

Anticoagulation Management Update: PBL

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Dr. Tambunan is a frequent and popular FMX presenter. He practices internal medicine and has been teaching for 20 years. He specializes in anticoagulation, venous thromboembolism, and viral hepatitis.



Learning Objectives

1. Practice applying new knowledge and competencies gained from anticoagulation sessions, and receive feedback from expert faculty.
2. Interact collaboratively with peers to solve complex and challenging case-study scenarios.
3. Develop problem-solving skills that promote effective reasoning to manage anticoagulation within the context of professional practice.



Audience Engagement System

The screenshot shows the Audience Engagement System app interface. Step 1 is the home screen with various icons. Step 2 shows a list of CME events, including 'Acute Coronary Syndromes: Unchain My Heart'. Step 3 shows the details for this event, including the title, location, duration, and a description. Red arrows indicate the flow from Step 1 to Step 2, and from Step 2 to Step 3.



Chief Complaint

- Chest pain

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History of Present Illness

66 year-old woman is evaluated in the emergency room for chest pain that has been present for one hour. The pain is located in the sternal area, and described it as pressure like. She has not experienced any similar episode previously. Her pain is relieved after one sublingual nitroglycerin and supplemental oxygen

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Past Medical History

- Hypertension x 15 years
- Chronic kidney disease
- Hypercholesterolemia

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Medications, Allergies

- Lisinopril 10 mg daily
- Furosemide 20 mg daily
- KCl 10 mEq daily
- Simvastatin 40 mg daily

- Allergy: PCN

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Immunizations

- MMR as a child
- Td – 7 years ago
- Flu vaccine up to date

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Family History

- Dad – HTN, MI at age 60
- Mom – DM type 2 and HTN

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Social History

- Tobacco – Denies
- EtOH - Occasional
- IVDA – Denies
- Occupation – retired. Previously human resource department supervisor

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Review of Systems

- Gen: More easily fatigued
- Resp: Occ. Shortness of breath
- GI: Intermittent nausea feeling

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Physical Examination

- Vitals: B/P 150/74, HR – 72, O2 sat = 94% on RA
- Neck: JVD – normal
- Heart: RRR with no murmur or gallop or rub
- Lung: CTAB
- Abd: Soft, NT, NABS, no HSM
- Ext: good pulse, no peripheral edema

FMX

Laboratory/Radiology

- Na = 136, K = 4.1, Cl = 104, HCO₃ = 22, BUN = 24, Creat = 2.1, Gluc = 99, ALT/AST = 48/58, Alb 3.5, Bili = 0.8
- Estimated GFR is < 30 mL/min
- WBC 9.9, Hgb 10.9, Hct = 35, Plt = 233
- EKG shows normal sinus rhythm, T wave inversion on V 4-6

FMX

Assessment

- Which of the following is the best anticoagulation management for this patient?
 - A. Low dose unfractionated heparin
 - B. Full dose unfractionated heparin
 - C. Low dose low molecular weight heparin
 - D. Full dose low molecular weight heparin

FMX

Plan

- Answer: B
- Explanation: Because the GFR is low, it is not recommended to use LMWH since the Xa activity will be unstable since LMWH is renally excreted. Low dose LMWH or UFH is not effective therefore not acceptable. Therefore, full dose unfractionated heparin is the acceptable anticoagulation management for this patient

FMX

Assessment

Two days into her hospitalization, she felt her heart racing and was diagnosed of having an atrial fibrillation rhythm with a controlled VR. Echocardiogram shows an EF = 35%, LA size of 4.0, and no valvular disorder or clot noted.

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Question:

What is your anticoagulation choice?

