

Patients taking warfarin: problems revealed by medicines use reviews

Susan Youssef, a community pharmacist who has been performing medicines use reviews at Dean and Smedley pharmacy in Derby, shares some of her experiences of MURs with patients taking warfarin

In October 2007, Derby City Primary Care Trust conducted a multidisciplinary audit on actions that make anticoagulant therapy safer. Following my participation in this, I developed a more structured approach to medicines use reviews on patients taking warfarin. I focus these MURs on indications for treatment, dosage, timing, compliance, international normalised ratio (INR) monitoring and, in particular, food and supplement interactions with warfarin.

Indications and duration of treatment

During MURs I check patients' understanding of why they are taking warfarin, as well as the likely duration of their treatment. Those who commonly present in my pharmacy, suffer with atrial fibrillation or have undergone surgery for insertion of mechanical prosthetic heart valves. These two groups of patients need lifelong therapy with warfarin.

Atrial fibrillation is often described by patients as "an irregular heart beat," and they can all tell me that they take warfarin to "thin the blood." Most, however, are not aware of the use of warfarin for stroke prevention in atrial fibrillation.

Other patients require warfarin treatment for a limited time only. For example, patients with a single episode of deep vein thrombosis require treatment for only six months and I use MURs to ensure that they are not continued on warfarin indefinitely. If patients are unsure of the required duration of warfarin treatment, I refer them to their GP.

Dosage, timing and compliance

As part of an MUR I check that the patient takes his or her warfarin at the same time each day. I have found that all patients adhere closely to this instruction, taking their tablet(s) at 6pm. This is usually a practical time, particularly for those waiting for an INR result from a blood test taken in the morning.

Warfarin dosage can be extremely varied and a patient's dose can be found in his or her oral anticoagulant therapy record book, commonly known as the "yellow book". I check that the doses in this book are expressed as mg, rather than as a number of tablets, which could lead to confusion when tablets come in different strengths.

New-style yellow books became available in April 2007 but many patients still carry the old-style one. I tell them that they will be given a new one by the anticoagulant clinic, with a credit card-sized alert card that they should carry at all times. Alert bracelets are



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available, but patients find the card more convenient.

Whereas the new-style book only contains patients' treatment records, the old ones also had a useful list of "dos and don'ts", including advice regarding missed warfarin doses, as well as information on a few drug interactions. These omissions from the new book make it even more pertinent for pharmacists to check that patients know what to do if they have accidentally taken an extra dose or if a dose has been missed.

For missed doses, I stress the importance of continuing with the prescribed regimen and

make sure that the patient knows never to double or increase subsequent doses. In the case of overdose, I recommend patients contact their anticoagulant clinic. (However, if the patient shows any signs of bleeding, they should attend accident and emergency immediately.) Despite this potential for error, patient compliance with the correct dose seems to be fairly good.

INR monitoring

The yellow book also contains important information about the patient's target INR

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Panel 1: A summary of common medicines, supplements and foods which interact with warfarin²

Medicines

Antibiotics (eg, azithromycin, erythromycin, tetracycline)
 Non-steroidal anti-inflammatory drugs
 Antidepressants (eg, fluoxetine, paroxetine, sertraline)
 Stomach ulcer medicines or acid reducing agents (eg, cimetidine, omeprazole, ranitidine)
 Lipid lowering agents (fibrates and statins)
 Antifungal agents (eg, itraconazole).

Foods

Avocado
 Cranberry juice
 Flaxseed
 Garlic
 Ginger
 Mango
 Onions
 Papaya
 Seaweed
 Soy protein products (including soya milk and tofu)

Supplements

Chondroitin plus glucosamine
 Coenzyme Q10
 Danshen (*Salvia miltiorrhiza*)
 Devil's claw (*Harpagophytum procumbens*)
 Dong quai (Chinese angelica; *Angelica sinensis*)
 Feverfew (*Tanacetum parthenium*)
 Fenugreek together with boldo (*Peumus boldus*)
 Fish oil supplements containing eicosapentaenoic acid and docosahexaenoic acid
Ginkgo biloba
 Ginseng
 Green tea (*Camellia sinensis*)
 Horse chestnut (*Aesculus hippocastanum*)
Lycium barbarum (also known as Chinese Wolfberry, Di Gu Pi, Goji Berry, Gou Qi Zi)
 St John's wort (*Hypericum perforatum*)
 Vitamin A
 Vitamin K
 Wintergreen (also known as methyl salicylate and used topically)

Panel 2: Key counselling points for patients taking warfarin

- Check attendance at anticoagulation clinics
- Remind patients to present yellow book with each warfarin prescription
- Check that the warfarin dose is at the same time each day and that it is expressed as milligrams
- Advise patients never to adjust for missed doses
- Ensure awareness of food and supplement interactions
- Advise patients to avoid binge drinking

range and a list of all the patient's previous INR results, which is essential to ensuring good INR control.

