defibrillated every 2 minutes	87%	80%	86%
As long as patient remained pulseless, vasopressors were given every 3-5 minutes after IV was established	90%	90%	88%
Amiodarone 300 mg was administered to patients that remained in pulseless V-Tach & V-Fib after vasopressor administration	69%	85%	68%
Amiodarone 150 mg was administered 5min after first dose to pts remaining in pulseless V-Tach & V-Fib	66%	82%	73%
ROSC Obtained and Maintained to Hospital	37%		
Number of Incidents	447	403	445

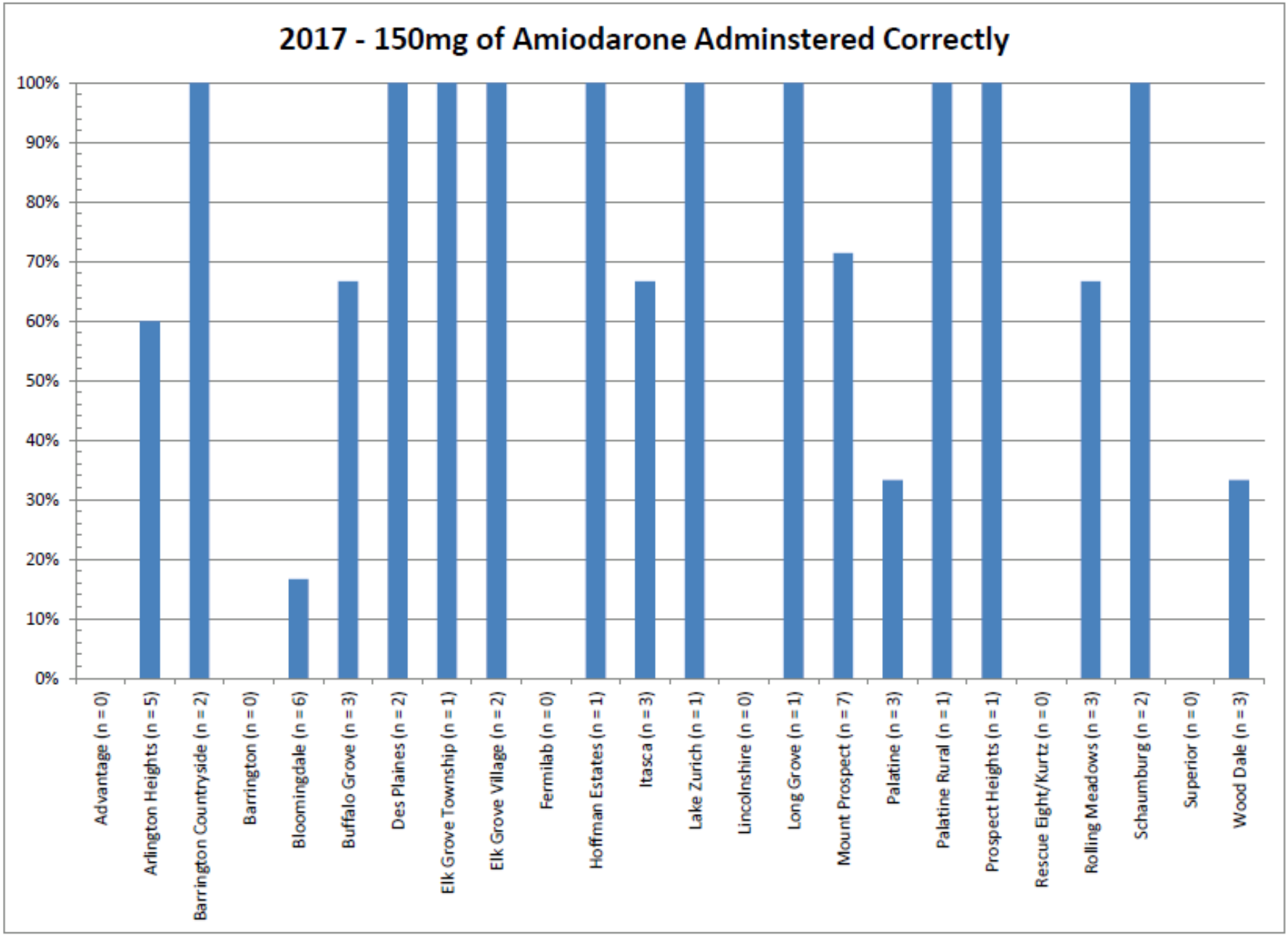
* 2014 results only include months Oct, Nov, Dec

Engineering Control for CA

- Amiodarone is frequently omitted / given incorrectly during CA
- The “drug person” should include in preparations to draw up amiodarone ***routinely*** for any patient in CA after epinephrine is drawn up and first dose is given
- This effort should serve as a reminder for drug administration at anytime throughout CA




2017 Administration of 300mg of Amiodarone Correctly
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Advantage (n = 0)
Arlington Heights (n = 10)
Barrington Countryside (n = 2)
Barrington (n = 0)
Bloomingdale (n = 9)
Buffalo Grove (n = 5)
Des Plaines (n = 3)
Elk Grove Township (n = 1)
Elk Grove Village (n = 4)
Fermilab (n = 0)
Hoffman Estates (n = 3)
Itasca (n = 3)
Lake Zurich (n = 3)
Lincolnshire (n = 2)
Long Grove (n = 2)
Mount Prospect (n = 10)
Palatine (n = 8)
Palatine Rural (n = 1)
Prospect Heights (n = 3)
Rescue Eight/Kurtz (n = 0)
Rolling Meadows (n = 7)
Schaumburg (n = 11)
Superior (n = 0)
Wood Dale (n = 4)


2017 - 150mg of Amiodarone Adminstered Correctly
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Advantage (n = 0)
Arlington Heights (n = 5)
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Barrington (n = 0)
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Buffalo Grove (n = 3)
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Palatine (n = 3)
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Schaumburg (n = 2)
Superior (n = 0)
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Questions?
VISTAFD.ORG

NWC EMSS Continuing Education
April 2018

ACS, 12 Leads, and Dysrhythmia Management

Please direction questions or comments to
J Dyer, RN, EMT-P, EMS System Educator

NORTHWEST COMMUNITY EMERGENCY MEDICAL SERVICES SYSTEM
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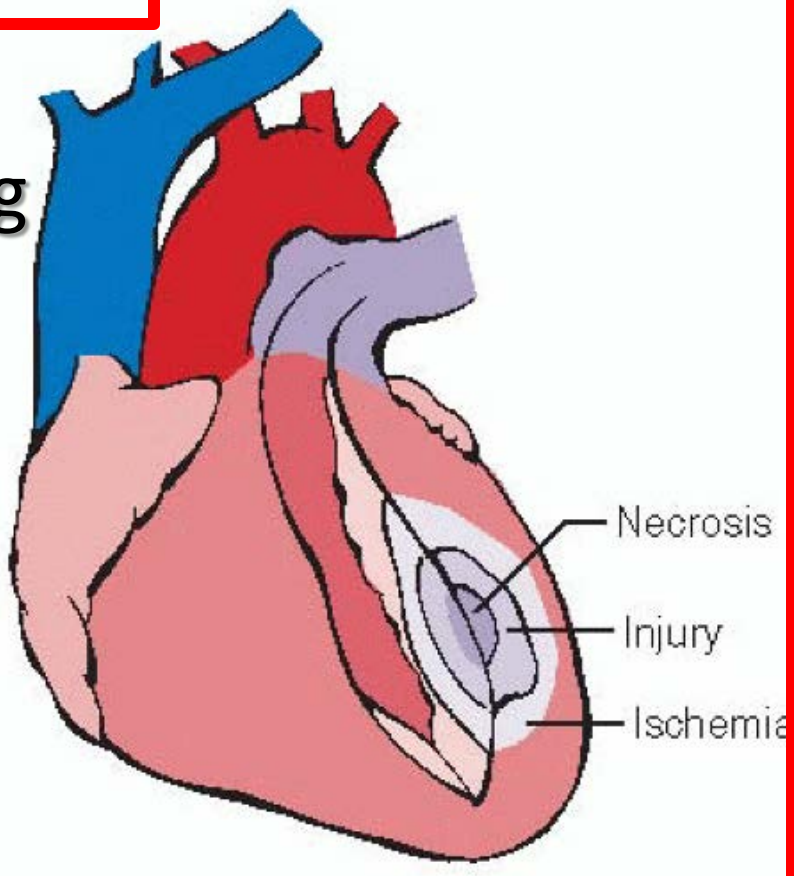
Objectives

- Formulate an accurate prehospital impression and sequence appropriate care based on thorough, accurate assessment of pts experiencing S&S of ACS
- Describe and adopt actions for acquisition of high quality 12 Lead ECGs
- Demonstrate accurate interpretation of ECG rhythm and 12 Leads w/o aid of CIP
- Explain indications for V4R 12 Lead and adopt into practice
- Defend rationale for acquisition of serial 12 Lead ECGs and adopt into practice when indicated

ACS includes

- unstable angina
- non-Q wave MI
- Q wave MI

Common denominator: varying degree of reduction in blood flow and oxygen supply to myocardium, resulting in a range of reversible to non-reversible damage to functional myocardial tissue.



Prehospital Goals for ACS

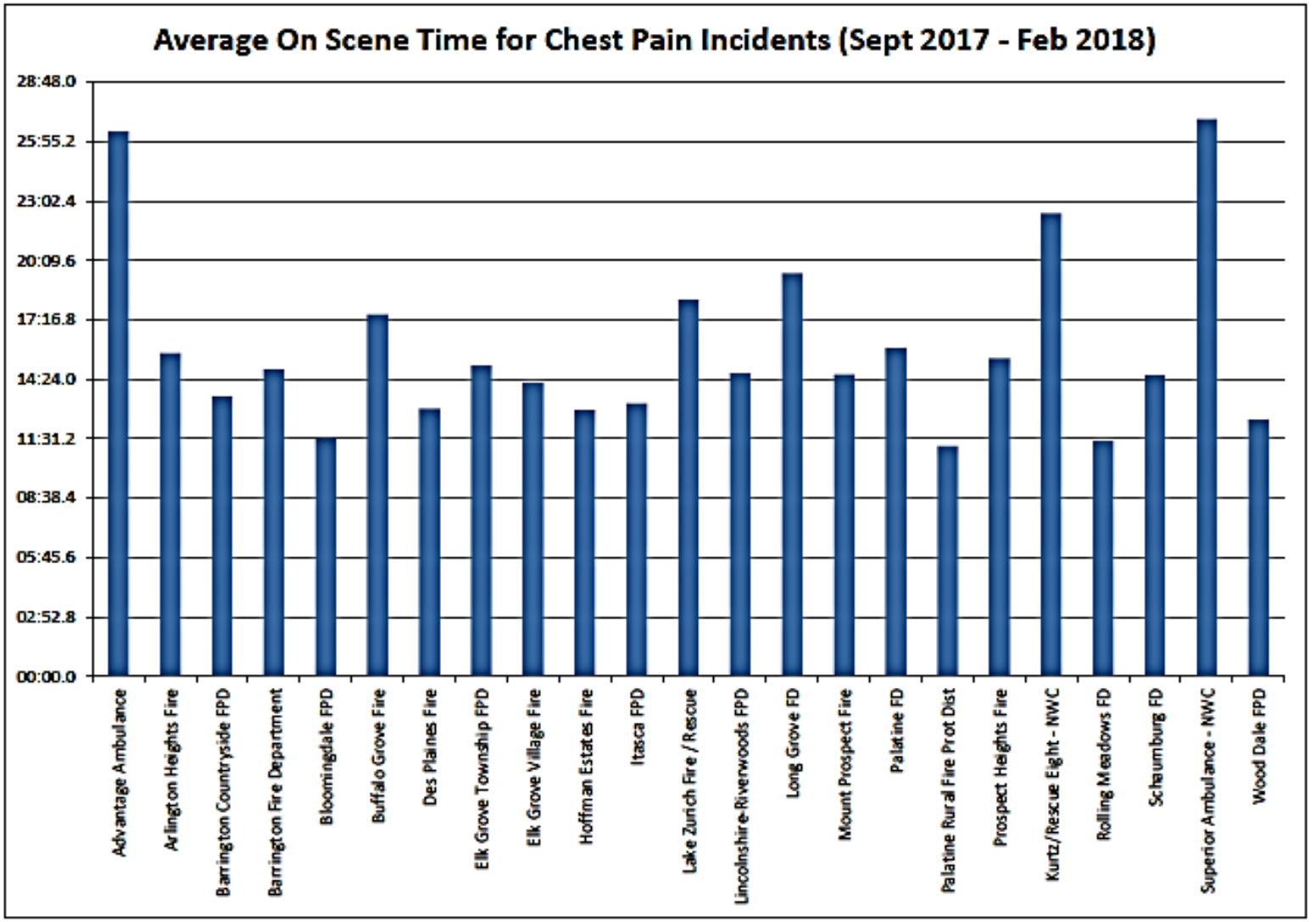
Adequate oxygenation & ventilation

Detect & treat dysrhythmias

Support cardiac output

Limit infarction size

Relieve pain and anxiety


Average On Scene Time for Chest Pain Incidents (Sept 2017 - Feb 2018)
28:48.0
25:55.2
23:02.4
20:09.6
17:16.8
14:24.0
11:31.2
08:38.4
05:45.6
02:52.8
00:00.0
Advantage Ambulance
Arlington Heights Fire
Barrington Countryside FPD
Barrington Fire Department
Bloomingdale FPD
Buffalo Grove Fire
Des Plaines Fire
Elk Grove Township FPD
Elk Grove Village Fire
Hoffman Estates Fire
Itasca FPD
Lake Zurich Fire / Rescue
Lincolnshire-Riverwoods FPD
Long Grove FD
Mount Prospect Fire
Palatine FD
Palatine Rural Fire Prot Dist
Prospect Heights Fire
Kurtz/Rescue Eight - NWC
Rolling Meadows FD
Schaumburg FD
Superior Ambulance - NWC
Wood Dale FPD

ACS SOP

- ASA 324 mg to ***all suspected ACS, regardless of pain***
- No ASA for chest pain following acute trauma; OLMC if unsure
- 12 Lead ECG w/ 1st set VS
- **2nd 12 L in 10 min if no acute changes on first and S&S persist or change**
- **NTG – cardioresp compromise + discomfort**

NTG Contraindications

SBP < 90/60

Viagara, Levitra w/in 24 hrs

Cialis w/in 48 hrs

Inferior MI w/ STE in V4R *

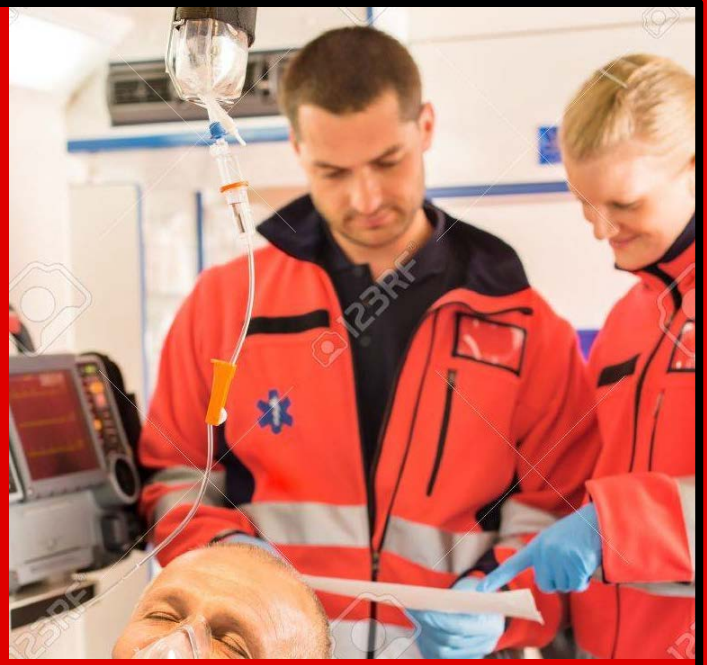
Inferior: start IV, monitor SBP closely

* HR < 50 or > 100 *

Emerging evidence tells us that risk for ↓BP is greater in those patients who are tachycardic prior to administration of NTG

Serial 12 Leads

Studies demonstrate that ECG findings may evolve in patients with initially non-dx 12 Leads.



<u>Study: 325 STEMI patients</u>

- STEMI confirmed on 1st prehosp 12 Lead in only 84.6% (275 pts)
- All confirmed w/in 25 minutes on 2nd or 3rd 12 Lead

What the Experts Say: Prehospital 12 Lead

American Heart Association®

- Prehospital 12 L should be acquired early for suspected ACS
- Trained non-physicians may perform ECG interpretation
- Computer assisted ECG interpretation may be used in conjunction with interpretation by a physician or trained provider
- Prehospital ECG acquisition coupled with pre-notification of STEMI consistently reduces the time to in –hospital reperfusion.

Prehospital 12 Leads: This Is Why

Study: Prehospital ECGs may show clinically significant abnormalities that are not always captured on the initial ED ECG. Prehospital ECG's have the potential to change the management of pts in the ED.

Davis: Prehosp Emerg Care , Vol 18, 2014.

Prehospital 12 Leads: Why You Must Be Able To Read It

- Accuracy of computer interp not sufficient to be sole source of STEMI identification
- Partnership in ACS care implies expectation of competent EMS 12 Lead interpretation
- Prehospital notification of STEMI &/or cath lab activation driven by high level of confidence in accurate interpretation

Computer-Interpreted ECGs

- Variability among manufacturers' algorithms
- Frequent over-interpretation of A fib
- Tendency to double-count rate due to large T waves
- High degree inaccuracy w/ paced rhythms
- Wide variation in false pos/neg dx STEMI

S J Wellens.
J Am Coll Cardio. 2017;70:1183-1192
Computer Interpreted ECG: Benefits and Limitations.

Why Your 12 Lead Must Be Top-Notch

Treatment decisions will be based on your 12 Lead!

A diagnosis based on an inaccurate ECG could lead to inappropriate, unnecessary, and perhaps harmful treatment.

Computer attempts to interpret poor-quality tracings – DO NOT ACCEPT!

