Venous Thromboembolism (VTE) Prevention and Management Policy and Procedures
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Approved policies related to this policy

<table>
<thead>
<tr>
<th>Name Policy</th>
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Statement of changes made

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<td>0.1</td>
<td>03/06/2011</td>
<td>New document written to incorporate existing VTE guidelines</td>
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List of stakeholders who have reviewed the document

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<th>Name</th>
<th>Title</th>
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<tr>
<td>Mr Mike Walker</td>
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<td>Mrs Lynn Anderson</td>
<td>Acting Deputy Head of Nursing</td>
</tr>
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</tr>
<tr>
<td>VTE Steering Group members</td>
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SUMMARY

This policy explains the guidelines and clinical management of patients receiving care at the North Cumbria University Hospitals NHS Trust (NCUH) in relation to the management and prevention of venous thromboembolism.
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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. A UK survey suggested that 71% of patients assessed to be at medium or high risk of developing deep vein thrombosis did not receive any form of mechanical or pharmacological VTE prophylaxis.

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. Venous thrombosis is often asymptomatic; less frequently it causes pain and swelling in the leg. Part or all of the thrombus can dislodge and travel to the lung as a potentially fatal pulmonary embolism. Symptomatic venous thrombosis carries a considerable burden of morbidity, including long-term morbidity because of chronic venous insufficiency. This in turn can cause venous ulceration and development of a post-thrombotic limb (characterised by chronic pain, swelling and skin changes).

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).

**Principles of VTE Prevention**

- All patients coming into hospital must receive information about VTE. This details how they can reduce the risk along with the measures that the hospital will take in order to reduce their VTE risk.

- The risk of VTE and the risk of bleeding must be assessed in all patients coming into hospital as an emergency or electively for an inpatient or day case operation. Patients coming for non-surgical day case treatments e.g. endoscopy, renal dialysis or radiological procedures do not require assessment unless indicated by the treating consultant.

- All patients must receive thromboprophylaxis measures based on their individual VTE/bleeding risk assessment and on the treatment they are planned to receive and the degree of immobility they are likely to encounter.

- All patients assessed at significant risk of VTE must receive mechanical prophylaxis unless specifically contraindicated.
Pharmacological measures of prophylaxis are important in patients at high risk of VTE, provided they are not contraindicated. The two drugs routinely used in NCUHT are Enoxaparin, and Rivaroxaban (only in elective total hip and total knee replacement patients). Other drugs should only be prescribed after advice from a Pharmacist and/or Haematologist.

- At discharge all patients at high risk and those with expected reduced mobility should continue mechanical prophylaxis with anti-embolism stockings. Very high risk patients should continue pharmacological prophylaxis after discharge – this is usually evidence-based but also at the discretion of the treating consultant. This is becoming more important with patients staying for shorter stays in hospital even for major surgery.

- All patients must receive information about VTE prevention after discharge, including advice on what signs and symptoms they need to be aware of. They must receive instructions and training on the continued use of mechanical and pharmacological prophylaxis if applicable.

2. **PURPOSE OF THE DOCUMENT**

The purpose of this document is to describe guidance for the prevention of VTE and PE in adults receiving care within NCUHT and thereby prevent unnecessary patient deaths.

3. **DEFINITION OF TERMS USED**

VTE    Venous thromboembolism  
PE     Pulmonary Embolus   
AES    Anti-embolic stockings  
KPI    Key Performance Indicator   
CQUIN  Commissioning for Quality and Innovation   
CQC    Care Quality Commission  

4. **SCOPE**

This policy applies to all employees of NCUHT including locum and agency staff.

5. **DUTIES (ROLES & RESPONSIBILITIES)**

5.1 **Chief Executive Officer / Board Responsibilities**

The Trust Board members must be aware of the policy and the responsibilities of the designated personnel contained within and the committees outlined within the policy.
5.2 **Clinical Director Responsibilities**

The Clinical Directors will support the senior medical staff with the enclosed guidance.

5.3 **Director of Nursing & Quality and Divisional Heads of Nursing Responsibility**

The Director of Nursing & Quality and Divisional Heads of Nursing must ensure all nursing staff are aware of and have access to this policy and that appropriate education, supervision and mechanisms are in place to ensure safe practice.

5.4 **Matrons, Sister / Charge Nurse**

Senior staff must ensure that members of their team are adequately trained and competent to deliver the enclosed guidance.

5.5 **Staff Responsibility**

To ensure that all clinical staff are aware of this policy and are conversant with the guidelines therein.

6. **PROCESS**

6.1 **The process/risk assessment for identifying patients at risk of VTE**

All patients are reviewed on admission to identify those who are at risk of venous thromboembolism (VTE) using the appropriate risk assessment tool.

Patients who do not require VTE assessment are outlined in [Appendix 1](#).

Adult surgical patients are assessed by the a member of the nursing or medical team using the Surgical VTE Assessment Form - [Appendix 2](#).

Medical and acute admissions are assessed by the F1 or F2 (clerking doctor) using the assessment form incorporated into admission clerking documentation and is found in [Appendix 3](#).

It is imperative that the documentation is completed in full, signed and filed in the patient’s medical records in a contemporaneous manner.

**General recommendations for reducing the risk of VTE:**

- Do not allow patients to become dehydrated unless clinically indicated.
- Encourage patients to mobilise as soon as possible.
- Do not regard aspirin or other antiplatelet agents as adequate prophylaxis for VTE.
Medical patients have an increased of VTE if:

- If they have had or are expected to have significantly reduced mobility for three days or more
- If they are expected to have ongoing reduced mobility relative to their normal state and have one or more of the risk factors shown in Box 1 below.

Surgical patients and patients with trauma with one or more of the following criteria:

- Surgical procedure with a total anesthetic and surgical time of more than 90 minutes, or 60 minutes if the surgery involves the pelvis or lower limb
- Acute surgical admission with inflammatory or intra-abdominal condition
- Expected significant reduction in mobility
- One or more of the risk factors shown in Box 1 below

Box 1 Risk factors for VTE

- Active cancer or cancer treatment
- Age over 60 years
- Critical care admission
- Dehydration
- Known thrombophilias
- Obesity (body mass index [BMI] over 30 kg/m²)
- One or more significant medical comorbidities (for example: heart disease; metabolic, endocrine or respiratory pathologies; acute infectious diseases; inflammatory conditions)
- Personal history or first-degree relative with a history of VTE
- Use of hormone replacement therapy
- Use of oestrogen-containing contraceptive therapy
- Varicose veins with phlebitis

For women who are pregnant or have given birth within the previous six weeks see separate

Trust Guideline for Obstetric VTE Prophylaxis

Assess all patients for risk of bleeding before offering pharmacological VTE prophylaxis. Do not offer pharmacological VTE prophylaxis to patients with any of the risk factors for bleeding shown in Box 2, unless the risk of VTE outweighs the risk of bleeding.
Box 2 Risk Factors for bleeding

- Active bleeding
- Acquired bleeding disorders (such as acute liver failure)
- Concurrent use of anticoagulants known to increase the risk of bleeding (such as warfarin with international normalized ratio [INR] higher than 2)
- Lumbar puncture/epidural/spinal anaesthesia expected within the next 12 hours
- Lumbar puncture/epidural/spinal anaesthesia within the previous 4 hours
- Acute stroke
- Thrombocytopenia (platelets less than 75 x 10⁹/l)
- Uncontrolled systolic hypertension (230/120 mmHg or higher)
- Untreated inherited bleeding disorders (such as haemophilia and von Willebrand’s disease)

Reassess the patients’ risk of bleeding and VTE within 24 hours of admission, and whenever the clinical situation changes, to:

- Ensure that the methods of VTE prophylaxis used are suitable
- Ensure that VTE prophylaxis is being used correctly
- Identify adverse events resulting from VTE prophylaxis.

