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.

Venous Thromboprophylaxis for Lower Limb Immobilisation in outpatients aged 16 or more

This Medicines Information Leaflet (MIL) is applicable to all patients aged 16 years or more at Oxford University Hospitals (OUH) with lower limb immobilisation. For guidance on the prevention of venous thromboembolism (VTE) in adult inpatients, please refer to MIL.

Assessing the risk of VTE

Lower limb immobilisation is associated with an increased risk of VTE. The incidence of VTE in patients with temporary plaster cast immobilisation is estimated anywhere between 5 - 39%, depending on the type of patient and the type of immobilisation.[1] There are limited data available with regard to VTE risk and other forms of lower limb immobilisation, such as removable boot and knee brace[2].

Current NICE guidance[3] states to 'consider pharmacological VTE prophylaxis with LMWH for people with lower limb immobilisation whose risk of VTE outweighs their risk of bleeding.' The NICE guidelines define immobilisation as 'any clinical decision taken to manage the affected limb in a way that would prevent normal weight-bearing status or use of that limb, or both'.

The process agreed upon locally at OUH is to risk assess all patients aged 16 years or more with a form of lower limb immobilisation (e.g. plaster cast, brace, removable boot). Patients should be assessed using the OxFord venous Thromboembolism risk Number (OFTEN) assessment. This has been developed to provide a method of risk stratification for the prevention of VTE in this setting, using the recognised NICE VTE risk factors. Appendix 1 shows the list of VTE risk factors to be discussed with the patient, and appendix 2 illustrates the overall pathway.

VTE risk should be discussed, with written information provided to all patients and a decision made regarding prophylactic low-molecular weight heparin (LMWH) following discussion with the patient. This decision should be documented.

Enoxaparin sodium is the LMWH of choice in OUH. Enoxaparin is a biological medicine and should be prescribed by brand; Inhixa® will be supplied for all enoxaparin prescriptions. Each reference to enoxaparin in this document relates to Inhixa®

The OUH guidance recommends that in patients with an OFTEN score of 2 or more, enoxaparin should be initiated, unless contraindicated. This should be continued until the end of full immobilisation. In patients with an OFTEN score of less than 2, the VTE risk whilst in immobilisation is likely to be lower and therefore daily enoxaparin is generally not advised.

Dosing of enoxaparin

VTE risk assessment and prescribing of enoxaparin if appropriate should usually occur at the initial assessment and reviewed as the clinical situation changes. However, for patients presenting to the Emergency Department who require a fracture clinic appointment the following day, this will occur the following day in the fracture clinic.

The prescribing and supply of enoxaparin should be carried out by OUH. Routine bloods should be available within the preceding 6 months, to include

full blood count (FBC), urea and electrolytes (U&Es) and liver function tests (LFTs).

Weight (kg)	Dose (mg) for CrCl above 30mL/min
Less than 50	20mg once daily
50-100	40mg once daily
101-150	60mg once daily
More than 150	40mg twice daily

Table 1: Weight based doses adjustments for enoxaparin

Renal function and dose of enoxaparin

For patients with a known creatinine clearance (CrCl) of 30 ml/min or less, follow the dosing in table 2. For any patient with a CrCl less than 15 ml/min, a standard dose of 20mg daily should be used irrespective of body weight. In the absence of a CrCl in the preceding 6 months, patients should be screened for chronic kidney disease as detailed in appendix 2 (box c). Monitoring the clearance of enoxaparin (via a trough Anti-Xa level) should be completed at day 7 for the cohort of patients with CrCl less than 15ml/min or on dialysis.

Weight (kg)	Dose (mg) for CrCl 15-30mL/min
Less than 50	20mg once daily
50-100	20mg once daily
101-150	40mg once daily
More than 150	60mg once daily

Table 2: Weight based doses adjustments for enoxaparin in renal impairment

Pregnancy or within 6 weeks of childbirth

Patients who are pregnant or within 6 weeks of childbirth should be discussed with a Consultant Obstetrician from the Silver Star unit to establish the dose and duration of thromboprophylaxis.

Patient counselling

All patients should be counselled for VTE risk, offered a patient information leaflet and advised to seek medical attention if increasing pain/swelling in leg or new chest pain or shortness in breath.

Alternative thromboprophylaxis options

If enoxaparin is unsuitable (e.g. allergy, history of heparin induced thrombocytopenia, needle phobic patient or those who decline enoxaparin) please refer to venous thromboembolism (VTE) in adult inpatients MIL.

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References:

[1]The College of Emergency Medicine (2012). Guideline for the use of thromboprophylaxis in ambulatory trauma patients requiring temporary limb immobilisation. Accessed via https://rcem.ac.uk/wp-content/uploads/2021/10/Thromboprophylaxis_in_Ambulatory_Trauma_Patients_Requiring_Temporary_Limb_Immobilisation_Flowchart.pdf {19/05/17}

[2]Emergency Medicine Journal (2020). Thromboprophylaxis in lower limb immobilisation after surgery (TiLLI). Accessed via: https://emj.bmj.com/content/37/1/36 (07/03/2023)

[3] NICE NG89 (2018) Venous thromboembolism in over 16s: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism. Accessed via https://www.nice.org.uk/guidance/NG89 (13/06/2019)

Appendix 1: OxFord venous ThromboEmbolism risk Number (OFTEN) assessment for lower limb immobilisation in outpatients

To be completed by all patients (16 years or older) immobilised in a lower limb cast/boot

Patient's name_____ **Hospital/NHS number**_____

Date_____ **Date of Birth**_____

Please circle each score box that applies to you (the patient); please discuss with the doctor if uncertain.

