



# Venous Thromboembolism (VTE) – Prevention and Treatment of VTE in Patients Admitted to Hospital

This procedural document supersedes: PAT/T 44 v.4 – Venous Thromboembolism (VTE) – Prevention and Treatment of VTE in Patients Admitted to Hospital



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## Amendment Form

Please record brief details of the changes made alongside the next version number. If the APD has been reviewed **without change**, this information will still need to be recorded although the version number will remain the same.

Version	Date issued	Brief Summary of Changes	Author
Version 5	19 August 2021	<p><b><u>Amendment</u></b></p> <ul style="list-style-type: none"> <li>• Within subsection 4.1 Prevention – link to the Guidance for VTE Prophylaxis, has been replaced.</li> <li>• Appendix 6 – Guidance for VTE Prophylaxis, has been replaced with the guidelines as updated in March 2021.</li> </ul>	Cindy Storer
Version 4	15 January 2020	<b>Significantly revised – please read in full.</b>	Ben Kumar Stuti Kaul Lee Wilson
Version 3	2 July 2014	<ul style="list-style-type: none"> <li>• This is a new policy – please read in full.</li> <li>• VTE Investigation and Treatment IPOC amended in response to 2012 NICE guidance on VTE.</li> <li>• New Patient Information Leaflets produced – see Appendix 7 and 8</li> </ul> <p><b>NOTE: supersedes: PAT/T 44 v.2</b> - Prevention of Venous Thromboembolism (VTE) - Deep Vein Thrombosis and Pulmonary Embolism in Patients Admitted to Hospital <b>and combines PAT/T 46 v.2</b> - Guideline for the Management of Venous Thromboembolism.</p>	Stuti Kaul Ben Kumar Tracy Evans-Phillips Lee Wilson

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## 1 INTRODUCTION

The House of Commons Health Committee reported in 2005 that an estimated 25,000 people in the UK die from preventable hospital-acquired venous thromboembolism (VTE) every year. This includes patients admitted to hospital for medical care and surgery. The inconsistent use of prophylactic measures for VTE in hospital patients has been widely reported.

VTE is a condition in which a blood clot (thrombus) forms in a vein. It most commonly occurs in the deep veins of the legs; this is called deep vein thrombosis. The thrombus may dislodge from its site of origin to travel in the blood – a phenomenon called embolism.

VTE is an important cause of death in hospital patients, and treatment of non-fatal symptomatic VTE and related long-term morbidities is associated with considerable cost to the health service.

The risk of developing VTE depends on the condition and/or procedure for which the patient is admitted and on any predisposing risk factors (such as age, obesity and concomitant conditions).

This guideline makes recommendations on:

- a) Assessing and reducing the risk of VTE in patients in hospital. The recommendations take into account the potential risks of the various options for prophylaxis and patient preferences.
- b) Investigation and management of VTE

The guideline assumes that prescribers will use a drug's summary of product characteristics to inform decisions made with individual patients.

## 2 PURPOSE

### 2.1 Prevention

- Patients (and relatives and carers as appropriate) should have the opportunity to be involved in decisions.
- All inpatients and day-case patients >16 with must undergo a mandatory risk assessment for the prevention of VTE.
- The risk assessment must be completed by a doctor or nurse and filed in the medical notes.
- The risk assessment should be undertaken on admission to hospital or at pre-operative assessment (if undergoing elective surgery), and again if the patient's clinical condition changes.
- The clinical decision on how to manage the risk of venous thromboembolism will be based on an assessment of the risks of VTE against the risks of preventative treatment

for each individual patient and the decision will be informed by available published evidence. Following this the relevant pharmacological and/or mechanical prophylaxis should be prescribed.

- The Patient Information Leaflet (PIL) 'Preventing Blood Clots while you are in Hospital' (Appendix 7) should be given to all inpatients and day case patients >16 years of age
- This guideline provides guidance for the prevention of VTE based on recommendations in NICE Guideline 89 it says "and" the Report of the Independent Expert Working Group on the prevention of VTE in hospitalised patients as described above.
- This guideline was developed in consultation with all clinical directorates and specialities to allow for speciality specific recommendations. These can be found in the Appendices at the end of this policy.

## 2.2 Treatment

- Patients (and relatives and carers as appropriate) should have the opportunity to be involved in decisions.
- The clinical decision making regarding management of VTE should be made with consideration of the latest NICE guidance on DVT and PE.
- If VTE is suspected, prescribers should follow the latest version of the Trust DVT & PE (VTE) IPOC. (Appendix 8)
- The DVT & PE (VTE) IPOC contains the following sections
  - a. Clinical Assessment including DVT (in Non-Pregnant and Pregnant Patients) and PE (in Non-Pregnant and Pregnant Patients) – see also Maternity Service Guidance 20.
  - b. Post Diagnosis VTE checklists
  - c. Daltepain and DOAC Prescribing and Dosing tablets in DVT/PE

## 3 DUTIES AND RESPONSIBILITIES

- All relevant healthcare professionals should give patients verbal and written information on the following, as part of their discharge plan.
  - The signs and symptoms of DVT and PE
  - The correct use of prophylaxis at home
  - The implications of not using the prophylaxis correctly.
- All relevant healthcare professionals should follow the DVT and PE (VTE) IPOC (Appendix 8) when treating a patient with symptoms of VTE.
- Should clinical specialities subsequently wish to amend the specific guidance for the prevention of VTE in their speciality, application should be submitted to the VTE Group for consideration and if agreed, should be included as appendices to this guideline.

## 4 PROCEDURE

### **Pharmacological VTE prophylaxis**

Dalteparin is the low molecular weight heparin (LMWH) recommended for use in Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust for those indications for which it is licensed. Fondaparinux sodium should be used in individuals who are allergic to heparin.

#### **4.1 Prevention**

- All patients (age 16 and over) need to be risk assessed on admission to identify those who are at increased risk of VTE using either; the Generic VTE Risk Assessment (Appendix 1), VTE Risk Assessment in pregnancy (Appendix 2) or if the patient has a lower limb cast in fracture clinic, the POP VTE Risk Assessment (Appendix 3).
- For guidance on completing the Generic VTE Risk Assessment, see Appendix 4
- For dosage recommendations for prescribing dalteparin, <https://www.dbth.nhs.uk/services/pharmacy/medicines-formulary/medicines-formulary-section-2-cardiovascular-system/>
- Patients on Orthopaedic wards use the Generic VTE Risk Assessment, however further details on pharmacological thromboprophylaxis and extended prophylaxis can be found in Appendix 6 and on the following link: <https://oesn11hpbml2xaq003wx02ib-wpengine.netdna-ssl.com/wp-content/uploads/2021/06/Orthopaedic-DVT-Guidelines-March-2021x.pdf>
- For Stroke patients in whom pharmacological VTE Prophylaxis or Anti-embolization stockings maybe contraindicated please refer to Appendix 5 – Management of VTE risk in Stroke patients Decision Tree.
- For further guidance on VTE prevention and prophylaxis, please follow NICE Guideline 89 – Venous Thromboembolism: in over 16's – Reducing the risk of hospital acquired deep vein thrombosis or pulmonary embolization.
- All patients admitted to hospital as an Inpatient or Daycase (including maternity and orthopaedic patients) must receive the Trust's information leaflet "Preventing Blood Clots While You Are In Hospital" (WPR 30726) on admission to hospital (Appendix 7)

#### **4.2 Treatment**

- All patients with symptoms of DVT or PE should be managed according to the DVT & PE (VTE)IPOC (WPR 24524), Appendix 8
- The algorithms in the Trust's IPOC present the most concise summarisation of the treatment guidance.
- All patients with confirmed VTE must receive a copy of either the "DVT Patient Information Leaflet" (Appendix 9) or the "PE Patient Information Leaflet" (Appendix 10)
- For further guidance on VTE treatment, please follow the link below:
- [Venous thromboembolic diseases: the management of venous thromboembolic](#)

[diseases and the role of thrombophilia testing](#)

- Formulary guidance and protocols on reversal of anticoagulation (including heparin, warfarin and rivaroxaban) can be found via:  
<https://www.dbth.nhs.uk/services/pharmacy/medicines-formulary/medicines-formulary-section-2-cardiovascular-system/>

## **PATIENTS LACKING CAPACITY**

Sometimes it will be necessary to provide care and treatment to patients who lack the capacity to make decisions related to the content of this policy. In these instances staff must treat the patient in accordance with the Mental Capacity Act 2005 (MCA 2005).

- A person lacking capacity should not be treated in a manner which can be seen as discriminatory.
- Any act done for, or any decision made on behalf of a patient who lacks capacity must be done, or made, in the persons Best Interest.
- Further information can be found in the MCA policy, and the Code of Practice, both available on the intranet.

**There is no single definition of Best Interest.** Best Interest is *determined on an individual basis. All factors relevant to the decision must be taken into account, family and friends should be consulted, and the decision should be in the Best interest of the individual. Please see S5 of the MCA code of practice for further information.*

## **5 TRAINING/SUPPORT**

	Staff Function	Training Needs	How Delivered
1	Staff who have general (non-specific) role in delivery of care to patients	General Awareness	Posters/leaflets/ Trust publicity
2	Staff who deliver care to patients	General Awareness Fitting of Antiembolism Stockings (AES) On-going care of patient wearing Antiembolism Stockings (AES)	As above PLUS Local Induction

3	Registered Staff who deliver care to patients (Inc AHP's)	<p>General Awareness</p> <p>VTE disease process</p> <p>Measuring and fitting of Antiembolism Stockings (AES)</p> <p>Contraindications to GCS</p> <p>On-going care of patient wearing Antiembolism Stockings (AES)</p> <p>Indications and fitting of Flowton Intermittent Pneumatic Compression (IPC) sleeves</p> <p>Contraindications to dalteparin</p> <p>Administration of dalteparin</p>	As above PLUS Local Induction
4	Medical staff	<p>General Awareness</p> <p>VTE disease process</p> <p>Long term effects of VTE</p> <p>Contraindications to Antiembolism Stockings (AES)</p> <p>Alternative methods of Mechanical compression.</p> <p>Contraindications to Dalteparin, DOACs, Warfarin and Aspirin</p> <p>Prescribing Dalteparin, DOACs, Warfarin and Aspirin</p> <p>On going care of patients on Dalteparin, DOACS, Warfarin and Aspirin</p>	As above PLUS Local Induction.



## 6 MONITORING COMPLIANCE

Criteria	Monitoring	Who	Frequency	How reviewed
All patients admitted to the Trust as Inpatients or Day-cases will have a VTE Risk Assessment	Annual audit using pre-defined proforma (specific to VTE Risk Assessment used), auditing 20 sets of casenotes of patients with a current stay	Each specialty, lead by the Clinical Audit Lead within the division	Annual rolling programme	Report sent to division for recommendations and action plans.  Action plans and recommendations reviewed by VTE Group  Compliance with annual programme monitored by Audit & Effectiveness Forum
All patients with hospital acquired VTE (within 3 months of admission) to have a Root Cause Analysis undertaken	Cases identified via Datix system, casenotes are located and reviewed to identify if the VTE was avoidable	Feedback letters sent to Primary Clinician to complete.	Reviewed on an individual case basis	Each outcome is shared with division, VTE Group and fed back to Trust via Medical Director.
Patients admitted with a VTE will have care according to the DVT & PE IPOC	Audit of compliance with the IPOC	Audit instigated by the VTE Group Lead	Annual	Report reviewed by VTE Group and results disseminated to Trust via Clinical Directors

## 7 GLOSSARY OF DEFINITIONS

<b>-VE</b>	<b>Negative</b>
<b>+VE</b>	<b>Positive</b>
<b>AES</b>	<b>Anti-Embolism Stockings</b>
<b>AHS</b>	<b>Allied Health Professional</b>
<b>AM</b>	<b>Morning</b>
<b>ANP</b>	<b>Advanced Nurse Practitioner</b>
<b>BD</b>	<b>Twice Daily</b>
<b>BMI</b>	<b>Body Mass Index</b>
<b>BP</b>	<b>Blood Pressure</b>
<b>BNF</b>	<b>British National Formulary</b>
<b>Ca<sup>2+</sup></b>	<b>Calcium</b>
<b>CrCl</b>	<b>Creatinine Clearance</b>
<b>CTPA</b>	<b>CT Pulmonary/Angiogram</b>
<b>CT Scan</b>	<b>Computed Tomography Scan</b>
<b>CXR</b>	<b>Chest X-Ray</b>
<b>DOAC</b>	<b>Direct Oral Anticoagulant</b>
<b>DVT</b>	<b>Deep vein Thrombosis</b>
<b>ECG</b>	<b>ElectroCardioGram</b>
<b>ED</b>	<b>Emergency Department</b>
<b>SER</b>	<b>Erythrocyte Sedimentation Rate</b>
<b>EVE</b>	<b>Evening</b>
<b>FBC</b>	<b>Full Blood Count</b>
<b>GP</b>	<b>General Practitioner</b>
<b>INR</b>	<b>International Normalised Ratio</b>
<b>IPOC</b>	<b>Integrated Plan of Care</b>
<b>IV</b>	<b>Intravenous</b>
<b>IVC</b>	<b>Inferior Vena Cava</b>
<b>IVDU</b>	<b>Intra Venous Drug misuse</b>
<b>LFT</b>	<b>Liver Function Tests</b>
<b>LMWH</b>	<b>Low Molecular Weight Heparin</b>

<b>MSG</b>	<b>Maternity Service Guideline</b>
<b>MDT</b>	<b>Multi Disciplinary Team</b>
<b>NHSLA</b>	<b>National Health Service Litigation Authority</b>
<b>NICE</b>	<b>National Institute for Health and Care Excellence</b>
<b>OD</b>	<b>Once Daily</b>
<b>PE</b>	<b>Pulmonary Embolism</b>
<b>PSA</b>	<b>Prostate Specific Antigen</b>
<b>PT</b>	<b>Prothrombin Time</b>
<b>Q Scan</b>	<b>Perfusion Scan</b>
<b>ST</b>	<b>Speciality Training</b>
<b>U&amp;E</b>	<b>Urea and Electrolytes</b>
<b>UFH</b>	<b>UnFractionated Heparin</b>
<b>USS</b>	<b>Ultrasound</b>
<b>VTE</b>	<b>Venous ThromboEmbolism</b>

## 8 EQUALITY IMPACT ASSESSMENT

The Trust aims to design and implement services, policies and measures that meet the diverse needs of our service, population and workforce, ensuring that none are disadvantaged over others. Our objectives and responsibilities relating to equality and diversity are outlined within our equality schemes. When considering the needs and assessing the impact of a procedural document any discriminatory factors must be identified.