6.2 Prophylactic Treatment regime for High Risk Patients

Once patients have been identified at being at particular risk of VTE, appropriate prophylaxis is given.

Guidance regarding the methods of prophylaxis can be viewed in Appendix 4.

6.3 Procedure to be followed if VTE is suspected

If an inpatient already is suspected to have a DVT or PE a registrar or other senior clinician will review the patient and order appropriate radiological investigations, either a duplex Doppler scan of the lower limb or a CT pulmonary angiogram. It should be noted that D-dimer measurement is not useful in patients who have had recent surgery as this is an acute phase inflammatory marker and may already be abnormal.

6.4 Management of the patient once a positive diagnosis has been made

The Trust has in place a guideline for the managements of patients where a positive diagnosis has been made. This is an agreed document between NHS Cumbria and NCUH and is scheduled for review by September 2012. If a DVT or PE is confirmed by the doctor the patient should be loaded with warfarin (unless contraindicated). If
warfarin is contraindicated seek the haematologist’s advice. Follow the DVT guideline within Appendix 5.

6.5 Information given to patients

As part of the discharge plan, patients and their families or carers are given verbal and written information regarding VTE.

The guidance follows in Appendix 6

7. IMPLEMENTATION AND TRAINING REQUIREMENTS

The Trust has undertaken a training needs analysis and details of the current training requirements for different staff groups in relation to VTE training is detailed in the Trust’s Induction and Mandatory Training Policy and Training Needs Analysis.

8. PROCESS FOR MONITORING COMPLIANCE WITH POLICY / PROCEDURE

Organisational arrangements in place for ensuring Trust compliance with the policy and procedures are a combination of the following:

- Review of incident reports and preparation of reports that feed into the Trusts’ risk management / governance arrangements
- The Information Department issues monthly compliance figures for use for monitoring of externally set KPI’s and CQUIN measures

The Trust-wide Audit of VTE prophylaxis is mandatory. This is part of the Commissioning for Quality and Innovation (CQUIN) target contract which states that 90% of patients admitted have to be risk assessed on admission and within 24 hours and of patients assessed as being at high risk, 100% have to receive appropriate thromboprophylaxis.

Data on completion of risk assessment on all patients admitted to hospital is collected and reported to the Department of Health on a monthly basis.

9. REFERENCES

Core documents - evidence base
Links to NHSLA Risk Management Standards
Links to CQC Regulations / Outcomes
APPENDIX 1 - PATIENT GROUPS NOT REQUIRING ROUTINE VTE ASSESSMENT

The Medical Director, following consultation with the SHA Medical Director, has agreed that the patients having the interventions and procedures listed below do not require routine VTE assessment

- Dialysis patients
- All routine endoscopy patients
- All routine day case patients for Ophthalmology
- All Chemotherapy patients

Any other minor procedures must be submitted to the Medical Director for consideration and agreement before being included in the list above.

This is general guidance only and clinical judgement in individual patient treatment will override this instruction.
APPENDIX 2 - VTE ASSESSMENT

Venous thromboembolism (VTE) Risk Assessment for Adult Surgical Patients

Please fill in this form, sign and keep with current drug chart. Prescribe ALL appropriate prophylaxis on drug chart, including mechanical prophylaxis.

Patients who have more than one risk factor and significantly reduced mobility should be considered at high risk and consideration given to if they require thromboprophylaxis until they return to their normal level of mobility.

<table>
<thead>
<tr>
<th>Thrombosis Risk</th>
<th>Bleeding Risk</th>
</tr>
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<tbody>
<tr>
<td>Age &gt;60 years</td>
<td>Acute stroke</td>
</tr>
<tr>
<td>BMI &gt;30kg/m²</td>
<td>Acquired bleeding disorder (such as acute liver failure)</td>
</tr>
<tr>
<td>Personal or family history of VTE</td>
<td>Platedes &lt;75x10^11, check on admission</td>
</tr>
<tr>
<td>Significant reduced mobility for 3 days or more</td>
<td>Uncontrolled hypertension (&gt;330/120)</td>
</tr>
<tr>
<td>Total anaesthetic + surgery time &gt; 60 minutes</td>
<td>Neurosurgery, spinal anaesthesia or eye surgery</td>
</tr>
<tr>
<td>Hip or knee replacement</td>
<td>Lumbar puncture/spinal/epidural anaesthesia within the previous 4 hours</td>
</tr>
<tr>
<td>Surgery involving patient and lower limb with anaesthetic + surgery time &gt; 60 minutes</td>
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<tr>
<td>Hip fracture</td>
<td></td>
</tr>
<tr>
<td>Dehydration</td>
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<tr>
<td>Known thrombophilia</td>
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<tr>
<td>One or more significant medical co-morbidities (e.g. heart disease, metabolic, endocrine or respiratory pathologies, acute infections, inflammatory conditions)</td>
<td>Consistent use of anticoagulants known to increase risk of bleeding (such as warfarin with INR &gt; 2)</td>
</tr>
<tr>
<td>Hormone therapy e.g. HRT/COCP</td>
<td>Other procedure with high bleeding risk</td>
</tr>
<tr>
<td>Pregnancy within weeks post partum</td>
<td>Venous veins with phlebitis</td>
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Contraindications to Enoxaparin | Contraindications to AES/SCDs |
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<tbody>
<tr>
<td>GFR&lt;30ml/min – use Enoxaparin 22mg daily</td>
<td>Do not use SOCDS if present lower limb DVT</td>
</tr>
<tr>
<td>Active bleeding</td>
<td>Severe peripheral vascular disease</td>
</tr>
<tr>
<td>Platelet count &lt;75 x 10^9</td>
<td>Leg oedema / leg deformity</td>
</tr>
<tr>
<td>Untreated inherited bleeding disorder</td>
<td>Severe dermatitis</td>
</tr>
<tr>
<td>Previous HIT or allergy to enoxaparin</td>
<td>Recent skin graft</td>
</tr>
<tr>
<td>On therapeutic anticoagulation</td>
<td>Peripheral neuropathy</td>
</tr>
<tr>
<td>Acquired bleeding disorder</td>
<td>Poorly fitting</td>
</tr>
<tr>
<td>Patient concerned about using animal products</td>
<td>Allergy to fabric</td>
</tr>
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Risk Category | Tick | Recommended Prophylaxis |
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<tbody>
<tr>
<td>ELECTIVE ORTHOPAEDIC Primary hip or knee replacement</td>
<td></td>
<td>Avanofiban 1mg oral (see above) OR Enoxaparin 40mg sq/daily</td>
</tr>
<tr>
<td>HIGH (with low risk of bleeding)</td>
<td></td>
<td>Sequential compression device + Early mobilisation</td>
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<tr>
<td>HIGH (with significant risk of bleeding)</td>
<td></td>
<td>Enoxaparin 40mg sq/daily + Anti-embolic stockings (not in orthopaedic pts)</td>
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<tr>
<td>LOW</td>
<td></td>
<td>Anti-embolic stockings (not in orthopaedic pts) + Sequential compression device + Early mobilisation</td>
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Assessment completed by: [Name] [Sign] [Date]

