Policy Document Control Sheet

NHS
County Durham and Darlington
NHS Foundation Trust

Reference Number	GUID/N&G/0013						
Title	Guideline for Venous Thromboembolism (VTE) Risk Assessment and Prophylaxis in Adult Patients Admitted to Hospital (over the age of 18 years)						
Version number	4.0						
Document Type	Trust-Wide Policy		Trust-Wide Procedure	√	HR Framework		
	Trust-wide Guideline		Local Guideline				
Originating Directorate Or Care Group	Assurance, Risk and Compliance, Coporate						
Department	Assurance, Risk and Compliance						
Name of Document Author	Denise Kirkup, Head of Assurance & Compliance						
Name of Document Owner	Steve Cowie, Chair of VTE Task & Finish Group						
Original Policy Date	September 2010						
Reviewing Committee	VTE Task & Finish Group						
Approving Committee	Clinical Standards & Therapeutics Committee						
Ratification Committee	Clinical Effectiveness Committee						
Ratifcation Date	12th December 2018						
Next Review Date	12th December 2021						
Equality Impact Assessment completed	Yes						
Status	Approved						
Confidentiality	Unrestricted						
Keywords	Venous, thromboembolism, thrombosis, VTE, deep vein thrombosis, DVT, pulmonary embolism, PE, assessment, prophylaxis, low molecular weight heparin, LMWH, anti-embolic stockings.						

Executive Sponsor's Signature	
Name & Job title of Executive Sponsor	Shafie Kamaruddin, Chair, CSTC
Master copy held at:	Corporate Records Office, Trust Headquarters, Darlington Memorial Hospital

Version Control Table

Date Ratified	Version Number	Status
September 2010	1.0	Superseded
September 2010	1.1	Superseded
September 2010	1.2	Superseded
August 2011	1.3	Superseded
December 2011	2.0	Superseded
Feburary 2012	2.1	Superseded
December 2012	3.0	Superseded
May 2013	3.1	Superseded
October 2013	3.2	Superseded
May 2014	3.3	Superseded
January 2016	3.4	Superseded
April 2016	3.5	Superseded
December 2018	4.0	Approved

Table of Revisions

Date	Section	Revision	Author
September 2010	Various Sections	Revision of versions 1.0 and 1.1 – working draft documents taking into account peer comments	Helen Rutter – Clinical Effectiveness Lead
August 2011	23	Revision of monitoring to reflect current practice and NHSLA requirements	Helen Rutter – Clinical Effectiveness Lead
December 2011	7, 8, 9 & 10 Appendix	Inclusion of guidance for community hospitals. Appendix 8/10 updated. Appendix 9 included	Helen Rutter – Clinical Effectiveness Lead
February 2012	Monitoring Section	Monitoring mechanisms made more specific	Helen Rutter – Clinical Effectiveness Lead
December 2012	Section 1, 6, 7 & 23 Appendix	Removal of specific CQUIN targets data as these change annually. Section 6 updated with respect to information	Helen Rutter – Clinical Effectiveness

	11a	given to patients. Section 7 inclusion of electronic assessment tool Section 23 updated monitoring committee to include CSTC. Appendix 11a updated to include exclusions No: 25-27	Lead
May 2013	Section 7 Appendix 6, 11a & 12	Section 7 clarification around responsibilities and timescales for risk assessment. Appendix 6 update to surgical VTE assessment form. Appendix 11a update of agreed exclusion cohorts. Appendix 12 flow chart reflecting process in section 7	Helen Rutter – Clinical Effectiveness Lead
September 2013	Page 6 Appendix 11	Page 6 addition of process for assessment and prophylaxis for patients having lower limb casts applied at Trauma Clinic (Appendix 11)	Helen Rutter – Clinical Effectiveness Lead
May 2014	Appendix 11a, 11b, 14a & 14b	Addition of Risk Assessment form for Foot Ankle Surgery. Inclusion of Pathway and Risk Assessment form for Lower limb plaster cast/back slap in ED. Guidance for stroke patients in section 16 amended and reference made to a separate document	Alwyn Foden/Denise Kirkup
January 2016	Appendices	Reviewed appendices to include nursing guidance, size chart and application chart. In addition, removed all reference to Flowtrons as this is a brand name	Denise Kirkup with advice from Hazel Abbott Procurement Nurse
April 2016	Sections 16 & 23	Section 16 changed name of associated document Section 23 updated monitoring table	Denise Kirkup, Head of Assurance and Compliance
October 2018	Full review	Full review of the content by the VTE Task & Finish Group	VTE Task & Finish Group