Acquiring a High Quality 12 Lead

Skin prep

Remove excess hair

Fresh pads

Dry the skin

Store electrodes unopened

Press electrode edges

Acquiring a High Quality 12 Lead

Proper lead placement

Limb leads on *limbs*

Choose flat, fleshy parts

Avoid bony area & major muscles

Supine if possible

Support limbs

Artifact

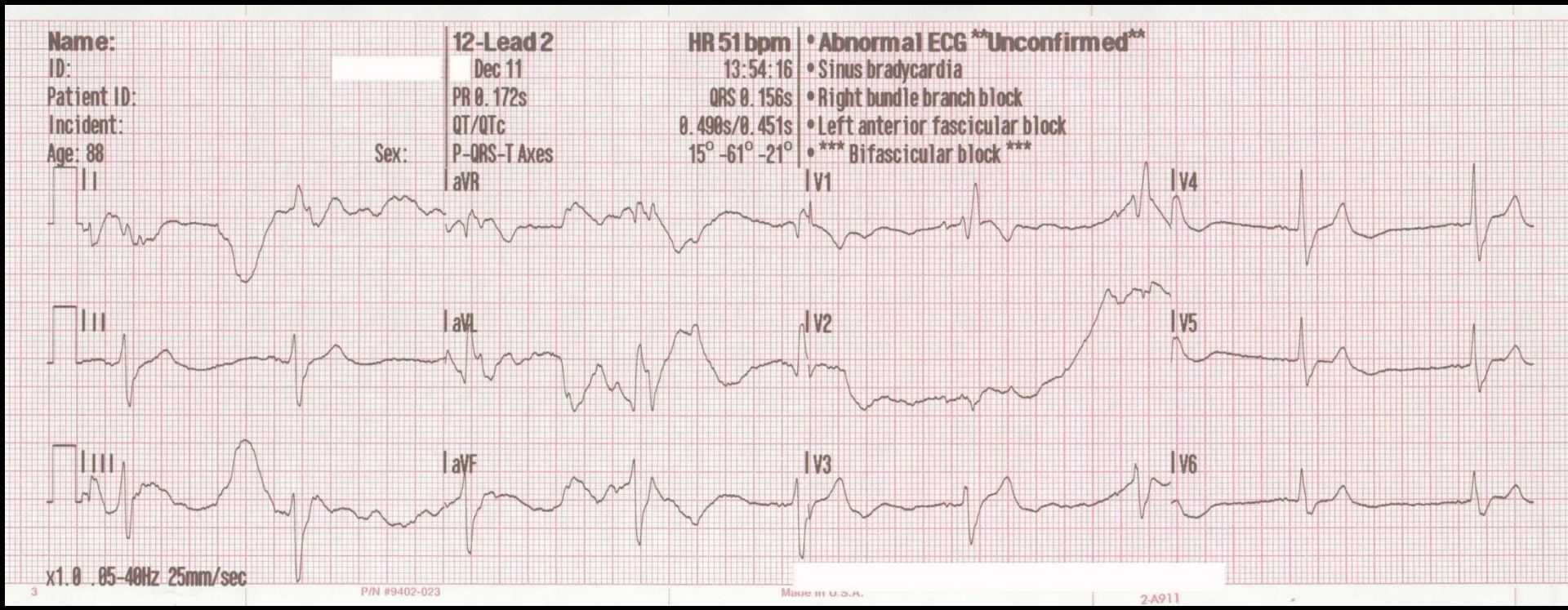
Top cause: poor skin prep

Change the lead

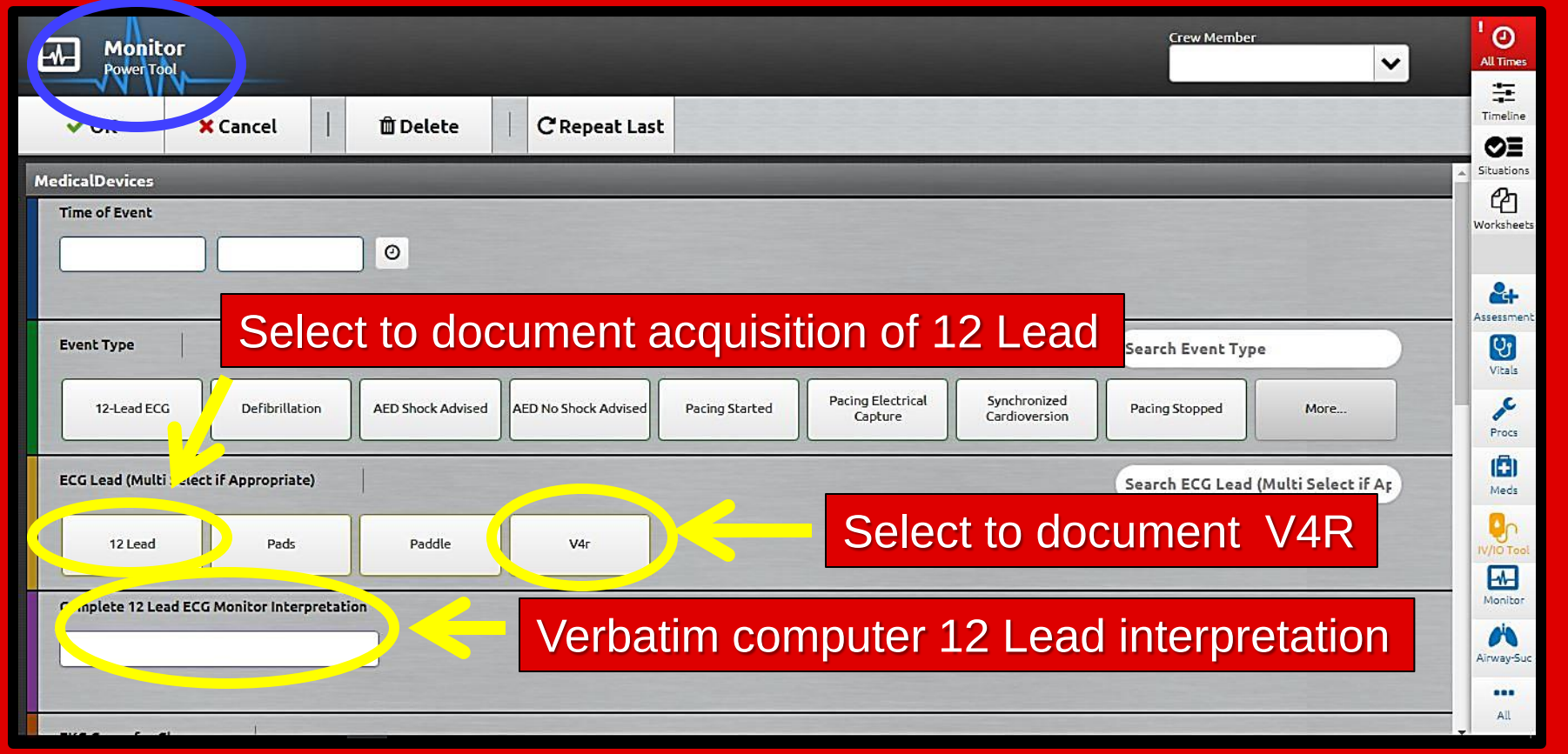
Avoid other equipment

Warm the patient

Position comfortably

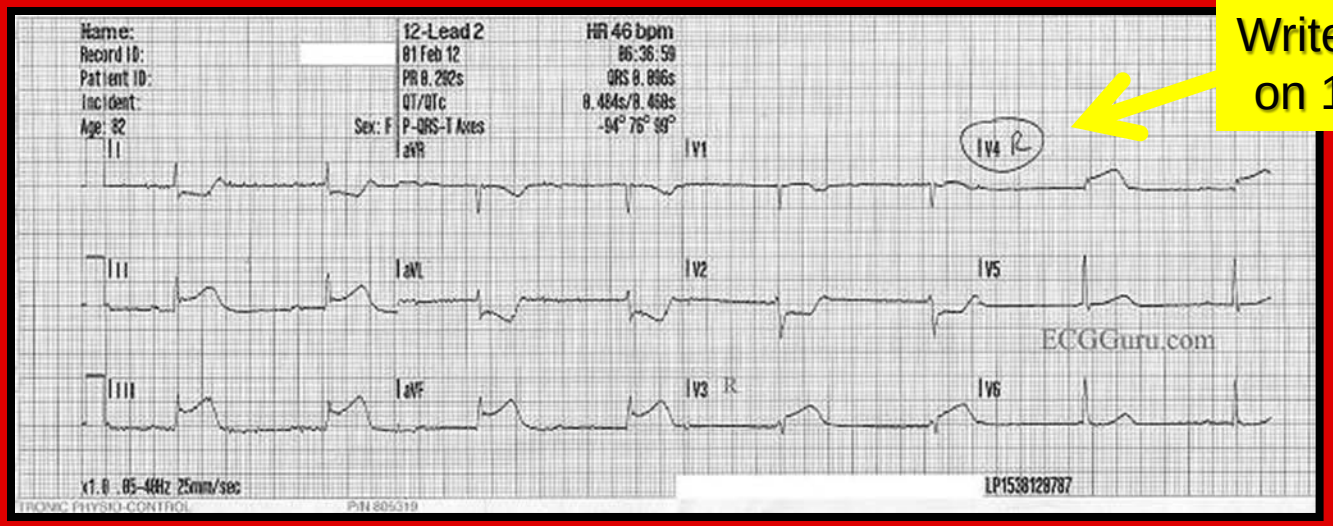


Documenting the 12 Lead



Select both "12 Lead" *and* "V4R" to document 12 Lead done with V4R lead

V4R 12 Lead



Write '"V4R" on 12 Lead

V4 lead moved to Rt side of chest, 5th ICS, midclavicular line

V4R 12 Lead Indications

IWMI with

ST elevation in V1

ST elevation in Lead III > in Lead II

Other considerations:

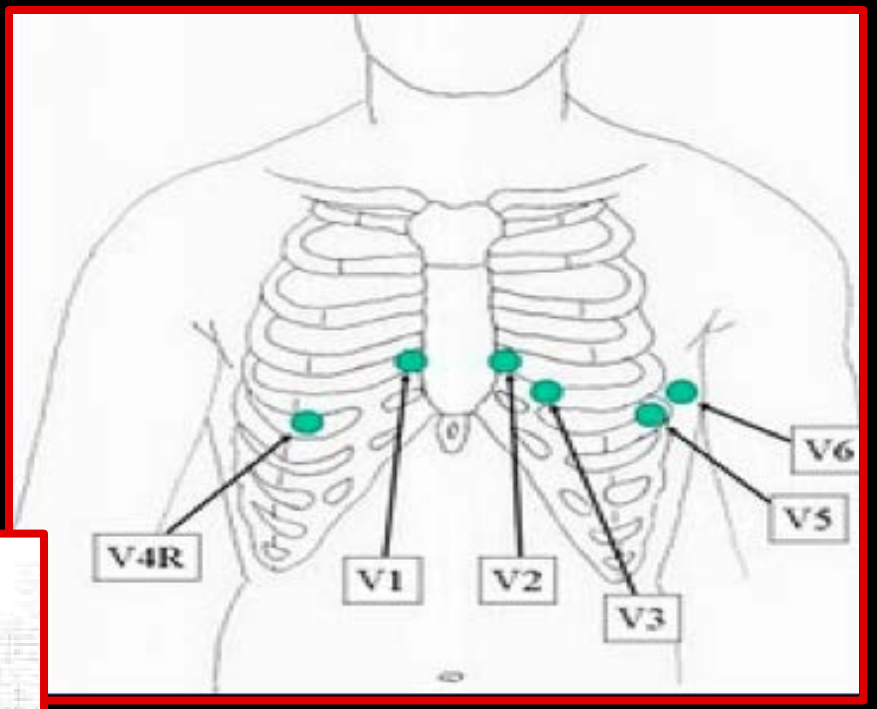
STE V1 > V2

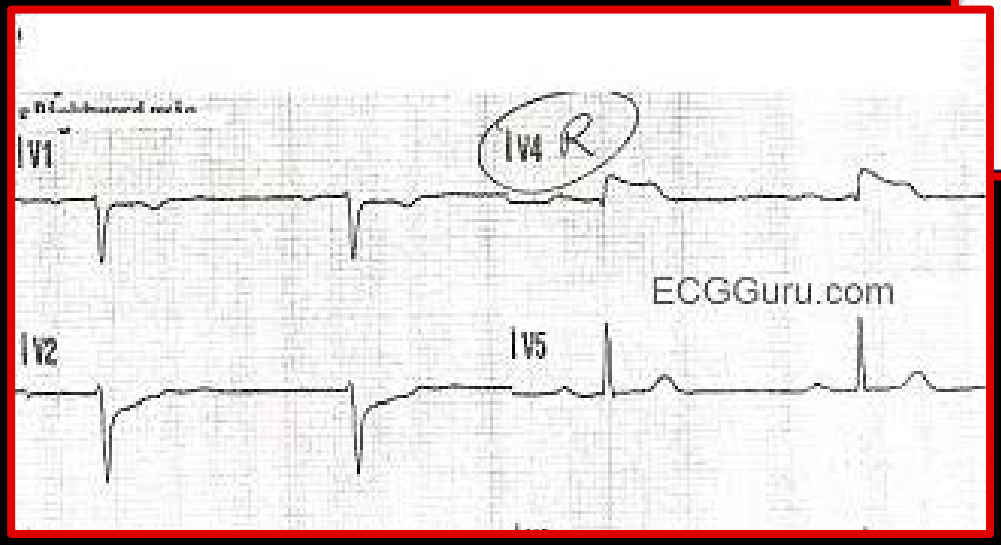
STE V1 + STD V2

Marked STD in V2

V4R and Rt Ventricle MI

Write V4R on 12 L





If no STE, OLMC may order NTG

V4R 12 Lead: PBPI Stats

N = 62 Primary Impr: STEMI – Inf wall

27 included multiple 12 Leads

44%

Three **reported acquiring a V4R 12 Lead!**

Thanks for a job well done -

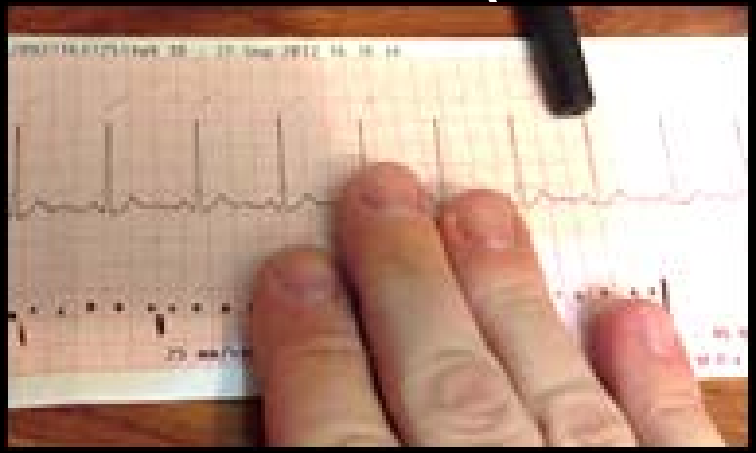
Buffalo Grove FD

Mt Prospect FD

Schaumburg FD

The 12 Lead: Looking for Acute Changes

ST segments: is there elevation or depression ≥1mm (1 small box)?



All leads: is there ST elevation or depression in two or more anatomically contiguous leads?

Ischemia: 3 Indicators

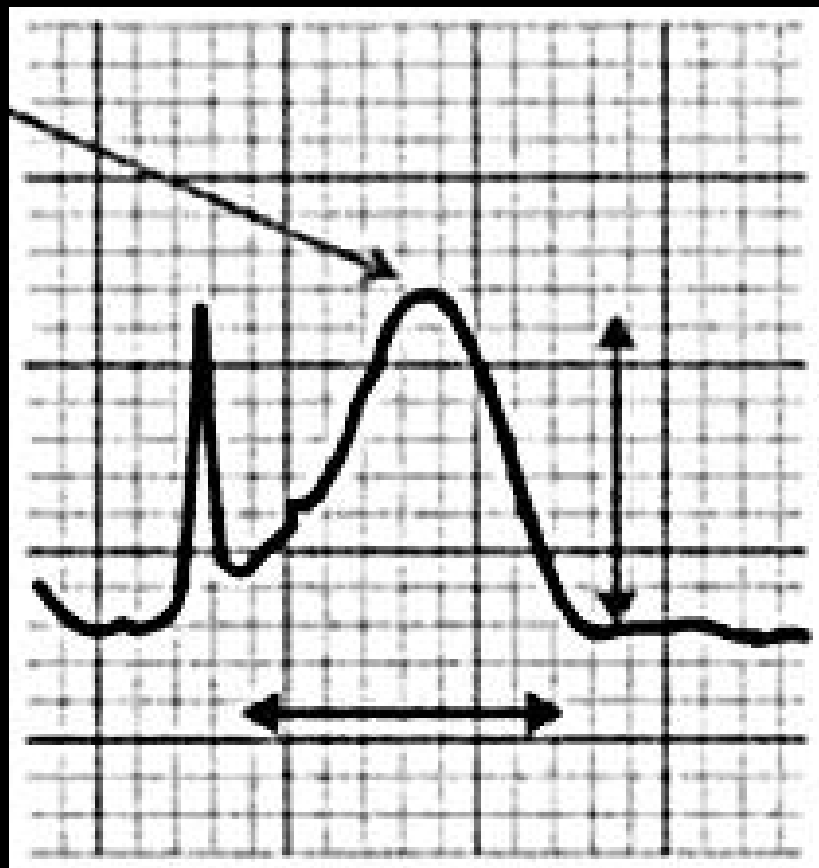
Hyperacute T wave –

seen <u>shortly after onset</u> of ischemia!

Inverted/flipped T wave

ST depression

Hyperacute T Waves

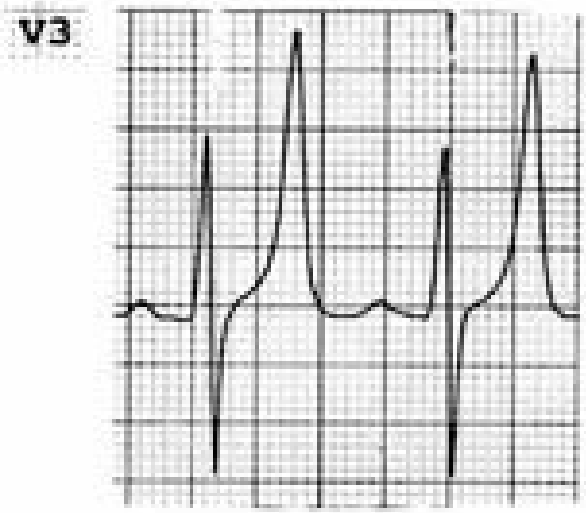


Hyperacute – The height of the T wave exceeds ½ the overall height of the QRS

Broad base – The base of the T wave elongates during ischemia

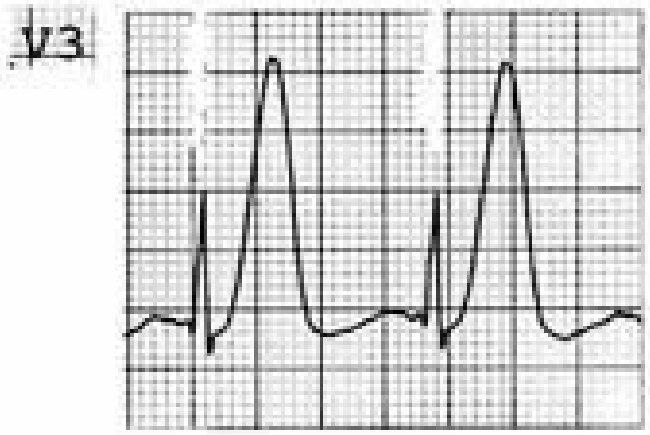
Hyperacute T Waves

Hyperkalemia



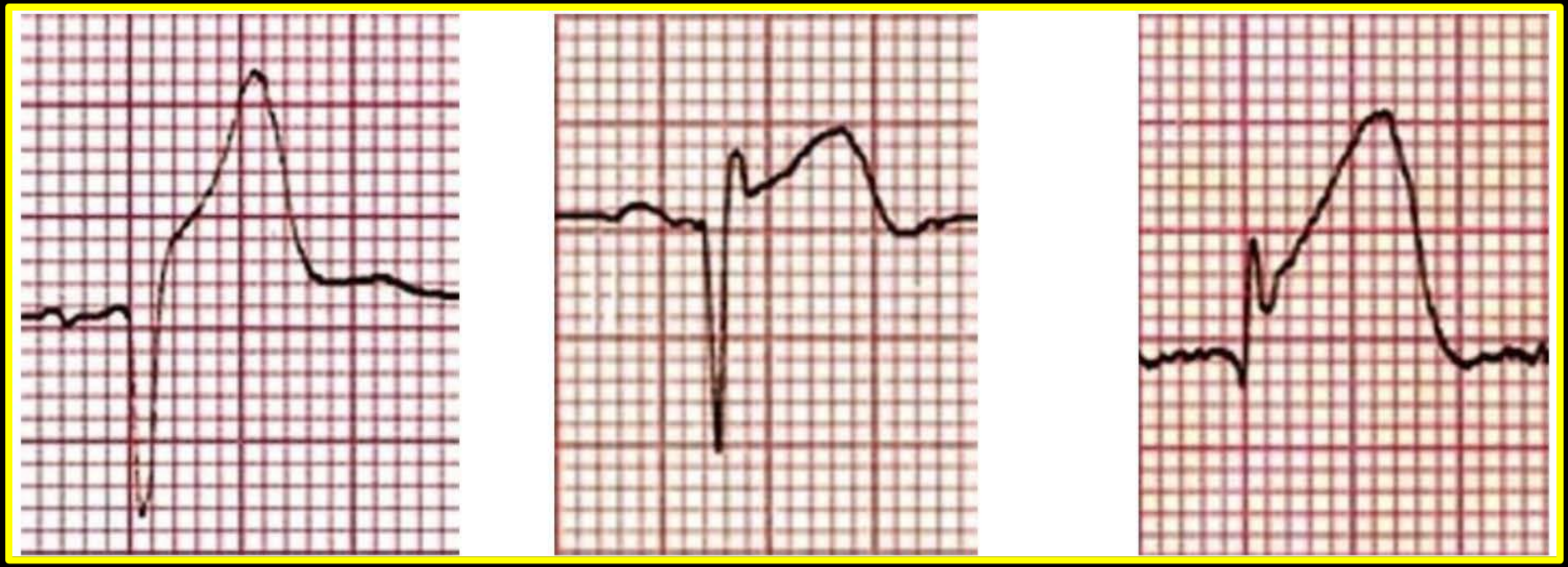
Symmetric, narrow-based, pointed, tenting