An Equality Impact Assessment (EIA) has been conducted on this procedural document in line with the principles of the Equality Analysis Policy (CORP/EMP 27) and the Fair Treatment For All Policy (CORP/EMP 4).

The purpose of the EIA is to minimise and if possible remove any disproportionate impact on employees on the grounds of race, sex, disability, age, sexual orientation or religious belief. No detriment was identified. (See Appendix 11)

## 9 ASSOCIATED TRUST PROCEDURAL DOCUMENTS

PAT/PA 19 - Mental Capacity Act 2005 Policy and Guidance, including Deprivation of Liberty Safeguards (DoLS)

CORP/EMP 4 – Fair Treatment for All Policy

CORP/EMP 27 - Equality Impact Assessment Policy

## 10 DATA PROTECTION

Any personal data processing associated with this policy will be carried out under 'Current data protection legislation' as in the Data Protection Act 2018 and the General Data Protection Regulation (GDPR) 2016.

For further information on data processing carried out by the trust, please refer to our Privacy Notices and other information which you can find on the trust website:


<https://www.dbth.nhs.uk/about-us/our-publications/uk-data-protection-legislation-eu-general-data-protection-regulation-gdpr/>

## 11 REFERENCES

1. Prevention of Venous Thromboembolism in Hospitalised Patients (2007)  
Chief Medical Officer's report from the Independent Expert Working Group
2. NICE Guideline 89: [www.nice.org.uk/guidance/ng89](http://www.nice.org.uk/guidance/ng89)
3. Guidelines on the use and monitoring of heparin (2006) *British Journal of Haematology* **133**, 19 – 34
4. NICE clinical guideline 144: <https://www.nice.org.uk/guidance/CG144>
5. Department of Constitutional Affairs  
Mental Capacity Act (2005): Code of Practice, 2007  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/497253/Mental-capacity-act-code-of-practice.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/497253/Mental-capacity-act-code-of-practice.pdf)

## APPENDIX 1 – GENERIC – VTE RISK ASSESSMENT

## Generic - VTE Risk Assessment

 <b>Doncaster and Bassetlaw Teaching Hospitals</b> NHS Foundation Trust		AFFIX LABEL HERE IF AVAILABLE NHS Number: <input type="text"/> District Number: <input type="text"/> Surname: <input type="text"/> Forename(s): <input type="text"/> Address: <input type="text"/> D.o.B.: <input type="text"/>	
<b>VTE RISK ASSESSMENT AND DEMENTIA SCREENING</b>			
Date: <input type="text"/> Time: <input type="text"/> Ward: <input type="text"/> Age: <input type="text"/> If the patient is aged 75 or over, complete Dementia Risk Assessment overleaf			
<b>Mobility – all patients</b> <input type="checkbox"/> Surgical Patient <input type="checkbox"/> Medical Patient		Acute illness <input type="checkbox"/> Yes <input type="checkbox"/> No Patient expected to have ongoing reduced mobility relative to normal state <input type="checkbox"/> Yes <input type="checkbox"/> No	
		<b>No + No = Low Risk</b> Tick "low risk" below and sign the form. Give VTE information leaflet. One or more "Yes" complete full risk assessment, indicate risk level and sign the form. Give VTE information leaflet.	
<b>THROMBOSIS RISK</b>			
<b>Patient Related</b>	<b>Tick</b>	<b>Admission related</b>	<b>Tick</b>
Active cancer or cancer treatment		Significantly reduced mobility for 3 days or more	
Age >60 years		Hip or Knee replacement	
Dehydration		Hip fracture	
Known thrombophilias		Total anaesthetic + surgical time > 90 minutes	
Obesity (BMI >30)		Critical Care admission	
One or more significant medical comorbidities (eg heart disease; metabolic, endocrine or respiratory pathologies; acute infectious diseases; inflammatory conditions)		Acute admission with inflammatory or intra-abdominal condition	
Personal history or first-degree relative with a history of VTE		Surgery involving pelvis or lower limb with a total anaesthetic + surgical time > 60 minutes	
Use of hormone replacement therapy		Surgery with significant reduction in mobility	
Use of oestrogen-containing contraceptive therapy			
Varicose Veins with phlebitis			
Pregnancy or <6 weeks post partum			
<b>BLEEDING RISK</b>			
<b>Patient Related</b>	<b>Tick</b>	<b>Admission related</b>	<b>Tick</b>
Active bleeding		Neurosurgery, spinal surgery or eye surgery	
Acquired bleeding disorder (such as acute liver failure)		Other procedure with high bleeding risk	
Concurrent use of anticoagulants known to increase the risk of bleeding (such as warfarin with INR>2)		Lumbar puncture / epidural / spinal anaesthesia expected within next 12 hours	
Acute stroke		Lumbar puncture / epidural / spinal anaesthesia within the previous 4 hours	
Thrombocytopenia (platelets <75x10 <sup>9</sup> /l)		Smoker? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Uncontrolled systolic hypertension (230 / 120 mmHg or higher)		Please note that this question does not form part of the risk assessment	
Untreated inherited bleeding disorders (such as haemophilia and von Willebrand's disease)		VTE Risk reviewed <input type="checkbox"/> Yes <input type="checkbox"/> No Signature: _____ Date: _____	
<b>Clinical Decision</b> <input type="checkbox"/> Low risk, no thromboprophylaxis required <input type="checkbox"/> High risk, Thromboprophylaxis indicated <input type="checkbox"/> Thromboprophylaxis contraindicated <input type="checkbox"/> VTE patient information leaflet given Reason for contraindication: _____			
Signature: _____ Print Name: _____ Designation: _____			



All patients with dementia or patients who you have concerns regarding mental health, please contact:

Older Peoples Mental Health Liaison Nurse using form available on ward or ring:

Tel: 01302 796505  
Fax: 01302 798474

Completed by: \_\_\_\_\_

Signature: \_\_\_\_\_

Print name: \_\_\_\_\_

Designation: \_\_\_\_\_

Date: \_\_\_\_\_

Time: \_\_\_\_\_

## Dementia Screening Tool

**INPATIENT**  
☐ Elective Admission  
☐ Emergency Admission

**Under 75**      **Over 75**

**NO ASSESSMENT REQUIRED**  
Please tick if applicable  
☐ END

**KNOWN DEMENTIA**  
Please tick if applicable  
☐ END

**Has the patient been more confused in the past 3 days?**  
*- If no carer or relative present – ask patient to count from 20 - 1*

**YES 'DELIRIUM PATHWAY'**      **NO**

**Has the patient been more forgetful in the past 12 months**

**YES**      **NO**  
Please tick if applicable  
☐ END

**AMT 4**  
☐ Year  
☐ Name of place  
☐ Age  
☐ DOB

**SCORE <4 'POSSIBLE IMPAIRMENT'**      **SCORE 4/4 'IMPAIRMENT UNLIKELY'**

**Advise GP at discharge via discharge letter**  
☐ END  
Please tick if applicable

**No further action required**  
☐ END  
Please tick if applicable

**(i) Basic physiological assessment and intervention as per ABC**  
**(ii) Patient physiologically stable (or as stable as possible)**  
**(iii) Full medical, drug history and examination (support from family and carers may be required)**

**Common causes of delirium**

- Hypoxia
- Pain
- Infection (urine, chest)
- Drug toxicity (opiates, sedatives)
- Constipation
- Dehydration

**First line interventions**

- Identify and treat the underlying physical cause
- Communicate clearly, calmly and consistently
- Check basic needs
  - Hunger   • Thirst   • Pain
- Involve relatives, carers or friends
- Encourage patient to drink

All patients experiencing delirium must receive an early assessment from a member of the Care of Older People Team ext 4826.  
If patients do not settle with reassurance or first-line interventions, urgently contact a member of the OPMH team.

## APPENDIX 2 – VTE RISK ASSESSMENT IN PREGNANCY

## VTE Risk Assessment in Pregnancy

HMR 2

**Doncaster and** **NHS**  
**Bassetlaw Hospitals**  
 NHS Foundation Trust  
**THROMBOSIS RISKS – SEE OVERLEAF FOR  
 ADVICE ON THROMBOPROPHYLAXIS**

AFFIX LABEL HERE IF AVAILABLE

NHS Number: .....  
 District Number: .....  
 Surname: .....  
 Forename(s): .....  
 Address: .....  
 D.O.B.: .....

Date: ..... Time: .....

**Patient Related Pre-existing**

- ☐ Previous VTE  
☐ Thrombophilia  
☐ Age over 35 years  
☐ Obesity (BMI > 30 kg/m<sup>2</sup>) either pre-pregnancy or in early pregnancy  
☐ Parity ≥ 3  
☐ Smoker  
☐ Gross varicose veins- *With phlebitis*  
☐ Intravenous drug abuse.  
☐ Some medical disorders, e.g. nephrotic syndrome, certain cardiac diseases, Myeloproliferative disorders e.g. essential thrombocythaemia, polycythaemia vera Sickle cell disease, inflammatory disorders e.g. inflammatory bowel disease.  
☐ Hyperemesis  
☐ Multiple pregnancy or Assisted Reproductive Technique /Ovarian hyperstimulation syndrome  
☐ Long-haul travel ≥ 4 hours (within 4 weeks of admission)\*

**Bleeding Risks****Patient Related**

- ☐ Untreated inherited bleeding disorders (such as haemophilia and von Willebrand's disease)  
☐ Active bleeding  
☐ Acquired bleeding e.g. acute liver failure  
☐ Concurrent use of anticoagulants known to increase the risk of bleeding (see guideline "Peri-Operative Management of Patients on Oral Anticoagulant Therapy" via Intranet)  
☐ Acute stroke  
☐ Thrombocytopaenia (platelets below 75 x10<sup>9</sup>/l)  
☐ Uncontrolled systolic hypertension (230/120 mmHg or higher)

**New onset or transient Admission related**

- ☐ Surgery with significant reduction in mobility  
☐ Acute surgical admission with inflammatory or intra-abdominal condition  
☐ Hip or lower limb fracture  
☐ Immobility e.g. paraplegia, SPD, critical care admission  
☐ Dehydration  
☐ Severe infection, e.g. pyelonephritis, wound, chest  
☐ Mid-cavity rotational operative delivery  
☐ Prolonged labour (24 hours or more)  
☐ Delivery by caesarean section  
☐ PPH > 1 litre or blood transfusion  
☐ Pre-eclampsia

**Admission related**

- ☐ Lumbar puncture/ epidural/ spinal anaesthesia within the previous 4 hour  
☐ Neurosurgery, spinal surgery or eye surgery  
☐ Other procedure with high bleeding risk  
☐ Lumbar puncture/ epidural/ spinal anaesthesia expected within the next 12 hours

**Thrombosis risk factors present but no prophylaxis prescribed: state reason why** (e.g. already on anticoagulation therapy, bleeding risk outweighs thrombosis risk) .....

Thrombosis risk factors present: ☐ dalteparin prescribed  
☐ and/or mechanical prophylaxis prescribed  
☐ VTE leaflet given

☐ No risk factors present

**Action taken (see overleaf for advice)**

by Midwife Signature: ..... Print name: .....  
 Prescriber Signature: ..... Print name: .....

