Enoxaparin 40mg DAILY
Continued until the patient no longer has significantly reduced mobility (if more than 12 weeks consult with haematologist).

Venous foot/calf pumps
Continuously unless patient mobilising
Until mobile and then continued dependant on risk of mobilising.

Regularly reassess the patient’s risks of VTE and bleeding.

Enoxaparin should be commenced within 24 hours of injury as long as:
1. Haemodynamically stable.
2. No other significant contra-indicative injuries such as major head, spine, thoracic, abdominal injuries which should be discussed with relevant surgical and anaesthetic teams.
3. The benefits of reducing the risk of VTE outweigh the risks of bleeding.

4. Epidural/Spinal
   Pre-insertion: Enoxaparin must not be given within 12 hours of an epidural / spinal procedure. If a traumatic procedure, wait 24 hours.
   Post-insertion: Enoxaparin must not be given within 6 hours of an epidural / spinal procedure. If a traumatic procedure, wait 24 hours.

5. Ward care:
   Epidural catheters must not be removed within 12 hours of a dose of Enoxaparin.

6. After removal of an epidural catheter wait at least 6 hours before next dose of Enoxaparin.

Antiplatlet agents.
Refer to hospital perioperative guidelines and see Perioperative Antiplatlet therapy. British Journal of Anaesthesia 2007; 99(3): 316-28

Clotting/DOAC
For patients who have had clotting/DOAC within 7 days prior to surgery - antiplatelet therapy.

Antiplatelet agents should be restarted only after full mobilisation. If significant symptoms related to stopping HRT in past, consideration should be given to continuing after discussion of risks for VTE with patient.

If immobilised in bed with lower limb cast/boots:
Enoxaparin 40mg DAILY
Until mobile and then continued dependant on risk score, unless significant bleeding risks.

If to be mobilised within 4 days of surgery:
Enoxaparin 40mg DAILY
Continued for total time limits completely immobilised in cast/boots. Consider stopping prophylaxis if lower limb immobilisation continues beyond 42 days.

Note:
1. The dose of enoxaparin must be reduced in patients with severe renal impairment to 20mg DAILY for prophylaxis, e-GFR <30ml/min. Please refer to the product’s SPC and the BMJ for further information.

£600 per patient

VTE Prophylaxis is generally not needed for people undergoing arthroscopic knee surgery where:
• Total anaesthesia time is less than 90 minutes
• The person is low risk of VTE
• Preoperative prophylaxis if:
  • Total anaesthesia time is more than 90 minutes or
  • The person is at high risk of VTE.

Enoxaparin 40mg DAILY for 14 days
Start 6-12 hours after surgery.

See Plymouth NHS Trust warfarin bridging guidelines
If need to convert Rivaroxaban to Enoxaparin / Heparin:
• Discontinue Rivaroxaban
• Conventional Anticoagulation
  • Suspected / Confirmed new VTE or suspected PE
    Give treatment dose Enoxaparin / Heparin immediately.
  • Major bleeding complication
    If need to convert from Enoxaparin to Rivaroxaban
    1. Give Rivaroxaban 12 hours after last Enoxaparin dose
    2. If Rivaroxaban Vomited
       • Give further dose of Rivaroxaban if vomited within 4 hours of dose and a tablet can be clearly seen.
       • If continued vomiting give prophylactic dose Enoxaparin 40mg od.

Guidelines for VTE prophylaxis in orthopaedics and trauma
DEVELOPED BY: Mr J Keenan, Dr T Nokes and Dr T Gale

This local guideline has been produced as an aid to risk assessment and prevention of venous thromboembolism based on current published evidence and guidelines including NICE 2018(NC98).

This document provides general guidance for Plymouth Hospitals NHS Trust but does not necessarily account for all clinical situations. Where a senior doctor's view differs, their advice should be followed and variation to the guidelines documented wherever possible. Every patient should be assessed individually before applying guidance on thromboprophylaxis.

Orthopaedic patients not undergoing surgery should also be risk assessed and given appropriate Prophylaxis with Clexane depending on NICE risk assessment criteria.

