1. Introduction

In March 2005 the Health select Committee published a report on the Prevention of Venous Thromboembolism in Hospitalised Patients. The key findings included.

- There is a safe, efficacious and cost effective method of preventing venous thromboembolism (VTE) which is not being used as widely administered as it should be.
- Each year 25,000 people in England die from VTE contracted in hospital.
- There is a need to ensure strong safety mechanisms embedded in working practices and systems to minimise the chances of an adverse event occurring.
- The Department of Health has now commissioned the National Institute for Clinical Excellence to produce a set of guidelines, which are expected to be published in April 2007.

2. References


Mandatory measures for thromboprophylaxis on Surgical Division

- All patients must have a formal, documented DVT risk assessment and therapeutic measures must be documented in the notes or in the pre-assessment documentation.
- All patients having surgery should be offered Antiembolic stockings (AES) or Intermittent pneumatic compression (IPC) (calf or foot pumps)
- Patients undergoing major orthopaedic surgery (considered at >30 minutes operating time) should be offered IPC and a low molecular weight heparin.
- Patients undergoing hip-replacement should be offered dabigatran, if they are unable to self-inject on discharge..
- Adequate hydration (oral or parenteral) should be ensured in immobilised patients
- Early mobilisation should be encouraged whenever possible

Use of Antiembolic Stockings (AES)

- Where possible these should be thigh length.
- Patients should be shown how to wear stocking correctly by appropriately trained staff
- Staff should monitor the use of stockings and assist patients not wearing them correctly
- Patients should be encouraged to wear the stockings until they return to their usual level of mobility
- If patients require stockings for discharge this should be documented in the notes and written on the patient’s TTO

Contraindications

- Massive leg oedema
- Pulmonary oedema (heart failure)
- Severe peripheral arterial disease
- Severe peripheral neuropathy
- Major leg deformity
- Local leg conditions with which stockings would interfere e.g. dermatitis, vein ligation, gangrene, recent skin grafts

Cautions

- Select correct size stockings
- Apply carefully – align toe hole under toes
- Check fitting daily for changes in leg circumference
- Do not fold down
- Remove daily for hygiene and circulation check

Use of low molecular weight heparin (LMWH)

- The LMWH of choice is enoxaparin subcutaneous injection
- The usual dose is 40mg given at 5pm daily – the dose does not need adjusting for low body weight
- Creatinine clearance of <30ml/min use Heparin 5000 units twelve hourly.

Creatinine clearance calculated by Cockcroft and Gault equation NOT e-GFR:

\[
CrCl = \frac{K \times (140 - \text{age}) \times \text{Weight (kg)}}{\text{Serum creatinine}}
\]

\[
(\text{K = 1.23 for men, 1.04 for women})
\]

Contraindications and Cautions

Allergy to heparin or enoxaparin or another low molecular weight heparin.

On oral anticoagulant with INR > 2

Thrombocytopenia (platelets < 50x10/L)

Known bleeding disorder

Previous heparin-induced thrombocytopenia

Evidence of active bleeding

Uncontrolled hypertension (BP > 230/120mmHg)

Lumbar puncture within previous 4 hours (24 hrs if traumatic)

Acute renal failure GFR < 30ml/min calculated using Cockcroft & Gault equation

Monitoring

- Platelet count prior to initiating therapy and then between day 5-10 and a second time between day 15 – 21 of treatment. Reduction of 30-50% of initial value indicates a need to discontinue therapy and use alternative prophylaxis

- Renal function prior to starting treatment and repeated especially for patients on extended prophylaxis

- Plasma potassium for patients at risk of adrenal secretion suppression e.g. diabetes mellitus, chronic renal failure, metabolic acidosis, raised plasma potassium or taking potassium-sparing drugs. Risk is increased with duration of therapy.
Risk factors for thromboembolism – patients with one or more risk factor should be given mechanical and chemical prophylaxis (IPC + Enoxaparin). Use AES if IPC not tolerated.

### ADDITIONAL RISK FACTORS (ARF) FOR VTE

- Malignancy
- Recent thrombotic stroke (within 4/52)
- Heart Failure
- Respiratory Disease
- Inflammatory bowel disease
- Personal or Family history of VTE
- Dehydration
- Myeloprolifertive disease
- Major trauma to lower extremities.
- Antiphospholipid syndrome
- Central Venous Catheter in situ
- Varicose veins
- Continuous travel of more than 3 hours approx 4 weeks before or after surgery.
- Acute Medical Illness
- Acute MI (within 12/52)
- Sepsis
- Rheumatic heart disease
- Nephrotic syndrome
- Age > 60 (risk rises linearly with age)
- Obesity (BMI >30)
- Drugs OCP/HRT, tamoxifen, chemotherapy
- Inherited thrombophilia
- Paroxysmal nocturnal haemoglobinuria
- Smoking
- Immobility
- Pregnancy; current or recent (within 6 weeks) any gestation

### Guidance on thromboprophylaxis for orthopaedic procedures

<table>
<thead>
<tr>
<th>Total hip replacement (THR)</th>
<th>Fractured neck of femur</th>
<th>Total knee replacement (TKR)</th>
<th>Major lower limb trauma</th>
<th>Elective spinal surgery</th>
<th>Traumatic spines, pelvis, acetabulum</th>
<th>Other surgery and trauma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start IPC in recovery and continue for as long as tolerated.</td>
<td>Start IPC in emergency department and continue for as long as tolerated.</td>
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<td>Start IPC in emergency department and continue for as long as tolerated.</td>
<td>Start IPC in theatre and continue until patient is fully mobile.</td>
<td>Ultrasound on arrival if transfer and no effective prophylaxis.</td>
<td>Patient should be offered AES or IPC until mobile.</td>
</tr>
<tr>
<td>Start *enoxaparin at 5pm on day 2 post-op.</td>
<td>If no IPC available then start enoxaparin in emergency department.</td>
<td>Start *enoxaparin at 5pm on day 2 post-op (48 hrs).</td>
<td>Start enoxaparin at 5pm daily once risk of bleeding from soft tissue, brain, spine, and surgery has been ruled out.</td>
<td>Read operation note to see if patient may be suitable for enoxaparin.</td>
<td>Start IPC if USS is negative. Discuss and document management with Consultant if USS is positive.</td>
<td>If surgery &gt; 30 minutes give enoxaparin when bleeding risk has been ruled out.</td>
</tr>
<tr>
<td>*Continue enoxaparin for 4 weeks</td>
<td>If not started pre-op, start enoxaparin at 5pm on day 2 post-op (48 hrs).</td>
<td>*Continue for 10 days</td>
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</tr>
<tr>
<td></td>
<td>Continue enoxaparin for 4 weeks</td>
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</table>

Patients with ONE or more risk factors for thromboembolism should also receive enoxaparin at 5pm daily once any bleeding risk has been ruled out.

### Notes on policy

- All patients must have a risk assessment completed on admission and re-assessed regularly – see trust policy.
- Patients requiring extended prophylaxis should be identified at admission and a “helping recovery at home pack” issued. The extended regimen should be indicated in the medical notes and on the drug chart.
- Patients receiving extended prophylaxis must be assessed for competency at self-administration or arrangements made for administration should they be discharged prior to the end of the course. Any concerns about the patient’s ability to self-administer enoxaparin or to comply with the extended regimen should be documented in the medical notes. *THR & TKR patients unable to self inject should be offered dabigatran (dose as per company literature) starting 24 hours post-operatively and continued for 28 days for THR and 10 days for TKR.*
- Where a patient’s dose is reduced due to poor renal function, the dose reduction and the reason for it should be highlighted in the medical notes and on the drug chart for clarity.
- Any deviations from this thromboprophylaxis policy should be documented in the patient’s medical notes and on the drug chart.
- Reasons for any delay in initiation of anti-coagulants or other contraindications to the use of anti-coagulants should be documented in the medical notes.