WPR37533  
 May 2013  
 FLUOR GREEN

### THROMBOSIS RISKS

**All women should receive adequate hydration and be encouraged to mobilise early Antenatal and continuing pregnancy:**

<b>Known to have thrombophilia or history of VTE</b>	<input type="checkbox"/> See table 1 in the Maternity Guidelines (MSG 20)
Admission with 1 or more risk factors or more persisting	<input type="checkbox"/> Anti-embolic stockings and LMWH whilst inpatient. If 3 risk factors consider continuing throughout pregnancy and for 6 weeks postpartum
Hyperemesis, ovarian hyperstimulation syndrome, medical comorbidities or ANY surgery	<input type="checkbox"/> Anti-embolic stockings and LMWH whilst inpatient. If persisting risk factors consider continuing throughout pregnancy
<b>Significant active medical comorbidities</b> e.g. heart or lung disease, SLE, cancer, inflammatory conditions, nephritic syndrome >3 g/day, sickle cell disease, Myeloproliferative disorders e.g. polycythaemia or Thrombocythemia	<input type="checkbox"/> <b>Any risk factor:</b> <ul style="list-style-type: none"> <li>• "Anti-embolic stockings"</li> <li>• Consider antenatal prophylaxis with LMWH</li> <li>• <b>Consider continuing for 6 weeks postnatal</b></li> </ul>
Intravenous Drug user	<input type="checkbox"/> Anti-embolic stockings and may require antenatal LMWH – discuss with Haematologist

#### Postnatal:

<b>Vaginal delivery</b>	
BMI 35 – 40 with 2 or more risk factors OR Most recent BMI greater than or equal to 40 kg/m <sup>2</sup> )	<input type="checkbox"/> At least 7 days LMWH and anti-embolic stockings for 6 weeks
<b>Caesarean section</b>	
Delivery by caesarean section (Elective or Emergency)	<input type="checkbox"/> At least 7 days LMWH and anti-embolic stockings If persisting risk factors e.g. BMI over 40 kg/m <sup>2</sup> or age over 35 consider extending LMWH for up to 6 weeks
<b>Known to have thrombophilia or history of VTE</b>	<input type="checkbox"/> See table 1 in the Maternity Guidelines (MSG 20)

**Prescriptions:** Prescribe anti-embolic stockings on prescription and administration record chart. Check serum creatinine when prescribing first dose of dalteparin. If creatinine is greater than 150micromol/L, dalteparin dose should be reduced to 20mg daily.

Weight	Recommended Dalteparin dose
Less than 50kg	2500 units daily
50-90kgs	5000 units daily
91-170kg	7500 units daily
Greater than 170kg	75 units/kg/daily (may be given in divided doses)

A plan for ongoing thromboprophylaxis (if required) should be documented on the case notes.

**Contraindications to dalteparin:** patients with acute bacterial endocarditis, active major bleeding and conditions with a high risk of uncontrolled haemorrhage, including recent haemorrhagic stroke; thrombocytopenia in patients with a positive in-vitro aggregation test in the presence of dalteparin (Heparin Induced Thrombocytopaenia); active gastric or duodenal ulceration; hypersensitivity to either dalteparin sodium, heparin or its derivatives including other Low Molecular Weight Heparins; hyperkalaemia.

**Contraindications to anti-embolism stockings (anti-embolic stockings):** peripheral arterial disease (suspected or proven); peripheral artery bypass grafting; peripheral neuropathy or other sensory impairment; fragile skin, gangrene, dermatitis or recent skin graft; known allergy to material; cardiac failure, severe leg oedema or pulmonary oedema from congestive heart failure, unusual leg size or shape, major limb deformity preventing correct fit.

NB: Note Neither LMWH or Warfarin are contraindicated in breast feeding



## APPENDIX 3 – LOWER LIMB POP RISK ASSESSMENT

## Lower Limb POP Risk Assessment

HMR 2	<p><b>Doncaster and  Bassetlaw Hospitals</b></p> <p>NHS Foundation Trust</p> <p><b>RISK ASSESSMENT FOR VTE FOR PATIENTS WITH LOWER LIMB CASTS</b></p>	<p style="text-align: right; font-size: 0.8em;">AFFIX LABEL HERE IF AVAILABLE</p> <p>NHS Number: .....</p> <p>District Number: .....</p> <p>Surname: .....</p> <p>Forename(s): .....</p> <p>Address: .....</p> <p>D.o.B.: .....</p>																																	
<p>Date of Risk Assessment: ..... Time: .....</p> <p>Please state your approximate: Weight: ..... Height: .....</p>																																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #f2f2f2;"> <th style="text-align: left; padding: 5px;">Clotting Risk</th> <th style="text-align: center; padding: 5px;">Yes</th> <th style="text-align: center; padding: 5px;">No</th> </tr> </thead> <tbody> <tr><td style="padding: 5px;">Are you currently undergoing or, in the past received treatment for cancer?</td><td style="text-align: center; padding: 5px;"><input type="checkbox"/></td><td style="text-align: center; padding: 5px;"><input type="checkbox"/></td></tr> <tr><td style="padding: 5px;">Any personal history or family history of blood clots?</td><td style="text-align: center; padding: 5px;"><input type="checkbox"/></td><td style="text-align: center; padding: 5px;"><input type="checkbox"/></td></tr> <tr><td style="padding: 5px;">Do you have any known blood disorder? (e.g. Factor V Leiden, antithrombin deficiency, Protein C or S deficiency)</td><td style="text-align: center; padding: 5px;"><input type="checkbox"/></td><td style="text-align: center; padding: 5px;"><input type="checkbox"/></td></tr> <tr><td style="padding: 5px;">Any use of oral HRT (Hormone replacement therapy)?</td><td style="text-align: center; padding: 5px;"><input type="checkbox"/></td><td style="text-align: center; padding: 5px;"><input type="checkbox"/></td></tr> <tr><td style="padding: 5px;">Use of oestrogen-containing contraceptive therapy?</td><td style="text-align: center; padding: 5px;"><input type="checkbox"/></td><td style="text-align: center; padding: 5px;"><input type="checkbox"/></td></tr> <tr><td style="padding: 5px;">Have you had surgery on the lower limbs within the last six weeks?</td><td style="text-align: center; padding: 5px;"><input type="checkbox"/></td><td style="text-align: center; padding: 5px;"><input type="checkbox"/></td></tr> <tr><td style="padding: 5px;">Have you undertaken recent long-distance travel? (a journey by car / train / bus / plane lasting longer than 4 hours in the last 4 weeks)</td><td style="text-align: center; padding: 5px;"><input type="checkbox"/></td><td style="text-align: center; padding: 5px;"><input type="checkbox"/></td></tr> <tr><td style="padding: 5px;">Are you pregnant or less than 6 weeks post-delivery?</td><td style="text-align: center; padding: 5px;"><input type="checkbox"/></td><td style="text-align: center; padding: 5px;"><input type="checkbox"/></td></tr> <tr><td style="padding: 5px;">Do you have varicose veins with phlebitis?</td><td style="text-align: center; padding: 5px;"><input type="checkbox"/></td><td style="text-align: center; padding: 5px;"><input type="checkbox"/></td></tr> <tr><td style="padding: 5px;">Have you had an admission to hospital within the last 6 weeks?</td><td style="text-align: center; padding: 5px;"><input type="checkbox"/></td><td style="text-align: center; padding: 5px;"><input type="checkbox"/></td></tr> </tbody> </table>			Clotting Risk	Yes	No	Are you currently undergoing or, in the past received treatment for cancer?	<input type="checkbox"/>	<input type="checkbox"/>	Any personal history or family history of blood clots?	<input type="checkbox"/>	<input type="checkbox"/>	Do you have any known blood disorder? (e.g. Factor V Leiden, antithrombin deficiency, Protein C or S deficiency)	<input type="checkbox"/>	<input type="checkbox"/>	Any use of oral HRT (Hormone replacement therapy)?	<input type="checkbox"/>	<input type="checkbox"/>	Use of oestrogen-containing contraceptive therapy?	<input type="checkbox"/>	<input type="checkbox"/>	Have you had surgery on the lower limbs within the last six weeks?	<input type="checkbox"/>	<input type="checkbox"/>	Have you undertaken recent long-distance travel? (a journey by car / train / bus / plane lasting longer than 4 hours in the last 4 weeks)	<input type="checkbox"/>	<input type="checkbox"/>	Are you pregnant or less than 6 weeks post-delivery?	<input type="checkbox"/>	<input type="checkbox"/>	Do you have varicose veins with phlebitis?	<input type="checkbox"/>	<input type="checkbox"/>	Have you had an admission to hospital within the last 6 weeks?	<input type="checkbox"/>	<input type="checkbox"/>
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FOR MEDICAL USE ONLY																																			
<p>Is thromboprophylaxis indicated? <span style="float: right;"><input type="checkbox"/> Yes <input type="checkbox"/> No</span></p> <p>If 'No', specify reason why: .....</p>																																			
<p>Has thromboprophylaxis been prescribed? <span style="float: right;"><input type="checkbox"/> Yes <input type="checkbox"/> No</span></p>																																			
Drug:	Dose:	Duration:																																	
Signature of prescriber:		Date:																																	

## APPENDIX 4 – HOW TO COMPLETE THE VTE RISK ASSESSMENT

### How to complete the VTE Risk Assessment

Doncaster and Bassetlaw Hospitals **NHS**  
NHS Foundation Trust

## How to complete the VTE Risk Assessment

**Doncaster and Bassetlaw Hospitals NHS Foundation Trust**  
**VTE RISK ASSESSMENT AND DEMENTIA SCREENING**

Date:         Time:     Ward:

Age:  If the patient is aged 75 or over, complete Dementia Risk Assessment overleaf

**Handwrite using 'magic pen'**

NHS Number:   
District Number:   
Surname:   
Forename(s):   
Address:   
D.O.B.:

**Yes** for emergencies  
**No** for elective (unless consultant advises otherwise)

**Yes** for patients having any GA surgery and any LA surgery with reduced mobility (eg hernia repair)

**Acute illness**  
☐ Yes ☐ No  
Patient expected to have ongoing reduced mobility relative to normal state  
☐ Yes ☐ No

**No = No = Low Risk**  
Tick 'low risk' below and sign the form. Give VTE information leaflet.  
One or more 'Yes' Complete full risk assessment, indicate risk level and sign the form. Give VTE information leaflet.

**THROMBOSIS RISK**

Patient Related	Tick	Admission related	Tick
Active cancer or cancer treatment		Significantly reduced mobility for 3 days or more	
Age >60 years		Hip or Knee replacement	
Dehydration		Hip fracture	
Known thrombophilia		Total anaesthetic + surgical time > 90 minutes	
Obesity (BMI >30)		Critical Care admission	
One or more significant medical comorbidities (eg heart disease, renal, liver, endocrine or respiratory pathologies; acute infectious diseases; inflammatory conditions)		Acute admission with inflammatory or intra-abdominal condition	
Personal history or first-degree relative with a history of VTE		Surgery involving pelvis or lower limb with a total anaesthetic + surgical time > 60 minutes	
Use of hormone replacement therapy		Surgery with significant reduction in mobility	
Use of oestrogen-containing contraceptive therapy			
Varicose Veins with phlebitis			
Pregnancy or <6 weeks post partum			

**Check with surgeon if unsure**

**BLEEDING RISK**

Patient Related	Tick	Admission related	Tick
Active bleeding		Neurosurgery, spinal surgery or eye surgery	
Acquired bleeding disorder (such as acute liver failure)		Other procedure with high bleeding risk	
Concurrent use of anticoagulants known to increase the risk of bleeding (such as warfarin with INR >2)		Lumbar puncture / epidural / spinal anaesthesia expected within next 12 hours	
Acute stroke		Lumbar puncture / epidural / spinal anaesthesia within the previous 4 hours	
Thrombocytopenia (platelets <75x10 <sup>9</sup> /l)			
Uncontrolled systolic hypertension (230 / 120 mmHg or higher)			
Untreated inherited bleeding disorders (such as haemophilia and von Willebrand's disease)		Smoker? <input type="checkbox"/> Yes <input type="checkbox"/> No	

Please note that this question does not form part of the risk assessment

**Clinical Decision**  
☐ Low risk, no thromboprophylaxis required  
☐ Thromboprophylaxis contraindicated  
☐ High risk, Thromboprophylaxis indicated  
☐ VTE patient information leaflet given

Signature: \_\_\_\_\_ Print Name: \_\_\_\_\_ Designation: \_\_\_\_\_

WPR3721  
Sept 2012  
TJLMO GREEN

PTO for Dementia Risk Assessment

**ALL Patients Order—WPR30721**

**Note:** If patient is high risk but contraindicated for both (Daltaparin and TEDS), tick 'Contraindicated'. If contraindicated for one, presume the other

The following patient groups are exempt from completing the VTE Risk Assessment:

- Haemodialysis
- Endoscopy
- Chemotherapy
- Ophthalmological procedures with local anaesthetic/regional/sedation and not full general anaesthetic
- Non-cancer ENT surgery lasting less than 90 minutes with local anaesthetic/regional/sedation and not full general anaesthetic
- Non-cancer plastic surgery lasting less than 90 minutes with local anaesthetic/regional/sedation and not full general anaesthetic
- Non cancer dental and maxilla-facial surgery lasting less than 90 minutes with local anaesthetic/regional/sedation and not full general anaesthetic
- Other similar minor procedures lasting less than 90 minutes to be signed off by the medical director with local anaesthetic/regional/sedation and not full general anaesthetic