**PRESCRIBER MUST REVIEW RECOMMENDED PROPHYLAXIS AND EVALUATE BLEEDING RISKS AND CONTRAINDICATIONS BEFORE PRESCRIBING APPROPRIATE THROMBOPHOPHYLAXIS.**

Doctors signature / Bleep: [Name] [Date]
Venous Thromboembolism (VTE) Risk Reassessment for Adult Patients. Patients should be reassessed at 24hrs and if clinical condition changes.

<table>
<thead>
<tr>
<th>Date</th>
<th>Has Patient VTE risk changed?</th>
<th>Does Prophylaxis need amending?</th>
<th>Have changes to prophylaxis been prescribed?</th>
<th>Signed</th>
<th>Name and Grade</th>
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**Prescribing Information**

<table>
<thead>
<tr>
<th></th>
<th>ENOXAPARIN</th>
<th>RIVAROXABAN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Timing</strong></td>
<td>Do not give for at least 2 hrs usually 6-6 hrs after surgery and only when excessive bleeding has been excluded. Day of surgery admissions – operating surgeon will specify timing of first dose and then following doses in patient ward areas will be given at 10.00 hrs. For patients admitted day before surgery, give no later than 10.00.</td>
<td>Prescribe for 6-10 hours postoperatively then at 18.00 hrs each day.</td>
</tr>
<tr>
<td><strong>Epidural/Spinal analgesia</strong></td>
<td>Placement or removal of catheter should be delayed for 12 hours after administration of enoxaparin. Enoxaparin should not be given sooner than 6 hours after catheter removal.</td>
<td>An epidural catheter is not to be removed earlier than 15 hours after the last administration of rivaroxaban. The next rivaroxaban dose is to be administered not earlier than 6 hours after the removal of the catheter.</td>
</tr>
<tr>
<td><strong>Duration of therapy</strong></td>
<td>For joint replacement patients see standard therapy above. Fractured NOF patients should receive 25 days enoxaparin. For other patients prescribe until discharge unless &gt; 14 days in which case reassess need. Consider extended prophylaxis for high risk major surgery patients.</td>
<td>Continue for 14 days for knee replacements.</td>
</tr>
<tr>
<td><strong>Management of bleeding</strong></td>
<td>Enoxaparin is NOT reversed by FFP. Stop treatment until cause of bleeding is confirmed and seek senior advice. Check platelet count and coagulation screen. If no surgical or correctable cause, consider protamine. Timing of protamine will neutralise the effect of 1mg of enoxaparin (maximum dose of protamine is 50mg).</td>
<td>A specific antidote antagonising the pharmacodynamic effect of rivaroxaban is not available. Rivaroxaban has mean terminal half-lives between 7 and 11 hours. Stop treatment until cause of bleeding is confirmed and seek senior advice. Use appropriate symptomatic treatment, e.g. mechanical compression, surgical interventions, fluid replacement and haemodynamic support. If life-threatening bleeding cannot be controlled by the above measures, administration of recombinant factor VIIa may be considered with haematology advice.</td>
</tr>
<tr>
<td><strong>Monitoring of therapy</strong></td>
<td>Monitor platelet count and potassium levels before starting treatment and every 5-7 days. If platelet count falls by &gt;50% and/or patient develops new thrombosis or skin allergy HIT should be considered.</td>
<td>No routine monitoring is necessary.</td>
</tr>
<tr>
<td><strong>Discharge</strong></td>
<td>Aspirin and Clopidogrel should be initially stopped while the patient is on enoxaparin or rivaroxaban unless specifically indicated and reamined after a period of 7 days if no wound healing is present.</td>
<td></td>
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</tbody>
</table>
APPENDIX 3 - PAGE 4 OF THE MEDICAL PATIENT CLERKING PROFORMA

Patient Name: [Redacted]
DOB: [Redacted]
Hospital number: [Redacted]

Risk Factors and Prophylaxis:

Patient Administration Alerts:

MRSA status: □ Known Positive, □ Known Negative, □ Unknown.
Clostridium difficile status: □ Known Positive, □ Known Negative, □ Unknown.

Cardiac/Cerebral/Peripheral Disease Risk Factors
□ Hypercholesterolaemia, □ Hypertension, □ Diabetes, □ Previous IHD / TIA / Stroke / PVD
□ Family History, □ Male, □ Smoker

RISK ASSESSMENT TOOL FOR VENOUS THROMBOEMBOLISM

THROMBOSIS RISK
□ Age > 60
□ Previous DVT/PE
□ Active cancer
□ Acute or chronic lung disease
□ Acute or chronic inflammatory disease
□ Chronic heart failure
□ Lower limb paralysis (excluding stroke)
□ Acute infectious disease
□ BMI >30kg/m²
□ Major orthopaedic surgery
□ Hip fracture
□ Plaster cast lower limb
□ Surgical procedure >30mins
□ Significantly reduced mobility compared to normal for 3 days or more

HAEMORRHAGE RISK
□ Haemorrhage or other bleeding disorder
□ Known platelet count <100
□ Acute stroke in previous month (ischaemic or haemorrhagic)
□ BP >200 systolic or >120 diastolic
□ Severe liver disease
□ Severe renal disease
□ Active bleeding
□ Major bleeding risk (existing anticoagulant/platelet therapy)
□ Neurosurgery, spinal surgery or eye surgery
□ Other procedure with high bleeding risk
□ Lumbar puncture/spinal/epidural in 4 hours previous.

Patients who have one or more risk factors should be considered high risk and consideration given to if they require Thromboprophylaxis.

Thromboprophylaxis:
□ IS to be given
□ IS NOT to be given

Compare VTE risk against haemorrhagic risk and determine if intervention is indicated

Recommended prophylaxis:
Below knee compression stockings + Enoxaparin 40mg once daily at 6pm
(If CrCl <30mls/min use Enoxaparin 20mg)

Admission Clerkig Proforma Page 4

Last modified: 03/02/2010
APPENDIX 4 - GUIDELINES REGARDING PROPHYLAXIS FOR PATIENTS AT RISK OF VTE

4.1 Mechanical VTE prophylaxis

Base the choice of mechanical VTE prophylaxis on individual patient factors including clinical condition, surgical procedure and patient preference. Choose any one of:

- Anti-embolism stockings
- Intermittent pneumatic compression devices (around the calf or foot pump pumps).

