MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) The client receives enoxaparin (Lovenox) postoperatively. The nurse teaches the client about this medication and evaluates that learning has occurred when he makes which statement?
   A) "It increases the flexibility of my blood cells."
   B) "It dissolves small clots so I won’t have a stroke."
   C) "It inhibits the synthesis of prostaglandins."
   D) "It increases the time it takes for me to form a clot."

2) The client receives heparin. During the morning assessment of the client, the nurse notes that the client’s blood pressure and red blood cell (RBC) count are low. There is no evidence of bleeding on the bed linen or the client’s gown. What will the best assessment of this client reveal?
   A) The client’s activated partial thromboplastin time (aPTT) is too low.
   B) The client may be bleeding internally.
   C) The client has probably formed some clots.
   D) The client is dehydrated.

3) The client receives warfarin (Coumadin) and becomes pregnant. The physician changes her anticoagulant to enoxaparin (Lovenox). She asks the nurse "Why did the doctor do that"? What is the best explanation by the nurse?
   A) "Because warfarin (Coumadin) is known to cause serious cardiac defects."
   B) "Because you are less likely to have bleeding with enoxaparin (Lovenox)."
   C) "Because it is easier to maintain your bleeding times in a therapeutic range."
   D) "Because enoxaparin (Lovenox) cannot get into your baby."

4) The new mother receives heparin. She asks the nurse if she can breast-feed her baby. What is the most therapeutic response by the nurse?
   A) "No, because it would be too difficult to regulate your heparin dose."
   B) "No, because heparin will enter your breast milk."
   C) "No, because this could alter your international normalized ratio (INR) times too much."
   D) "No, because this could cause your nipples to bleed."

5) The physician orders enoxaparin (Lovenox) for the postoperative client. What is the best administration technique by the nurse?
   A) Administer the medication via slow intravenous (IV) push in the client’s Intravenous (IV) line.
   B) Administer the medication in the abdomen, subcutaneously.
   C) Ask the client where she would like the injection, and administer it subcutaneously.
   D) Administer the medication in the upper arm, subcutaneously.
6) The client is being discharged on warfarin (Coumadin) following a valve replacement. The nurse has completed medication education and determines that learning has occurred when the client makes which statement?
   A) "I can take enteric-coated aspirin, but not plain aspirin for my arthritis."
   B) "I must maintain a consistent intake of Vit. C while I am on warfarin (Coumadin)."
   C) "If I notice any bruising or bleeding I will need to have lab work done."
   D) "I must wear a medic alert bracelet that says I'm on warfarin (Coumadin)."

7) The physician orders pentoxifylline (Trental) for the client with peripheral vascular disease. The nurse has completed medication education and determines that learning has occurred when the client makes which statement(s)? Select all that apply.
   A) "It decreases the "stickiness" of my blood."
   B) "It decreases my platelets so my blood is less likely to clot."
   C) "It thins my blood so more can get to those little vessels."
   D) "It makes my red blood cells (RBCs) squishy so they can go into the little blood vessels."
   E) "It changes how my liver makes clotting factors."

8) A woman brings her husband to the emergency department and tells the nurse that her husband just had a stroke. The physician verifies a thrombotic cerebral vascular accident (CVA) occurred and plans to use alteplase (Activase). What priority assessment question will the nurse ask the wife?
   A) "What other medical illnesses does your husband have?"
   B) "Does your husband have hypertension?"
   C) "What time did your husband have the stroke?"
   D) "What other medications does your husband take?"

9) The nurse is managing care for a client with a DVT (deep vein thrombosis) of the right calf. The client receives heparin intravenously (IV). What is the priority outcome for this client?
   A) The client will comply with dietary restrictions.
   B) The client will not disturb the intravenous infusion.
   C) The client will not experience bleeding.
   D) The client will keep the right leg elevated on two pillows.

10) The nursing instructor is teaching student nurses about the process of hemostasis after an injury. What does the nursing instructor include as the initial event in this process?
    A) The vessel spasms.
    B) Plasma proteins convert to active forms.
    C) Platelets become sticky.
    D) Von Willebrand's factor is activated.