June 2019, Review date June 2023

GUIDELINES FOR VENOUS THROMBOEMBOLISM (VTE) PROPHYLAXIS IN ORTHOPAEDICS AND TRAUMA

Enoxaparin 40mg DAILY or equivalent, refer to Guidelines for VTE prophylaxis in orthopaedics and trauma

If immobilised in bed with lower limb cast/boots:
Enoxaparin 40mg DAILY
Until mobile and then continued dependant on risk score, unless significant bleeding risks.

If to be mobilised within 4 days of surgery:
Enoxaparin 40mg DAILY
Continued for total time limits completely immobilised in cast/boots. Consider stopping prophylaxis if lower limb immobilisation continues beyond 42 days.

Note:
1. The dose of enoxaparin must be reduced in patients with severe renal impairment to 20mg DAILY for prophylaxis, e-GFR <30ml/min. Please refer to the product’s SPC and the BMJ for further information.

£600 per patient
### ELECTIVE KNEE ARthroPLasty - PRIMARY & REVISION

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venous foot / calf pumps</td>
<td>Continuously unless mobilising</td>
</tr>
<tr>
<td>Aspirin</td>
<td>Start Aspirin 6-12 hours after surgery completion</td>
</tr>
<tr>
<td></td>
<td>Use tranexamic acid as UHP guidelines during surgery</td>
</tr>
<tr>
<td></td>
<td>If no bleeding concerns start 6-12 hours post surgery. First evening dose to be omitted if after midnight (i.e surgery finishes after 6 pm)</td>
</tr>
</tbody>
</table>

### ELECTIVE HIP ARthroPLasty - PRIMARY & REVISION

<table>
<thead>
<tr>
<th>Procedure</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Venous foot / calf pumps</td>
<td>Continuously unless mobilising</td>
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<tr>
<td>Aspirin</td>
<td>Start Aspirin 6-12 hours after surgery completion</td>
</tr>
<tr>
<td></td>
<td>Use tranexamic acid as UHP guidelines during surgery</td>
</tr>
<tr>
<td></td>
<td>If no bleeding concerns start 6-12 hours post surgery. First evening dose to be omitted if after midnight (i.e surgery finishes after 6 pm)</td>
</tr>
</tbody>
</table>

### ELECTIVE UPPER LIMP SURGERY & ISOLATED UPPER LIMB TRAUMA

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enoxaparin 20mg DAILY</td>
<td>For most upper limb procedures no standard prophylaxis is required.</td>
</tr>
<tr>
<td></td>
<td>Note:</td>
</tr>
<tr>
<td></td>
<td>1.  Enoxaparin 10 days - Check full blood count on admission and at day 4 to 7 (before discharge) to exclude heparin induced thrombocytopenia (HIT).</td>
</tr>
<tr>
<td></td>
<td>2.  Enoxaparin longer than 10 days - Check full blood count on admission and at day 4 to 7 (before discharge) and at 10 to 14 days to exclude heparin induced thrombocytopenia (HIT).</td>
</tr>
<tr>
<td></td>
<td>3.  The dose of Enoxaparin must be reduced in patients with severe renal impairment to 20mg DAILY for prophylaxis - e.g. e-GFR &lt;30ml/min. Please refer to the product’s SPC and the BNF for further information.</td>
</tr>
</tbody>
</table>

### ELECTIVE MINOR / INTERMEDIATE LOWER LIMP SURGERY & FOOT AND ANKLE SURGERY & LOWER LIMB TRAUMA

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enoxaparin 40mg DAILY</td>
<td>For most lower limb procedures prophylaxis not required.</td>
</tr>
<tr>
<td></td>
<td>Note:</td>
</tr>
<tr>
<td></td>
<td>1.  Patient risk assessed at pre op / admission (see NICE Risk Assessment Recommendation, box 1 and 2) After consenting to surgery:</td>
</tr>
<tr>
<td></td>
<td>Consider offering combined VTE prophylaxis with mechanical and pharmacological methods.</td>
</tr>
<tr>
<td></td>
<td>2.  Orthopaedic patients not undergoing surgery may also be risk assessed and given appropriate prophylaxis with Clexane depending on NICE risk assessment criteria.</td>
</tr>
</tbody>
</table>

