MIL

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This Medicines Information Leaflet is produced locally to optimise the use of medicines by encouraging prescribing that is safe, clinically appropriate and cost-effective to the NHS.

Initiating oral anticoagulation with vitamin K antagonists (VKAs) in adult patients

When making the decision to anticoagulate, consideration must be given to the risks of both haemorrhage and thrombosis. Higher International Normalised Ratio (INR) targets and longer durations of anticoagulation increase the risk of haemorrhage.

This MIL is designed to aid clinicians in the initiation of vitamin K antagonists (VKAs), provide guidance on local regimens and information about the Oxfordshire Anticoagulation Service. Warfarin and other VKAs act by reducing the levels of vitamin K dependent clotting factors (II, VII, IX, X). Therapeutic depletion of these factors takes several days. It is important to start planning for discharge ahead of time. Arrangements **must** be made for the safe monitoring of the patient following discharge from hospital.

Risk assessing the patient

Before starting a patient on a VKA, there are both medical and social factors to consider. If the medication is to be administered by a carer then these factors would apply equally to them:

- Are they capable of safe adherence and understanding of the medication?
- Are they willing and able to have regular INR blood tests for monitoring? Contact the anticoagulation team at the earliest opportunity if the patient is known to be difficult to bleed so planning for discharge can be arranged.
- Do they have any disabilities that may affect the way dose adjustments are communicated to them (e.g. blind, deaf or illiterate)?
- Do they use a medication compliance aid (e.g. a dosette box or nomad tray)? The combination of such compliance aids and VKA treatment is generally not recommended.

The Oxfordshire Anticoagulation Service can be contacted for advice. They manage the majority of local patients on warfarin.

Target INRs and INR ranges

The standard INR range for Atrial Fibrillation (AF) and new Venous Thromboembolism (VTE) is 2-3 (target 2.5). Higher INR ranges including 2.5-3.5 or 3-4 may be specified by cardiology for mechanical heart valves or haematology for complex patients such as recurrent VTE. Tighter target ranges (e.g. 2–2.5) are not feasible, do not improve anticoagulant control and often result in more regular testing.

Before starting a VKA

Before starting a patient on a VKA, a baseline coagulation screen (prothrombin time (PT)/INR and activated partial thromboplastin time (APTT)) must be performed. This will identify any potential underlying clotting abnormalities.

Starting VKA therapy

a) Fast loading regimen with Low Molecular Weight Heparin (LMWH) (e.g. for acute VTE, new mechanical heart valves and LV thrombus)

For more information on acute VTE, refer to MIL vol. 2, No. 2). **For acute VTE, LMWH should be continued for 5 days or until the INR has been within therapeutic range for 2 consecutive daily readings – whichever is longer.** This is due to the initial pro-thrombotic effect of warfarin. For mechanical heart valves continue LMWH until one INR is within therapeutic range.

Dose recommendations below are given for the most common VKA, warfarin. If your patient requires an alternative VKA, the anticoagulation pharmacist (bleep 4511) or a senior anticoagulation nurse (bleep 5035) can be contacted for advice. The warfarin induction schedule used in the Trust when fast loading is required is shown in table 1. A starting dose of 5mg is preferred to 10mg as over-anticoagulation is less likely, particularly in the elderly and those with liver disease or heart failure. If the baseline INR is less than or equal to 1.3, give the patient warfarin 5mg once daily for the first 2 days. The INR needs to be checked on the mornings of days 3 and 4 and the dose adjusted according to the regimen in table 1.

Table 1: Fast warfarin loading regimen

Days 1 & 2	**Day 3**		**Day 4**	
	INR	**Dose**	**INR**	**Dose**
Give **5mg** each evening if baseline INR less than or equal to 1.3	less than 1.5	**10mg**	less than 1.6	**10mg**
	1.5-2	**5mg**	1.6-1.7	**7mg**
	2.1-2.5	**3mg**	1.8-1.9	**6mg**
	2.6-3	**1mg**	2-2.3	**5mg**
	greater than 3	**0mg**	2.4-2.7	**4mg**
			2.8-3	**3mg**
			3.1-3.5	**2mg**
			3.6-4	**1mg**
			greater than 4	**0mg**

Beyond day 4, clinical judgment should be used to adjust doses. A member of the Anticoagulation Team can be contacted for advice.

b) Slow induction of anticoagulation in patients with atrial fibrillation or atrial flutter

It is generally recommended to use a slow loading regimen when starting warfarin for stroke prevention. These patients are more likely to be sensitive to warfarin, risking the potential for raised INRs. If the baseline INR is less than or equal to 1.3 the usual starting dose is 3mg warfarin daily. The INR should be checked in 4 to 7 days. For more information on anticoagulation in patients with AF, please refer to MIL Vol. 8, No. 5 'Atrial fibrillation, atrial flutter and anticoagulation management'. Inpatients being loaded on warfarin should receive at least prophylactic LMWH and may be considered for therapeutic LMWH whilst the INR is below 2. Patients can be discharged home whilst INR is sub-therapeutic and managed by the anticoagulation service.