11) The client has a deep vein thrombosis (DVT) and is admitted for initial heparin therapy. Which order(s) would the nurse want to validate with the physician? Select all that apply.
    A) Advil as needed (PRN) for headaches
    B) Tylenol as needed (PRN) for headaches
    C) Low vitamin K diet
    D) Heparin 1,000 units intravenous (IV) every 6 hours
    E) Obtain a daily weight on the client
12) The client receives warfarin (Coumadin). The nurse plans to teach the client to avoid which foods that are served for lunch?
   A) Salt substitute
   B) Whole-wheat bread with margarine
   C) Tomato salad with basil
   D) Fettuccine Alfredo

13) The nurse is managing care for a client with cirrhosis of the liver. The nurse teaches the client about how to avoid injury that may result in bleeding. The client asks the nurse why he is at risk to start bleeding. What is the best response by the nurse?
   A) "Because your liver thickens your blood so it is less likely to clot."
   B) "Because your liver is injured and unable to manufacture platelets."
   C) "Because your liver is breaking down your clotting factors too quickly."
   D) "Because your liver is injured and cannot make clotting factors."

14) The client receives warfarin (Coumadin). The nurse notes that the client's morning international normalized ratio (INR) is 7. What are the priority nursing interventions at this time?
   A) Administer protamine sulfate and hold the next dose of warfarin (Coumadin).
   B) Hold the next dose of warfarin (Coumadin) and contact the physician.
   C) Administer vitamin K and hold the next dose of warfarin (Coumadin).
   D) Hold the next dose of warfarin (Coumadin) and repeat the international normalized ratio (INR).

15) The client receives an appropriate dose of warfarin (Coumadin), but the international normalized ratio (INR) is in the high range. The client denies taking any aspirin products. What is the best assessment question to ask the client at this time?
   A) "Have you been eating much garlic?"
   B) "Have you been eating a lot of salads and vegetables?"
   C) "Are you restricting your fluids too much?"
   D) "Have you been drinking too much milk?"
Coagulation Disorders

1. All anticoagulant drugs will increase the normal time the body takes to form clots. Enoxaparin (Lovenox) does not dissolve small clots. Lovenox does not increase the flexibility of blood cells. Lovenox does not inhibit the synthesis of prostaglandins.

2. A low blood pressure and red blood cell count (RBC) in the client could indicate internal bleeding. Internal bleeding, not the formation of clots, is most likely responsible for the low blood pressure RBC count. Internal bleeding, not a low activated partial thromboplastin (aPTT), is most likely responsible for the low blood pressure and RBC count. Internal bleeding, not dehydration is most likely responsible for the low blood pressure and RBC count.

3. Heparin and the low-molecular-weight-heparin (LMWH) are too large to cross the placental barrier. The client would not be less likely to have bleeding with Lovenox. Coumadin is not known to cause serious cardiac defects. It is not easier to maintain bleeding times with Lovenox than Coumadin.

4. The use of heparin during breast-feeding can trigger bleeding from the nipples and should be avoided. Heparin does not enter the breast milk. Breast feeding would not alter the international normalized ratio (INR). Breast-feeding would not make it difficult to regulate the heparin dose.

5. Administer the medication in abdomen, subcutaneously.

6. Clients on anticoagulant therapy should wear a medic alert bracelet. Aspirin is not allowed when a client is on anticoagulant therapy. Lab work must be done routinely, not just if the client notices bruising or bleeding. The intake of Vit. K, not C, must be maintained at a consistent level when a client takes Coumadin.

7. Pentoxifylline (Trental) acts on red blood cells (RBCs) to reduce their viscosity and increase their flexibility to allow them to enter partially occluded vessels. Trental also has an antiplatelet action. Trental decreases the viscosity or “stickiness” of blood. Trental is not an anticoagulant. Trental does not interfere with the manufacture of clotting factors in the liver.

8. Alteplase (Activase) must be given within 3 hours of thrombotic cerebrovascular accident (CVA) for maximum effectiveness. Asking about hypertension is a good question, but not the priority. Asking about medications is a good question, but not the priority. Asking about illnesses is a good question, but not the priority.
9. The absence of bleeding is a priority outcome for any client receiving anticoagulant therapy. Disturbing the IV could relate to bleeding, but this does not directly correlate with heparin. Dietary restrictions are important, but not as high of a priority as an absence of bleeding. Elevation of the affected extremity is important, but not as high a priority as an absence of bleeding.

