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North East London Community Anticoagulation Service:

Management of Excursions from Target INR Range in Patients taking Warfarin

Document control	
Title	Management of Excursions from Target INR Range in Patients taking Warfarin
Version	1.0
Produced by	North East London Pharmacy and Medicines Optimisation Team
Approved by	North East London Formulary and Pathways Group (FPG)
Date approved	04/11/2025
Ratified by	North East London System Prescribing and Medicines Optimisation (SyPMO) Board
Date ratified	25/11/2025
Review date	November 2028

Warfarin is a high-risk medication, which requires safe and appropriate management.
This document serves to provide guidance to **NEL Community Anticoagulation Service** providers on the management of excursions from target INR range in patients taking warfarin.
This guideline should be used in conjunction with local operating policies for each community anticoagulation service provider.
If a patient falls outside the scope of this guidance and there are concerns about the management of excursions from target INR, please seek specialist input.
All clinical decisions, reasoning and actions taken are to be clearly documented in the patient's electronic medical record which will automatically write back to the electronic medical record held by the patient's registered GP.

Section 1: Dose adjustment following an excursion from target INR range

Clinical decisions in these scenarios require individual patient considerations, including determining a reason for the excursion from target INR.

1. To help determine if there is a temporary or non-temporary reason for the excursion from target INR, ask the following routine questions which will help inform necessary warfarin dose changes:
   - Have you taken all doses as recommended at your last appointment?
   - Have you missed any doses in the last week?
   - Have you consumed any alcohol in the last week?
   - Have there been any changes to your regular or acute medicines, or have you started any antibiotics recently? Have you taken any medications over the counter, vitamins, minerals, herbal or homeopathic? (Check for interactions)
   - Have there been any changes to your diet? Is this a temporary or permanent change? Has your appetite changed?
   - How is your general health? Any vomiting or diarrhoea?
   - Have you had any recent hospital admissions?

2. Dose adjustment which should be considered in conjunction with clinical decision support system (CDSS) recommendations:

   - When **temporary** factors are identified for an out-of-range INR, a temporary dose adjustment should be recommended, e.g. for a sub-therapeutic INR consider boosting the dose for 1-2 days and then continue with the same maintenance dose.
     The same principle should be applied when reasons for an excursion from target INR cannot be identified.

   - When factors are identified that are **NOT temporary** reasons for an out-of-range INR, a change in the warfarin maintenance dose should also be considered e.g. permanent change in diet or addition of a long-term interacting medication.

   - In patients with repeated out-of-range INR values, supplemental measures may be required including (re-)educating patients on the risk and benefits of warfarin intake, the importance of strict adherence as well as food and drug-drug interactions etc. In high-risk patients (e.g. mechanical valve patients) specialist advice may need to be sought.

