DOCUMENT TYPE: Policy		**UNIQUE IDENTIFIER:** TP-117	
DOCUMENT TITLE: Policy and procedure for prophylaxis against, and treatment of, venous thromboembolism (VTE) in adult patients		**VERSION NUMBER:** 4.1 **STATUS:** Ratified	
SCOPE: Trust wide		**CLASSIFICATION:** Organisational	
AUTHOR(S): Sura Ali Emer Sheridan Sean Connell	**JOB TITLE:** Highly Specialist Pharmacist – Critical Care Medicines Management Training Lead Highly Specialist Pharmacist Acute Medicine and ED	**DIVISION:** Diagnostics and Clinical Support	**DEPARTMENT:** Pharmacy
REPLACES: Policy and procedure for prophylaxis against, and treatment of, venous thromboembolism (VTE) in adult patients V4		**HEAD OF DEPARTMENT:** Gareth Price	
VALIDATED BY: VTE Group Medicines Governance Committee		**DATE:** 11 September 2024 11 September 2024	
RATIFIED BY: Procedural Documents Ratification Group Chairs approval by Hajara Ugradar Associate Director of Safety and Learning		**DATE:** 19 September 2024	
(NOTE: Review dates may alter if any significant changes are made).		**REVIEW DATE:** 30 September 2027	

AMENDMENT HISTORY

Version No.	Date of Issue	Page/Selection Changed	Description of Change	Review Date
3.1	29/10/2020	Page 19, 10.5.1	Change apixaban initial dose course length	30/9/2023
3.2	14/12/2020	Page, 22-23, Appendix 1	Addition of Ambulatory PE Pathway and description	30/9/2023
3.3	6/5/2021	Page 12 & 13 &	Weigh categories changed for Dalteparin prophylaxis.	30/9/2023

			Monitoring requirements amended and referred to correct section of guideline. Duplicate information removed.	
3.4	16/9/2021	Appendix 1&2	Added anticoagulant decision matrix to facilitate DOAC prescribing in ambulatory PE	
3.5	15/09/2023	Page 5	Addition of Venous thromboembolism (VTE) prevention - maternity	30/09/2023
3.6	09/04/2024	Oncology	Addition of DOAC for oncology patients.	31/03/2027
3.7	03/09/2024	Dalteparin to enoxaparin	Formulary switch to enoxaparin (Inhixa), changes to dosing in all sections	03/09/2027

Does this document meet the requirements of the Equality Act 2010 in relation to Race, Religion and Belief, Age, Disability, Gender, Sexual Orientation, Gender Identity, Pregnancy & Maternity, Marriage and Civil Partnership, Carers, Human Rights and Social Economic Deprivation discrimination? Yes
Document for Public Display: No
Document requires reference to Freedom to Speak Up: If yes author to include in main body of the document where applicable **Yes**
Evidence reviewed by Library Services 16/09/2020 Evidence reviewed by Venous thromboembolism (VTE) Group 11/09/2024

CONTENTS

1. SUMMARY

Lancashire Teaching Hospitals NHS Foundation Trust aims to minimise preventable Venous thromboembolism (VTE) through systematic arrangements for the assessment, prophylactic treatment and monitoring of all inpatients. This policy also provides advice on the treatment of VTE and aims to set clear dosing advice for Low Molecular Weight Heparins (LMWHs) and Direct Oral Anti-coagulants (DOACs). Obstetric patients are covered by a separate policy.

2. PURPOSE

Most venous thrombi (clots) occur in the deep veins of the legs and this is called Deep Vein Thrombosis (DVT). Dislodged thrombi may travel to the lungs and this is called Pulmonary Embolus (PE). PE can lead to sudden death while DVT can cause long term morbidity due to chronic venous insufficiency, venous ulceration and post-thrombotic syndrome (PTS).

This policy will ensure that all non-obstetric inpatients, including day case and ambulatory, having been assessed for VTE using the Trust VTE Risk Assessment tool will receive appropriate thromboprophylaxis. This guideline brings together the prescribing recommendations for low molecular weight heparin from the British National Formulary (BNF) and Summary of Product Characteristics (SPCs), placing them in context of local formulary use.

3. SCOPE

3.1 Staff

The guideline is based on the Venous Thromboembolism NICE Guidance NG89 and NG158 and applies to all doctors, nurses and pharmacists working across the Trust.

3.2 Service Users within Scope

Adults (non-obstetric) patients prescribed low molecular weight heparin either for the prophylaxis or treatment of venous thromboembolism.

3.3 Service Users Out of Scope

The following specific groups of patients are not covered by NICE CG89 and are therefore currently outside the scope of this policy:

- Patients under the age of 16 at admission.
- Women who are pregnant or up to 6 week's post-partum – see Venous thromboembolism (VTE) prevention - maternity.

4. POLICY

4.1 Roles and Responsibilities

4.1.1 The Trust Board has overall responsibility for developing, implementing and monitoring the effectiveness of this policy.

4.1.2 The Chief Executive is accountable to the Trust Board for ensuring that:

- Policy is developed and implemented across the Trust,
- Implementation is monitored and any deficiencies are brought to the attention of the Trust Board.

4.1.3 All Prescribers are responsible for:

- Ensuring the patient has a VTE assessment completed and documented.
- Ensuring that when LMWH is prescribed the current patient weight (in Kilograms), and duration of treatment is documented.
- Ensuring that the prescribed dose of LMWH is in accordance with patient's current weight and renal function and this is documented.
- Ensuring anti-embolism drugs are administered in accordance with the prescription.
- Ensuring that where patients refuse the use of anti-embolic devices or Low Molecular Weight Heparin (LMWH), this is documented.
- Ensuring that where patients refuse the use of anti-embolic devices or Low Molecular Weight Heparin (LMWH) the Consultant in charge of patients care should be informed as soon as practically possible.
- Ensure that dosing, monitoring and duration of treatment is communicated at transfers of care e.g. discharge.
- Considering the need for dose change during treatment, where changes in weight and renal function are identified.

4.1.4 Pharmacy is responsible for:

- Ensuring that all prescriptions for LMWH and alternatives are in accordance with the guideline.
- Ensuring that the prescribed dose of LMWH is based upon current patient weight and renal function.
- Ensuring ward stock levels of LMWH are maintained.
- Checking the indication and duration of treatment, and where appropriate to ensure a correct stop date is entered on the prescription.
- Monitoring for interactions.
- Ensuring that the prescription is discontinued at the appropriate time.
- Recording any incidents involving low molecular weight heparins via the clinical incident reporting system.
- Ensuring that when prescribed on discharge a course length is stated and confirm that appropriate follow up arrangements are in place.

4.1.5 All nursing staff are responsible for:

- Ensuring that when Low Molecular Weight heparin (LMWH) is prescribed that the patient is weighed to ensure accurate dosing calculation,

- Ensuring anti-embolism drugs are administered in accordance with the prescription.
- Ensuring that where patients refuse the use of anti-embolic devices or Low Molecular Weight Heparin (LMWH), this is documented.
- Ensuring that where patients refuse the use of anti-embolic devices or Low Molecular Weight Heparin (LMWH) medical staff are contacted immediately. If the patient continues to refuse, then the Consultant in charge of patients' care should be informed before any elective procedure or intervention takes place.
- Monitoring the patient for signs of bruising and bleeding and bring any concerns to the attention of a prescriber immediately.
- Recording any incidents involving low molecular weight heparin via the clinical incident reporting system.

5. STANDARDS

An initial VTE assessment on Flex will be carried out within 24 hours of admission by the admitting / appropriate doctor. It is recognised that best practice would be to carry out the initial assessment within 6 hours of admission and clinicians are expected to use professional judgement to prioritise assessments of high risk patients and if pharmacological prophylaxis required prescribe within 14hours (NICE NG89).

