Clinical
Venous Thromboembolism: Standing Operating Procedure

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1. Introduction

1.1 Venous Thrombo-embolism (VTE) is a common, potentially fatal, disease that is likely to increase in prevalence due to an aging population. An estimated 25,000 people in the UK die from preventable hospital-acquired VTE every year. Treatment of non-fatal symptomatic VTE and related long-term morbidities is associated with considerable cost to the health service and unnecessary grief for relatives. There is evidence that routine prophylaxis reduces morbidity, mortality and costs in hospitalised patients at risk of DVT. All patients admitted to hospital must be routinely assessed for VTE.

1.2 Patients have a right to be protected from preventable harm and healthcare staff have a duty to safeguard the well-being of their patients. In January 2010 the National Institute for Clinical Excellence (NICE) launched an updated guideline “Venous Thrombo-embolism: reducing the risk of VTE”. This SOP outlines the Trust’s approach to implementing and monitoring the national best practice in relation to VTE.

2. Scope

2.1 This document applies to all Trust in-patients units and the clinical staff who care for those patients.

3. Definitions

- Deep vein thrombosis: (DVT) a condition which starts when a blood clot (a thrombus) forms in a vein. It most commonly occurs in the deep veins of the legs.
- Embolism: When the thrombus dislodges from its site of origin to travel in the blood.
- Pulmonary embolism, If the embolism blocks the blood supply to the lungs the result is a (PE) which is a serious, potentially life-threatening, condition.
- Venous Thromboembolism, DVT and PE together are known as Venous Thromboembolism (VTE).
- Thromboprophylaxis: Is the treatment to prevent blood clots forming in vein

4. VTE Risk Assessment

4.1 On admission all patients must be assessed using an approved VTE risk assessment tool. (Appendix 1).

The patient should be reassessed for risk after 24 hours and during the in-patient stay, weekly as a minimum, or if the patient’s condition changes. (see risk assessment appendix 1)

4.2 Relevant risk factors are contained in the risk assessment documents. Two more risk factors identified during assessment indicate the patient is at ‘high risk’ of VTE.

4.3 Patients who require prolonged admission (greater than one week) should have a weekly review of the VTE risk assessment and as required prophylaxis.

5. General Preventative Measures

5.1 General preventative measures include early mobilisation, leg exercises and ensuring adequate hydration. These measures are appropriate for all patients.

6. Prophylactic Measures against VTE

6.1 Prophylactic measures include pharmacological and mechanical interventions. Pharmacological or mechanical prophylaxis should be clearly documented.

6.2 They are determined by the risk factors, clinical presentation and NICE clinical guideline 92 (2010). Before starting VTE prophylaxis patients and/or their families or carers should be offered information on:-

- the risks and possible consequences of VTE
- the importance of VTE prophylaxis and its possible side effects
- the correct use of VTE prophylaxis
- how patients can reduce their risk of VTE (such as keeping well hydrated and, if possible, exercising and becoming more mobile.

7. Low molecular weight Heparins (LMWH)

7.1 Deltaparin (Fragmin) is the LMWH of choice in Stafford, as per UHN’s protocol. However, Enoxaparin (Clexane) may occasionally be recommended. Tinzaparin (Innohep) is the LMWH of choice in Shropshire as per SaTH’s protocol. The indications, cautions and contraindications for the use are contained in the British National Formulary and summary of product characteristics. Particular areas of caution for this drug are a history of VTE or bleeding pathology thus increasing the risk of bleeding.

Comment [RH1]: Deltaparin (Fragmin) is now the LMWH of choice in Stafford as per UHN’s protocol. However, Enoxaparin (Clexane) may occasionally be recommended. Tinzaparin (Innohep) is the LMWH of choice in Shrewsbury as per SaTH’s protocol.
LMWHs should be considered for all patients

7.2 Pharmacological interventions should be started as soon as possible after the risk assessment has been completed and continue until the patient is no longer at increased risk of VTE.

7.3 Other LMWHs or fondaparinux may be used in specific situations within guidelines.

7.4 Unfractionated heparin: LMWH should be used with caution when there is severe impairment of kidney function. When estimated GFR is <30ml/min, unfractionated heparin (UFH 5,000 IU bd) or reduced dose LMWH (e.g. Clexane 20mg) is advised.

