

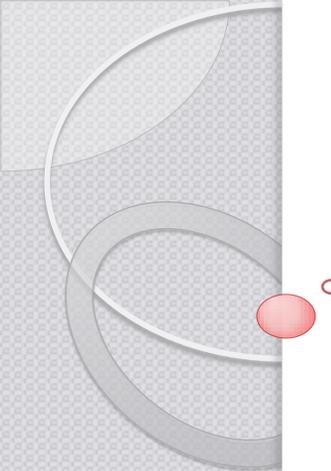
ND STEMI Coordinators Case Studies

ND Stroke & Cardiac System Conference, Bismarck, ND, May 19, 2015



Objectives

- Describe a success story and one that shows an opportunity for improvement
- Identify key metrics and therapies that should be delivered including the D's
- Tips for documentation of Cardiac events
- Define methods to utilize feedback to augment process improvement



STEMI Coordinator Case Study

Altru Health System, Grand Forks

Patient History

- 42 year old male
- Hx of DVT following knee surgery in 2009
- Psoriasis
- Tobacco use for 20 pack years
- Significant family history
- Height- 182.9 cm
- Weight- 111 kg

Presentation

- 10/10 chest pain that started 45 minutes prior to arrival
- Worse with exertion/walking
- Radiates to upper back and right jaw
- SOB
- Diaphoresis

Assessment at Critical Access Hospital

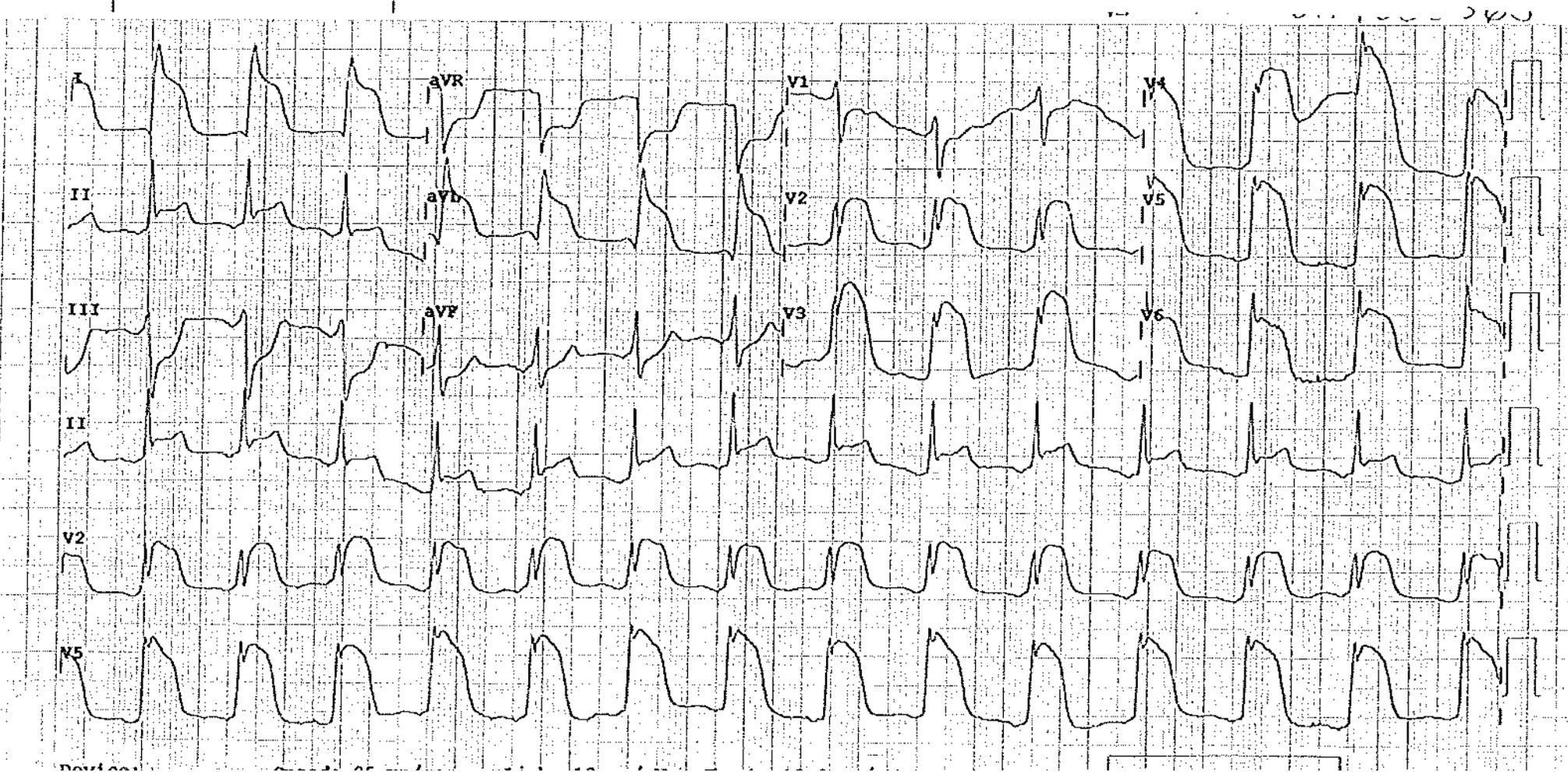
Vitals:

- HR: 90 BPM
- BP: 91/69
- O2 Sats: 100%

Medications:

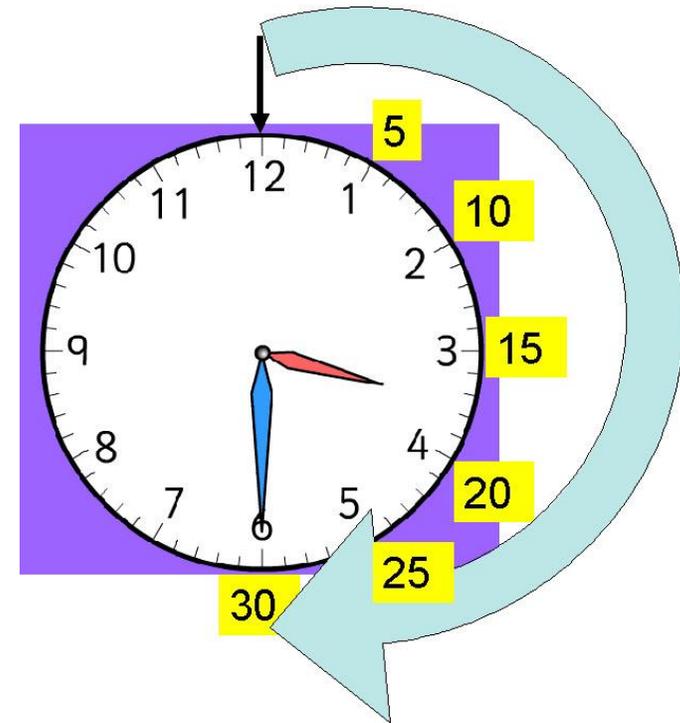
- Lorazepam
- Nasacort

ECG at Critical access Hospital



Critical Access Hospital Timeline

- 21:12 Arrived with spouse
- 21:15 ECG completed
- 21:17 MD assessment
- 21:20 ASA
- 21:30 600mg Plavix
- 21:31 5000 unit bolus heparin
- 21:36 1000 units/hr heparin drip
- 21:42 Transferred to Altru



Critical Access Hospital Timeline Summary

Arrival to ECG :	3 minutes
Arrival to MD assessment:	5 minutes
DIDO:	30 minutes

All STEMI protocols medications given prior to transfer

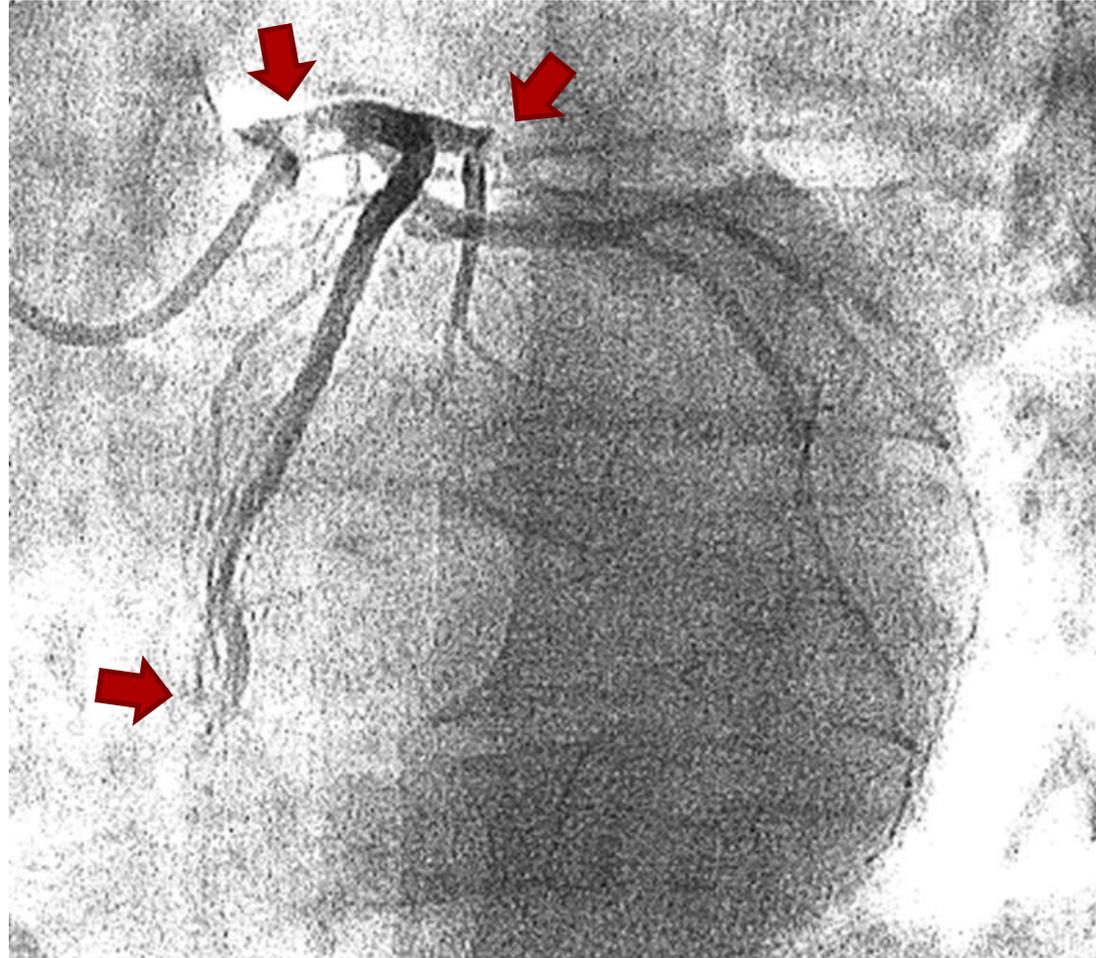
Travel time to Altru:	26 minutes
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Arrival at Critical Access to arrival at Altru: 56 minutes