Nursing, pharmacy and other registered staff can support medical staff by prompting assessments where appropriate, but the responsibility for completing the assessment remains with the doctor.

The doctor completing the assessment must take into account whether the patient has any circumstances or conditions or is taking any medication that may affect their risk of thrombosis or bleeding, or the appropriateness of prophylactic interventions or treatments e.g. due to drug interactions.

A senior review will be carried out as soon as is reasonably practicable (within 24 hours of the initial assessment) and then at next consultant review if condition changes or at 7 days post admission. Should there be any change in the patient's clinical condition/circumstances the assessment must be repeated and documented in the patient's case notes.

All patients will be prescribed and administered venous thromboembolism prophylaxis according to their risk assessment.

6. PROTOCOL

6.1 A primary Venous Thrombo-Embolism (VTE) Risk Assessment must be completed by the admitting Doctor / practitioner for every adult patient utilising the Trust VTE Risk Assessment Form which is part of the medical and surgical admission documentation on Harris Flex.

- All patients, carers / family should be offered the patient information leaflet on prevention of VTE so that they can make informed decisions.
- All patients should be encouraged to mobilise as soon as possible
- Do not allow patients to become dehydrated unless clinically indicated the doctor / nurse completing the assessment must take in to account if the patient is taking any concurrent anti-platelets, anti-coagulants or other interacting medicines.
- Patients should be offered Anti-Embolic Stockings if appropriate according to the risk assessment.
- The risk of VTE must outweigh the risk of bleeding if LMWH is to be prescribed. Senior medical advice should be sought if the doctor / nurse completing the assessment is unsure; the consultation, with whom, and the outcome must be documented in the medical notes.
- Patients who are at high risk of VTE and high risk of bleeding should be discussed with senior medical staff, ST3 or above. Consultant review should then be within 24 hours for further advice.
- The appropriate prophylaxis must be prescribed on the patients' inpatient medication chart within 14hours of admission unless otherwise stated in condition specific recommendations. (NICE NG89).
- Outpatients that have a lower limb cast and / or a significant reduction in mobilisation must be considered for VTE prophylaxis.

6.2 Secondary Assessment:

- All patients must receive a re-assessment to determine risk following stabilisation or deterioration of condition. This is to be carried out at consultant review or if clinical condition changes, ideally within 24 hours of admission.
- Patients with lower limb immobilisation that receive LMWH must have a secondary assessment completed including the review of blood analysis in fracture clinic prior to the supply of further doses. It is the responsibility of the reviewing prescriber to ensure that continuation of LMWH is appropriate and outweighs risk of harm to patients.

6.3 Indications for prophylaxis consideration in all conditions:

- All patients over the age of 16 years that have a lower limb cast, traumatic injury or significantly reduced mobility due to medical or surgical interventions.
- Expected to have reduced mobility relative to normal state and / or significantly reduced mobility for 3 days or more, this includes surgical and trauma patients.
- Total anaesthetic + surgical time > 90 minutes.
- Surgery involves pelvis or lower limb and total anaesthetic + surgical time > 60 minutes.

- Acute surgical admission with inflammatory or intra-abdominal condition.
- Active cancer or receiving cancer treatment.
- Age > 60 years.
- Critical care admission.
- Dehydration.
- Known thrombophilia's.
- Obesity (Body Mass Index (BMI) > 30 kg/m2).
- One or more significant medical comorbidities (for example: heart disease; metabolic, endocrine or respiratory pathologies; renal failure; acute infectious diseases; inflammatory conditions).
- Current hormone therapy, e.g. tamoxifen, hormone replacement therapy (HRT; including testosterone replacement), oestrogen-containing contraception.
- Personal history or first-degree relative with a history of VTE.
- Varicose veins with phlebitis (extensive varicositie).
- Active smoker.
- Recent hospital admission / recent major surgery within 90 days.

7. RECOMMENDATIONS FOR MECHANICAL PROPHYLAXIS

7.1 Mechanical prophylaxis entails the use of Thrombo-Embolic Deterrent (compression stockings / Thrombo-Embolic-Deterrent (TEDS) or Intermittent Pneumatic Compression Device (IPCDs).

Consider for:

- All inpatients having surgery or with reduced immobilisation must be offered below knee compression stockings unless contraindicated.
- Compression stockings or IPCDs must be considered for all patients at high risk of bleeding or in whom the use of pharmaceutical prophylaxis is contraindicated.
- Compression stockings / IPCDs may be considered as an adjunct to pharmaceutical prophylaxis.
- IPCDs must be considered for all patients with suspected fracture neck of femur and / or long periods of immobilisation pre or post-surgery
- IPCDs are to be used in place of TED stockings for all patients admitted with or suspected of and acute stroke.

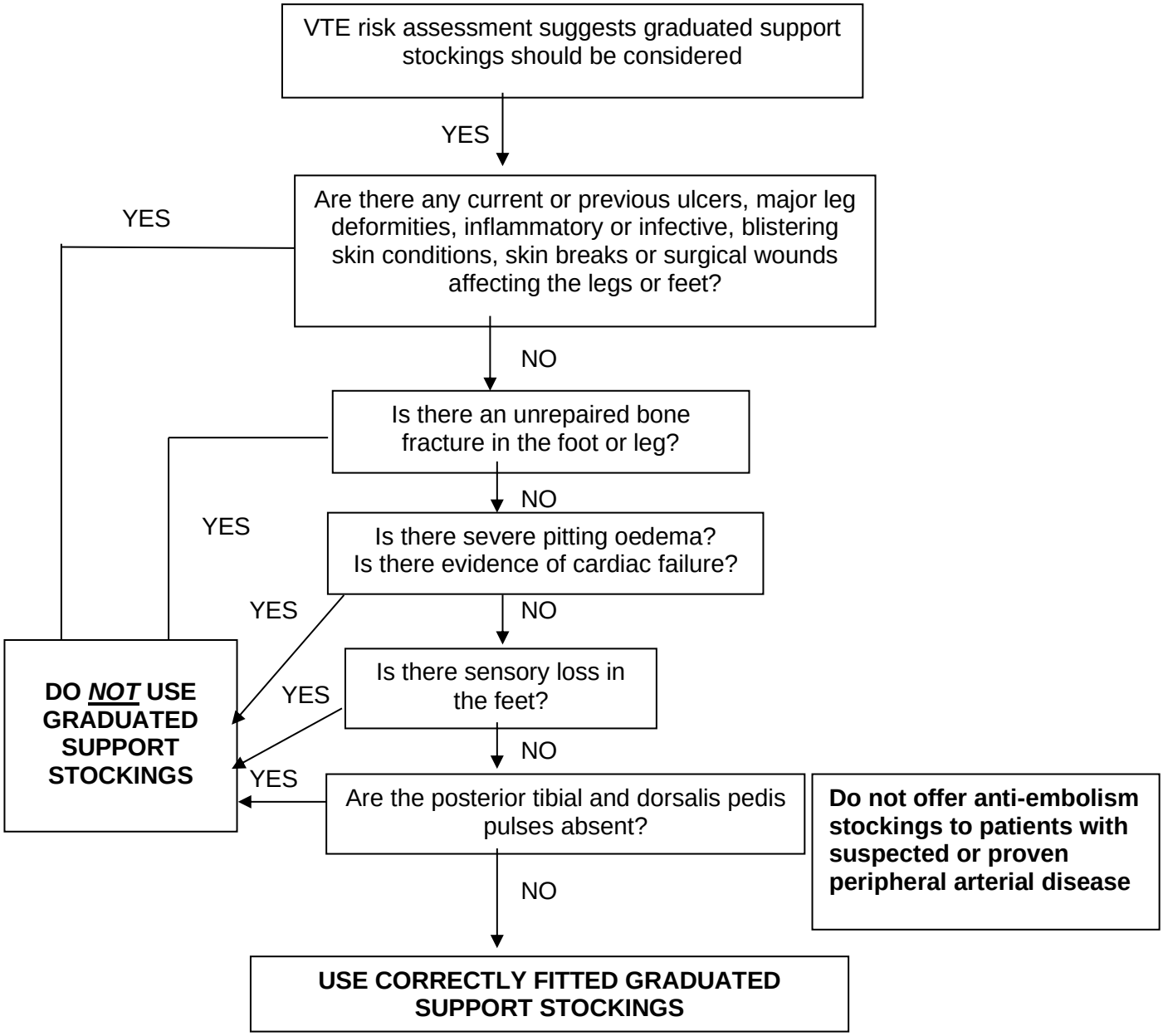
7.2 Contraindications to the use of knee / thigh TEDs