Oral Anticoagulation form

After signing the first prescription for warfarin, a prompt will appear to complete the 'oral anticoagulation form'. This form is used to collect essential information such as indication, INR range and duration. It will also display on the TTO at discharge. Therefore, it is vital the information is accurate as it will contribute to the communication with the patient and ongoing monitoring after discharge.

Duration of therapy

Patients with proximal Deep Vein Thrombosis (DVT) or Pulmonary Embolism (PE) should be treated for at least 3 months. Long term treatment should be considered for recurrent thrombosis, patients with an on-going risk factor or unprovoked proximal DVT or PE. The duration of treatment or review date should be stated on the discharge summary. Please go to the anticoagulation website for details including when and how to refer patients. Lifelong anticoagulation is indicated for patients with mechanical heart valves, AF and atrial flutter.

Patient (or carer) counselling

It is imperative that all patients new to VKA treatment are offered verbal counselling and provided with written information. It is vital every patient (and/or carer) fully understands this information to support safe management of anticoagulation. The responsibility for providing this counselling rests with prescribers, doctors, pharmacists or other trained healthcare professionals. Counselling guides to assist with this are available on the anticoagulation website. Completion of the oral anticoagulation counselling form must be carried out via EPR. Those under the Oxfordshire Anticoagulation Service will receive a telephone call with further information about

outpatient management and an ID card. However, full counselling should still be given prior to discharge and recorded on EPR.

Referring patients to the Anticoagulation Clinic

As soon as possible after starting VKA therapy, all new patients must be referred to the Anticoagulation Clinic to initiate remote postal dosing. This is a telephone referral via bleep **1857 or extension 23729**. Full details of the referral procedure are available via the website. For patients who are not covered by the Oxfordshire Anticoagulation Service, a referral must be made to the patient's GP or local anticoagulation service. Contact details for out of area anticoagulation services are available on the website.

Monitoring VKA therapy

Clinical judgment is required when deciding the interval between INR measurements. When adjusting doses, it should be kept in mind that it takes up to a week for the full effect of any dose change to be seen. Many medicines, supplements and foods interact with VKA therapy. Additional INR monitoring is recommended when **any changes** are made to a patient's medication. Please discuss further with your ward pharmacist or Medicines Information (ext. 21505).

Discharging a patient on VKA therapy

Before discharging a patient on VKA therapy, follow up arrangements for INR monitoring **must** be confirmed. Please note there is a delay of at least 24 hours between INR blood test and results being available for dosing. Therefore patients must be given a dose to take until they are contacted by the community service with a new dose. For **all** patients ensure each of the following steps are done:

1. The anticoagulation section of the TTO is fully completed
2. The TTO is fully published
3. A verbal referral is made

Please ensure the TTO is updated if there is a delay between completion and discharge.

All patients must be given the supporting printed information about their VKA therapy ('*Important information about anticoagulation with vitamin K antagonists*'). These booklets are available in clinical areas and from pharmacy. The first appointment for an INR check should usually be within the first 48 hours after discharge. **Please do not request routine post-discharge INR tests for a Friday, Saturday, Sunday or Bank Holiday. If there is a clinical need for the INR to be measured on one of these days, please contact the Anticoagulation Service (bleep 1857) for advice**.

Patients new to VKA and still on LMWH

Please call the DVT clinic to discuss these patients on bleep 5165 or extension 25629.

Out of hours: dvtservice@ouh.nhs.uk

Patients reloading on VKA and still on LMWH

Please call the Anticoagulation Clinic to discuss on bleep 1857 or extension 23729.

Out of hours: ac.services@ouh.nhs.uk

Management of overdose

Separate guidance has been produced for the management of elevated INRs. Please refer to MIL Vol. 5 No. 9 *Reversal of vitamin K antagonists (warfarin) in adult inpatients*

The Oxfordshire Anticoagulation Service

The Oxfordshire Anticoagulation Service operates a 'dose & post' service for most GP surgeries in Oxfordshire. The Service operates 9am – 5pm, Monday to Friday (excluding Bank Holidays). For more information refer to the website.

References

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