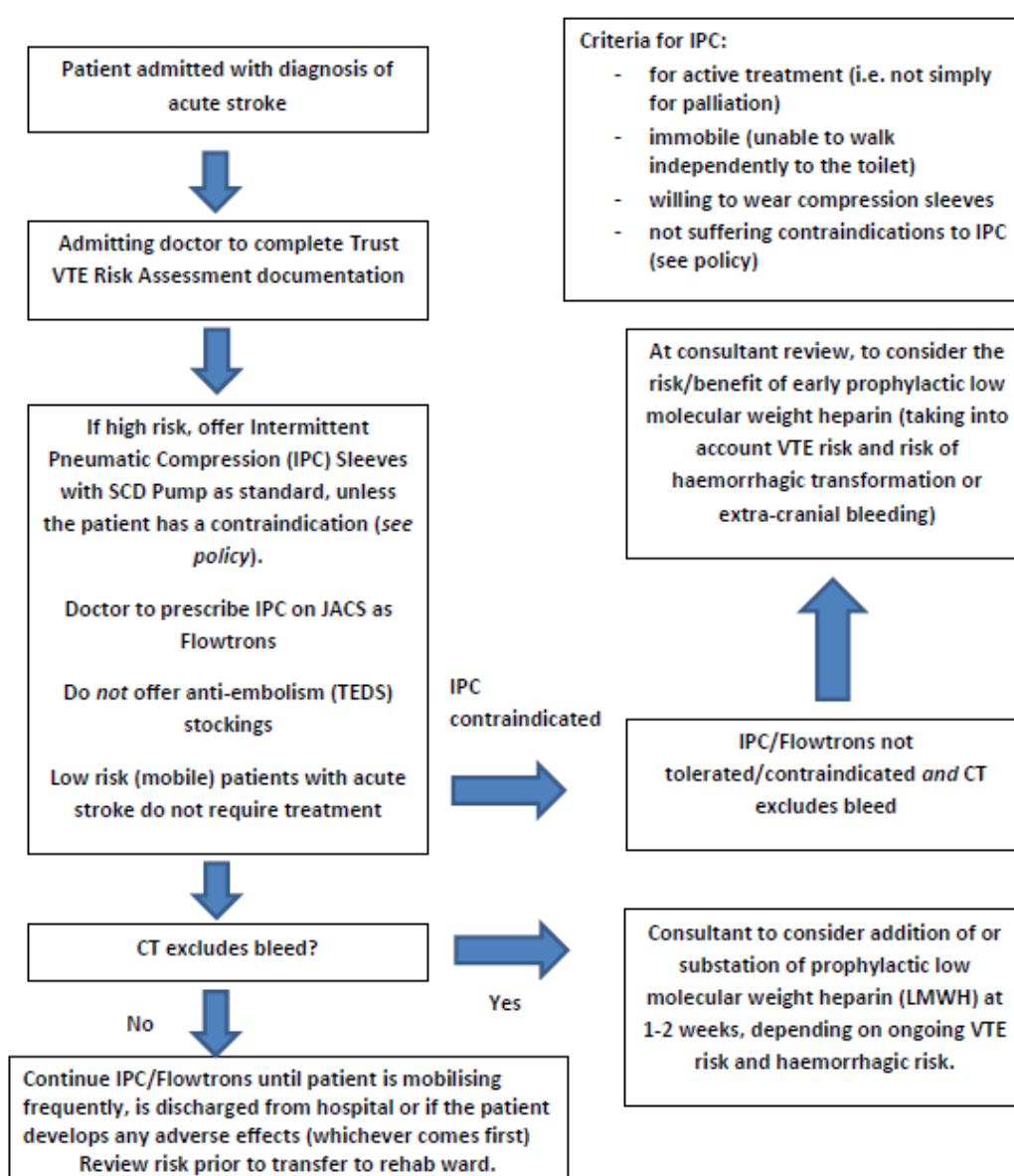
## APPENDIX 5 – MANAGEMENT OF VTE RISK IN STROKE PATIENTS: DECISION TREE



Doncaster and Bassetlaw  
Teaching Hospitals  
NHS Foundation Trust

### Management of VTE Risk in Stroke Patients: Decision Tree

This document should be used in conjunction with 'Venous Thromboembolism (VTE) – Prevention and Treatment of VTE in Patients Admitted to Hospital' PAT/T 44 v.3. and the 'Standard Operational Policy: The use of Intermittent Pneumatic Compression sleeves (IPC) in Stroke Patients'



Revised and approved by Stroke Clinical Governance Group 05.07.17

Issued: July 2017

Review Date: July 2020

## APPENDIX 6 – GUIDANCE FOR VTE PROPHYLAXIS

### Guidelines for VTE prophylaxis – Department of Orthopaedic & Trauma Surgery Doncaster and Bassetlaw Hospitals NHS Foundation Trust (March 2021)

#### PRESCRIBING NOTES:

Any of the patient related risk factors *in combination with* admission related risk factors (as included in the risk assessment tool), increases the risk of VTE and therefore must be considered for prophylaxis

Assess all patients on admission to identify those who are at increased risk of VTE. Assess bleeding risk. Balance risks of VTE and bleeding. Trust approved assessment forms provided on ward/in clinic to be completed for all patients

Offer VTE prophylaxis where appropriate. Do not offer pharmacological VTE prophylaxis if the patient has any risk factor for bleeding and risk of bleeding outweighs risk of VTE.

Reassess the risks of VTE and bleeding within 24 hours of admission and whenever the clinical situation changes. Also review the risk assessment at discharge, when the patient would usually be switched from dalteparin to aspirin. Where low mobility patients are discharged to rehabilitation wards (or nursing homes, etc) this would allow the patient to remain on dalteparin.

If the patient is pregnant discuss with Haematologist before starting treatment after doing the regular assessment.

Discussion with patients to be had after assessment forms analysed on the Department guidelines which reflects current recognised practice for DVT prophylaxis.

Policy applies to all patients 18 years and above as per Trust guidelines.

The Consultants of the Trauma and Orthopaedic Directorate have unanimously agreed the above guideline. Discussions have taken place with the PSRG.

These guidelines have been formulated in line with emerging evidence and the guidelines used by the American Academy of Orthopaedic Surgeons and the American College of Chest Physicians.

Author: Mr Vivek Panikkar, Consultant Orthopaedic Surgeon & VTE Lead  
Approved by Drug and Therapeutics Committee/Patient Safety Review Group/Orthopaedic Clinical Governance Group: March 2021  
Review Date: March 2024

1

## RECOMMENDATIONS TO BE CONSIDERED FOR SPECIFIC INDICATIONS:

**ELECTIVE:****High Risk Hip & Knee Replacement (previous PE/DVT, inherited or acquired thrombophilia, active cancer or treatment for cancer)**

- Use regional anaesthesia when possible, consider calf mechanical prophylaxis
- Dalteparin 5000units\* s/c in the EVENING to start 6 hours post-op and continued whilst patient in hospital (for those patients prescribed rivaroxaban).
- Then Rivaroxaban 10mg once DAILY for 6 weeks started at discharge. If unable to have Rivaroxaban, Warfarin (target INR 2.5 range 2 to 3) for 6 weeks started the day following surgery (continue dalteparin until INR therapeutic for two consecutive days). In active cancer or treatment for cancer, continue with Dalteparin 5000units\* s/c in the EVENING for 6 weeks following surgery.

**Standard Risk Hip & Knee Replacement**

- Use regional anaesthesia when possible, consider mechanical prophylaxis
- Dalteparin 5000units\* s/c in the EVENING to start 6 hours post-op and continued whilst patient in hospital.
- Then Aspirin 150mg once DAILY for 6 weeks to commence on discharge (where aspirin intolerant, consider substituting with dalteparin or rivaroxaban instead: for 10 days for knee replacement and 30 days for hip replacement)

**Hip Arthroscopy**

- Dalteparin 5000units\* s/c in the EVENING to start 6 hours post-op, continued for 3 weeks.

**Peri-acetabular Osteotomies**

- Dalteparin 5000units\* s/c in the EVENING to start 6 hours post-op and continued for 3 weeks post-op.

**Spinal Surgery/Fractures**

- All patients to receive anti-thromboembolism (TED) stockings before going to theatre and continue with these until fully mobile/additional mechanical prophylaxis can be considered if appropriate
- If high risk (previous PE/DVT, inherited or acquired thrombophilia, active cancer or treatment for cancer), consider Dalteparin 5000units\* s/c in the EVENING to start 48 hours after surgery and continued whilst patient in hospital.

**Shoulder and Upper Limb Surgery**

- No specific prophylaxis required. Consider calf pumps/anti-thromboembolism (TED) stockings.

**Foot and Ankle Surgery**

- Use regional anaesthesia when possible.
- Hindfoot/Tendo Achilles reconstruction /Ankle fusion: Dalteparin 5000units\* s/c in the EVENING to start 6 hours post-op and until discharge.  
Then Aspirin 150mg once DAILY for 6 weeks to commence on discharge (where aspirin intolerant, consider substituting with Rivaroxaban 10mg once DAILY or Dalteparin 5000units s/c in the EVENING instead for period in plaster).
- FOREFOOT: Dalteparin 5000units\* as a single dose post-op.

Author: Mr Vivek Panikkar, Consultant Orthopaedic Surgeon & VTE Lead 2  
 Approved by Drug and Therapeutics Committee/Patient Safety Review Group/Orthopaedic Clinical Governance Group: March 2021  
 Review Date: March 2024



**TRAUMA:****Fractured Neck of Femur**

- Dalteparin 5000units\* in the EVENING to start 6 hours post-op, continued whilst patient in hospital.
- Then Aspirin 150mg once DAILY for 6 weeks to commence on discharge.
- If aspirin inappropriate, Dalteparin 5000units\* in the EVENING for 6 weeks following surgery.

**Pelvic Fracture**

- Dalteparin 5000units\* in the EVENING to start 6 hours post-op, continued whilst patient is still restricted in terms of mobility.

**Lower Limb Fractures(Guidance remains the same if foot included or not included in cast)**

**High Risk patients with Lower Limb Plaster Casts (previous PE/DVT, inherited or acquired thrombophilia, active cancer or treatment for cancer)**

- Dalteparin 5000units\* in the EVENING to start 6 hours post-op, continued whilst patient in hospital (for those patients prescribed rivaroxaban).
- Then Rivaroxaban 10mg once DAILY for six weeks. If unable to have Rivaroxaban, Warfarin (target INR 2.5 (range 2 - 3) for 6 weeks started the day following surgery (continue dalteparin until INR therapeutic for two consecutive days).

**Standard Risk patients with Lower Limb Plaster Casts**

- Dalteparin 5000units\* in the EVENING to start 6 hours post-op, continued whilst patient in hospital
- Then Aspirin 150mg once DAILY while patient is in a cast. Once plaster is removed provided patient is full weight bearing and ankle is free to mobilise Aspirin can be discontinued. Aspirin can be considered for a longer period of time if patient continues to struggle with mobilisation and is non-weight bearing.

**Upper Limb Fractures/Surgery**

- No specific prophylaxis required. Consider calf pumps/anti thromboembolism (TED) stockings intra operatively.

**Dalteparin Dosing Recommendations:**

5000units in the EVENING

If eGFR< 20ml/min\*, use 2500units in the EVENING

(\* this lower dose should also be used in all those with evidence of acute kidney injury (oliguria over 12 hours or doubling of serum creatinine) – including obese patients

Prophylaxis in Extremes of Body Weight (unlicensed):

Weight (kg)	Dose
<45	2500units in the EVENING
100-149	7500units in the EVENING
>149	5000units TWICE DAILY

All patients with history of acid peptic disease/reflux and or associated symptoms to be provided with GI protection for the duration of Aspirin treatment. This will usually be Lansoprazole 15 mgs od.

**Aspirin dosing in patients admitted taking antiplatelets:**

General advice is to add Aspirin 75mg daily for those patients taking Clopidogrel alone. This 75mg daily dose can also be used in those already taking aspirin on admission, who are not concomitantly taking Clopidogrel, in order to achieve continuity, e.g. for those patient whose regular medicines are dispensed in a MDS. For patients admitted on dual antiplatelet therapy eg, Aspirin and Ticagrelor, seek advice from a consultant cardiologist.

Author: Mr Vivek Panikkar, Consultant Orthopaedic Surgeon & VTE Lead

Approved by Drug and Therapeutics Committee/Patient Safety Review Group/Orthopaedic Clinical Governance Group: March 2021

Review Date: March 2024

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## APPENDIX 7 – PREVENTING BLOOD CLOTS WHILE YOU'RE IN HOSPITAL



Doncaster and Bassetlaw  
Teaching Hospitals  
NHS Foundation Trust

### Preventing blood clots while you're in hospital

#### What is deep vein thrombosis?

Whenever we cut ourselves, our blood hardens and a scab forms. This process is called blood clotting, or coagulation. Sometimes, a clot of blood can occur within a blood vessel, forming a 'plug' that can interrupt the normal flow of blood, a condition called thrombosis. When a clot forms in a vein deep within the leg, this is called deep vein thrombosis (DVT).

#### Why does blood clot?

Blood clotting is a natural, protective mechanism that is triggered by the body in response to a cut or wound and prevents you from bleeding too much. The blood-clotting process is a complex sequence of chemical reactions. Your blood contains blood clotting proteins, anti-clotting proteins and cells called platelets, all of which are important in this process. Thrombosis can occur as a result of inactivity (for example, prolonged bed rest) or inflammatory illnesses. Some people are born with abnormalities of the clotting or anti-clotting proteins in the blood that increase their risk - this is known as thrombophilia. This can sometimes be associated with a family history of blood clots.

