

DECATUR COUNTY MEMORIAL HOSPITAL

<p>PHARMACY</p>	<p>PAGE: 1 of 3</p>
<p>SUBJECT: WARFARIN ANTICOAGULATION REVERSAL GUIDELINES</p>	<p>EFFECTIVE DATE:</p>
<p>APPROVED:</p>	

I. Caveats

A. General

1. Remember that patients receive anticoagulation to prevent life-threatening thrombosis.
2. Consider the patient’s future anticoagulation needs when planning the reversal of warfarin anticoagulation.

B. Vitamin K

1. The effect of vitamin K on reversing warfarin anticoagulation is delayed, reaching its full effect at about 24 hours.
2. Excessively large doses of vitamin K do not reverse anticoagulation faster and may cause weeks of warfarin resistance. Any dose of vitamin K greater than 10mg should be considered excessive.
3. Oral vitamin K is the preferred preparation to be used in most situations.
4. Oral vitamin K is more predictable in its bioavailability and has a quicker onset of action than subcutaneous vitamin K; it also offers additional convenience and safety in comparison to other dosage forms.
5. Intramuscular vitamin K will not be used per DCMH policy to avoid hematoma risk.
6. Intravenous vitamin K has a more predictable response and faster onset of action than other forms of vitamin K. However, IV vitamin K may cause anaphylaxis and slow infusion rates have never been proven to prevent anaphylaxis. It should be diluted in 50 mL and given via IVPB infusion over at least 30 minutes. It is the preferred route of administration for severe bleeding situations.
7. Subcutaneous vitamin K is not as effective on a mg to mg basis as IV vitamin K and does not work as quickly; but it does not carry the anaphylaxis risk of IV vitamin K. It is an alternative when a patient cannot take oral vitamin K and the situation is not emergent.

C. Fresh Frozen Plasma (FFP)

1. FFP is a blood product containing a concentration of clotting factors. All of the risks of blood product transfusions apply to FFP.
2. FFP replaces depleted clotting factors and is therefore the fastest way to reverse warfarin anticoagulation. It begins to work immediately with a full effect in 6 hours.
3. FFP is usually given in doses of 2 to 4 units and is repeated every 6 to 12 hours as needed. 4 units should be used in a severe bleeding situation.

<p>Date: Reviewed By:</p>							
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- II. Management of overanticoagulation in patients without bleeding
  - A. INR above target but less than 5
    - 1. Lower the dose or omit the dose, monitor more frequently, and resume therapy at a lower dose when the INR is at a therapeutic level.
  - B. INR 5 to 9
    - 1. No risk factors for bleeding
      - a. High Thrombotic Risk: Omit the next 1 or 2 doses of warfarin
      - b. Low Thrombotic Risk: Omit the next 1 or 2 doses of warfarin.
    - 2. Risk factors for bleeding present
      - a. High Thrombotic Risk: Omit the next 1 or 2 doses of warfarin and monitor closely for bleeding OR hold warfarin, give 1 to 2.5 mg oral vitamin K.
      - b. Low Thrombotic Risk: Hold warfarin, give 1 to 2.5 mg oral vitamin K.
  - C. INR greater than 9
    - 1. No risk factors for bleeding
      - a. High Thrombotic Risk: Hold warfarin, give 5 mg oral vitamin K.
      - b. Low Thrombotic Risk: Hold warfarin, give 5 mg oral vitamin K.
    - 2. Risk factors for bleeding present
      - a. High Thrombotic Risk: Hold warfarin, give 5 to 10 mg oral vitamin K.
      - b. Low Thrombotic Risk: Hold warfarin, give 10 mg oral vitamin K.
  
- III. Management of anticoagulated patients with bleeding
  - A. Minor Bleeding (Example: Bleeding Gums)
    - 1. INR is low or in target range: make no changes and observe carefully
    - 2. INR above target but less than 5 (high): adjust warfarin appropriately, no vitamin K
    - 3. INR 5 to 9 (very high): hold warfarin, give 1 to 2.5 mg oral vitamin K
    - 4. INR greater than 9 (critical high): hold warfarin, give 5 to 10 mg oral vitamin K
  - B. Major Bleeding (Example: Major GI Bleed, CNS Bleed, retroperitoneal bleed, etc.)
    - 1. Any INR: Clinical circumstances such as the severity of bleeding, risk of thrombosis, and the INR value will dictate the course of action. Generally in this situation the advice would be to hold warfarin, give 4 units FFP, and supplemental FFP with 10 mg vitamin K by slow IVPB infusion over at least 30 minutes.
    - 2. In all above cases, monitor more frequently and resume therapy at a lower dose when the INR is at a therapeutic level if a reversible reason for the elevation cannot be identified.
  
- IV. Management of anticoagulated patients for emergent invasive procedures
 

*Important Facts to Remember:*

*\*The peak effect of vitamin K on reversing warfarin anticoagulation takes 24 hours although you may start to see effects in 6 to 12 hours.*

*\*\*FFP replaces depleted clotting factors and is therefore the fastest way to reverse warfarin anticoagulation. It begins to work immediately with a full effect in 6 hours.*

  - A. Low Surgical Risk of Bleeding
    - 1. Example: Accessible laceration of the arm
    - 2. Goal is low therapeutic INR (INR 2-2.5)
      - a. INR above target but less than 5: hold warfarin, consider giving 2.5 mg oral vitamin K, consider giving FFP



**B. High Thrombotic Risk**

1. Atrial Fibrillation WITH:
  - a. History of severe left ventricular dysfunction (ejection fraction less than 25%)
  - b. Clinically significant rheumatic heart disease
  - c. Previous thromboembolic events within 6 months
  - d. Cardioversion in the last month
  - e. Bioprosthetic heart valve
  - f. Severe left atrial enlargement
2. Less than 1 month since arterial thromboembolism
3. Mechanical heart valves
4. Less than 3 months since deep vein thrombosis or pulmonary embolism