7.5 Contraindications to heparins:

7.6 Active bleeding, hypersensitivity to heparin, coagulopathy, severe liver disease, endocarditis, history of HITT, lumbar puncture or neuroaxial anaesthesia within 12 hours, recent intraocular or intracranial surgery. Caution in uncontrolled hypertension.

This list is not exhaustive & clinicians should consider other factors in an individual patient.

7.7 Aspirin use in VTE thromboprophylaxis related to hospital admission or surgical procedures is NOT recommended in NICE Guidance CG92.

7.8 Dabigatran may be used within licensed indications and is recommended by NICE in such instances. It is contraindicated in severe renal impairment (GFR < 30ml/min) and if neuroaxial analgesia is used while the epidural catheter is in place. After removal of an epidural catheter the first dose should be delayed at least 3 hours. Dose reduction is recommended if GFR is 30-50 ml/min. Caution in age >75 years. Dose reduction required if concomitant amiodarone or verapamil use. Note interaction with amiodarone, quinidine. Concomitant clopidogrel use is not recommended. Caution in concomitant use of NSAIDS due to the known increase in bleeding risk.

7.9 Rivaroxaban may be used within licensed indications and is recommended by NICE in such instances. It is contraindicated in very severe renal impairment (GFR <15ml/min), and to be used with caution in severe renal impairment (GFR 15-29ml/min). Neuroaxial analgesia may be used with the recommendation that the epidural catheter is removed more than 18 hours after the last dose and the next dose is not sooner than 6 hours after removal of the catheter. Note interaction with HIV protease inhibitors and -azole antifungals - not recommended if these drugs are also being given but fluconazole may be given with caution. Caution in concomitant use of NSAIDS due to the known increase in bleeding risk.

7.10 Warfarin is NOT recommended in NICE Guidance CG92. It has been shown to be effective for extended prophylaxis after hospital admission but LMWH, Dabigatran or Rivaroxaban should be considered to be the preferred options. A LMWH should be used until a therapeutic INR has been established.

Mechanical prophylaxis
8. Graded Elastic Compression Stockings (GECS)

8.1 In the absence of contraindications properly fitted GECS are an adjunct or alternative to pharmacological prophylaxis when there is increased risk from heparin use, due to patient or procedure related factors. NICE guidance recommends against the use of GECS in patients with acute stroke.

8.2 Only competent staff may fit stockings.
   • They should fit the Sigel profile (a pressure profile for elastic stockings).
   • They should be removed daily to inspect the skin and for hygiene purposes.
   • Ensure that they are worn correctly and any event that leads to leg swelling or oedema should lead to the refitting of GECS.
   • Knee length stockings are better tolerated and there is no evidence that thigh length stockings improve effectiveness.

8.3 Anti-embolic stockings are to be used with patients who have or will undergo surgical procedures, have suffered major trauma, spinal injured patients and other at risk patients for whom pharmacological prophylaxis is contraindicated. Once patients have regained their normal level of mobility and other risks are eliminated stockings can be removed, however if their normal level of mobility cannot be regained medical advice further should be sought once the acute phase is resolved and their condition is stable.

8.4 Stroke patients should not be offered anti-embolism stockings (NICE,2010).

8.5 Other patient groups for whom anti-embolic stockings are contra-indicated include those with:
   • Severe Peripheral Vascular Disease or vascular surgery
   • Insensate leg (numbness) due to local anaesthesia block, neuropathy, diabetes etc
   • Cellulitis
   • Dermatitis
   • Massive oedema
   • Leg/foot ulcers
   • Gangrene
   • Fragile “tissue paper” skin
   • Cardiac failure
   • Major limb deformity preventing correct fit
   • Allergy to the material of manufacture

8.6 Anti-embolic stockings offer 17mmHg pressure to a limb; therefore assessment of the patient’s limbs is of paramount importance prior to application. Application of anti-embolic stockings to an ischaemic limb can cause significant damage including the development of heel pressure ulcers. The registrant must be aware of the following signs/symptoms which could indicate ischaemia:
   • The limb is cold
   • The limb is hairless
   • The limb is dusky on dependence
   • The limb blanches on elevation
• Pain at night when legs are elevated is common
• Foot pulses are absent or diminished – palpate the pulses at the dorsalis pedis artery (or the anterior tibial artery), the posterior tibial artery and the peroneal artery.
• Any wound to the lower limbs which appear deep or punched out.