Hyperacute Ischemia



Symmetric, broad-based, not tented, not pointed

ECG Changes: Injury



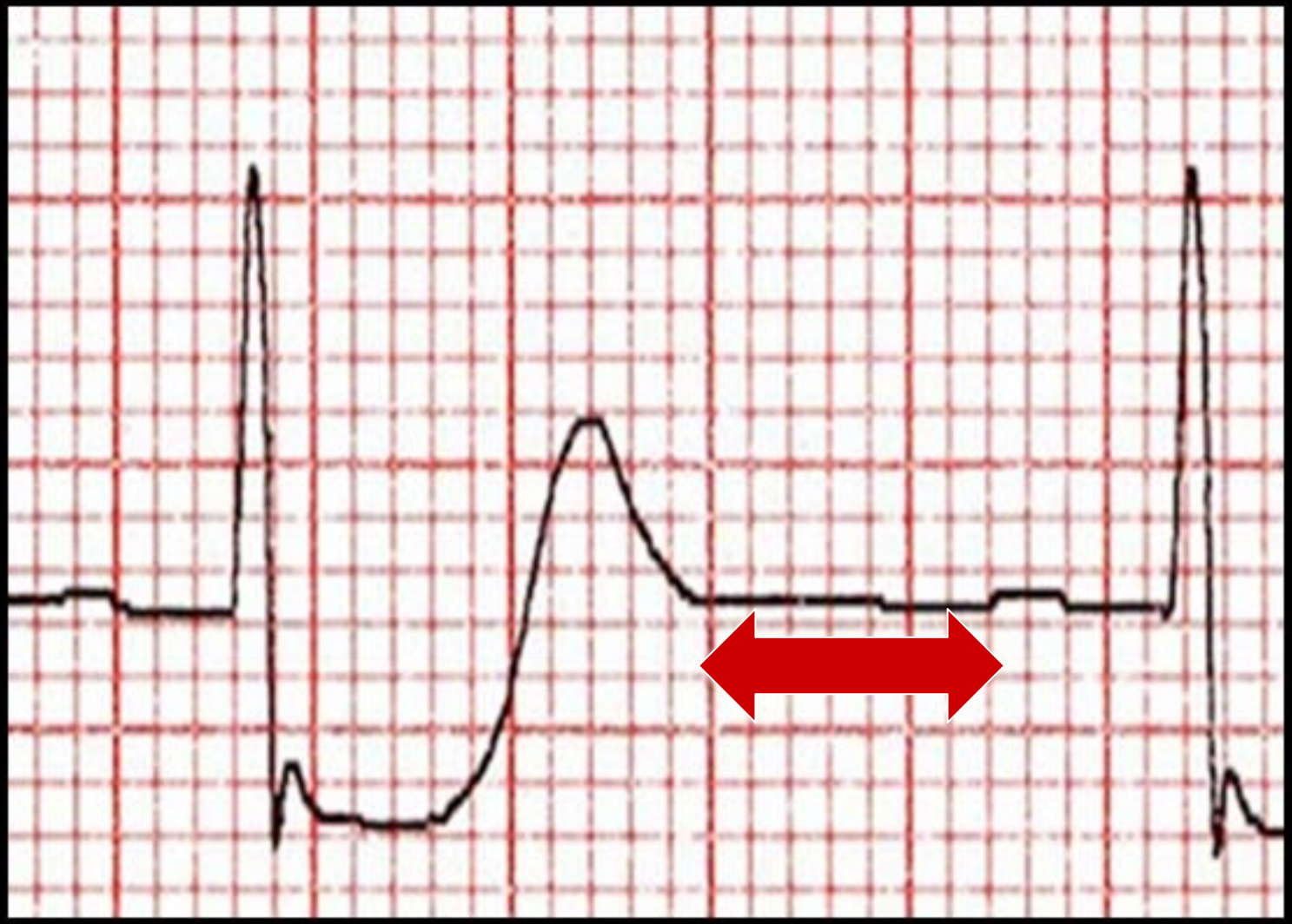
ST elevation

ECG Changes: Infarct

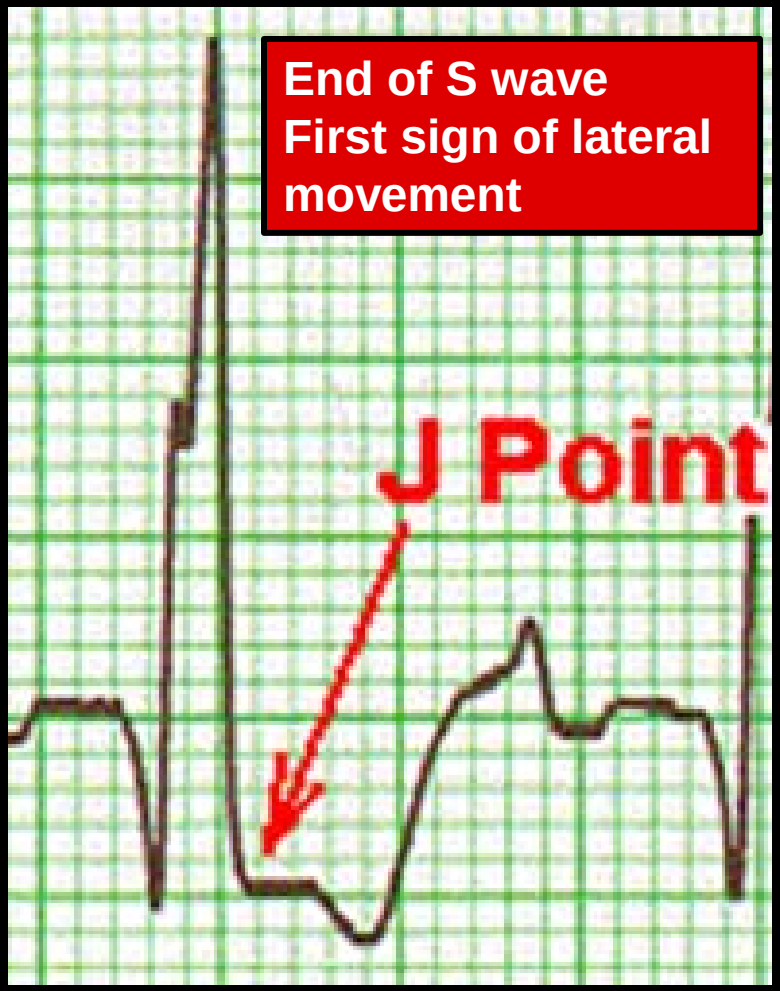
STE if acute / ongoing

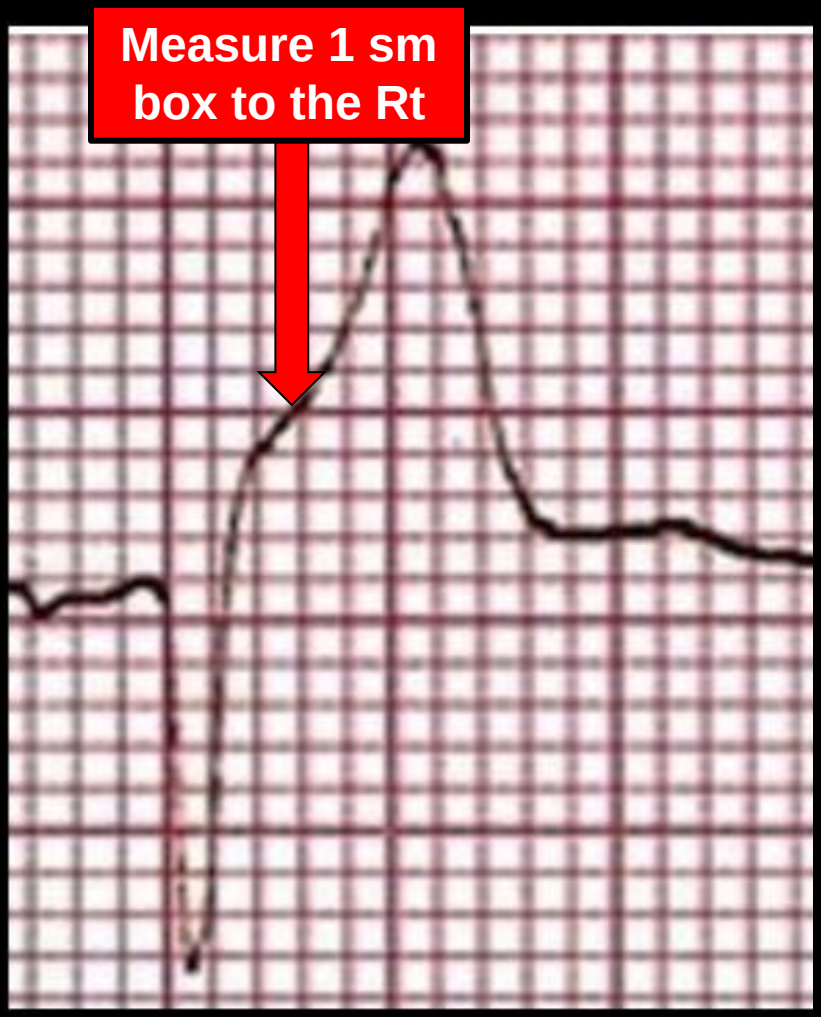
Q waves if “old” / complete

T-P Segment

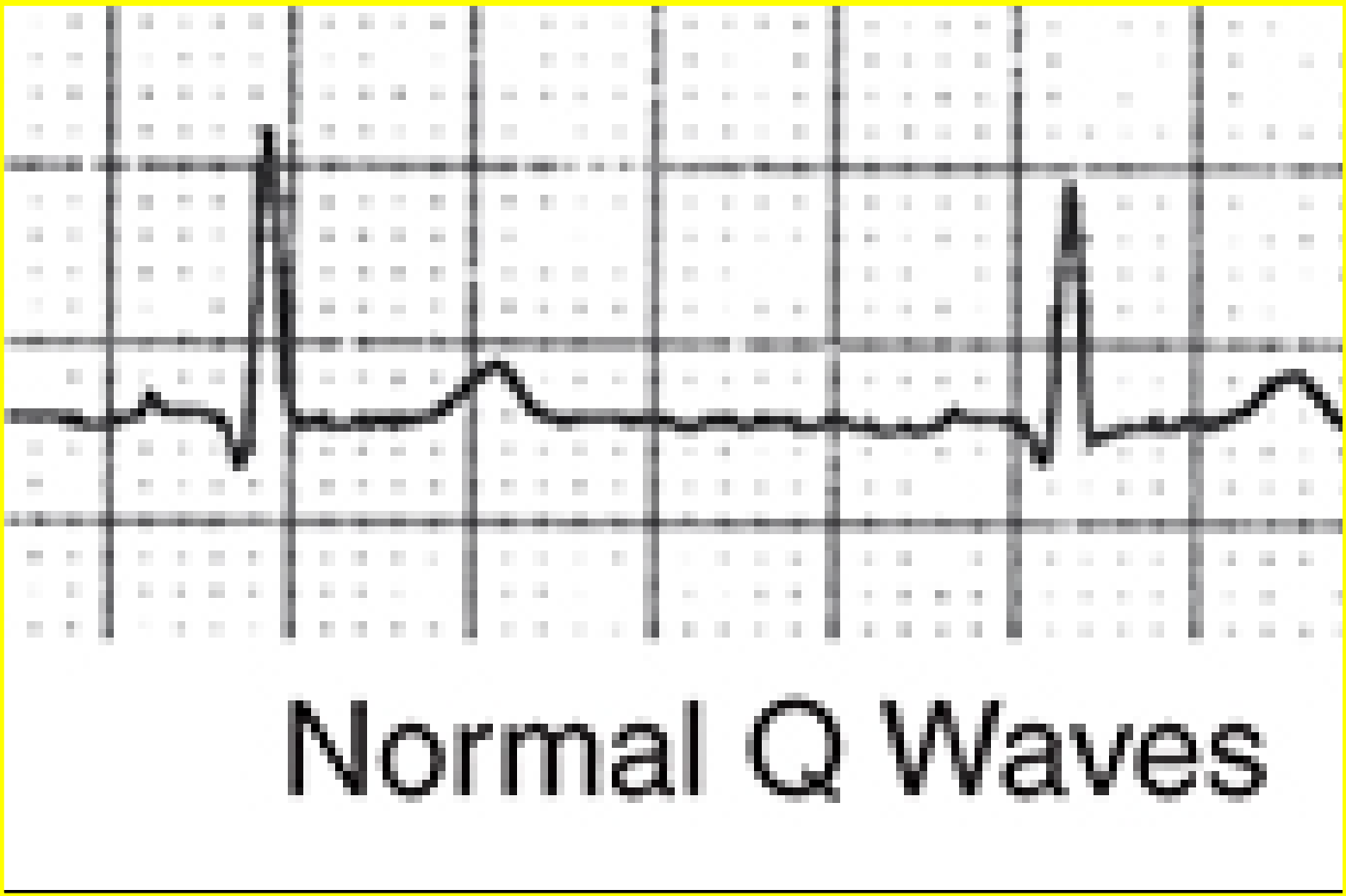


J Point

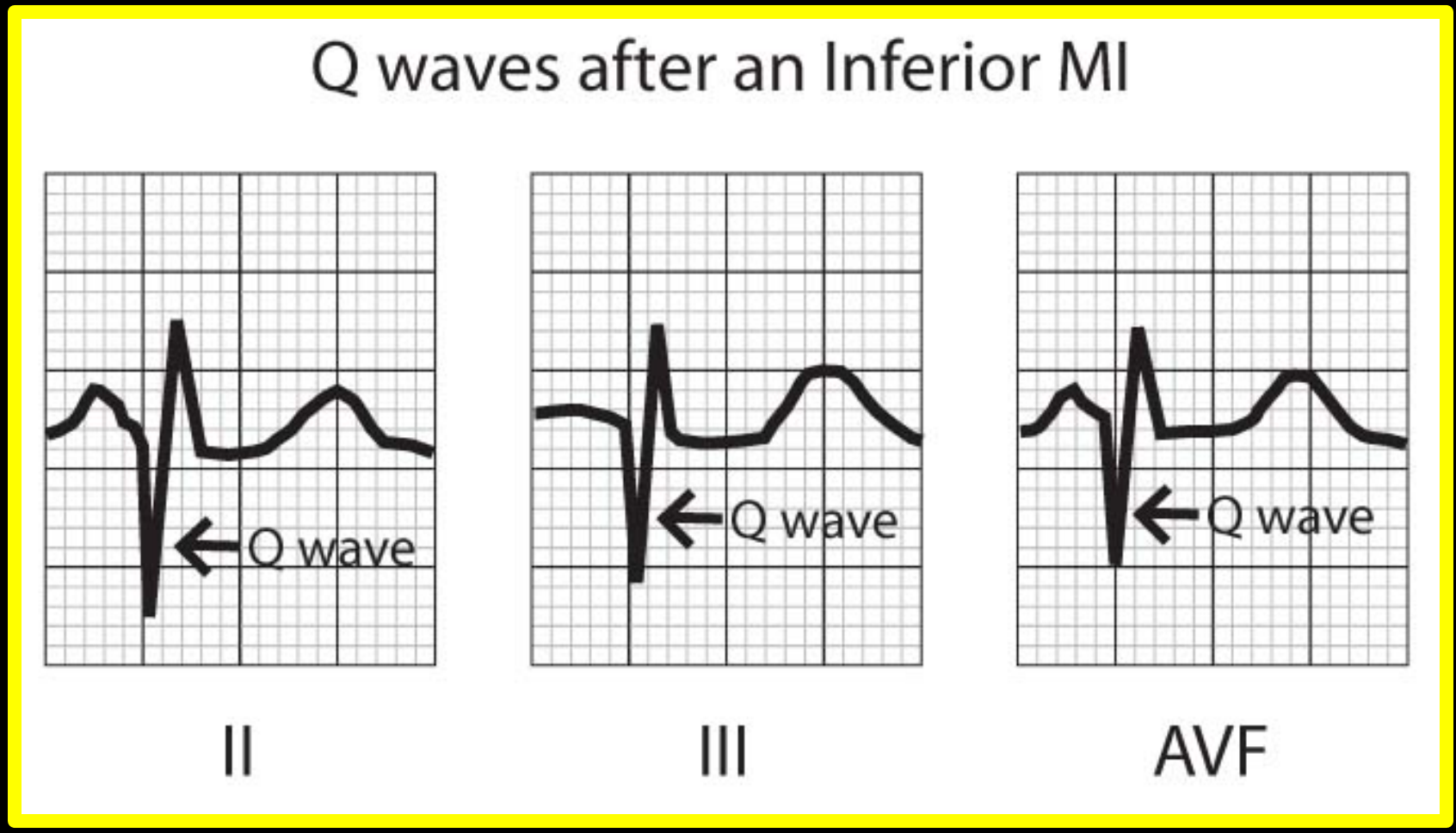

End of S wave
First sign of lateral movement
J Point


Measure 1 sm box to the Rt

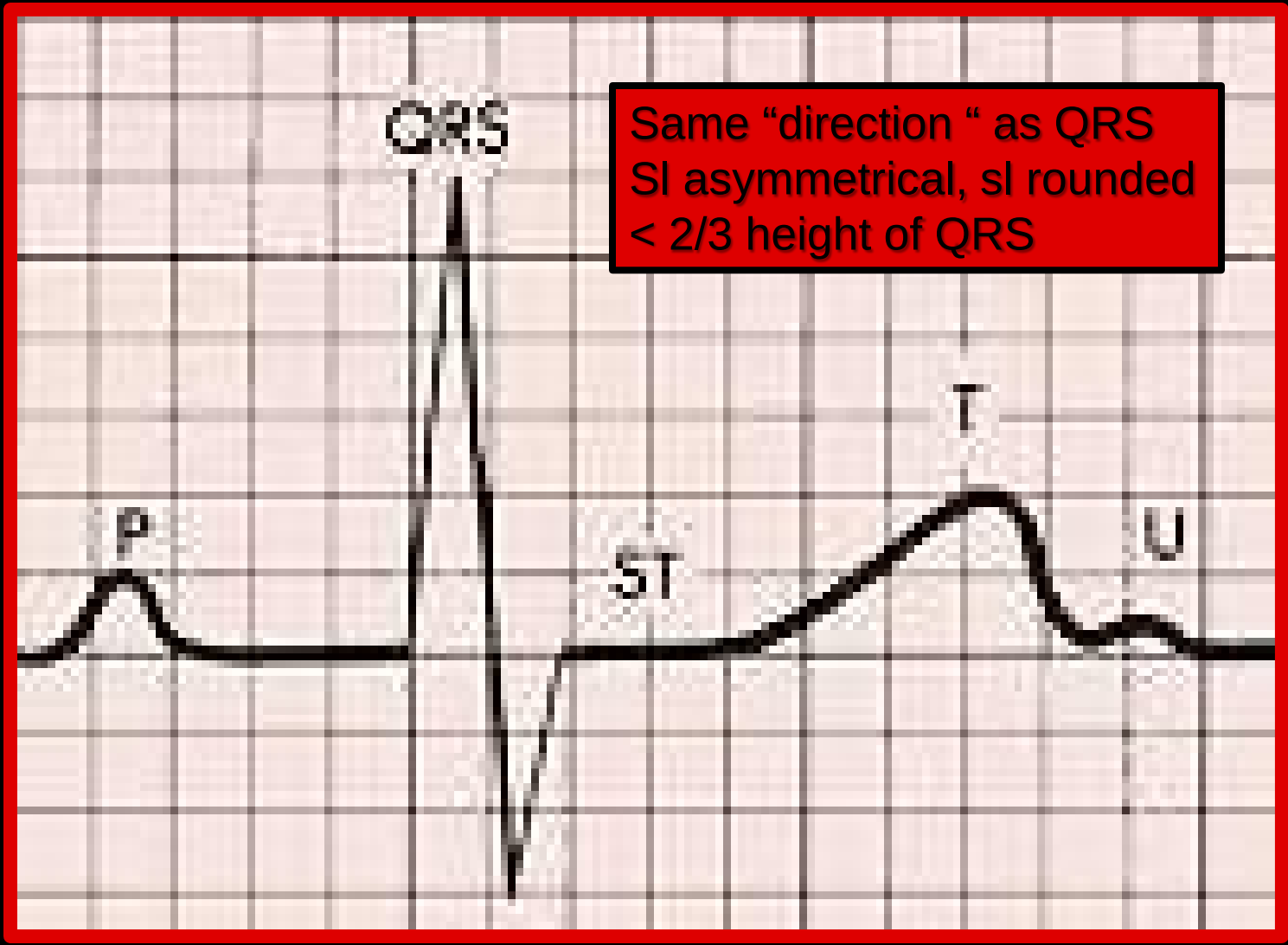
Physiologic Q Waves



Pathologic Q Waves



T wave

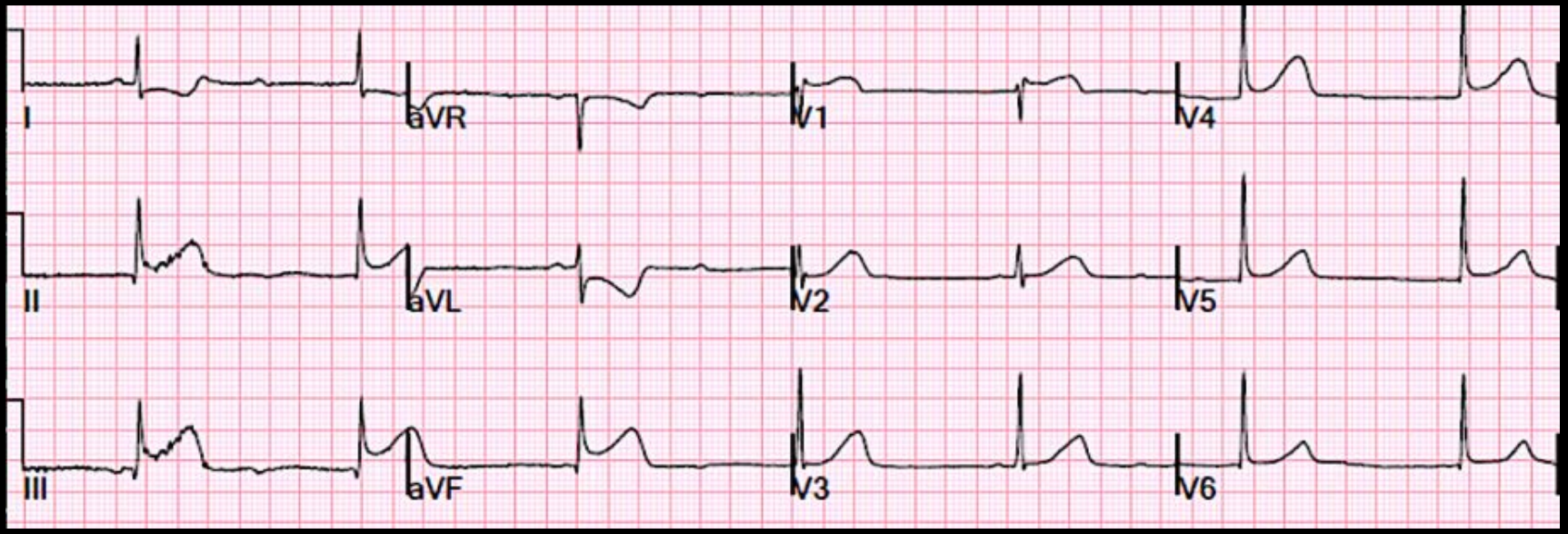


Same “direction “ as QRS
Sl asymmetrical, sl rounded
< 2/3 height of QRS

Reciprocal Changes

Location of Infarct	Arterial Supply	Indicative Changes	Reciprocal Changes
Anterior	LAD	**V1-V4**	II, III, aVF
Inferior	RCA	**II, III, aVF**	I, aVL
Lateral	Circumflex	I, aVL, V5, V6	V1
Posterior	Posterior Descending (RCA)	None	V1, V2
Septal	Septal Perforating (LAD) Posterior Descending (RCA	Loss of R wave in V1, V2, or V3	None

