Trust Guideline for Adults for Investigation and Management of Venous Thromboembolism (Deep Vein Thrombosis, Pulmonary Embolism and Proximal Superficial Thrombophlebitis (STP))

Document Control:

For Use In:	Norfolk and Norwich University Hospitals		
	All clinical areas		
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Document Author:	Dr Hamish Lyall, Consultant Haematologist		
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Version	Date	Author	Reason/Change
V1.0	Dec 2011	Dr J Wimperis	To originate document
V2.0	Feb 2013	Dr J Wimperis	Full review and update
V3.0	Apr 2013	Dr J Wimperis	Audit standards added
V4.0	Oct 2013	Dr J Wimperis	Minor amendments made
V5.0	Jul 2016	Dr H Lyall	SVT (STP) management updated
V6.0	Aug 2019	Dr H Lyall	Apixaban added. SVT (STP) advice updated DVT and PE algorithms replaced by text to reflect current practice pathways Links to trust documents for pregnancy, GP VTE advice sheet and DOACs added Grammar/text/formatting changes
V7.0	Sep 2020	Dr H Lyall	Updated to include NICE NG158 recommendations. New sections

			added for mechanical interventions, thrombophilia, anticoagulation management and VTE follow up. Minor changes to SVT (STP)
V8.0	Jul 2024	Dr H Lyall	Full review and update. Transferred into new Trust procedural document template

Previous Titles for this Document:

Previous Title/Amalgamated Titles	Date Revised
Trust Guideline for Adults for Investigation and Management of Venous Thromboembolism (Deep Vein Thrombosis and Pulmonary Embolism)	February 2013 - title change to include proximal superficial vein thrombosis
Trust Guideline for Adults for Investigation and Management of Venous Thromboembolism (Deep Vein Thrombosis, Pulmonary Embolism and Proximal Superficial Vein Thrombosis)	July 2024 – title change to replace 'superficial vein thrombosis' with the term 'superficial thrombophlebitis'.

Distribution Control

Printed copies of this document should be considered out of date. The most up to date version is available from the Trust Intranet.

Consultation

The guideline was updated by Dr Hamish Lyall on behalf of the Thrombosis and Thromboprophylaxis Committee who approved its content. Suggested amendments were incorporated.

Monitoring and Review of Procedural Document

The document owner is responsible for monitoring and reviewing the effectiveness of this Procedural Document. This review is continuous however as a minimum will be achieved at the point this procedural document requires a review e.g. changes in legislation, findings from incidents or document expiry.

Relationship of this document to other procedural documents

This document is a clinical guideline applicable to the Norfolk and Norwich University Hospitals NHS Foundation Trust.

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1. Introduction

1.1. Rationale

VTE is a common medical presentation to both inpatient and outpatient services. This guideline is based on the established guidance as given in the reference section of this guideline. Compliance link: NICE Guideline NG158 updated August 2023: Venous thromboembolic diseases: diagnosis, management and thrombophilia testing.

1.2. Objective

To ensure the safe management of all patients with suspected and confirmed Venothromboembolism (VTE) - Deep Vein thrombosis (DVT), Pulmonary Embolism (PE) and proximal lower limb superficial thrombophlebitis (STP).

1.3. Glossary

The following terms and abbreviations have been used within this document:

Term	Definition
CTPA	Computed Tomography Pulmonary Angiogram
DD	D dimer
DOAC	Direct oral anticoagulant
DVT	Deep Vein thrombosis
INR	International Normalised Ratio
LMWH	Low molecular weight heparin
PE	Pulmonary Embolism
UFH	Unfractionated Heparin
USS	Ultrasound scan
STP	Superficial Thrombophlebitis
SVT	Superficial Vein Thrombosis
VQ	Pulmonary Ventilation Perfusion scan
VTE	Venous Thromboembolism

2. Responsibilities

- All staff who investigate and management venous thromboembolism thromboprophylaxis in patients at NNUHT should ensure they remain up to date with this guideline.

