HOSPITAL POLICY - Prescribing and Monitoring of Vitamin K Antagonist Anticoagulants for Inpatients

Doncaster and Bassetlaw Hospital NHS Foundation Trust

Formulary Guidance Standards for the Prescribing and Monitoring of

Vitamin K Antagonist Anticoagulants for Inpatients

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1 INTRODUCTION

1.1 Related documents to be read in conjunction with this guidance

- Anticoagulant Referral Form (WPR41040)
- BCSH Oral Anticoagulant Guidelines (1998)
- BCSH Guidelines on oral anticoagulation (warfarin): 3rd edition- 2005 update
- NPSA safety alert 18 actions that can make anticoagulant therapy safer- 2007
- Warfarin Slow Start Regimen
- Bridging Anticoagulation- Peri-operative management of patients on oral anticoagulant therapy
- Guidelines for management of bleeding and excessive anticoagulation with oral anticoagulants (includes guidance on the management of head injury in patients on anticoagulation)

- Guidelines for the diagnosis and management of VTE
- Protocol for use of Beriplex

1.2 Training

All staff caring for patients on anticoagulant therapy must have the necessary work competences.

The consultant is responsible for the competence to prescribe of their clinical team. The Ward Manager is responsible for the competence of their nursing staff to administer. The Clinical Director of Pharmacy and Medicines Management is responsible for the competence of the staff providing the clinical pharmacy and dispensing services

Additional learning can be found via the e- learning modules.

http://learning.bmj.com/learning/search-result.html?moduleId=5004325 http://learning.bmj.com/learning/search-result.html?moduleId=5004429

To access these modules requires registration with the site which has a subscription cost.

1.3 Patient Information

- All patients will be given a pack which contains:
  - The booklet - 'Oral Anticoagulant Therapy: Important information for patients'.
  - Anticoagulant Therapy Record Book (where used) – to record their dosing schedule when discharged.
  - Anticoagulant Therapy Alert Card.
- This documentation is readily available on wards and in Outpatients. Further supplies are available from the Pharmacy Department.
- Any healthcare professional (HCP) involved in the care of a patient may issue the information. The HCP will document in the notes to indicate that the patient has received this information.
- All patients will also receive verbal information about their proposed anticoagulant treatment from the medical team prior to commencing anticoagulation. See Counselling and Appendix 2.
- All patients will initially be given an anticoagulant dosing referral form which will detail the doses that the patient should take until their next blood test. This referral form should be completed in full by the prescriber and faxed either to the patients Primary Care Provider if they will be taking over the anticoagulant prescribing (mainly Bassetlaw patients) or the Doncaster Anticoagulant Monitoring Service or AMS (mainly Doncaster patients).

(Confirm with your patient who is normally responsible for their warfarin dosing and ensure anticoagulant referral form is directed to appropriate service.)

2 PRESCRIBING

2.1 On Admission

All patients admitted on warfarin must have an INR checked on the day of admission before prescribing

2.2 General Guidance On Initiating Warfarin

- Ensure baseline bloods (full blood count, liver function tests, urea & electrolytes, coagulation screen and baseline INR) are satisfactory before commencing warfarin.
- Explain to the patient the indication for warfarin treatment, risks and benefits and issue NPSA 'Important Information for Patients' pack
- Measure INR daily when **initiating** warfarin treatment.
- NB. The INR is not accurate if the APTT ratio is greater than 4.0 whilst on unfractionated heparin.
- Patients may also be started according to the slow start guidance
- Restarting warfarin after surgery may be done in accordance with the

Bridging Anticoagulation guidance

DAY	***Patients aged under 65**		****Patients aged 65 or over**	
	INR (IN MORNING)	**WARFARIN DOSE (mg) (IN EVENING)**	**INR (IN MORNING)**	**WARFARIN DOSE (mg) (IN EVENING)**
1 (Pre-treatment baseline)	less than1.4	10	less than 1.4	10
2 if INR greater than 1.8, patient may be warfarin sensitive. Monitor frequently.	less than 1.8 1.8 – 2.0 greater than 2.0	10 1 0	less than 1.8 1.8 – 2.0 greater than 2.0	5 1 0

3	less than 2.0 2.0 – 2.2 2.3 – 2.5 2.6 – 2.9 3.0 – 3.2 3.3 – 3.5 greater than 3.5	10 5 4 3 2 1 0	less than 2.0 2.0 – 2.2 2.3 – 2.5 2.6 – 2.9 3.0 – 3.2 3.3 – 3.5 greater than 3.5	5 4 4 3 2 1 0
4	less than 1.4 1.4 – 1.5 1.6 – 1.7 1.8 – 1.9 2.0 – 2.3 2.4 – 3.0 3.1 – 4.0 greater than 4.0	Greater than 8 8 7 6 5 4 3 Omit dose until INR is 3.0 or under	less than 1.4 1.4 – 1.5 1.6 – 1.7 1.8 – 1.9 2.0 – 2.3 2.4 – 3.0 3.1 – 3.2 3.3– 3.5 3.6– 4.0 greater than 4.0	Greater than 7 7 6 5 4 3 2 1 0 0
After day 4	Use clinical judgement		Use clinical judgement	

*Modified from British Society for Haematology Guidelines on Oral Anticoagulation: Third Edition. Br J Haematology 1998; 101: 374-87 and Fennerty et al. British Medical Journal 1988; 297: 1285-8.