### Risk factors for VTE

- Active cancer or cancer treatment
- Age over 60 years
- Critical care admission
- Dehydration
- Known thrombophilies
- Obesity (BMI over 30 kg/m²)
- One or more significant medical comorbidities (such as heart disease, metabolic, endocrine or respiratory pathologies, acute infections diseases or inflammatory conditions)
- Personal history or a first degree relative with a history of VTE
- Use of hormone replacement therapy
- Use of oestrogen-containing contraceptive
- Varicose veins with phlebitis
- Pregnancy or 6 weeks post partum

### Venous foot / calf pumps

- Active bleeding or high bleeding risk procedure
- Acquired bleeding disorders (such as acute trauma, induced thrombocytopenia)
- Concurrent use of anticoagulants known to increase the risk of bleeding (such as warfarin with international normalised ratio [INR] higher than 2.0)
- Epidural/spinal anaesthesia or lumbar puncture expected within the next 12 hours (e.g. CVAE or 18 hours (rivaroxaban)
- Epidural/spinal anaesthesia or lumbar puncture within the previous 4 hours (rivaroxaban or tinzaparin)
- Acute stroke
- Thrombocytopenia (platelets less than 75 x 10⁹/l)
- Uncontrolled systolic hypertension (150/90 mmHg or higher)
- Untreated inherited bleeding disorders (such as haemophilia and von Willebrand’s disease)

### Anticoagulants

- Rivaroxaban 10mg DAILY for 35 days
  - Surgery completed before 1pm start 10pm
  - Surgery completed after 1pm start 8am following day
  - Use tranexamic acid during surgery as advised in UHP guidelines

First evening dose may be omitted at discretion of surgeon or anaesthetist. First evening dose to be omitted if after midnight (i.e surgery finishes after 6 pm)

### Risk factors for VTE

- History of VTE
- Pregnancy or 6 weeks post partum
- Recent surgery finishes after 6 pm)
- Acute surgical admission with inflammatory or intra-abdominal condition
- Surgery with significant reduction in mobility
- Significantly reduced mobility for 3 days or more

### Enoxaparin

- DAILY:
  - For most upper limb procedures prophylaxis not required. e-GFR is <30ml/min.
  - Please refer to the product’s SPC and the BNF for further information.

### Vitamin K antagonists

- Warfarin
  - Oral anticoagulants (such as warfarin) may be given within 6 hours of an epidural / spinal procedure. If a traumatic procedure, wait 24 hours.
- Phenobarbital, carbamazepine and St John's Wort.
- Enoxaparin 20 mg daily
  - For most upper limb procedures prophylaxis not required. e-GFR is <30ml/min.
  - Please refer to the product’s SPC and the BNF for further information.

### Venous thromboembolism

- Previously or family history of venous thromboembolism
- Active cancer or cancer treatment
- Inflammatory conditions
- Chronic obstructive pulmonary disease
- Acute stroke
- Epidural/spinal anaesthesia
- Acute infectious diseases or respiratory pathologies, metabolic, endocrine or inflammatory conditions
- Active bleeding or high bleeding risk procedure
- Acquired bleeding disorders (such as acute trauma, induced thrombocytopenia)
- Concurrent use of anticoagulants known to increase the risk of bleeding (such as warfarin with international normalised ratio [INR] higher than 2.0)
- Epidural/spinal anaesthesia or lumbar puncture expected within the next 12 hours (e.g. CVAE or 18 hours (rivaroxaban)
- Epidural/spinal anaesthesia or lumbar puncture within the previous 4 hours (rivaroxaban or tinzaparin)
- Acute stroke
- Thrombocytopenia (platelets less than 75 x 10⁹/l)
- Uncontrolled systolic hypertension (150/90 mmHg or higher)
- Untreated inherited bleeding disorders (such as haemophilia and von Willebrand’s disease)