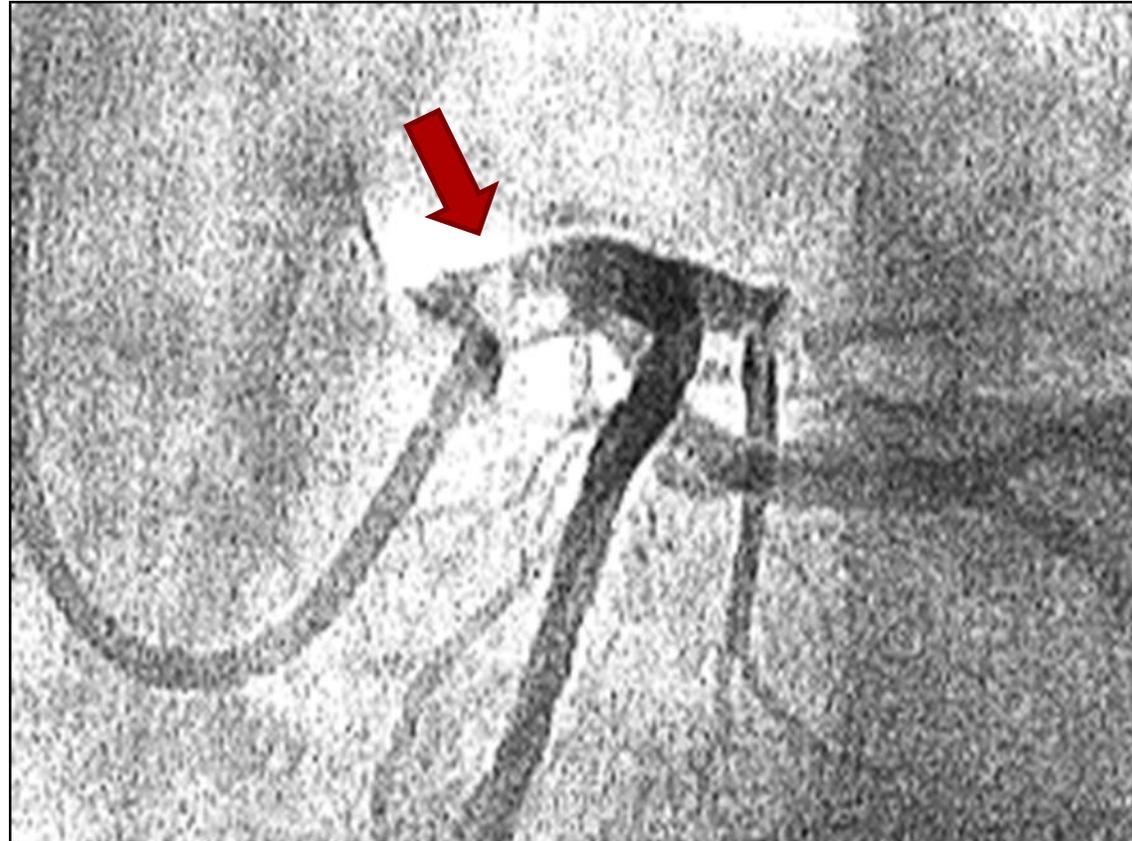
Right Coronary Artery



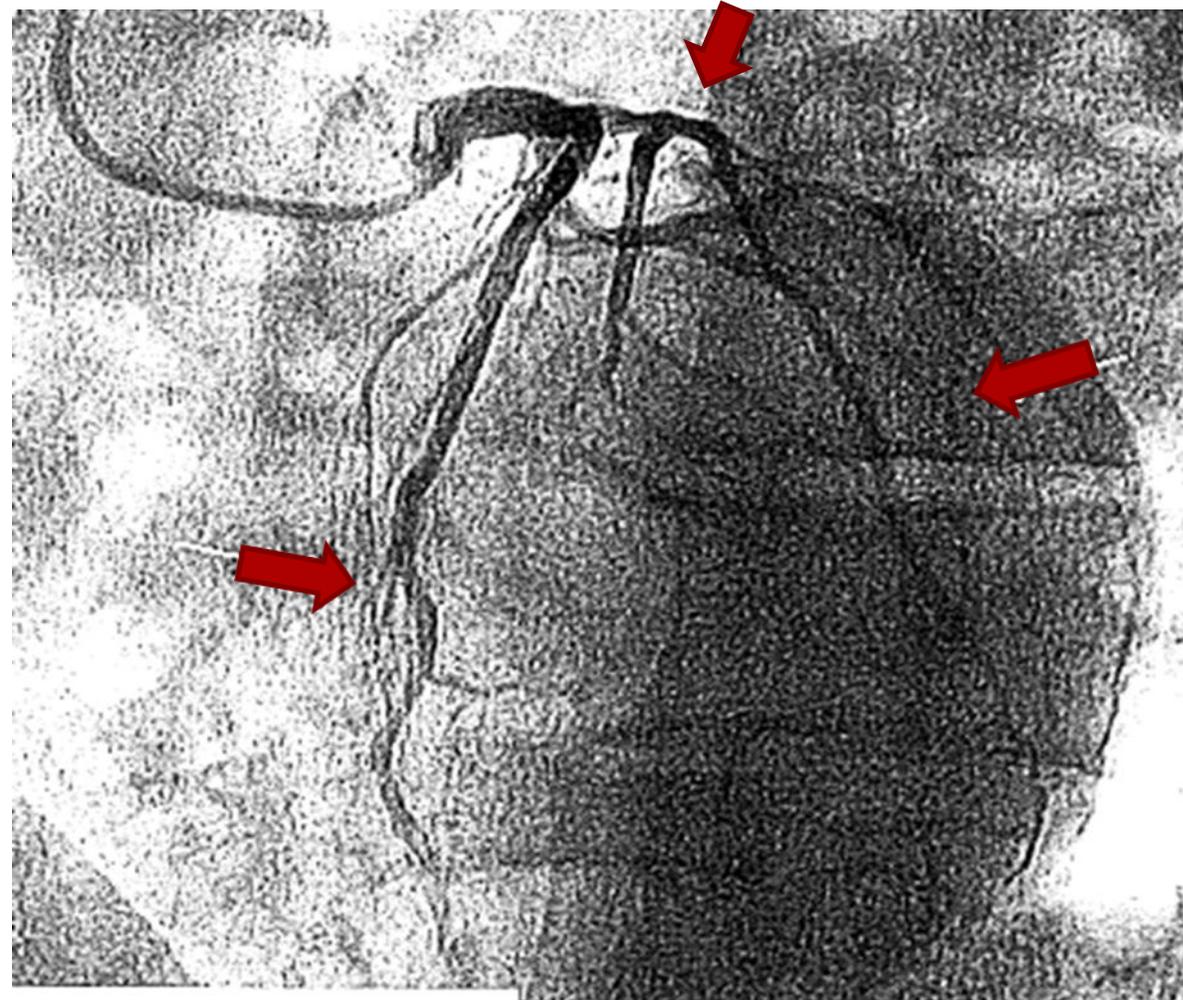
Left Coronary System / BEFORE



Left Main Thrombosis



Left Coronary System / AFTER



Angiogram

- Radial access
- Aspiration Catheter used

- Dopamine
- Aggrastat bolus/drip
- TPA intra-arterial

Altru Health System Timeline

22:08 Arrived at Altru

22:09 Arrived in Cath Lab

22:17 Case started

22:22 Reperfusion time

Arrival to reperfusion time: 14 minutes

Arrival at CAH to Reperfusion: 70 minutes!

What Went Smooth?

- CAH met all goal times
- 100% compliant on STEMI protocol steps
- Informed Altru about transfer 12 minutes after patient arrival at CAH
- 44 minutes advanced notice

Patient/Family Comments

“Wish there was a way to get the ambulance to our farm faster”

STEMI Coordinator Case Study

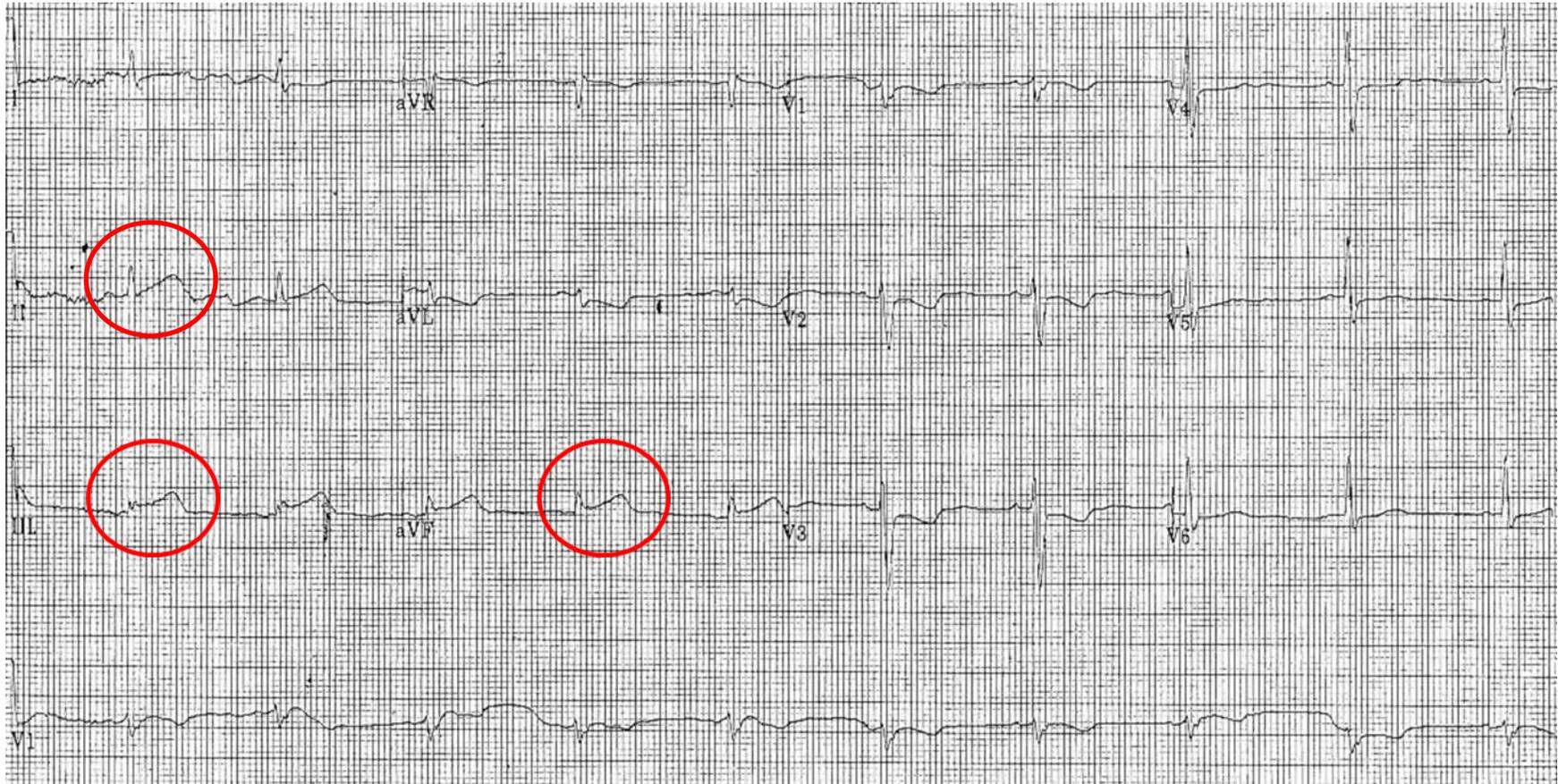
Essentia Health, Fargo

Case 1

- 74 y.o. male with history of tobacco abuse and CAD with CABG in 2010
- 19:36 – Presented to Zone 2 hospital ED by private vehicle, complaining of 2 hours of chest pain



Case I



19:51 – EKG showed ST elevation in inferior leads (Door to ECG: 15 min)

Case I

- 20:00 – ALS ground ambulance service called to transport patient
- 20:07 – Transport arrived
- 20:13 – TNKase administered
- 20:29 – ALS EMS departed regional hospital
- 21:30 – Arrived Essentia Fargo ED for evaluation

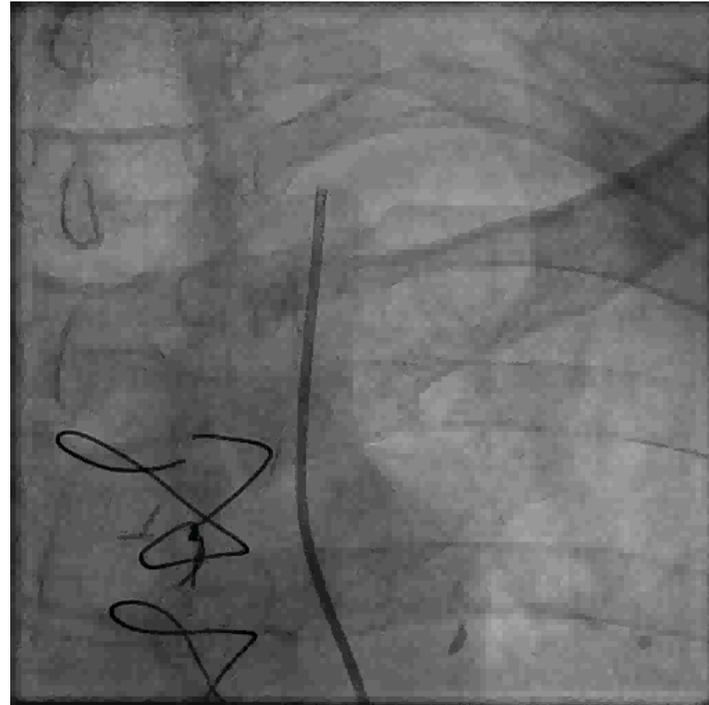
Case I

- Patient evaluated in ED by cardiology
- ST elevations and chest pain resolved; patient wanted to wait overnight to determine whether to rescind his DNR status and go to cath lab
- Admitted to CCU



Case 1

- Patient agreed to go to cath lab the next day
- Vessels patent; no indication for PCI
- Patient recovered in CCU and was discharged 3 days later

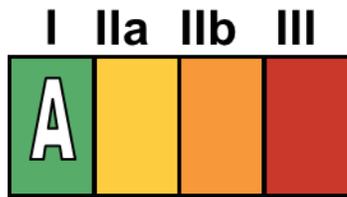


Case I

Time Metrics:

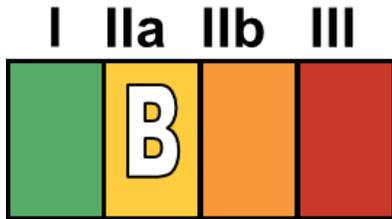
- Referral facility door-to-ECG: **15 minutes**
(Goal: ≤ 10 minutes)
- Referral door to needle: **36 minutes**
(Goal: ≤ 30 minutes)
- Referral facility door-in-door-out: **53 minutes**
(Goal: ≤ 45 minutes)
- Transport time to Essentia: **61 minutes**
- Referral ED door to Essentia ED door: **114 minutes**

Fibrinolytic Therapy When There Is an Anticipated Delay to Performing Primary PCI Within 120 Minutes of FMC



In the absence of contraindications, fibrinolytic therapy should be given to patients with STEMI and onset of ischemic symptoms within the previous 12 hours when it is anticipated that primary PCI cannot be performed within 120 minutes of FMC.

Transfer of Patients With STEMI to a PCI-Capable Hospital for Coronary Angiography After Fibrinolytic Therapy



Transfer to a PCI-capable hospital for coronary angiography is reasonable for patients with STEMI who have received fibrinolytic therapy even when hemodynamically stable* and with clinical evidence of successful reperfusion. Angiography can be performed as soon as logistically feasible at the receiving hospital, and ideally within 24 hours, but should not be performed within the first 2 to 3 hours after administration of fibrinolytic therapy.

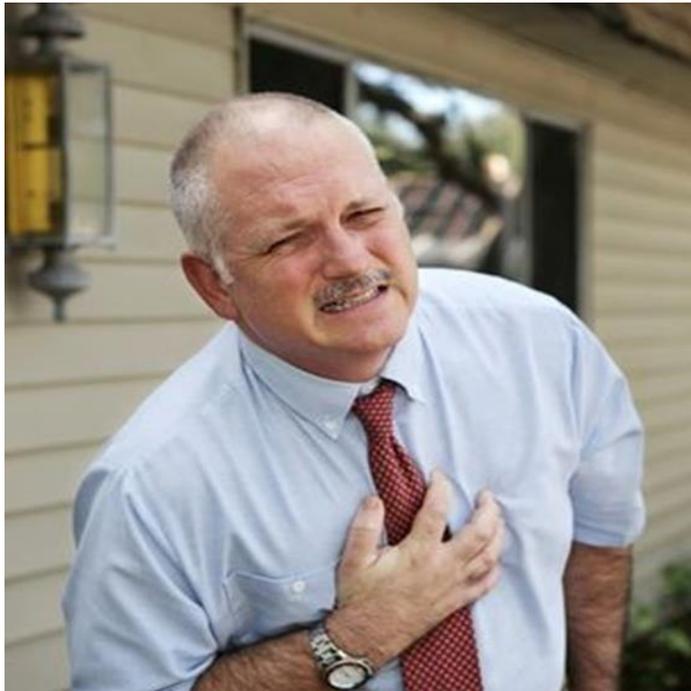
*Although individual circumstances will vary, clinical stability is defined by the absence of low output, hypotension, persistent tachycardia, apparent shock, high-grade ventricular or symptomatic supraventricular tachyarrhythmias, and spontaneous recurrent ischemia.