This Policy/Procedure/Guideline has been reviewed and updated to comply with the General Data Protection Regulations (May 2018)

Contents

1 Introduction

Venous thrombosis is a condition caused by formation of a blood clot (thrombus) in the veins (primarily of the leg veins but also in the abdomen [iliac and vena cava], arm and pulmonary veins). Blood flow through the affected vein can then become restricted, causing swelling and pain. The most serious forms of venous thrombosis originate in the 'deep' veins of the legs, thighs, or pelvis – giving rise to the term 'deep vein thrombosis' (DVT). The most significant danger of DVT is that fragments of the thrombi can break off and travel through the venous system to become lodged in the pulmonary arteries (arteries in the lungs), causing pulmonary embolism (PE). DVT and PE are the most common manifestations of venous thrombosis, and together are known as venous thromboembolism (VTE). However, making a diagnosis of VTE is not always easy, as DVT may be confused with cellulitis, muscle strain or venous insufficiency – while PE can mimic pneumonia, acute myocardial infarction and viral pleurisy.

VTE is known as the 'silent killer' as it is often undetected before it is too late to treat –

- approximately 80% of DVT's are clinically silent
- 70% of fatal PE's are only detected at post mortem

Although DVT is commonly asymptomatic, it can lead to sudden death due to PE, or cause –

- Long-term morbidity due to venous insufficiency and post-thrombotic leg syndrome.
- PE following hospital acquired DVT causes between 25,000 and 32,000 deaths each year in the UK and this may be an underestimate, since many deaths are not followed by post-mortem.

PE is the immediate cause of death in 10% of all patients who die in hospital

- This figure exceeds the combined total of deaths from breast cancer, AIDS and road traffic accidents
- It is over twenty-five times greater than the 955 annual deaths from MRSA and over five times greater than the total number of deaths from hospital acquired infection.

2 Purpose

The purpose of this guideline is to ensure that:

- all patients admitted to hospital at risk of developing VTE are identified using the national VTE risk assessment tool;
- that the appropriate level of prophylaxis for the prevention of thromboembolism is offered to patients according to their level of risk and individual clinical situation; and
- staff should be able to provide accurate advice to patients relating to VTE and prophylaxis.

The recommendations in this guideline must be implemented taking into account the patient's individual clinical situation and the clinical judgement of the clinician in charge of their care.

3 Scope

The guideline applies to all patients, over the age of 18 years under the care of County Durham and Darlington NHS Foundation Trust. Exceptions to this are in patients who form part of an agreed exclusion cohort (see appendix 12). Adherence to the guideline is the responsibility of Trust employees.

Obstetric patients will be treated according to trust policy for 'Management of DVT and Pulmonary Embolism during Pregnancy and in the Puerperium'.

For treatment and diagnosis of VTE, refer to guideline GUID/N&G/0015 Guideline for Venous Thromboembolism (VTE) diagnosis and treatment (adult patients) a statement on who the Procedural Document applies to, and who needs to read it.

4 Definitions

For the purpose of this guideline the following definitions stand.

Venous thromboembolism: Venous thrombosis is a condition in which a blood clot (thrombus) forms in a vein. Blood flow through the affected vein can be limited by the clot, causing swelling and pain. Venous thrombosis most commonly occurs in the 'deep veins' in the legs, thighs, or pelvis. This is known as a deep vein thrombosis. An embolism is created if a part or all of the blood clot in the deep vein breaks off from the site where it is created and travels through the venous system. If the clot lodges in the lung a very serious condition, pulmonary embolism (PE), arises. Venous thrombosis can form in any part of the venous system. However, deep vein thrombosis (DVT) and PE are the most common manifestations of venous thrombosis. DVT and PE are known as venous thromboembolism (VTE).