- Suspected or proven peripheral arterial disease.
- Peripheral arterial bypass grafting.
- Peripheral neuropathy or other causes of sensory impairment.
- Local condition in which stockings may cause damage, such as fragile 'tissue paper' skin, dermatitis, gangrene or recent skin graft.
- Known allergy to material of manufacture.
- Severe leg oedema or pulmonary oedema from congestive heart failure.
- Unusual leg size or shape.
- Major limb deformity preventing correct fit.
- Acute stroke (Use Intermittent Pneumatic Compression Devices).

8. USE OF GRADUATED COMPRESSION (ANTI-EMBOLISM) STOCKINGS (AES)

- The stocking compression profile should be approximately 14-18mmHg at the ankle.
- Where full length AES are used the compression profile should be 14mmHg at the mid-calf and 8mmHg at the upper thigh.
- Anti-Embolic Stockings (AES) can cause harm in susceptible patients (e.g. exacerbation of lower limb ischaemia &/or pressure ulcers). Where the risk assessment indicates that AES should be used, the guidance in the flow chart overleaf should be followed to identify patients for which anti-embolism stockings are contraindicated.
- Where risk assessment indicates that AES should be used, but they are contraindicated by other factors, then this must be documented.

8.1 ANTI-EMBOLIC STOCKING (AES) SAFETY ASSESSMENT FLOW CHART



8.2 Protocol for fitting and follow up of Anti-Embolic Stockings (AES)

- Patients will be informed of the recommendation to wear AES and given an information leaflet.
- All patients will have an Anti-Embolic Stocking Care Plan completed.
- The patient's leg will be measured in accordance with the manufacturer's instruction and an appropriate size stocking fitted.
- AES should be below knee unless otherwise clinically indicated.
- The ankle circumference and the size of stocking supplied will be documented in the care record.
- 30 minutes after initial AES application the legs will be checked. If there is any redness or pressure damage use of the stockings will be stopped.
- At the beginning of each shift nurses will check to ensure AES are in place and fitted appropriately i.e. no wrinkles (which can act as a tourniquet and increase the risk of DVT).
- AES will be worn for 23.5 hours per day; during the half hour when they are removed the skin should be re-examined particularly over the pressure points.
- Legs will be re-measured if there is new oedema or swelling. Any increase in size must be documented and new stockings supplied.
- Clean stockings will be supplied every 3 days. Patients will be advised that the stockings are part of their personal belongings and should be laundered at home according to manufacturer's instructions for future use.
- Patients whose mobility is likely to be restricted after discharge may be at increased risk of DVT/PE for up to six weeks post discharge. These patients will be given two pairs of AES and an information leaflet to take home. The GP should be informed.
- If the patient is unable to remove or apply stockings independently and no family or carer help is available, then the task should be referred to the District Nursing team.
- AES should be worn until normal mobility has resumed.

9. USE OF INTERMITTENT PNEUMATIC COMPRESSION DEVICES (IPCDs)

- Consider intermittent pneumatic compression for VTE prophylaxis for people who are immobile and admitted with acute stroke. If using, start it within 3 days of acute stroke.
- When using intermittent pneumatic compression for people who are admitted with acute stroke, provide it for 30 days or until the person is independently mobile or discharged, whichever is sooner.
- For all patients undergoing pelvic or abdominal surgery of 60 minutes or longer Intermittent Pneumatic Compression Devices (IPCDs) will be used in theatre.
- For all patients undergoing any other surgery of 90 minutes or longer IPCDs will be used in theatre.
- For all patients in prone or jack knife position Intermittent IPCDs will be used in theatre.
- Wherever possible when a patient is in lithotomy or Lloyd Davies position stirrups should be avoided and instead pneumatic lithotomy leggings used.

- Surgeons and their assistants should avoid leaning on legs in lithotomy or Lloyd Davies position.
- Where IPCDs are used for surgical patients, they should be removed once the patient leaves the post anaesthetic care unit to return to the ward, unless otherwise prescribed.
- IPCDs may be advised/prescribed for post-surgery on the wards in patients who are completely immobile, such as those having a spinal anaesthetic, or where there is difficulty in fitting Anti-Embolic Stockings.
- AES should be worn underneath IPCDs whenever possible.

10. PROPHYLACTIC LOW MOLECULAR WEIGHT HEPARIN (LMWH)

10.1 Prophylaxis of VTE

Enoxaparin (Inhixa®) is the LMWH formulary choice in Lancashire Teaching Hospitals NHS Foundation Trust for **prophylaxis** of venous thromboembolism for all directorates.

LMWH prophylaxis should routinely be administered at 17:00 hours. It should be prescribed as a stat dose (one only dose) if needed to meet the 6 hour standard. It is suggested that there should be at least 12 hours between doses.

LMWH prophylaxis should be discontinued 12 hours prior to biopsies or other invasive procedures for example epidurals and spinal surgery. It should then be restarted 4-6 hours post procedure, depending on speciality policy providing there are no complications unless alternative instructions have been recorded in the notes at the direction of a Consultant.

Enoxaparin prophylaxis dosing for all adult patients with GFR >30ml/min.

Weight	Enoxaparin Dose
≤49kg	20mg SC OD
50-99kg	40mg SC OD
100 -150kg	40mg SC BD*
≥151kg	60mg SC BD*

**These are unlicensed doses taken from 'What doses of thromboprophylaxis are appropriate for adult patients at extremes of body weight? UKCPA, ~Medicine Q&A362.2, June 2015'.*

For clinicians working in specialist areas where other LMWH agents are used, the relevant product literature and Summary of Product Characteristics (SPC) guidance for those agents should be consulted and followed.

10.2 Patients with Renal Impairment

- For patients with GFR ≤30ml/min or dialysis dependent, the **Enoxaparin dose is 20mg SC OD** regardless of body weight.

- Anti-Xa monitoring is not normally required for prophylactic dose LMWH; however, this can be considered if bleeding risks are significant.

- For monitoring in treatment dose LMWH, see section 11.3.1

10.3 Duration of Pharmacological Thromboprophylaxis

- Fragility fractures of the pelvis, hip and proximal femur – LMWH for 28 days.
- Elective hip replacement –
    - See Trust Procedure: Perioperative Anaesthetic Management for Primary Hip and Knee Arthroplasty in Adults
- Elective knee replacement.
    - See Trust Procedure: Perioperative Anaesthetic Management for Primary Hip and Knee Arthroplasty in Adults
- All other orthopaedic surgery LMWH whilst immobile – no longer than 42 days.
- Spinal injury – LMWH for 30 days or until mobile or discharged.
- Major abdominal cancer surgery – LMWH for 28 days.
- All other patients until mobility no longer reduced.

VTE prophylaxis for patients after spinal surgery with Morbid Obesity (BMI>40) at discharge from hospital:
Assess mobility at the time of discharge (to be assessed by Therapies Team before discharge).

- Back to pre-surgery mobility—TED stockings for 30 days.
- Mobile but not back to pre-surgery mobility—Consider Chemoprophylaxis for 14 days in addition to TED stockings.
- Poor mobility—TED stockings and Chemoprophylaxis for 30 days (Bleeding risk after surgery need to be assessed).