Case I

Discussion:

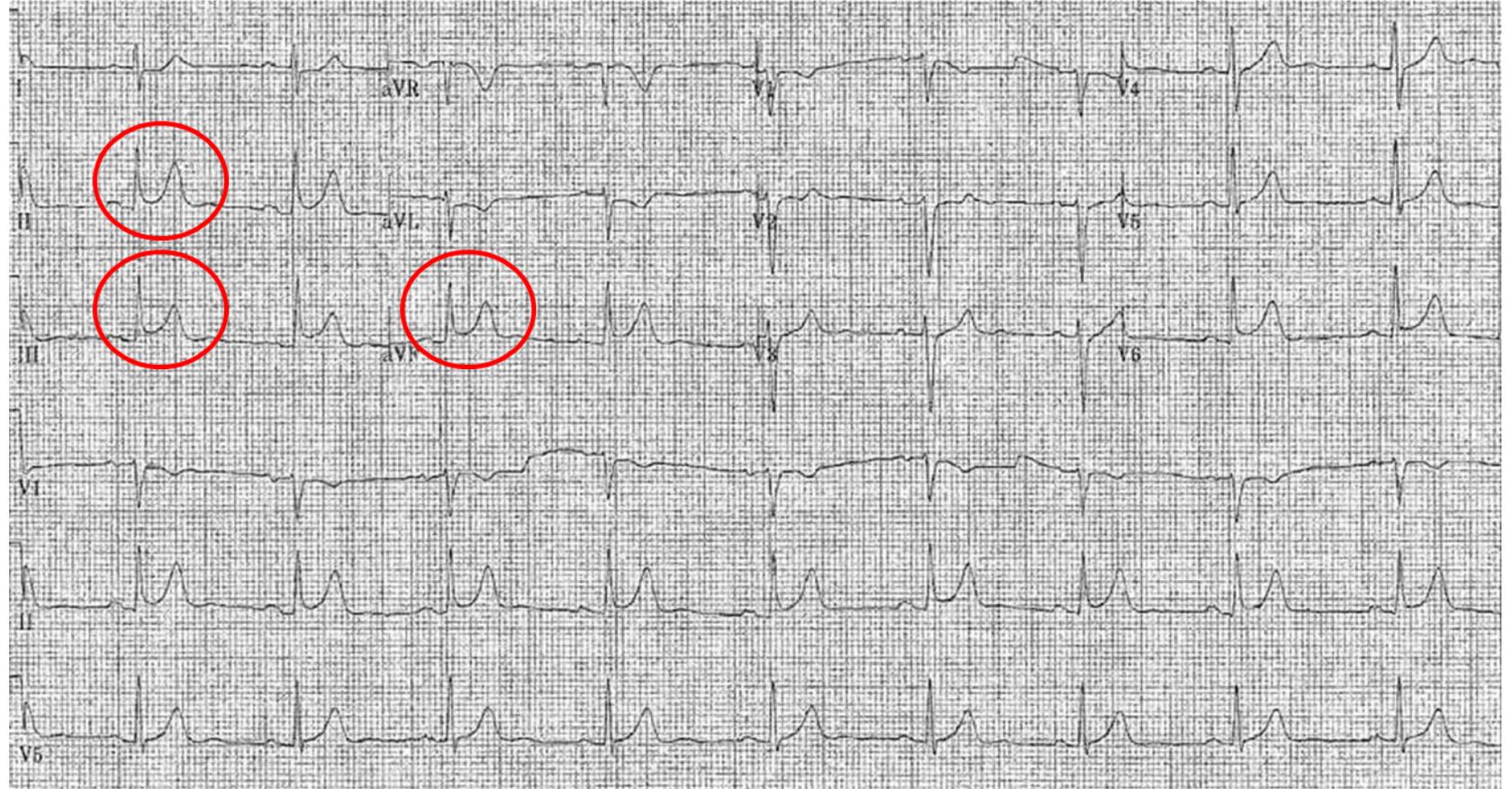
- Prompt ECG acquisition is essential in order to meet other STEMI time goals!
- Patient should still be transferred to a PCI-capable receiving center after fibrinolytic administration, even though they no longer will be included in door to balloon metrics.

Case 2



- 46 y.o. male with history of active tobacco use and CAD with prior stenting
- 15:28 – Presented to Zone 2 hospital ED by private vehicle, complaining of 30 minutes of chest pressure

Case 2



- 15:35 – EKG showed ST elevation in inferior leads with reciprocal changes
- 16:15 – EKG faxed and STEMI Alert activated
Patient refused lytics due to concerns about bleeding risk

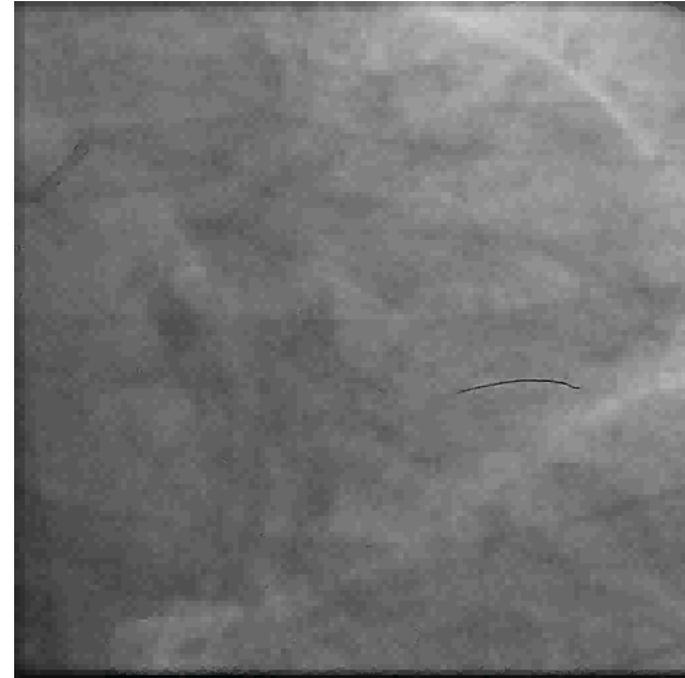
Case 2

- 16:35 – Air helicopter called to transport patient
- 17:41 – A critically unstable patient presented to the regional hospital ED and required transport via the helicopter initially dispatched for the STEMI; fixed-wing unit dispatched to transport STEMI
- 18:34 – Patient left regional hospital ED with FW flight crew
- 19:07 – Flight crew departed regional airport with patient
- 20:30 – Arrived at Essentia – brought directly to cath lab



Case 2

- 100% in-stent occlusion of 1st OM branch of Cx
- Treated with balloon angioplasty and placement of a drug-eluting stent
- Patient recovered in CCU and was discharged 4 days later

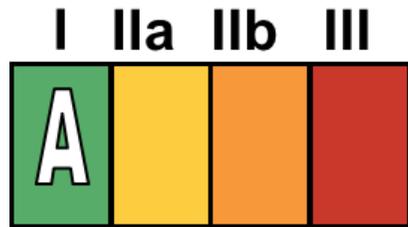


Case 2

Time Metrics:

- Referral facility door-to-ECG: 7 minutes
(Goal: ≤ 10 minutes)
- Referral door to device: 316 minutes
(Goal: $< 90-120$ minutes)
- Referral facility door-in-door-out: 186 minutes
(Goal: ≤ 30 minutes)
- Transport time to Essentia: 114 minutes
- Essentia door to device: 14 minutes
(Goal: $< 60-90$ minutes)
- Cath lab arrival to device: 13 minutes
(Goal: < 30 minutes)

Fibrinolytic Therapy When There Is an Anticipated Delay to Performing Primary PCI Within 120 Minutes of FMC



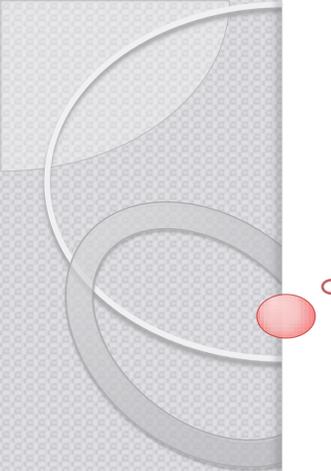
In the absence of contraindications, fibrinolytic therapy should be given to patients with STEMI and onset of ischemic symptoms within the previous 12 hours when it is anticipated that primary PCI cannot be performed within 120 minutes of FMC.

Case 2

Discussion:

- Transport delays are not always avoidable
- Activate transport ASAP and remain in close contact; adjust plan as needed
- Patients who are considered for fibrinolytics due to anticipated delay to primary PCI may refuse lytics, or may have contraindications to lytic therapy – if this is the case, make sure the regional practitioner documents the specific reason why lytics were not given





STEMI Coordinator Case Study

Sanford Health Bismarck

Scenario #1

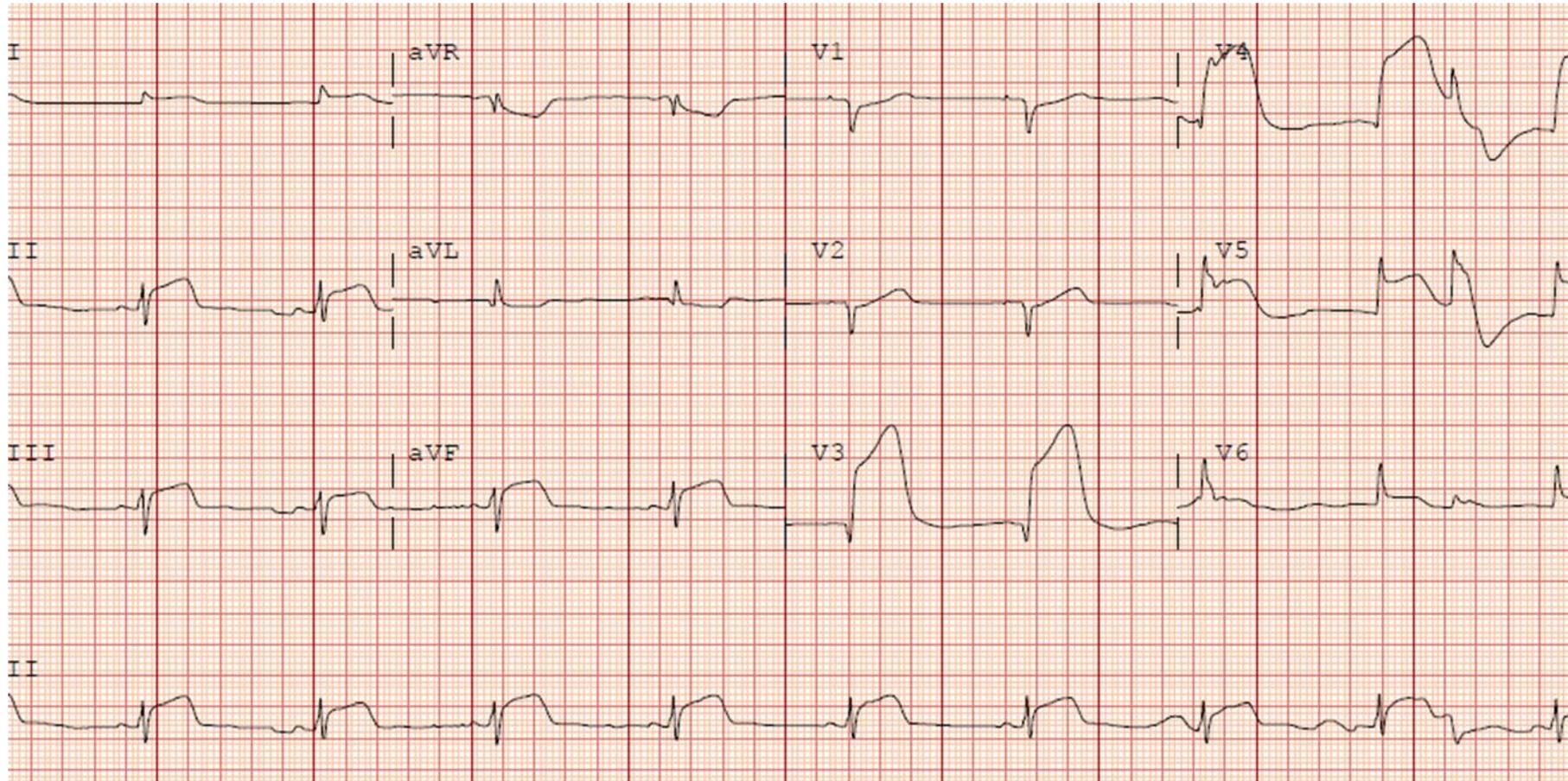
- 72 yo M patient stopped overnight in Bismarck on way to a family event.
- He began developing some midsternal chest pressure throughout the night. He was up frequently during the night with diarrhea and was diaphoretic. Approx. 1 hour PTA, he had severe chest pain with nausea.
 - Patient assumed he had the stomach flu.
- He presented to Sanford Bismarck ED via private vehicle.
- He received evaluation including EKG, vitals, and labwork in ED.
- Patient was transferred emergently to the cardiac cath lab for PCI.