10. The blood vessel spasms, causing constriction during the initial event in the hemostasis process. Platelets do not become sticky during the initial event in the hemostasis process. Von Willebrand’s factor is not activated during the initial event in the hemostasis process. Plasma proteins do not convert to active forms during the hemostasis process.

11. Advil could increase the risk of bleeding, 1,000 units of heparin is a sub-therapeutic dose. Vitamin K is the antidote for Coumadin overdose, there is no need to restrict it with heparin therapy. Daily weights are necessary to determine medication dosage. There isn’t any contraindication with heparin and Tylenol.

12. Tomatoes are high in Vitamin K and must be avoided when a client receives Coumadin.

13. The liver is responsible for production of essential clotting factors necessary to prevent bleeding. The liver is not responsible for breaking down clotting factors. The liver is not responsible for making the blood thick. The liver is not responsible for manufacturing platelets.

14. Vitamin K is the antidote for Coumadin overdose and its administration is warranted with an INR of 7. Repeating the INR is appropriate, but the client must receive Vitamin K immediately. Protamine sulfate is the antidote for heparin, not Coumadin. Consulting the physician is appropriate, but the client must receive Vitamin K.

15. Garlic has been shown to decrease the aggregation of platelets, thus producing an anticoagulant effect. Clients taking anticoagulant medications should limit their intake of garlic. Salads and vegetables contain vitamin K, which is an antidote for Coumadin. This would not impact the INR. Milk does not impact INR when a client receives Coumadin. Dehydration does not impact the INR when a client receives Coumadin.
Answer Key

Test Name: COAGULATION DISORDERS

1) D
2) B
3) D
4) D
5) B
6) D
7) A, B, C & D
8) C
9) C
10) A
11) A, C, D
12) C
13) D
14) B
15) A
Anticoagulant Therapy:
Warfarin (Coumadin) & Vitamin K Food-Drug Interaction

Vitamin K can interfere with Coumadin's effects. However, a balanced diet with Consistent Vitamin K intake is essential to keep Coumadin's coagulation time constant. Recommended Dietary Intake of Vitamin K is about 100 micrograms (mcg)/day.

If you consume the following foods on a regular basis, then continue to do so, just don't exceed your normal daily intakes:

- **Leafy Green Vegetables, including:** collards, mustard greens, chard, turnips, beets, spinach, broccoli, Brussel sprouts, cabbage, lettuce, chayote leaf, dandelion, coriander, lambsquarters, amaranth, samat, touyao, bok choy, water cress. Mint (ok as garnish).

**THINGS TO AVOID:**

- **Vanilla Extract, IF:** made from tonka bean, came from Mexico, or if ingredients are not listed.

- **Dried Seaweed (1oz. per serving):** Dulce, Rockweed, Seagrass, Purple laver, Hijiki.

- **Alcohol & Caffeine. If consume, No more than 2 drinks/cups per day (8oz. cup per serving) (1drink = 12oz. beer, 4oz. wine, or 1oz. liquor)**

- **Other:** grapefruit juice, mango, liver, parsley, kale. Tobacco.

- **Vitamin Supplements A, D, E, K, & C above the recommended dietary allowance, unless physician approved.**

**Herbal supplements that may increase risk of bleeding:**

- Ginger, garlic, ginko biloba, ginseng, kava kava, danshen, arnica, salvia miltiorrhiza, alfalfa, red clover, grape seed, chamomile, passion flower, feverfew, angelica, aniseed, capsicum, horse-chestnut, licorice, willow bilberry meadowsweet, glucosamine, anise, coenzyme Q, St. Johns Wort, bilberry, bladderwrack, bomelain, cat’s claw, coleus, dong quai, chamomile, cordyceps, evening primrose oil, green tea, guggul, reishi, sweet clover, horseradish, omega-3-acids (fish oils), prickly ash, turmeric, white willow.

- Herbal teas that contain tonka beans, melilot, & woodruff.

*Sutter Maternity & Surgery Center Dietitian: 831-477-2270. Please call if you have a question.*