This list is not exhaustive and is not intended to replace clinical judgement and individualised care.

In orthopaedic patients an alternative pharmacological thromboprophylaxis is used please refer to the Trust Procedure: Perioperative anaesthetic management for primary hip and knee arthroplasty in adults.

10.3.1 Discharge on Thromboprophylaxis

Give patients and their family members or carers verbal and written information about VTE and prophylaxis. Anticoagulant information booklets are available from pharmacy.

Ensure patients who are discharged with pharmacological and/or mechanical VTE prophylaxis know how to use and manage it correctly or have arrangements in place for someone to be able to help them.

Notify the patient's GP if they have been discharged on VTE prophylaxis.
NICE Guidance (NG89) currently recommends a minimum pharmacological prophylaxis of 7 days, excluding the above exceptions (10.3).

At discharge, re-review the patient's VTE risk for:

- Ongoing reduced or restricted mobility relative to normal state
- VTE risk factors
- Bleeding risk

Consideration should then be given to continuing VTE prophylaxis at discharge, to complete a minimum duration of 7 days or until VTE risk is reduced and/or mobility returns to normal state.

11 Treatment of Venous thromboembolism

11.1 Enoxaparin

Low molecular weight heparin formulary choice for the treatment of DVT/PE in adult and paediatric patients.

Dose

150 IU/kg (1.5 mg/kg) SC once daily for uncomplicated patients with low risk of VTE recurrence.

100 IU/kg (1 mg/kg) SC twice daily for patients such as those with obesity (BMI>30Kg/m^2), with symptomatic PE, cancer, recurrent VTE or proximal thrombosis.

The dose regimen should be selected by the prescriber based on an individual assessment including evaluation of the thromboembolic risk and of the risk of bleeding.

If platelet count <100 x 10^9/L, discuss with Consultant Haematologist or Acute admitting Consultant before starting enoxaparin.

If CrCl 15-30ml/min use a reduced dose of 1mg/Kg once daily and consider anti-factor Xa monitoring.

For patients with a creatinine clearance <15mL/min treatment should be based on a risk benefit assessment and consideration be made for monitoring anti-factor Xa levels.

See Monitoring (11.3.1) for Anti-Xa monitoring advice.

Use in haemodialysis is outside the scope of this guideline and should be discussed with the renal team.

Enoxaparin 1.5mg/Kg ONCE Daily regimen dose banding for use in uncomplicated patients with low risk of VTE recurrence.		
Weight (Kg) Round Weight to nearest Kg	**Dose (mg)**	**Volume**
35-40	60	0.6ml
41-46	70	0.7ml
47-53	80	0.8ml
54-60	90	0.9ml
61-66	100	1ml
67-70	105	0.7ml
71-80	120	0.8ml
81-90	135	0.9ml
91-100	150	1ml
101-106	160	1ml + 0.6ml
107-113	170	1ml + 0.7ml
114-120	180	1ml + 0.8ml
121-126	190	1ml + 0.9ml
127-133	200*	1ml + 1ml
134-136	205*	1ml + 0.7ml
137-146	220*	1ml + 0.8ml

*Split doses equal to or above 200mg to a twice daily regimen i.e. 100mg BD

Consult haematology for patients >150Kg or <35Kg.

11.2 Cancer Patients

Enoxaparin (Inhixa®) is the formulary choice for extended treatment of VTE and is licensed in cancer patients for 6 months.

Dose

- GFR >30ml/min: Enoxaparin 1mg/Kg SC TWICE daily for 5-10 days **then reduce** to 1.5mg/Kg SC ONCE daily for the remainder of 6 months.

- If CrCl ≤30ml/min: Enoxaparin 1mg/Kg SC ONCE daily

Patients that are currently on a Dalteparin 6 month extended treatment course can be continued on this until completion, see appendix 3 for dosing.

DOACs can be considered taking into account the tumour site, interactions with other drugs including those used to treat cancer, and the person's bleeding risk, this should be discussed with the patient's oncologist. Apixaban should be the first choice DOAC (see section 12.1 for dose information).

11.3 Monitoring

Heparin induced thrombocytopenia (HIT) is a rare side effect of heparins, including LMWH. Thrombocytopenia, should it occur, usually appears between days 4 and 14 of treatment, but can appear even within 24h or after day 14. Signs of HIT include a reduction in platelet count of 30% or more, thrombosis & skin allergy or lesions which could be necrotic. If HIT is confirmed/strongly suspected, stop treatment and discuss with haematologist/responsible clinician (within 24hrs).

Heparin can suppress adrenal secretion of aldosterone leading to hyperkalaemia. Potassium should be monitored before and during treatment in patients at risk e.g. renal impairment, diabetes mellitus and patients taking potassium sparing drugs. The referring consultant will specify if and with what frequency potassium should be monitored if more frequent than that stated below.

- All patients should have a platelet count plus urea and electrolytes before starting treatment.
- For patients who have been exposed (or not been clarified) to heparin of any sort in the last 100 days a platelet count 24 hours after starting LMWH is required.
- All patients will have a platelet count on days 7 and 14 post initiation. If a significant decrease in the platelet count is observed (>30% drop from the initial value) then LMWH must be discontinued immediately and advise sought from haematology.
- All patients will have potassium levels checked on Day 7.
- If potassium is 5.5 – 6.0mmol/L recheck in 48 hours.

- If potassium level is > 6.0 mmol/L consider discontinuing LMWH. Reassess the need for LMWH by using the VTE risk assessment tool and consider other causes of a raised potassium level.
- All patients must be clinically monitored for signs of bruising or bleeding.

For patients with an increased risk of bleeding, it is recommended that LMWH is administered as a twice daily regimen. (See SPC for more details).

11.3.1 Anti Factor Xa Monitoring:

Routine anti-Xa activity monitoring is not usually required but may be considered in patients at risk of under or over anticoagulation e.g. in those with renal or hepatic impairment, or extremes of weight, AVM.

Anti-Xa levels can be taken immediately before the 4th dose, then 4 hours after the 4th dose of LMWH. Consult haematology for assistance interpreting levels.

Dose Regimen	Anti-Factor Xa Reference Range
Once Daily	0.5-1.5 IU/mL
Twice Daily	0.5-1.0 IU/mL

11.4 Adverse Effects

- Bleeding may occur in the presence of associated risk factors e.g. lesions liable to bleed, invasive procedures or the use of medicines affecting haemostasis. Rarely major haemorrhage.
- Mild, transient, asymptomatic thrombocytopenia during the first few days of therapy. This is rarely Heparin Induced Thrombocytopenia (see MONITORING above).
- Injection site reactions, usually mild and should not cause discontinuation of therapy. Seek advice if severe.
- Long term treatment with heparin increases the risk of osteoporosis.
- Hyperkalaemia

11.5 Drug Interactions

Drugs affecting haemostasis e.g. antiplatelet agents, non-steroidal Anti-Inflammatory Drugs, systemic glucocorticoids, thrombolytics and anticoagulants.

If the combination cannot be avoided LMWH should be used with caution.

LMWHs may also increase the risk of bleeding events when given with Selective Serotonin Reuptake Inhibitors or Serotonin-noradrenaline reuptake inhibitors (SNRIs).

11.6 Contraindications

- Active or high risk of bleeding
- Currently on therapeutic anticoagulation
- INR>2 – Discuss with Haematology
- Thrombocytopenia
- Heparin-Induced Thrombocytopenia (HIT)
- Stroke or recent cerebral haemorrhage: avoid LMWH for VTE prophylaxis for the first two weeks post stroke. For intracerebral haemorrhage (ICH), this may be longer until the underlying cause of ICH is confirmed. Consult the stroke team if considering LMWH for VTE prophylaxis after acute stroke.
- Malignant Hypertension
- Epidural in-situ - *for treatment doses*
- Haemophilia and other haemorrhagic disorders
- Recent or impending major surgery – *consult speciality*
- Known hypersensitivity to active ingredients

11.7 Hypersensitivity to LMWH

- Reassess the management plan for prevention of VTE.
- Consider the use of an alternative LMWH or Unfractionated Heparin

12 Direct Oral Anticoagulants (DOACs) in the treatment of VTE

12.1 DOAC Treatment Doses

When switching from LMWH to a DOAC, give the first DOAC dose when the next LMWH dose would have been due.