From April 2008, the National Patient Safety Agency (NPSA) has required community pharmacists to check that INR monitoring is carried out for all patients taking warfarin. Pharmacists will need to ensure that each patient's INR is at a safe level before dispensing a warfarin prescription.¹ I have been using MURs as an opportunity to tell patients to bring in their yellow books every time they bring in a prescription for warfarin.

Although the target INR range is variable, for most patients, including those treated for atrial fibrillation, deep vein thrombosis or pulmonary embolism, the range is 2–3. Higher INR target ranges of 3–3.5 are used in patients who have recurrent thromboembolic complications despite previous warfarin treatment and patients with mechanical prosthetic heart valves, although the target will depend on the type and location of the valve.

I also check with patients how often they are required to attend the anticoagulant clinic. The frequency of appointments is largely dictated by how stable the patient's INR is. There can be up to 12 weeks between blood tests for patients with stable INR.

Some patients carry their yellow book with them so I am able to check their target range, which is printed at the front. The yellow book also contains the last anticoagulant clinic appointment and the most recent INR result, which I note on the MUR form under the general comments section.

Food, supplement and OTC interactions

By far the most useful MUR counselling for patients taking warfarin involves the drug's interactions with medicines, supplements and foods. One patient told me about an occasion when she was advised by her practice nurse to drink cranberry juice to help treat a urinary infection, resulting in an increase in her INR despite it having been stable for a number of years. The patient first noticed a problem when she started to bruise easily. She contacted the anticoagulant clinic for an INR test, which was found to be much higher than her normal therapeutic range. As a result, the patient's warfarin dose was changed until her INR stabilised. She asked me for a list of interacting substances, which I did not have at the time of the MUR. However, I did some research and contacted her once I had the required information and I now issue patients on warfarin with a similar list at their MUR (see Panel 1).

During my research I came across a patient-friendly article on the Health Canada website, which lists all food and supplement interactions with warfarin and other pharmacists may find this useful.²

Some patients are unaware the consumption of some foods can affect their INR. These include Brussels sprouts, broccoli, spinach and liver. Although it is safe for patients taking warfarin to eat these foods, sudden large increases in the quantities eaten can decrease their INR because they contain high levels of vitamin K. All my patients have said that anticoagulant clinic staff have not informed them of this at any point during their treatment.

Patients can also be told about supplements that interact with warfarin. The commonest of these are glucosamine plus chondroitin, St John's wort, *Ginkgo biloba* and ginseng. It should be noted that many patients buy these products from outlets where staff do not have the knowledge or expertise to advise on interactions, including the internet.

I advise on over-the-counter medicines that interact with warfarin and remind patients always to check with a pharmacist before purchasing a product. All my patients so far have known that paracetamol is safe to take while taking warfarin as long as recommended doses are not exceeded.

Healthy lifestyle

Healthy lifestyle support forms a large part on the community pharmacy contract in England and Wales. Patients taking warfarin can also benefit from this. MURs have allowed me to discuss alcohol consumption with patients and to advise them to avoid binge drinking. While moderate amounts of alcohol are safe with warfarin in patients with normal liver function, heavy drinking can cause fluctuations in INR.

Patients who are keen to stop smoking are encouraged to use the smoking cessation programme on offer at the pharmacy.

I have not come across any patients on warfarin wanting to lose weight but, if I did, I would advise them to have their INR monitored during weight loss in case dose adjustments are required.

I type all MURs and note that patients are given a leaflet on food and supplement interactions with warfarin. To ensure that I cover all the key counselling points, I use a checklist that covers the areas I think are the most important (see Panel 2).

In keeping with the NPSA guidance, I now record the latest INR reading and target INR ranges on the patient medication record each time a patient presents with a warfarin prescription.

I intend to arrange a visit to my local anticoagulant clinic to further improve my knowledge of the service offered.

References

1. National Patient Safety Agency. Actions that make anticoagulant therapy safer: dispensing oral anticoagulants. Available at www.npsa.nhs.uk (accessed on 2 April 2008).
2. Health Canada. It's your health: warfarin interactions with drugs, natural health and food products. Available at www.hc-sc.gc.ca (accessed on 28 March 2008).