

Tuesday The Challenge Quiz Review

#1

TX is a 64yo male (82kg) who presents to the ED with chest pain that started while hanging holiday decorations. He reports a history of high blood pressure and high cholesterol, for which he takes enalapril and rosuvastatin. He states that he doesn't think he needs to be here, but his husband insisted he come in. Upon initial examination his blood pressure is 162/86, HR 74, RR 18, O₂ saturation 99% on RA. Initial lab work is unremarkable except for an elevated troponin. EKG shows various ischemic changes but has ST segment elevation. He is diagnosed with an STEMI. In addition to aspirin, and ticagrelor, the physician approaches you asking for a recommendation regarding anticoagulation therapy for TX. He notes that cardiology does think that he needs to go to the cath lab soon. Which of the following is the most appropriate recommendation regarding anticoagulation for TX?

- a) **Enoxaparin 30mg IV push followed by 80mg subQ q12h**
- b) Heparin 80 units/kg IV push followed by an infusion of 18 unit/kg/hr
- c) Fondaparinux 2.5 mg subcutaneously
- d) Cangrelor bolus of 30 µg/kg followed by 4 µg/kg per minute
 - Per the ACC/AHA guidelines, all STEMI patients should receive anticoagulation. Enoxaparin has a level A recommendation, while heparin, fondaparinux, and bivalirudin all have level B recommendations. Enoxaparin is recommended to be initiated at 1mg/kg subQ q12h, with an initial IV bolus of 30mg in some patients per the TIMI trial (PMID 10517729). There is some modern discussion about the utilization of enoxaparin vs heparin, however, if heparin is used, the dosing is 60 units/kg (max 4000 units) followed by an infusion of 12 units/kg/hr (max 1000 units/hr). The dosing in choice B is typical dosing for management of an acute DVT or PE. For answer choice C, (generally reserved for medical management only strategy, heparin typically recommended just prior to PCI, if needed. Answer D is incorrect since it is not anticoagulation and it is a antiplatelet agent.

#6

The emergency medical service brought a 25-year-old man to the emergency department. The patient has a history of bipolar disorder complicated by multiple substance use. He was found downstairs in his apartment at the bottom of the stairs lying on his left arm. He was last seen a few hours ago by his roommate. He is disoriented and unable to answer any questions, but is breathing on his own. His vital signs are HR 55, T 96.5, RR 18, BP 110/75. You decide to obtain an EKG that shows peaked T waves. What is the next best step in the management of this patient?

- A. Intubation
- B. Epinephrine
- C. Albuterol
- D. Insulin
- E. Calcium gluconate**

Correct E

- A patient brought to the emergency department after prolonged compression of the left upper extremity with an ECG significant for peaked T waves is indicative of crush syndrome leading to hyperkalemia. The next best step is to administer calcium gluconate to prevent global depolarization of the myocardium while correcting its electrolyte abnormalities.
- Hyperkalemia is a potentially life-threatening electrolyte problem that can be a complication of diseases including renal failure, acidosis, ingestion toxicity, lupus, and tumor lysis syndrome. It normally presents on the EKG as peaked T waves, followed by QRS prolongation leading to AV blocks, and finally resembling sine waves indicating impending cardiac arrest.
- ECG shows peaked T waves significant for hyperkalemia.

Incorrect answers:

- Answer A: The patient is breathing on his own and protecting his airway. This patient does not need to be intubated.
- Answer B: Epinephrine is the treatment of choice for anaphylaxis and would lower potassium in this patient, but it has a slower onset than calcium gluconate in protecting myocytes.
- Answers C and D: Both albuterol and insulin should be given when needed, but they have a slow onset during which cardiac complications can occur.

#12

A 20-year-old boy presents to the ER with a high fever. Yesterday he felt tired and then overnight he developed a high fever accompanied by chills and malaise. He also started complaining of headaches and myalgias this morning. A rapid influenza test confirms the diagnosis of influenza A. Which of the following regimen can be given to the patients with diagnosed influenza virus infection within 48 hours of symptom onset?

- A. Give oseltamivir 75 mg orally twice daily for 10 days
- B. Give amantadine 200 mg orally once daily for 10 days.
- C. Do not prescribe antiviral therapy as this infection is self limited
- D. Give oseltamivir 75 mg orally twice daily for 5 days**

Answer D

The regimen of choice for influenza in most patients is oseltamivir 75 mg orally twice daily for 5 days. Although active against influenza, adamantanes are not currently recommended because of resistance in recent years. Use of antiviral therapy for a patient with a low risk of complications from influenza is a judgment call. The CDC guidelines recommend that treatment be considered in otherwise healthy, symptomatic patients within 48 hours of symptom onset.

#13

TH is a 62yo male who presents to the ED with a 3-day history of weakness, fever, and neck stiffness. He has a past medical history of hypertension for which he takes lisinopril and reports no allergies. In triage his temperature is 101.3°F, HR 102, RR 21, BP 114/72, O₂ saturation 98% on room air. CBC and BMP are significant for a WBC of 11.8 and lactate of 3.7. The physician suspects meningitis and prepares for a lumbar puncture. Which of the following is the most appropriate recommendation for empiric therapy in TH?

- a) Piperacillin-tazobactam, vancomycin
- b) Cefepime, vancomycin, ampicillin
- c) Ceftriaxone, vancomycin
- d) Ceftriaxone, vancomycin, ampicillin**

- Standard recommended therapy for adults with bacterial meningitis includes covering against *Neisseria meningitidis* and *Strep. pneumoniae* usually with vancomycin plus a third-generation cephalosporin (most commonly ceftriaxone). After age 50 *Listeria* becomes a concern, so ampicillin is recommended as additional therapy. *Pseudomonas* coverage is not recommended empirically in this patient population, nor is anaerobic coverage, so there is no need for piperacillin-tazobactam or cefepime (PMID 15494903).

#14

SM is a 62yo female with past medical history of hypertension, atrial fibrillation, and type 2 diabetes. She takes lisinopril 10mg po daily, metoprolol tartrate 25mg po bid, rivaroxaban 20mg po daily, and metformin 500mg po bid and is allergic to heparin (HIT). She presents to the ED as a stroke alert due to left sided weakness and aphasia. Her initial blood pressure is 206/112 mmHg, heart rate 86, RR 17, O₂ saturation 96% on room air, and blood glucose 186mg/dL. She is taken promptly to CT scan which reveals a right sided intra parenchymal hemorrhage. The treating provider asks you about if and how her rivaroxaban should be reversed, knowing that you do not have andexanet alfa on formulary. What is the most appropriate recommendation?

- A. Suggest transferring the patient to a facility that does carry andexanet alfa
- B. Vitamin K 10mg IVPB once

C. Kcentra 50 units/kg IVPB once

D. FEIBA 50 units/kg IVPB once

- According to the American College of Cardiology consensus statement, andexanet alfa is the recommended reversal agent for major DOAC related bleeds, but prothrombin complex concentrate should be used if andexanet alfa is unavailable, making choice A incorrect (PMID: 32680646). Vitamin K is used for the reversal of warfarin and other vitamin K antagonists, making choice B incorrect.
- Kcentra contains heparin, and since this patient has a heparin allergy, choice C is incorrect and choice D is preferred.