Vitamin K Antagonist Questions

1. Which of the following is NOT a catalyst for the coagulation cascade?
   a. Tissue Factor
   b. Plasminogen
   c. Collagen
   d. Negatively charged phospholipid surfaces
   e. Positively charged phospholipid surfaces

2. The following is true regarding VKOR, except:
   a. It converts vitamin K1 to active vitamin KH2
   b. Due to genetic variants patients may require very large doses of warfarin to achieve therapeutic INR
   c. It is the target of warfarin’s mechanism of action
   d. It binds to negatively charged phospholipids in the presence of calcium
   e. It recycles vitamin K epoxide to active vitamin KH2

3. The following is true regarding warfarin pharmacokinetics, except:
   a. S-warfarin is metabolized by CYP3A4
   b. S-warfarin is up to 5 times more potent than R-warfarin
   c. Warfarin is rapidly and completely absorbed in GI tract
   d. Anticoagulation is not achieved until 4-5 days after initiation of warfarin
   e. Warfarin is highly protein bound, up to 99%, mostly by albumin

4. MJ, a 47 year old female is diagnosed with first event idiopathic DVT/PE and is started on warfarin and heparin in house. On day 3, the patient’s INR = 2. What is your recommendation regarding further anticoagulation for MJ?
   a. Continue warfarin and heparin until INR 2.5-3.5, then stop heparin and continue warfarin
   b. Discontinue heparin and continue warfarin
   c. Discontinue warfarin and continue heparin
   d. Continue warfarin and heparin for 5 days total overlap, then stop heparin if INR therapeutic
   e. Continue warfarin and heparin, but consider adding aspirin to regimen

5. On the same admission, MJ has a chest x-ray that shows a suspicious mass. Upon further diagnostic testing, MJ is diagnosed with Stage 2 non small cell lung cancer. Based upon the CHEST guidelines, what is your recommendation for continuing anticoagulation in this patient?
   a. Begin treatment with LMWH, stop heparin and warfarin
   b. Continue heparin and warfarin until INR 2.5-3.5
   c. Continue heparin and warfarin until INR 2-3
   d. Treat with LMWH for 3-6 months, then treat with warfarin or LMWH indefinitely or until cancer resolved
   e. None of the above
f. A and D

6. DE is a 60 year old male being referred to your anticoagulation clinic with a diagnosis of new onset atrial fibrillation. DE’s past medical history is significant for hypertension, hypercholesterolemia, rheumatoid arthritis, and type 2 diabetes mellitus. Based on the CHEST guidelines, what duration of warfarin therapy do you recommend for DE? Why?
   a. 3 months to indefinite, CHADS score of 2
   b. Indefinite, CHADS score of 4
   c. Indefinite, CHADS score of 2
   d. Aspirin therapy preferred over warfarin in this patient
   e. None of the above

7. Which if the following is not a contraindication for warfarin therapy?
   a. Pregnancy
   b. Major surgery or trauma
   c. Active bleeding
   d. Spinal puncture
   e. Asymptomatic PE

8. When considering warfarin dosage adjustments, which of the following patient specific factors is important to consider?
   a. Dietary vitamin K intake
   b. Acute febrile illness
   c. Newly started amiodarone
   d. History of patient non-adherence
   e. All of the above

9. Warfarin sensitivity and/or warfarin resistance are most likely caused by:
   a. Genetic variation in CYP3A4 gene
   b. Genetic variation in CYP2C9 gene
   c. Genetic variation in VKORC1 gene
   d. Hemophilias
   e. B and C
   f. A and C

10. PL is a new patient at your anticoagulation clinic, and you will be initiating warfarin dosing for PL’s new diagnosis of atrial fibrillation. PL states she has read about genetic testing in regards to warfarin dosing, and asks if you would recommend she have the testing done. Based on most the most current evidence available, you reply:
    a. At this time there is no good evidence available that suggests this will improve outcomes in your warfarin therapy.
    b. It is routinely recommended we test all new patients for these genetic polymorphisms.
    c. We will initiate your warfarin therapy and consider genetic testing in 1 month, based on current guidelines and recommendations.
d. As it will save you and the healthcare system money, we usually test all patients.