** Modified from Gedge et al. Age and Ageing 2000; 29: 31-34

2.3 Warfarin Prescription

Warfarin is prescribed on either the separate ‘Oral Anticoagulant Prescription’ section of the Inpatient Medicines Prescription and Administration chart or the separate warfarin module in the JAC e-prescribing system

There are three different warfarin products described on the e-prescribing system:

- **'Warfarin tablets for daily dosing'** is the usual product to prescribe. Each days doses are described in milligrams
- **'Warfarin tablets for STAT doses'** is used for single doses where an initial dose is required after the normal 6pm schedules or where the warfarin module cannot be used
- **'Warfarin Tablets for Discharge'** is used for the discharge prescription. The dosing schedule is written in the Oral Anticoagulant Dosing Record Book(if in use) and on the AMS referral form

More information can be found on the E-Prescribing manual for Warfarin prescribing and Administration

2.4 Recording the INR

To enable the Anticoagulant Monitoring Service Referral to be completed at discharge the INR results and dates should be recorded on the JAC e-prescribing system.

At discharge this document can be printed off and sent with the referral form as a record of doses given and INR results

For instruction on how to record and the print off the INR. See E-Prescribing manual for Warfarin Prescribing and administration (p.7)

2.5 Maintenance Dosing Of Warfarin For Patients

After any dose change, or when starting or stopping an interacting medicine check the INR every 2 to 3 days General principles:

- Dose changes should usually only be +/- 10%
- It will take 3 – 4 days for a dose change to significantly change the INR, **but continue to monitor the INR to observe the full effect**
- When starting or stopping ANY additional medication, check the BNF to see if interaction with warfarin. Interactions are also highlighted in the e-prescribing Conflict Log
- When starting ANY new drug (or discontinuing one known to interact with warfarin), **check INR after 2-3 days and continue to check the INR to observe the full effect**

2.6 Recommended Target Ranges for INR

A target INR of 2.5 (range 2.0 - 3.0) is sufficient for most indications EXCEPT:

• Recurrent or further DVT/PE when fully anti-coagulated. For these patients a target INR of 3.5 is recommended.

•Certain mechanical prosthetic heart valves:

Valve type	Position	Target INR	Range
Bi-leaflet	Aortic	2.5	2.0-3.0
Tilting Disc	Aortic	3.0	2.5-3.5
Bi-leaflet or Tilting disc	Mitral	3.0	2.5-3.5
Caged ball or caged disc	Aortic/mitral	3.5	3.0-4.0

2.7 Management Of Over-Anticoagulation Or Bleeding On Warfarin

Check INR in all patients and resuscitate as necessary

Adverse effect/INR	Warfarin	Vitamin K (phytomenadione)	Other actions
Life/limb threatening/ major bleeding (including intra-cerebral, intracavity or critical organ bleeds)	Withhold	5mg IV	Give Beriplex (as per policy) in addition to phytomenadione (vitamin K)
Clinically relevant non – Major Bleeding (INR less than 4.5)	Withhold	**	Investigate underlying cause in the same manner as for patients not taking warfarin.
Clinically relevant non	Withhold	1-2mg IV or orally*** (IV active within 6-8hrs, oral active within	Repeat INR the next day

– Major Bleeding (INR above 4.5)		12-24hrs)	
Head injury (normal CT scan, no bleeding, and INR above 4.5)	Withhold	1-2mg IV*	Following a significant head injury, the INR should be more stringently maintained in the patients' desired therapeutic range for 4 weeks following a normal CT scan to minimise the risk of delayed intracranial bleeding
Head injury (normal CT scan, no bleeding, and INR in desired range)	Withhold/ continue dependent on patient factorsseek advice		Clinical decision – consider factors such as how the head injury occurred, indication for anticoagulation, etc. In some patients it may be appropriate to discontinue the anticoagulant for a period of time. Advice should be taken from the Consultant in charge/ Haematologist as needed. If continued follow advice above.