Patient Information & History

- Demographics
 - 72 years old
 - Caucasian
 - Male
- Pertinent Medical History
 - Hx of recurrent PE with anticoagulation, but after discussion with PCP, decided to discontinue anticoagulants a few months ago
 - No history of smoking
 - Active, a runner, and exercises regularly
 - No family hx of premature coronary atherosclerosis
- Pertinent Home Medications
 - No medications

EKG

- EKG showed an Anterior STEMI



Vitals/Lab Results

- **Baseline Vitals**

- Temp 97.4
- Resp 18
- Pulse 55
- BP 157/94
- O2 93% RA
- Pain 6/10
- Ht 5'11"
- Wt 165 lbs
- BMI 23.1

- **Baseline Labs**

- Trop T 0.15 (N= ≤ 0.01)
- CK-MB 20.1 (N= ≤ 6.0)
- Creatinine 0.80
- Hgb 13.5
- INR 1.70
- Lipid Panel
 - TC 131
 - Trig 106
 - HDL 44
 - LDL 66

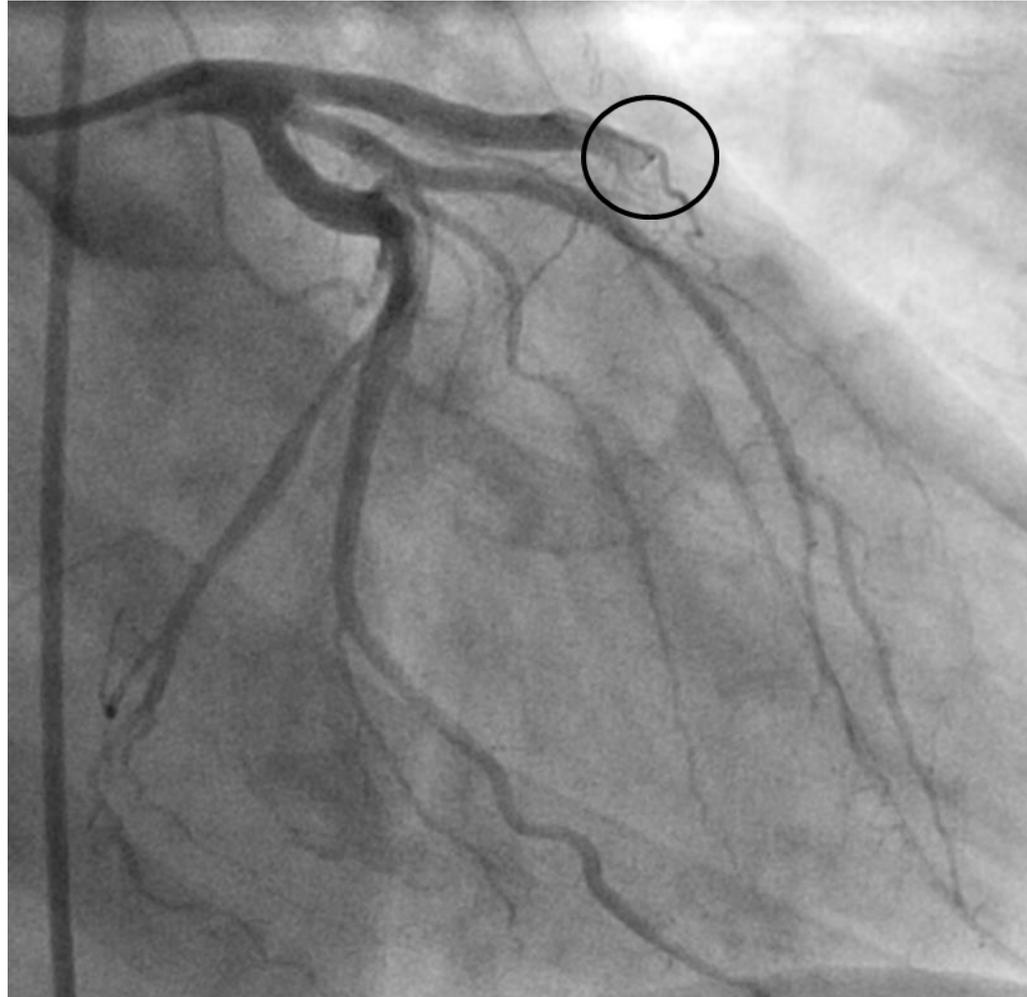
Meds Received

- ASA
- Heparin Bolus 5,000 units
- Angiomax
- Brilinta
- Lisinopril
- Metoprolol
- Zocor

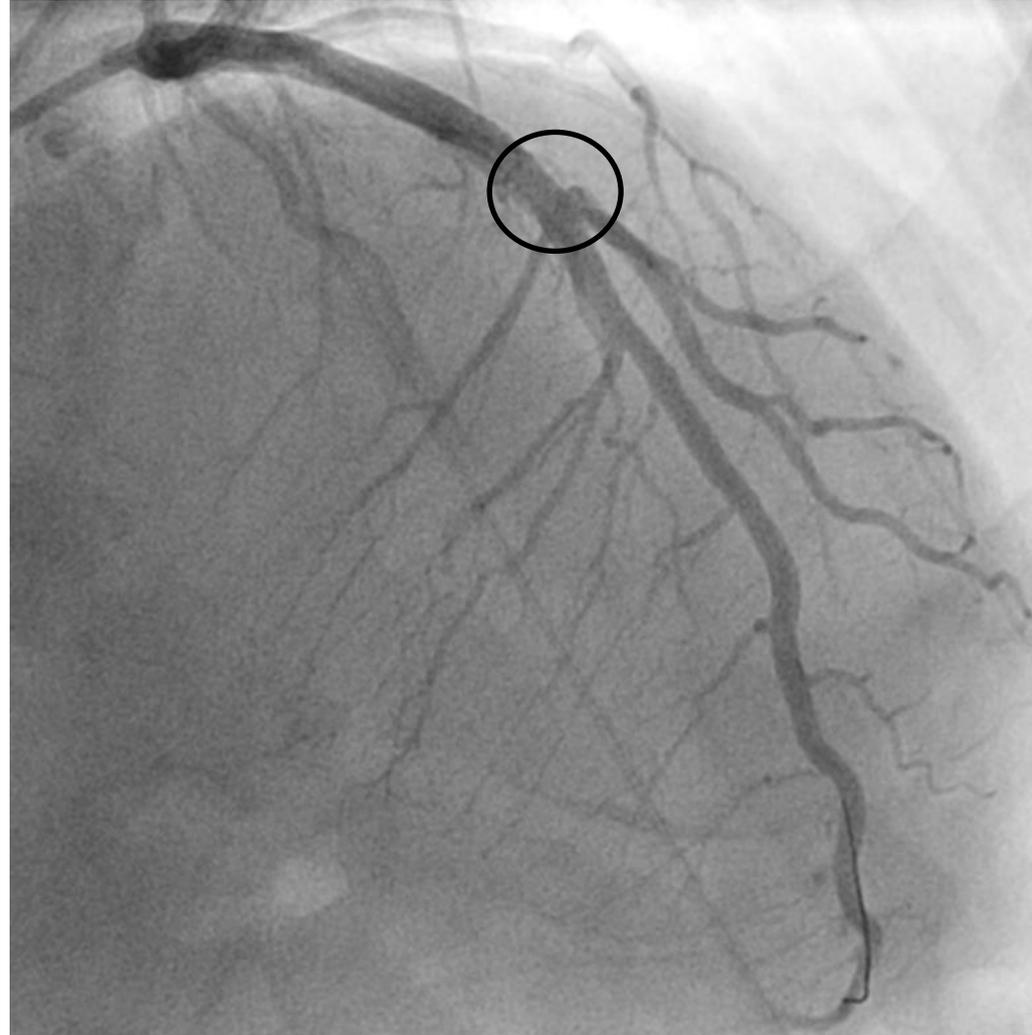
PCI

- Upon arrival to cath lab, patient was found to have a 100% occlusion to the midsegment of the LAD.
- The LAD was initially traversed with a guidewire. An export catheter was then used as there was still no flow into the LAD. Follow-up angiography revealed that the vessel was opened. Residual 50% stenosis and haziness resulted. A DES was delivered to the mid LAD lesion and TIMI 3 flow with no residual stenosis resulted.

Before



After



Times

- Symptom Onset: Approx 06:00
- Presentation to the ED: 09:53
- EKG: 09:54
- STEMI Code Paged: 10:03
- Departed ED: 10:10
- Arrived Cath Lab: 10:12
- Cath Lab Start Time: 10:14
- Export Cath/Reperfusion Time: 10:24
- **Door to Balloon: 31 Minutes**

Outcome

- After cath and PCI, patient was transferred to the general cardiac floor in stable condition.
- He was discharged home 2 days later on:
 - ASA
 - Plavix
 - Lisinopril
 - Metoprolol
 - Simvastatin
 - Referral to cardiac rehab program

Scenario #2

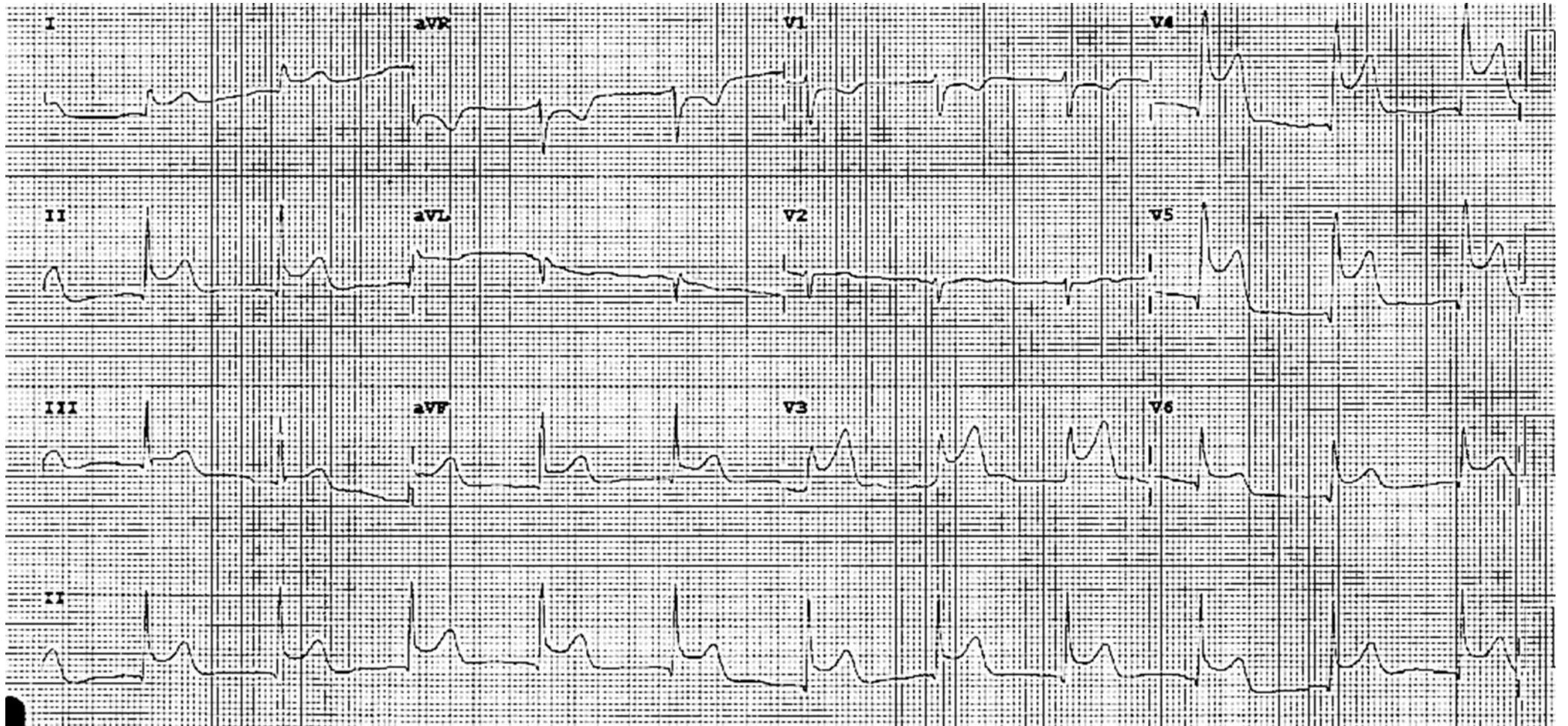
- 51 yo M presented to outlying facility ED via private vehicle with complaints of chest pressure and sweats.
 - Pressure across the entire upper chest with no radiation.
 - Mild nausea with no vomiting.
 - Mild shortness of breath
 - Profuse diaphoresis
 - Pain 8/10
- He had been having “twinges” of discomfort which lasted only minutes over the past week, with no other associated symptoms.

Patient Information & History

- Demographics
 - 51 years old
 - Caucasian
 - Male
- Pertinent Medical History
 - Hyperlipidemia
 - Current every day smoker
 - Patient's father deceased in his 30s due to MI complications.
- Pertinent Home Medications
 - None

EKG

EKG showed an Anterolateral STEMI



Vitals/Lab Results

- **Baseline Vitals**

- Temp 98.4
- Resp 18
- Pulse 65
- BP 155
- O2 100% RA
- Pain 8/10
- Ht 167.6
- Wt 68.04

- **Baseline Labs**

- Trop I 0.197 (N= \leq 0.056)
- CK-MB 2.1 (N= \leq 5.0 ng/ml)
- Creatinine 0.90
- Hgb 17.8
- INR 0.90
- Lipid Panel
 - TC 216
 - Trig 120
 - HDL 40
 - LDL 152

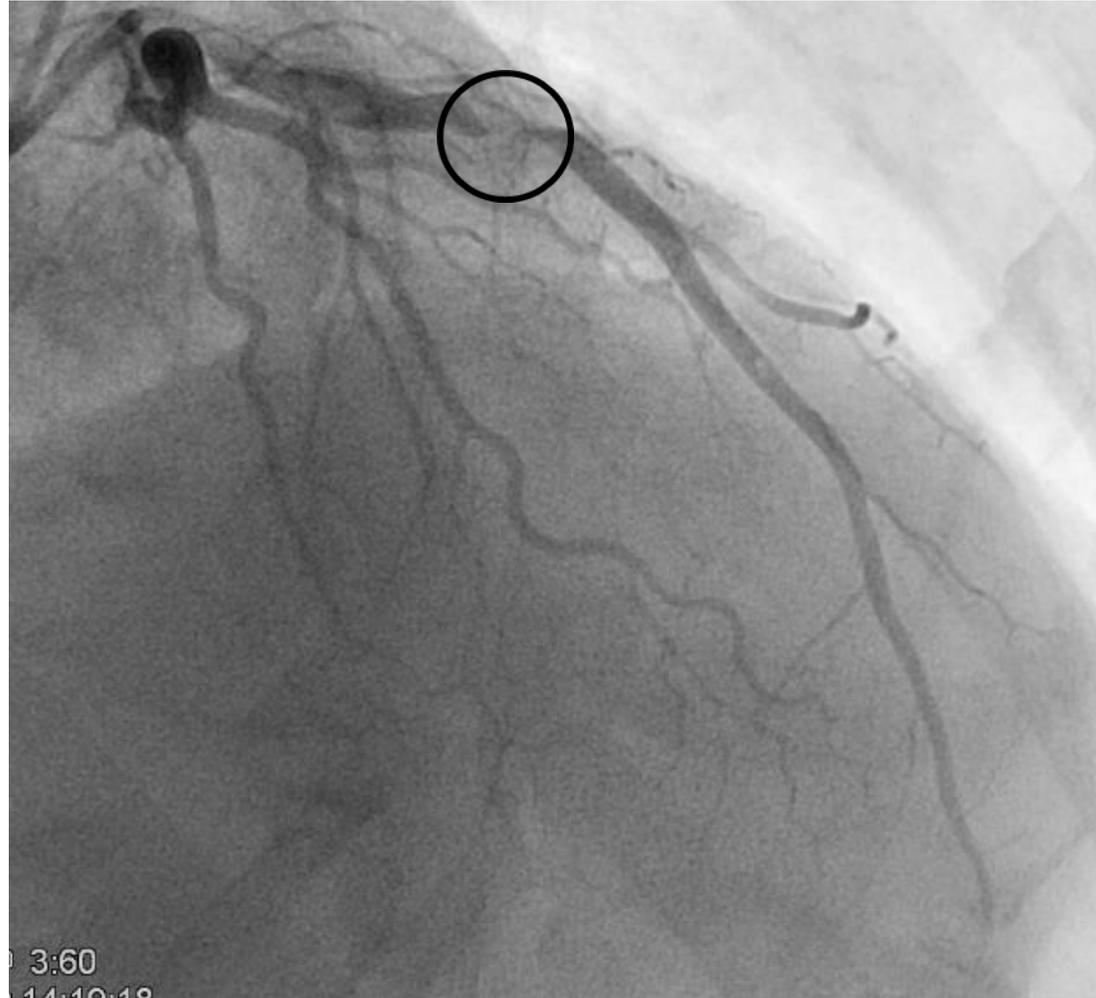
Meds Received

- ASA 325 mg
- Effient 60 mg
- Metoprolol
- Lisinopril
- Statin 8/3
- Heparin Bolus 4,000 units
- Angiomax