Thromboprophylaxis: Thromboprophylaxis is the treatment to prevent blood clots forming in veins – Mechanical thromboprophylaxis devices include graduated compression (TED) stockings, intermittent pneumatic compression and venous foot pumps. All increase venous outflow or reduce stasis within the leg veins – Chemical thromboprophylaxis is pharmaceutical intervention to decrease the clotting ability of the blood.

5 Duties

Medical Director – the Medical Director has overall clinical responsibility for this guideline.

Clinical Directors – all Clinical Directors are responsible for implementation within their Care Group.

Medical staff – Medical staff are responsible for the assessing of all adult in-patients and day-cases under their care for the risk of VTE and prescribing of appropriate prophylaxis.

Nursing staff – Ward nursing staff are responsible for checking an appropriate assessment has been carried out within the stated time period. If this is not the case it is their responsibility to bring this to the doctor in charge of the patients care.

Midwives – Midwives are responsible for assessing women at booking and all subsequent admissions into hospital prior to delivery. They should follow the guidance in their local policy 'Management of DVT and Pulmonary Embolism during Pregnancy and in the Puerperium'.

Care Groups – the Care Groups are responsible for ensuring a clinical review (RCA) is carried out per patient on any episode of VTE within 90 days of discharge following an inpatient stay of at least twenty four hours, or following a surgical procedure under general or regional anaesthetic.

Radiology – Radiology will identify all VTE events monthly and send the data to each Care Group for a review to take place. The findings from the review should be sent to Patient Safety Team so a quarterly report can be completed.

6 Patient Information

All patients will be provided with written information in relation to their time as an in-patient and once they are discharged. **The EIDO leaflet '*Reducing your risk of developing a blood clot*' is to be given to patients by the clinician carrying out the VTE assessment. The leaflet is available on the Trust intranet/Assurance, Risk and Compliance/Patient Information Leaflets or in the Disease Prevention Category on the EIDO Healthcare site accessed via:** http://dc.eidohealthcare.com/login/eH4-KGHV8uzM

Specific information for patients with plaster casts will be included in plaster cast instructions. See Appendix 2.

The availability of this written information does not negate the need for staff to give verbal information regarding assessment, prophylaxis and treatment when they are admitted and discharged from hospital.

Medical and nursing staff should make themselves familiar with the information contained within the patient information sources to enable them to respond to patient and carer queries.

7 Process for Identifying Patients at Risk

The processes for identifying patients at risk of venous thromboembolism and bleeding will be dependent upon the mechanism by which the patients are admitted to hospital. All patients should be risk assessed for VTE at one of the following stages.

1) Risk assessment carried out by medical staff as soon as possible after admission or by the time of first consultant review. Record assessment by the electronic form on iSoft.
2) For elective admission VTE risk assess at pre-assessment where possible. Reassess on admission or by the time of first consultant review.
3) For all patients reassess VTE and bleeding risk at point of consultant review or if clinical conditions changes.

8 Recording Risk Assessments

The majority of VTE risk assessments will be completed electronically within the iSoft system.

In some situations a paper orange form will be completed. The appropriate orange form used should be used according to where the patient has been admitted. Copies of the risk assessments are available as follows:

- Medicine (see Appendix 4)
- Surgery (see Appendix 5)
- Gynaecology (see Appendix 6)
- Critical Care (see Appendix 7)
- Obstetrics (see Appendix 8)
- Community Hospitals (see Appendix 9)

If a paper VTE assessment is completed, this must be filed within the appropriate patient record with the medical clerking documentation for the appropriate episode of care.

GPs covering a ward within a community hospital; it is the GP who assesses the patient on admission into the community hospital who has overall clinical responsibility for completing the VTE risk assessment in line with the guidance contained within this policy.

Patients attending Trauma Clinic and having lower limb cast applied or foot and ankle surgery carry out self-assessment (see appendix 10 and 11 for details), once completed medical staff will prescribe appropriate prophylaxis if the patient is at risk.