No Bleeding (INR greater than 8)	Withhold	1mg IV or orally*** (IV active within 68hrs oral active within 12-24hrs)	
No Bleeding (INR between 4.5 and 8.0)	Withhold	Consider 1mg orally*** if patient considered at increased risk of bleeding (e.g. age >65 yrs, previous GI or intracranial bleed, renal or liver failure, anaemia, cancer, recent stroke, or recent surgery)	

*If the risk of utilising vitamin K to bring an INR back into the therapeutic range is felt to be greater than the risk of bleeding for the individual patient concerned then as a minimum prior to discharge the INR should be rechecked. The patient should only be discharged if the INR is decreasing and arrangements have been put in place to ensure that this continues. **In presence of increased risk factors for bleed (such as age over 65yrs,previous GI bleed or intracranial bleed, renal or liver failure, anaemia, recent stroke, recent surgery, head injury with normal CT etc) clinicians may consider giving Vitamin K 1mg iv or orally if benefit of doing so outweighs the risk

***Use Konakion MM paediatric injection (given orally)

2.8 Special Patient Groups

2.8.1 Elderly Patients

1. High risk of drug interaction with warfarin due to likelihood of higher comorbidity and polypharmacy.
2. Decision to initiate should take into account likely adherence, attendance for INR checks and risk of falling.
3. Normal ageing and/or acute ill health may require treatment to be reviewed in light of point 2 above.

2.8.2 Cancer Patients

Patients with active malignancy, particularly if receiving chemo/ radiotherapy, should be considered for ongoing treatment with low molecular weight heparin. Discuss with oncology consultant.

2.8.3 Thromboembolic Disease in Pregnancy and the Puerperium

Avoid warfarin therapy during pregnancy. Seek advice from an obstetrician on heparin treatment in pregnancy and warfarin initiation in the puerperium.

3 COUNSELLING

- All patients discharged on warfarin must receive counselling prior to their discharge from hospital.
- In patients where warfarin has been initiated, this should be done as soon as possible after the decision to start treatment.
- The doctor initiating the oral anticoagulant must as a minimum complete in the Record Booklet, the Alert Card, and the Patient Information Booklet the following
    - The indication for the therapy
    - The target INR
    - The intended duration of treatment
- Medical Staff and nursing should refer all new anticoagulant patients to the ward clinical pharmacist as soon as possible
- Counselling normally will be delivered by the clinical pharmacist.
- When this counselling is not possible by the pharmacist, counselling must be delivered by a member of the medical team caring for the patient.
- The person delivering the counselling (see appendix 2 for full counselling check list) must -
    - Ensure an information pack (information booklet, alert card and dosing record book, where used) has been issued and refer to it during counselling.
    - Advise the patient to carry the Alert Card with them at all time
    - Check that the patient understands the necessity for INR monitoring and how this will take place following discharge
    - Check that the patient understands that they will be provided with a copy of the referral form on discharge, with instructions to take it to the AMS or GP

- A record will be made on as a Clinical Pharmacy Note on the e-prescribing system and in written clinical record, as applicable. If there are concerns about the patient's understanding after counselling arrangements will be made to counsel the patient's carer and this must be documented in the medical notes, where applicable, as a note on the electronic prescribing system.
- Patient specific advice relating to drug interactions, pregnancy or alcohol intake will be considered and if given, be documented in the medical notes, and where applicable, as a note on the electronic prescribing system.
- The pharmacist performing the clinical check of the discharge prescription (TTO's) will ensure that counselling has been delivered. If it is not possible for pharmacy staff to deliver the counselling, the pharmacist will contact the doctor who wrote the TTO's

- The final responsibility for ensuring a patient has been counselled lies with the medical team.

4 DISCHARGE

4.1 Prescriber's responsibilities

The prescriber retains the responsibility to dose the discharged patient until their first appointment with either the DBH Anticoagulant Monitoring Service (AMS) or the Primary Care Provider (GP).

- At discharge the prescriber must

- complete the Anticoagulation Referral Form and ensure it is faxed to the DBH Anticoagulant Monitoring Service or the Primary Care Provider (GP).
- provide the AMS or GP with the most recent record of dosing and INR results during the patient's stay.
    - For instruction on how to record the print off the INR See page 7 of the E-Prescribing manual for Warfarin Prescribing and administration
    - Or for patients not using e-prescribing, copy the anticoagulation prescribing section of the Inpatient Medicines Prescribing and Administration Chart
- provide the patient with a copy of the referral form, with instructions to take it to the AMS or GP
- check INR is in therapeutic range and if not, check that appropriate monitoring arrangements are in place.
- prescribe warfarin on the discharge prescription.
- check whether interacting drugs have been started / stopped. If so , document on TTO record and referral form
- check the patient has been counselled and issued with an anticoagulant patient information booklet, the Alert Card and the dosing Record Book.
- ensure the patient understands the dose of medication they need to take until their next INR
- ensure the patient understands the arrangement for further monitoring and dosing
- state clearly on the interim discharge summary to the GP regarding anticoagulant therapy and the monitoring arrangements in place.

