

Venous Thromboembolism Prevention Protocol

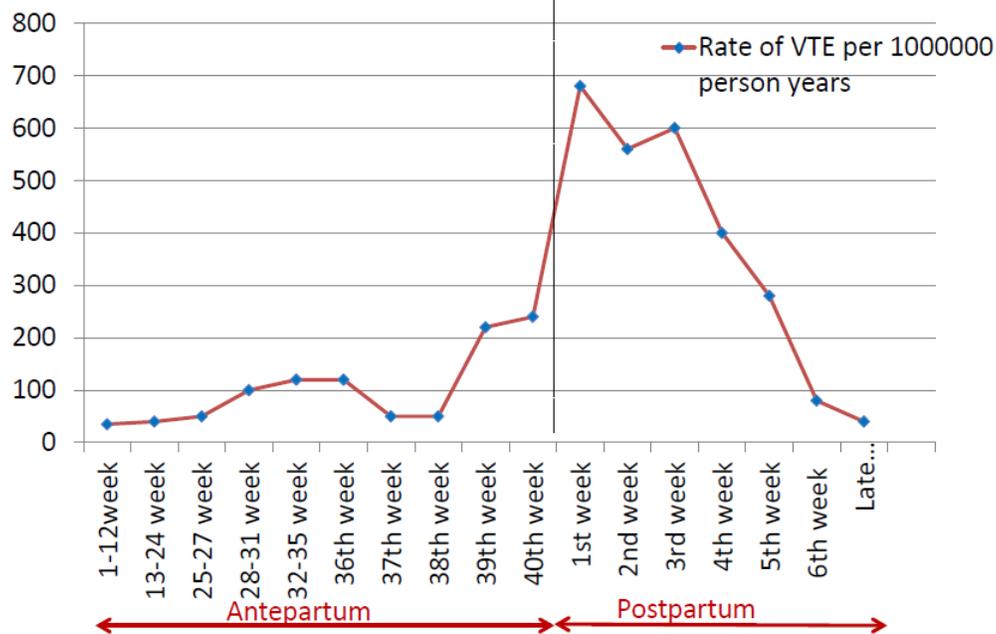
This protocol pertains to prevention of VTE in low and high risk pregnant patients admitted as inpatients.

For information about diagnosis and management of women with thrombophilia and VTE see the Thrombophilia Protocol.

Background:

- Pregnant women have increased risk of VTE given venous stasis of lower extremities, endothelial injury and hypercoagulable state of pregnancy.
- Pregnant women are at 5-fold increased risk of VTE compared with non-pregnant women.
- VTE risk increases to over 20-fold intrapartum and postpartum, and risk remains until 12 weeks postpartum.