The pathway for risk assessment of venous thromboembolic disease (VTE) in lower limb immobilisation in Emergency Department is available at appendix 13 and 14.

9 Training in Risk Assessment

All medical and nursing staff will have access to the assessment tools (intranet and iSoft) and patient information leaflets (EIDO).

Junior doctors will be provided with information at induction and are required to complete the e-learning module and achieve a competency of 75% pass.

e-VTE Module - Please access the link via the Trust intranet using the search term ‘eLearning’.

Attendance at Essential Training is recorded by Organisational Development (OD) and entered onto the Trust Training Management System, OLM. Monitoring of non-attendance will be in line with the Training Needs Analysis, Monitoring and Evaluation Policy and carried out by OD. Please refer to this policy for detailed information.

10 Prophylaxis

VTE prophylactic guidance, NICE Clinical Guideline 92 and Quality Standard, advocates the use of mechanical and/or pharmacological methods. Whichever method is appropriate on an individual basis, the following principles apply to all patients –

- Do not allow patient to become dehydrated unless clinically indicated.
- Encourage patients to mobilise as soon as possible.
- Do not regard aspirin or antiplatelet agents as adequate prophylaxis for VTE.

Temporary inferior vena caval filters should be considered for patients who are at very high risk of VTE (such as patients with a previous VTE event or active malignancy) if mechanical and pharmacological VTE prophylaxis contraindicated.

The appropriate prophylaxis should be prescribed to all patients with identified risk factor(s) on admission to hospital and continued following discharge where indicated.

Vitamin K antagonists. Do not offer addition pharmacological or mechanical VTE prophylaxis to patients who are having vitamin K antagonists and who are within their therapeutic range, providing anticoagulant therapy is continued.

Patients on full anticoagulant therapy on admission. Do not offer additional mechanical or pharmacological VTE prophylaxis to patients who are already having full anticoagulant therapy (for example, fondaparinux).

Patients already having antiplatelet agents on admission or needing them for treatment. Consider using additional mechanical or pharmacological VTE prophylaxis to patients who are having

antiplatelet agents to treat other conditions and who are assessed to be at increased risk of VTE. Take into account the risk of bleeding and comorbidities.

11 Mechanical Prophylaxis

The choice of mechanical VTE prophylaxis should be based upon individual patient factors including the clinical condition, surgical procedure and patient preference; one of the following should be chosen:

- Anti-embolic stockings (knee or thigh length)
- Intermittent pneumatic compression devices (thigh or knee length)
- Foot impulse devices

Anti-embolic stockings

Patients with the following contraindications should not be use anti-embolic stocking.

- acute stroke
- suspected or proven peripheral artery disease
- peripheral arterial bypass grafting
- peripheral neuropathy/other sensory loss
- local conditions in which stockings may cause damage, for example, fragile ‘tissue paper’ skin, dermatitis, gangrene or recent skin graft
- known allergy to material of manufacture
- cardiac failure
- severe leg oedema or pulmonary oedema from congestive heart failure
- major limb deformity preventing correct fit

Caution and clinical judgement should also be used applying anti-embolism stockings over venous ulcers and wounds. Where patients have venous ulceration history and/or are ‘in compression therapy’ that the usual prescription of care therapy should be followed, renewal of the compression therapy should be undertaken on the day of scheduled surgery with clean therapy being applied.

Guidance for staff caring for patients wearing anti-embolic stockings

The following NICE guidance should be taken into account when caring for patients wearing anti-embolic stockings.

Ensure that patients who need anti-embolism stockings have their legs measured and that the correct size of stocking is provided. Anti-embolism stockings should be fitted and patients shown how to use them by staff trained in their use.

