VTE GUIDELINES for OB

VTE Treatment for Every Stage of Care

<table>
<thead>
<tr>
<th>Prenatal Assessment</th>
<th>Mechanical Prophylaxis (SCD)</th>
<th>Prophylactic Dose LMWH or UFH*</th>
<th>Treatment Dose LMWH or UFH*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ambulation</td>
<td>Prior VTE:</td>
<td>Multiple VTE Episodes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Idiopathic VTE</td>
<td>VTE with HR thrombophilia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• VTE with pregnancy or oral contraceptives</td>
<td>VTE with acquired thrombophilia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• VTE with LR thrombophilia</td>
<td>* Consult with MFM Team</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Family History of VTE with HR thrombophilia</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• HR thrombophilia</td>
<td></td>
</tr>
<tr>
<td>Antepartum Hospitalization</td>
<td>Yes, if not on bed rest</td>
<td>Patient Score is ≥ 2 (see score chart)</td>
<td>* Consult with MFM Team</td>
</tr>
<tr>
<td>Delivery Hospitalization*</td>
<td>Yes, if not on bed rest</td>
<td>Patient Score is ≥ 2 (see score chart)</td>
<td>* Consult with MFM Team</td>
</tr>
</tbody>
</table>

* Important: Initiate Anticoagulation Post-Delivery

If Patient Score is ≥ 2: 10 days prophylactic dose
If Patient Score is ≥ 2 and patient has any of the following – Prior VTE (idiopathic or Provoked VTE, VTE with pregnancy or oral contraceptives, VTE with LR thrombophilia), Family History of VTE with HR or LR thrombophilia, or HR thrombophilia: 6 weeks prophylactic dose

*Consult with MFM Team

A VTE Risk Assessment should be performed for every patient on admission, after delivery, after any surgical procedure and at discharge. To calculate the score, sum the total of all of your patient’s risk factor score points (the 1 or 2 to the right of the risk factor). A score of ≥ 2 indicates high risk; a score of 0 or 1 indicates low risk.

Score System Key
- Already receiving prophylactic LMWH or UFH as outpatient (2)
- Any history of VTE (2)
- HR Thrombophilia (see definition below) (2)
- Thrombophilia and family history of VTE (2)
- LR Thrombophilia (see definition below) (1)
- Any Surgical Procedure (2)
- Bed Rest ≥ 3 days (2)
- Pre-pregnancy Morbid Obesity (BMI ≥ 40+) (2)
- Pre-Pregnancy Obesity (BMI ≥ 30-39) (1)
- Age >40 or <15 (1)
- ART (assisted reproductive technology) (1)
- General Anesthesia (1)
- Heart Disease (1)
- Postpartum OB hemorrhage >1000 ccs (if stable after 12-24 hours) (1)
- Hysterectomy (1)
- IUGR (intrauterine growth restriction) (1)
- Lupus (1)
- Major Infection: Chorioamnionitis, SIRS, Sepsis (1)
- Multiple Gestation (1)
- Preeclampsia (1)
- Renal Disease (1)
- Sickle Cell (1)
- Severe liver disease (prolonged PT)
- Uncontrolled hypertension (BP >200mmHg systolic or >120mmHg diastolic)
- Unfractionated heparin should be used if there is a specific contraindication to LMWH
- Admission for delivery

*Contraindications for LMWH or UFH
- Hemophilia or other known bleeding disorder
- Artenatal Patients: Active or threatened bleeding (e.g. placenta previa, placental abruption) based on clinical judgment of balancing risks/benefits (consider holding LMWH/UFH 12-24 hours after bleeding stops)
- Thrombocytopenia (platelet count <75 x10^9)
- Recent stroke (hemorrhagic/ischemic)
- Severe renal disease (GFR <30ml/min)
- Severe liver disease (prolonged PT)
- Uncontrolled hypertension (BP >200mmHg systolic or >120mmHg diastolic)
- Unfractionated heparin should be used if there is a specific contraindication to LMWH
- Admission for delivery

Definitions:
- High-risk thrombophilia (HR): Factor V Leiden or prothrombin gene mutation homozygous, Antithrombin III deficiency, Compound heterozygote disorders (FVL and prothrombin)
- Low-risk thrombophilia (LR): Factor V Leiden or prothrombin gene mutation heterozygous, Protein C or S deficiency
- Acquired thrombophilia: Antiphospholipid antibody syndrome
- Provoked VTE: VTE event occurring in the setting of a temporary risk factor (ie. Orthopedic surgery, indwelling catheter, immobilization)
- Unprovoked VTE: VTE event in the absence of a temporary risk factor