Drug	Initial Dose	Maintenance Dose	Prophylaxis dose after treatment period (minimum 3 months)
Apixaban	10mg PO BD for 7 days	5mg PO BD	2.5mg PO BD
Rivaroxaban	15mg PO BD for 21 days	20mg PO OD	10-20mg PO OD
Edoxaban	5 days treatment dose LMWH	60mg PO OD	
Dabigatran	5 days treatment dose LMWH	150mg PO BD	
Please see dose reductions below			

12.2 DOAC Dose Reductions

Drug	Renal Reduction	Other criteria
Apixaban	CrCl 15-29ml/min, use with caution	

	CrCl <15ml/min, not recommended	
Rivaroxaban	CrCl 15-29ml/min, consider 15mg PO OD after initial 21 day 15mg PO BD period, if bleeding risk outweighs risk for recurrent VTE CrCl <15ml/min, not recommended	
Edoxaban	CrCl 15-50ml/min: reduce dose to 30mg PO OD CrCl <15ml/min, not recommended	Body weight <60Kg: reduce to 30mg PO OD With p-glycoprotein inhibitor: reduce to 30mg PO OD
Dabigatran	CrCl 30-50, consider reducing to 110mg BD based on bleed/VTE risk. CrCl < 30ml/min – not recommended	Age >80 years, reduce to 110mg PO BD. High risk of bleeding consider reducing to 110mg PO BD

12.3 DOAC in extremes of weight

DOACs may display altered pharmacokinetics when used in patients with extremely high or extremely low body weight. It is up to the practitioner to decide on the clinical risk to the patient and choose the appropriate therapy.

12.4 DOAC Monitoring

Clotting screens can be normal when the patient is fully anticoagulated and are not necessarily useful.

Renal and liver function tests should be performed more often if there is an intercurrent illness that may impact renal or hepatic function.

Renal and hepatic function is recommended at baseline and at least once a year, unless:

- CrCl 30-60ml/min, age >75 years, or frail, repeat U+Es every 6 months
- CrCl 15-30ml/min, repeat U+Es every 3 months

Monitoring requirements should be clearly communicated to the GP on the IHDI.

12.5 DOAC Cautions and contra-indications

Cautions

- Renal impairment (see above)
- Hepatic disease, Child-Pugh A-B or with coagulopathy
- Interacting medications (see below)

Contraindications

- Active bleeding or significantly high risk
- Recent cerebral infarction or haemorrhage
- Epidural in-situ
- INR >2 or coagulopathy – discuss with haematology
- Pregnancy or Breastfeeding
- Haemophilia or haemorrhagic disorder
- Antiphospholipid syndrome
- Hepatic disease (Child-Pugh C), caution in Child-Pugh A-B or with coagulopathy
- Active malignancy (relative - discuss with oncology)
- Patients on Azoles or antiretrovirals (see interactions)
- Recent or impending major surgery (consult speciality)

This list is not exhaustive; please see the individual product's characteristics when prescribing.

12.6 DOAC Interactions

DOACs are susceptible to interactions with CYP3A4 and P-glycoprotein altering medications, such as:

- Carbamazepine
- Phenytoin
- Azole antifungals
- Antiretrovirals
- Rifampicin

Additionally, medications that increase the risk of bleeding should be avoided where possible e.g. NSAIDs and antiplatelets.

This list is not exhaustive, please check the BNF for further guidance and consult your ward pharmacist for further advice.

12.7. Inferior Vena Cava Filters

Consider an IVC filter for people with proximal DVT or PE when anticoagulation treatment is contraindicated. Remove the IVC filter when anticoagulation treatment is no longer contraindicated and has been established.

Before fitting an IVC filter, ensure that there is a strategy in place for it to be removed at the earliest possible opportunity. Document the strategy and review it if the clinical situation changes.

12.8 Treatment Duration

Reason for treatment	Duration of Therapy*
Calf Vein Thrombosis	3 months

Provoked Proximal Deep Vein Thrombosis (DVT) or Pulmonary Embolism (PE) (associated with temporary risk factors)	3 months
Unprovoked proximal DVT / PE	3 months, then must review and consider long term anticoagulation in line with risk assessment
Recurrence of spontaneous venous thromboembolism when not anticoagulated	Indefinite
Recurrence of venous thromboembolism when on anticoagulation	Indefinite

*The final decision about the duration of anticoagulation can be complex. It is crucial to do a risk assessment whilst deciding duration of anticoagulation therapy and this must be done in consultation with patient.

For unprovoked VTE - to consider long term anticoagulation if risk of bleeding not high.

For minor provoking factors- there should be a risk assessment based on risk of VTE recurrence and risk of bleeding and then the duration of therapy determined. This should be agreed between clinician and patient with informed consent.

Discuss with haematology if needed.

12.9 AMBULATORY MANAGEMENT OF PULMONARY EMBOLISM (PE)

Patients with suspected or confirmed PE may be risk stratified to guide the appropriate setting for their treatment.

Outpatient and ambulatory management are recommended for patients with a suspected or confirmed PE and a low risk of complications.

At LTHTR, ambulatory management of PE will be via the Same Day Emergency Department.

Patients can be assessed, risk stratified, and managed using a number of clinical scoring tools. These are laid out in a management pathway in Appendix 1.

Revised Geneva Score – evaluates patients for probability of PE

Pulmonary Embolism Rule-out Criteria (PERC) – designates if PE can be ruled out i.e. if any criteria are positive PE cannot be ruled out.

Simplified Pulmonary Embolism Severity Score (sPESI) – Estimates risk of death based on a number of patient demographics and clinical parameters. Scores ≥ 1 will not be eligible for ambulatory management.

Age adjusted D-Dimer will be used – the threshold of 0.5 increases by 0.01 for every year the patient is over 50. i.e. threshold of 0.68 for a 68 year old patient. This is to increase the specificity of the test, and reduce unnecessary scanning, radiation and contrast exposure.

Additionally, some patient groups will be excluded from ambulatory management i.e.

- Active bleeding/ risk of major bleed
- Severe pain requiring opiates
- CKD stage 4 or 5
- Severe liver disease
- Heparin-induced thrombocytopenia (HIT) in the last 12 months
- On full dose anticoagulation at time of PE
- Social concerns
- Pregnancy
- Signs of right heart strain
- COVID-19 Suspect or Positive

The pathway (Appendix 1) is designed to be used by the Emergency Department practitioner, when a PE is suspected.

Anticoagulation should not be delayed in highly suspect cases; treatment dose should be started pending confirmatory scan.

Referral
From 08;00-16:00 Monday to Sunday, liaise with SDEC (3392) for referrals
Out of hours – Arrange virtual Clinic follow-up.

1. Submit referral via SDEC@lthtr.nhs.uk, with patient details and subject “PE Pathway”
2. Practitioner to request out-patient CTPA. **State Geneva Score in request**
3. Instruct patient to call SDEC on 01772 522527 at 8.30am to arrange CTPA or further anticoagulation.

Discharge prescriptions should be written on SDEC to provide patient with further anticoagulation to take home following confirmation of PE by scan.
Discharge prescriptions for anticoagulation may be provided by SDEC in the case of a delayed scan.
Outpatient pharmacy 8:30-17:30, Monday-Friday
In-patient pharmacy 17:30-19:30
Saturday-Sunday, in-patient pharmacy, 0900-1700

13. PATIENT RESOURCES AND COUNSELLING

All patients will be supplied the manufacturers patient information leaflet if discharged on LMWH.