- Ensure that patients who develop oedema or postoperative swelling have their legs re-measured and anti-embolism stockings refitted.
- If arterial disease is suspected, seek expert opinion before fitting anti-embolism stockings.
- Use anti-embolism stockings that provide graduated compression and produce a calf pressure of 14–15 mmHg.
- Encourage patients to wear their anti-embolism stockings day and night until they no longer have significantly reduced mobility.
- Remove anti-embolism stockings daily for hygiene purposes and to inspect skin condition. In patients with a significant reduction in mobility, poor skin integrity or any sensory loss, inspect the skin two or three times per day, particularly over the heels and bony prominences. Record inspection on EPMA.
- Discontinue the use of anti-embolism stockings if there is marking, blistering or discolouration of the skin, particularly over the heels and bony prominences, or if the patient experiences pain or

discomfort. If suitable, offer a foot impulse or intermittent pneumatic compression device as an alternative.
- Show patients how to use anti-embolism stockings correctly and ensure they understand that this will reduce their risk of developing VTE.
- Monitor use of anti-embolism stockings, offering assistance if not being worn correctly.

Intermittent pneumatic compression devices and foot impulse devices

- Do not offer either method to patients with a known allergy to the material of manufacture.
- Encourage patients on the ward who have either device in place to use then for as much of the time as is possible and practical, both when in bed and when sitting in a chair.

12 Pharmacological Prophylaxis

All patients who are identified as being at risk will be prescribed the appropriate dose of Low Molecular Weight Heparin (LMWH) as first choice pharmacological prophylaxis. The choice of LMWH within CDDFT is Enoxaparin (Clexane) for thromboprophylaxis unless contraindicated when mechanical prophylaxis should be considered.

Contraindications as stated in the British National Formulary (2017):

- hemophilia and other hemorrhagic disorders,
- thrombocytopenia less than 75
- History of heparin-induced thrombocytopenia
- recent cerebral hemorrhage,
- severe hypertension;
- peptic ulcer;
- after major trauma or recent surgery to eye or nervous system;
- acute bacterial endocarditis;
- LMWH administration should be avoided 12 hours before and 4 hours after spinal, epidural anaesthesia and lumbar puncture;
- hypersensitivity to heparin or to low molecular weight heparins;
- Hepatic impairment - risk of bleeding increased—reduce dose or avoid in severe impairment (including oesophageal varices);
- Renal impairment - risk of bleeding increased in severe impairment (Creatinine clearance less than 30ml/min)—dose may need to be reduced.
- NB heparin is of animal origin and alternatives should be discussed with patients as appropriate

Alternative anticoagulants

- Unfractionated heparin maybe considered or VTE prophylaxis
- For patients with true allergy to LMWH there are alternative parenteral anticoagulants available (e.g. Hirudins or Heparinoids). Contact pharmacy for advice about the most suitable agent.
- Direct oral anticoagulants DOAC (e.g. Rivaroxiban, Dabigatran, Apixaban, Edoxaban) are licensed for the VTE prophylaxis in elective hip and knee. Refer to BNF or pharmacy for advice about dosing and the most suitable agent.

13 Enoxaparin Dosage for VTE Prophylaxis

Note: these dosage schedules are not for the treatment of VTE.

Surgical patients	• 40mg subcutaneously once daily for time that mobility is reduced or that risk of VTE is diminished. • Prolonged prophylaxis in hip/knee surgery patients may be

	continued for up to 28 days post-operatively • Patients with on-going immobility (e.g. lower limb cast) may need an extended course of treatment. • Severe renal impairment (CrCl less than 30ml/min): 20mg subcutaneously once daily
Medical patients	• 40mg subcutaneously once daily for time that mobility is reduced or that risk of VTE is diminished. • Severe renal impairment (CrCl less than 30ml/min): 20mg subcutaneously once daily
Pregnant patients up to 6 weeks post delivery	• Please refer to policy on 'Management of DVT and Pulmonary Embolism during Pregnancy and in the Puerperium'

There is no requirement to carry out clotting tests while on prophylactic LMWH. Patient on LMWH should have platelets checked after five days.

14 Prophylaxis in Surgical Patients

The following guidance should be considered for all surgical patients –

Patients on existing anticoagulation
See Bridging anticoagulation in surgery guide (section 11 of the Trust Oral anticoagulation guidelines (insert link)) for advice about how to manage patients requiring surgery who are already on anticoagulation

Oral contraceptives and HRT
Advise women to consider stopping oestrogen-containing contraceptives or HRT 4 weeks before surgery.