#### Is a DVT serious?

If the blood clot stays in the leg, it may not cause serious problems and some clots cause no symptoms at all. After large clots, long-term swelling and discomfort in the leg can result. If a clot becomes dislodged from the vein in the leg, it can travel through the circulation to reach, and block, the blood vessels in the lungs, a condition called pulmonary embolism (PE).

This condition can be trivial or life threatening, depending on the size of the clot.

Because symptoms of a PE can be the first sign of a problem, it is very important to prevent clots from forming in the first place.



WPR30726 June 2018 Review date: June 2020

### Why might I be at risk of developing blood clots?

There are several risk factors that increase your chances of developing a DVT or PE. These are commonly seen in patients in hospital.

The main risk factors include:

- major operations
- reduced mobility
- pregnancy
- trauma (fractures)
- acute medical illness
- stroke or paralysis
- cancer and its treatments
- some oral contraceptives or Hormone Replacement Therapy (HRT) - see below\*
- smoking
- previous blood DVT or PE
- a known blood abnormality causing a clotting tendency (thrombophilia) or family history of clots.

Current guidance for women on HRT or oestrogen-containing oral contraceptives undergoing any elective (non-emergency) surgery is to consider temporarily stopping these 1 month before surgery. You may wish to discuss this with your General Practitioner (GP) or surgeon. Women who do stop the oral contraceptive should be aware of the possibility of pregnancy and consider alternative methods of contraception. You are still likely to benefit from other forms of clot prevention.

### What can be done to prevent blood clots?

When you are admitted to hospital, you will have a clotting risk assessment performed and, if you are found to be at risk, measures will be put in place to address this.

These include:

#### Anti-thrombotic stockings (TED stockings)

Unless there is a good reason not to, eg poor circulation or nerve damage to the feet and legs common in diabetes, all surgical patients will be given anti-thrombotic stockings to wear while in hospital, and for six weeks after the operation. They should be worn day and night and not removed for more than 30 minutes a day (for bathing). It is important that the stockings are fitted properly, so that they will have the desired effect in preventing clotting. If your stockings are falling down or too tight, speak to a trained nurse who will be able to measure your legs and issue a more appropriate stocking. The stockings are designed to be washed up to 30 times. Wash them by hand, using a mild detergent in warm water and dry naturally.

#### VTE Prophylaxis Group



### Anticoagulants

If you are felt to be at high risk of clotting, you will also be prescribed an anticoagulant or 'blood-thinner'. These work with the body's natural anti-clotting system to prevent blood clots.

#### What type of anticoagulant is used?

One commonly prescribed anti-coagulant is Dalteparin, a type of heparin. It is given by your nurse as an injection, once every day, while you are in hospital.

For most patients and most operations, you will be given Dalteparin until you are fully mobile. This will normally be less than a week. In certain cases, your doctor may decide that you need to continue with Dalteparin for a while after you go home from hospital. If this is the case, the doctor or nursing staff will discuss this with you before you are discharged. Dalteparin is easy to inject at home and can be done either by you or a relative. Do not hesitate to ask about anything that concerns you - injecting at home is easy, and it is important that you feel confident about doing so. If you are unable to manage this, a district nurse will be asked to visit to give you the injection.

If you are undergoing orthopaedic or podiatric surgery, you may be given aspirin (an oral antiplatelet tablet) or rivaroxaban (an oral anticoagulant) to take home. Aspirin is only recommended by NICE for certain types of operations (hip or knee replacements) but local guidelines (based on recommendations from the American College of Chest Physicians) suggest wider use of aspirin. You can choose to be treated in accordance with NICE guidance, if you would prefer, or you can discuss these options with your surgeon.

#### Are there any side effects with Dalteparin?

It is unlikely that you will experience any problems with Dalteparin.

However, you should contact your doctor immediately, day or night, if you:

- feel chest pains or develop shortness of breath
- injure yourself, particularly on your head, eyes or joints
- cut yourself and bleed heavily
- have nose bleeds or your gums bleed heavily
- have a very heavy menstrual period
- notice unexpected bruises, such as brown or black spots on the skin
- vomit blood or something that looks like coffee-grounds

### VTE Prophylaxis Group

- pass blood in your urine or motions (either obvious blood or sticky, black stools)
- develop a sudden change in your general health, eg vomiting, diarrhoea, fever, etc.

### **What happens once I am out of hospital?**

Continue to wear your compression stockings if you have been issued with them. Once your recovery is under way, the best thing to do is exercise. Blood that is moving is less likely to clot. Exercise, eg walking, helps the blood to circulate and can help to prevent DVT. Regular, gentle exercise is something you should try to incorporate into your daily routine, if your health allows you. Not only will it help you keep your weight down, but it will also make you feel fitter and more energetic. You should ask your doctor what exercise is safe for you to do and when you can start.

### **What are the signs and symptoms of a DVT or PE?**

If you experience any of the following signs or symptoms, you should inform a member of the healthcare team or your GP immediately:

#### **DVT**

- calf pain in either leg (throbbing, tightness)
- swelling of one leg, which is new or increasing
- any redness/skin inflammation to your calf/thigh area.

#### **PE**

- breathlessness
- coughing up blood-stained phlegm
- chest pain or discomfort, especially worsened on deep breathing or coughing
- cyanosis (a bluish tinge to the complexion due to lack of oxygen)
- sudden collapse.

**If you experience any of these symptoms, call a doctor immediately.**

### **Patient Experience Team**

The team are available to help with any concerns, complaints or questions you may have about your experience at the Trust. Their office is in the Main Foyer (Gate 4) of Doncaster Royal Infirmary. Contact can be made either in person, by telephone or email.

**The contact details are:** Telephone: 01302 642764 or 0800 028 8059


Email: [dbth.pals.dbh@nhs.net](mailto:dbth.pals.dbh@nhs.net)

**VTE Prophylaxis Group**



## APPENDIX 8 – DVT &amp; PE IPOC

## DVT &amp; PE IPOC

 <b>Doncaster and Bassetlaw Teaching Hospitals</b> NHS Foundation Trust <b>DVT &amp; PE (VTE) IPOC</b>		<small>ATTACH LABEL HERE IF AVAILABLE</small> NHS Number: _____ District Number: _____ Surname: _____ Forename(s): _____ Address: _____ D.O.B.: _____	
Hospital: <input type="checkbox"/> Doncaster <input type="checkbox"/> Montagu <input type="checkbox"/> Bassetlaw		Consultant: _____	
Arrival Date: _____ Arrival Time: _____ Nurse: _____ Time Nurse seen: _____ Doctor: _____ Time Doctor seen: _____		Age: <input type="text"/> GP: _____	
Referred by: <input type="checkbox"/> GP <input type="checkbox"/> ED <input type="checkbox"/> Surgical <input type="checkbox"/> Medical <input type="checkbox"/> In hospital <input type="checkbox"/> Obstetrics Next of kin (name): _____ Relationship: _____ Tel.: _____			
Presenting Complaint:		Drugs:	
History of Presenting Complaint:			
Past Medical History:		Known Allergies and reactions: Please attach label <div style="border: 1px solid black; padding: 5px;"> <b>WARNING - the patient is:</b>          Sensitive to: _____          Allergic to: _____          On Anticoag type: _____          On Steroids type: _____  <input type="checkbox"/> Latex sensitive Date: _____  <input type="checkbox"/> MRSA Date: _____  <input type="checkbox"/> C. Diff Date: _____  <input type="checkbox"/> None known       </div>	



WYR24524  
Oct 2018  
WYRTE

Systematic Enquiry:	
Social History:	
<b>Examination:</b> <b>Baseline Observations:</b> BP: _____ / _____ Pulse: _____ bpm Temp: _____ °C Resp: _____ pm SpO <sub>2</sub> : _____ % Height: _____ m Weight: _____ kg BMI: _____ <b>Leg Measurements: (10 cm below tibial tuberosity)</b> Left Calf Measurement: _____ cm Right Calf Measurement: _____ cm	
CVS:	Other:
RS:	
Abdo/Legs:	Complete clinical assessment and pre-test probability scoring to guide Ddimer use before embarking on imaging investigations DVT in non-pregnant patient - page 8 DVT in pregnancy - page 9 PE in non-pregnant patient - page 10 PE in pregnancy - page 11
	<b>REQUEST ECG / CXR IF SUSPECTED PE</b> <b>– INCLUDING IF PREGNANT</b>
	Offer an immediate treatment dose of LMWH (Dalteparin) if PE investigations will take >1 hour from clinical suspicion, or DVT investigations will take > 4 hours from clinical suspicion (NICE Quality Standards)
	Consider if suitable for Ambulatory PE Pathway if suspected or proven PE (page 3)

**Out-patient/Ambulatory Care management of suspected or proven Pulmonary Embolism (PE)**

Patients with suspected or proven PE should be assessed as to their suitability (or otherwise) for out-patient or ambulatory management.

Any decision to discharge must only be made by an Advanced Nurse Practitioner (ANP) or senior doctor (ST3 or above) – In the absence of a Consultant.

This includes pregnant patients, intravenous drug misuse (IVDU) and cancer.

Exclusion criteria for out-patient/Ambulatory care management . Any of:

- Haemodynamic instability (Systolic BP <100mmHg or pulse >100 bpm)
- Oxygen saturations < 92%
- Severe pain requiring opiate analgesia
- Social concerns/barriers to treatment adherence
- Liver or renal impairment precluding out-patient anticoagulation
- Evidence of right heart strain on CTPA or Echo (unless troponin negative)
- Other medical concerns

**CONTINUATION / SENIOR REVIEW**

	USE	Date	
		Time	
		Creat	
		Urea	
		Na+	
		K+	
		Glu	
	LFT + base	TProt	
		Albumin	
		Globulin	
		ALP	
		ALT	
		GGT	
		TBilirubin	
		CBl	
		Ca <sup>2+</sup>	
		Corr Ca <sup>2+</sup>	
	FBC	Hb	
		WCC	
		Neutro	
		MCV	
		Plt	
	Clotting	PT	
		INR	
		APTT	
		FIB	
		D-Dimer	
	Other	CRP	
		ESR	
		CK	
		Troponin	
		TSH	
		ft4	
		Date of ABG	
		Time of ABG	
	Blood Gas	FiO <sub>2</sub>	
		pH	
		PaCO <sub>2</sub>	
		PaO <sub>2</sub>	
		HCO <sub>3</sub>	
		BE	

**CONTINUATION / SENIOR REVIEW**[illegible]

**CONTINUATION / SENIOR REVIEW**[illegible]

**CONTINUATION / SENIOR REVIEW**[illegible]



**PRESCRIPTION****Dalteparin:** See dosing table Page 14**Rivaroxaban & Apixaban:** See dosing table Page 15**ONCE ONLY MEDICINES**

1. Patient away from ward      3. Patient refused dose      5. Dose not given at nurse's discretion      7. Self administration  
 2. Patient could not take dose      4. Dose not available      6. Dose not given at doctor's request

Date Prescribed	Approved name of medication	Date and time due	Dose	Route	Signature & Bleep No	Date	Given Time	Initials	Pharmacy

**DISCHARGE CHECKLIST**
☐ Treatment commenced      ☐ If no, why: \_\_\_\_\_

☐ Dalteparin shared care proforma completed and sent to GP

☐ Referral to other agency (e.g. District Nurse)

State, include date/time: \_\_\_\_\_

 Repeat bloods arranged: ☐ FBC      ☐ INR (4th day post Warfarin)      ☐ Peak Factor Xa (Day 6) in those with weight >120kg on Dalteparin

☐ Patient DVT or PE Information leaflet given

☐ DOAC/Warfarin counselling delivered or comments: \_\_\_\_\_

☐ Referred to Orthotics for Compression Stockings

☐ Referred to Breast MDT for consideration of mammography/ Review of Tamoxifen use      ☐ Not required

☐ Patient to return for repeat assessment: Date: \_\_\_\_\_      ☐ Not required

☐ Follow-up appointment at 6 weeks for Acute Medical Clinic arranged      ☐ Not required

☐ Echocardiogram requested for 6 weeks      ☐ Not required

☐ Dattx required for internal investigation if there has been (in the last 3 months) a hospital admission or recent surgery      ☐ Not required

**Transport:**      ☐ Patients own      ☐ Medicar      ☐ Ambulance – assisted/non-assisted

☐ Transport booked      Booking reference Number: \_\_\_\_\_

Designation &amp; Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date &amp; Time: \_\_\_\_\_

