

IREDELL HEALTH SYSTEM

Vitamin K Route Substitution for Reversal of Warfarin	
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<i>The contents of this policy are applicable to, unless otherwise noted, Iredell Memorial Hospital and Iredell Davis Behavioral Health.</i>	

Purpose: to assure the safest and most effective route of vitamin K is utilized for the reversal of warfarin in adults.

Background

- The effect of vitamin K on reversing warfarin anticoagulation is delayed, reaching its full effect in about 24 hours
- Large doses of vitamin K, while effective, may lower the INR more than is necessary and may cause weeks of warfarin resistance. While larger doses inhibit the vitamin K cycle for a longer time, they do not decrease the INR more quickly.
- Doses of ≤ 5 mg vitamin K orally substantially decrease the INR in 24 hours, and doses > 5 -10mg orally substantially decrease the INR in 24-48 hours. Doses > 10 mg may take much longer to achieve full INR lowering and may eliminate warfarin sensitivity.
- **Oral** vitamin K is the preferred preparation to be used in most situations. The CHEST guidelines recommend **oral administration of vitamin K rather than subcutaneous or intravenous** routes for patients with mild to moderate elevation of INRs without major bleeding (Grade 1A recommendation).
- **Oral** vitamin K is more predictable in its bioavailability and has a faster onset of action than subcutaneous vitamin K. It also offers additional convenience and safety in comparison to other dosage forms.
- **Intramuscular** vitamin K will not be used to avoid the risk of hematoma.
- **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 infused over at least 30 minutes. It is the preferred route of administration for severe bleeding situations.
- **Subcutaneous** vitamin K does not produce reliable, rapid reductions in INR and is not recommended when the oral route is feasible. It 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 risk of anaphylaxis of IV vitamin K.

Policy

1. Oral vitamin K is the preferred route of administration whenever it is possible.
2. All orders for intramuscular (excluding use in neonates) and subcutaneous vitamin K for warfarin reversal will be automatically substituted by the pharmacy with oral vitamin K whenever possible. If the SQ or IM vitamin K order is for rapid reversal for an urgent surgical procedure, the pharmacist will contact the surgeon to determine which of two routes the surgeon desires – oral or IV.
3. When orders for intramuscular vitamin K (excluding use in neonates) or subcutaneous vitamin K for warfarin reversal are received in the pharmacy for a patient who may be unable to take an oral product, the pharmacist will contact the physician to recommend the following options:
 - (a) oral use of the parenteral vitamin K formulation if possible; or

- (b) slow IV infusion of vitamin K
- 4. All orders for intravenous vitamin K will be immediately dispensed and given by slow IV infusion over at least 30 minutes.
- 5. Iredell Davis will only stock vitamin K tablets. Intravenous administration will not be utilized at Iredell Davis.

Procedure

- A. When a pharmacist receives an order for intramuscular (excluding neonate use) or subcutaneous vitamin K:
 - 1. Pharmacist will review the patient's chart and/or consult with nursing personnel to determine if oral administration is possible. Factors to consider include:
 - patient is taking po's (clear liquids at a minimum), NG or feeding tube is usable
 - no abnormal GI absorption (low aspiration risk, no need for bowel rest, no obstruction, no vomiting, no continuous GI suction, no malabsorption syndrome)
 - 2. If oral administration is possible, the pharmacist will dispense oral vitamin K in the same milligram strength as the subcutaneous or intramuscular order.
 - When this substitution occurs, the pharmacist will enter an order noting the substitution per policy.
 - The parenteral form of vitamin K may be used orally if needed for small doses (e.g. 1mg). It can be given undiluted or in orange juice to mask the taste.
 - 3. If the oral route is questionable or not possible, the pharmacist will contact the physician for consideration of oral use of the parenteral product, or slow IV infusion of vitamin K.
 - 4. If the SQ or IM vitamin K order is for rapid warfarin reversal for an urgent surgical procedure, the pharmacist will contact the surgeon to determine which of two routes the surgeon desires – oral or IV.
- B. There will be no substitution of intravenous vitamin K. When IV vitamin K is ordered, it will be dispensed to be given by slow IV infusion over 30 minutes.
- C. For dosing of vitamin K, see "Warfarin Reversal Guidelines."

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References

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