4.1.1 Anti-embolic stockings

For the purpose of this guideline, anti-embolic stockings applies to any patient wearing Thrombexin white below knee (1st line) or thigh length graduate stockings that can only be prescribed in hospital and after completion of VTE risk assessment. For other types of hosiery prescribed for leg ulcer prevention and management refer to vascular nurses.

To ensure the safe use and appropriate care of patients prescribed anti-embolic stockings must be measured as recommended by the Sigel Profile. This profile recommended in 1974 that AES should be measured at 5 points: the ankle, mid calf, below the knee, the mid thigh and upper thigh don't delete in order to prevent a DVT in an immobile inpatient opposed to 3 points of the British Standard. The only published; evidence based study to measure and compare graduated compression profiles of six AES manufacturers is S Thomas et al in 2000 and is still relevant today.

In order to provide best practice in the use of AES, a mechanical method of thrombo-prophylaxis for adult patients with a VTE risk, it is the responsibility of the clinician to complete the Trust VTE risk assessment proforma and prescribe the AES. However the competent nurse caring for that individual patient must be aware of the following conditions that would prevent the use of AES.

- Severe oedema of legs
- Pulmonary oedema from congestive heart failure
- Atherosclerosis or other vascular disease
- Leg conditions such as dermatitis, gangrene, cellulitis or skin grafting in the last three months
- Severe peripheral neuropathy, particularly in diabetics
- Unusual leg shape or size
- Major limb deformity preventing correct fit
PROCEDURE

1. The Trust VTE risk assessment form must be completed and Thrombexin AES prescribed by physician/ surgeon.
2. Use anti-embolism stockings that provide graduated compression and produce a calf pressure of 14-15mmHg.
3. The patient's ankle and calf measurements must be documented at the initial nursing assessment plus the size and length of the stockings supplied. Below knee is the preferred 1st line management.
4. Leg measurements need to be rechecked to avoid potential complications related to swelling of the leg that may cause excessive pressure from the stockings.
5. Ensure that patients who develop oedema or postoperative swelling have their legs re-measured and anti-embolism stockings refitted.
6. Regular observations of the circulation, sensation and movement of toes should be checked after applying the stockings to include the following symptoms. The stockings must be removed if any of the following symptoms occur.
   - Discoloured toes
   - Blue/White/Cold toes
   - Tingling in the toes
   - Swelling to the toes
7. When anti-embolic stockings are applied, the correct placement and proper fitting must be observed to ensure they are not impairing/ restricting the circulation either at the thigh, knee, ankle or the toes. When sitting the patients must be monitored regularly to ensure the stocking is not restricting the circulation at the knee, if this occurs the stocking must be refitted or removed completely.
8. Any pain or discomfort in the stockinged leg must be recorded at each shift change and any problems identified by the nurse or the patient must be reported to the medical staff. The stocking must be removed immediately and an alternative VTE prophylaxis may be required.
9. Encourage patients to wear their anti-embolism stockings day and night until they no longer have significantly reduced mobility.
10. 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.
11. The nurse must encourage the patient to take adequate fluids where possible and exercise ankles/ toes often to reduce the risk of a DVT occurring.
12. All healthcare workers caring for patients wearing anti-embolic stockings must be aware of and observe for the following signs and symptoms of a DVT/ PE and take appropriate action as needed. The patient may complain of all or one of the below
Signs and symptom of a sign of Deep Vein Thrombosis (DVT)

- Swelling of the calf and/or thigh
- Pain and tenderness in the leg, mainly the calf
- Increased skin temperature of the leg
- Distended superficial veins
- Colour change (red or purple)
- Low-grade pyrexia (uncommon)

Signs and symptoms of pulmonary emboli (PE)

- Breathlessness
- Dizziness
- Distress
- Non specific chest pains
- Coughing (especially if bringing up blood)

1. Education of the patient and appropriate carers must be an important part of the care provided and must encompass issues such as the purpose of the Thrombexin AES, the correct fitting and application, care of skin and safety checks for circulation, swelling, pain and movement. The patient and carers must be provided with a patient leaflet.

2. For patients where long-term use of stockings is indicated more than one pair should be supplied to allow for washing (See Medi UK manufacturer instruction). The nurse will need to ensure that a second pair is supplied after the patient has been reassessed before discharge.

3. For patients who sustain a DVT during inpatient stay contact the vascular nurses as the management is entirely different in order to prevent post thrombotic syndrome

THE APPLICATION OF STOCKINGS

General observations

- Note the shape of the patient’s leg
- Observe the skin, is it dry, are there any open wounds
- Observe for heat or signs of inflammation
- Is there any pain in the leg on palpation
- Is there any deformity of the leg/ ankle/ foot
- Observe for scarring or previous ulcers
Choosing and fitting instructions

1. Choice of below knee (1st line) or thigh length for one or both legs depends on consultant’s instructions however an experienced nurse trained in the fitting of stockings may determine which length of stocking is most appropriate for the individual patient. This must be documented in the medical and nursing notes.

2. Refer to manufacturer’s instructions and measurement table to determine the appropriate size of stocking, this is identifiable on the stocking packet.

3. Measure ankle circumference at narrowest part of the ankle for below (1st line) and above knee stockings.

4. Measure calf circumference at widest part of the calf for below (1st line) and above knee stockings.

5. Measure thigh circumference at widest part of thigh for above knee stockings.

Do not apply stockings if the manufacturer’s measurements do not meet the Sigel Profile and do not use the nearest size/fit as they have the potential to cause a DVT as well as trauma/injury to the patient’s leg. An incident form must be submitted to risk management if any injury is incurred.

Applying the stocking

1. The patient may fit their own stocking if they are able but the nurse must ensure the stocking fits effectively.

2. The nurse must obtain consent from the patient prior to applying the stockings and discuss the patient leaflet on the risks and benefits of wearing the stocking.

3. Insert hand into stocking as far as the heel pocket, grasp the centre of the heel and turn stockings inside out to the heel area.

4. Carefully position stocking over the foot and heel and be sure the patient’s heel is fits snugly in the heel of the stocking.

5. Pull the body of stocking evenly up around the ankle and calf smoothing out carefully any excess material.

6. Pull toe section forward over the toes smooth ankle/instep area and allow for patient toes comfort.

7. Pull the remaining stocking carefully and evenly up the leg. For below knee stockings (1st line) pull up to just below the crease of the knee and to upper/mid thigh for full length stockings (The patient should not complain of pain or discomfort if the stocking is fitted correctly

8. The patient must be taught how to apply or remove the stockings correctly whilst in hospital and before discharge.

9. Patients must be encouraged to remove the stocking or inform the nurse if they have issues with the stocking.

10. If the stocking is required for a longer period of time and the patient is unable to apply their own stocking alternative arrangements must be made to ensure another person can apply the stockings after discharge.
Special note

For patients who have a previous history of a DVT or have had a venous ulcer in the past and who routinely wear support stockings (usually beige or black in colour) their own strong class one/two stocking may be used instead of AES. For any issues relating to patients wearing strong compression hosiery please contact the vascular nurses.