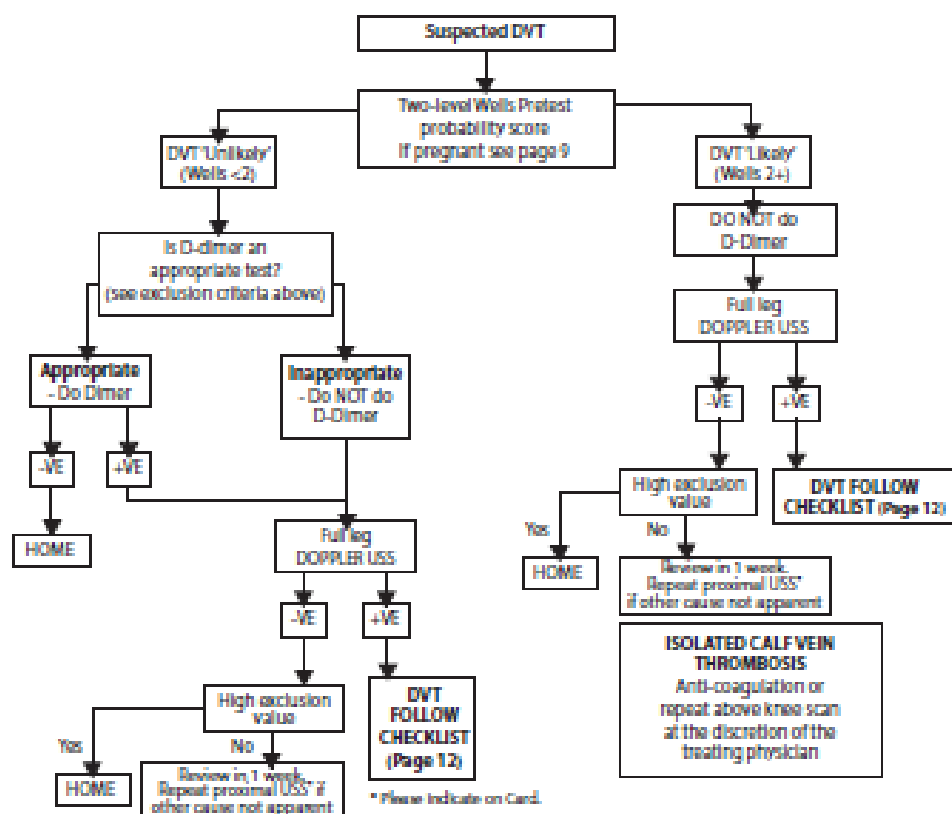
### DVT ASSESSMENT & TREATMENT IN A NON-PREGNANT PATIENT

Two-level Wells score<sup>a</sup>

Clinical Feature	Points
Active cancer (treatment ongoing within previous 6 months or palliative)	1
Paralysis, parestia, recent plaster immobilisation of the lower extremities	1
Recently bedridden for more than 3 days or major surgery within 12 weeks, requiring general or regional anaesthesia	1
Localised tenderness along the distribution of the deep venous system	1
Entire leg swollen	1
Calf swelling 3 cm larger than asymptomatic side	1
Pitting oedema confined to the symptomatic leg	1
Collateral superficial veins (non-varicose)	1
Previously documented DVT	1
An alternative diagnosis at least as likely as DVT	-2
<b>Clinical probability simplified score</b>	
DVT 'likely'	2 points or more
DVT 'unlikely'	Less than 2 points

**EXCLUSION CRITERIA FOR VTE – DIMERTEST**  
 1. All in-patients  
 2. Patients within 1 month of a surgical procedure (excluding daycase procedure)  
 3. Women in second or third trimester of pregnancy, and within one month post partum  
 4. Patients already started on Dalteparin or Warfarin  
 5. Patients with Cellulitis  
 6. Patients with recurrent DVT within 6 months  
 7. Patients with a likely clinical probability of DVT or PE  
 8. Patients with underlying malignancy who are receiving either active treatment or palliative care  
 9. Known NDU  
 All of the above mentioned patients should have Doppler Scan of legs for suspected DVT and CTPA for suspected PE without doing a D-Dimer test.

#### DIAGNOSTIC ALGORITHM



## DVT ASSESSMENT &amp; TREATMENT IN A PREGNANT PATIENT

Two-level Wells score<sup>1</sup>

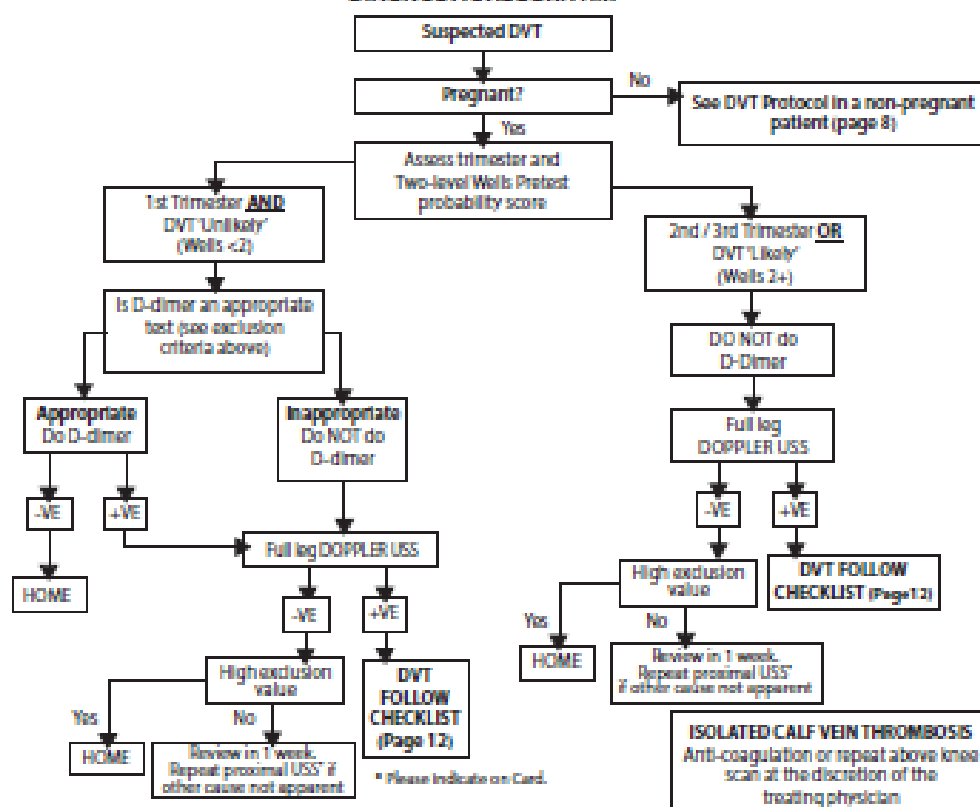
Clinical Feature	Points
Active cancer (treatment ongoing within previous 6 months or palliative)	1
Paralysis, paresthesia, recent plaster immobilisation of the lower extremities	1
Recently bedridden for more than 3 days or major surgery within 12 weeks, requiring general or regional anaesthesia	1
Localised tenderness along the distribution of the deep venous system	1
Entire leg swollen	1
Calf swelling 3 cm larger than asymptomatic side	1
Pitting oedema confined to the symptomatic leg	1
Collateral superficial veins (non-varicose)	1
Previously documented DVT	1
An alternative diagnosis at least as likely as DVT	-2
<b>Clinical probability simplified score</b>	
DVT 'likely'	2 points or more
DVT 'unlikely'	Less than 2 points

## EXCLUSION CRITERIA FOR VTE – DIMER TEST

1. ALL In-patients
2. Patients within 1 month of a surgical procedure (excluding daycase procedure)
3. Women in second or third trimester of pregnancy, and within one month post partum
4. Patients already started on Dalteparin or Warfarin
5. Patients with Collulitis
6. Patients with recurrent DVT within 6 months
7. Patients with a likely clinical probability of DVT or PE
8. Patients with underlying malignancy who are receiving either active treatment or palliative care
9. Known IDU

All of the above mentioned patients should have Doppler Scan of legs for suspected DVT and CTPA for suspected PE without doing a D-Dimer test.

## DIAGNOSTIC ALGORITHM



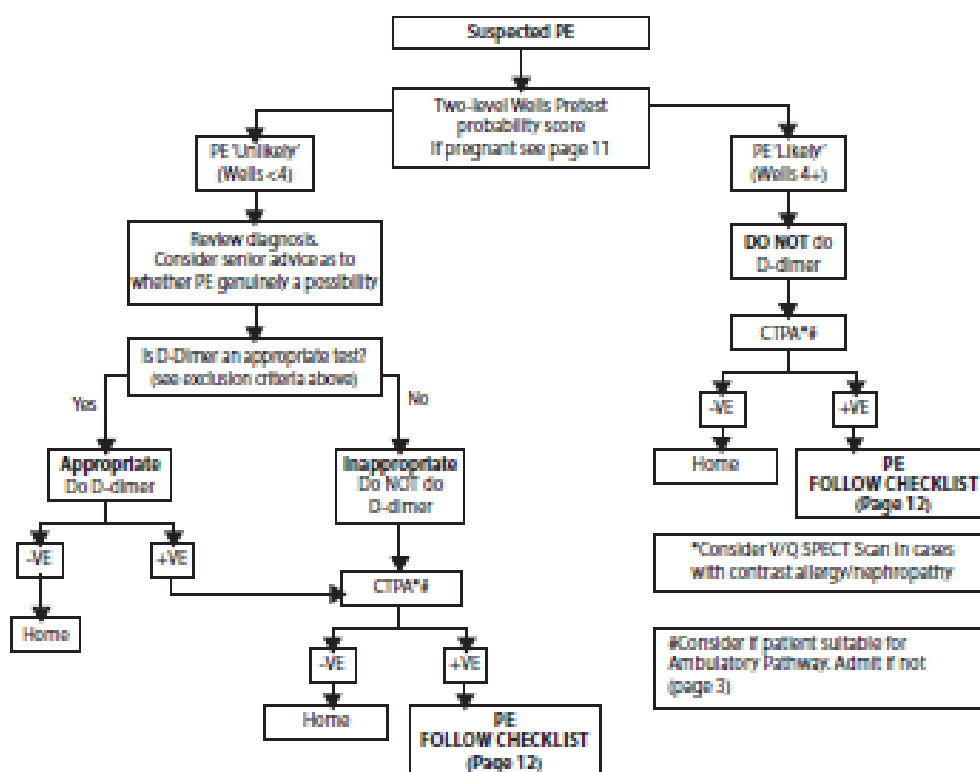
**PE ASSESSMENT & TREATMENT IN A NON-PREGNANT PATIENT****Two-level PE Wells score<sup>a</sup>**

Clinical Feature	Points
Clinical signs and symptoms of DVT (minimum of leg swelling and pain with palpation of the deep veins)	3
An alternative diagnosis is less likely than PE	3
Heart rate > 100 beats per minute	1.5
Immobilisation for more than 3 days or surgery in the previous 4 weeks	1.5
Previous DVT/PE	1.5
Haemoptysis	1
Malignancy (on treatment, treated in the last 6 months, or palliative)	1
<b>Clinical probability simplified score</b>	
PE 'likely'	More than 4 points
PE 'unlikely'	4 points or less

**EXCLUSION CRITERIA FOR VTE – DIMER TEST**

1. ALL In-patients
2. Patients within 1 month of a surgical procedure (excluding daycase procedure)
3. Women in second or third trimester of pregnancy, and within one month post partum
4. Patients already started on Dalteparin or Warfarin
5. Patients with Cellulitis
6. Patients with recurrent DVT within 6 months
7. Patients with a likely clinical probability of DVT or PE
8. Patients with underlying malignancy who are receiving either active treatment or palliative care
9. Known NDU

All of the above mentioned patients should have Doppler Scan of legs for suspected DVT and CTPA for suspected PE without doing a D-Dimer test.

