

ACUTE CORONARY SYNDROME – LEARNER GUIDE

Agenda:

- 1:15-1:30 PM Theory Burst 1
 - 1:30-2:15 PM Case 1
 - 2:15-2:30 PM Expert Questions
 - 2:30-2:45 PM Break
 - 2:45-3:20 PM Case 2-3
 - 3:20-3:30 PM Expert questions and wrap-up
 - * Fun and high-yield EKGs at the end of Case 3
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CASE 1

68 year old Caucasian male with a history of Type 2 DM, HTN, HLD presents to the ER with chest pain. He describes it as a “squeezing” located in the middle of his chest without radiation. He has been experiencing this chest pain weekly and is most noticeable after walking up the stairs to his house. His symptoms are relieved with sitting down and resting. Over the last 48 hours, he has experienced these symptoms more frequently and they occurred twice this morning after he carried his grocery bags. He reports feeling “uncomfortable” and sweaty. His symptoms from this morning have persisted despite rest and prompted him to seek medical attention.

Family Hx: Unknown, patient is adopted

Social Hx: Retired electrician, former smoker: 1ppd x20 years, quit age 60, 1-2 beers per week, denies IVDA

Medications: Metformin 1000mg BID, Lisinopril 20mg daily, ASA 81mg daily, Simvastatin 20mg daily; reports adherence with medications and took his medications this morning including ASA

Physical Exam:

Vitals: 140/80, P 109, RR 16, 94% RA

Gen: Mild distress, diaphoretic, appears uncomfortable

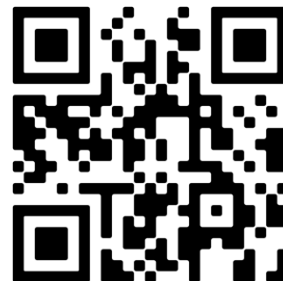
CV: Regular rhythm and rate, no murmurs, rubs, or gallops

Resp: Clear to auscultation bilaterally, chest rise symmetric

GI: Soft, non-tender, non-distended, +BS

Ext: 2+ DP pulses bilaterally, no edema

EKG: Case 1 EKG 1 (appendix or QR code)



Labs/CXR

CBC: WBC 9×10^3 Hgb 13 Hct 39 Plt 350×10^3

Renal panel: Na 136 K 4.2 Cl 102 HCO₃ 23 BUN 15 Cr 0.9

LFTs: AST 20 (nml 9-40), ALT 22 (nml 7-60), ALP 80, Br 0.8 Albumin 4.0

High sensitivity troponin trend in ED: 57 → 60 (3 hours); Lactate: 0.8 → 0.7

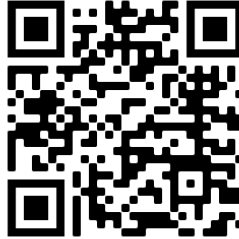
CXR: non-acute cardiopulmonary disease, clinically correlate

What is on your differential diagnosis? Why?

2. How would you risk stratify this patient? Why is this important?



HEART



TIMI



GRACE

3. You are admitting this patient to the cardiology service. What are the goals of your treatment? What treatment do you initiate?

4. The patient's troponins return at 84 at 6 hours after presentation and then 136 at 9 hours after presentation. What's your diagnosis now? Does this change your management?

5. When you re-evaluate the patient approximately 10 hours from presentation, you notice the physical exam findings below. How does your management change if this patient's physical exam findings were the following?