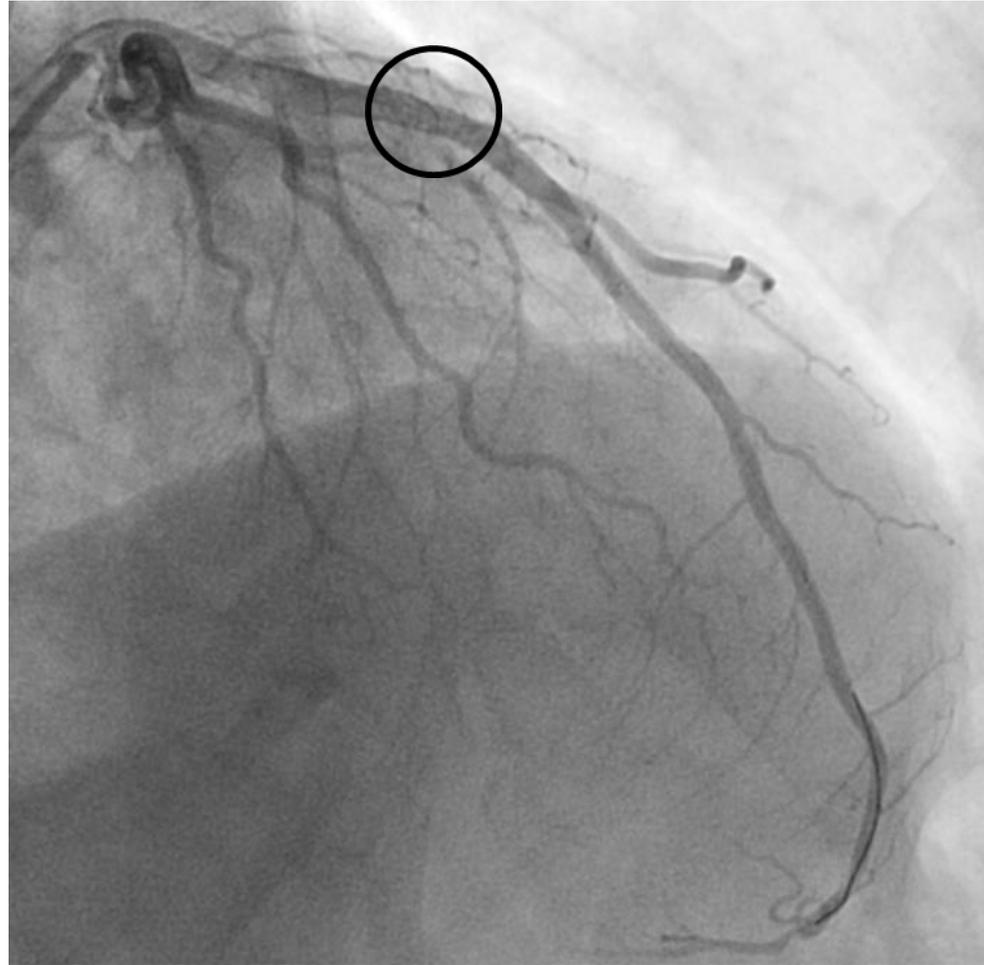
PCI

- Upon arrival to cath lab, patient was found to have 99% subtotal occlusion to the mid LAD.
 - Was noted to have TIMI 2 flow distal to the lesion.
- The LAD was initially traversed with a guidewire without difficulty. A balloon was used to predilate the lesion.
 - Follow-up angiography revealed that the lesion improved with 80% residual stenosis and establishment of TIMI 3 flow.
- DES was placed with result of TIMI 3 flow and no residual stenosis.

Before



After



Times

- Symptom Onset: 10:00
- Presentation to Referral Facility: 10:27
- EKG: 10:35
- Departed Referral Facility: 12:16
- Arrived Sanford: 13:39
- Arrived Cath Lab: 13:41
- Cath Lab Start Time: 13:54
- Balloon Time: 14:04
- **Door to Balloon: 25 Minutes**
- **Referral Facility DIDO: 109 Minutes (Goal \leq 30 Minutes)**
 - **No Lytics Given**
- **Door to Reperfusion Time: 217 (Goal \leq 120 Minutes)**

What Went Wrong

- Patient at referral facility for approx. **100 minutes** prior to initiating transfer.
- Patient was ruled candidate for lytics, but referring physician neglected to inform cardiologist how long patient had been in their ER.
 - Cardiologist was informed patient would be to door of Sanford within 60 minutes, therefore declined need for lytics.

Outcome

- After cath and PCI, patient was transferred in stable condition to the general cardiac floor.
- He was discharged to home 2 days later on:
 - ASA 325
 - Atorvastatin
 - Plavix
 - Lisinopril
 - Metoprolol
 - Referral to tobacco cessation program
 - Referral to cardiac rehab program

STEMI Coordinator Case Study

Sanford Health Fargo



CASE STUDY #1

(January 2015)



- **1340-** 61 year old male presented to a regional clinic (>60 minutes from a PCI center) with c/o left sided chest pain and SOB since 0830
- Patient stated pain was so bad at first that he *almost* called an ambulance (was also nauseated and diaphoretic at that time). Patient did not have insurance and eventually decided to be seen at clinic.



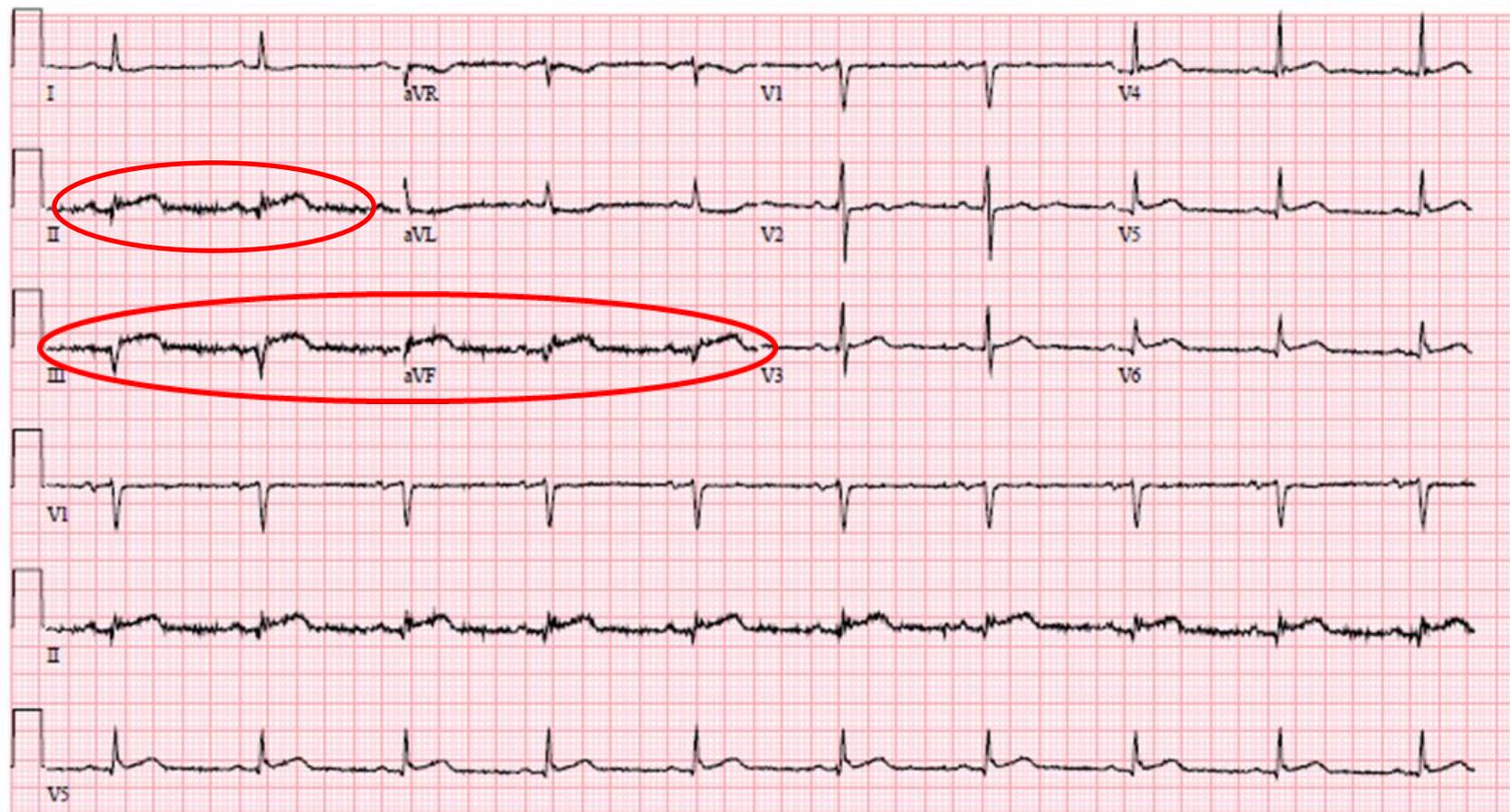
- Upon arrival to the clinic, a troponin was immediately drawn
- **1438-** Troponin came back elevated
- **1501-** 12L ECG was performed, revealing inferolateral ST elevation

Male Caucasian PR interval 174 ms Inferior infarct Acute
Room: QRS duration 90 ms ** ACUTE MI **
Loc:96 QT/QTc 412/407 ms Abnormal ECG
P-R-T axes -11 1 82 Team aware
No previous tracing available

Technician: JG
Test ind: CHEST PAIN, SOB

Referred by: NAGLA, V BUCHHOLZ, B

Confirmed By: H.S. MANJUNATH

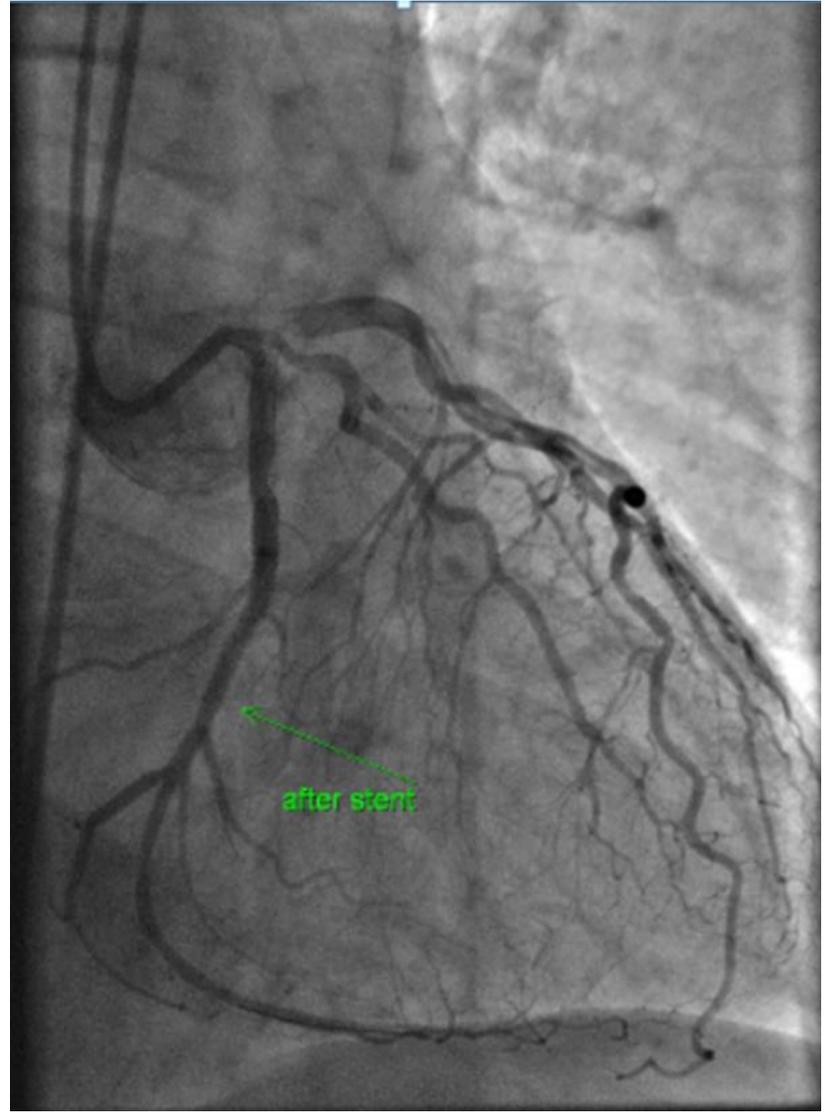
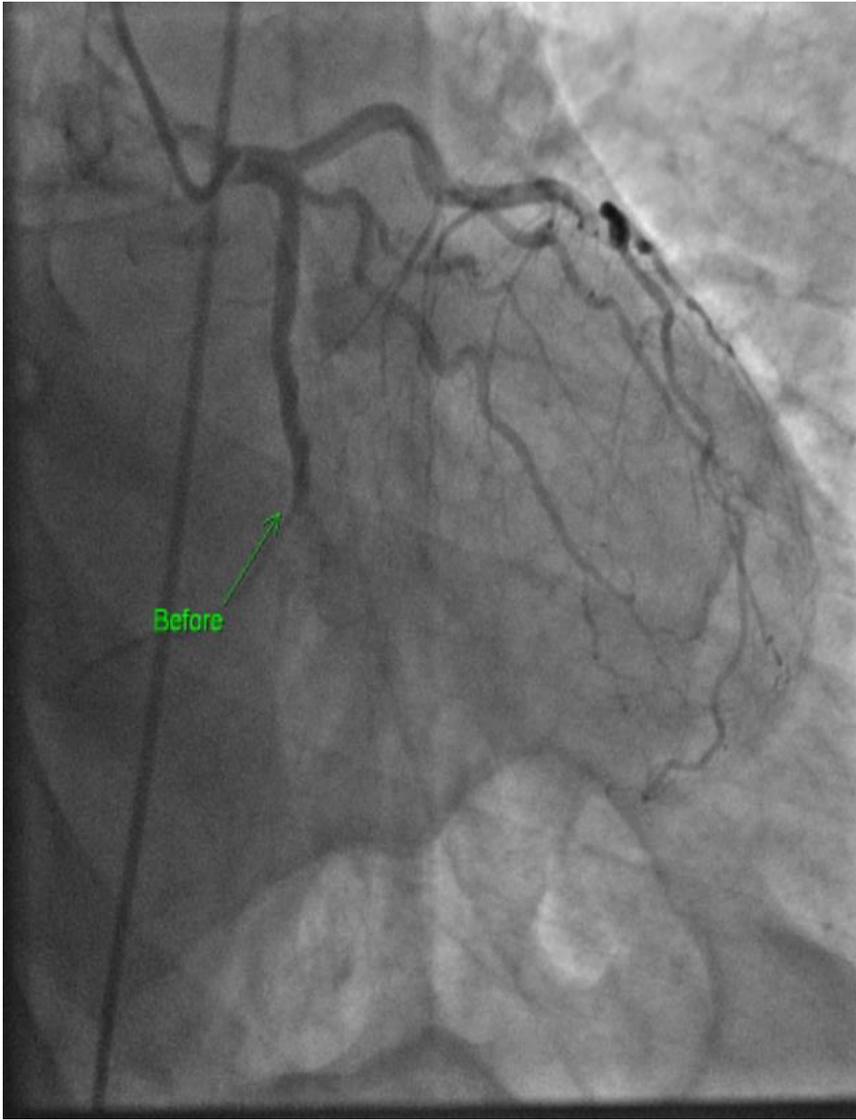