**PE ASSESSMENT & TREATMENT IN A NON-PREGNANT PATIENT  
DIAGNOSTIC ALGORITHM**

### PE ASSESSMENT & TREATMENT IN A PREGNANT PATIENT

#### Two-level PE Wells score<sup>a</sup>

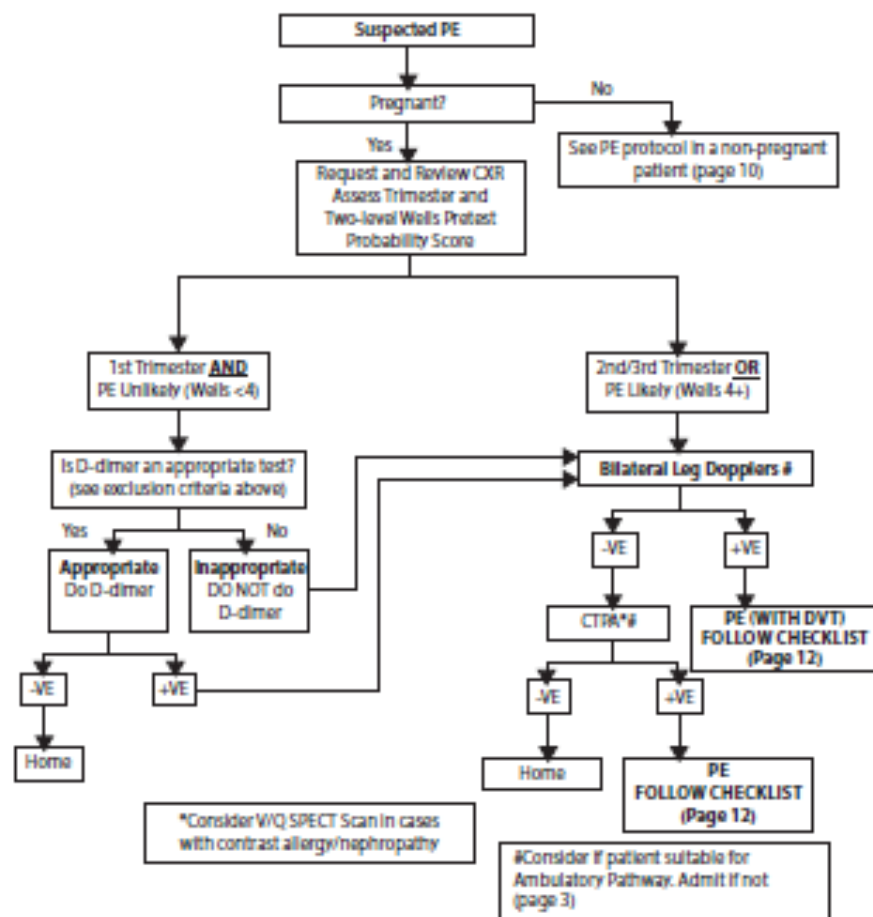
Clinical Feature	Points
Clinical signs and symptoms of DVT (minimum of leg swelling and pain with palpation of the deep veins)	3
An alternative diagnosis is less likely than PE	3
Heart rate > 100 beats per minute	1.5
Immobilisation for more than 3 days or surgery in the previous 4 weeks	1.5
Previous DVT/PE	1.5
Haemoptysis	1
Malignancy (on treatment, treated in the last 6 months, or palliative)	1
<b>Clinical probability simplified score</b>	
PE 'likely'	More than 4 points
PE 'unlikely'	4 points or less

#### EXCLUSION CRITERIA FOR VTE – DIMER TEST

1. ALL In-patients
2. Patients within 1 month of a surgical procedure (excluding daycase procedure)
3. Women in second or third trimester of pregnancy, and within one month post partum
4. Patients already started on Dalteparin or Warfarin
5. Patients with Cellulitis
6. Patients with recurrent DVT within 6 months
7. Patients with a likely clinical probability of DVT or PE
8. Patients with underlying malignancy who are receiving either active treatment or palliative care
9. Known IDU

All of the above mentioned patients should have Doppler Scan of legs for suspected DVT and CTRA for suspected PE without doing a D-Dimer test.

### PE ASSESSMENT & TREATMENT IN A PREGNANT PATIENT DIAGNOSTIC ALGORITHM



### Venous Thromboembolism (VTE) Checklist

This guidance is of relevance only if the patient has confirmed DVT / PE. Points to consider:

#### Treatment:

- Select the most appropriate anticoagulant from the table below.
- For distal DVTs, a discussion with the patient should be had. The expectation is to treat this. If for treatment, proceed as per 'Proximal DVT'.
- For patients with renal impairment (Creatinine clearance <20ml/min) offer Unfractionated Heparin (UFH).
- For those patients initiated on Warfarin, start the LMWH/UFH as soon as possible and continue for 5 days, or until the INR is >2 for at least 24 hours, whichever is the longest.
- For Guidance on the use of Dabigatran – see page 14. For Rivaroxaban/Apixaban see page 15.

#### Duration of Treatment:

- Offer anticoagulation to patients with confirmed (provoked or unprovoked) proximal DVT or PE within 24 hours of diagnosis and continue for at least 3 months in DVT and 6 months in PE.
- Offer anticoagulation beyond 3 months (i.e. long-term) to patients with an unprovoked PE or proximal DVT, taking into account the patient's risk of VTE recurrence and of bleeding. Discuss with the patient the benefits and risks of extending their anticoagulation treatment.
- Offer LMWH (dalteparin) to patients with active cancer and confirmed proximal DVT/PE, and continue anticoagulation for at least 6 months.
- Consider maintenance Aspirin therapy if not for extended duration – may reduce risk of recurrence by 1/3

#### Summary of Treatment Duration/Anticoagulation of Choice:

Patient Population	Duration	Offer	Anticoagulation of choice
Provoked proximal DVT (inc. IDU)	At least 3 months		Rivaroxaban (LMWH if pregnant)
Provoked PE (inc. IDU)	At least 6 months		Rivaroxaban (LMWH if pregnant)
Unprovoked proximal DVT	At least 3 months	Extended duration	Rivaroxaban or Warfarin
Unprovoked PE	At least 6 months	Extended duration	Rivaroxaban or Warfarin
Active cancer with proximal DVT/PE	At least 6 months	Extended duration	LMWH
Consider Aspirin (if not for extended duration) when stopping anticoagulation			
Pregnancy: Continue anticoagulation throughout pregnancy and 6 – 8 weeks post-partum			

#### Ileofemoral/upper-limb DVT:

- Consider catheter-directed thrombolytic therapy for patients with symptomatic ileofemoral DVT who have symptoms of less than 14 days duration, and good functional status, with life expectancy > 1 year, no active cancer and low bleed risk (discuss with DRI vascular team).
- All unprovoked upper limb DVTs should be discussed with DRI vascular team.
- PICC lines should not normally be removed unless directed by haematology or radiology advice.

#### Mechanical Interventions – IVC Filters (Consultant decision only):

- Offer temporary Inferior Vena Caval (IVC) filters to patients with proximal DVT / PE in whom anticoagulation is contraindicated and remove if patient becomes eligible for such treatment.
- Consider IVC filters for patients with recurrent proximal DVT / PE despite adequate anticoagulation treatment only after considering alternatives (e.g. higher INR 3-4 or LMWH).
- Ensure a strategy to remove the IVC filter at the earliest opportunity is planned (and documented) when the filter is placed, and that the strategy is reviewed regularly.

### Venous Thromboembolism (VTE) Checklist continued

#### Mechanical Interventions – Stockings

- Refer patients with proximal DVT to Orthotics for Class 2 below-knee graduated compression stockings (specify ankle pressure >23 mmHg) to be seen 1 week after diagnosis, to allow the resolution of acute swelling.
- Stockings should be worn for at least 2 years and replaced 2-3 times / year.
- Stockings should be worn day and night until mobility is regained, then during the day only.

#### Further Investigations

- All patients with proximal DVT/PE require:
  - History and physical examination
  - Further investigation guided by above, to include as a minimum:
    - Chest X-ray (unless CTPA done)
    - Bloods (including FBC, ESR, LFT, Ca2+)
    - Urinalysis

#### Further Investigations for Cancer

- In those >40 years of age, and 1st unprovoked proximal DVT / PE, consider:
  - Abdominal-pelvic CT scan
  - Mammogram in females. For those <50 yrs of age or those >50 yrs of age who have not had their 1st mammogram or those of any age who have breast symptoms or signs of concern: Please consider referral to Breast MDT stating "Consideration for mammography required as per NICE Guidelines for unexplained VTE"
  - There is no need to refer asymptomatic women over 50 years of age if they have had a mammogram in the last 3 years. Other women over the age of 50 should be advised to attend for local mammography screening.
  - Male > 60 years – PSA level
  - Male <60 years with urinary symptoms – PSA level
  - If raised ESR – myeloma screen

#### Thrombophilia Screening

- These are highly specialised investigations and should be addressed in VTE Follow-up Clinic.
- Do not offer thrombophilia testing to those requiring long-term anticoagulation therapy (see above).
- Consider testing for antiphospholipid antibodies in patients who have had unprovoked DVT or PE if it is planned to stop anticoagulation treatment (discuss with or refer to haematology).
- Consider testing for hereditary thrombophilia in patients with unprovoked DVT / PE and who have a first-degree relative who has had DVT / PE if it is planned to stop anticoagulation (discuss with or refer to haematology).
- Do not offer thrombophilia testing to patients who have had Provoked DVT / PE.
- Do not offer thrombophilia testing to first-degree relatives of patients with thrombophilia who have had DVT / PE.

#### Follow-Up

- In patients with confirmed DVT/PE offer and request follow-up in the DRI or Bassetlaw acute medical clinic at 6 weeks for review.
- Request an out-patient echocardiogram (to be done at 6 weeks) if have confirmed proximal DVT / PE and breathlessness / dyspnoea at presentation. The request should specify the need to exclude Pulmonary Hypertension.
- If pregnant follow Maternity Service Guideline (MSG) 20 and Inform Obstetric Department.
- If a patient with a proven DVT/PE is taking Tamoxifen, advise them to stop taking this drug and refer to Breast MDT for review. (Tamoxifen is a pro-coagulant).

# **DALTEPARIN PRESCRIBING INFORMATION & DOSING TABLES IN DVT/PE**

## **Dalteparin:**

### **Treatment in Routine Patients:**

Weight (kg)	Daily Dose
<46	7500 units OD
46-56	10000 units OD
57-68	12500 units OD
69-82	15000 units OD
>83	18000 units OD

### **Treatment in Pregnant Patients (unlicensed):**

Weight (kg)	Overall Dose
<50	5000 units BD
50-64	7500 units AM & 5000 units EVE
65-79	7500 units BD
80-94	10000 units AM & 7500 units EVE
>95	10000 units BD

Once delivered, convert dosing to that of a non-pregnant patient for duration of treatment.

### **Treatment in Extremes of Body Weight (unlicensed):**

Consider using an increased treatment dose of dalteparin in patients weighing over 120kg using the table below:

Weight (kg)	Overall Dose
≥120 - <150	12500 units BD <sup>1</sup>
≥150	15000 units BD <sup>1</sup>

<sup>1</sup>In these patients, peak factor Xa level testing should be considered if the treatment continues for more than 5 days

#### **Contraindications to Dalteparin use:**

- High risk of bleeding (e.g. haemophilia or other (haemorrhagic disorder)
- Thrombocytopenia (platelet count below  $50 \times 10^9/l$ )
- History of Heparin-induced thrombocytopenia
- Active peptic ulceration
- Recent cerebral haemorrhage
- Acute bacterial endocarditis
- Known sensitivity to dalteparin

#### **Other prescribing cautions:**

- In liver failure significant accumulation may occur – specialist advice (from a consultant haematologist and/or gastroenterologist) should be sought and consideration given to intravenous unfractionated heparin (IV UFH).
- In renal impairment significant accumulation may occur and intravenous unfractionated heparin (IV UFH) should be used where creatinine clearance is calculated to be less than 20ml/min.
- Treatment dose Dalteparin (e.g. for PE/DVT) should not be used on the day of, or the day after an operation. Where it is indicated, IV UFH should be used. Refer to the Bridging Anticoagulation Guidance.
- Patients with prosthetic heart valves – specialist advice (from a consultant haematologist) should be sought.



## RIVAROXABAN/APIXABAN PRESCRIBING INFORMATION & DOSING TABLES IN DVT / PE

### Introduction

Rivaroxaban (Xarelto) is a direct oral anticoagulant (DOAC). Unlike warfarin, it does not require INR monitoring. It has been approved for use in venous thromboembolic disease by NICE – TA261 & TA287.

Rivaroxaban is the Doncaster & Bassetlaw NHS Teaching Hospital's anticoagulant of choice in VTE Disease. Other DOACs can be considered if clinically appropriate in discussion with senior clinician (Registrar and above).

3 months Rivaroxaban can be offered to those with unprovoked DVT in whom extended duration therapy is not anticipated.

6 months Rivaroxaban can be offered to those with unprovoked PE in whom extended duration therapy is not anticipated.

Rivaroxaban should not be prescribed to patients with severe renal impairment ( $\text{CrCl} < 30 \text{ ml/min}$ ). In patients with a weight  $> 120 \text{ kg}$ , offer DOACs only in discussion with haematology. Consider Factor Xa levels.

Rivaroxaban can be offered to patients requiring long-term extended duration anticoagulation. However, warfarin remains available and is the anticoagulant of choice in severe renal impairment ( $\text{CrCl} < 30 \text{ ml/min}$ ).

### Rivaroxaban Dosing Schedule

#### Normal Renal Function ( $\text{CrCl} > 50 \text{ ml/min}$ )

15 mg twice daily for three weeks followed by:

20 mg once daily for remainder of the acute treatment period.

After the acute treatment period, consider step-down to 10mg once daily for extended duration (Preventative) therapy.

#### Renal Impairment ( $\text{CrCl} 30\text{--}49 \text{ ml/min}$ )

In patients with moderate ( $\text{CrCl} = 30 \text{ to } 49 \text{ ml/min}$ ) renal impairment, the schedule below is used:

15 mg twice daily for three weeks followed by:

Consider reducing from 20mg once daily to 15 mg once daily for remainder of the treatment period if the patient's assessed risk of bleeding outweighs risk of recurrent VTE.

### Apixaban (Elilquis)

Apixaban is another DOAC licensed for the treatment and long term prevention of VTE disease. Whilst Rivaroxaban remains the Trust DOAC of choice, Apixaban can be used as an alternative if clinically appropriate.

Please refer to the BNF or contact your Ward Pharmacist for dosing information in VTE. Dosing is not the same as for Atrial Fibrillation.

### Interactions and Cautions

Co-administration with strong inhibitors of both CYP3A4 and P-gp (azole-antimycotics such as ketoconazole, itraconazole, voriconazole and posaconazole or HIV protease inhibitors) should be avoided. Given limited clinical data with dronedarone, co-administration with this should also be avoided.