Pre-existing antiplatelet therapy
Assess risks and benefits of stopping pre-existing antiplatelet therapy 1 week before surgery.

Consider involving the multidisciplinary team in the assessment.

Anaesthesia
- Consider regional anaesthesia, in addition to other methods of VTE prophylaxis, as it carries a lower risk of VTE than general anaesthesia. Take into account patient preferences, suitability for regional anaesthesia and any other planned method of VTE prophylaxis.
- If regional anaesthesia is used, plan the timing of pharmacological prophylaxis to minimise risk of epidural haematoma. If antiplatelet or anticoagulant agents are being used or their use is planned, refer to the summary of product characteristics for guidance about safety and timing of these agents in relation to regional anaesthesia.
- Do not routinely offer pharmacological or mechanical VTE prophylaxis to patients having surgery with local anaesthesia by local infiltration with no limitation of mobility.

15 Surgical Specialty Specific Prophylaxis

	Mechanical prophylaxis	Pharmacological prophylaxis
Elective hip replacement	**To be used routinely** Intermittent pneumatic compression devices	**To be used routinely** LMWH to be commenced 6-12 hours post-operatively.

	Mechanical prophylaxis	Pharmacological prophylaxis
	Duration: Until mobility is no longer significantly reduced.	Duration: 28 days post –operatively in hip replacement.
Elective knee replacement	**To be used routinely** Intermittent pneumatic compression devices Duration: Until mobility is no longer significantly reduced.	Aspirin (day one) for 14 days post operative.
Fragility fractures of the hip pelvis and proximal femur	**To be used routinely** Intermittent pneumatic compression devices Duration: Until mobility is no longer significantly reduced.	**To be used routinely** LMWH to be commenced 6-12 hours post-operatively. Duration: 28 - 35 days post –operatively.
Arthroscopic knee surgery	VTE prophylaxis not generally need for people undergoing arthroscopic knee surgery. Consider LMWH for 14 days if total anesthesia time is greater than 90 minutes or an individual's VTE risk outweighs their risk of bleeding.	
Non-arthroplasty orthopaedic knee surgery	**To be used routinely** Intermittent pneumatic compression devices Duration: Until mobility is no longer significantly reduced.	**To be used routinely** LMWH to be commenced 6-12 hours post-operatively. Duration: Until mobility is no longer significantly reduced
Foot and ankle surgery	**Not normally required**	Consider LMWH prophylaxis of patients that require immobilisation, when total anesthesia time is more than 90 minutes or a person's VTE risk outweighs their risk of bleeding. Continue until able to mobilise (maximum 42 days)
Upper limb orthopaedic surgery	Intermittent pneumatic compression devices.	**Not normally required.** Consider if total general anesthesia time is over 90minutes or post-op immobilization is likely. LMWH to be commenced 6-12 hours post-operatively. Duration: Until mobility is no longer significantly reduced.
General surgery	**To be used routinely** Anti-embolic stockings (knee or full length)	**To be used routinely** LMWH to be commenced 6-12 hours post-operatively. Duration: Until mobility is no longer significantly reduced.
Abdominal surgery	**To be used routinely** Anti-embolic stockings (knee or full length) **OR** Intermittent pneumatic compression	**To be used routinely** LMWH to be commenced 6-12 hours post-operatively. Continue for at least 7 days. Consider extending to 28 days for major abdominal cancer surgery.