8.7 If one or more of these signs are present, a Doppler test should be carried out, prior to application of anti-embolism stockings. If the Doppler reading is <0.8, medical advice should be sought prior to the application of anti-embolism stockings. Medical advice should also be sought if the patient has one of the following conditions:

• Severe oedema of legs
• Pulmonary oedema due to Congestive Cardiac Failure (CCF)
• Local leg conditions e.g. dermatitis, cellulites or skin grafts in last 3 months
• Severe peripheral neuropathy
• Greater thigh/leg circumference than recommended by the fitting instructions
• Before carrying out Doppler assessment (Ankle Brachial Pressure Index), specialist training must be completed.

8.8 NICE guidelines (2010) recommend thigh-length stockings, however if they are inappropriate for a particular patient, for reasons of compliance or fit, knee-length stockings may be used as a suitable alternative. Anti-embolism stockings must not be left off for any longer than thirty minutes at a time.

8.9 Intermittent Pneumatic Compression (IPC) devices (full or knee length) may be used when pharmacological prophylaxis is contraindicated.

8.10 Foot Impulse Devices require correct use and should only be used as part of a specific medical plan.

9. Discharging patients

9.1 Discharge plans must include the provision of verbal and written information on the signs and symptoms of deep vein thrombosis and pulmonary embolism and the correct and recommended advice on the use of VTE prophylaxis at home (if discharged with prophylaxis).

Upon discharge nurses must:-

• Include the necessary information in their transfer / handover information prior to transfer to other care facilities.
• Clearly state the duration of treatment on discharge summary.
• If on-going treatment is required, nurses must discuss with the relevant care provider as well as the patient.
10. Training and Competency Assessment

10.1 Education about the hazards of VTE, risk assessment and preventative methods is part of the Trust mandatory training process for qualified inpatient staff. The DH e-learning package for VTE thromboprophylaxis is available through the Electronic Staff Record and face to face at healthcare awareness days.

11. Root Cause Analysis for Hospital - Acquired VTE

11.1 A Root Cause Analysis (RCA) will be completed for incidence of VTE that occur between 3 after days of admission and 12 weeks post discharge.

11.2 The Matron, will complete a concise root cause analysis (RCA), to understand if there were any deficits in the patient’s care and if any remedial action needs to be taken. Outcomes of the RCA will be sent to the Associate Director of Physical Care and the Deputy Director of Nursing.

11.3 Serious untoward incident (SUI) will be reported according to national guidance and monitored through the Commissioning Quality Review arrangements.

12. Process for Monitoring Compliance and Effectiveness

12.1 VTE monitoring is reported through the national Safety Thermometer and is based on the NICE guidance audit tool and the NICE Quality Standard. Training compliance will be reported in the monthly mandatory training reports.

12.2 The Department of Health require information to ensure all patients have received a risk assessment. This is provided by the Trust to the Performance Team.

12.3 Data and information arising from the safety thermometer and mandatory training review will be reviewed as part of directorate management meetings and the Physical Healthcare meeting.

12.4 The Lead Associate Director for physical care has the responsibility for monitoring this policy.

13. References

NICE  
Venous thromboembolism - reducing the risk (CG92)

RCN  
Preventing VTE

E-learning  
Web based training. This is better accessed through ESR as a record of your leaning is added to your competency profile.
Risk assessment completed, signed and dated on admission and repeated within 24 hours.

Is the patient at risk?

Yes

Medical Officer to decide upon treatment

Drugs Prescribed as per Nice Guidance

re-assess patient after 24 hours then weekly

No

Re-assess weekly or as patients condition changes

Anti-embolic stockings

Assess for suitability

The following signs could indicate ischaemia:
- The limb is cold
- The limb is hairless
- The limb is dusky on dependence
- The limb blanches on elevation
- Pain at night when legs are elevated is common
- Foot pulses are absent or diminished
- any wound which appears deep or punched out

Doppler Test

If less than 0.8 ABPI

DO NOT Apply Stocking Seek further Medical Advice

Over 0.8 measure limb and apply stocking and provide information