Venous Thromboembolism Prophylaxis Guidelines

**Purpose:** To provide guidance on preventing venous thromboembolism (VTE) in the surgical intensive care unit (SICU) at Vanderbilt University Medical Center (VUMC).

<table>
<thead>
<tr>
<th>Risk Stratification</th>
<th>Procedures</th>
<th>Patient Specific Factors</th>
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</table>
| Low                 | • Laparoscopic cholecystectomy  
• Appendectomy  
• Transurethral prostatectomy  
• Inguinal herniorrhaphy  
• Unilateral/bilateral mastectomy | • Ambulating/mobilization  
• Age < 40 years with no additional risk |
| Moderate            | • Gynecologic (non-malignancy) surgery  
• Cardiac surgery  
• Thoracic surgery  
• Spinal surgery for malignancy  
• Bariatric surgery | • BMI > 25 kg/m²  
• Age 40-60 years with no additional risk  
• Estrogen therapy |
| High                | • Open-abdominal  
• Open-pelvic  
• Orthopedic | • Age > 60 years  
• Prior VTE  
• Malignancy  
• Anesthesia ≥ 2 hours  
• Bed rest ≥ 4 days  
• Postpartum  
• Hospital stay > 2 days  
• Long bone fractures  
• Multi-trauma |

**Contraindications to Pharmacologic VTE Prophylaxis:**

- Heparin
  - Active bleeding
  - Heparin induced thrombocytopenia (HIT)
- Enoxaparin
  - Active bleeding
  - HIT
  - Epidural catheter
  - Intra-cranial Pressure (ICP) Monitor
  - External Ventricular Drain (EVD)
**Initiation for Pharmacologic VTE Prophylaxis:**

All patients admitted to the SICU should be started on VTE prophylaxis on admission to the unit unless they have a contraindication or one of the following:

- Intra-cranial hemorrhage – start 72h after injury
- Craniotomy – start 72h after procedure
- Significant spinal injury/surgery – start 24h after injury or surgery

**Special Population: Obese Patients [10-14, 19-20]**

- **Enoxaparin**
  Obese patients with a BMI > 40 may benefit from higher doses of enoxaparin for VTE prophylaxis and monitoring of low molecular weight heparin assays (anti-Xa levels).
  - Dosing
    - BMI > 40 = enoxaparin 40 mg subQ q12h (normal renal function)
  - Monitoring
    - Low molecular weight heparin assay (Anti-Xa levels) should be obtained 4 hours after the 3rd or 4th dose
    - Goal level = 0.2-0.5 IU/mL

- **Heparin**
  If enoxaparin is contraindicated and the patient does not have an epidural, higher doses of low dose unfractionated heparin may be used.
  - Dosing:
    - Heparin 7,500 units subQ q8h

**VTE Prophylaxis with an Epidural:**

- **Epidural Placement**
  - Heparin:
    - Hold dose for 6 hours prior to epidural placement
  - Enoxaparin:
    - 1 mg/kg subQ q12h or 1.5 mg/kg subQ q24h: Hold VTE prophylaxis for 24 hours prior to epidural placement
    - 40 mg subQ q24h or 30 mg subQ q12h: Hold VTE prophylaxis for 12 hours prior to epidural placement

- **Epidural Removal**
  - Heparin
    - Hold dose for 4 hours prior to epidural removal
  - Enoxaparin
    - Should not be used while epidural is in place

- **Resuming after epidural is removed**
  - May initiate subcutaneous heparin or enoxaparin 2-4 hours after epidural removal
Sequential Compression Devices (SCDs):

- It is the SICU practice to have SCDs ordered on every patient on admission to the unit.

Treatment Overview:

<table>
<thead>
<tr>
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<th>Epidural</th>
<th>CrCl ≥ 30 mL/min</th>
<th>CrCl 20-29 mL/min</th>
<th>CrCl &lt; 20 mL/min</th>
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<tbody>
<tr>
<td><strong>High Risk</strong></td>
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<tr>
<td>• Ortho</td>
<td>Heparin SubQ 5,000 units q8h</td>
<td>Enoxaparin 40mg SubQ q24h</td>
<td>Enoxaparin 30mg SubQ q24h</td>
<td>Heparin SubQ 5,000 units q8h</td>
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<td>• Malignancy</td>
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<td><strong>Moderate Risk</strong></td>
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<tr>
<td>• Age &gt; 60</td>
<td>Heparin SubQ 5,000 units q8h</td>
<td>Enoxaparin 40mg SubQ q24h</td>
<td>Enoxaparin 30mg SubQ q24h</td>
<td>Heparin SubQ 5,000 units q8h</td>
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<tr>
<td>• Prolonged OR</td>
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<tr>
<td>• Immobility</td>
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<td>• Prior VTE</td>
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<td>• Postpartum</td>
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<td><strong>Low Risk</strong></td>
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<tr>
<td>• Ambulating</td>
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<tr>
<td>• No additional risk factors</td>
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<tr>
<td><strong>Obese</strong> (BMI &gt; 40)</td>
<td>Heparin SubQ 5,000 units q8h</td>
<td>Enoxaparin 40mg SubQ q12h - OR - Heparin SubQ 7,500 units q8h</td>
<td>Enoxaparin 30mg SubQ q24h - OR - Heparin SubQ 5,000 units q8h</td>
<td>Heparin SubQ 5,000 units q8h</td>
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</tbody>
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References