	Mechanical prophylaxis	Pharmacological prophylaxis
	device used in theatre for high risk patients or undergoing lengthy procedure	Duration: Until mobility is no longer significantly reduced.
ENT	**To be used routinely** Anti-embolic stockings (knee or full length) **OR** Intermittent pneumatic compression device used in theatre for high risk patients or undergoing lengthy procedure	**To be used routinely in patients where VTE risk outweighs risk of bleeding** LMWH to be commenced 6-12 hours post-operatively. Continue for at least 7 days.
Vascular- Open vascular surgery or endovascular aneurysm repair	**To be used routinely** Anti-embolic stockings (knee or full length) **OR** Intermittent pneumatic compression device used in theatre for high risk patients or undergoing lengthy procedure	**To be used routinely in patients where VTE risk outweighs risk of bleeding** LMWH to be commenced 6-12 hours post-operatively. Continue for at least 7 days.
Urology	**To be used routinely** Anti-embolic stockings (knee or full length) **OR** Intermittent pneumatic compression device used in theatre for high risk patients or undergoing lengthy procedure	**To be used routinely** LMWH to be commenced 6-12 hours post-operatively. Duration: Until mobility is no longer significantly reduced. Patients who had TURBT or TURP not prescribed Clexane as post-op bleeding risks are high.
Gynaecology	**To be used if risk identified** Anti-embolic stockings (knee or full length)	**To be used if risk identified** LMWH to be commenced 6-12 hours post-operatively. Duration: Until mobility is no longer significantly reduced.
Bariatric	**To be used routinely** Anti-embolic stockings (knee or full length) **OR** Intermittent pneumatic compression devices	**To be used if risk identified** LMWH to be commenced 6-12 hours post-operatively. Duration: For at least 7 days and until mobility is no longer significantly reduced.

16 Prophylaxis in General Medical Patients

Offer pharmacological VTE prophylaxis to general medical patients assessed to be at increased risk of VTE.

LMWH should be started as soon as possible after risk assessment and continued until the patient is no longer at risk of VTE.

17 Stroke Patients

Please refer to '*Guidelines for VTE following an Acute Stroke'*. Contact Stroke consultant on-call for individualised guidance. Stroke Guidelines

18 Critical Care Patients

Offer VTE prophylaxis to patients admitted to the critical care unit according to their reason for admission taking into account any planned interventions and the use of other therapies that may increase the risk of complications.

19 Cancer Patients

Do not routinely offer pharmacological or mechanical prophylaxis to patients with cancer having oncological treatment who are ambulant and outpatients.

Offer pharmacological prophylaxis to patients who are assessed to be at increased risk of VTE.

Start pharmacological prophylaxis as soon as possible after risk assessment and continue until patient is no longer at risk.

20 Liver Disease

Patients with liver disease should be assessed and prescribed thromboprophylaxis in line with general medical patients.

21 Palliative Care Patients

Consider using pharmacological prophylaxis to patients in palliative care who have potentially reversible acute pathology.

Take into account potential risks and benefits and the views of patients and their families and/or carers as part of the decision making process.

22 Patients with Central Venous Catheters

Do not routinely offer pharmacological or mechanical prophylaxis to patients with central venous catheters who are ambulant.

Consider offering pharmacological prophylaxis to patients with central venous catheters who are assessed as being at risk of VTE.

23 Patients with Lower Limb Casts

Consider offering pharmacological VTE prophylaxis to patients with lower limb plaster casts after evaluating the risks and benefits based on clinical discussion with the patient.

Offer LMWH until lower limb plaster cast removal.

Specific information should be given to this group of patients as detailed in appendix 13 and 14.

24 Thromboprophylaxis in Obese and Low Body Weight Patients

Obesity is a risk factor for the development of venous thromboembolism but standard prophylaxis doses of Enoxaparin risk undertreating patients. Conversely low body weight increases the risk of over anticoagulation with standard prophylactic doses of LMWH. For these reasons consideration should be made to adjust Enoxaparin dose for patients with either low or high body weight using the table below. Risk of bleeding complications should be consider before deciding to prescribe an increased LMWH prophylaxis dose. The increased dose should only be prescribed if the risk of VTE outweighs the risk of bleeding complications. All dose recommendations are off license but based upon best available evidence.

Non-obese patients prescribed enoxaparin 40mg daily receive a weight based dose of 0.4-0.8 mg/kg. If patients greater than100kg receive 40mg bd and patients greater than150kg receive 60mg bd they would be receiving a similar weight based dose to non-obese patients. See table. Although not routinely recommended Factor Xa monitoring could be considered by haematology for patients where there is a concern about under or over treatment.

