

**Vitamin K Dosing Guidelines  
(Reversing the Warfarin Effects)**

Robert L. Maher, Jr., Pharm. D.  
Robert J. Simonelli, Pharm. D.

**Vitamin K Dosing Guidelines: Reversing the Warfarin Effects**

The Pharmacy frequently receives questions regarding the appropriate dose and route of administration for vitamin K. The recommendations below, reprinted from the 1998 Chest supplement are included as general guidelines

>3 but <5	None in K Do	None	If the INR is above the therapeutic range but below 5.0, the patient is not bleeding, and rapid reversal is not indicated (i.e. surgical intervention*), then the dose can be lowered or the next dose can be omitted and warfarin therapy can be resumed at a lower dose when the INR approaches the desired range. If the INR is only minimally above the therapeutic range, then no dose reduction may be required at all.
>5 but <9	2.5 mg	PO	If the INR is between 5-9 and the patient does not have clinically significant bleeding, or more rapid reversal is required for elective surgery', then one of two approaches can be used. If the patient has no additional risk factors for bleeding, the next one or two doses of warfarin can be omitted, the INR monitored more frequently (i.e. daily until fallen into therapeutic range), and warfarin therapy reinstated at a lower dose when the INR falls into therapeutic range. Alternatively, the next dose of warfarin should be omitted and Vitamin K (2.5 mg) can be given orally. This second approach should be used if the patient is at increased risk of bleeding.
>9 but <10	5 mg	PO	If the INR is between 9-10 and the patient does not have clinically significant bleeding, a higher dose of Vitamin K (5 mg) should be given orally with the expectation that the INR will be reduced substantially by about 24-48 h. The INR should be checked every 6-12 hours; Vitamin K can be repeated every 12 hours if necessary at a dose based on the INR.
>10	10 mg	IV**	If a rapid reversal of anticoagulant effect is required because of serious bleeding or major warfarin overdose (>10), a Vitamin K dose of 10 mg should be given. Check INR every 6 hours. Vitamin K may be repeated every 12 hours and supplemented with 1-2 units of fresh frozen plasma transfusion or factor concentrate depending on the urgency of the situation.
Life-threatening bleeding or serious warfarin overdose	10 mg	IV**	In case of life-threatening bleeding or serious warfarin overdose, replacement of prothrombin complex concentrate is indicated, supplemented with 10 mg of intravenous Vitamin K, to be repeated as necessary depending on INR. It is not usually necessary to give Vitamin K for the immediate reversal if prothrombin complex concentrates containing Factor VII are used.

If continued warfarin therapy is indicated after high doses of Vitamin K administration, then heparin can be given until the effects of Vitamin K have been reversed and the patient becomes responsive to warfarin. The use of smaller doses of Vitamin K has the advantage of reversing the activity but not interfering with the total effects of warfarin. Patients receiving high doses of Vitamin K (10-15 mg) will rapidly reverse the anticoagulant effects; however, patients will remain resistant to warfarin anywhere between 1-2 weeks.

When more rapid reversal is required because the patient requires urgent surgery or dental extraction, then the Vitamin K can be given orally in a dose of 5 mg with the expectation that a reduction of the INR will occur within 24 hours. If the INR remains high at 24 hours, an additional dose of 2.5 mg of Vitamin K can be given.

If dose of Vitamin K (1-2 mg) is to be given intravenously, dilute and infuse the solution over 10-20 minutes. If a 10 mg IV dose of Vitamin K is to be given, dilute and infuse the solution over 20-30 minutes.

Reference:

- Hirsch I, Dalen JE, Deykin I, Poller L, et al. Oral anticoagulants: mechanisms of action, clinical effectiveness and optimal therapeutic range. Chest 1998;114(5):445S-469S.