Low molecular weight heparins are porcine derivative medications. This information should be conveyed to patients where relevant, and in particular to patients of Muslim or Jewish faith or those who follow a vegan diet. Fondaparinux may be considered as an alternative and haematology and pharmacy contacted for dosing.

Patients leaving hospital on DOACs or Warfarin need counselling on their medications in line with the Trust counselling templates.

The information needs to include

- Reason for starting
- How they work
- Dose
- How to take
- Expected Duration
- Monitoring
- What to do in the case of missed/forgotten doses
- Side Effects
- What to do if experiencing side effects
- Interactions (including with food, store bought medicines and herbal products)
- How we manage surgery/dentistry
- Antidotes or lack-thereof
- What to do if trauma or head-injury
- Pregnancy/breastfeeding (Warfarin/DOAC contra-indicated)

Patients started on warfarin need referral to the Anticoagulant Clinic as per Trust Policy**:** Initiation and Maintenance of Oral Anticoagulants in Adults- Vitamin K Antagonists Only

Anticoagulant patient booklets are available for DOACs and Warfarin. These may be obtained in your department or from pharmacy.

Pharmacists and suitably trained Pharmacy Technicians are available to provide patient counselling pre-discharge.

13. IMPLEMENTATION STRATEGY

The VTE Group will be responsible for guiding the implementation of this policy throughout all specialities.
The guideline will be made available on the intranet. A hyperlink will be made from net formulary. It will be disseminated to all pharmacists. It will be referenced in junior medical staff induction.

14. PATIENTS REQUIRING DISTRICT NURSE FOLLOW UP

- Referral to District Nursing (DN) services must be made using the e-referral system.
- It must be clearly stated on the e-referral form for DN follow up regarding the administration of prescribed prophylaxis. Where DN administration is required, all equipment must be provided.
- Where required bloods to be taken prescription of pharmaceutical prophylaxis, weight of patient and time required to be given.
- The DN Team caring for a patient requiring monitoring must ensure all above information is included within the e-referral and schedule visits accordingly.

- It is the responsibility of the healthcare professional allocated to administer the prophylaxis to ensure the blood results are checked and within range prior to administration of pharmaceutical prophylaxis regimes as appropriate.
- The review of blood results is the responsibility of the requesting doctor, subsequent dose changes must be communicated to the patient and carer (or DN where applicable) and documented within the patient's case notes).

15. SHARED CARE

A shared care guideline has been agreed by Chorley and South Ribble and Greater Preston CCG and Lancashire Teaching Hospitals NHS Foundation Trust.

15.1 Indications included in the shared care guideline

- Treatment of DVT or PE and prevention of its recurrence in patients unable to stabilise on warfarin or DOACs or with a contraindication to warfarin or DOACs (Including treatment post-partum).
- Treatment of DVT or PE and prevention of its recurrence in patients with malignant disease (solid tumours).
- Prophylaxis of DVT in immobile patients at home or in care setting and at high risk of developing a DVT.
- Treatment of DVT or PE in housebound patients in whom treatment has been initiated in hospital or in the Primary Care Centre until warfarin treatment stabilised or scan proves negative.

15.2 Indications NOT included in shared care guideline

- Prophylaxis of VTE in oncology patients on VTE inducing therapy.
- Pregnancy: Prevention of VTE (High risk patients – pre and postpartum) / prevention of miscarriage / use in fertility clinics.
- Pregnancy: Treatment of VTE pre-partum.
- VTE prophylaxis – post operative use.
- Pre-operative & post-operative surgical use.

15.3 Secondary Care Responsibilities

- Confirm the diagnosis of VTE or the indication for prophylaxis.
- Discuss the benefits and side-effects of treatment with the patient.
- Provide training on self-administration if appropriate.
- Provide sufficient initial supply (1 month) and a sharps bin were appropriate.
- Arrange for the patient to have an FBC at specified times during the first 14 days of treatment to rule out thrombocytopenia. Ensure that the patient knows when and where to attend for blood tests and ensure that the GP is informed of the baseline platelet count.
- Agree shared care with the patients GP.
- Provide GP all relevant information as outlined including:
    - The treatment to be prescribed including dose, frequency, indication and expected duration.

- The patient's weight and initial renal function.
- Details of monitoring required.
- When to stop treatment.
- Review the patient regularly.
- Ensure that clear referral and GP advice.

15.4 Primary Care Responsibilities

- Provide the patient with prescriptions for prescribed LMWH and a sharps bin for the duration of the treatment
- Ensure systems are in place for administration if the patient is not self-administering
- Check dose is appropriate for patient's weight and renal function
- Arrange or carry out any monitoring required
- Report any adverse events to the consultant

16. CONTACT NAMES & NUMBERS

- Consultants from a wide variety of specialties, including Haematology, Oncology, Gynaecology and General Medicine may seek shared care of patients on LMWH. Contact details for further advice will be available in the discharge letter.
- Out of hours urgent advice can be obtained by telephoning the Medical Registrar on-call or the on-call Haematologist via switchboard.

This guidance does not replace the Summary of Product Characteristic (SPC) which should be read in conjunction with this guidance.

17. AUDIT AND MONITORING

VTE assessment is monitored on a VTE assessment dashboard by divisions.
Incidents and risks are monitored through the VTE Group.

18. TRAINING

TRAINING Is training required to be given due to the introduction of this policy? No		
Action by	**Action required**	**Implementation Date**

19. DOCUMENT INFORMATION

ATTACHMENTS	
Appendix Number	Title
Appendix 1	Equality, Diversity & Inclusion Impact Assessment Form

OTHER RELEVANT / ASSOCIATED DOCUMENTS	
Unique Identifier	Title and web links from the document library
EBG 6/3/18	Perioperative anaesthetic management for primary hip and knee arthroplasty in adults
EBG00274	Venous thromboembolism (VTE) prevention - maternity
EBG00429	Initiation and Maintenance of Oral Anticoagulants in Adults-Vitamin K Antagonists Only

SUPPORTING REFERENCES / EVIDENCE BASED DOCUMENTS **References in full** checked by library 16/09/2020 ZM	
Number	References
1	National Patient Safety Agency Rapid Response Report 14. 'Reducing treatment dose errors with low molecular weight heparins'. NPSA/2010/RRR014. 30th July 2010.
2	Summary Product Characteristics Enoxaparin (SPC) accessed at medicines.org.uk January 20
3	Summary Product Characteristics Edoxaban (SPC) accessed at medicines.org.uk January 20
4	Summary Product Characteristics Dabigatran (SPC) accessed at medicines.org.uk January 20
5	Summary Product Characteristics Rivaroxaban (SPC) accessed at medicines.org.uk January 20 Dalteparin
6	Summary Product Characteristics Dalteparin (SPC) accessed at medicines.org.uk January 20
7	What doses of low molecular weight heparins or direct oral anticoagulants are appropriate for thromboprophylaxis for adults at extremes of body weight? Prepared by the HAT Committee of the UK Clinical Pharmacy Association for NHS healthcare professionals Date Prepared: June 2015 accessed at sps.nhs.uk January 20
8	National Institute for Health and Care Excellence (02/08/2018) *Venous thromboembolism in over 16s: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism.* NICE guideline [NG89]. https://www.nice.org.uk/guidance/ng89 National Institute for Health and Care Excellence (02/08/2023) Venous thromboembolic diseases: diagnosis, management and thrombophilia testing. Venous thromboembolic diseases: diagnosis, management and thrombophilia testing (NG158)
9	British National Formulary online (2020) https://bnf.nice.org.uk/
10	National Institute for Health and Care Excellence (2024) *Anticoagulation – oral.* https://cks.nice.org.uk/topics/anticoagulation-oral/
11	Gregoire et al (2006) Prediction of pulmonary embolism in the emergency department: the revised Geneva score. Ann Intern Med. https://pubmed.ncbi.nlm.nih.gov/16461960/
12	J A Kline et al. (2008) Prospective multicenter evaluation of the pulmonary embolism rule-out criteria. J Thromb Haemost. https://pubmed.ncbi.nlm.nih.gov/18318689/
13	Xiao-Yu Zhou et al. (2012) The prognostic value of pulmonary embolism severity index in acute pulmonary embolism: a meta-analysis. Respir Res. https://pubmed.ncbi.nlm.nih.gov/23210843/
14	Afshari A, Ageno W, Ahmed A, et al. European Guidelines on perioperative venous thromboembolism prophylaxis: Executive summary. Eur J Anaesthesiol 2018;35:77-83.