3. Processes to be followed

3.1. Broad recommendations

- Patients with suspected VTE (PE or DVT or symptomatic proximal STP) should be investigated according to the pathways presented in this guideline.
- Suspected DVT - if a diagnostic scan is indicated and cannot be performed within 4 hours of assessment at NNUH patients should start either therapeutic sc LMWH (LMWH Dosing Advice Sheet), or apixaban (10mg b.d), or rivaroxaban (15mg b.d) or an intravenous infusion of UFH (Unfractionated Heparin Chart) . If there is a contraindication to anticoagulation the reason should be recorded in the patient record and an urgent scan discussed with radiology.
- Suspected PE - As soon as the patient has been assessed as requiring radiological investigation if the scan cannot be done immediately start therapeutic sc LMWH (LMWH Dosing Advice Sheet), or apixaban (10mg b.d.) or rivaroxaban (15mg b.d) or, an intravenous infusion of UFH (Unfractionated Heparin Chart). If there is a contraindication to anticoagulation record the reason in the patient record and discuss urgent scan with radiology. Apixaban or rivaroxban should not be used for patients with haemodynamic instability.
- Patients with DVT or PE confirmed by the results of investigations should start anticoagulation immediately or continue therapeutic anticoagulation, if already started, with one of the following:
    - LMWH and Warfarin (target INR 2.5). LMWH should be stopped once INR >2 for at least 24 hrs.
    - DOAC (Starting a DOAC).
    - LMWH only (e.g. if pregnant).
- Patients with confirmed PE and with haemodynamic compromise should be considered urgently for thrombolytic therapy; see Massive acute Pulmonary embolism. Other selected patients with high-intermediate risk PE may also be considered at the discretion of a respiratory consultant.
- Patients with distal DVT should be treated with therapeutic anticoagulation for 3 months.
- Patients with proximal DVT (popliteal, femoral or iliac vein) or PE secondary to a transient risk factor should be treated with therapeutic anticoagulation for at least three months.
- Patients with proximal DVT or PE secondary to ongoing risk factors (e.g. pregnancy or leg in plaster) should be treated for at least three months or for the duration of the risk factor, whichever is longer.
- Patients with unprovoked proximal DVT or PE should be treated for at least 3 months and then assessed for risks and benefits of indefinite therapy; see GP advice for managing patients with VTE.

- Patients with unprovoked VTE should not routinely be offered a CT scan to look for underlying malignancy unless there are clinical or laboratory findings to suggest cancer; see GP advice for managing patients with VTE.
- Patients with confirmed STP within 3 cm of the saphenofemoral junction should be treated with therapeutic anticoagulation for 3 months
- All patients should be given written information regarding VTE together with a patient held anticoagulant information/dosing record (e.g. the yellow DH booklet or DOAC advice sheet – see click4clots).
- On discharge from the hospital clear arrangements must be made for follow up and monitoring, including transfer of care to primary care.

3.2. Patients with cancer

- Patients with venous thromboembolism **and cancer** should receive at least three-six months of LMWH or a DOAC. The choice of LMWH or DOAC is at the discretion of the treating physician, taking into account current evidence for cancer associated thrombosis, tumour site, concurrent cancer treatment and bleeding risk. A clinical decision to treat beyond six months may be made for individual patients depending on the perceived risks and benefits.

NB Patients with VTE found incidentally i.e. unsuspected (e.g. on staging scan) should be treated with therapeutic anticoagulation.

3.3. Suspected Deep Vein Thrombosis

Inpatient: Clinical decision rules (e.g. Wells) and D-dimer are unlikely to rule out DVT. Request full leg Doppler ultrasound*

Outpatient: Refer to VTE clinic. Patient investigated as per VTE clinic SOP

Emergency department: refer to VTE clinic. NB Pathways for Point of care ultrasound (POCUS) are in development.

Pregnancy:** Guideline for investigation and management of VTE in pregnancy

Results of scan:
Positive: immediately start or continue therapeutic anticoagulation
Negative: STOP therapeutic anticoagulation (unless alternative indication to continue)

N.B If distal veins not visualised distal DVT has not been excluded and patient should have a repeat scan in one week to look for possible proximal extension.

*If scan cannot be done within 4 hours, start an anticoagulant (therapeutic LMWH or apixaban or rivaroxaban) unless contraindicated. If contraindicated record reason in patient record and discuss urgent scan with radiology.

** D-dimer may only be used for patients managed in VTE clinic as per VTE clinic protocol.

3.4. Suspected Pulmonary Embolism

Inpatient: Clinical decision rules (e.g. Wells, YEARS) and D-dimer unlikely to rule out PE. Arrange urgent CXR to exclude other causes of symptoms. Request scan for PE*.

Patients presenting to Emergency Department (ED): Follow ED guideline: Emergency department management pathway for pulmonary embolism

All other outpatients: Referred to AMU. Clinical decision rules (e.g. Wells, YEARS) and D-dimer should be used to rule out PE where possible. Arrange urgent CXR to exclude other cause of symptoms. Patients who cannot have PE ruled out using these methods require a scan*.

Pregnancy:** Guideline for investigation and management of VTE in pregnancy

Suspected massive PE: Consider thrombolysis (see Trust protocol for acute PE in adults)

CTPA is the standard investigation for pulmonary embolism, V/Q scan as an alternative should be used if CXR is normal, no history of lung disease (e.g. COPD) and scan is available.