Risk of first thromboembolism in and around pregnancy



Sultan et al Br J Haematol 156, Issue 3, 366-373

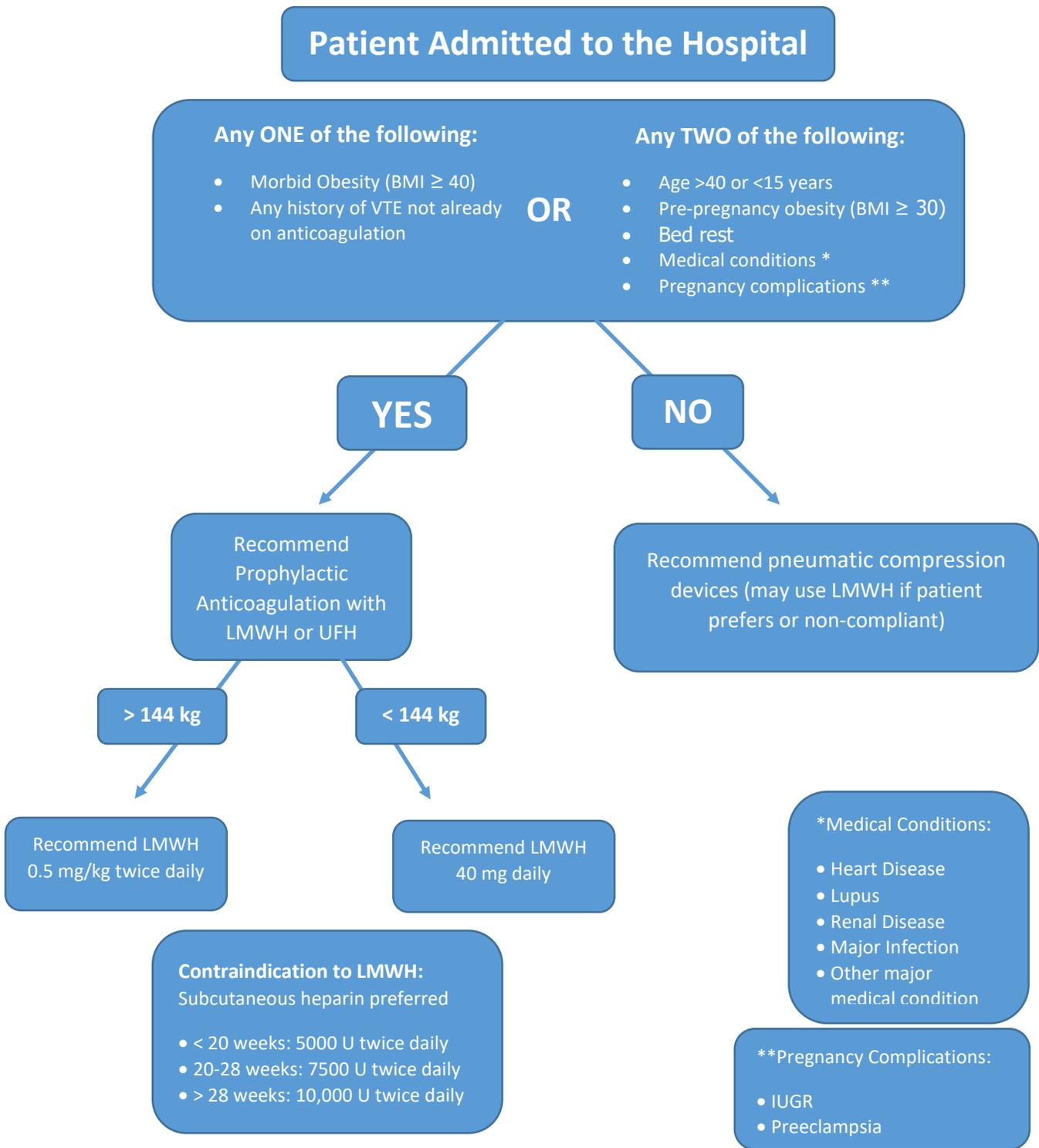
- VTE risk increases 18 fold during non-delivery hospitalization.
- Accounts for 10% of maternal deaths in developed countries.
- VTE occurs twice as frequently after cesarean delivery compared to vaginal delivery.

Antepartum Prophylaxis

- Women admitted during pregnancy for antepartum complications need to have mode of VTE prophylaxis considered, documented and implemented. Risk factor status should be assessed and documented (major or minor risk factors) and management strategy devised. It is reasonable to initiate pharmacological VTE prophylaxis on women at time of admission once imminent delivery is felt to be unlikely and women are deemed to have VTE prophylaxis initiated.
- If women are discharged from the antepartum service, the need to continue on VTE prophylaxis will hinge upon whether risk factors are substantial and ongoing and should be determined on an individual basis.
- Women considered low-risk may be have pneumatic compression versus prophylactic dose LMWH if non-compliant with compression or if preferred.
- Women considered high-risk (presence of major risk factors, multiple minor risk factors) should receive LMWH prophylaxis.
- LMWH is generally preferred, however if unplanned delivery is anticipated consider switching to SQH.
- Chemoprophylaxis should be ordered to be given after the fetal NST each day.

DOSE:

1. Pneumo-boots—no agreed upon consensus regarding minimal time, “may be removed while patient is ambulating, but should be put back on when the patient returns to seated or supine position”
2. Chemoprophylaxis - **There are two acceptable doses of LMWH for VTE prophylaxis:**
 - a. Lovenox 40 mg q d is an accepted and often utilized dose for VTE prophylaxis. The advantage to 40 mg qd is the ability to administer regional anesthesia at 12 hours, as opposed to needing to wait 24 hours with higher doses of LMWH. A disadvantage is this dose has been shown to have a much lower rate of blood levels deemed to be “therapeutic” for VTE prophylaxis. Achieving these blood levels has never been shown to reduce VTE morbidity.
 - b. Weight-based dosing should be used (0.5 mg/kg twice daily) in patients greater than 144kg (315lbs) when delivery is not imminent. Weight based dosing is more effective for achieving adequate blood levels in the obese, however may hinder the ability to have regional anesthesia performed if taken within 24 hours.