4.2 Pharmacy's responsibilities

All discharge prescriptions for warfarin will receive a clinical check against the inpatient prescription by a pharmacist prior to dispensing.

- At discharge the pharmacist must
    - check INR is in therapeutic range and if not that appropriate monitoring arrangements are in place
    - check whether interacting drugs have been started / stopped. If so , document on discharge summary record

    - check all the patient has been issued with the necessary anticoagulant patient information
    - check all patients initiated or restarted on warfarin have received counselling
    - endorse the prescription with the strength of the tablets to be supplied
- patients who are prone to confusion over medicines or those requiring less than 3mg warfarin daily must have only 1mg tablets supplied.
- patients may be supplied with 0.5mg tablets on request if they are requiring less than 1mg warfarin daily or if unable to cope with alternate dosing regimens.
- patients must not be given 0.5mg and 5mg tablets and patients must not be instructed to break tablets in half.

- ensure the patient understands the ongoing dosing schedule
- ensure the patient understands the dose to be taken until their next INR test and the arrangements for their next INR test

4.3 Nurse's responsibilities • At discharge the nurse must:

- check that all patients initiated or restarted on warfarin have been counselled. If not, contact the clinical pharmacist or a member of the medical team.
- provide the patient with a copy of the referral form, with instructions to take it to the AMS or GP
- check the patient has been issued with the necessary anticoagulant patient information pack
- ensure the patient understands the ongoing dosing schedule
- ensure the patient understands the dose to be taken until their next

INR test and the arrangements for their next INR test

- ensure the patient leaves the hospital with their warfarin tablets

5 DISCONTINUATION

- Discontinuation of treatment should be in keeping with the Guidelines for the diagnosis and management of VTE.
- Patients who require long term anticoagulation should have their treatment discontinued if the clinical risks associated with the medication outweigh the benefits.
- Anticoagulation Monitoring Service and GP should be informed regarding the decision to discontinue treatment.
- Patients attending Anticoagulation Monitoring Service who have completed the recommended duration of treatment defined at time of referral will have their warfarin discontinued at the appropriate time. The Clinician responsible for initiating therapy and the GP will be informed.

Appendix 1 Roles of the Prescriber Pharmacist and Nurse

Detailed Warfarin Counselling Checklist

- The reason for treatment
    - Indication/diagnosis
    - Likely duration of treatment
- The strengths available and how to identify them (inform which strengths will be supplied and their colours; mention others)
    - 0.5mg white
    - 1mg brown
    - 3mg blue
    - 5mg pink
- How to take warfarin tablets
    - Loading (if appropriate)
    - What dose
    - How to construct/make up dose (in mg)
    - Frequency and time
    - Missed doses
- Why monitoring is necessary and how it is done
    - Ensure safety
    - Ensure effective and appropriate
    - Blood sample to determine INR (and explanation)
    - Target range
    - Frequency (daily or alternate days initially, and then at longer intervals as appropriate, up to 12 weeks)
    - Clinic details / contact numbers (see appendix 3 for details on the Doncaster anticoagulation monitoring service and how it operates)
- Where to obtain further supplies
    - Ensure always have at least a weeks' supply left
    - Prescription from GP
    - Collect from community pharmacy
- Potential serious side effects
    - Haemorrhage
    - Seek medical attention if experience excessive or unexplained bleeding/bruising
    - Seek immediate medical attention if
        - bleeding cannot be stopped,
        - involved in trauma
        - suffer significant blow to the head

- Going to the dentist
    - Need to inform dentist before attending for treatment
    - Will require recent INR result and therefore may require extra blood test
    - In most cases treatment will proceed as normal without altering warfarin therapy

- Medicines that affect warfarin
  - Many medications interact with warfarin
  - Always inform healthcare professionals that you are taking warfarin
  - If interacting medications are started/stopped extra blood tests may be required
  - When buying medications over the counter inform the pharmacist
  - Do not take aspirin (unless prescribed) or ibuprofen, paracetamol and codeine based painkillers are suitable
- Other things that affect warfarin
  - Eat a well-balanced diet
  - Do not exceed recommended alcohol intake (three units for men and two units for women, per day) or ‘binge drink’
- Women:
  - Pregnancy – teratogenic in 1st trimester, see GP as soon as possible if pregnancy confirmed, if possible discuss with GP in advance
  - Periods – may be heavier than previously, seek medical attention if experience unexpected bleeding or unusually heavy/prolonged bleeding
- Where to access further advice later if necessary
  - Anticoagulation monitoring service where appropriate
  - GP
  - Community pharmacy
  - NHS direct
- The warfarin information pack, the anticoagulant warning card etc
  - Ensure pack issued
  - Remove dosing book if not going to be used
  - Explain the monitoring service in place in their area
  - Document pack issued in clinical records and on discharge letter