## Contraindications to pharmacologic VTE prophylaxis (check all that apply)

### Absolute
- Active hemorrhage
- At risk for intracranial or intraspinal hemorrhage (recent acute trauma or high-risk spine/intracranial surgery within past 72 hours)
- Other (please specify):

### Relative
- Intracranial hemorrhage within the last year
- Craniootomy within 2 weeks
- Intra-ocular surgery within 2 weeks
- GI or GU hemorrhage within last month
- Thrombocytopenia (<50 K) or coagulopathy (PT>18)
- End-stage liver disease
- Active intracranial lesion/neoplasm
- Hypertensive urgency/emergency
- Post-op bleeding concerns

### Other
- Immune-mediated HIT (fondaparinux may be considered)
- Epidural catheter or spinal block (current or planned); see reverse for dosing guidance.
- Acute Pain Service MUST be notified before prophylaxis is started (951-1324)
- Recent arteriotomy
- Anticipated stay ≤ 48 hours
- Other (please specify):

## Risk assessment (check one)

### Low
- Patient is ambulating as much as he/she would at home and has no other VTE risk factors (see reverse)

### Moderate/high
- All patients NOT in low or very high risk categories
  - Choose one of the following:
    - Fondaparinux 2.5 mg sub-Q daily (do not use if actual body weight <50 kg or CICr <30 ml/min)
      - Start date
      - Start time
      - 0900
      - 2100
    - Heparin 5000 units sub-Q q 8 hours
      - Start date
      - Start time
      - 0600
      - 1400
      - 2200
    - Enoxaparin 40 mg sub-Q daily (do not use if actual body weight <50 kg or CICr <30 ml/min)
      - Start date
      - Start time
      - 0900
      - 2100

### Very high
- post-op from high risk surgery (hip or knee arthroplasty), hip fracture, trauma or acute spinal cord injury
  - Choose one of the following:
    - Fondaparinux 2.5 mg sub-Q daily (do not use if actual body weight <50 kg or CICr <30 ml/min)
      - Start date
      - Start time
      - 0900
      - 2100
    - Enoxaparin 30 mg sub-Q q 12 hours (do not use if actual body weight <50 kg or CICr <30 ml/min)
      - Start date
      - Start time
      - 0900
      - 2100
    - Enoxaparin 40 mg sub-Q daily (do not use if actual body weight <50 kg or CICr <30 ml/min)
      - Start date
      - Start time
      - 0900
      - 2100
    - Heparin 5000 units sub-Q q 8 hours
      - Start date
      - Start time
      - 0600
      - 1400
      - 2200

## Mechanical prophylaxis
- Appropriate for (1) low risk patients (2) patients with a contraindication to anticoagulants or (3) in addition to anticoagulants in VERY HIGH RISK PATIENTS
- Sequential compression device (SCDs) to lower extremities

## Patients that may go to or return to OR within 24 hours

Choose one of the following:
- Heparin 5000 units sub-Q q 8 h x dosage
- Enoxaparin 30 mg sub-Q q 12 h x dosage
- No pharmacologic prophylaxis at this time due to ____________________________________________________________________________

## LAB ORDERS:
- Serum creatinine (if none in past 72 hours)
- CBC (if none in past 72 hours)
- Platelet count every 3 days (if heparin or enoxaparin are ordered)
VTE risk factors include, but are not limited to:

<table>
<thead>
<tr>
<th>Age ≥50 years</th>
<th>Myeloproliferative disorder</th>
<th>Dehydration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart failure</td>
<td>Active malignancy</td>
<td>Hormone replacement</td>
</tr>
<tr>
<td>Moderate to major surgery</td>
<td>Prior VTE</td>
<td>Impaired mobility</td>
</tr>
<tr>
<td>Inflammatory bowel disease</td>
<td>Active rheumatic disease</td>
<td>Sickle cell disease</td>
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<tr>
<td>Estrogen-based contraceptives</td>
<td>Central venous catheter</td>
<td>Acute or chronic lung disease</td>
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<tr>
<td>Obesity</td>
<td>Known thrombophilic state</td>
<td>Varicose veins/chronic stasis</td>
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<tr>
<td>Recent post-partum with immobility</td>
<td>Myocardial infarction</td>
<td>Nephrotic syndrome</td>
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<tr>
<td>Stroke</td>
<td>Spinal cord injury</td>
<td>Anesthesia</td>
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<tr>
<td>Sepsis</td>
<td>Venous access</td>
<td>Trauma</td>
</tr>
<tr>
<td>Family history of VTE</td>
<td>Vasculitis</td>
<td></td>
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</tbody>
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Recommendations for the use of VTE prophylaxis in patients with epidural catheters or spinal blocks