- Ground transport was immediately dispatched
- **1504-** EMS personnel arrived at patient's bedside
- Patient was transferred briefly to the nearby ED where he received Plavix and heparin
- **1522-** Patient was discharged from the ED via ground ambulance

- **1656-** Patient was admitted to the SMCF cath lab
- **1705-** Coronary angiography was performed, revealing a 100% occluded mid circumflex
- **1724-** Thrombectomy performed, followed by the placement of a drug eluting stent





METRICS

Indicator	Actual Time	Goal	Goal Met
Clinic Door to ECG <i>(estimated)</i>	81	≤10 minutes	
Clinic Door to EMS dispatch	81	≤10 minutes	
Clinic/ED Door-in to Door-out <i>(separate amount of time spent in ED unavailable)</i>	102	≤ 45 minutes	
Transport time <i>(includes transport from ED garage to cath lab)</i>	94	≤ 95 minutes	
SMCF Door to PCI	28	≤20 minutes	
Sanford Health Oakes Clinic Door to PCI	224	≤160 minutes	

MORE TO THE STORY...

- Clinic was very busy with only one provider
- Patient was at first insistent on being transferred to the VAMC, as he did not have insurance
- On-call provider for ED had emergency issues related to pregnancy



KEY POINTS



- There is still much work to be done in educating the community about the symptoms of a heart attack and the importance of utilizing EMS
- Very important to work with local clinics to establish a STEMI protocol
- Clinics should consider some sort of rapid response team
- Patient was a good candidate for lytic therapy (onset of symptoms <6 hours, relatively young, no contraindications)

SILVER LINING...

- The patient's EF was 50% at the time of the angiogram
- Has done very well post-PCI. Has no symptoms
- This case prompted the clinic to improve their process for future STEMI cases



CASE STUDY #2

(January 2015)



- An 81 year old female presented to the Hillsboro ED at approximately 0100 with c/o chest pain, n/v and SOB
- The patients symptoms had resolved upon arrival to the ED and her 12L ECG and initial troponin were WNL

Female Caucasian
Room: ER 01b
Loc: 45

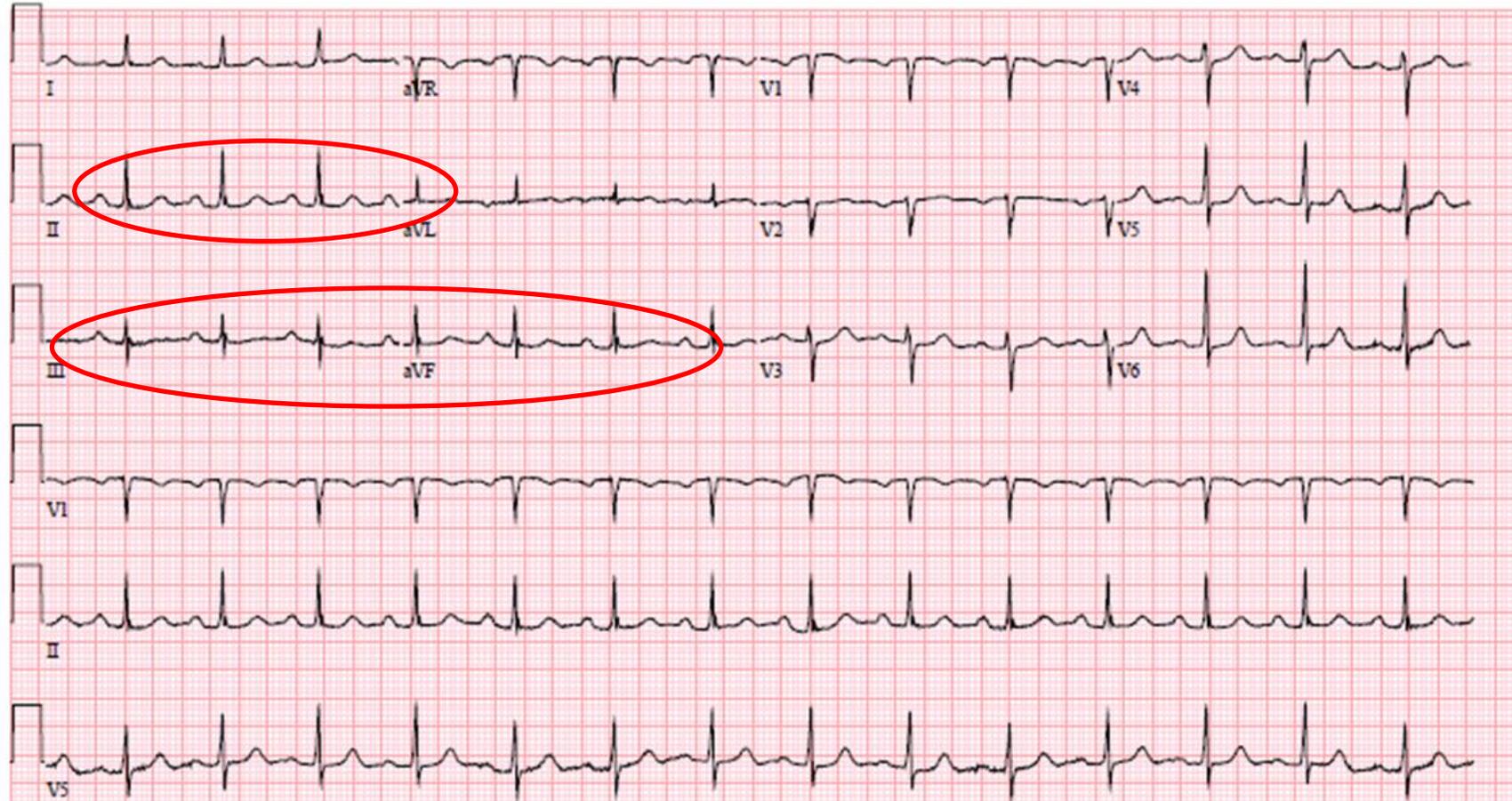
PR interval	200	ms
QRS duration	84	ms
QT/QTc	374/450	ms
P-R-T axes	74 47	48

Normal ECG

Technician: MP
Test ind:

Referred by: CHARLES BREEN

Confirmed By: CHARLES BREEN



- The patient was admitted for ACS rule-out
- **0445-** Patient experienced sudden, severe chest pain
- **0451-** 12L ECG was performed showing inferior ST elevation

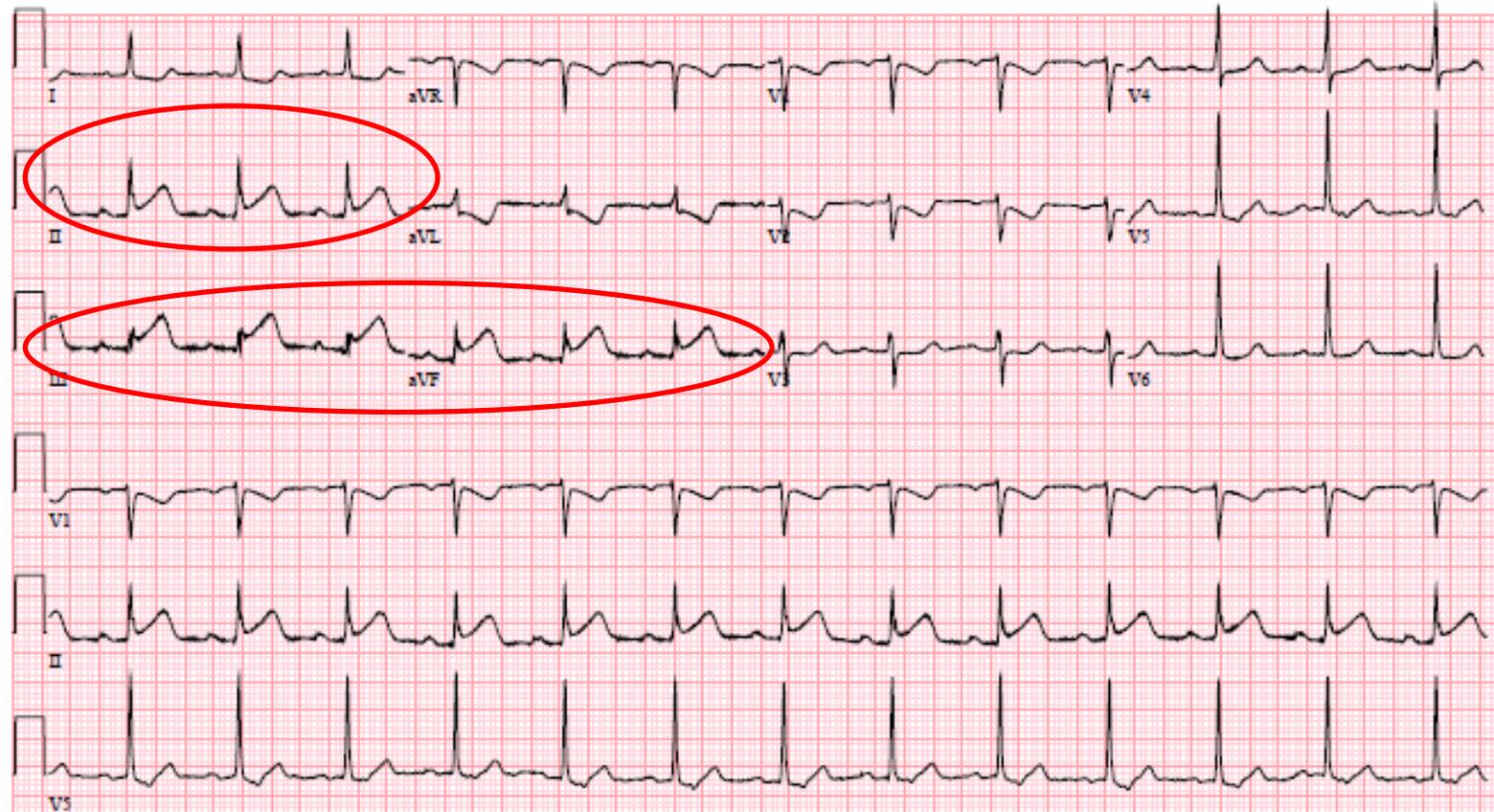


Female Caucasian PR interval 198 ms ST elevation consider inferior injury or acute infarct
Room:2 01b QRS duration 78 ms ** ACUTE MI **
Loc:45 QT/QTc 366/419 ms Abnormal ECG
P-R-T axes 66 45 92

Technician: SL
Test ind:

Referred by: CHARLES BREEN

Confirmed By: CHARLES BREEN



- **0455-** On-call provider arrived at patient's bedside
- **0503-** SMCF's One Call referral line was contacted regarding a STEMI transfer
- **0525-** Patient was discharged via ground ambulance



- **0606-** Patient was admitted directly to the SMCF cath lab
- **0611-** Coronary angiography was performed, revealing a 99% occluded mid RCA
- **0624-** Balloon angioplasty was performed, followed by the placement of a drug eluting stent



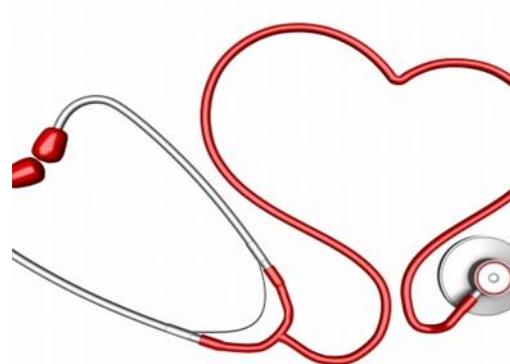


METRICS

Indicator	Actual Time	Goal	Goal Met
Symptom Onset to ECG	6	≤10 minutes	
STEMI ECG to One Call	12	≤15 minutes	
STEMI ECG to Door-Out	34	≤ 35 minutes	
Transport time <i>(includes transport from ED garage to cath lab)</i>	41	≤ 45 minutes	
Sanford-Fargo Door to PCI	18	≤20 minutes	
Sanford-Hillsboro Door to PCI	99	≤100 minutes	

FOLLOW-UP

- Patient's EF at the time of the angiogram was 55%
- EF at return appointment in March was 65%
- Patient has done well in cardiac rehab, denies any further chest pain
- Patient did report some increased SOB, was switched from Brilinta to Plavix





KEY POINTS

- Always perform serial ECGS for new or worsening symptoms
- Inpatient STEMIs are quite rare- it is very important to have a plan in place if this should occur

The Hospital Is No Place for a Heart Attack

A Group of 12 Institutions Is Working to Improve Survival Rates for In-Hospital Attack Patients



Cardiac Team: From left, Drs. George Stouffer, Prashant Kaul, Xuming Dai, Sidney Smith and Michael Yeung, stand by a screen displaying a coronary angiogram in a catheterization lab at North Carolina Memorial Hospital in Chapel Hill. The group aims to speed treatment and improve outcomes for patients who have a heart attack in the hospital.

