

Perioperative Anticoagulation Management: Review Questions

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QUESTIONS

Choose the single best answer for each question.

- 1. A 70-year-old woman who has taken warfarin since placement of a prosthetic aortic valve replacement 3 years ago is scheduled to undergo cataract extraction. She has no history of bleeding problems or emboli. Which of the following is the most appropriate management strategy?**
 - A) Cancel the surgery because of the risk of anti-coagulant withdrawal
 - B) Continue warfarin therapy without interruption through the perioperative period
 - C) Stop warfarin therapy 4 days before surgery, check the patient's international normalized ratio (INR) preoperatively to ensure an INR of less than 1.5, and resume warfarin at the former dose following surgery
 - D) Stop warfarin therapy 5 days before surgery, admit the patient to receive heparin intravenously 3 days prior to surgery, stop heparin 12 hours prior to surgery, and restart heparin and warfarin therapy following surgery
 - E) Substitute aspirin for warfarin 7 days before surgery, then resume warfarin therapy at the patient's former dose 2 days after surgery
- 2. Which of following interventions to prevent deep venous thrombosis would be most appropriate for a 75-year-old man who has just undergone a total knee replacement?**
 - A) Administration of aspirin 650 mg orally twice daily
 - B) Administration of enoxaparin 30 mg subcutaneously every 12 hours
 - C) Administration of unfractionated heparin 5000 units subcutaneously every 8 hours
 - D) Administration of warfarin 1 mg daily
 - E) Use of gradient elastic stockings
- 3. A 32-year-old pregnant woman, admitted to the hospital at 36 weeks' gestation because of deep venous thrombosis (DVT) in the left thigh, is started on intravenous therapy with unfractionated heparin. Two days after admission, she develops pain in the right lower quadrant that is consistent with acute appendicitis. Emergent surgery is recommended, meaning that anticoagulation therapy will have to be discontinued until 24 to 48 hours following surgery. Which of the following is the best option to manage the patient's DVT?**
 - A) Change therapy to low-molecular-weight heparin until postoperative hemostasis is ensured
 - B) Continue unfractionated heparin intravenously at a reduced dose to keep the partial thromboplastin time in the upper normal range
 - C) Continue unfractionated heparin intravenously at the present dose because the risk of perioperative bleeding is low
 - D) Discontinue heparin therapy and use pneumatic compression stockings until heparin can be resumed
 - E) Preoperatively place an inferior vena cava filter
- 4. An 81-year-old man requires a colon resection because of colon cancer. He has chronic atrial fibrillation and had an embolic cerebrovascular accident 3 years previously. His condition is managed with chronic warfarin therapy. Which of the following is the most appropriate way to manage his anticoagulation during the perioperative period?**
 - A) Cancel the surgery because of the risk of anti-coagulant withdrawal

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- B) Continue warfarin therapy without interruption through the perioperative period
- C) Stop warfarin therapy 4 days prior to surgery, and resume at the former dose following surgery
- D) Stop warfarin therapy 5 days before surgery, admit the patient to receive heparin intravenously 3 days prior to surgery, stop heparin 12 hours prior to surgery, and restart heparin and warfarin therapy following surgery
- E) Substitute aspirin for warfarin 7 days before surgery, then resume warfarin therapy at the patient's former dose 2 days after surgery
5. **A 74-year-old woman is admitted to the hospital because of a severe exacerbation of chronic obstructive pulmonary disease. Her mobility and ability to ambulate are restricted by her poor respiratory status. Which of the following statements regarding the appropriate DVT prophylaxis is correct?**
- A) Aspirin could be used to prevent DVT
- B) Elastic stocking use alone is recommended for DVT prophylaxis in her situation
- C) Low-dose unfractionated heparin and low-molecular-weight heparin should be equally effective in preventing DVT in this patient
- D) Prophylaxis is unnecessary
- E) None of the above
- 2. (B) Administration of enoxaparin 30 mg subcutaneously every 12 hours.** Low-molecular-weight heparin is most often recommended for deep venous thrombosis (DVT) prophylaxis in patients undergoing hip or knee replacement. Aspirin is not effective in preventing DVT in any situation. Elastic stockings and low-dose unfractionated heparin have minimal impact on the incidence of DVT in these patients. Similarly, warfarin protocols in patients with international normalized ratios less than 2 postoperatively will not greatly change DVT rates.
- 3. (E) Preoperatively place an inferior vena cava filter.** Given the risk of pulmonary embolism in patients with a recent DVT who undergo surgery, most authorities recommend preoperative placement of an inferior vena cava filter. Adjusting, continuing, or discontinuing heparin therapy will not reduce the risk of perioperative thromboembolic complications.
- 4. (D) Stop warfarin therapy 5 days before surgery, admit the patient to receive heparin intravenously 3 days prior to surgery, stop heparin 12 hours prior to surgery, and restart heparin and warfarin therapy following surgery.** Because of a prior embolic event, this patient is at high risk for thrombotic complications if anticoagulation therapy is withdrawn. Because of this risk, management with heparin and warfarin is the correct strategy. Canceling the surgery deprives the patient of a potentially curative procedure. Continuing warfarin through the perioperative period significantly increases the patient's risk of bleeding. Many authorities feel that stopping warfarin without using heparin in high-risk patients is insufficient. Aspirin is not an adequate substitute for anticoagulation therapy.
- 5. (C) Low-dose unfractionated heparin and low-molecular-weight heparin should be equally effective in preventing DVT in this patient.** Given her age, pulmonary status, and immobility, the patient has an approximately 5% to 20% risk of developing DVT during her hospitalization. Aspirin or elastic stockings alone are not recommended at this level of risk. Low-dose unfractionated heparin and prophylactic doses of low-molecular-weight heparin have similar results in patients requiring DVT prophylaxis.

EXPLANATION OF ANSWERS

1. **(C) Stop warfarin therapy 4 days before surgery, check the patient's international normalized ratio (INR) preoperatively to ensure an INR of less than 1.5, and resume warfarin at the former dose following surgery.** Withholding anticoagulation temporarily for cataract surgery does not carry a high risk for embolic or thrombotic complications. Warfarin can safely be withheld preoperatively without undue risk. The surgery should not be cancelled, and heparin therapy is not recommended. Continuing warfarin throughout the perioperative period is unnecessary. Aspirin is not an effective antithrombotic agent in patients with prosthetic valves.

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