Intrapartum Prophylaxis

- The majority of patients may stop anticoagulation and induce labor within 24 hours.
- Alternatively, may convert from therapeutic or prophylactic LMWH to UFH if delivery is anticipated in select patients.
- Consider Anesthesia consultation prior to intrapartum period to devise mutually agreed plan for anticoagulation.
- Interruption of anticoagulation decreases risk of epidural or spinal hematoma with regional anesthesia. To be considered for regional anesthesia, patients should wait:
 - 12 hours after the last prophylactic dose of LMWH (40 mg per day dose)
 - 24 hours after the last dose of LMWH > 40 mg per day
 - Neuraxial anesthesia okay when receiving 5000 units of UFH q 12 hours
 - If receiving greater than 10K units of UFH per day, neuraxial anesthesia may be used 4 hours after last dose or with PTT < 40, 2 hours after last dose. Protamine sulfate may be used in select emergent cases with expert consultation.
 - Recommendations from UC Health “Institution recommendations for using anticoagulant agents and coagulation status in adult patients undergoing neuraxial anesthesia procedures”
- Continue pneumatic compression devices when anticoagulation has been discontinued.

Cesarean delivery

- Pneumatic compression devices recommended before start of cesarean delivery for all patients.
- Decision for UFH or LMWH at the time of cesarean section should be based on individual risk assessment of additional risk factors.
- Although cesarean delivery increases risk of VTE, universal anticoagulation is not recommended.

Low risk patients:

- Pneumatic compression devices may be preferred to unfractionated heparin because of risk of bleeding complications.
- Pneumatic compression devices have been found to be cost effective.

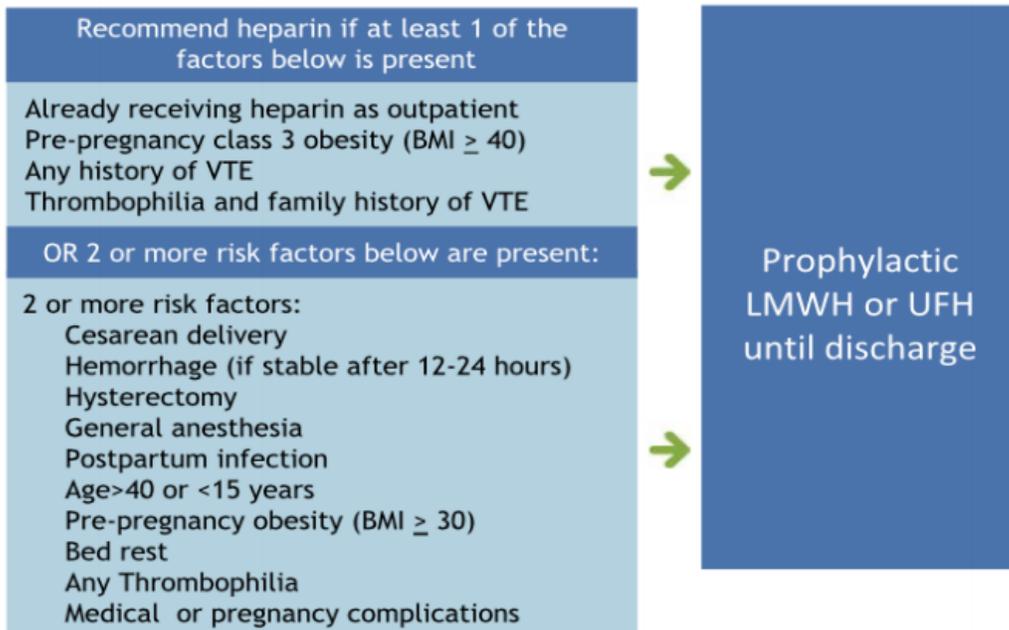
High risk patients:

- Individual risk assessment may require thromboprophylaxis with pneumatic compression devices and/or LMWH
- Patients with one more more risk factors for venous thromboembolism should be considered for postpartum prophylaxis with LMWH

Postpartum Prophylaxis

- Anticoagulation should be resumed no sooner than 6 hours after SVD, 12 hours after CD. American Society of Regional Anesthesia recommend at least 2 hours from epidural removal and resumption of prophylaxis.
- Pneumatic compression devices should be left in place until anticoagulation is restarted.
- Select patients on antepartum prophylaxis who continue to have significant risk factors for VTE should receive postpartum prophylaxis for 6-12 weeks.

VTE Prevention: Postpartum (in hospital)



Legend: Recommendations for prophylaxis are based on guidelines from the Royal College of Obstetricians and Gynaecologists.

Table from Council on patient safety in women's health care Safety Action Series: Assessing risk for antenatal venous thromboembolism.

March 2017

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