Actual Body Weight	**Less than 50kg**	**50-100kg**	**100-150kg**	**Greater than150kg**	**Creatinine Clearance Less than30ml/min†**
Enoxaparin	20mg daily	40mg daily	40mg BD	60mg BD	20mg daily
† All patients with Creatinine Clearance less than30ml/min should receive enoxaparin 20mg daily regardless of weight.					

Actual body weight should be used for dose calculation.

25 Discharge Planning

As part of the discharge plan, offer patients and/or their families or carers verbal and written information on the following.

- The signs and symptoms of deep vein thrombosis and pulmonary embolism.
- The correct and recommended duration of use of VTE prophylaxis at home (if discharged with prophylaxis).
- The importance of using VTE prophylaxis correctly and continuing treatment for the recommended duration (if discharged with prophylaxis).
- The signs and symptoms of adverse events related to VTE prophylaxis (if discharged with prophylaxis).
- The importance of seeking help and who to contact if they have any problems using the prophylaxis (if discharged with prophylaxis) the importance of seeking medical help and who to contact if deep vein thrombosis, pulmonary embolism or other adverse events are suspected.
- Written patient information leaflet should be provided.

Ensure that patients who are discharged with anti-embolism stockings:

- understand the benefits of wearing them;
- understand the need for daily hygiene removal;
- are able to remove and replace them, or have someone available who will be able to do this for them;
- know what to look for, such as skin marking, blistering or discolouration, particularly over the heels and bony prominences; and
- know who to contact if there is a problem

Ensure that patients who are discharged with pharmacological and/or mechanical VTE prophylaxis are able to use it correctly, or have arrangements made for someone to be available who will be able to help them.

Notify the patient's GP if the patient has been discharged with pharmacological and/or mechanical VTE prophylaxis to be used at home.

26 Monitoring

26.1 Compliance and Effectiveness Monitoring

Compliance with this policy will be monitored as outlined in the table below.

26.2 Compliance and Effectiveness Monitoring Table

Monitoring Criterion	Response
Who will perform the monitoring?	Information Department by producing compliance with assessment figures. Care Groups will review compliance with assessment figures and carry out monitoring of prophylaxis via monthly ward performance framework.
What are you monitoring?	The number of patients who have appropriate risk assessment for VTE and appropriate prophylaxis in

	line with trust guideline.
When will the monitoring be performed?	Weekly compliance figures.
How are you going to monitor?	Figures are produced on a weekly basis showing levels of compliance on all adult in-patients and day-cases (with the exception of patients within the exclusion criterion) – these feed into the weekly monitoring and annual monitoring for CQUIN.
What will happen if any shortfalls are identified?	Information disseminated to Care Groups who will be responsible for actioning specific issues.
Where will the results of the monitoring be reported?	Care Group performance reviews.
How will the resulting action plan be progressed and monitored?	Action plans should not be required as picked up as part of performance reviews.
How will learning take place?	Information sharing from the Anticoagulation Group.

27 Glossary of Terms

DVT - Deep Vein Thrombosis (DVT)
PE - Pulmonary Embolism
LMWH - Low Molecular Weight Heparin

28 Associated Documentation

Policy for the Development and Management of Policy and Guidance Documents
Staff Induction policy
Training Needs Analysis
Guideline for Venous Thromboembolism (VTE) diagnosis and treatment (adult patients)
Antenatal and Postnatal Thromboprophylaxis
Guidelines for VTE prevention following an acute stroke
Major Haemorrhage Policy
National Institute for Health and Care Excellence (2015) CG92 Venous thromboembolism: reducing the risk for patients in hospital
National Institute for Health and Care Excellence (2016) QS29 Venous Thromboembolism in adults diagnosis and management
National Institute for Health and Care Excellence (2018) NG89 Venous thromboembolism in over 16s: reducing the risk of hospital-acquired Deep vein thrombosis or pulmonary embolism
National Institute for Health and Care Excellence (2018) QS3 Venous thromboembolism in adults: reducing the risk in hospital

29 Appendices