15	American Society for Metabolic and Bariatric Surgery Clinical Issues Committee. ASMBS updated position statement on prophylactic measures to reduce the risk of venous thromboembolism in bariatric surgery patients. Surg Obes Relat Dis 2013;9:493-7.
16	Almarshad FM, Almegren M, Alshuaibi T, Alobaodi N, Almutawa A, Basunbl H, AlGahtani F, Al Rawahi B. Thromboprophylaxis after bariatric surgery. Blood Res. 2020 Mar;55(1):44-48. doi: 10.5045/br.2020.55.1.44. Epub 2020 Mar 30. PMID: 32269974; PMCID: PMC7106117.
Bibliography: Not applicable	

DEFINITIONS / GLOSSARY OF TERMS	
Abbreviation or Term	Definition
AES	Anti-Embolism Stockings
BD	Twice a day
DVT	Deep Vein Thrombosis
EPR	Electronic Patient Record
ESRD	End Stage Renal Disease
FBC	Full Blood Count
HIT	Heparin induced thrombocytopenia
IPCDs	Intermittent Pneumatic Compression Devices
LMWH	Low Molecular Weight Heparin
OD	Once a day
PE	Pulmonary Embolus
PTS	Post-Thrombotic Syndrome
QDS	Four times a day
SPC	Summary of Product Characteristic
TDS	Three times a day
THR	Total Hip Replacement
TKR	Total Knee Replacement
VTE	Venous-Thromboembolism
X	Ten
Xa	Ten-a

CONSULTATION WITH STAFF AND PATIENTS Enter the names and job titles of staff and stakeholders that have contributed to the document		
Name	Job Title	Date Consulted
Sean Connell	Highly Specialist Pharmacist	May 2020
Dr Lee Helliwell	Consultant ED/Acute Medicine – Authorship of PE Policy	April 2021
Mr Ansy Egun	Consultant Vascular	April 2024
Sura Ali	Highly Specialist Pharmacist Critical Care	April 2024
Dr Clare Gordon	Consultant (Stroke)	Sept 2024
Dave Barber	Lead Oncology Pharmacist	Sept 2024

DISTRIBUTION PLAN	
Dissemination lead:	Emer Sheridan
Previous document already being used?	Yes
If yes, in what format and where?	Electronic, Heritage library system, hard copy
To be disseminated to:	Trust wide
Document Library	Heritage
Proposed actions to communicate the document contents to staff:	Include in the LTHTR weekly Procedural documents communication– New documents uploaded to the Document Library

Appendix 1: Management of Suspected Pulmonary Embolism in the Emergency Department

Lancashire Teaching Hospitals NHS Foundation Trust

Pathway for Emergency Medicine at Lancashire Teaching Hospitals NHS Foundation Trust

Suspected Pulmonary Embolism

DO NOT USE IF Patient: Pregnant, Haemodynamic Instability, Suspect/Confirmed COVID-19

Baseline Observations: HR, RR, BP, Sp02, Temp, ACVPU
Bloods (FBC, U&E, LFT, Coagulation Screen, Troponin)
CXR, ECG
D-dimer is only required if intermediate risk

Calculate Revised GENEVA Score			
Age >65	+1	Unilateral lower limb pain	+3
Previous PE or DVT	+3	Haemoptysis	+2
Surgery (under general anaesthesia) or lower limb fracture within 1 month	+2	Heart Rate <75 75-94 >95	+0 +3 +5
Active malignant Condition (or treated curatively <1 year ago)	+2	Pain on lower limb palpation and unilateral oedema	+4

Low (8% risk of PE) — 0-3

Intermediate (29% risk of PE) — 4-10

High (74% risk of PE) — >11

Calculate Pulmonary Embolism Rule out Criteria (PERC)	
Age >50	+1
HR>100	+1
SpO_2 <95% on air	+1
Unilateral leg swelling	+1
Haemoptysis	+1
Recent surgery/ trauma	+1
Hormone use	+1

PERC 0 → **CONSIDER ALTERNATIVE DIAGNOSIS**

PERC ≥1 → **D-dimer Result (Use age adjusted if >50 years of age*)**

<0.5 → **CONSIDER ALTERNATIVE DIAGNOSIS**

≥0.5 → **Cover with Low Molecular Weight Heparin (LMWH)**

1. Assess suitability for anticoagulation
2. Consider contra-indications
3. See anticoagulant decision matrix on next page

See Main VTE Policy for further information

Monday – Sunday, 08:00-16:00

Liaise with SDEC (3392) for referral
Ensure patient has a PINK cannula or larger

Out of Hours

Calculate Simplified PESI Score	
Age > 80y	1
History of active cancer	1
History of heart failure or chronic lung disease	1
Pulse ≥ 110 beats/min	1
Systolic blood pressure< 100 mm Hg	1
SpO2 <90% on air	1
TOTAL.....	

Simplified PESI = 0 AND ALL of the following excluded:

COVID-19 - Active bleeding/ risk of major bleed - Severe pain requiring opiates - CKD stage 4 or 5 - Severe liver disease - Heparin-induced thrombocytopenia (HIT) - in the last 12 months - On full dose anticoagulation at time of PE - Social concerns – Pregnancy - Signs of right heart strain

Patient can be safely discharged with Medical Virtual Clinic follow up

Simplified PESI ≥ 1
Refer to the medical team for inpatient work up

Arranging Medical Virtual Clinic Follow Up

Submit a referral via SDEC@lthtr.nhs.uk, with the patient details, identify in the subject "PE Pathway"

ED team to request 'outpatient CTPA' prior to discharge on Qmed
(Mention Geneva Score in request)

Dr to inform patient to call SDEC at 08:30a.m the following morning, either for CTPA or further anticoagulation
01772 522527

Dr to give Outpatient Investigation for PE patient information leaflet (PIL)
(hyperlink on ED guidelines)

Appendix 2: Ambulatory Management of Suspected Pulmonary Embolism in the Emergency Department: Anticoagulant Decision Matrix

Suspected PE for Ambulatory Management

Contraindication to Anticoagulation

- ❑ Adverse reaction to anticoagulant, or constituents
- ❑ Clinically significant active bleeding
- ❑ High risk of significant bleeding (lesion, surgery, malformation etc.)
- ❑ Coagulopathy (INR >1.5)
- ❑ Already anticoagulated

Contraindication to DOAC

- ❑ Patients with severe renal impairment or on dialysis (creatinine clearance <15mL/min)
- ❑ Severe hepatic impairment - Child-Pugh C
- ❑ Interacting drugs such as Antivirals, antifungals, antiepileptics and antibiotics Interactions | BNF content published by NICE
- ❑ Pregnancy and breastfeeding
- ❑ Patients with active cancer

DOAC Indicated

Discharge on DOAC to cover until CTPA/VQ

Apixaban* 10mg PO BD for 7 days

**Other DOACs are available on prescription from pharmacy*

Mon-Fri 9am-7.30pm	Obtain from pharmacy
Sat-Sun 9am-5pm	Obtain from pharmacy
Out-of-hours	Use 7 day TTO pack from ED Majors