Inferior Wall MI (IWMI)



Leads: II, III, aVF

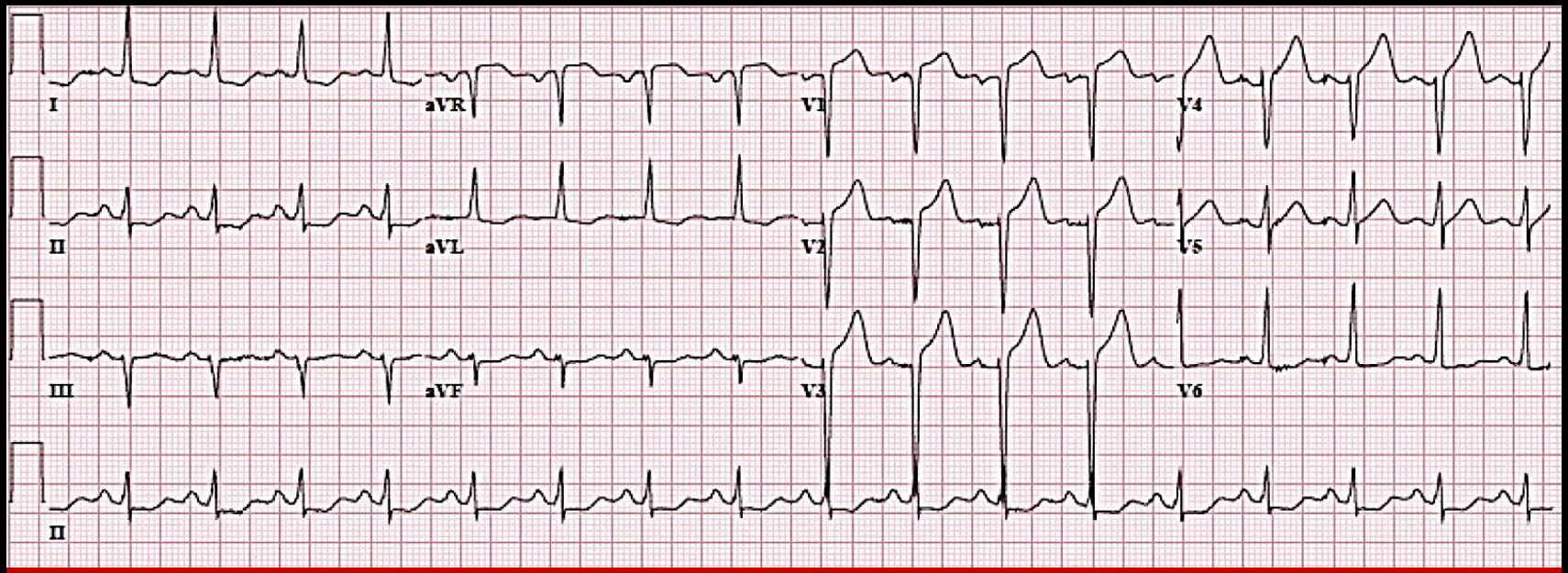
Reciprocal leads: I, aVL

S&S: GI, vasovagal

Often w/ RV

Dysrhythmias: Bradycardia , 1° AVB, 2° M1

Anterior Wall MI (AWMI)



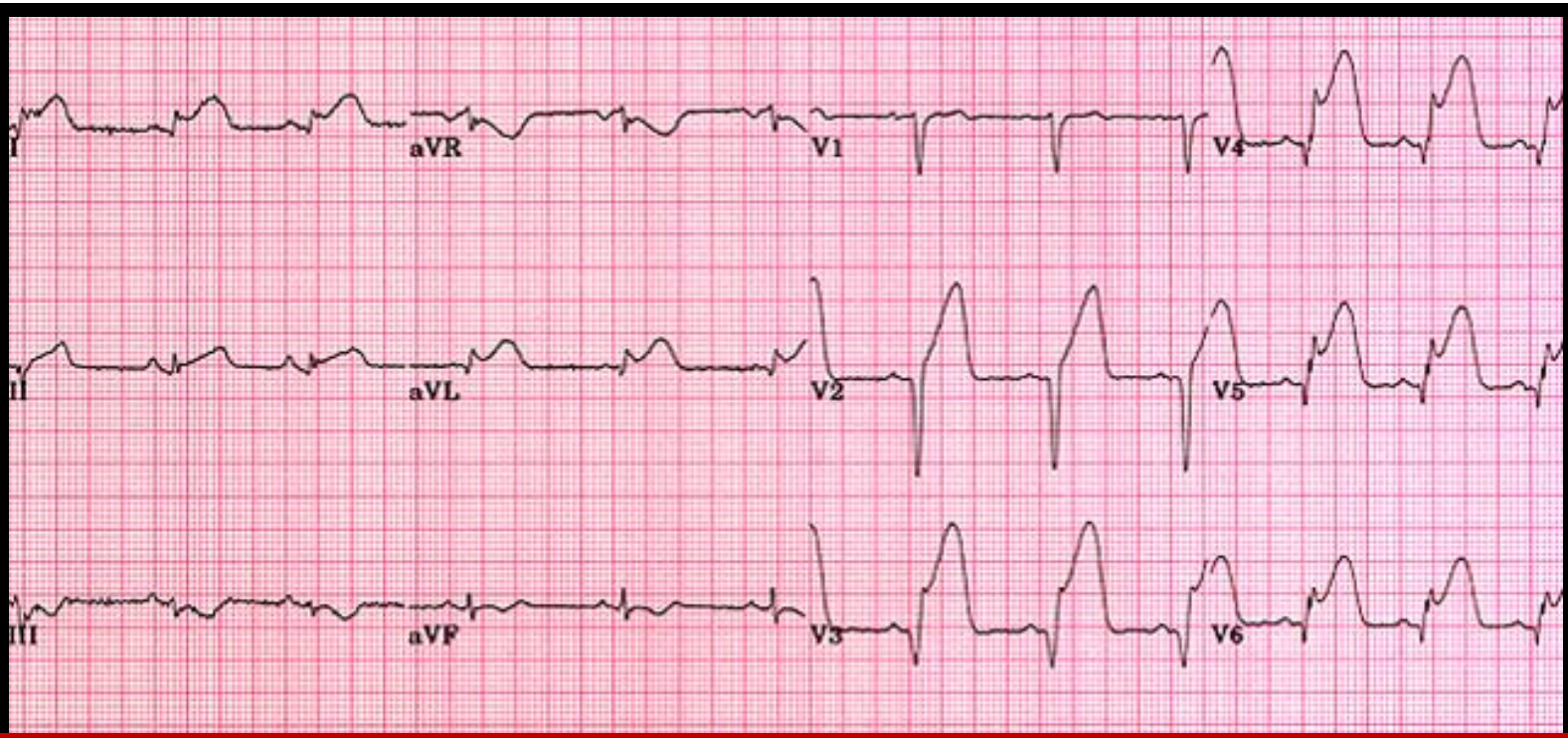
Leads: V3 and V4

Reciprocal leads: posterior, II-III-aVF

Usually involves lateral, septal

Complications: HF, tachycardias, 2° II, 3° AVB, BBB

Lateral Wall MI (LWMI)



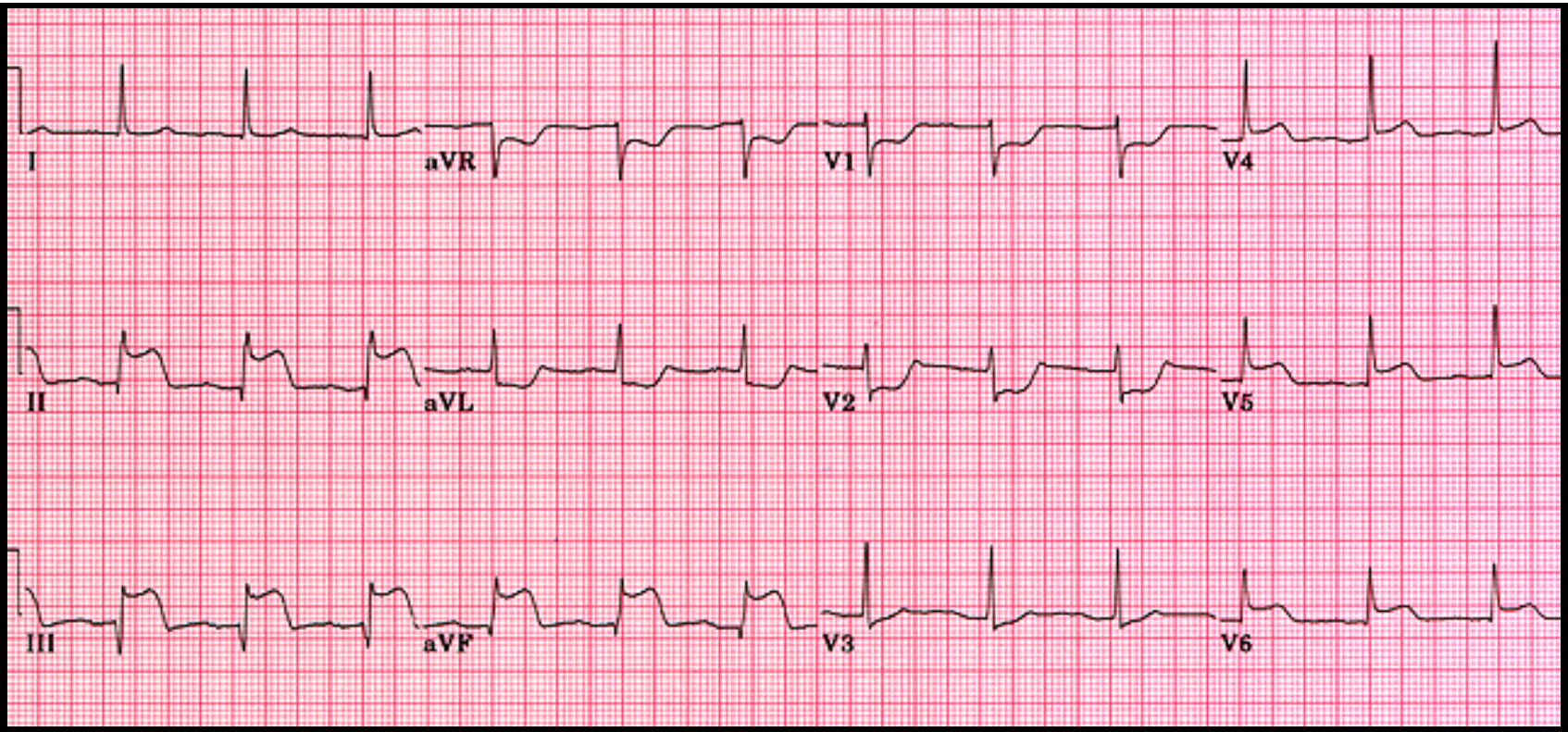
Leads: I, aVL, V5 and V6

Usually occurs w/ ant and inf wall MI

Complications: Conduction dysrhythmias

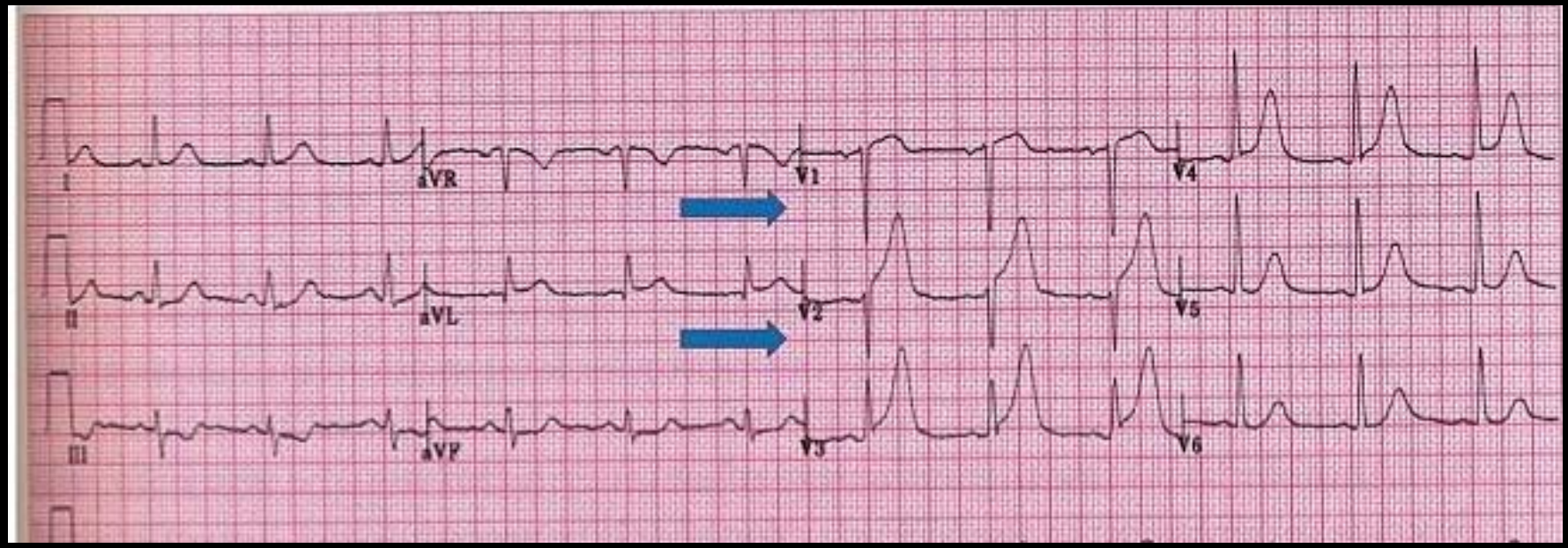
2° II, 3°, BBB

Posterior Wall MI (RVMI)



Leads: Look for reciprocal changes in
V 1-3: Tall R's w/ STD - early
Tall R wave may persist, STD resolves

Septal MI



Leads: V1 and V2
Usually with ant or lat MI
Complications: R & L BBB → conduction disturbances, 2° II, 3° AVB

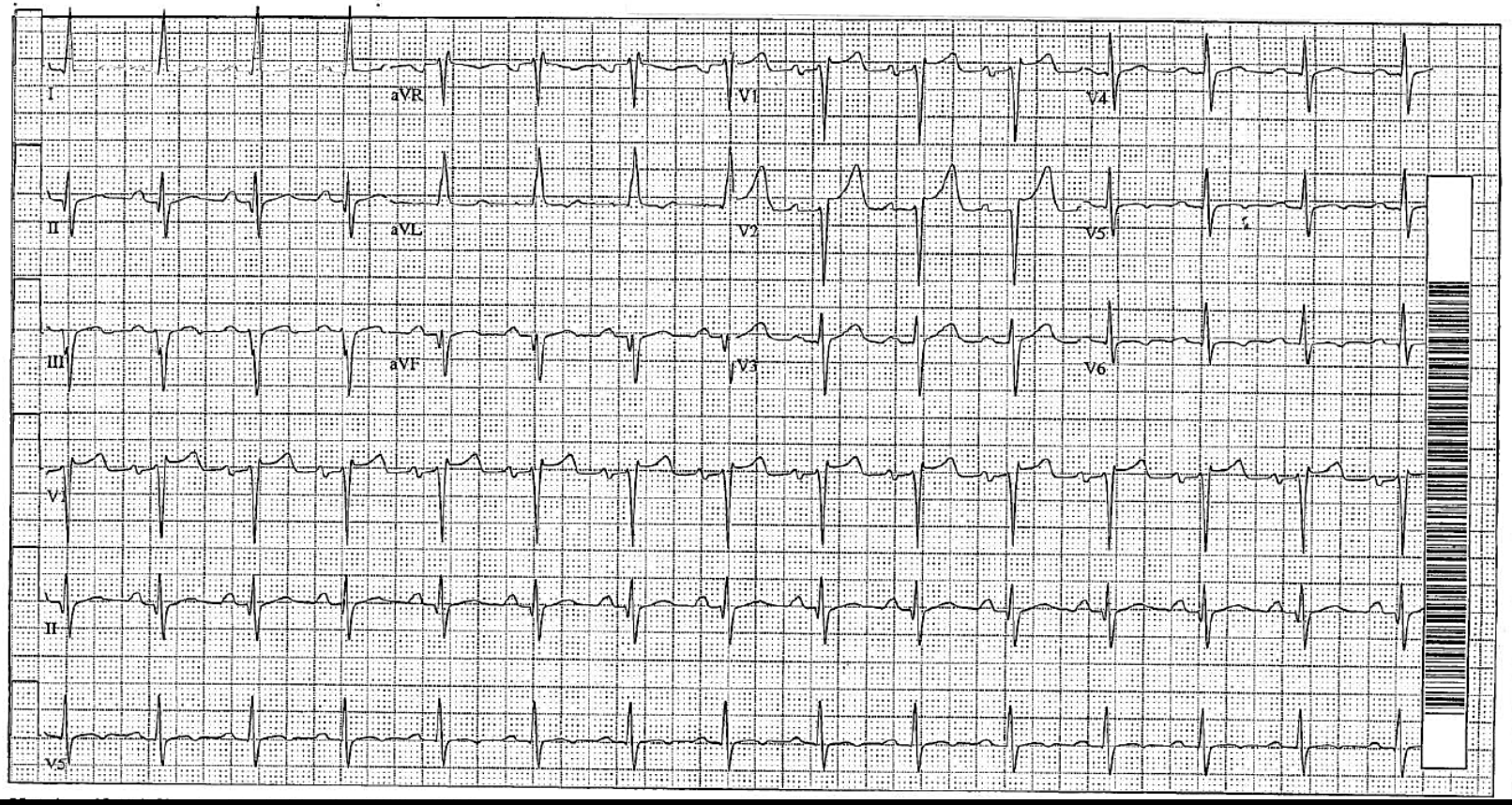
Let's Do Some...

