

Vitamin K --Focus on the Vitamin K and Warfarin/Coumadin Anticoagulant Drug Issue



Cathy Breedon PhD, RD, CSP, FADA
Clinical and Metabolic Nutrition Specialist and Perinatal/Pediatric Nutrition Specialist
Sanford Medical Center, Fargo, ND and UND School of Medicine, Fargo, ND

This paper is in response to the many questions I get from health care professionals about the problem of actual vitamin K insufficiency in many people already using these drugs. It is a follow-up clarification of the drug-nutrient interaction issue only, and it is intended only for health care professionals who have read my more complete paper on many aspects of the vitamin K inadequacy problem:

“Aunt Cathy’s Guide to: Vitamin K --New Issues in Cardiovascular Health, Osteoporosis, Cancer of the Liver and Colon, Diabetes, Pregnancy & Varicose Veins.

Question 1: “What should we tell people already on Coumadin/warfarin regarding vitamin K?”

My Answer: Here's our problem ... overt vitamin K deficiency is (unfortunately) common in this population but quite often unrecognized because it is rarely evaluated, either by lab tests or dietary evaluations.

A great many multivitamin supplements do not even include vitamin K because (until recently) it had been assumed to be provided in adequate amounts by intestinal bacteria. It was not even included in the list of nutrients in the “mypyramid.gov” diet information. It is not on our radar.

Many health professionals are totally unaware of this. Some automatically tell patients to quit taking their multivitamins without checking to see if the product even contains any vitamin K. This is clearly not benign for many reasons, many of which are explained in another paper:

“My Current Top Five Easy Ways to Improve Your Family’s Nutrition (subject to change at any moment! ☺)

Normally dietitians and nurses are dead-set against allowing any actual vitamin deficiency diseases in their patients, and now that we know it is such a big problem, we want to fix it. **But we are usually not in control of this situation.**

It needs to be corrected because vitamin deficiency hurts people in several different ways, both related to the coagulation issue and also related to a number of other serious complications of inadequacy (arteriocalcinosis, liver and colon cancer, osteoporosis, diabetes, arthritis, etc.)

However, if patients are already on this drug AND they are vitamin K deficient, the doctor (or PA or NP, etc.) has to be the person in charge of incrementally improving the vitamin K status.

This can be accomplished most effectively (because of consistency) with a regular (daily) supplement. A daily supplement providing the advisable intake is actually recommended by many researchers as a way to minimize the problem of volatility of blood coagulation for people on these medications. It should be pretty easy to do ... just walk the amount up incrementally and monitor coagulation while doing it and adjusting the dosage of medication.

But if the doctor doesn't "believe in" this new research there is not a thing we can do about it. We can't tell patients to add a bunch (even a "consistent" bunch) of vitamin K because it might cause problems for a person whose coagulation balance was calculated counting on a baseline vitamin K deficiency state.

Question 2: “What if the person is not yet on Coumadin/warfarin but he/she may be put on this medication?”

If a person is contemplating going on Coumadin, it is of course safe to beef up the vitamin K intake "up front" to a consistent "assured adequacy" amount. Then the person prescribing it

simply sets the new drug prescription based on the underlying consistent and adequate vitamin K status. That would be ideal. (Actually, ideal would be a situation in which nobody had vitamin K insufficiency to begin with. ☺)

Nutrition folks and other health care professionals need to have a clear understanding that vitamin K is not a scary nutrient. It is just that there is an important drug/nutrient interaction that needs attention when people are put on that particular drug. We also need to be very aware that low vitamin K can also increase the dangerous volatility of a warfarin patient's blood coagulation. (This is another reason why vitamin K deficiency is NOT benign.)

Vitamin K is only a safety issue in relation to folks on this medication. Vitamin K does not "make you" coagulate your blood. It's just a tool (a vitamin cofactor) that needs to be there for normal coagulation to take place. (Other things set coagulation into motion.)

There is no upper level of safety even established for this vitamin in its natural forms (vitamin K-1 phylloquinone and vitamin K-2 menaquinone) because no problems have ever been seen apart from the altered situation that exists when a person is prescribed a warfarin/ Coumadin type of anticoagulant medication. They are of a class called "vitamin K antagonists" because they exert their influence on the vitamin K piece of the process of coagulation.

However, all we can really do about vitamin K for people on warfarin or those about to start warfarin is to share this new information with the people in charge of prescribing their medications.

An additional note:

This discussion is only about the importance of simple nutritional adequacy of vitamin K in relation to warfarin use. It is not addressing therapeutic applications of high-dose vitamin K as a treatment for warfarin overdose or drug-related bleeding. That intervention is not a nutrition-related use of vitamin K but a pharmacologic use in an acute situation. It is outside of the scope of this discussion.

Another additional note:

There are other types of medications sometimes used to decrease risk of inappropriate blood clotting that do **not** interact with vitamin K, such as “antiplatelet agents” (some are listed below.) This is mentioned here to be sure that health care people recognize that inducing vitamin K inadequacy by restricting intake is especially inappropriate when the medication does not operate as a vitamin-K antagonist at all.

Antiplatelet Agents

Generic Name	Trade Names
Clopidogrel	Plavix
Ticlopidine	Ticlid
Dipyridamole	Persantine
Dipyridamole ER plus aspirin (25mg)	Aggrenox

Yet another additional note:

Similarly, the nutritional intervention of decreasing the **ratio of omega-6 to omega-3 fats** in the diet has the ability to decrease clotting time because it alters the strength of thromboxanes produced. Again, vitamin K is not involved in this effect. Thromboxanes made from the omega-6 fatty acid arachidonic acid (ARA) are much more aggregatory than are those made from the omega-3 fat eicosapentaenoic acid (EPA.) [A good way to remember this is that “the bigger number (that is 6, which is bigger than 3) is associated with the bigger aggregation effect.”]

The American diet typically provides about 10 to 20 omega-6 fats for every omega-3 fat. In societies that regularly have intake ratios of about 4 omega-6 fats per omega-3 fat (such as those eating the “Mediterranean Diet,”) the problem of excessive and inappropriate clotting is much less common. It benefits other health parameters as well.

While change in the 4:1 ratio direction has been shown to be an excellent idea overall for general health (including cardiovascular health,) this form of intervention needs to be discussed with physicians/ Pas/NPs if they are treating a person with any anti-clotting medication. Actually, the dietary change can sometimes make it unnecessary to be on anti-clotting medications at all, but as before, incorporating this kind of diet change also needs to be managed by the person prescribing the medication.