DOAC contra-indicated

Discharge on Enoxaparin to cover until CTPA/VQ:

1.5 mg/kg OD SC for uncomplicated patients with low risk of VTE recurrence.
1mg/Kg for CrCl 15-30ml/min

1 mg/kg BD SC for all other patients such as those with obesity, symptomatic PE, recurrent VTE or proximal thrombosis

Out-of-hours: Administer a dose to the patient on ED and either

1. *Provide a discharge prescription for the patient to collect next day, or*
2. *Arrange patient return to ED/SDEC for next dose*

CTPA or VQ Positive	CTPA or VQ Negative
Complete 7 days of apixaban 10mg BD (complete box from pharmacy/TTO Pack) then start apixaban 5mg BD until review*	Discontinue anticoagulation

*Review periods vary by clinical presentation (see VTE policy)
*Apixaban dose may need reducing to 2.5mg BD in those at high risk of bleeding with/without renal impairment. Based on risk assessment

Appendix 3

Dalteparin dose in Oncology

Dalteparin may be used as part of shared decision making with patients if Treatment is given for a total of 6 months. The dose for the first 30 days is 200units/kg daily subcutaneously reducing to 150units/kg for months 2-6.

First 30 days – 200units/Kg

Body Weight (kg)	Dose (units)
<46	7 500
46-56	10 000
57-68	12 500
69-82	15 000
83 and over	18 000*

*Maximum dose of 18,000 units was used in patient weighing up to 132 kg in the CLOT study.

Month's 2 to 6 – 150units/Kg

Body Weight (kg)	Dose (units)
≤56	7 500
57 to 68	10 000
69 to 82	12 500
83 to 98	15 000
≥99	18 000

When transferring treatment from Enoxaparin to Dalteparin, the duration on enoxaparin should be taken into account in determining when to switch to the reduced dose.

For very obese patients consider discussing with haematology for best dosing practices.

For patients with renal impairment (CRCL <30mL/min) use Enoxaparin and dose as above (section 10.4.1 and 11.2 above).

11.2.1 Dosing in thrombocytopenia

In cases of thrombocytopenia below 100 mm3 in the first 30 days of Dalteparin treatment discuss with parent team/haematology.

In the case of thrombocytopenia (platelets 50-100/mm3), Dalteparin dose should be adopted as follows, unless otherwise advised by parent team/haematology:

Body Weight (kg)	Scheduled Dose		Reduced Dose	
≤56kg	7500 units	Once Daily	5000 units	Once Daily
57-68kg	10000 units	Once Daily	7500 units	Once Daily
69-82kg	12500 units	Once Daily	10000 units	Once Daily
83-98kg	15000 units	Once Daily	12500 units	Once Daily
≥99kg	18000 units	Once Daily	15000 units	Once Daily

If Platelet counts are below 50,000/mm3, Dalteparin should be held and consult with parent team or haematology.

Lancashire Teaching Hospitals
NHS Foundation Trust

Equality, Diversity & Inclusion Impact Assessment Form

Department/Function	Pharmacy			
Lead Assessor	Sura Ali			
What is being assessed?	Policy and procedure for prophylaxis against venous thromboembolism (VTE) in adult patients (excluding obstetrics)			
Date of assessment	09 September 2024			
What groups have you consulted with? Include details of involvement in the Equality Impact Assessment process.	Equality of Access to Health Group	☐	Staff Side Colleagues	☒
	Service Users	☐	Staff Inclusion Network/s	☒
	Personal Fair Diverse Champions	☐	Other (Inc. external orgs)	☐
	Please give details:			

1) What is the impact on the following equality groups?			
Positive: ➢ Advance Equality of opportunity ➢ Foster good relations between different groups ➢ Address explicit needs of Equality target groups		**Negative:** ➢ Unlawful discrimination, harassment and victimisation ➢ Failure to address explicit needs of Equality target groups	**Neutral:** ➢ It is quite acceptable for the assessment to come out as Neutral Impact. ➢ Be sure you can justify this decision with clear reasons and evidence if you are challenged
Equality Groups	**Impact** (Positive / Negative / Neutral)	**Comments:** ➢ Provide brief description of the positive / negative impact identified benefits to the equality group. ➢ Is any impact identified intended or legal?	
Race (All ethnic groups)	Neutral		
Disability (Including physical and mental impairments)	Neutral		
Sex	Neutral		
Gender reassignment	Neutral		
Religion or Belief (includes non-belief)	Negative	Heparins are of porcine origin; this should be discussed with patients of the Jewish and Muslim faith where consumption of porcine products are prohibited.	
Sexual orientation	Neutral		
Age	Neutral		

Marriage and Civil Partnership	Neutral	
Pregnancy and maternity	Neutral	
Other (e.g. caring, human rights, social)	Negative	Vegan & Vegetarian patients, due to heparins containing an animal product (porcine). This should be discussed with the patient on an individual basis.

2) In what ways does any impact identified contribute to or hinder promoting equality and diversity across the organisation?	There are alternative anticoagulants available that can be offered as part of a shared decision with patients if they refuse heparins.

3) If your assessment identifies a negative impact on Equality Groups you must develop an action plan **to avoid discrimination and ensure opportunities for promoting equality diversity and inclusion are maximised.**

- This should include where it has been identified that further work will be undertaken to further explore the impact on equality groups
- This should be reviewed annually.

ACTION PLAN SUMMARY

Action	Lead	Timescale
To be discussed on an individual level with patients.	Responsible Clinician for the patient	3 years with next guideline review

HOW THE NHS CONSTITUTION APPLIES TO THIS DOCUMENT

WHICH PRINCIPLES OF THE NHS CONSTITUTION APPLY? Click here for guidance on Principles	Tick those which apply	WHICH STAFF PLEDGES OF THE NHS CONSTITUTION APPLY? Click here for guidance on Pledges	Tick those which apply
1. The NHS provides a comprehensive service, available to all.	√	1. Provide a positive working environment for staff and to promote supportive, open cultures that help staff do their job to the best of their ability.	√
2. Access to NHS services is based on clinical need, not an individual's ability to pay.	√	2. Provide all staff with clear roles and responsibilities and rewarding jobs for teams and individuals that make a difference to patients, their families and carers and communities.	√
3. The NHS aspires to the highest standards of excellence and professionalism.	√	3. Provide all staff with personal development, access to appropriate education and training for their jobs, and line management support to enable them to fulfil their potential.	☐
4. The patient will be at the heart of everything the NHS does.	√	4. Provide support and opportunities for staff to maintain their health, wellbeing and safety.	☐
5. The NHS works across organisational boundaries.	√	5. Engage staff in decisions that affect them and the services they provide, individually, through representative organisations and through local partnership working arrangements. All staff will be empowered to put forward ways to deliver better and safer services for patients and their families.	☐
6. The NHS is committed to providing best value for taxpayers' money.	√	6. To have a process for staff to raise an internal grievance.	☐
7. The NHS is accountable to the public, communities and patients that it serves.	√	7. Encourage and support all staff in raising concerns at the earliest reasonable opportunity about safety, malpractice or wrongdoing at work, responding to and, where necessary, investigating the concerns raised and acting consistently with the Employment Rights Act 1996.	☐

WHICH AIMS OF THE TRUST APPLY? Click here for Aims	Tick those which apply	WHICH AMBITIONS OF THE TRUST APPLY? Click here for Ambitions	Tick those which apply
1. To offer excellent health care and treatment to our local communities.	√	1. Consistently deliver excellent care.	√
2. To provide a range of the highest standard of specialised services to patients in Lancashire and South Cumbria.	√	2. Great place to work.	√
3. To drive innovation through world-class education, teaching and research.	☐	3. Deliver value for money.	√
		4. Fit for the future.	√