PHOTO: TRAVIS DOVE FOR THE WALL STREET JOURNAL

By **RON WINSLOW** <http://www.wsj.com/articles/a-hospital-is-no-place-for-a-heart-attack-1422920270>

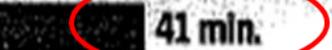
Feb. 2, 2015 8:37 p.m. ET

A hospital is a bad place to have a heart attack.

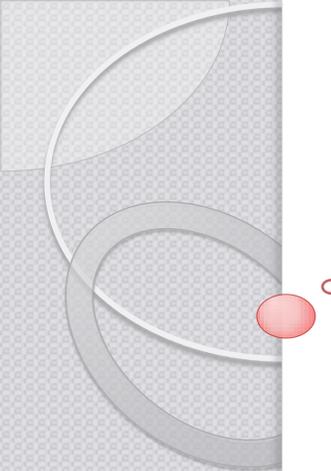
While cardiologists have made great strides speeding treatments to people who suffer a heart attack outside the hospital, scant attention has gone to patients already in the hospital for an unrelated medical problem who then have an attack. Recent studies suggest those patients are at least three times as likely to die before getting discharged as people who arrive at the emergency room after having a heart attack elsewhere.

Now, a group of 12 hospitals are joining forces to develop strategies—involving nurses in non-cardiac units to rapid-response teams in catheterization labs—to hasten care for those suffering in-hospital heart attacks. Researchers estimate some 10,000 people a year have an attack in

Time to Treatment | Where patients suffer a heart attack makes a big difference

	Average time to an electrocardiogram	Average time from ECG to treatment	Fatality rate*
When a heart attack occurs out of the hospital	 5 min. Suspected heart-attack patients are given an electrocardiogram, or ECG, immediately upon arrival at the emergency room, according to protocol. Often, paramedics perform an ECG in the ambulance and send results to the ER.	  60 min. ECG results are delivered immediately to the cardiac-catheterization lab, activating a cardiac-response team that is prepared to take action as soon as the patient arrives.	 4% A 4% death rate underscores the value of a systematic protocol to get patients treated quickly.
When a heart attack occurs in the hospital	  41 min. Symptoms in non-cardiac patients may not be recognized quickly. Delays can occur in finding a doctor to evaluate the patient or staff to perform the ECG.	  129 min. Non-cardiac doctors and nurses may wait for results of other tests to come in before reading an ECG or consulting with a cardiologist, delaying activation of the cath lab staff.	 40% Sicker and older patients explain some of the difference in mortality, but doctors believe a focus on improving care can significantly boost survival rates for such patients.

measured before hospital discharge Note: Based on a study at UNC Chapel Hill of 227 out-of-hospital and 48 in-hospital patients. Source: Journal of the American Heart Association



STEMI Coordinator Case Study

CHI St. Alexius Health, Bismarck

CASE STUDY I

48 YEAR OLD MALE

HX OF 3 PREVIOUS MI'S

TOTAL OF 5 PREVIOUS STENTS

LAST MI AND STENT PLACEMENT 2013

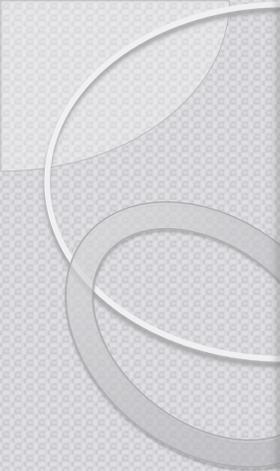
UNABLE TO AFFORD MEDICATIONS, STOPPED ALL BUT ASA

RISK FACTORS

FAMILY HX

CURRENT SMOKER

HYPERLIPIDEMIA



1230 CHEST PAIN STARTED 10/10
1301 PT. CALLED 911 AND BEGAN DRIVING TOWARD TOWN
1330 INTERCEPTED BY EMS.
1336 EKG OBTAINED – INFERIOR STEMI CALLED, APPROX. 25
MILES LATER INTERCEPTED WITH AIRMED

PT. RECEIVED ASA, FENTANYL, HEPARIN BOLUS AND DRIP DURING
TRANSPORTS

1519 ARRIVED ST.A'S
1530 ARRIVED CATH LAB
1556 VESSEL OPEN

HEART CATH RESULTS

LEFT MAIN CLEAR

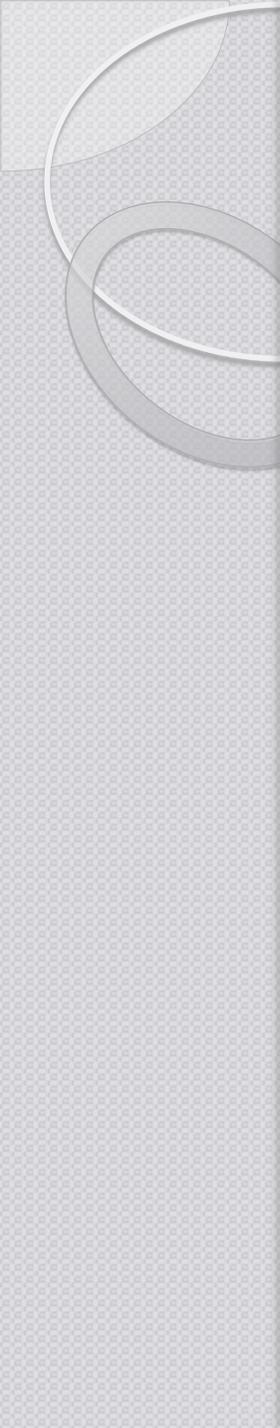
MID LAD 80%

CX CLEAR

RCA 100% PREVIOUSLY INSERTED STENTS STARTING IN
PROXIMAL RCA TO DISTAL OCCLUDED DUE TO THROMBOSIS
WITH ADDITIONAL DISTAL LESION OF 60%

1556 SUCCESSFUL PTCA

FOLLOWED BY BOTH INTEGRILLIN AND HEPARIN
DRIPS



FMC TO BALLOON 146 MIN.

DOOR TO TABLE 11 MIN.

DOOR TO BALLOON 37 MIN.

CASE STUDY 2

50 YEAR OLD MALE

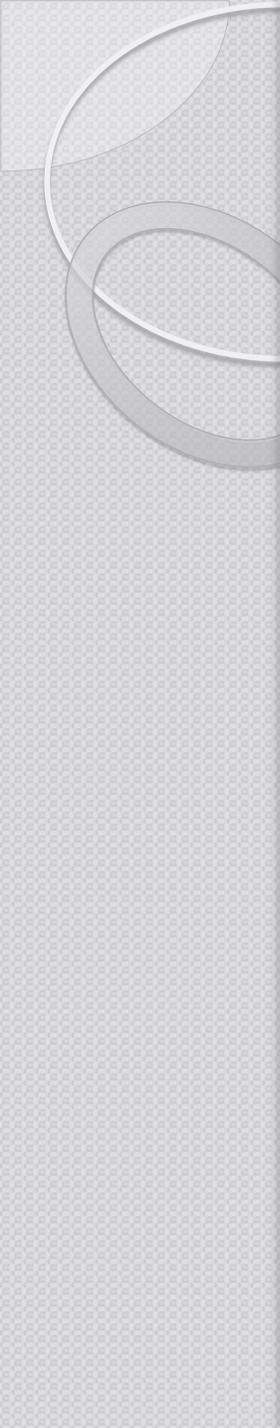
NO PREVIOUS HEART HISTORY

ON NO MEDICATIONS

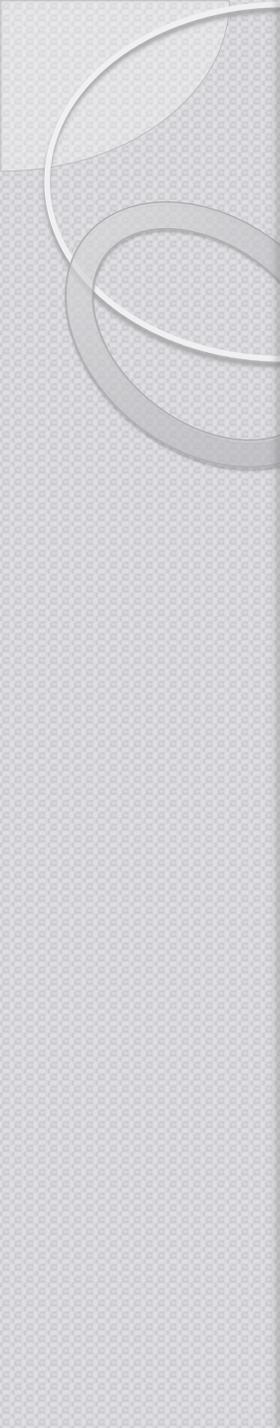
RISK FACTORS

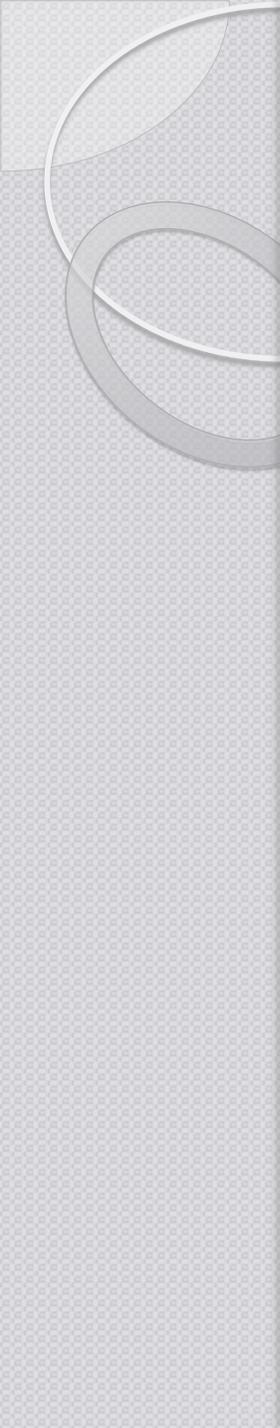
HX OF SMOKING

PREMATURE FAMILY HX OF CAD

- 
- 0712 EMS CALLED FROM CAFÉ FOR PT. WITH DIAPHORESIS, SOB, N/V AND UPSET STOMACH
 - 0716 DEPUTY ARRIVED, PLACED PT. ON O2. AFTER SEVERAL MINUTES PT. PAINFREE
 - 0737 EMS ARRIVED, NO SX. PRESENT
 - 0748 12 LEAD COMPLETE AND POSITIVE FOR ANTERIOR MI
 - 0755 PAIN REOCCURRED WITH SLIGHT DECREASE AFTER NTG

- 
- 0804 ARRIVED CAH – TRANSPORT ARRANGED, HEPARIN STARTED
 - 0834 TNK GIVEN
 - 0848 SPONTANEOUS VFIB FOLLOWED BY SHOCK AND RETURN TO SR
 - 0858 FLIGHT CREW AT BEDSIDE AND PT. PAINFREE
 - 0941 ARRIVE ST.A'S PAINFREE AND STABLE. EKG NORMALIZED AND DECISION TO WAIT UNTIL AM FOR HEART CATH UNLESS PROBLEMS.

- 
- 1231** **WAITING IN ER FOR BED ON TELE AND PT
SPONTANEOUSLY FIBRILLATED AND WAS
SHOCKED INTO SR**
 - 1245** **ARRIVED CATH LAB**
 - 1314** **VESSEL OPENED**



ALL VESSELS CLEAR WITH THE EXCEPTION OF THE PROXIMAL
LAD WHICH HAD A 99% OCCLUSION.

ARREST TO CATH LAB 14 MIN.

ARREST TO BALLOON 43 MIN.