For patients receiving low-dose sub-Q unfractionated heparin (5,000 units q12h or q8h)

- Wait 4-6 hours after a prophylactic dose of unfractionated heparin before placing an epidural catheter/spinal block.
- Wait 2-4 hours after a prophylactic dose of unfractionated heparin before removing an epidural catheter.
- Initiate unfractionated heparin thromboprophylaxis 1-2 hours after placing or removing an epidural catheter/spinal block.
- The concurrent use of antiplatelet or oral anticoagulants is contraindicated.
- **Concurrent use of an epidural catheter or spinal block and sub-Q low-dose unfractionated heparin requires Acute Pain Service approval (951-1324).**

For patients receiving prophylactic-dose enoxaparin: 40 mg once daily ONLY; q12h dosing contraindicated in epidural patients

- Wait 12 hours after a prophylactic dose of low molecular weight heparin before placing an epidural catheter/spinal block.
- Wait 10-12 hours after a prophylactic dose of low molecular weight heparin before removing an epidural catheter.
- Initiate low molecular weight heparin thromboprophylaxis 2-4 hours after removal of the epidural catheter.
- Initiate low molecular weight heparin thromboprophylaxis 6-8 hours postop when epidural catheter/spinal block placed.
- The concurrent use of antiplatelet or oral anticoagulants is contraindicated.
- **Concurrent use of an epidural catheter or spinal block and sub-Q low molecular weight heparin requires Acute Pain Service approval (951-1324).**

For patients receiving fondaparinux

- Extreme caution is warranted given the long half-life and early postoperative dosing of fondaparinux.
- Until further clinical experience is available, an alternate method of prophylaxis should be utilized.

Heparin-induced thrombocytopenia

- Consider immune-mediated HIT (HIT type II) if platelets drop by >50% from baseline at day 5-14 of therapy in heparin-naive patients.
- This may occur sooner than 5 days if patient has had a recent heparin product exposure
- HIT Type II occurs in approximately 3% of patients exposed to unfractionated heparin and to a lesser degree with low molecular weight heparins, such as enoxaparin
- HIT can occur with any dose or route of heparin exposure, including heparin-coated lines, flushes, prophylaxis or treatment
- All patients on a heparin products should have a baseline PLT count prior to initiation of therapy and then at least every 3 days thereafter
- HIT is a prothrombotic and potentially life-threatening condition that should be treated immediately
- If HIT is suspected, a hematology consult is recommended. Also, a HIT antibody panel should be sent and the patient should be initiated on an alternative anticoagulant (argatroban, lepirudin or fondaparinux) as soon as possible until the HIT antibody results are known
- Platelet transfusions in suspected HIT patients are relatively contraindicated and are not recommended

Monitoring

Prophylactic doses of enoxaparin and fondaparinux do not usually require monitoring. However, there are certain patient populations in which monitoring anticoagulation levels may be considered. These include:

- Morbid obesity (BMI>40)
- Pregnancy
- Changing/impaired renal function

If a patient requires monitoring, the appropriate order code for monitoring heparin or LMWH by anti Factor Xa is a HEPXA level and should be ordered as such. The order code for fondaparinux is FONDA.

DO NOT write the order as anti-Xa levels or anti-Xa activity levels. This often leads to an order for Factor X Activity, which is not the correct test and causes a significant delay in reporting of results.

HEPXA or FONDA levels should be drawn 4 hours after a LMWH or fondaparinux dose. It is preferable to draw the level after at least the 3rd dose to account for any accumulation that may be occurring. If a HEPXA level is within the target range, repeat levels are not recommended unless there is a significant change in renal function or weight.

Target levels for prophylaxis: enoxaparin 0.2-0.6 anti-Xa IU/ml fondaparinux 0.39-0.5 anti-Xa IU/ml

Resources

Acute Care Antithrombosis Pharmacist: Allison Burnett, PharmD 264-6970
Anticoagulation/hematology services: Check the “Am I On” system on UNMH homepage

For question or concerns regarding this protocol, please contact Aburnett@salud.unm.edu

Last revised July 16, 2008