Healthier Together
Improving health and care in Bristol, North Somerset and South Gloucestershire

Management of Subtherapeutic INRs in the community

This protocol is intended to provide guidance to primary care clinicians for management of adult patients on oral anticoagulation with a vitamin K antagonist, with an International Normalised Ratio (INR) result that is below their target range. Guidance for secondary care clinicians should be sought from their respective Trust guidelines.

Clinical decisions in these scenarios require individual patient considerations, including determining a reason for the result (e.g., missed dose), risk factors for thrombosis and bleeding, and patient preference.

For the following low-risk thrombosis patients, consider boosting the warfarin dose for 1 or 2 days, and/or increasing the regular warfarin dose:

- AF without additional thrombotic risk factors
- >3 months since VTE
- VTE >6 weeks or recurrent VTE with target INR 2.5
- Low risk aortic valve replacement with no additional risk factors (see table 1.0 below)

For patients at higher risk of thrombosis, including those specified by a consultant, it may be appropriate to consider prescribing bridging therapy, the use of a short acting anticoagulant with treatment dose low molecular weight heparin (off label use) until INR ≥2. For high-risk patients this consideration should be made if INR <1.8 (for target 2.5) or <2.0 (for target ≥ 3.0). This should be in discussion with the outpatient anticoagulant clinic or haematology department if uncertain (see contact details below). Sub-therapeutic bridging should be arranged in working hours.

High thrombosis risk:

- VTE within 4-6 weeks
- AF with CVA/TIA/embolism within 3 months, rheumatic mitral disease, or mitral stenosis
- Non-AF cardiac embolism within 1 month
- Mitral or aortic valve replacement of high or medium thrombogenicity (see table 1.0 below for classifying risk of valves)
- Recurrent VTE on anticoagulant (range 3-4)
- Antiphospholipid syndrome / Anti-thrombin deficiency

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Table 1.0: Target international normalized ratio for mechanical prostheses

Prosthesis Thrombogenicity	**Patient-related risk factors** [A]	
	None	**>1 risk factor**
Low [B]	2.5	3.0
Medium [C]	3.0	3.5
High [D]	3.5	4.0

AF = atrial fibrillation; LVEF = left ventricular ejection fraction

A. Mitral or tricuspid value replacement; previous thromboembolism, AF; mitral stenosis of any degree; LVEF < 35%

B. Carbomedics, Medtronic Hall, ATS, Medtronic Open-Pivot, ST Jude Medical, Sorin Bicarbon.

C. Other bileaflet valves with insufficient data.

D. Lillehei-Kaster, Omniscience, Starr-Edwards (ball-cage), Bjork-Shiley and other tilting-disc valves.

The British Society of Haematology (Keeling, et al 2011) have adopted the European Society of Cardiology guidelines (Vahanian, et al 2021) on classification of INR targets.

Prescribing low molecular weight heparin:

- If clinically appropriate, patients should obtain a prescription for enoxaparin from their GP. If this is the first prescription, Inhixa® brand should be prescribed.

- An up-to-date weight must be used for dosing. The standard dose of enoxaparin is 1.5mg/kg OD or 1mg/kg BD (see posology section of SPC).

- *Dose adjustments:*
  Obesity: Dose according to weight (dose should not be capped). Two doses to be given 12hrs apart i.e.1mg/Kg BD. Anti-Xa monitoring may be required if administered for >7 days, please discuss this with specialist teams below.

  Renal impairment: If creatinine clearance (CrCl) 20-30mls/min, dose 1mg/Kg OD. If CrCl <20ml/min seek advice from haematology (UHB) or renal team (NBT).

- *Duration:*

  Minimum 3 days (or until next INR test, whichever is longer), longer supplies may be needed on weekends. For patients with frequent subtherapeutic INR results, a longer supply may be needed. A list of community pharmacies with stock of enoxaparin can be found here, including opening times.

- Arrangements should be made by the prescriber for patients and/or carers to be shown how to administer enoxaparin. This should be by a trained healthcare professional.

- Some patients may require district nursing for administration. This should be arranged by the prescriber**.**

Please contact UHBW anticoagulant clinic on 01173423874 or NBT on 07718 575 471 (Mon-Fri 09:00-17:00) for more information.

Contact the Haematology SpR if there are any clinical concerns that you wish to discuss:
Mon-Fri 09:00-17:00 UHBW bleep 2677, NBT bleep 9441
After 5pm/weekends, contact the Adult Haematology SpR via switchboard.

References:

Alec Vahanian et al. (2021) ESC/EACTS Scientific Document Group, 2021 ESC/EACTS Guidelines for the management of valvular heart disease: Developed by the Task Force for the management of valvular heart disease of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS). European Heart Journal.

Keeling, D., Baglin, T., Tait, C., Watson, H., Perry, D., Baglin, C., Kitchen, S., Makris, M. and (2011), Guidelines on oral anticoagulation with warfarin – fourth edition. British Journal of Haematology, 154: 311-324.

Summary of Product Characteristics (SmPC). Inhixa 4,000 IU (40 mg) in 0.4 mL solution for injection in pre-filled syringe. www.medicines.org.uk/emc/product/784/smpc#gref

Perioperative Management of Antithrombotic Therapy: Antithrombotic Therapy and Prevention of Throbosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest 2012;141;e326S-e350S

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