

# Poor patient warfarin knowledge may increase risk of deadly side effects

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15 April 2016: Patients have poor knowledge of warfarin which may increase their risk of serious side effects, according to research presented today at EuroHeartCare 2016 by Dr Kjersti Oterhals, a nurse researcher at Haukeland University Hospital in Bergen, Norway.<sup>1</sup>

"The stroke and bleeding complications from warfarin can be fatal," said Dr Oterhals. "Worldwide warfarin causes the most deaths from drug-related side effects. Patients need to know what foods and drugs have an impact on how warfarin works, and what to do if they have symptoms of an overdose or underdose."

Warfarin is given to [patients](#) at increased risk of [blood clots](#) from conditions such as atrial fibrillation or a mechanical heart valve. Blood clots can travel through the blood to the brain and cause a stroke. Warfarin 'thins the blood' by slowing down the anticoagulation effect of vitamin K, thereby increasing the time it takes blood to clot and reducing the risk of stroke. Taking too much warfarin raises the risk of bleeding.

Patients on warfarin take an individually tailored dose that depends on their genes, usual diet, drugs and physical activity. Initially patients have a daily blood test to check their international normalised ratio (INR) which indicates how long it takes the blood to clot. People not taking warfarin have an INR of around 1 but patients with a mechanical heart valve should have an INR in the range of 2.5 to 3.5 to prevent their body creating a blood clot which could travel to the brain and cause a stroke.

"The goal is to thin the blood enough to prevent a stroke but not too much and cause bleeding," said Dr Oterhals. "An INR of 3 means it takes 3 times longer to stop a bleeding than it would take someone not on warfarin. If a patient's INR is below the target range they are at increased risk of thrombosis and above it they are at risk of bleeding complications. Lack of knowledge on what food and drugs interact with warfarin can lead to INR levels outside the therapeutic range which can be dangerous."

The study included 404 patients with aortic stenosis who were taking warfarin. Nearly two-thirds (63%) took warfarin because they had a mechanical heart valve to treat aortic stenosis and 24% took the drug because they had atrial fibrillation. Patients were 68 years old on average and 70% were men.

Patients received a postal questionnaire with 28 multiple choice questions about warfarin. They answered 18 questions correctly on average but 22% gave correct answers on less than half of the questions. Questions with the least correct answers concerned food and drug interactions and when to call a doctor.

When asked which of the following foods would interfere with warfarin: celery, carrot, coleslaw or green beans, just 25% correctly said coleslaw and most patients answered green beans.

"Patients often think green vegetables have the most vitamin K but that's not true," said Dr Oterhals. "Brassica vegetables such as cabbage, broccoli and cauliflower are rich sources. Patients do not have to avoid these foods but they should eat an equal amount every week because the vitamin K will decrease their INR and put them at increased [risk](#) of thrombosis or embolism. Patients who like to eat a lot of vitamin K containing foods can take a higher warfarin dosage but they need to be consistent."

While 80% knew they should go directly to the emergency room if they had nose bleeding that would not stop, only 45% correctly said diarrhoea for more than one day should trigger a visit to the doctor. Some 86% knew that the INR test tells the pharmacist how thick or thin the blood is while taking warfarin.

The study found that increased age was associated with decreasing correct answers. Dr Oterhals said: "We can only speculate why. Younger people tend to seek out information about how to manage their disease while the older generation wants the doctor to tell them what to do."

She continued: "Motivated patients should be offered an INR testing kit so that they can monitor their levels and adjust the warfarin dose themselves, just as patients with diabetes who use insulin do. It enables patients to travel and try new foods without having to find a clinic to get tested. Patients tell me that hot weather increases their INR while another found out while in Asia that nori decreased his INR."

## Warfarin checklist

- Diet: keep vitamin K intake consistent and check content of new foods; even small levels eaten in large amounts affect the INR
- Drugs: antibiotics increase INR; avoid herbal medicines; ask about over the counter drugs
- Call the doctor: nosebleeds indicate [blood](#) is too thin; diarrhoea causes vitamin K loss
- Exercise: patients who exercise regularly need a higher warfarin dose
- Be consistent: check how anything out of the ordinary will affect your warfarin.

Dr Oterhals concluded: "Warfarin is a life saving drug but can be deadly if not used carefully. Health professionals have a responsibility to

educate patients but unfortunately even cardiac nurses do not know enough.<sup>2</sup> There is an urgent need to improve health professionals' [warfarin](#) knowledge so they can educate patients."

Provided by European Society of Cardiology

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