Results of scan:
Positive: immediately start or continue therapeutic anticoagulation
Negative: STOP therapeutic anticoagulation (unless alternative indication to continue)

NB. All patients with a confirmed PE should have a PESI score (or equivalent) documented. This may be used to help guide IP vs OP management and those patients who may require higher level care.

*If scan cannot be done immediately start therapeutic LMWH or apixaban or rivaroxaban unless contraindicated. If contraindicated record reason in patient record and discuss urgent scan with radiology.

** D-dimer may be considered in conjunction with a validated algorithm for pregnancy (e.g. YEARS pregnancy) to avoid imaging.

3.5. Investigation and management of Proximal Superficial Thrombophlebitis (STP)

The terms superficial vein thrombosis and superficial thrombophlebitis are considered the same entity for the purpose of this guideline.

- STP is predominantly a clinical diagnosis but may be detected on ultrasound
- Patients with STP are at high risk of concurrent DVT. Patients with STP will usually need investigation to exclude DVT
- Patients with symptoms of proximal lower limb STP above the knee should have an USS to determine extent of the STP and exclude concurrent DVT

- Patients with clinical signs of STP below knee can have concomitant DVT excluded by D-dimer and Wells score. If DVT not excluded by D-dimer and Wells score, patient will need an ultrasound scan
- Patients with STP within 3cm of the sapheno-femoral junction should be considered for therapeutic anticoagulation
- For patients with proximal STP > 3cm from sapheno-femoral junction or extensive below knee STP (>5cm length) treatment with either prophylactic dose of LMWH or rivaroxaban 10mg daily for 6 weeks is advised
- Patients who are not treated with anticoagulants should be offered NSAIDs (oral or topical) unless contraindicated
- All patients should be advised to seek medical advice if they develop symptoms of VTE after discharge

3.6. Investigations for cause of VTE

- Unprovoked VTE can be a presenting feature of malignancy. If clinical history, examination or blood tests indicates a concern further investigation may be required.
- Current guidance is that routine CT scans should not be requested for patients with unprovoked VTE who do not have clinical or laboratory concerns for cancer.

3.7. Mechanical interventions

- IVC filters: Only indicated where anticoagulation is contraindicated or PE has occurred on treatment See guideline Vena Cava filter insertion.
- Thrombolysis/mechanical thrombectomy for DVT. Consider referral to vascular surgeons if iliac thrombosis, < 14 days symptoms, life expectancy > 1 year and low bleeding risk.
- Compression stockings for DVT are not routinely recommended. Can be helpful for symptomatic relief but do not impact risk of post thrombotic syndrome.

3.8. Thrombophilia Testing

- Testing for heritable thrombophilia is not recommended. Seek advice from haematology if this is being considered for selected cases.
- Testing for anticardiolipin antibodies can be considered in unprovoked VTE if patient has clinical features to suggest the possibility of antiphospholipid syndrome (known SLE/autoimmune disease, livedo reticularis, prolonged APPT before anticoagulation, recurrent VTE, VTE at unusual sites, arterial thrombosis without risk factors, unexplained thrombocytopenia, unexplained cardiac valve abnormalities, recurrent pregnancy loss/severe pre-eclampsia).

3.9. Anticoagulant treatment

- For uncomplicated outpatient treatment of VTE a DOAC is preferred. See Starting a DOAC
- For patients who are extremes of body weight (< 50kg or > 120 kg) see advice in Starting a DOAC. For patient with BMI > 40 kg/m^2 or > 120 kg apixaban or rivaroxaban are acceptable choices. No drug monitoring is required.
- Warfarin is the recommended treatment for patients with antiphospholipid syndrome
- UFH has complex administration with high risk of error. It should only be used when alternatives are not suitable
- For all patients starting an anticoagulant appropriate anticoagulant counselling should be given. See DOAC counselling checklist
- Heparins are manufactured from animal products and apixaban and rivaroxaban contain lactose from cows milk. For patients in whom these are not acceptable options an alternative parenteral anticoagulant is fondaparinux. Alternative oral anticoagulants are edoxaban, dabigatran or warfarin
- All patients require FBC, renal function LFT and coagulation screen (PT/APTT) prior to starting an anticoagulant
- For patients with significant renal impairment (Cr Cl < 30ml/min) see specific recommendations in LMWH Dosing Advice Sheet and Starting a DOAC regarding contraindications, dose reduction or monitoring.

3.10. VTE follow up

All patients discharged following a new VTE diagnosis require follow up in primary care. Selected patients should also be followed up in secondary care. Follow up is required for:

1. Ongoing prescription of anticoagulants.
2. Anticoagulant monitoring (where required).
3. Assessment for underlying cause and modification of thrombotic/bleeding risk factors.
4. Review at 3 months to determine anticoagulation duration.
5. Assessment for post DVT/PE complications and further investigation if needed.