[redacted] 46 yr)
Male Black

Room: [redacted]
Loc: [redacted]

Vent. rate	87	BPM
PR interval	188	ms
QRS duration	110	ms
QT/QTc	392/471	ms
P–R–T axes	58 –34	39

Technician: [redacted]
Test ind:



#1

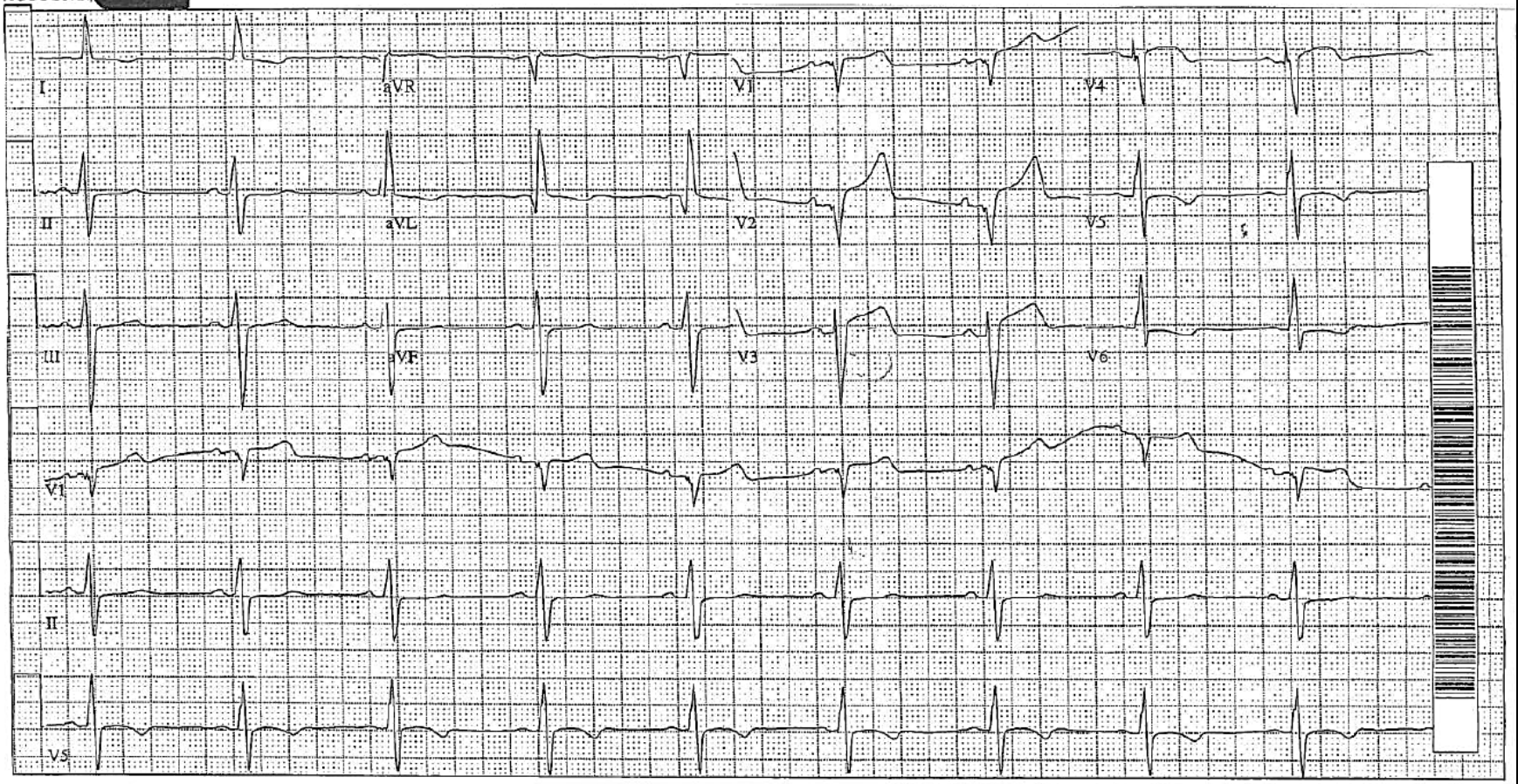
Female Caucasian

Room:
Loc:

PR interval	170	ms
QRS duration	118	ms
QT/QTc	488/466	ms
P–R–T axes	81 –39	189

Technician:
Test ind:

ACCOUNT#



#2

[redacted]

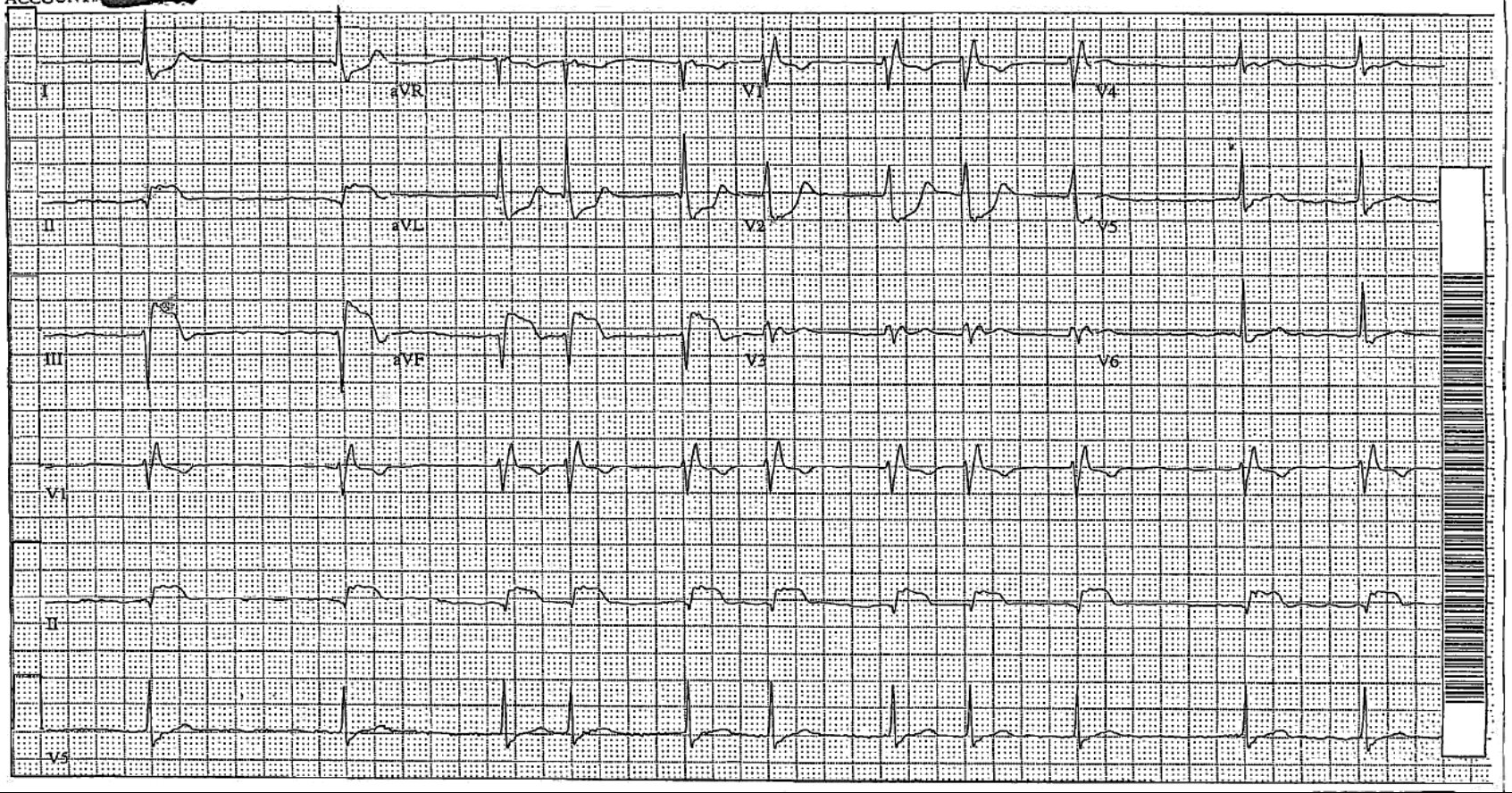
86 yr
Male Caucasian

Room:
Loc:12

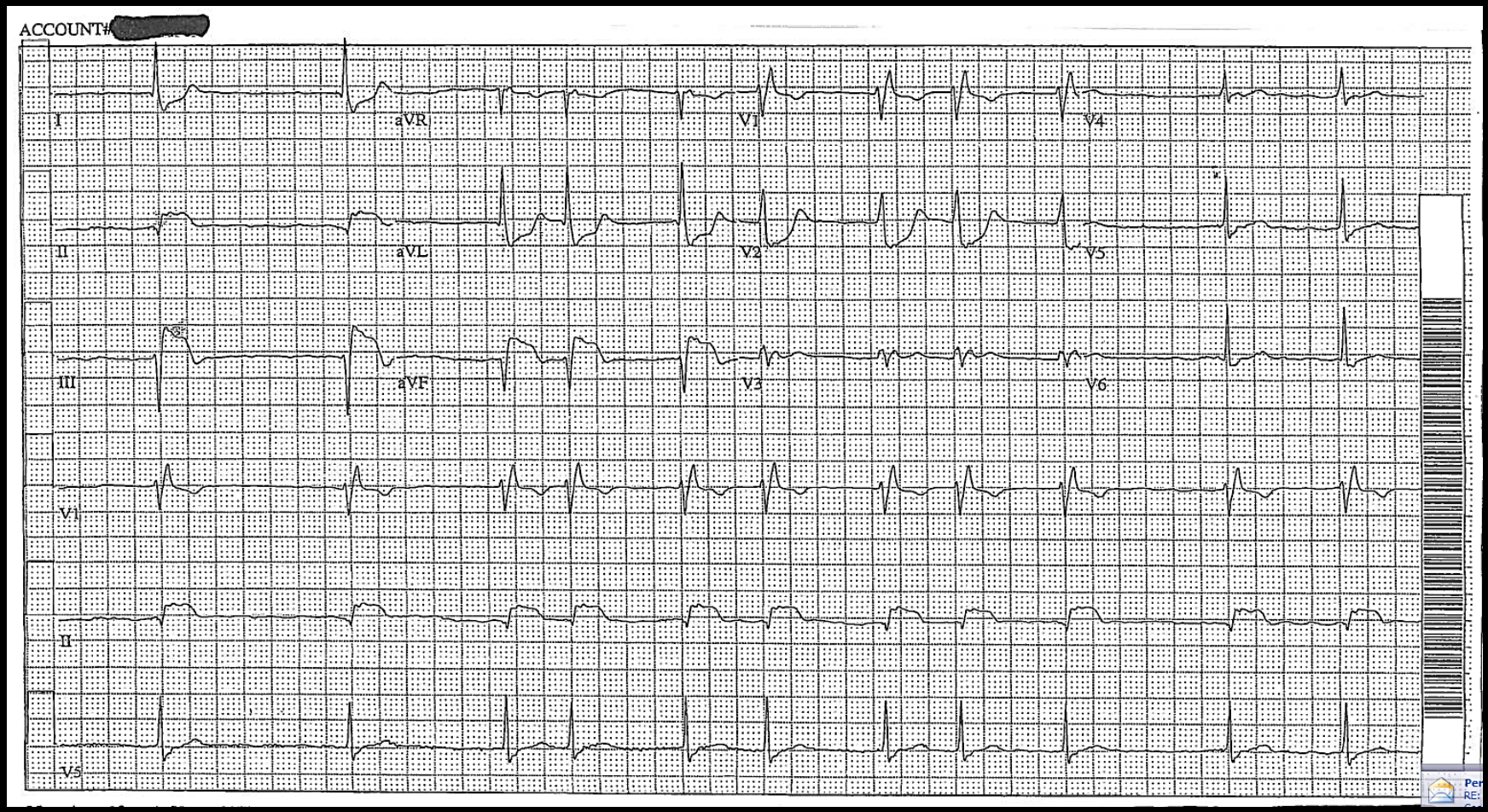
Vent. rate	69	BPM
PR interval	*	ms
QRS duration	118	ms
QT/QTc	394/422	ms
P–R–T axes	* –33	47

Technician: [redacted]
Test ind:

ACCOUNT# [redacted]



#3


ACCOUNT#
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
V1
II
V5

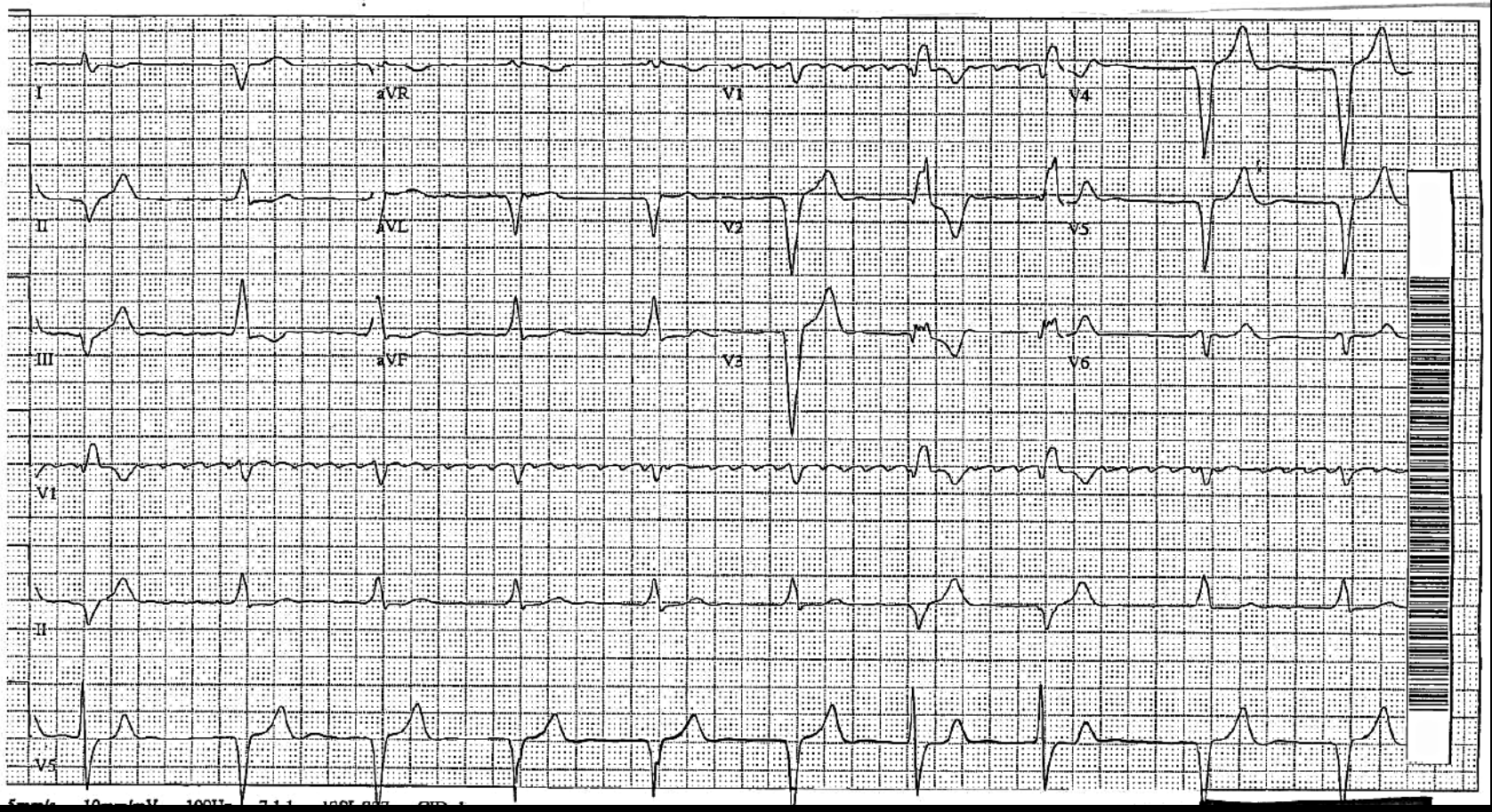
[redacted] (78 yr)
Male Caucasian

[redacted]
Loc:10

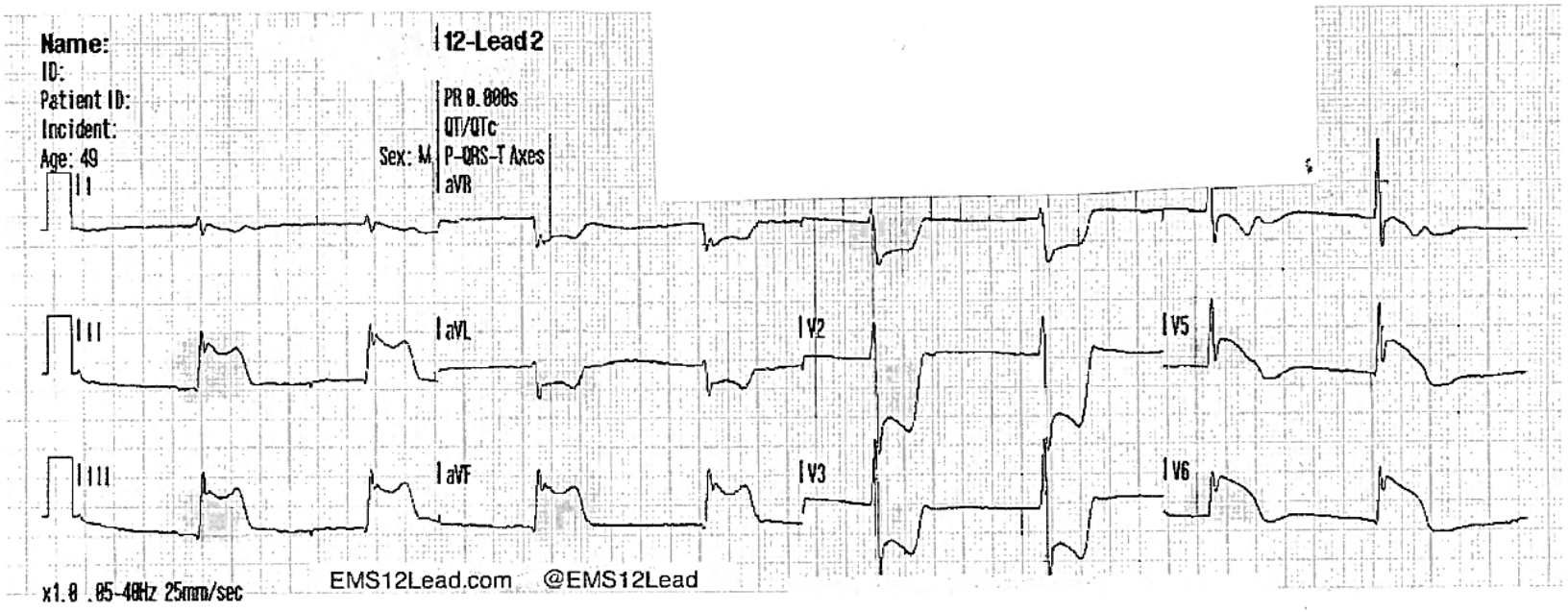
Vent. rate	59	BPM
PR interval	*	ms
QRS duration	152	ms
QT/QTc	454/449	ms
P-R-T axes	* 121	-1

Technician: [redacted]
Test ind:

#5

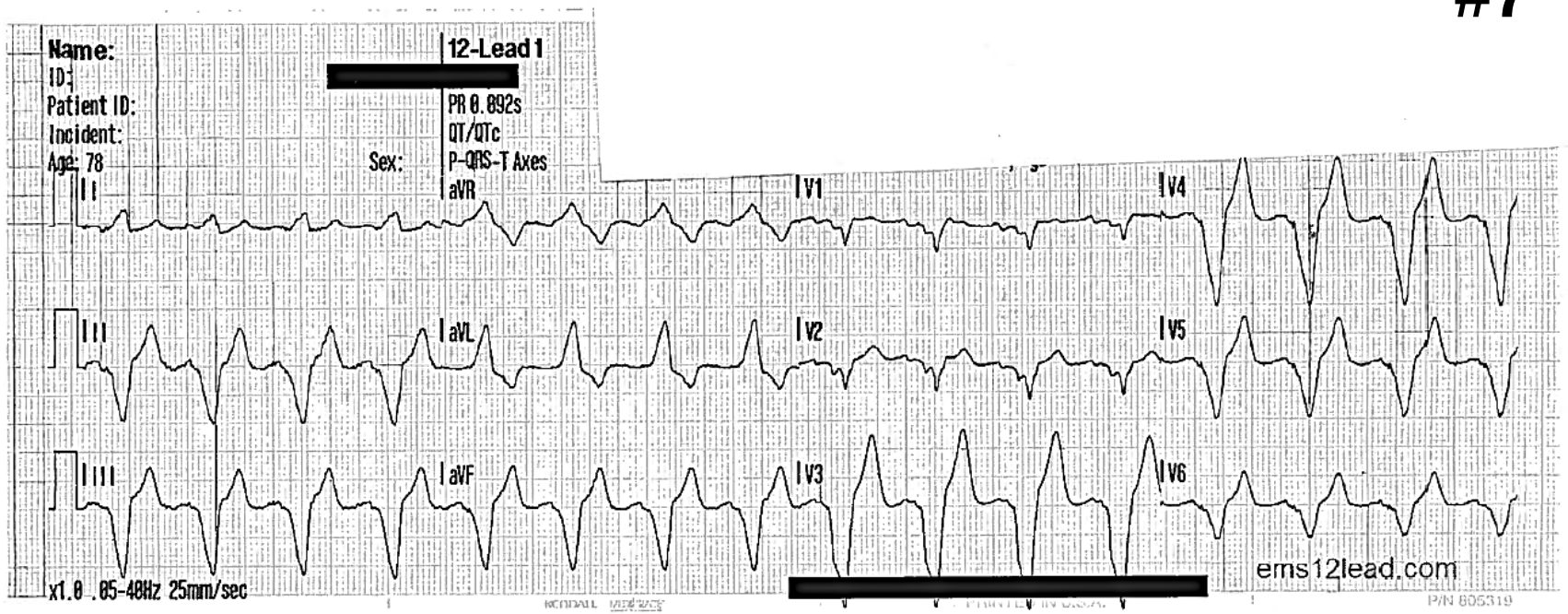


#6

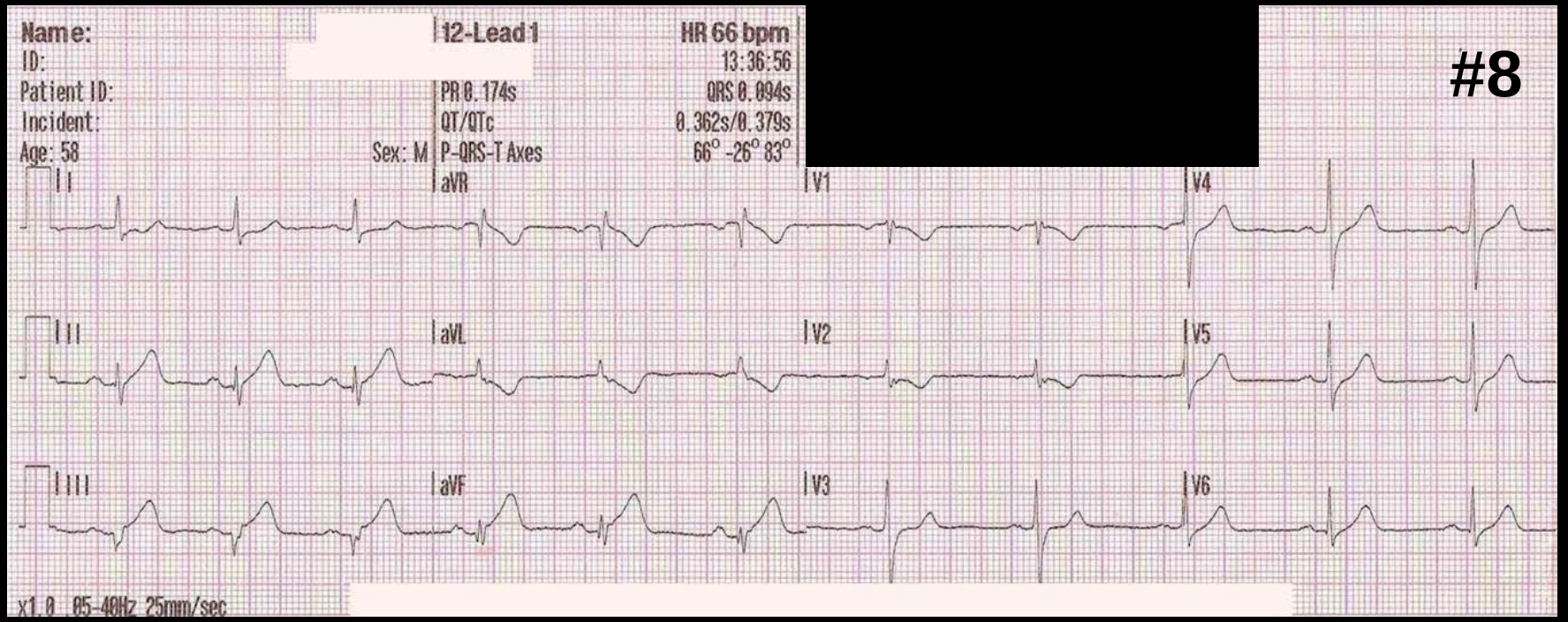

Name:
ID:
Patient ID:
Incident:
Age: 49
Sex: M
12-Lead 2
PR 0.000s
QT/QTc
P-QRS-T Axes
aVR
I
II
III
aVL
aVF
V2
V3
V5
V6
x1.0 .05-40Hz 25mm/sec
EMS12Lead.com @EMS12Lead

6

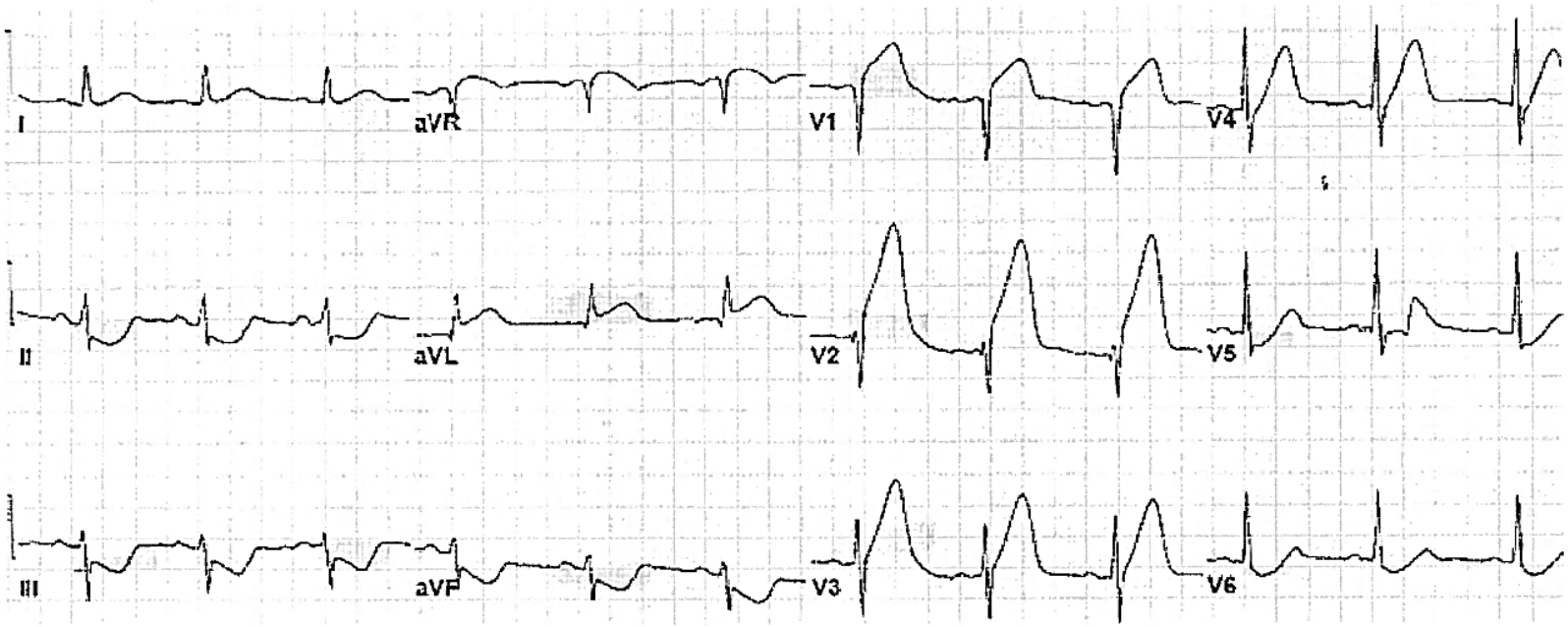
#7


Name:
ID:
Patient ID:
Incident:
Age: 78
Sex:
12-Lead 1
[redacted]
PR 0.092s
QT/QTc
P-QRS-T Axes
I
II
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6
x1.0 .05-40Hz 25mm/sec
[redacted]
ems12lead.com
P/N 805319

#8


Name:
ID:
Patient ID:
Incident:
Age: 58
Sex: M
12-Lead 1
PR 0.174s
QT/QTc
P-QRS-T Axes
HR 66 bpm
13:36:56
QRS 0.094s
0.362s/0.379s
66° -26° 83°
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
x1.0 .05-40Hz 25mm/sec

#9



[redacted]

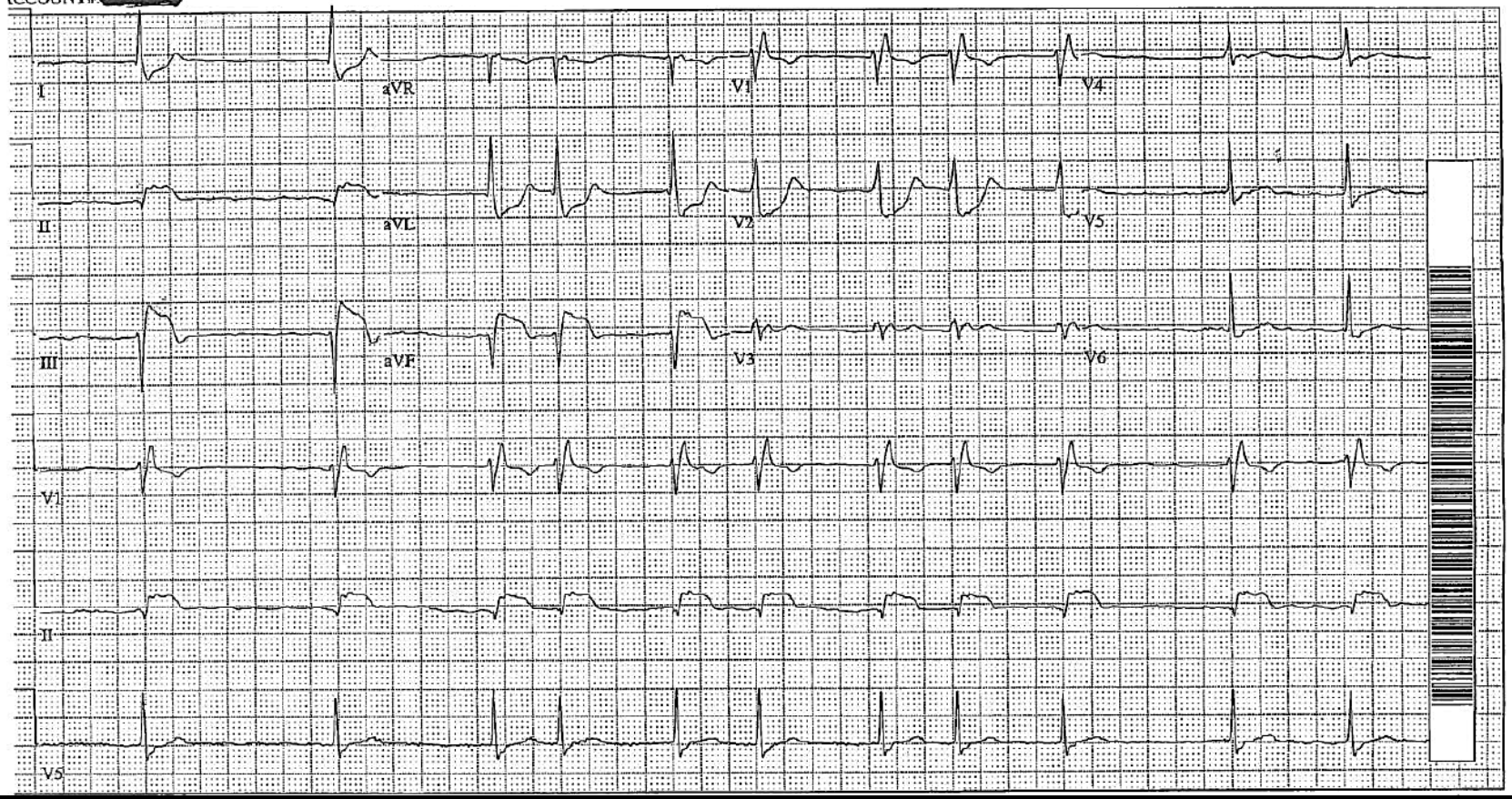
6 yr
Male Caucasian

Room:
Loc: [redacted]

Vent. rate	69	BPM
PR interval	*	ms
QRS duration	118	ms
QT/QTc	394/422	ms
P-R-T axes	* -33	47

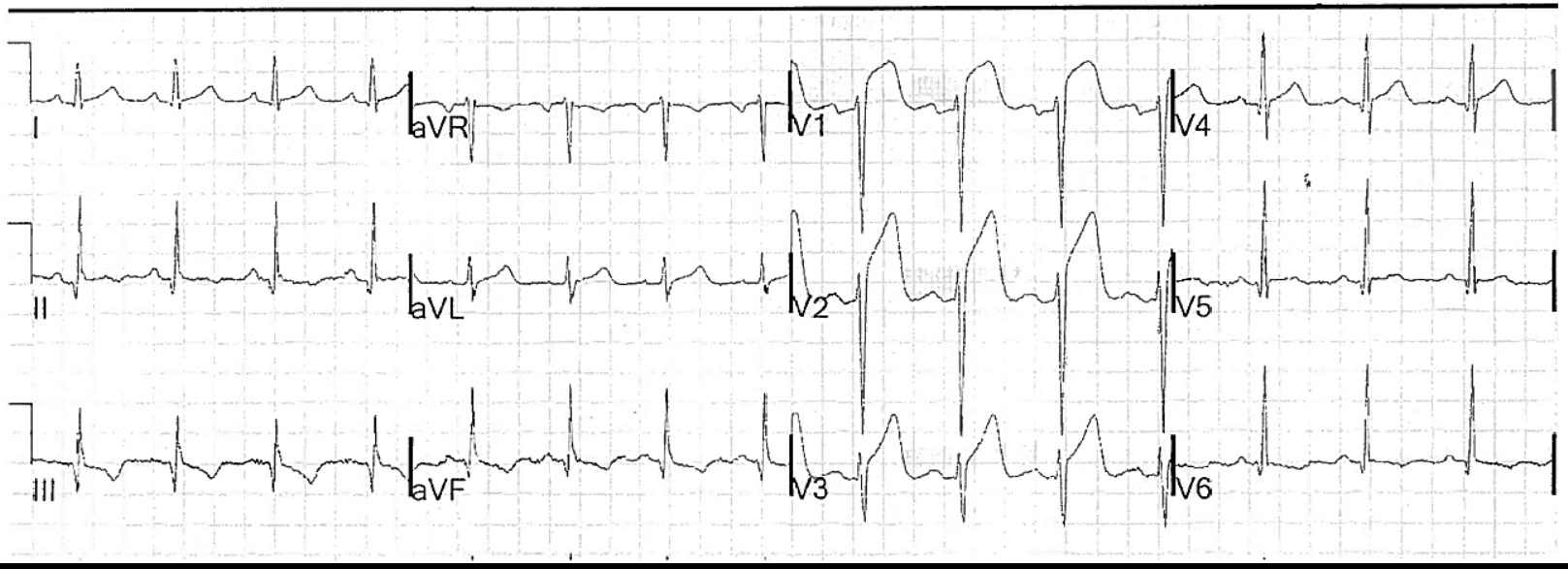
Technician: [redacted]
Test ind:

ACCOUNT#: [redacted]

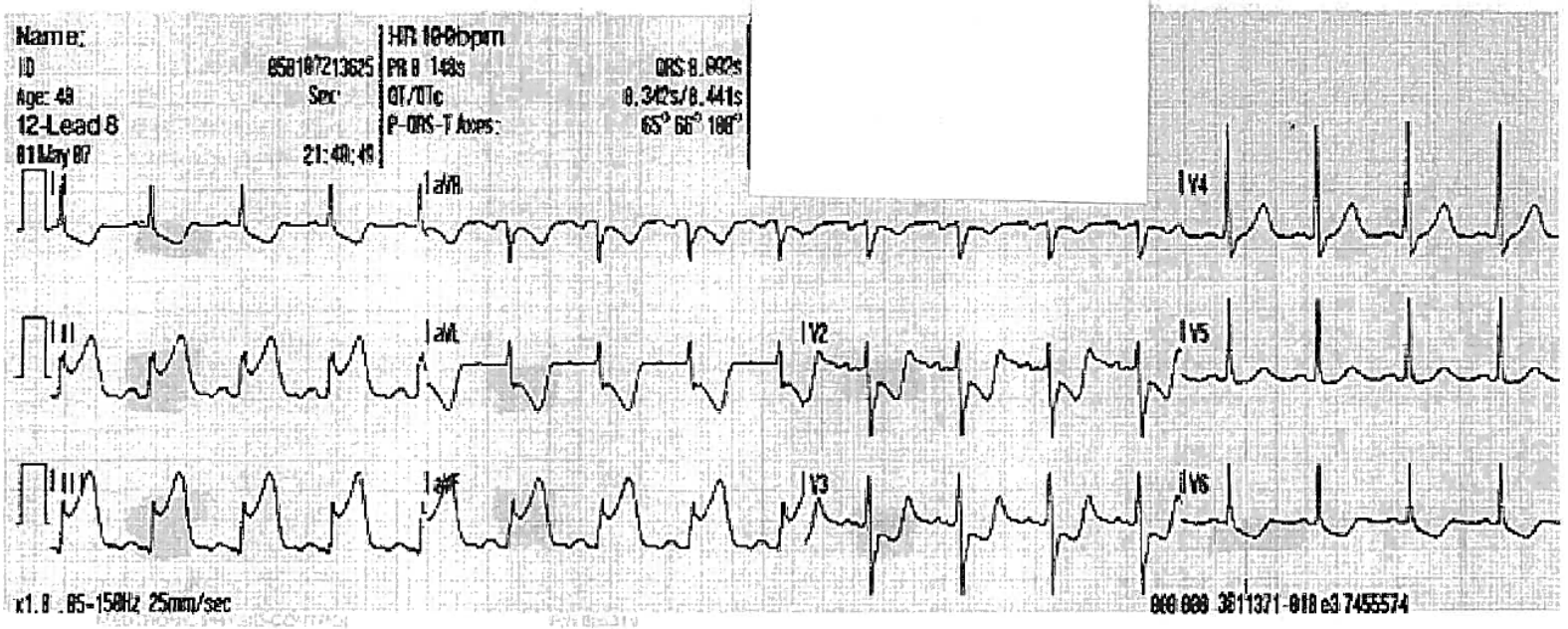


#10

#11

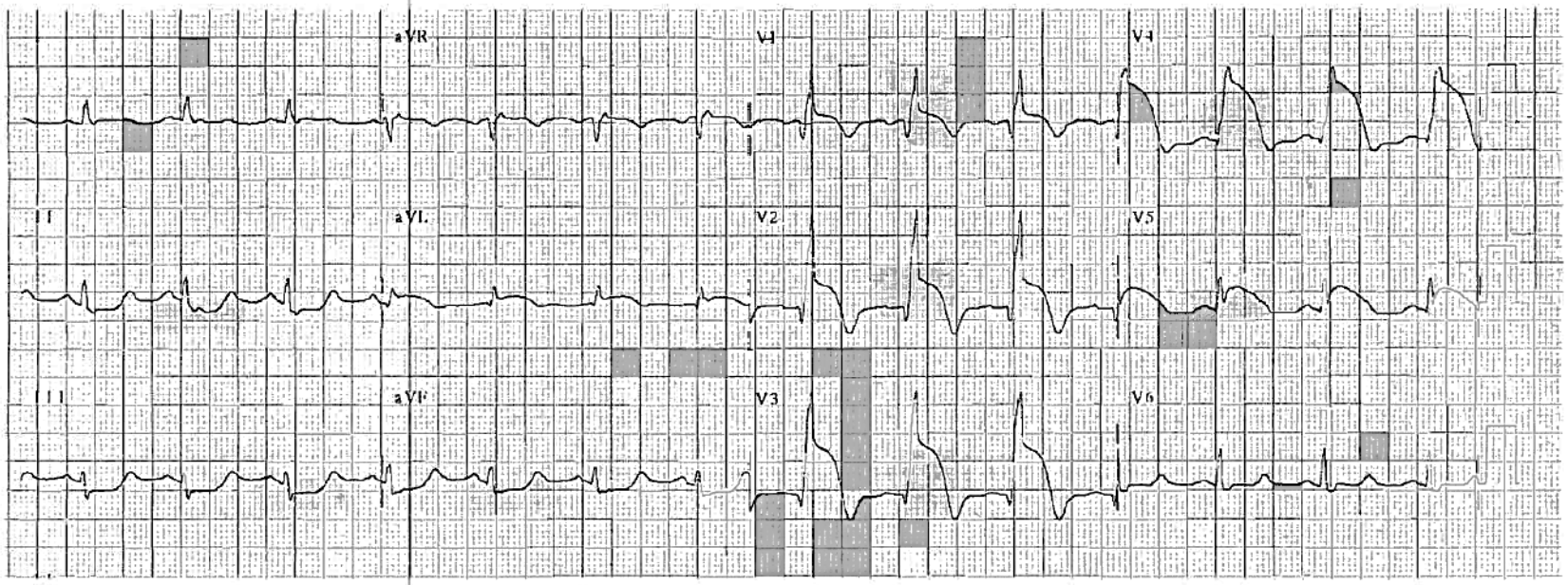


#12


Name:
ID
Age: 49
12-Lead 8
01 May 07
HR 168bpm
PR 0.148s
QRS 0.092s
QT/QTc
0.342s/0.441s
P-QRS-T Axes:
65° 66° 186°
I
aVR
V4
II
aVL
V2
V5
III
aVF
V3
V6
x1.0 .05-150Hz 25mm/sec

12

#13



Dysrhythmia Management

Common problem w/ ACS

Scenario 1

It is a sunny, 66° day. You respond for a woman w/ weakness and lightheadedness. You find a 68 y/o female on the sofa in the golf course locker room, eyes closed, leaning her head back against the back of the sofa. Her friends drove her in from the 2nd tee when she began to feel faint. She did not fall or lose consciousness.