Vitals: 100/60, P110, RR 20, 89% RA
Gen: Moderate distress
CV: Tachycardic, regular rhythm, no murmurs, S3 gallop
Resp: Crackles at bases bilaterally
GI: Soft, non-tender, non-distended, +BS
Ext: 1+ DP pulses bilaterally, 2+ edema to mid-shins bilaterally
EKG: Case 1 EKG 2 in appendix or QR code



Killip Classification (tool to risk stratify individuals with an acute MI, taking into account physical examination and the development of heart failure in order to predict and stratify their risk of mortality)

Class I = no signs of HF

Class II = S3, elevated JVP, crackles ½ of posterior lung fields

Class III = overt pulmonary edema

Class IV = cardiogenic shock

*Mortality significantly higher at 30 days and 6 months for Class II or higher

CASE 2

56 year old male is admitted for fatigue and dyspnea. He has a history of ESRD on intermittent HD and missed his last outpatient dialysis treatment. He is receiving HD in-hospital today with improvement in his dyspnea. You are the night team B intern (aka superhero) covering for cardiology and renal teams. You receive a call that the patient has developed new chest pain during dialysis. You immediately go and assess this patient. He describes his symptoms as a sudden pressure in the middle of his chest. Has been present for the preceding 5 minutes with associated nausea and dizziness. He had similar chest pain about 2 weeks ago that abated after 1 hour. He did not see a doctor after it. Further questioning reveals that he had been feeling too weak and therefore had missed his last dialysis session.

Past Medical History: HTN, HLD, DMII, ESRD on HD, morbid obesity BMI 42

Family History: Father deceased at age 49 from acute MI

Social History: Former truck driver; Current smoker: 1ppd x25 years, denies alcohol and IVDA

Physical Exam:

Vitals: 104/64, P 108, RR 22, 94% RA

Gen: Moderate distress, diaphoretic, clutching at chest

CV: Tachycardic, regular rhythm, no murmurs, rubs, or gallops

Resp: Mild crackles at bases, improved since previous when reviewed admission documentation, chest rise symmetric

GI: Soft, non-tender, non-distended, +BS

Ext: 2+ DP pulses bilaterally, no edema



Prior EKG: normal sinus rhythm, no ST-T wave changes, no q-waves, PVCs

You obtain a new EKG which reveals the following: CASE 2 EKG in Appendix or QR code

1. What is your diagnosis? Explain your answer in terms of the EKG.

2. What are your next steps in management?

Platelet P2Y12 receptor blocker loading doses in acute STEMI

Reperfusion	Type	Age (years)	Preferred drug (loading dose)
Yes	PCI	ALL	Ticagrelor loading dose 180 mg or prasugrel loading dose 60 mg, in patients without contraindications*. Both are preferred to clopidogrel.
			Clopidogrel loading dose 300-600 mg (600 mg is preferred), in patients for whom ticagrelor or prasugrel is not chosen
	Fibrinolysis	≤75	Clopidogrel 300 mg
		>75	Clopidogrel 75 mg
No	--	ALL	Ticagrelor 180 mg

STEMI: ST-elevation myocardial infarction; PCI: percutaneous coronary intervention.

* Absolute contraindications to prasugrel include a history of stroke or transient ischemic attack (TIA) or active pathological bleeding. Weight <60 kg and age ≥75 years are relative contraindications.

3. What if you are at a community, stand-alone hospital and you are the moonlighting resident, how would your management change?

4. What are absolute contraindications to reperfusion therapy in setting of STEMI? What do you do if they exist?

Absolute Contraindications	Relative Contraindications
<ul style="list-style-type: none"> • Any ICH previously • Known AVM • Ischemic Stroke (within last 3 months) • Suspected dissection • Active bleeding • Bleeding diathesis • Head/facial Trauma (within last 3 months) 	<ul style="list-style-type: none"> • Chronic Severe HTN • BP >180/100 • Ischemic Stroke <ul style="list-style-type: none"> ○ >3months • Traumatic/Prolonged CPR <ul style="list-style-type: none"> ○ >10minutes • Major Surgery <ul style="list-style-type: none"> ○ >3 weeks • Recent Internal Bleeding (2-4wks) • Pregnancy • PUD – active • Elevated INR

If contraindications exist, start medical management only and immediately transfer to PCI capable hospital.

