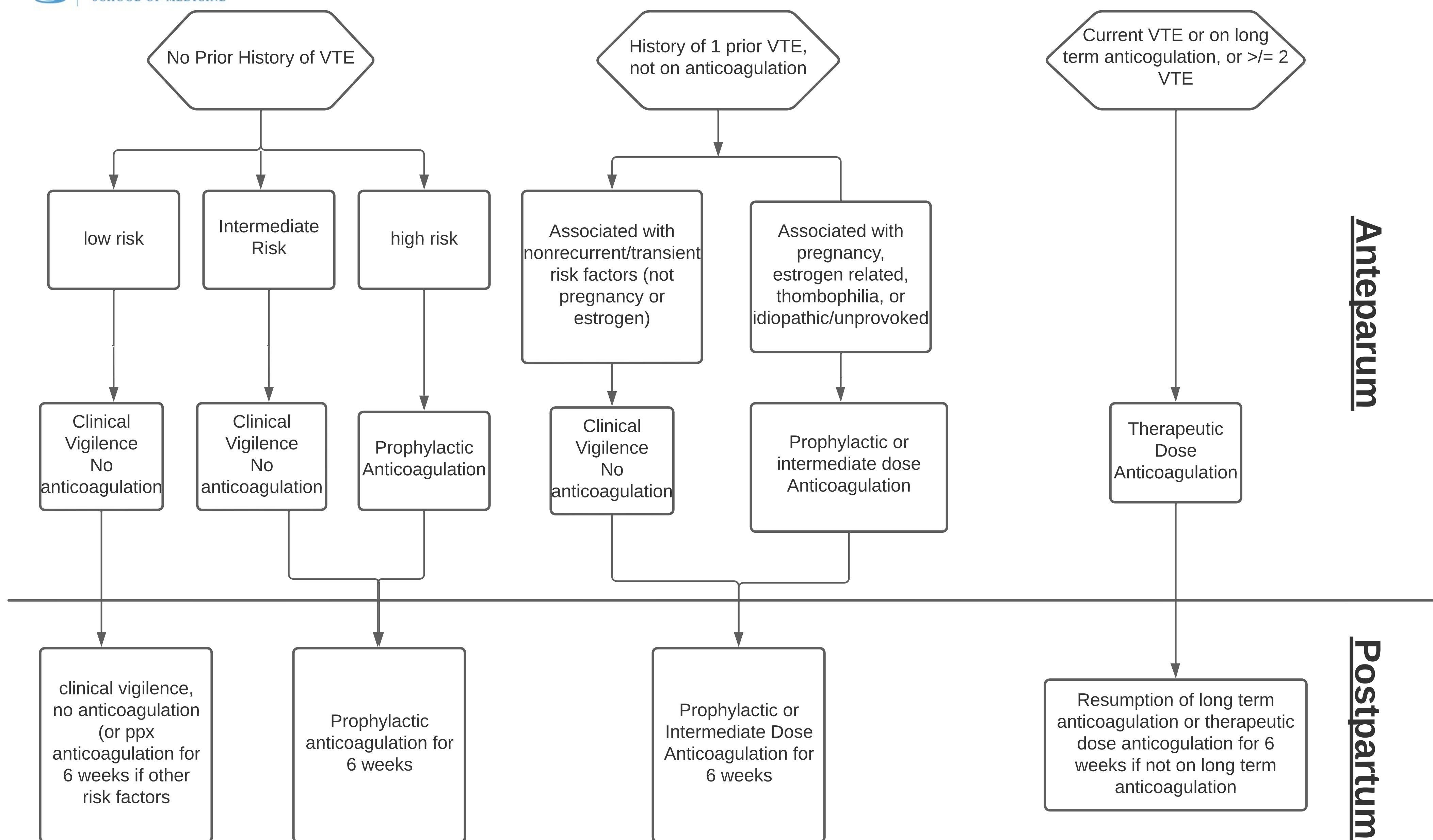
UNC SCHOOL OF MEDICINE

Management of Thromboembolic Disease in Pregnancy



Low Risk
No family history
(first degree relative with VTE <50)
AND
low risk thrombophilia (Factor V Leiden, Prothrombin G20210A heterozygote)

Intermediate Risk
No family history (first degree relative with VTE <50) **AND**
high risk thrombophilia (Factor V Leiden homozygote, Prothrombin G20210A homozygote, Protein S deficiency, Protein C deficiency, Antithrombin deficiency, double heterozygote for factor V Leiden and Prothrombin G20210A Antiphospholipid Antibody Syndrome)
OR
Positive family history (first degree relative w/ VTE <50) AND low-risk thromboophilia (Factor V Leiden or ProthrombinG20210A heterozygote)

High Risk
Positive family history (First degree relative w/ VTE <50)
AND
high risk thrombophilia (Factor V Leiden homozygote, Prothrombin G20210A homozygote, Protein S deficiency, Protein C deficiency, Antithrombin deficiency, double heterozygote for factor V Leiden and Prothrombin G20210A Antiphospholipid Antibody Syndrome).

Other risk factors to consider Postpartum
Obesity (BMI >35 kg/m2)
Prolonged immobility (strict bedrest >1 week in antepartum period)
Cearean delivery
Peripartum hemorrhage > 1000ml
Postpartum infection
Medical conditions that increase risk of VTE (nephrotic range proteinuria, sickle cell disease)
Smoking (>10 cig/day)

Note: Women with a history of thrombosis who have not had a complete evaluation of possible underlying etiologies should be tested for antiphospholipid antibodies and for inherited thrombophilias (cannot test for protein S during pregnancy). The results of testing may alter the recommendations for thromboprophylaxis or dosing and timing of anticoagulation.