Scenario 1

The patient is pale, cool and moist. She is awake and answers your questions appropriately, but keeps her eyes closed when not asked to open them. Her breathing is unlabored. She denies chest pain, SOB, or nausea. She denies allergies. Meds: ASA 81 mg, losartan. PMH: HTN. Her radial pulse is very weak and very slow. Lungs are clear. Your partner gets VS while you attach the monitor.

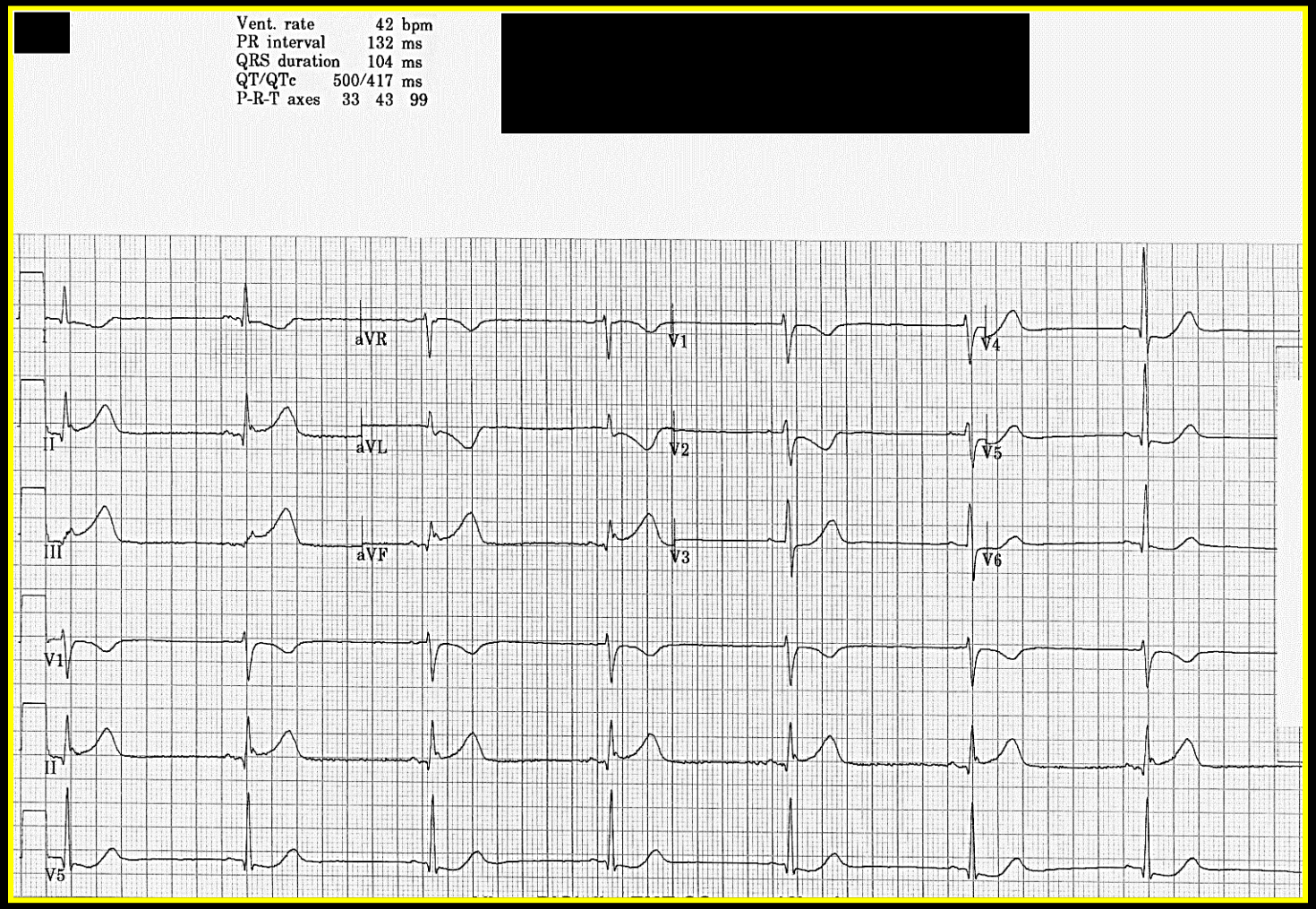
Scenario 1

VS: BP 88/60, HR 40, RR 18, SpO2 on RA 95%, ETCO2 is 32.

Your interpretation?

12 Lead as follows…

Scenario 1



What do you see?

Scenario 1: What SOP?

Pacing pads

Repeat 12L w/ V4R

ASA 324 mg chewed and swallowed if not already taken

IV access

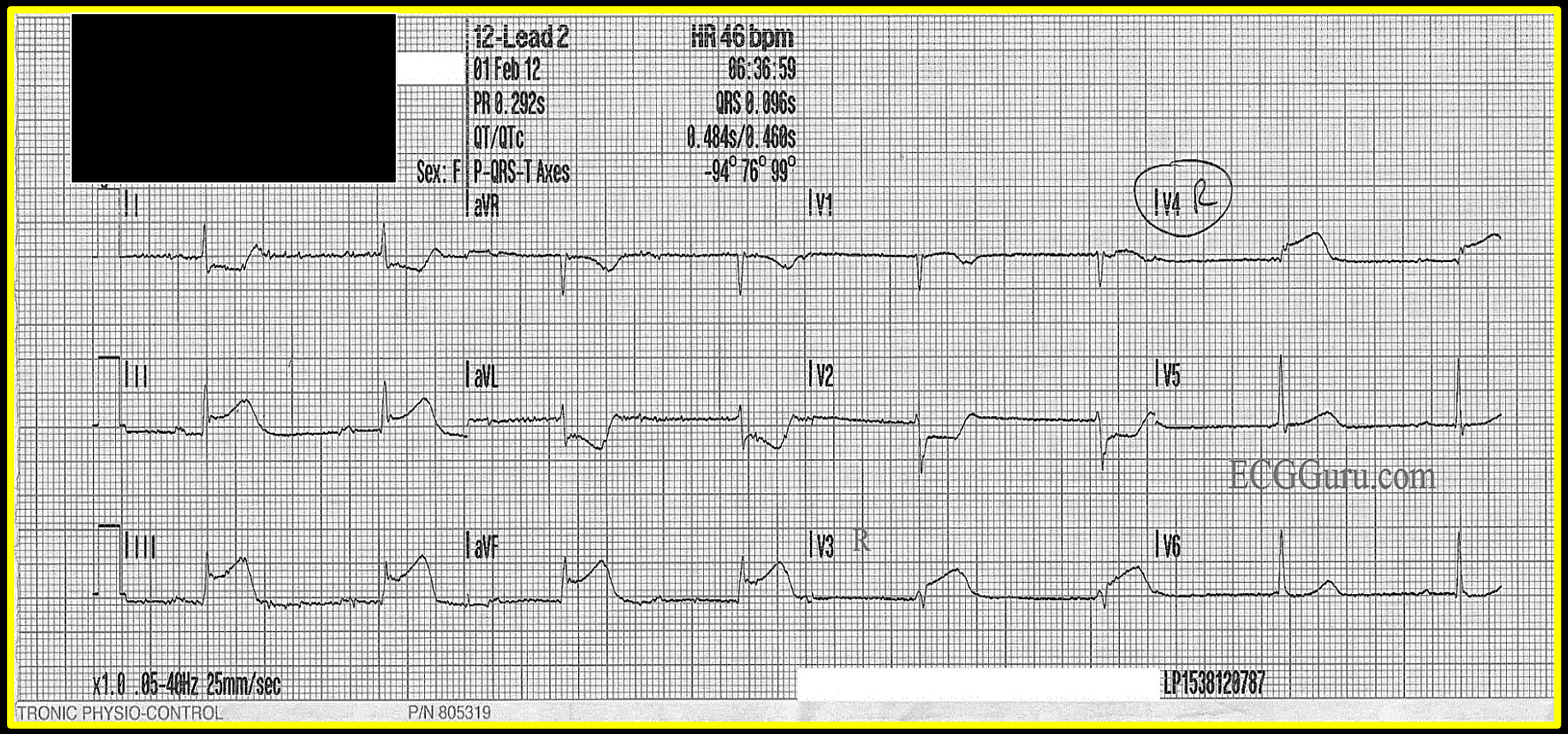
If hypotensive & bradycardic: ***Correct rate problem first*** 

Atropine 0.5 mg IV rapid up to 3 mg total

Optimize preload by admin IVF!

Scenario 1

Here is the V4R 12 Lead. What do you see?



Scenario 1

There is no response to atropine. What's next?

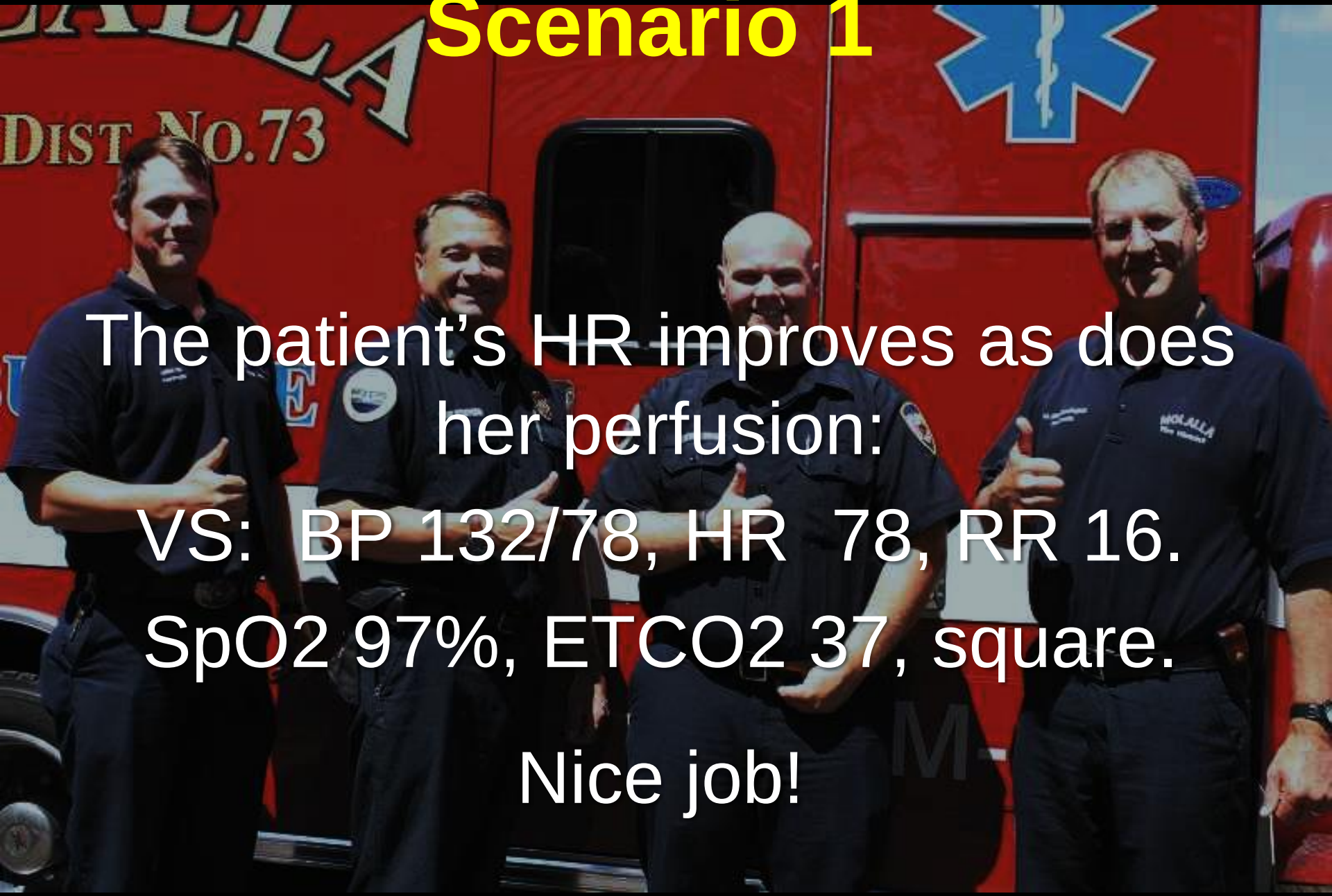
- Consider IVF while preparing Norepinephrine.
- Norepi drip at 2 mL/min. Your tubing has 15 gtt per ml. What is your drip rate?

15 gtt / mL X 2 mL = 30 gtt / min.

When would you use pacing for this patient?

- No vascular access
- Atropine and or Norepi ineffective

Scenario 1



The patient's HR improves as does her perfusion:

VS: BP 132/78, HR 78, RR 16.

SpO2 97%, ETCO2 37, square.

Nice job!

Scenario 2

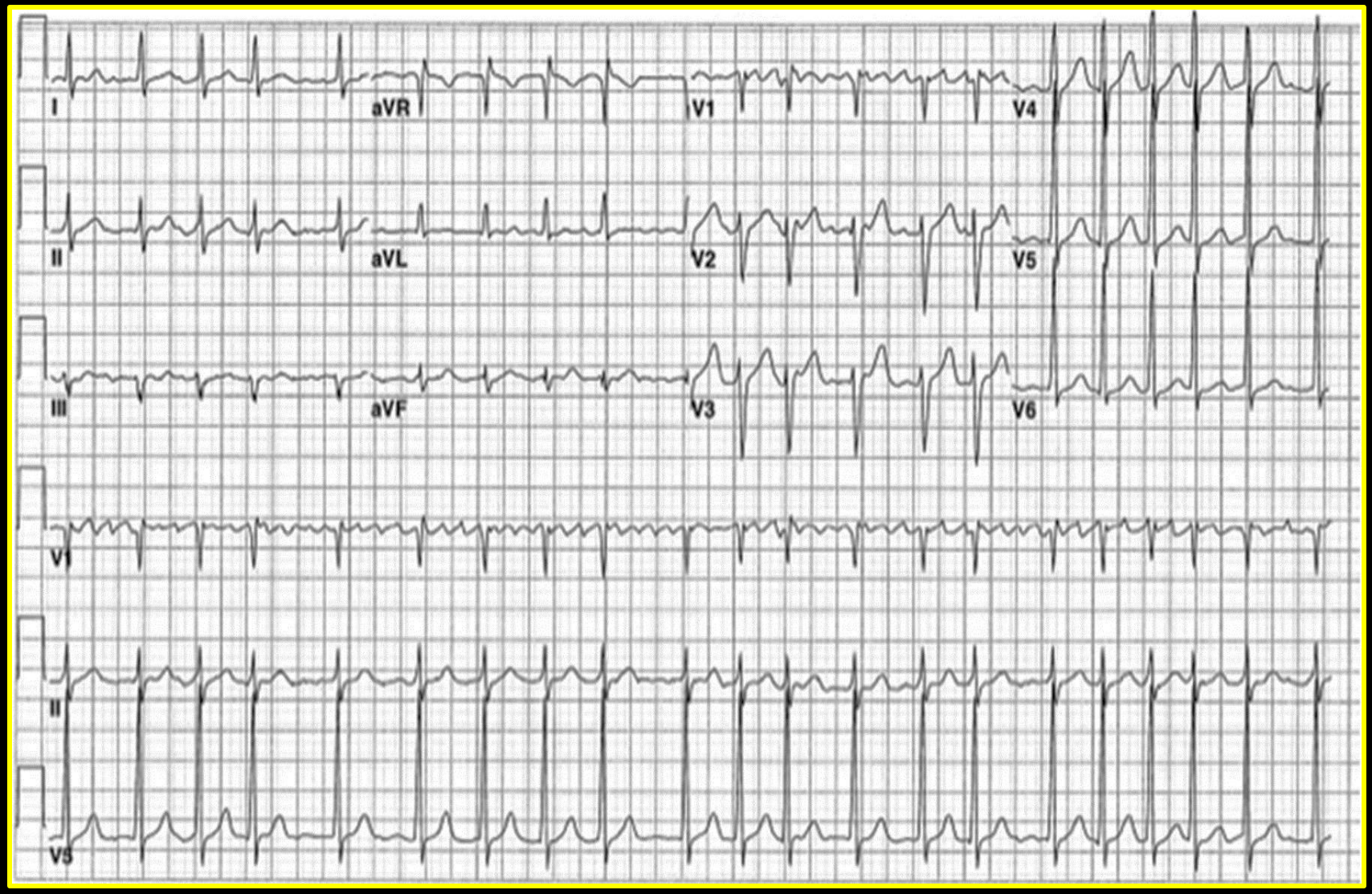
You are dispatched for a 48 y/o man with pounding in his chest and chest heaviness. You find him lying on the bed in a hotel room. His wife says they just returned to their room when he suddenly said he didn't feel good and needed to lie down. The patient is alert and answers questions appropriately. He speaks in full sentences and his breathing appears unlabored. His skin is diaphoretic but warm. You attempt to count his radial pulse but it is too fast. Lungs are clear. Your coworker puts the pt on the monitor:

Scenario 2

What is your interpretation?

BP 100/66, HR 166, RR 18, SpO2 96%, ETCO2 34. He rates his discomfort as 6/10. His wife states the pt has no PMH, no allergies, is a non-smoker, and takes no meds except Viagra and some new diet pill. His 12 Lead follows:

Scenario 2



Treatment? What SOP?

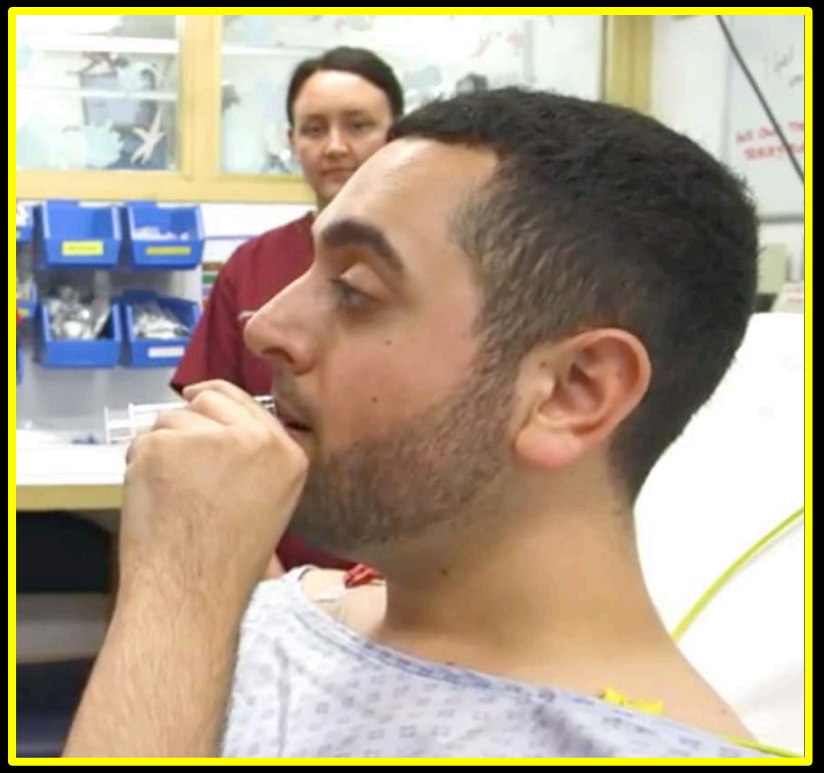
First - attempt vagal maneuver

Modified Vagal Maneuver!