- Uncomplicated provoked DVT is suitable for GP follow up only.
- Unprovoked DVT should be referred to a haematologist for review at 3 months.
- Patients with PE associated with the combined oral contraceptive pill or pregnancy should be referred to haematology for follow up at 3 months. All other patients with PE should be referred to a respiratory physician for follow up at 3 months. Patients at low risk of CTEPH may be managed by a letter of advice from the respiratory physician to the GP for follow up in primary care.

Patients with multiple comorbidities who are not able or unlikely to benefit from attending hospital outpatients may be followed up in primary care with advice and guidance from secondary care if needed.

4. References

NICE Guideline NG158 updated August 2023 Venous thromboembolic diseases: diagnosis, management and thrombophilia testing https://www.nice.org.uk/guidance/ng158

Thrombosis Canada: clinical guidelines superficial thrombophlebitis/superficial vein thrombosis March 2019 https://thrombosiscanada.ca/clinicalguides/#

European Society for Vascular Surgery: 2021 Clinical Practice Guidelines on the Management of Venous Thrombosis Editor's Choice – European Society for Vascular Surgery (ESVS) 2021 Clinical Practice Guidelines on the Management of Venous Thrombosis - European Journal of Vascular and Endovascular Surgery (ejves.com)

Use of direct oral anticoagulants in patients with obesity for treatment and prevention of venous thromboembolism. Updated communication from the ISTH SSC subcommittee on Control of Anticoagulation. Martin, Karlyn A. et al: Journal of Thrombosis and Haemostasis Vol 19, Issue 8, 1874-1882

5. Clinical audit standards

Aspect of care / Service (indicator)	Target % compliance	Exceptions
For patients with suspected DVT: Therapeutic anticoagulation started within 4 hours of assessment at NNUH	100%	1. Outpatient with DVT Wells score <3 and DD low 2. Anticoagulation contraindicated 3. USS performed within 4 hours and negative for DVT
For patients with suspected DVT: if anticoagulation not started within 4 hours of assessment at NNUH reason must be recorded in patient records	100%	None
For patients with suspected DVT if USS indicated it should be performed within 24 hours	100%	None
For patients with suspected PE: Therapeutic anticoagulation started as soon as clinical assessment	100%	1. Outpatient with PE Wells score ≤ 4 and DD low 2. Anticoagulation contraindicated

completed at NNUH		3. If scan performed immediately and shows no evidence of PE
For patients with suspected PE: If anticoagulation not started as soon as assessment at NNUH indicates that radiological scan is indicated reason must be recorded in patient records	100%	None

6. Monitoring Compliance

Compliance with the process will be monitored through the following:

Key elements	Process for Monitoring	By Whom (Individual / group /committee)	Responsible Governance Committee /dept	Frequency of monitoring
Clinical audit standards set out in section 5 above.	Regular audits	VTE Team	Thrombosis & Thromboprophylaxis Committee	Annual

The audit results are to be discussed at Thrombosis & Thromboprophylaxis Committee meetings to review the results and recommendations for further action. Then reported to the Clinical Safety and Effectiveness Sub-Board who will ensure that the actions and recommendations are suitable and sufficient.

7. Appendices

There are no appendices for this document.

8. Equality Impact Assessment (EIA)

Type of function or policy	Existing

Division	All clinical areas	**Department**	Trust wide
Name of person completing form	Dr H Lyall	**Date**	20.11.2023

Equality Area	**Potential Negative Impact**	**Impact Positive Impact**	**Which groups are affected**	**Full Impact Assessment Required YES/NO**
Race	None		N/A	No
Pregnancy & Maternity	None		N/A	No
Disability	None		N/A	No
Religion and beliefs	None		N/A	No
Sex	None		N/A	No
Gender reassignment	None		N/A	No
Sexual Orientation	None		N/A	No
Age	None		N/A	No
Marriage & Civil Partnership	None		N/A	No
EDS2 – How does this change impact the Equality and Diversity Strategic plan (contact HR or see EDS2 plan)?		This policy does not discriminate		

- **A full assessment will only be required if: The impact is potentially discriminatory under the general equality duty**
- **Any groups of patients/staff/visitors or communities could be potentially disadvantaged by the policy or function/service**
- **The policy or function/service is assessed to be of high significance**

IF IN DOUBT A FULL IMPACT ASSESSMENT FORM IS REQUIRED

The review of the existing policy re-affirms the rights of all groups and clarifies the individual, managerial and organisational responsibilities in line with statutory and best practice guidance.