Protocols for Prophylaxis

<table>
<thead>
<tr>
<th>Agent</th>
<th>LMWH Enoxaparin</th>
<th>UFH Unfractionated Heparin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dosed Based on Weight</td>
<td></td>
<td>Dosed Based on Trimester</td>
</tr>
<tr>
<td>&lt;50kg</td>
<td>20mg daily</td>
<td>First trimester</td>
</tr>
<tr>
<td>50-90kg</td>
<td>40mg daily</td>
<td>Second trimester</td>
</tr>
<tr>
<td>91-130kg</td>
<td>60mg daily</td>
<td>Third trimester</td>
</tr>
<tr>
<td>131-170kg</td>
<td>40mg BID (80mg daily if patient declines BID dosing)</td>
<td>Postpartum</td>
</tr>
<tr>
<td>&gt;170kg</td>
<td>0.6mg/kg/day (Divided BID)</td>
<td></td>
</tr>
</tbody>
</table>

Hospitalized antepartum patients may receive 5000 units UFH twice daily for prophylaxis to facilitate regional anesthesia

Adapted from ACOG Practice Bulletin 123, ACCP Recommendations, RCOG Green Top Guideline 37a
Protocols for Therapeutic Dosing

<table>
<thead>
<tr>
<th></th>
<th>LMWH Enoxaparin</th>
<th>Unfractionated Heparin</th>
<th>Warfarin (postpartum)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dosing:</strong></td>
<td>1mg/kg twice daily</td>
<td>10000 units or more twice daily adjusted to mid interval target aPTT (1.5-2.5)</td>
<td>INR 2.0-3.0 (postpartum only)</td>
</tr>
<tr>
<td>Antepartum/Postpartum</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Timing of Neuraxial Anesthesia*

Sources: FDA Drug Safety Communication Nov, 2013; NYP protocol

**Antepartum/Intrapartum**
- UFH prophylaxis (≤10,000IU/day) Wait 4-6 hours post last dose prior to neuraxial blockade
- UFH therapeutic Wait 6 hours post last dose prior to neuraxial blockade or check aPTT
- LMWH prophylaxis Wait 12 hours post last dose prior to neuraxial blockade
- LMWH therapeutic Wait 24 hours post last dose prior to neuraxial blockade

**Postpartum**
- UFH prophylaxis (≤10,000IU/day) Can restart immediately after epidural catheter removal or spinal needle placement
- UFH therapeutic Wait ≥ 1 hour after epidural catheter removal or spinal needle placement
- LMWH prophylaxis Wait at least 4 hours after epidural catheter removal or 12 hours after spinal or epidural needle placement.
- LMWH therapeutic Avoid therapeutic dosing with epidural catheter in situ. Wait at least 24 hrs after catheter removal or spinal needle placement.

*Check a platelet count before neuraxial block or catheter removal in all patients receiving UFH for > 4 days.

Post Delivery Prophylaxis

<table>
<thead>
<tr>
<th></th>
<th>LMWH</th>
<th>UFH</th>
</tr>
</thead>
</table>
| **1st Dose**     | For both vaginal and cesarean delivery (and PPTL):  
                   • If the procedure ends between 10:01 AM and 10:00 PM, start LMWH the next day at 10:00 AM
                   • If the procedure ends between 10:01 PM and 10:00 AM, start LMWH at 10:00 PM  
                   * No sooner than 12 hours after the procedure regardless of type of anesthesia |
| **Epidural Catheter Remains in-situ** | Do not remove epidural catheter until 12 hours after last dose. Wait at least 4 hours before next dose |
| **Additional Scenarios** | If epidural catheter is to be removed prior to a dose of LMWH, then LMWH should not be given until 4 hours after removal|

Screening for Heparin Induced Thrombocytopenia (HIT)

- Check a platelet count on all patients receiving UFH for > 4 days
- A platelet count of <150,000/microL or acute drop to <50% of baseline require further evaluation and immediate consultation with a hematologist or maternal-fetal medicine specialist
- A preceding diagnosis of gestational thrombocytopenia or idiopathic thrombocytopenic purpura may confound screening for HIT, and consultation with a hematologist or maternal fetal medicine specialist may be required for patients with these conditions

Prophylaxis and Spontaneous Labor

- For patients on LMWH prenatally, consideration should be made to switch to UFH at 35-36 weeks gestational age to facilitate administration of regional anesthesia
- When patients are transitioned from LMWH to UFH, HIT should also be screened for with a CBC 4 days after UFH is initiated

Therapeutic Postpartum Anticoagulation

For patients who have therapeutic LMWH postpartum anticoagulation planned:
- LMWH should be deferred until at least 24 hours after spinal needle placement or epidural catheter removal
- Prophylactic UFH dosing should be considered during the 24 hours postpartum after regional anesthesia for these patients
- For patients with major risk factors for hemorrhage precluding therapeutic LMWH (recent postpartum hemorrhage, wound hematoma, coagulopathy) prophylactic UFH and/or SCDs should be considered