STEMI Coordinator Case Study

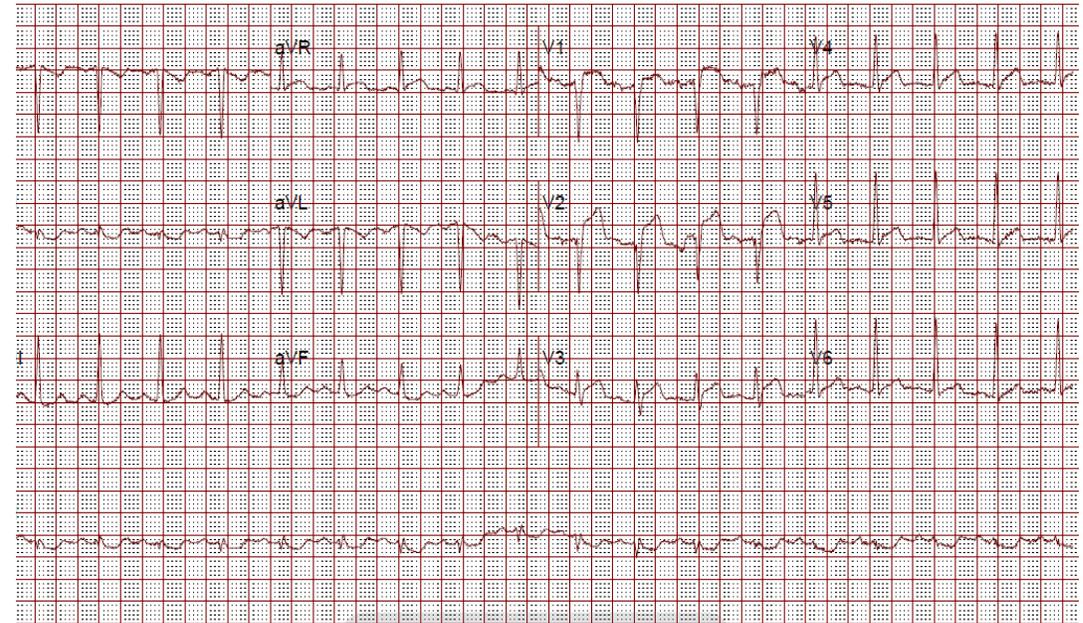
Trinity Health, Minot

Case Study #1-EMS

- 39 year old male
- PMH: Smoker
- Patient awoke with Back Pain radiating to both collar bones at 0420.
- Called EMS
- Dispatched 0446, FMC 0454
- No EKG done enroute because patient was having “Back Pain”

EKG-

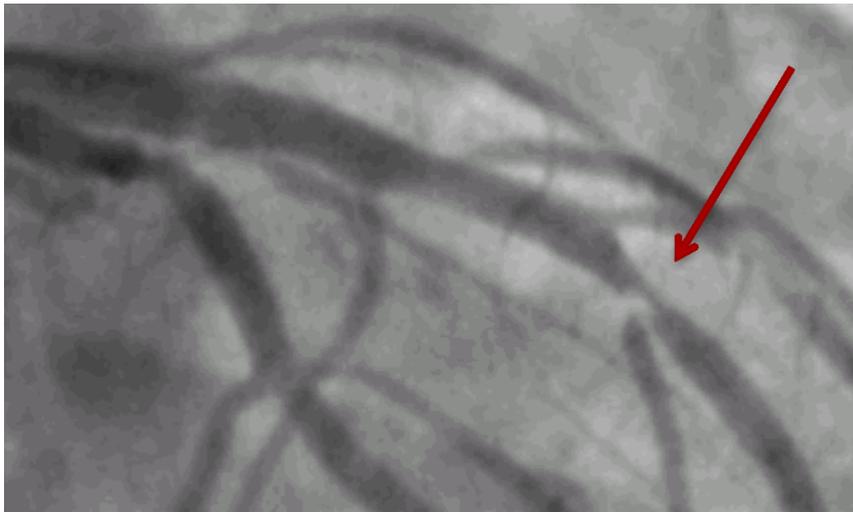
- Patient arrived at 0520
- EKG at 0528



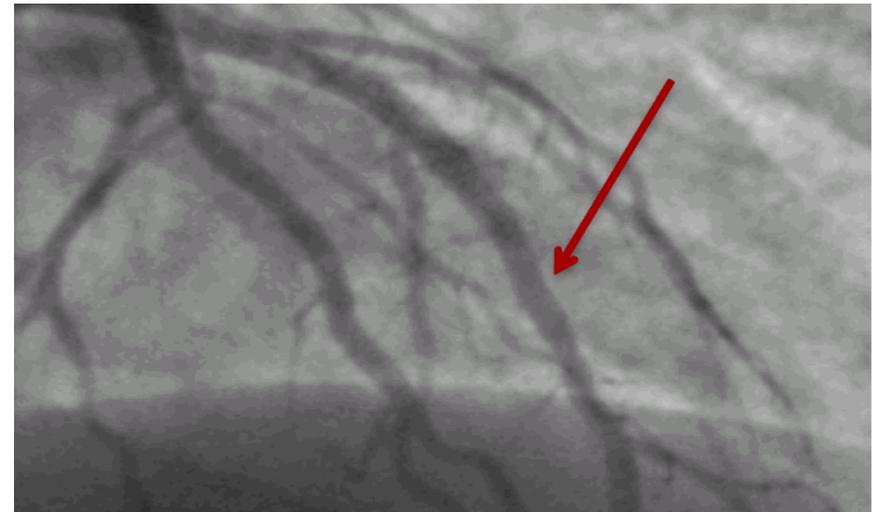
- ST Elevation in Anterior leads
- STEMI Alert activated at 0531

Cath Lab

- To Cath lab at 0613 (56 minutes)
- Wire crosses lesion at 0640 (80 minutes)



Before



After

Lessons Learned

- EKG while enroute for ANY Medical patients
- Immediate EKG at the facility

Barrier in this case:

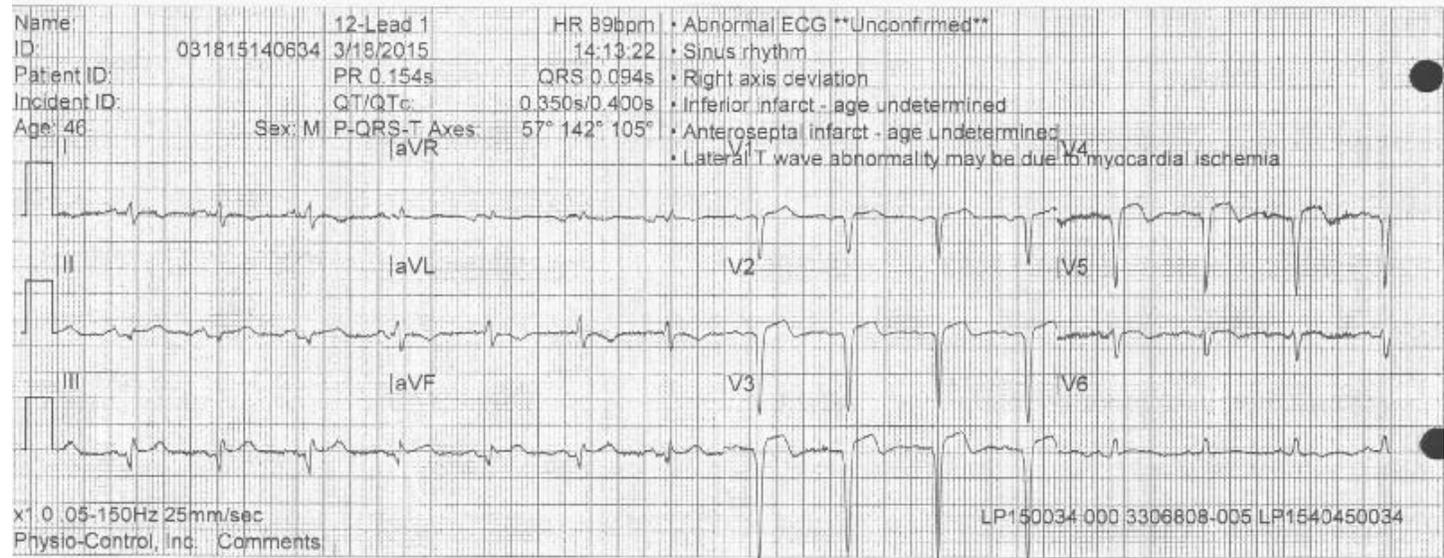
Patient was a health-care provider, and was sure it was only back pain. Didn't receive appropriate attention because surely with his background he would know if he was having a heart attack!

Outcome

- Patient has done well post AMI, quit smoking, lost weight, attempting to live a healthier lifestyle.
- Hgb A1C down from above 10 on admit to hospital to less than 6
- LV function has normalized (25-30% at time of AMI to 55% post follow up appointment)

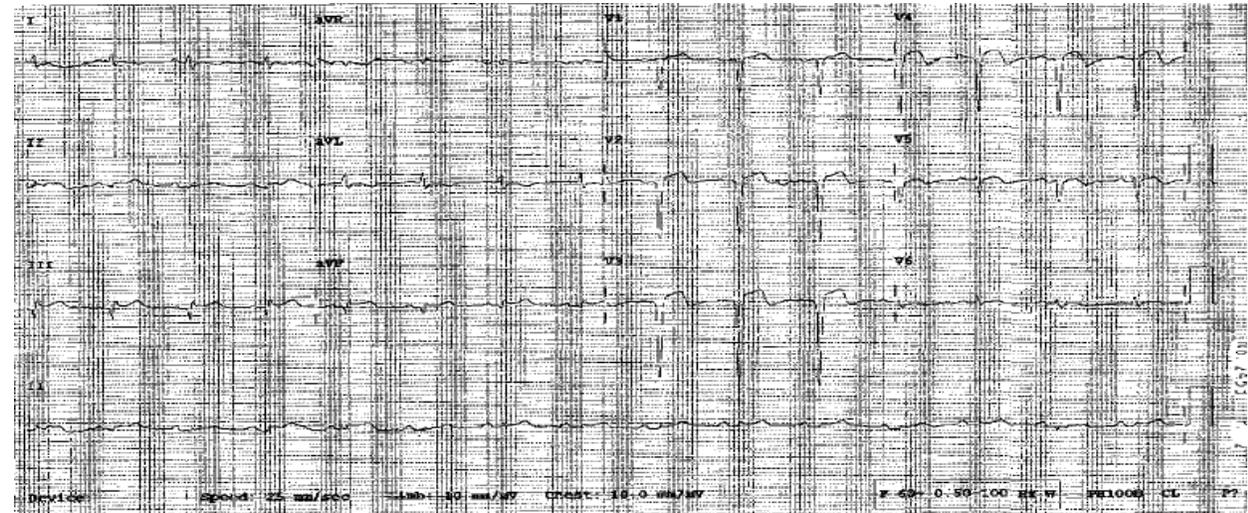
Case Study #2-CAH

- 46 Year old male
- PMH: Obesity, smoker, Sleep Apnea, Dyslipidemia
- Patient woke up at 0300 with left sided chest pain, on and off all day
- EMS called
- FMC: 1408
- First EKG 1413

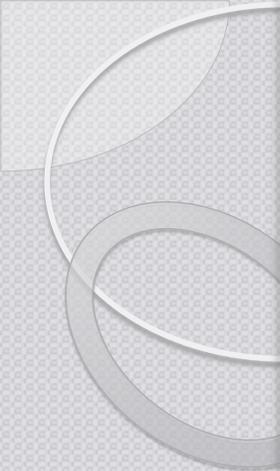


EKG

- Patient arrived at CAH at 1432
- Repeat EKG at 1432



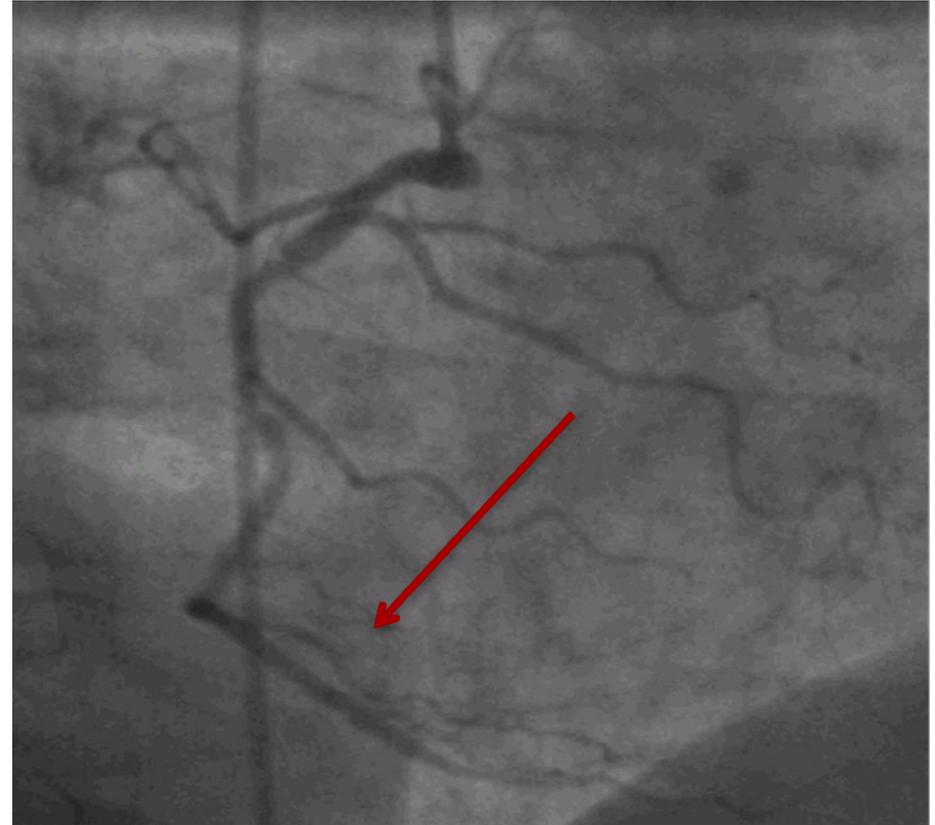
- Minimal ST Elevation in Anterior Leads
- TNKase at 1448 (16 minutes)

- 
- Patient transferred by Fixed Wing-departed CAH at 1507 (35 Minutes)
 - STEMI Alert activated 1604
 - Arrival at Trinity 1623
 - To cath lab at 1640
 - Wire crossed lesion 1712

Cath Lab



Before



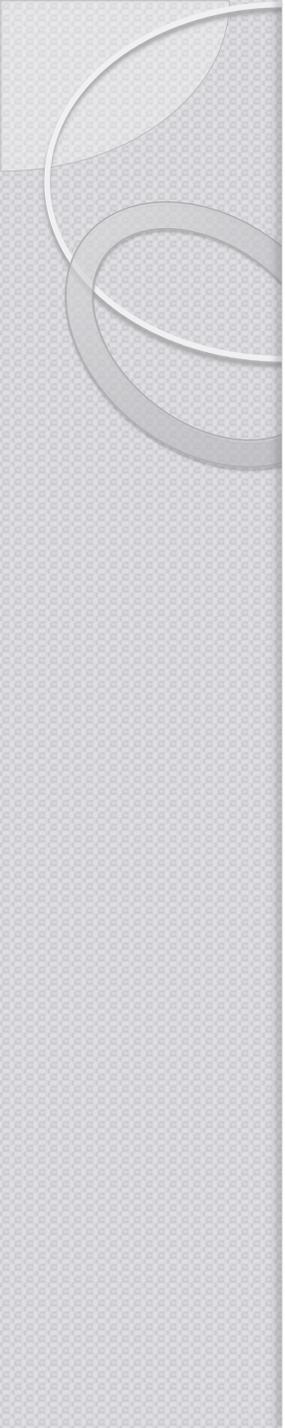
After

Lessons Learned

- Yes, it can be done! EKG prior to arrival, team activated, transport activated, DIDO < 45 minutes

Outcome

- Patient did well while hospitalized without any complications.
- Post follow up-Patient attempting to cut back on smoking
- EF 50%

- 
- Questions?