4.1.2 Intermittent pneumatic compression devices

The risk assessment forms illustrated within Appendix 2 and Appendix 3 alert the clinician to patients who require this device.

Do not offer intermittent pneumatic compression devices to patients with a known allergy to the material of manufacture, or if recent lower limb DVT.

Encourage patients on the ward who have intermittent pneumatic compression devices to use them for as much of the time as is possible and practical, both when in bed and when sitting in a chair.

4.2 Pharmacological VTE prophylaxis

The pharmacological VTE prophylaxis used routinely in the Trust is Enoxaparin. Rivaroxaban may be used in elective Hip or Knee replacements only.

4.2.1 Enoxaparin

The standard dose is 40mg s/c once a day. In patients with renal impairment (creatinine clearance <30mls/hour) use a reduced dose of 20mg s/c once daily.

Timing of treatment

Enoxaparin should not be given for 4-6 hours after surgery and only when excessive bleeding has been excluded.

In patient ward areas will routinely give this at 18.00 each day. If any other time is chosen then this must be clearly indicated and the nursing team informed.

In patients admitted the day before surgery a pre-operative dose not later than 18.00 may be given if indicated.

Day of Surgery admissions

In patients admitted on the day of surgery (including day surgery) pre-operative enoxaparin should not be given. On the basis of the assessment of risk of VTE and bleeding, the operating surgeon will specify the timing of administration of the first dose at the pre-incision Surgical Checklist Time Out, thus allowing the anaesthetist to contribute to the decision. If the enoxaparin has not been prescribed then this must be done at this point to ensure it is not missed in error. Enoxaparin will be
given either 4-6 hours after the procedure or at 18.00. Depending on the VTE risk, the patient will require continued mechanical prophylaxis until enoxaparin has been given. In high risk patients undergoing major surgery this should be with an intermittent compression device.

Evidence on the best time to administer enoxaparin is weak apart from in joint replacement. This may need to be decided on an individual patient basis based on the balance of risks.

**Epidural/Spinal analgesia**

Placement or removal of an epidural catheter or spinal needle should not be undertaken less than 12 hours after administration of enoxaparin. Enoxaparin should not be given until at least 6 hours after catheter removal.

**Management of bleeding**

Enoxaparin is not reversed by FFP. Treatment should be stopped until the cause of bleeding is identified and controlled. Senior advice should be sought. The platelet count and clotting screen should be checked. If there is no correctable cause then consider Protamine.

**1mg of Protamine will neutralize the effect of 1mg of Enoxaparin. Maximum dose of Protamine is 50mg.**

**Monitoring of Therapy**

If enoxaparin is continued for more than 5 days there is a small risk of the patient developing a *Heparin-induced thrombocytopenia (HIT)*. The platelet count should be measured before treatment and after 5-7 days or if the patient develops a skin rash or other signs of an allergic reaction.

**Duration of therapy**

Treatment should continue until mobility is no longer significantly reduced. Hip replacement and hip fracture patients should receive prophylaxis for 28 days. Elective knee replacements should receive 14 days prophylaxis. Consider extending prophylaxis to 28 days post-operatively for higher risk patients who have had major cancer surgery in the abdomen or pelvis.
4.2.2. Rivaroxaban

This is only licensed for use in patients undergoing elective hip or knee arthroplasty and is only in relation to thromboprophylaxis.

**Rivaroxaban protocol for elective hip and knee replacement surgery**

| Current anticoagulant medication i.e. warfarin, phenindione and acenocoumarol | YES |
| Concomitant and unavoidable therapy with antiretrovirals,azole antifungals, rifampicin, carbamazepine, phenytoin, phenobarbital, St. John’s Wort | NO |
| Hepatic Disease associated with coagulopathy and | NO |
| Hypersensitivity to Rivaroxaban, galactose intolerance, Lapp-lactase deficiency or glucose-galactose malabsorption | NO |
| Swallowing difficulties, vomiting of tablet or likelihood that the tablet will not be swallowed | YES |
| Severe Renal Impairment Creatinine Clearance < 15ml/min | YES |
| RIVAROXABAN 10mg oral once daily | NO |

**Timing of treatment**

Rivaroxaban must **not** be given pre-operatively.

The first dose should be given 8-10 hours post-operatively and then at 18.00 each day. The decision on the timing of the first dose should be confirmed at the pre-incision Surgical Checklist Time Out and the dose prescribed if not been previously. Mechanical prophylaxis should be continued until at least the first dose has been given.

**Restart warfarin post-operatively, and administer enoxaparin until 1 day after the INR is in range.**

**Standard Therapy**

Enoxaparin 40mg s/c daily starting pre-operatively and continuing for 28 days post-operatively for hip replacement and a minimum of 14 days post-operatively for knee replacement according to consultant preference.

Standard treatment (as above) until resolved

**Enoxaparin 20mg s/c daily**
Epidural/Spinal Analgesia

An epidural catheter is not to be removed earlier than 18 hours after the last dose of Rivaroxaban. The next dose should not be administered earlier than 6 hours after the removal of the catheter.

Management of bleeding

A specific antidote antagonizing the pharmacodynamic effect of Rivaroxaban is not available. Rivaroxaban has a mean half-life of between 7 and 11 hours. Stop treatment until cause of bleeding has been identified and controlled and seek senior advice. If life-threatening bleeding cannot be controlled then consider administering recombinant factor VIIa after consulting the Hematologist.

Monitoring of therapy

No routine monitoring is necessary.

Duration of therapy

Treatment should be continued for 14 days for knee replacements and for 35 days for hip replacements.

4.2.3 Aspirin and Clopidogrel

Neither of these drugs should be regarded as providing VTE prophylaxis. They should be initially stopped while the patient is on enoxaparin or Rivaroxaban unless specifically indicated and restarted after a period of 7 days if no wound oozing is present.

4.2.4 Patients already having antiplatelet agents or anticoagulants on admission or needing them for treatment

1. Consider offering 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 (see Box 1). Take into account the risk of bleeding (see Box 2) and of co morbidities such as arterial thrombosis. If the risk of VTE outweighs the risk of bleeding, consider offering pharmacological VTE prophylaxis with Enoxaparin according to the reason for admission. If the risk of bleeding outweighs the risk of VTE, offer mechanical VTE prophylaxis.

2. Do not offer additional pharmacological or mechanical prophylaxis for VTE to patients who are taking vitamin K antagonists and who are within their therapeutic range, providing anticoagulant therapy is continued. Seek haematology/pharmacy advice if treatment requires to be discontinued for surgery/procedure.