CASE 3

67 year old Caucasian male with history of recent PCI approximately 1 week ago at an outside facility, HTN, DMII, COPD and osteoarthritis presents to the ED with acute dyspnea which began 3 hours ago. His dyspnea is associated with lightheadedness and nausea. He was told he had a heart attack one week ago after he presented with severe chest pain. He received a stent but does not know which one. He takes all his medications including ASA and clopidogrel as directed.

Physical Exam

Vitals: T 97, HR 115, BP 98/65, RR 17, SpO2 90% on 4L NC (baseline: RA)

Gen: In mild resp distress, awakens to voice, ill-appearing

Neck: JVD to ear is present

Cardiac: Tachycardic, regular rhythm, holosystolic murmur best heard at apex with radiation to axilla

Chest wall: No tenderness to palpation

Lungs: Crackles at bilateral bases, chest rise symmetric

Abd: Soft, nontender to palpation, non-distended

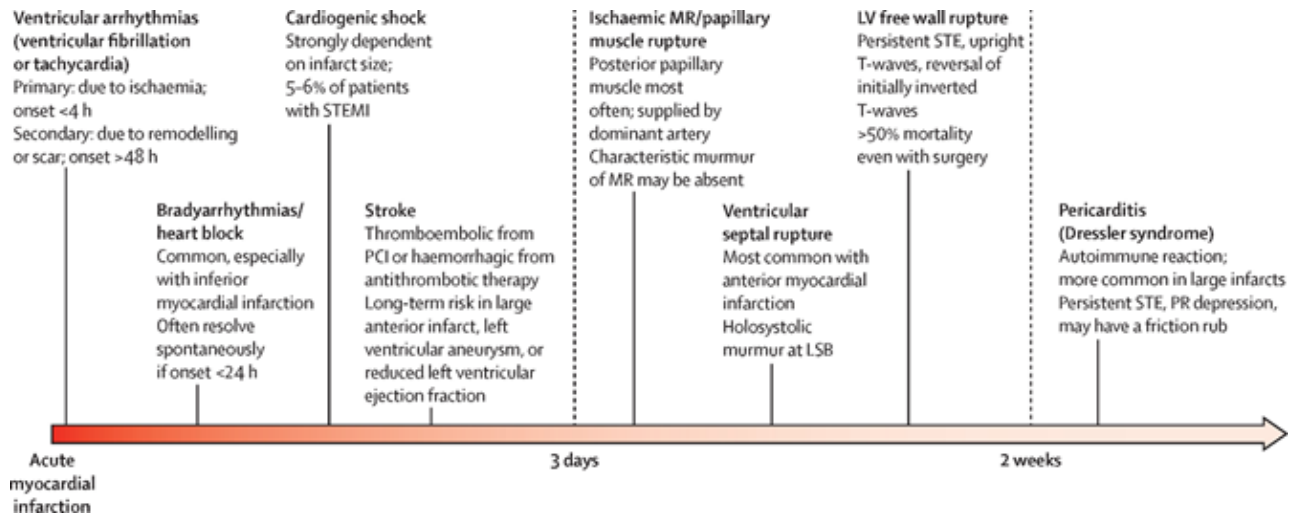
Ext: No pitting edema



EKG: Case 3 EKG in Appendix or QR code

1. What does the EKG show?

2. What's on your differential?



3. What do you want next to assist in diagnosis?

4. What are your next steps of management?

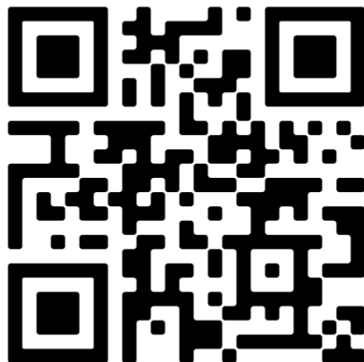
FOR EXTRA FUN



EKG A:



EKG B:



EKG C: