Title of document: Guidelines for thromboprophylaxis of Adult Trauma and Orthopaedic patients

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Related links: Draft NICE guidance October 2006 – Venous thromboembolism (www.NICE.org.uk)

Description: A guideline for the prevention of Deep Vein Thrombosis and Pulmonary embolism in Adult Orthopaedic Trauma and Elective patients

Final Validation Committee: SUHT Drug and Therapeutics Committee

Date agreed: Mar 2007

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Directorates who use the document: Trauma and Orthopaedics

Highlighted to: Trauma and Orthopaedic Consultants, Specialist registrars, Trauma and Orthopaedic Ward Sisters

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Signature of Chairman of Validation Committee: D. Waller

Print Name: D. Waller

Post Held: Chair SDC
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 Grade II Compression stockings (GIICS) 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.
- Adequate hydration (oral or parenteral) should be ensured in immobilised patients.
- Early mobilisation should be encouraged whenever possible.

Use of Grade II Compression Stockings (GIICS)

- Patients should be shown how to wear stockings 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 and Cautions

<table>
<thead>
<tr>
<th>Contraindications</th>
<th>Cautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Massive leg oedema</td>
<td>Select correct size stockings</td>
</tr>
<tr>
<td>Pulmonary oedema (heart failure)</td>
<td>Apply carefully – align toe hole under toes</td>
</tr>
<tr>
<td>Severe peripheral arterial disease</td>
<td>Check fitting daily for changes in leg circumference</td>
</tr>
<tr>
<td>Severe peripheral neuropathy</td>
<td>Do not fold down</td>
</tr>
<tr>
<td>Major leg deformity</td>
<td>Remove daily for hygiene and circulation check</td>
</tr>
<tr>
<td>Local leg conditions with which stockings would interfere e.g. dermatitis, vein ligation, gangrene, recent skin grafts</td>
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</tr>
</tbody>
</table>

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 20mg** enoxaparin given at 5pm daily.

Creatinine clearance calculated by Cockcroft and Gault equation:

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

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

Serum creatinine

<table>
<thead>
<tr>
<th>Contraindications and Cautions</th>
<th>Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allergy to enoxaparin or heparin</td>
<td><strong>Platelet count</strong> 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.</td>
</tr>
<tr>
<td>Major bleeding disorders</td>
<td><strong>Renal function</strong> prior to starting treatment and repeated especially for patients on extended prophylaxis.</td>
</tr>
<tr>
<td>Active gastric or duodenal ulceration</td>
<td><strong>Plasma potassium</strong> 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.</td>
</tr>
<tr>
<td>Haemorrhagic stroke</td>
<td></td>
</tr>
<tr>
<td>Thrombocytopenia or history of heparin-induced thrombocytopenia</td>
<td></td>
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<tr>
<td>Jaundice – check clotting first</td>
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</tbody>
</table>
### Risk factors for thromboembolism – patients with one or more risk factor should be given mechanical and chemical prophylaxis (IPC + Enoxaparin). Use GiICS if IPC not tolerated.

- Previous DVT or PE
- Heart failure
- Pre-operative best rest > 4 days
- Venous insufficiency
- Pre-operative acute infection
- Cancer and / or use of chemotherapy agents
- Older immobile patients
- Post-partum (< 1 month)
- BMI > 30
- Myeloproliferative disease
- Combined oral contraceptive / hormone replacement therapy / Tamoxifen
- Lower limb paralysis
- Acquired or inherited thrombophilia

### Guidance on thromboprophylaxis for orthopaedic procedures

<table>
<thead>
<tr>
<th>Total hip replacement</th>
<th>Fractured neck of femur</th>
<th>Total knee replacement</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>
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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 Grade II compression stockings or IPC until mobile.</td>
</tr>
<tr>
<td><strong>Start Enoxaparin at 5pm on day 2 post-op.</strong></td>
<td>If no IPC available then start Enoxaparin in Emergency department.</td>
<td>If no start pre-op., 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>
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<td>Continue enoxaparin minimum of 24 hours post-op and continue until mobile.</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

- Patients requiring extended prophylaxis with enoxaparin (4 weeks post-operative dosing) 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 else arrangements made for administration should they be discharged prior to the end of the four-week period. 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.
- Where a patient’s enoxaparin 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.

Ward pharmacists will be able to add enoxaparin to the drug charts in line with this guideline – reasons for delay in initiation of enoxaparin or other contraindications to the use of enoxaparin should be documented in the medical notes in order to prevent inappropriate addition.

If any patient is still in hospital 4 weeks post operatively re-assess DVT risk.