3. Do not offer additional pharmacological or mechanical prophylaxis for VTE to patients who are having full anticoagulant therapy.
4. Bridging anticoagulation regimes for patients with mechanical heart valves on warfarin or antiplatelet agent will be decided by the pre-op assessment service in conjunction with Hematologist.

4.2.5 Reducing the risk of GI bleed

If patients are receiving enoxaparin or Rivaroxaban and are also concurrently prescribed aspirin / clopidogrel / NSAIDs, consider giving GI protection with Proton Pump Inhibitor or H2-antagonists for the duration of Enoxaparin / Rivaroxaban treatment. Please contact pharmacy for further advice.

5. Reducing the risk of VTE in medical patients

Offer pharmacological VTE prophylaxis with Enoxaparin to general medical patients assessed to be at increased risk of VTE (see Box 1). For patients with renal failure give reduced dose of Enoxaparin (20mg). Start pharmacological prophylaxis as soon as possible after risk assessment has been completed. Continue until the patient is no longer at increased risk of VTE.

a. Medical patients in whom pharmacological prophylaxis is contraindicated

Consider offering mechanical VTE prophylaxis to medical patients in whom pharmacological prophylaxis is contraindicated.

- Do not offer anti-embolism stockings for VTE prophylaxis to patients who are admitted for stroke.

- Consider offering prophylactic-dose of Enoxaparin (or reduced dose for patients with renal failure) if:
  - a diagnosis of hemorrhagic stroke has been excluded, and
  - the risk of bleeding (hemorrhagic transformation of stroke or bleeding into another site) is assessed to be low, and
  - the patient has one or more of:
    - Major restriction of mobility
    - Previous history of VTE
    - Dehydration
    - Co morbidities (such as malignant disease).

- Continue until the acute event is over and the patient's condition is stable.

- Until the patient can have pharmacological VTE prophylaxis, consider offering a foot impulse or intermittent pneumatic compression device.
b. Patients with stroke

Do not offer anti-embolism stockings for VTE prophylaxis to patients who are admitted for stroke.

Consider offering prophylactic-dose of Enoxaparin (or reduced dose for patients with renal failure) if:

- a diagnosis of hemorrhagic stroke has been excluded, and
- the risk of bleeding (hemorrhagic transformation of stroke or bleeding into another site) is assessed to be low, and
  - major restriction of mobility
  - previous history of VTE
  - dehydration
  - co morbidities (such as malignant disease).

Continue until the acute event is over and the patient’s condition is stable.

Until the patient can have pharmacological VTE prophylaxis, consider offering a foot impulse or intermittent pneumatic compression device.

c. Patients with cancer

- Offer pharmacological VTE prophylaxis with Enoxaparin to patients with cancer who are assessed to be at increased risk of VTE (see Box 1). Start pharmacological VTE prophylaxis as soon as possible after risk assessment has been completed. Continue until the patient is no longer at increased risk of VTE.

- Do not routinely offer pharmacological or mechanical VTE prophylaxis to patients with cancer having oncology treatment that are ambulant. Non-ambulant patients are defined as any patient who is bed bound, unable to walk unaided or likely to spend a proportion of the day in bed or in a chair.

d. Patients with central venous catheters

- Do not routinely offer pharmacological or mechanical VTE prophylaxis to patients with central venous catheters who are ambulant. Non-ambulant patients are defined as any patient who is bed bound, unable to walk unaided or likely to spend a proportion of the day in bed or in a chair.

- Consider offering pharmacological VTE prophylaxis with Enoxaparin (or reduced dose for patients with renal failure) to patients with central venous catheters who are at increased risk of VTE (see Box 1).
e. Patients in palliative care

- Consider offering pharmacological VTE prophylaxis with Enoxaparin to patients in palliative care who have potentially reversible acute pathology. Take into account potential risks and benefits and the views of the patient and their family and/or carers.

- Do not routinely offer pharmacological or mechanical VTE prophylaxis to patients admitted for terminal care or those commenced on an end-of-life care pathway.

- Review decisions about VTE prophylaxis for patients in palliative care daily, taking into account the views of the patient, their family and/or carers and the multidisciplinary team.

6. Reducing the risk of VTE in surgical patients

6.1 General recommendations for all surgical patients

- Advise patients to consider stopping oestrogen-containing oral contraceptives or hormone replacement therapy 4 weeks before elective surgery. If stopped, provide advice on alternative contraceptive methods.

- Assess the risks and benefits of stopping pre-existing established antiplatelet therapy 1 week before surgery. Consider involving the multidisciplinary team in the assessment.

- Consider regional anaesthesia for individual patients, in addition to other methods of VTE prophylaxis, as it carries a lower risk of VTE than general anaesthesia. Take into account the patients’ preferences, their suitability for regional anaesthesia and any other planned method of VTE prophylaxis.

- If regional anaesthesia is used, plan the timing of pharmacological VTE prophylaxis to minimise the 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 the safety and timing of these in relation to the use of regional anaesthesia.

- Do not routinely offer pharmacological or mechanical VTE prophylaxis to patients undergoing a surgical procedure with local anaesthesia by local infiltration with no limitation of mobility.

Recommendation for specific surgical patient groups
6.2 Gastrointestinal, gynaecological and urological surgery

a. Offer VTE prophylaxis to patients undergoing gastrointestinal surgery who are assessed to be at increased risk of VTE (see Box 1).

- Start mechanical VTE prophylaxis at admission. Continue mechanical VTE prophylaxis until the patient no longer has significantly reduced mobility.

- Add pharmacological VTE prophylaxis with Enoxaparin for patients who have a low risk of major bleeding, taking into account individual patient factors and according to clinical judgement. Continue pharmacological VTE prophylaxis until the patient no longer has significantly reduced mobility (generally 5-7 days).

b. Offer VTE prophylaxis to patients undergoing gynecological, thoracic or urologic surgery who are assessed to be at increased risk of VTE.

- Start mechanical VTE prophylaxis at admission. Continue mechanical VTE prophylaxis until the patient no longer has significantly reduced mobility.

- Add pharmacological VTE prophylaxis with Enoxaparin to patients who have a low risk of major bleeding, taking into account individual patient factors and according to clinical judgment. Continue pharmacological VTE prophylaxis until the patient no longer has significantly reduced mobility (generally 5-7 days).

- Consider extending pharmacological prophylaxis to 28 days postoperatively for higher risk patients who have had major cancer surgery in the abdomen or pelvis.

c. Orthopaedic- elective hip replacement

- Offer combined VTE prophylaxis with mechanical and pharmacological methods to patients undergoing elective hip replacement surgery:

  Start mechanical VTE prophylaxis at admission.

- Continue mechanical VTE prophylaxis until the patient no longer has significantly reduced mobility.

- Provided there are no contraindications, start pharmacological VTE prophylaxis after surgery. Choose either:

  - Enoxaparin starting 6–12 hours after surgery
  - Rivaroxaban, starting 8-10 hours after surgery
• Continue pharmacological VTE prophylaxis for 28-35 days, according to the summary of product characteristics for the individual agent being used.

d. Orthopedic- elective knee replacement

Offer combined VTE prophylaxis with mechanical and pharmacological methods to patients undergoing **elective knee replacement surgery**. Start mechanical VTE prophylaxis at admission.

• Continue mechanical VTE prophylaxis until the patient no longer has significantly reduced mobility.

• Provided there are no contraindications, start pharmacological VTE prophylaxis after surgery. Choose either:
  - Enoxaparin starting 6–12 hours after surgery
  - Rivaroxaban, starting 8-10 hours after surgery

• Continue pharmacological VTE prophylaxis for 10-14 days, according to the summary of product characteristics for the individual agent being used.

e. Orthopaedic- hip fracture

Offer combined VTE prophylaxis with mechanical and pharmacological methods to patients undergoing **hip fracture surgery**. Start mechanical VTE prophylaxis at admission.

• Continue mechanical VTE prophylaxis until the patient no longer has significantly reduced mobility.

• Provided there are no contraindications, add pharmacological VTE prophylaxis using Enoxaparin.

• Continue pharmacological VTE prophylaxis for 28 days.

f. Other orthopaedic procedures

Consider offering combined VTE prophylaxis with mechanical and pharmacological methods to patients having **orthopaedic surgery (other than hip fracture, hip replacement or knee replacement)** based on an assessment of risks (see **Box 1**) and after discussion with the patient.

Start mechanical VTE prophylaxis at admission.

• Continue mechanical VTE prophylaxis until the patient no longer has significantly reduced mobility.
- Start pharmacological VTE prophylaxis with enoxaparin 6–12 hours after surgery.

- Continue pharmacological VTE prophylaxis until the patient no longer has significantly reduced mobility.

Do not routinely offer VTE prophylaxis to patients undergoing upper limb surgery. If a patient is assessed to be at increased risk of VTE (see Box 1) refer to recommendation for other orthopaedic surgery (above).

g. Vascular Surgery

Offer VTE prophylaxis to patients undergoing vascular surgery who are not having other anticoagulant therapy and are assessed to be at increased risk of VTE (see section 2). If peripheral arterial disease is present, seek expert opinion before fitting anti-embolism stockings.

Start mechanical VTE prophylaxis at admission. Choose any one of:

- anti-embolism stockings if no contraindication
- intermittent pneumatic compression devices

- Continue mechanical VTE prophylaxis until the patient no longer has significantly reduced mobility

- Add pharmacological VTE prophylaxis using enoxaparin for patients who have a low risk of bleeding, taking into account individual patient factors and according to clinical judgment.

- Continue pharmacological VTE prophylaxis until the patients no longer has significantly reduced mobility (generally 5-7 days).

h. Day surgery

Offer VTE prophylaxis to patients undergoing day surgery who are assessed to be at increased risk of VTE (see Box 1).

Start mechanical VTE prophylaxis at admission. Choose any one of:

- anti-embolism stockings
- intermittent pneumatic compression devices

- Continue mechanical VTE prophylaxis until the patient no longer has significantly reduced mobility. Discharge with anti-embolism stockings and instruction on use.
• Add pharmacological VTE prophylaxis with enoxaparin for patients who have a low risk of major bleeding, taking into account individual patient factors and according to clinical judgment.

• If the patient is expected to have significantly reduced mobility after discharge, continue pharmacological VTE prophylaxis (generally for 5-7 days).

Offer VTE prophylaxis to patients undergoing surgery other than those identified in this section who are assessed to be at increased risk of VTE (see Box 1).

Start mechanical VTE prophylaxis at admission. Choose any one of:

- anti-embolism stockings
- intermittent pneumatic compression devices

• Continue mechanical VTE prophylaxis until the patient no longer has significantly reduced mobility.

• Add pharmacological VTE prophylaxis with enoxaparin to patients who have a low risk of major bleeding, taking into account individual patient factors and according to clinical judgment.

• Continue pharmacological VTE prophylaxis until the patient no longer has significantly reduced mobility (generally 5-7 days).

6.3 Other Patient Groups

6.3.1 Major trauma

Offer combined VTE prophylaxis with mechanical and pharmacological methods to patients with major trauma. Regularly reassess the patient’s risks of VTE and bleeding.

Start mechanical VTE prophylaxis at admission or as early as clinically possible. Choose any one of:

- intermittent pneumatic compression devices
- anti-embolism stockings used with caution (see Appendix 4, section 4.1.1)

• Continue mechanical VTE prophylaxis until the patient no longer has significantly reduced mobility.

• If the benefits of reducing the risk of VTE outweigh the risks of bleeding (see Box 2) and the bleeding risk has been established as low, add pharmacological VTE prophylaxis with Enoxaparin and continue until the patient no longer has significantly reduced mobility.
Continue pharmacological VTE prophylaxis until the patient no longer has significantly reduced mobility.

6.3.2 Spinal injury

Offer combined VTE prophylaxis with mechanical and pharmacological methods for patients with spinal injury. Regularly reassess the patient’s risks of VTE and bleeding. Start mechanical VTE prophylaxis at admission or as early as clinically possible. Choose any one of:

- anti-embolism stockings used with caution (see section 4.1)
- intermittent pneumatic compression devices

- Continue mechanical VTE prophylaxis until the patient no longer has significantly reduced mobility

- If the benefits of reducing the risk of VTE outweigh the risks of bleeding (see Box 2) and the bleeding risk has been established as low, add pharmacological VTE prophylaxis using enoxaparin.

- Continue pharmacological VTE prophylaxis until the patient no longer has significantly reduced mobility

6.3.3 Lower limb plaster casts

Consider offering pharmacological VTE prophylaxis for patients with lower limb plaster casts after evaluating the risks (see section 2) and benefits based on clinical discussion with the patient. Offer Enoxaparin (reduced dose for patients with renal failure) until lower limb plaster cast removal.

6.3.4 Critical Care

Assess all patients on admission to the critical care unit for their risks of VTE (see Box 1) and bleeding (see Box 2). Reassess patients’ risks of VTE and bleeding daily and more frequently if their condition is changing rapidly.

- Offer VTE prophylaxis to patients admitted to the critical care unit based on the reason for admission, taking into account:
  - any planned interventions
  - the use of other therapies that may increase the risk of complications.

Take into account the known views of the patient, comments from their family and/or carers and the multidisciplinary team.