Have patient blow into a 10mL syringe just enough to move plunger ≈ A pressure similar to 40mmHg

Vagal Maneuver Update!

- Position pt sitting @ 45º
- Instruct pt to blow the plunger out of a 10mL syringe for 15 sec.
- Position supine and lift legs to a 45º angle
- Hold for 15 seconds
- Return pt to sitting position
- Assess rhythm after 1 min.



Scenario 2

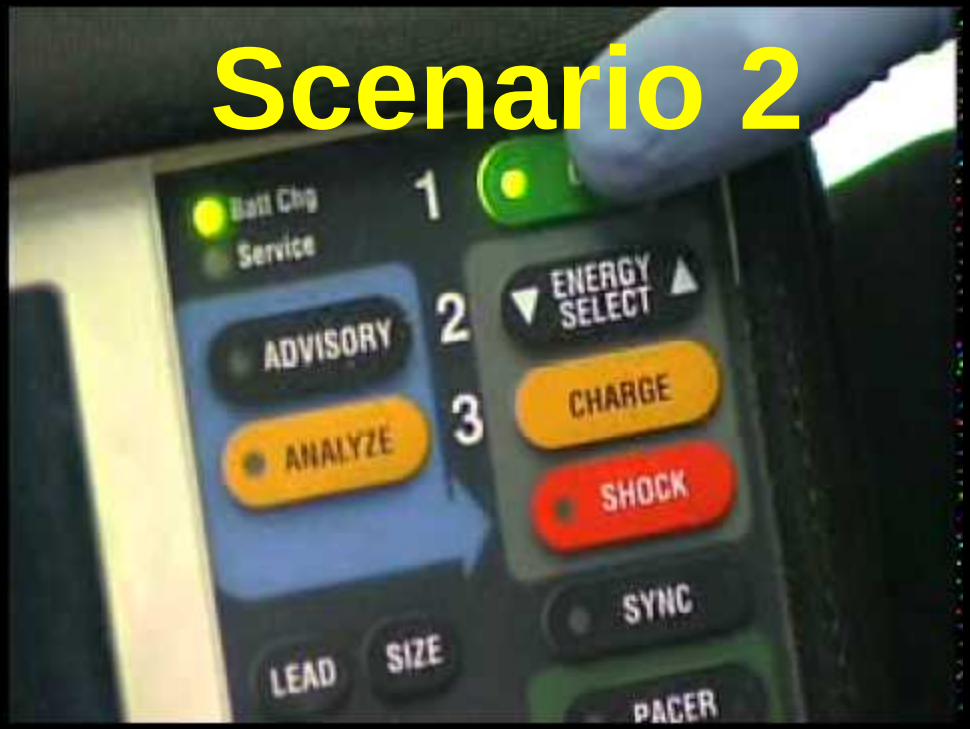
There is no change w/ vagal maneuver. What's next?

IV access

Verapamil 5 mg slow IVP over 2 min.

Approx. half the verapamil is given when the pt becomes slow to respond. Skin is cool and clammy. VS: BP 88/60, HR 172, RR 12, SpO2 93%, ETCO2 32, square. What action is indicated?

Scenario 2



Synchronized cardioversion

May sedate if SBP ≥ 90

What is your monitor's cardioversion Joules for atrial fib?

Scenario 2

What do you do now?

Immediate assessment of ECG and pulse

Interpretation?

Scenario 2

Pulse is strong and regular, and coincides w/ monitor. He becomes more alert and says he feels much better – the chest heaviness is gone and his heart is no longer pounding. He denies difficulty breathing, lightheadedness, nausea, dizziness. VS: BP 136/80, HR 76, RR 16, SpO2 97%, ETCO2 37.

Scenario 3

You respond for a 70 y/o patient w/ chest pain. You find the pt sitting at the kitchen table. He is grimacing, and leaning forward w/ his hand on his chest. He says he has terrible chest pain and can't catch his breath. His wife says he walked into the house from the garage where he was sanding boards for a project, gasping and leaning against the wall as he came in. She tried to give him some cold water but he won't drink it. As you approach him he says he might pass out. You move him to the cot, supine, and notice that he is very diaphoretic and pale. You check his radial pulse and note that it is very fast and weak.

Scenario 3

Allergies: none. Meds: Norvasc, Flomax

PMH: HTN, palpitations, BPH

Events: standing in the garage using sander

O: Rapid onset

P: sitting down makes it better

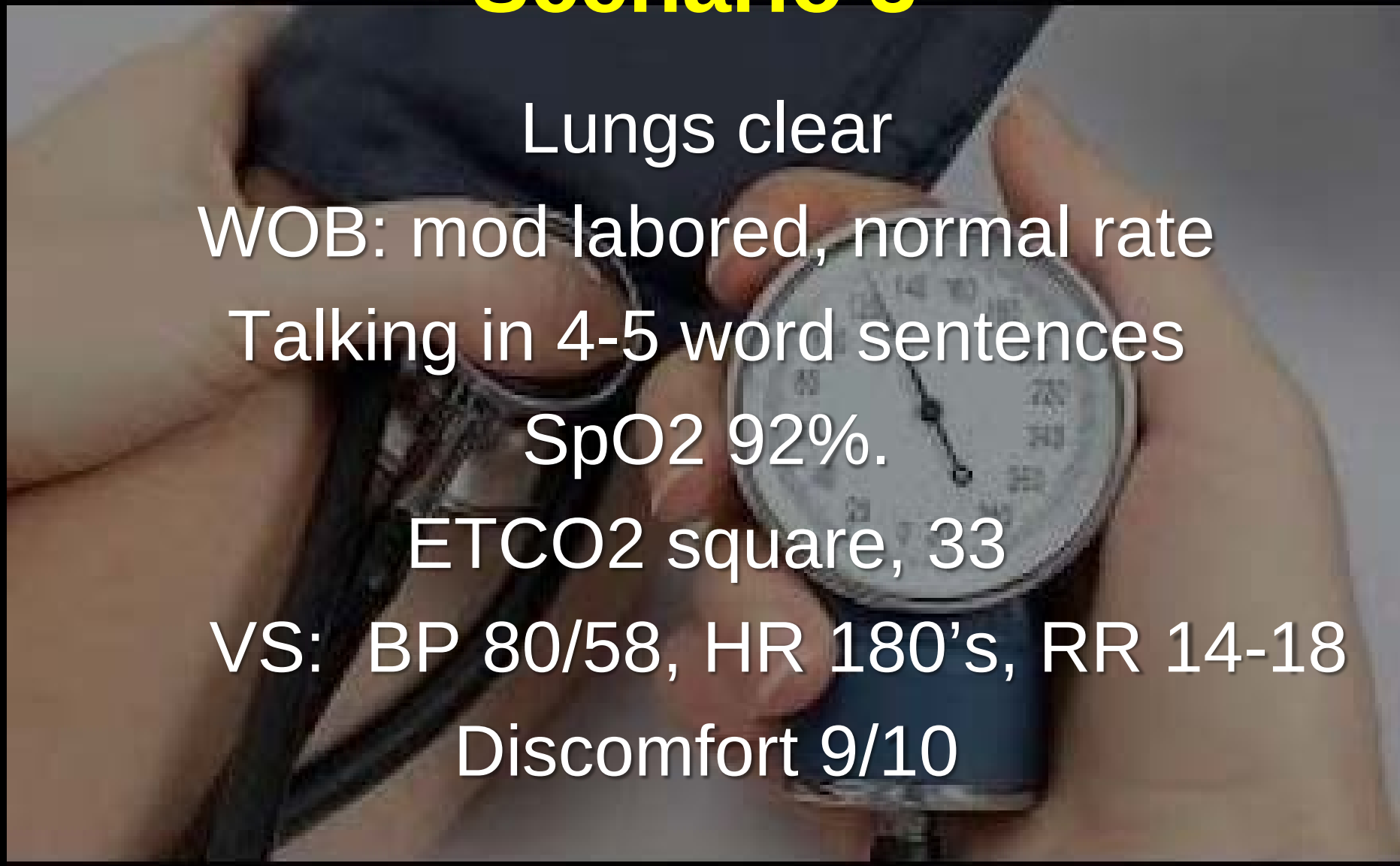
Q: squeezing and constant

R: mid chest, no radiation

S: 10/10

T: 10 minutes ago

Scenario 3



Lungs clear

WOB: mod labored, normal rate

Talking in 4-5 word sentences

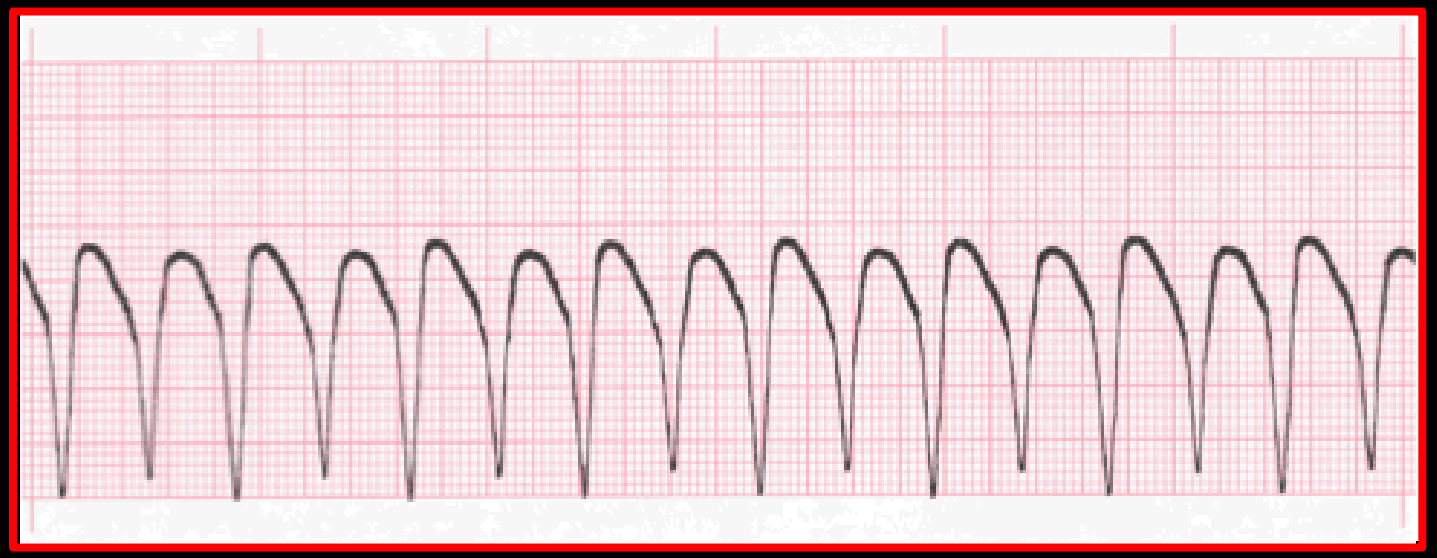
SpO2 92%.

ETCO2 square, 33

VS: BP 80/58, HR 180’s, RR 14-18

Discomfort 9/10

Scenario 3



What is your interpretation?

What SOP?

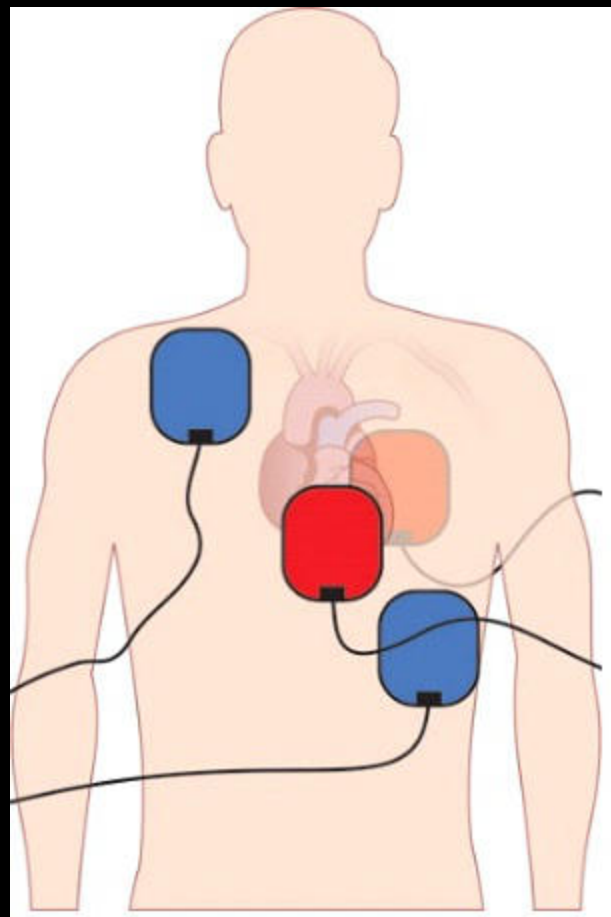
Apply pacing pads

Supplemental O2 / NC

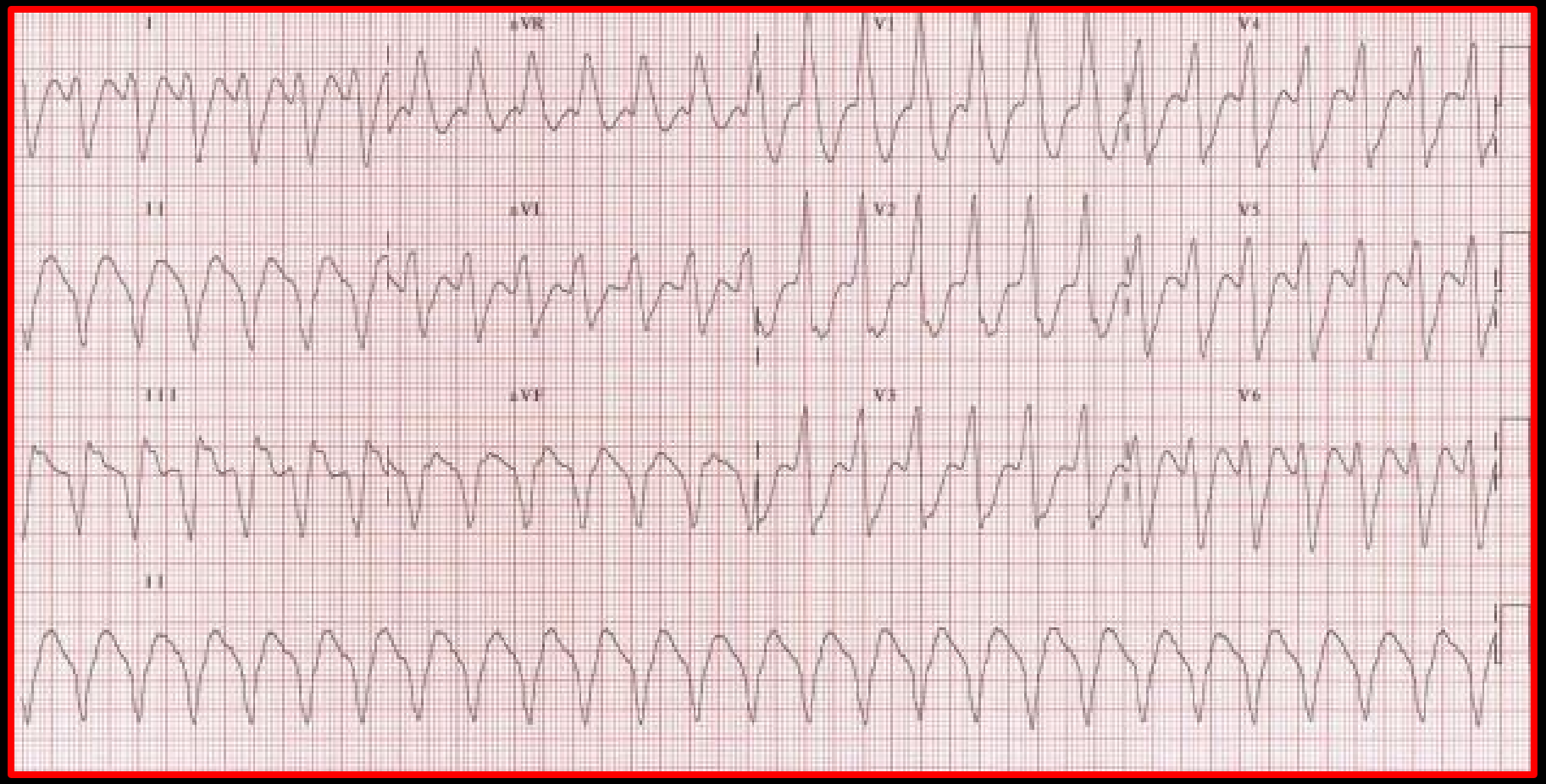
Obtain a 12 Lead ECG

ASA

IV access



Scenario 3



What is your interpretation?

Treatment?

Consider trial of IV amiodarone – he's perfusing enough to talk to you!

If mental status deteriorates, be be prepared to go immediately to synchronized cardioversion

Scenario 3

The patient does not respond now. He is cold and clammy w/ barely palpable pulses. What's next?

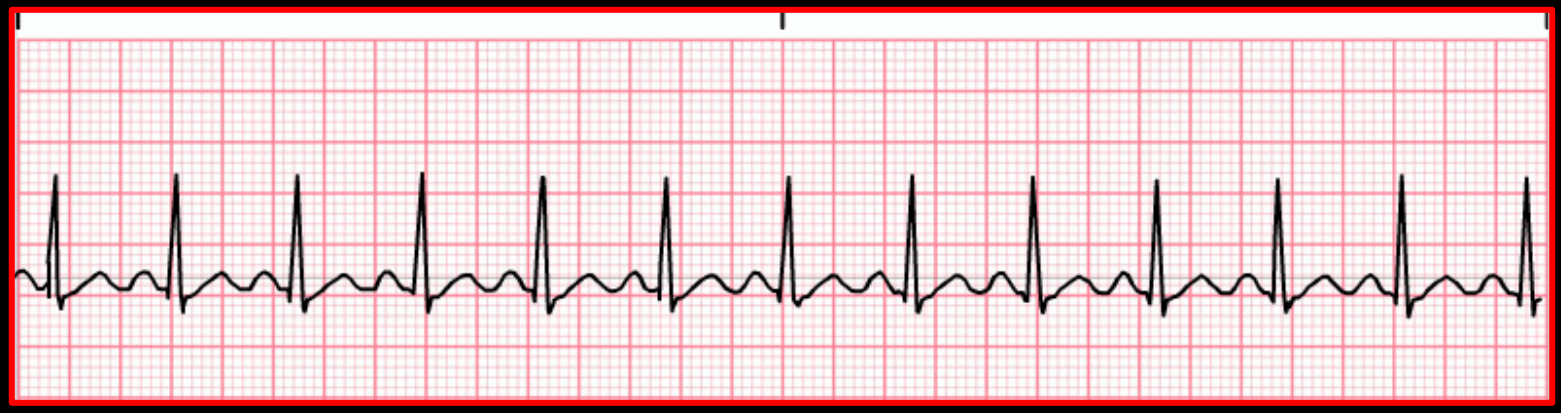
Scenario 3

Synchronized cardioversion

What energy level?

Scenario 3

The monitor now shows this:



Pulses are strong and regular, coinciding w/ the above rhythm. The patient opens his eyes. He denies chest discomfort or difficulty breathing. BP is 126/84! **What's next?**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Aspirin and Outcomes

Study: complications and mortality

outcomes

ved ASA.

Group

ission

CONCLUS

reated w/

ASA is improved by pre-hospital admin of ASA. Findings suggest that pre-hospital ASA might facilitate early reperfusion.

NTG and Tachycardia

10,300 *normotensive* patients w/ chest pain received NTG. Of those, 320 (3%) became hypotensive (≥ 30 mm Hg).

Hypotension after NTG	
Pts w/ tachycardia	3.9%
Pts w/o tachycardia	2.9%

Conclusion: While the absolute risk of NTG-induced hypotension was low, those w/ pre-NTG tachycardia had a significant ↑ in the relative risk of hypotension.