Anticoagulation Regimens

Low Molecular Weight Heparin (LMWH) - Recommended

Prophylactic	Enoxaparin 40 mg SC once daily
	Dalteparin 5000 units SC once daily
	Tinzaparin 4500 units SC once daily
	Nadroparin 2,850 units SC once daily
Intermediate	Enoxaparin 40 mg SC q12 hrs
	Dalteparin 5000 units SC q12 hrs
Therapeutic	Enoxaparin 1 mg/kg SC q12hrs
	Dalteparin 200 units/kg SC daily OR 100 units/kg SC q12hrs
	Tinzaparin 175 units/kg once daily

Unfractionated Heparin (UFH)

Prophylactic	1st trimester: 5,000-7,500 units SC q12hrs
	2nd trimester: 7,500 - 10000 units SC q12hrs
	3rd trimester: 10,000 units SC q12hrs OR 5,000 units SC q8hrs
	**consider using q8h dosing if significant concern for unscheduled delivery*
Therapeutic	216 u/kg q12hrs (adjust to target aPP of 1.5-2.5 6 hrs after injection)

*Patients receiving prophylactic anticoagulation n pregnancy do not need monitoring as optimal anti-factorXa levels in pregnancy have not been determined. Consider checking Anti -Xa levels for extremes of body weight (BMI >40) , which should be 0.6 - 1.0 units/mL for q12 hr dosing of LMWH.
*Commonly available syringe sizes for enoxaparin for concenration 100 mg/mL are as follows: 30 mg/0.3mL; 40 mg/0.4mL; 60mg/0.6mL; 80 mg/0.8mL. For patients whose dosing falls between a commonly available syringe dose, round up or down to an available syringe dose after considering bleeding and thrombosis risks. Consider rounding down for individuals with renal disease or those with high risk of preterm birth.

Preparation for Delivery

*Consider switching to UFH at 36 weeks (or earlier if high risk for early delivery). UFH has a shorter half life and ability to reverse using protamine sulfate.
OR
*Continue LMWH with plan to hold prior to scheduled IOL or Cesarean delivery (Table 1).

Table 1. Suggested time to start and stop LMWH relative to delivery

	When to hold before delivery	When to restart after delivery
Intermediate dose or Therapeutic LMWH	If IOL: hold for atleast 24 hrs prior to anticipated neuraxial placement If C/S: hold for atleast 24 hrs prior to scheduled procedure	•In consensus with anesthesia removal of catheter and considering surgical bleeding risk •Plan to restart atleast 24 hrs neuraxial anesthesia placement and atleast 4 hrs after epidural catheter removal
Prophylactic LMWH	If IOL or C/S: hold for 12hrs prior to anticipated neuraxial placement	•In consensus with anesthesia removal of catheter and considering surgical bleeding risk •Plan to restart atleast 12 hrs after neuraxial anesthesia placement and at least 4 hrs after epidural catheter removal

**Note: if patient is at high risk for VTE morbidity/mortality and cannot be off of anticoagulation for 24 hrs, please consult with OB anesthesia and consider use of heparin gtt. Please include that patient is on anticoagulation when messaging to schedule IOL or C/S.*

Intrapartum

Hold anticoagulation throughout intrapartum course (or see note above if anticoagulation cannot be held for at least 12-24 hours)
Sequential Compression Devices

Postpartum

Continue Sequential Compression Devices

If restarting LMWH/UFH: see Table 1

If starting coumadin:
- first dose PM after delivery
- bridge with LMWH/UFH for 5 days and until INR 2-3 for 2 days
- breast feeding permitted

Prior to Discharge:
Re-dose LMWH or UFH to day-of-discharge weight for homegoing

References

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3. Patient Safety and Quality Committee, Society for Maternal-Fetal Medicine. Electronic address: smfm@smfm.org, Combs CA. Society for Maternal-Fetal Medicine Special Statement: Checklist for thromboembolism prophylaxis after cesarean delivery. Am J Obstet Gynecol. 2020 Oct;223(4):B22-B23. doi: 10.1016/j.ajog.2020.07.013. Epub 2020 Jul 10. PMID: 32653461.
4. Options for peripartum anticoagulation in areas affected by shortage of unfractionated heparin. ACOG Practice Advisory. March 2020.
5. Stevens SM, Woller SC, Baumann Kreuziger L, Bounameaux H, Doerschug K, Geersing GJ, Huisman MV, Kearon C, King CS, Knighton AJ, Lake E, Murin S, Vintch JRE, Wells PS, Moores LK. Executive Summary: Antithrombotic Therapy for VTE Disease: Second Update of the CHEST Guideline and Expert Panel Report. Chest. 2021 Dec;160(6):2247-2259. doi: 10.1016/j.chest.2021.07.056. Epub 2021 Aug 2. PMID: 34352279.
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These algorithms are designed to assist the primary care provider in the clinical management of a variety of problems that occur during pregnancy. They should not be interpreted as a standard of care, but instead represent guidelines for management.Variation in practices should take into account such factors as characteristics of the individual patient, health resources, and regional experience with diagnostic and therapeutic modalities.
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