6.3.5 – Pregnancy and up to six weeks post partum – Refer to obstetric guidelines.
APPENDIX 5 - TREATMENT OF DVT

North Cumbria University Hospitals

TREATMENT OF DEEP VEIN THROMBOSIS
Revised 11/09/2009

GP suspects uncomplicated DVT
Referral to bed manager for assessment on EAU

A&E suspects uncomplicated DVT

Seen by admitting team
Physical examination including
peripheral pulses and risk factors
Probability score
Blood samples: FBC, U&E, LFT
Coagulation screen, D-Dimer
Review of results

Positive D-Dimer
Assess medical & social exclusion
criteria to treat as outpatient.
If scan not same day commence
LMWH (Enoxaparin 1.5mg/kg)
5 day supply to be given

NO admit to hospital
Dr’s to arrange scan

YES discharge home
with follow up in ATC by
on call EMAU doctor
ATC staff will arrange scan
Please leave notes and scan request
In tray on EAU or A&E to be picked
Up by ATC staff the following day
(Monday – Friday)

X-ray for venous imaging
Document D-Dimer & probability score on request form

Positive DVT
Begin LMWH/warfarin regime while at hospital
Primary care follow up
Inform GP

**Anticoagulant clinic
follow up
Inform GP

Negative DVT
Consider alternative diagnosis
Inform GP
High clinical suspicion
Consider repeat USS

Clinical moderate/high
probability
(See probability score)

Clinical low probability
(See probability score)
Suitable patients may be discharged with LMW heparin and warfarin administered at home (use check list).**All patients must be allocated a clinic appointment by anticoagulant clinic nurse.

**NOTES:**

1. Medical assessment should include a full assessment of possible risk factors, such as thrombophilia in the young (under 50) and malignancy in the elderly. May need to consider Chest x-ray and/or pelvic ultrasound.
2. The d-dimer test has a reported negative predictive value of 98% but a specificity of only 70% in DVT.
3. Subcutaneous LMW heparin is normally continued for 5 days and when the INR is > 2.
4. The target range for INR is 2 – 3. Treatment is normally continued for at least 3 months, but may be longer depending on clinical judgement. See drug chart for commencing warfarin – usually 10mg warfarin day 1, 5mg warfarin day 2.
5. If referring to the anticoagulant clinic, please state duration of warfarin therapy and ask patient to bring all medication at first visit. Clinic dates are Monday, Tuesday, Wednesday and Thursday. Please phone 814604 for an appointment or contact Teresa Woodman on bleep 226.
6. Advise patients on prevention of post-thrombotic syndrome (advice sheet available). Consider prescription of support stockings (class 2).
7. For patients without a DVT consider alternative diagnosis e.g. Cellulitis, Bakers Cyst, Trauma.

References:


What are the practicalities of heparinisation in the primary care setting? Medical dialogue May 1999 No. 507.


This guideline is an agreed document between North Cumbria University Hospitals and NHS Cumbria and is due to be reviewed September 2012.
APPENDIX 6 - PLANNING FOR DISCHARGE

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

- 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 if deep vein thrombosis, pulmonary embolism or other adverse events are suspected.

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
- know whom 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.

The following information is given to all adult patients on admission –
Preventing Venous Thromboembolism (VTE)
What is VTE?

VTE is the name given to a deep vein thrombosis (DVT) or a pulmonary embolism (PE). A DVT is a thrombus (blood clot) that forms in a deep vein, most commonly in your leg or pelvis and can cause swelling and pain. In the longer term, DVT can cause painful, swelling and ulcers. If a clot becomes dislodged and reaches your lungs, this is called a PE. This can cause coughing (with blood stained phlegm), chest pain and breathlessness. VTE diagnosis requires immediate treatment. If you develop any of these symptoms either in hospital or after discharge, please seek medical advice immediately.

Is VTE common?

VTE occurs in the general population in about one in 500 people. You may have heard in the news about DVT in people flying for long periods and suffering from ‘economy class syndrome’. You are actually much more likely to get VTE if you are going into hospital because of illness or for surgery.

Who is at risk of VTE?

In addition to admission to hospital, there are other factors that place you at greater risk of VTE. These include a previous VTE, a recent diagnosis of cancer, and certain blood conditions such as clotting disorders. In addition, certain contraceptive and hormone replacement tablets can increase your risk.
Will my risk of VTE be assessed?

The Government has recognised that VTE is an important problem and has advised doctors and nurses that everyone being admitted should have a VTE risk assessment completed. If you are at risk, your Doctor or Nurse will discuss with you what can be done to reduce your risk and will follow national guidelines and offer you protection against VTE.

What can I do to reduce my risk of VTE?

If your hospital admission has been planned several weeks in advance, there are some precautions that you can take to reduce your risk of VTE:

Talk to your doctor about your contraceptive or hormone replacement tablets. Your doctor may consider stopping them in the weeks before your operation.

If possible, in the month before your operation, avoid continuous travel of more than three hours.

• Keep a healthy weight.
When in hospital:

Keep active by moving around or walking; leg exercises are valuable. You can ask to see a Physiotherapist if you would like to learn some leg exercises

Ask your Doctor or Nurse: ‘What is being done to reduce my risk on VTE?”

Drink plenty of fluid to keep hydrated

In hospital, what will be done to reduce my risk of VTE?

You will be assessed by your Doctor on admission for your need to be given preventative treatment to reduce the risk of VTE (prophylaxis).

If you require an anaesthetic your Anaesthetist will decide which type of anaesthesia is most appropriate for you.

Anti-embolism stockings will be fitted if it is considered appropriate by your Doctor. You will be measured and fitted with stockings and be shown how to wear them. Please report any new symptoms in your feet or legs when wearing them to a member of nursing or medical staff. These stockings will reduce your risk of VTE.

The clinical team may advise you to wear a special inflatable sleeve or cuff around your legs while you are in bed. This will inflate automatically and provide pressure at regular intervals, increasing blood flow out of your legs. If the cuffs have been removed for more than three hours they should not be reapplied, unless advised by staff.

Finally, your Doctor might consider that you should take an anticoagulant injection or tablet, which reduces the chance of your blood clotting and stop VTE from forming.
What happens after I have been discharged from hospital?

Anti-embolism stockings should be worn from admission until you return to your usual level of mobility. If you have been advised to continue anticoagulation medicine at home and you need help with administration of injections or tablets, please ask your Nurse before discharge. It is important to keep active (avoid sitting down all day) when you get home, drink plenty of liquid and do any exercises you have been given.

If you develop any signs or symptoms of VTE at home, such as:

- swelling or pain in your leg or hip
- chest pain
- breathlessness
- a cough, possibly with bloody phlegm

then seek medical advice immediately, either from your GP (home doctor) or your nearest hospital emergency department.

Where can I find out more?

Please ask your doctor or nurse for more information. Alternatively, the NHS Choices website provides patient information on VTE.

http://www.nhs.uk
http://www.nice.org.uk/guidance/CG92
PALS
The Patient Advice and Liaison Service (PALS) is a service that offers support, information and assistance to patients, relatives and visitors. They can also provide help and advice if you have a concern or complaint that staff have not been able to resolve for you. The PALS office is located in the atrium opposite X ray at the Cumberland Infirmary and in the reception area at the main entrance in West Cumberland Hospital - staff will be happy to direct you.

Contact details:

Cumberland Infirmary
Tel: 01228 814008
Email: PALSCIC@ncuh.nhs.uk

West Cumberland Hospital
Tel: 01946 693818
Email: PALSWCH@ncuh.nhs.uk

If you would like this leaflet in larger print or another language please contact us using the details above.