Section 2: Pathway for bridging patients with sub-therapeutic INRs

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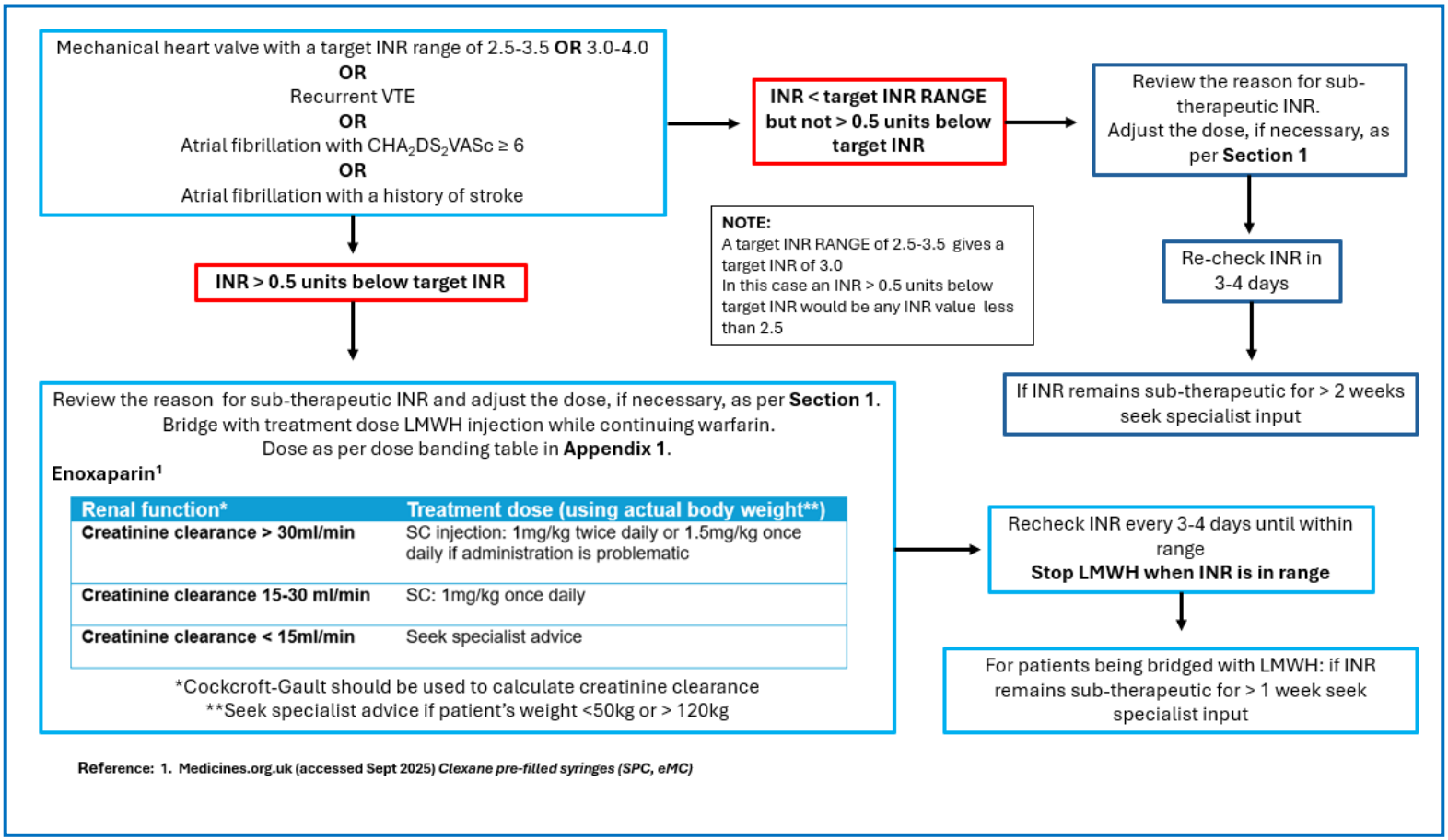
The clinical decision to bridge with Low Molecular Weight Heparin (LMWH) will be based on the individual patient's risk of thrombosis and bleeding risk.
The following patient groups are at a high risk of thrombosis when their INR is sub-therapeutic and should be considered for bridging with LMWH as per the pathway below:

- **Mechanical heart valve with an INR range of 2.5-3.5 or 3.0-4.0**
- **Recurrent VTE**
- **Atrial fibrillation with CHADS2VASc ≥ 6 OR atrial fibrillation with a history of stroke**

NOTE: All patients prescribed warfarin for the single indication of atrial fibrillation should be reviewed for suitability to switch to a DOAC.



Reference: 1. Medicines.org.uk (accessed Sept 2025) *Clexane pre-filled syringes (SPC, eMC)*

Bleeding Risk
Bleeding risk should be considered prior to bridging.

It may be necessary to seek specialist advice prior to bridging patients with a high risk of bleeding or patients with a history of bleeding when previously bridged with LMWH.

Factors which increase a patient's bleeding risk include old age, frailty, uncontrolled hypertension, diabetes, renal or liver failure, previous GI or cerebral bleed and concurrent use of anti-platelet medication.

Supply of LMWH
It is the responsibility of the provider to issue a same day prescription for enoxaparin and communicate this to the patient.
See **Appendix** 1 for details on quantity to supply.

Patient Counselling
It is the responsibility of the provider to counsel the patient on how to administer enoxaparin and dispose of used syringes.

Section 3: The use of vitamin K (phytomenadione) for the management of supra-therapeutic INRs

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This guideline is intended to provide guidance to allow patients on oral anticoagulation with warfarin, who are over-anticoagulated but do not have signs of bleeding, to be managed appropriately in the community.

All patients on anticoagulation with **MAJOR BLEEDING** should be transferred to A&E as an emergency regardless of INR.

Patients with **NON-MAJOR BLEEDING (including significant bruising) and above range INR** who require anticoagulation reversal to stop bleeding should also be transferred to A&E for management. These patients will require intravenous vitamin K, the management of which is not compatible with a community anticoagulation clinic environment.

Patients **BLEEDING AT THERAPEUTIC LEVELS** of anticoagulation should be investigated for the source of bleeding. For example, haematuria is not a feature of anticoagulation and patients with this symptom at therapeutic levels should be investigated for possible bladder and renal tract malignancy.

INR greater than or equal to 8.0 in the non-bleeding patient

DAY 1:

- Stop warfarin and send a venous INR (this may help advise future management if specialist advice is required)
- For patients with **mechanical heart valves** administer **1mg** phytomenadione orally*
- For **other anticoagulant indications** administer **2mg** phytomenadione orally
- Do not wait for the venous INR result prior to administering phytomenadione
- Advise patient to seek urgent medical attention if they develop significant spontaneous bruising or bleeding.