	Score
Age 60 years or over	1
Obese (BMI greater than 30kg/m^2)	1
Varicose veins with phlebitis	1
Use of oestrogen-containing contraceptive therapy e.g. oral combined contraceptive pill	1
Use of hormone replacement therapy (HRT)	1
One or more long-term medical conditions requiring treatment such as heart disease, lung disease, bowel disease, hormone disease, inflammatory conditions	1
Known blood clotting disease/thrombophilia: - Low risk thrombophilia (heterozygous for Factor V Leiden mutation or prothrombin gene G20210A mutation) - High risk thrombophilia (anti-thrombin deficiency, protein C or S deficiency, homozygous/compound heterozygous Factor V Leiden mutation)	 1 2
Active cancer or cancer treatment	2
Pregnancy or within 6 weeks of childbirth	2
Previous personal history of leg vein clots (deep vein thrombosis) or lung clots (pulmonary embolus)	2
Known family history of leg vein clots (deep vein thrombosis) or lung clots (pulmonary embolus) in close family (brother, sister, father, mother)	2
Achilles tendon rupture	2
Recent surgery to lower limb or pelvis (with total anaesthetic and surgical time greater than 60 minutes)	2
TOTAL SCORE	

Signature of patient/clinician_____

SCORE	RECOMMENDATION
0-1	Mobilisation as advised by medical practitioners. Give the patient an information leaflet on 'VTE and plaster casts'.
2	**If no contraindication to enoxaparin, prescribe enoxaparin prophylaxis daily until end of immobilisation of lower limb in cast/boot reviewed on an individual basis** depending on mobility – refer to the flowsheet for 'Venous Thromboprophylaxis for Lower Limb Immobilisation in Outpatients'

Appendix 2: Venous Thromboprophylaxis for Lower Limb Immobilisation in Adult Outpatients

Document VTE risk assessment in all patients (16 or older) who are immobilised in a lower limb cast/boot using the OFTEN assessment[a]
Offer all patients written information on VTE risk.

OFTEN[a] assessment = 0-1 → Low risk VTE. Mobilisation as advised by medical practitioner.

OFTEN[a] assessment 2 or more

Is pharmacological VTE prophylaxis contraindicated? Does the risk of bleeding outweigh the risk of VTE?[b]

No ↓

DAILY * prophylaxis to continue until end of immobilisation of lower limb in cast/boot reviewed on an individual basis depending on mobility.

Offer pharmacological thromboprophylaxis with enoxaparin			
Weight (kg)	CrCl greater than 30ml/min	CrCl 15-30ml/min	CrCl less than 15ml/min^
Less than 50	20mg once daily	20mg once daily	20mg once daily
50-100	40mg once daily	20mg once daily	
101-150	60mg once daily	40mg once daily	
More than 150	40mg twice daily	60mg once daily	

Screen patients for chronic kidney disease if meet criteria[c]
^Monitoring the clearance of enoxaparin via an Anti-Xa level should be completed at day 7 for patients with a CrCl less than 15ml/min or on dialysis.

Yes ↓

Discuss balance of VTE and bleeding risk with patient and patient's consultant and document management decision

Key and notes

Patients who are pregnant or within 6 weeks of childbirth should be discussed with a consultant obstetrician from the Silver Star Unit to establish the dose and duration of thromboprophylaxis
*Discuss with haematology for alternatives to enoxaparin if history of heparin induced thrombocytopenia (HIT) or allergy

a OxFord venous ThromboEmbolism risk Number (OFTEN) assessment for lower limb immobilisation in cast/boot

	Score
Age 60 years or over	1
Obesity (BMI greater than 30kg/m^2)	1
Varicose veins with phlebitis	1
Use of oestrogen-containing contraceptive therapy	1
Use of hormone replacement therapy	1
One or more significant medical comorbidities (for example): heart disease, metabolic, endocrine or respiratory pathologies, acute infectious diseases, inflammatory conditions	1
Low risk thrombophilia (heterozygous for Factor V Leiden mutation or prothrombin gene G20210A mutation)	1
High risk thrombophilia (anti-thrombin deficiency, protein C or S deficiency, homozygous/compound heterozygous Factor V Leiden mutation)	2
Active cancer or cancer treatment	2
Pregnancy or less than 6 weeks postpartum	2
Personal history of VTE	2
First-degree relative with a history of VTE	2
Achilles tendon rupture	2
Surgical procedure involving pelvis or lower limb with total anaesthetic time greater than 60 minutes	2
TOTAL SCORE	

b Risk factors for bleeding

- Active bleeding
- Acquired bleeding disorder (such as acute liver failure)
- Concurrent use of anticoagulants known to increase the risk of bleeding (such as warfarin with an INR 2 or more; direct/novel oral anticoagulants such as apixaban, rivaroxaban, edoxaban, dabigatran; or fondaparinux)
- Acute stroke
- Known thrombocytopenia (platelets less than 75x10^9/l)
- Uncontrolled systolic hypertension (230/120mmHg or higher)
- Untreated inherited bleeding disorder (such as haemophilia and von Willebrand disease)
- Lumbar puncture/epidural/spinal anaesthesia within the next 12 hours
- Lumbar puncture/epidural/spinal anaesthesia within the previous 4 hours
- Other high risk bleeding procedure such as neurosurgery, spinal surgery or eye surgery

c Risk factors for chronic kidney disease

- Diabetes
- Hypertension
- Cardiovascular disease (ischaemic heart disease, chronic heart failure, peripheral vascular disease or cerebral vascular disease)
- Structural renal tract disease, recurrent renal calculi or prostatic hypertrophy
- Multisystem diseases with potential kidney involvement – for example, systemic lupus erythematosus
- Family history of end-stage kidney disease or hereditary kidney disease

If a patient has a risk factor for chronic kidney disease, then check renal function (unless there is already a recent result within the last 6 months)