Concomitant use of DOACs with other strong CYP3A4 Inducers (e.g. Phenytoin, Carbamazepine, Phenobarbital or St John's Wort) may lead to reduced DOACs plasma concentrations. Strong CYP3A4 Inducers should be co-administered only with caution.

Other drugs that increase bleeding risk, e.g. other anticoagulants, anti-inflammatory drugs (NSAIDs) and antiplatelet therapies, should be co-administered with DOACs only with caution.

Note: Combination with potent CYP3A4 inhibitors (e.g. clarithromycin) should be avoided if DOACs are used in renal impairment.

### Reversal

Please refer to the specific Trust policy for the management of bleeding for patients taking DOACs. Specialist haematological advice should be sought and consideration given to the use of Beriplex.

INR/PT are not valid efficacy markers for DOACs and should not be used to make treatment decisions about these drugs.

### Other DOACs

The DOACs Dabigatran and Edoxaban are not recommended in this Trust due to the requirement for LMWH bridging.

## GLOSSARY OF ABBREVIATIONS

-VE	- Negative
+VE	- Positive
AM	- Morning
ANP	- Advanced Nurse Practitioner
BD	- Twice Daily
BMI	- Body Mass Index
BNF	- British National Formulary
BP	- Blood Pressure
Ca <sup>2+</sup>	- Calcium
CrCl	- Creatinine Clearance
CTPA	- CT Pulmonary Angiogram
CT Scan	- Computed Tomography Scan
CXR	- Chest X-Ray
DOAC	- Direct Oral AntiCoagulant
DVT	- Deep Vein Thrombosis
ECG	- ElectroCardioGram
ED	- Emergency Department
ESR	- Erythrocyte Sedimentation Rate
EVE	- EVENing
FBC	- Full Blood Count
GP	- General Practitioner
INR	- International Normalised Ratio
IPOC	- Integrated Plan Of Care
IV	- Intravenous
IVC	- Inferior Vena Cava
IDU	- IntraVenous Drug misUse
LFT	- Liver Function Tests
LMWH	- Low Molecular Weight Heparin
MSG	- Maternity Service Guideline
MDT	- Multi Disciplinary Team
NICE	- National Institute for Health and Care Excellence
OD	- Once Daily
PE	- Pulmonary Embolism
PSA	- Prostate Specific Antigen
PT	- Prothrombin Time
Q Scan	- Perfusion Scan
ST	- Speciality Training
U&E	- Urine and Electrolytes
UFH	- UnFractionated Heparin
USS	- Ultrasound
VTE	- Venous ThromboEmbolism

## APPENDIX 9 – DVT PIL

## DVT PIL



## Deep Vein Thrombosis (DVT)

Deep Vein Thrombosis occurs when blood clot (called a thrombus) forms in a vein. This usually occurs in the deep veins of the leg but can occur in most veins of the body.

The thrombus in the deep veins of the leg can cause obstruction to the blood flow leading to pain, swelling, and discolouration of the affected limb.

There is a chance that this clot might break off (this is called an embolus) and travel to the lungs (this is called Pulmonary Embolism) which is serious and can sometimes be fatal as it can block off the blood supply to parts of the lungs. Fortunately treatment is very effective in reducing the chance of this happening.

### Risk Factors for DVT:

- Clotting abnormality in the blood (including family history).
- Pregnancy.
- Obesity.
- Underlying Cancer.
- Previous DVT.
- Immobility including long haul flights.
- Contraceptive pills.
- Recent surgery.
- Intravenous drug use.

### Symptoms of DVT:

- Pain in the affected leg.
- Swelling/firmness of the leg.
- Warmth and redness of the leg.

WPR43192 May 2017 Review date by: May 2019

### How is it diagnosed?

In some cases the condition can be excluded by a blood test without the need for special scans. If the test is not appropriate or does not exclude a blood clot, an ultrasound Doppler scan of the veins is usually required.

### Treatment of DVT

The mainstay of treatment of DVT is 'anticoagulation' which means thinning of the blood. This reduces the risk of blood clots getting bigger, while the body's own systems dissolve the clot.

The duration of the anticoagulation treatment varies. The minimum duration of treatment should be three months.

### Medications used to treat DVT:

- Low Molecular Weight Heparin (LMWH) such as dalteparin.
- Vitamin K antagonists (VKAs), such as warfarin.
- New Oral Anticoagulants (NOACs), such as rivaroxaban.

If warfarin is used you will also start treatment with low molecular weight heparin injections for a few days. This is because it takes a few days for the optimal effect of warfarin to be established.

The risk and benefits of treatment will be discussed with you by the doctor. Warfarin has special monitoring arrangements and you will need regular blood tests, this may be done by either your GP or the hospital. The doctor or pharmacist will give more information, including an information pack before you are discharged.

When you are discharged it is important that you know when your next blood test is due and who will monitor your warfarin in the future. You will be given a form that will tell you this information and you should take it to your GP or the hospital when you have your next blood test.

In some cases of extensive DVT, a patient may need a filter to be placed in a main vein to stop the clot from travelling to the lungs. This is called an Inferior Vena Cava (IVC) filter. This decision is usually made by a senior clinician.



Sets of knee-length compression stockings (called Category 2, graduated compression stockings) should also be supplied for you, starting about a week after the clot was diagnosed. A stocking should be worn, only on the affected leg, for two years, in order to minimise the risk of developing complications of swelling and pain sometimes with skin ulcers (called the post phlebitic syndrome).

When the initial pain and swelling has settled, it can be taken off at night. Stockings need replacing two to three times per year.

Patients usually do not need to stay in the hospital for treatment of DVT.

Ambulatory (daily return to ward) treatment of patients with a diagnosis of DVT

Initially you will be assessed in the Acute Medical Unit (AMU) at DRI or the Assessment and Treatment Centre (ATC) at Bassetlaw Hospital or in the Emergency Department (ED) and some blood tests will be taken. If the assessing doctor suspects a DVT they will then arrange for you to have a Doppler scan and an injection (Dalteparin) in your tummy (under the skin). The Doppler scan may not be available on the same day or the following day (it depends on availability of slots).

However you will still need to have the injections (either in the hospital or in the community if such arrangements have been made by the hospital) once a day for your injections, until you have had a scan.

Warning signs - If you have any of the following, seek medical advice immediately:

- Blackout.
- Dizzy spell.
- Coughing up blood.
- Worsening shortness of breath.
- Sharp chest pain especially when taking a deep breath in.
- Any bleeding that does not stop with simple measures.
- Severe increase in leg swelling and/or pain.

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If you have any of these symptoms, please contact:

Doncaster Royal Infirmary, Acute Medical Unit (AMU),  
Tel: 01302 642617.

Bassetlaw Hospital, Assessment and Treatment Centre (ATC),  
Tel: 01909 502 186 (direct dial).

If you are very unwell, call 999 to get yourself to the hospital.

It is very important that you come back to the ward for daily Dalteparin injections for as long as the doctor or nurse thinks you need it, unless it has been arranged for the district nurse to administer it in the community.

If for any reason you cannot attend the ward for the injections or you do not receive a dose of the injection in the community please call the ward to inform them so that they can give you further advice.

#### Patient Experience Team

The team are available to offer advice or information on healthcare matters. Their office is in the Main Foyer (Gate 4) of Doncaster Royal Infirmary. Contact can be made either in person, by telephone or email. The team can visit inpatients on all Trust sites.

#### The contact details are:

Telephone: 01302 642764 or 0800 028 8059

Email: [pals.dbh@dbh.nhs.uk](mailto:pals.dbh@dbh.nhs.uk).

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## APPENDIX 10 – PE PIL

## PE PIL



## Pulmonary Embolism (PE)

Pulmonary embolism (PE) occurs when a blood clot dislodges from a vein, travels through the veins of the body, and lodges in the lung.

Most blood clots originally form in the deep veins of the legs, thighs, or pelvis and this condition is known as deep vein thrombosis (DVT).

The clot or clots block the blood flow to parts of the lung.

Pulmonary emboli are uncommon and range in severity but are important because large clots can be fatal if not identified and treated promptly.

### Risk factors of PE:

- Clotting abnormality in the blood (including family history).
- Pregnancy.
- Obesity.
- Underlying cancer.
- Previous DVT.
- Immobility including long haul flights.
- Contraceptive pills.
- Recent surgery.
- Intravenous drug use.

### Symptoms of PE:

- Shortness of breath.
- Sharp chest pain especially when taking a deep breath.
- Coughing up blood.
- Feeling dizzy/blacking out/crushing chest pain – may suggest presence of large clots.

WPR43202 May 2017 Review date by: May 2019

### How is it diagnosed?

In some cases the condition can be excluded by a blood test without the need for special scans. If the test is not appropriate or does not exclude a blood clot, a scan of the chest is usually required. In pregnancy a sound wave leg scan is often done instead to try to avoid the effects of X-rays on the unborn baby.

### Treatment of PE

The mainstay of treatment of PE is 'anticoagulation' which means thinning of the blood. This reduces the risk of blood clots getting bigger, while the body's own systems dissolve the clot.

The duration of the anticoagulation treatment varies. The usual minimum duration of treatment should be six months.

### Medications used to treat DVT:

- Low Molecular Weight Heparin (LMWH) such as dalteparin
- Vitamin K antagonists (VKAs), such as warfarin.
- New Oral Anticoagulants (NOACs), such as rivaroxaban.

If warfarin is used you will also start treatment with low molecular weight heparin injections for a few days this is because it takes a few days for the optimal effect of warfarin to be established. The risk and benefits of treatment will be discussed with you by the doctor. Warfarin has special monitoring arrangements and you will need regular blood tests, this may be done by either your GP or the hospital. The doctor or pharmacist will give more information, including an information pack before you are discharged. When you are discharged it is important that you know when your next blood test is due and who will monitor your warfarin in the future. You will be given a form that will tell you this information and you should take it to your GP or the hospital when you have your next blood test.

In some severe cases of PE patients need a 'clot busting treatment' called thrombolysis. This decision is usually made by a senior clinician.



Patients do not usually need to stay in the hospital for treatment. Some patients with PE can be treated either in the community or on an ambulatory basis.

### Ambulatory (daily return to ward) treatment of patients with a diagnosis of PE

If the clinician decides to treat a patient with PE under the ambulatory pathway, the patient is commenced on treatment and may need to come back daily to the ward for dalteparin injections and a blood test, until the blood is adequately thinned.

If you are deemed suitable for ambulatory treatment for your PE, then you will need to be aware of some symptoms you need to look out for:

These are:

- Blackout.
- Dizzy spell.
- Coughing up blood.
- Worsening shortness of breath.
- Sharp chest pain especially when taking a deep breath in.
- Any bleeding that does not stop with simple measures.

If you have any of these symptoms, please contact:

Doncaster Royal infirmary, Acute Medical Unit (AMU),  
Tel: 01302 642617.

Bassetlaw Hospital, Assessment and Treatment Centre (ATC),  
Tel: 01909 502 186 (direct dial).

If you are very unwell, call 999 to get yourself to the hospital.

It is very important that you come back to the ward for daily Dalteparin Injections unless it has been arranged for the district nurse to administer it in the community.

If for any reason you cannot attend the ward for the injections or you do not receive a dose of the injection in the community, please call the ward to inform them so that they can give you further advice.

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### Patient Experience Team

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## APPENDIX 11 – EQUALITY IMPACT ASSESSMENT - PART 1 INITIAL SCREENING

Service/Function/Policy/Project/ Strategy	Division	Assessor (s)	New or Existing Service or Policy?	Date of Assessment
Venous Thromboembolism (VTE) Policy – PAT/T 44 v.4	All	Ben Kumar	Existing policy	14.1.2020
<b>1) Who is responsible for this policy?</b> Pankaj Chaturverdi, Consultant Physician and Trust VTE Lead				
<b>2) Describe the purpose of the service /function/policy project/strategy?</b> Policy to guide clinical management of patients admitted with suspected diagnosis of VTE				
<b>3) Are there any associated objectives?</b> No				
<b>4) What factors contribute or detract from achieving intended outcomes?</b> None				
<b>5) Does the policy have an impact in terms of age, race, disability, gender, gender reassignment, sexual orientation, marriage/civil partnership, maternity/pregnancy and religion/belief?</b> No				
<ul style="list-style-type: none"> <li>If yes, please describe current or planned activities to address the impact n/a</li> </ul>				
<b>6) Is there any scope for new measures which would promote equality?</b> No				
<b>7) Are any of the following groups adversely affected by the policy?</b>				
<b>Protected Characteristics</b>	<b>Affected?</b>	<b>Impact</b>		
a) Age	no			
b) Disability	no			
c) Gender	no			
d) Gender Reassignment	no			
e) Marriage/Civil Partnership	no			
f) Maternity/Pregnancy	no			
g) Race	no			
h) Religion/Belief	no			
i) Sexual Orientation	no			
<b>8) Provide the Equality Rating of the service / function /policy / project / strategy – tick (✓) outcome box</b>				
<b>Outcome 1</b> ✓	<b>Outcome 2</b>	<b>Outcome 3</b>	<b>Outcome 4</b>	
<b>Date for next review:</b> April 2022				
<b>Checked by:</b> Lee Wilson, Consultant Pharmacist			<b>Date:</b> 14.1.2020	