*Patients with mechanical heart valves have a high risk of thrombosis and anticoagulation should be reversed more cautiously

DAY 2:

- **Retest INR** - it would be expected that the INR would approximately halve within 24 hours

SCENARIO 1: INR remains > 8.0

- For patients with **mechanical heart valves** re-administer **1mg** phytomenadione orally*
- For **other anticoagulant indications** re-administer **2mg** phytomenadione orally
- Advise patient to seek urgent medical attention if they develop significant spontaneous bruising or bleeding.
- **Re-check INR on DAY 3 and if INR is still >8.0 seek specialist advice**

SCENARIO 2: INR < 8.0

- Once the INR is below 8 do not give further phytomenadione
- **Restart warfarin when INR < 5.0**
  If there is an unclear or identified temporary reason for the patient becoming unstable on their usual maintenance dose, restart at this maintenance dose. If there is a permanent reason for the raised INR (e.g. diet change, interacting long-term medication, consider restarting at a lower maintenance dose.

INR 5.0-7.9 in the non-bleeding patient

Stop warfarin and re-test INR every 2-3 days. Advise patient to seek urgent medical attention if they develop significant spontaneous bruising or bleeding.

Restart warfarin when INR < 5. If there is an unclear or identified temporary reason for the patient becoming unstable on their usual maintenance dose, restart at this dose.
If there is a permanent reason for the raised INR (e.g. diet change, interacting long-term medication, consider restarting at a lower maintenance dose.

Administration of phytomenadione

All Community Anticoagulation Provider sites should stock **phytomenadione solution for injection** which can be administered orally, IM or IV. This guideline is only for oral administration.

Phytomenadione 2 mg/0.2 ml solution for injection can be obtained from a local community pharmacy as a stock item.

Phytomenadione MUST be prescribed on the patients' medical record prior to administering.

How to administer Phytomenadione:

- Check expiry date of ampoule and ensure the product is in date before use
- Break ampoule
- Using the oral dispenser withdraw the solution to the appropriate mark (2mg= 0.2ml, 1mg = 0.1ml)
- Hold dispenser in patient's mouth (at the back of the tongue) and press plunger
- Offer patient a glass of water as the solution has a very bitter taste

Section 4: NEL Specialist Support

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This guideline should be used in conjunction with local operating policies for each community anticoagulation service provider. Local operating policies should outline a clear escalation pathway with locally agreed formal links to local specialist haematology departments.
Access to specialist advice will enhance the delivery of high-quality anticoagulation care, especially for more complex patients, such that care can be provided closer to the patient's home.

Place	Organisation	Anticoagulation Contact Details
City and Hackney	Homerton Hospital	Email: huh-tr.antico@nhs.net
Tower Hamlets	Barts Health Royal London Hospital	Email: theanti.coagteam@nhs.net
Newham	Barts Health Newham Hospital	Email: BHNT.NewhamanticoagteNe@nhs.net
Waltham Forrest	Bart's Health Whipps Cross Hospital	Email: wxanticoadmin.bartshealth@nhs.net
Barking and Dagenham	Barking, Havering and Redbridge University Hospital Trust	Email: Bhrut.anticoagulant.services@nhs.net
Havering		
Redbridge		

Appendix 1: Enoxaparin dose banding table

The following tables provide guidance on (i) weight-based dosing of enoxaparin to the nearest syringe for ease of administration and (ii) quantity of enoxaparin to prescribe.

All strengths of enoxaparin are available in a box of ten pre-filled syringes.

Creatinine clearance should be calculated using Cockcroft and Gault equation.

Seek specialist advice if patient's weight <50kg or > 120kg.

Treatment dose if creatinine clearance > 30ml/min: Enoxaparin 1mg/kg subcutaneously twice daily		
Weight (kg)	**Dose**	**Supply**
50 - 69	60mg twice daily	2 boxes of enoxaparin 60mg
70 - 89	80mg twice daily	2 boxes of enoxaparin 80mg
90 - 109	100mg twice daily	2 boxes of enoxaparin 100mg
110 - 120	120mg twice daily	2 boxes of enoxaparin 120mg

Treatment dose if creatinine clearance is > 30ml/min and administration of twice daily dose is problematic: Enoxaparin 1.5mg/kg subcutaneously once daily		
Weight (kg)	**Dose**	**Supply**
50 - 59	80mg once daily	1 box of enoxaparin 80mg
60 - 74	100mg once daily	1 box of enoxaparin 100mg
75 - 89	120mg once daily	1 box of enoxaparin 120mg
90 - 110	150mg once daily	1 box of enoxaparin 150mg
111 - 120	180mg once daily	1 box of enoxaparin 100mg and 1 box of enoxaparin 80mg

Treatment dose if creatinine clearance < 30ml/min: Enoxaparin 1mg/kg subcutaneously once daily		
Weight (kg)	**Dose**	**Supply**
50 - 69	60mg once daily	1 box of enoxaparin 60mg
70 - 89	80mg once daily	1 box of enoxaparin 80mg
90 - 109	100mg once daily	1 box of enoxaparin 100mg
110 - 120	120mg once daily	1 box of enoxaparin 120mg