- A. Warfarin
- B. Apixaban
- C. Dabigatran
- D. Edoxaban
- E. Rivaroxaban

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CHA2 DS2 - VASc

- Congestive heart failure or LV dysfunction -- 1
- Hypertension ----- 1
- Age
 - 65 to 74 years ----- 1
 - 75 and older ----- 2
- Diabetes mellitus ----- 1
- Stroke or TIA or thromboembolism ----- 2
- Female sex (gender) ----- 1
- MI, peripheral vascular dz or aortic plaque -- 1

Lip GY, Nieuwaast R, Pisters R, et al. Chest 2010; 137(2):263-72

FMX

Rate of Stroke/Thromboembolism

- 0 --- 0 %
- 1 --- 0.6%
- 2 --- 1.6%
- 3 --- 3.9%
- 4 --- 1.9%
- 5 --- 3.2%
- 6 --- 3.6%
- 7 --- 8.0%
- 8 --- 11.1%
- 9 --- 100%

Lip GY, Halperin JL. Am J Med 2010;123(6):484-8

FMX

HAS-BLED Score

- Hypertension
- Abnormal renal function
- Abnormal liver function
- Stroke
- Bleeding
- Labile INR
- Elderly (> 65 years)
- Drugs or alcohol (two points for both)

Lip GY, Frison L, Halperin JL, Lane DA. J Am Coll Cardiol 2011; 57(2):173-80

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HAS-BLED Score

- 0 --- 0.9%
 - 1 --- 3.4%
 - 2 --- 4.1%
 - 3 --- 5.8%
 - 4 --- 8.9%
 - 5 --- 9.1%
- < 3 --- 9.1%
 - > 3 --- 16.6%

Lip GY, Frison L, Halperin JL, Lane DA. J Am Coll Cardiol 2011; 57(2):173-80
Apostolakis S, Lane DA, Guo Y, et al. J Am Coll Cardiol 2012; 60(9):861-7

FMX

	Dabigatran	Apixaban	Rivaroxaban	Edoxaban
Indications	Nonvalvular a. fib. DVT & PE treatment DVT prophylaxis	Nonvalvular a. fib. DVT & PE treatment DVT prophylaxis	Nonvalvular a. fib. DVT & PE treatment DVT prophylaxis	Nonvalvular a. fib. DVT & PE treatment DVT prophylaxis
Mechanism of action	Thrombin inhibitor	Factor Xa inhibitor	Factor Xa inhibitor	Factor Xa inhibitor
Clearance	Renal	Renal & Hepatic	Renal & Hepatic	Renal & Hepatic
Usual dosage for VTE treatment/a fib	150 mg BID	5 mg BID	20 mg QD	60 mg QD
Usual dosage for VTE prophylaxis	110 mg 1-4 hrs after surgery then 220 mg daily	2.5 mg BID	10 mg QD	30 mg QD
Antidote	Idarucizumab	?PCC	?PCC	? PCC
Pregnancy	C	B	C	C
Drug interactions (key: bold = increase, nl = decrease)	Azoles, amiodarone, rifampin, anticonvulsants	Azoles, diltiazem, macrolide, protease inh rifampin, anticonvulsants	Azoles, quinidine, HIV protease inh, macrolide rifampin, anticonvulsants	Verapamil, macrolide, Quinidine, azoles rifampin, anticonvulsants
Dose adjustments	CrCl 15-30 mL/min – 75 mg BID CrCl < 15 -- avoid	If + on 2 out of 3: 1. Age > 80 yrs old 2. Body weight < 60 kg 3. Creat > 1.5 mg/dl. Reduce dose to 2.5 mg BID	CrCl 15-50 – 15 mg daily CrCl < 15 - avoid * Food is mandatory	Do not use if CrCl is > 95 CrCl 15- 50 – 30 mg daily CrCl < 15 - avoid

Switching Anticoagulants

Agents	Recommendations
VKA to NOAC	INR <2.0: immediate INR 2.0-2.5: immediate or next day INR >2.5: follow INR till <2.5
NOAC to VKA	Administer concomitantly until INR is appr Re-test 24 hr after last dose of NOAC
Parenteral to NOAC: UFH LMWH	Start once UFH is discontinued. Caution: Renal Start when next dose would be given
NOAC to parenteral	Initiate when next dose of NOAC is due

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Which Anticoagulant?

- Cancer LMWH
- Poor compliance VKA
- Pregnancy LMWH
- Reversal agent needed VKA, UFH, Dabigatran
- Liver disease & coagulopath LMWH
- Renal disease & CrCl < 30 mL/min VKA

Kearon C, Aik E, et al. Chest 2016;149:315-352

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QUESTIONS?

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Associated Session

- Anticoagulation Management Update: The Old and New Frontier

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Interested in More CME on this topic?
aafp.org/fmx-internal

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