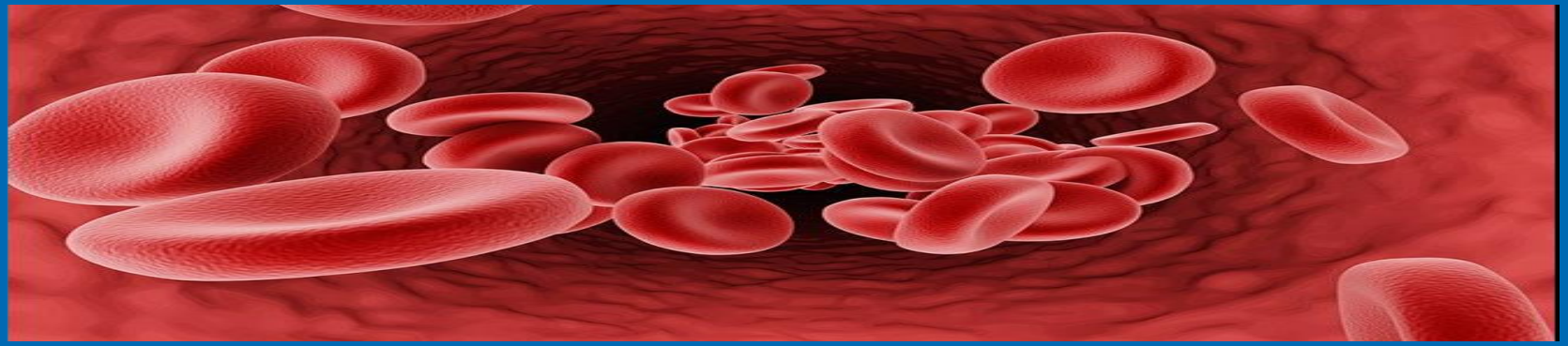
OCTOBER 15,2021



Venous Thrombosis Prevention in Pregnancy

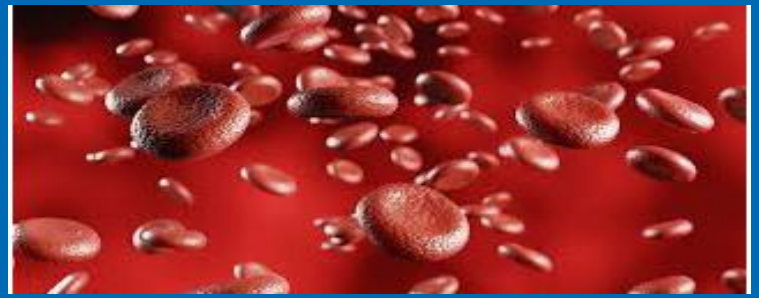
Unit Safety Bundle Creation

Lakeisha McNulty, BSN, C-EFM CNIV
Colorado Fetal Care Labor & Delivery Unit
lakeisha.mcnulty@childrenscolorado.org

Children's Hospital Colorado
Here, it's different.™

Objectives

- Review Maternal VTE Background & warning signs.
- Discuss the creation of the L&D VTE Safety Bundle.
- Review prevention & Treatment guidelines.
- Case review incorporating perinatal VTE guidelines .
- Summary
- Questions

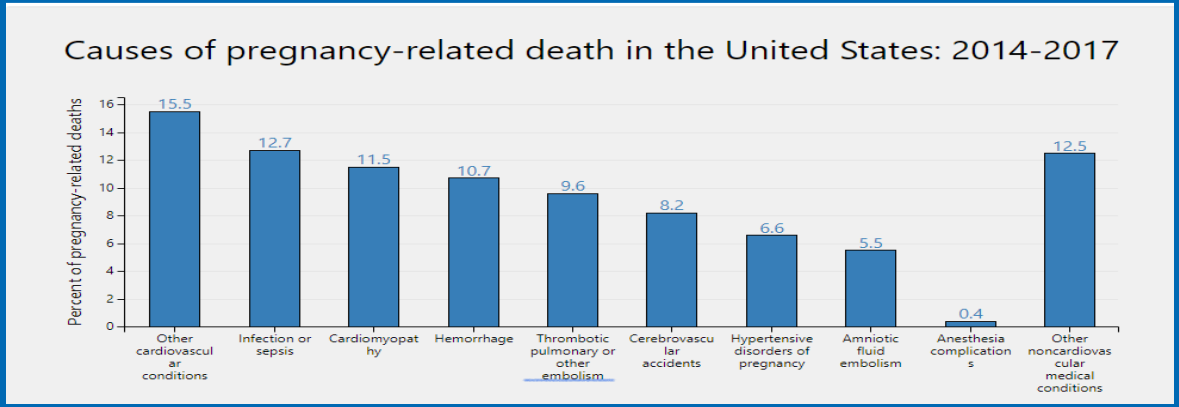


Background

CDC Surveillance studies of pregnancy related deaths have shown an increase in cardiovascular and cerebrovascular events in pregnant women with chronic health conditions.Venous Thromboembolism (VTE) is a leading cause of maternal morbidity/ mortality in the United States (10%).

Two Categories:

1. Deep Vein Thrombosis (DVT) 80% pregnancy risk
2. Pulmonary Embolism (PE) 20% pregnancy risk



Virchow's Triad:

Coagulation components are worsened by the physiological / hormonal changes that occur during pregnancy.

Hypercoagulability

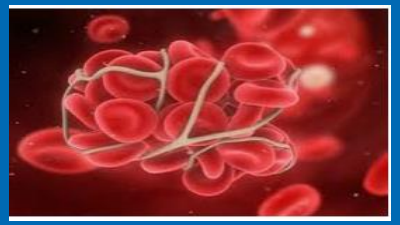
Increase in clotting factors (body's way of preventing hemorrhage at delivery)

Stasis of blood flow

Gravida uterus causes mechanical compression of pelvic vein and pregnancy hormone mediated venous dilation causing an increase blood volume, decreased blood velocity in lower extremities, and decreased blood return.

Endothelial vascular damage-can occur during delivery (fetal descent into pelvis/ increased risk during C/S)

This results in a >5 fold increased risk of VTE during pregnancy



Common Risk Factors For OB Patients

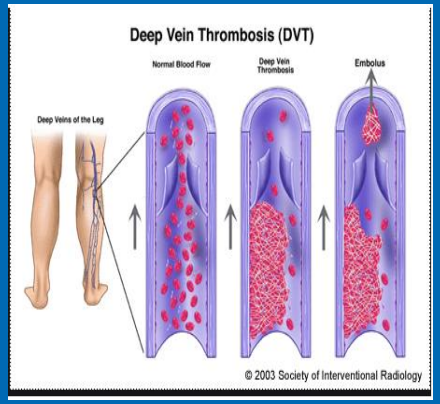
- ❖ Multiple gestation
- ❖ Smoking
- ❖ Pregnancy complications (Pre-Eclampsia, Hemorrhage, Infection, etc.)
- ❖ Medical conditions (Lupus, Cancer, Nephrotic Syndrome, etc.)
- ❖ Antepartum admission >72 hours (strict bed rest)
- ❖ Dehydration
- ❖ Family history of VTE
- ❖ BMI > 35
- ❖ ***Personal history of Thrombophilia :***

- High Risk Thrombophilia (Factor V mutation Homozygous , Prothrombin gene mutation homozygous, Compound Heterozygote for Factor V and Prothrombin gene mutation, Ant thrombin III Deficiency, Antiphospholipid Syndrome)
- Low Risk Thrombophilia (Factor V Heterozygous mutation ,Prothrombin gene mutation ,Protein S or C deficiency)

VTE Signs & Symptoms

Deep Vein Thrombosis (DVT):

- Pain
- Edema
- Warmth and discoloration (erythema) of the affected extremity



Pulmonary Embolism (PE):

- Dyspnea
- Angina (increase in severity with respirations)
- Hypoxia
- Unexplained cough (blood may be present) or unexplained tachycardia

CFCC L&D VTE Safety Bundle Creation

- In 2018, California Maternal Quality Care Collaborative (CMQCC) published a resource article to:
  - Assist hospitals with the creation of a Maternal VTE safety bundle
  - Assist with the identification & treatment for pregnant women with risk factors present up until 6 weeks postpartum.

- In 2019, the Colorado Fetal Care Center Labor & Delivery Unit here at Children's Hospital VTE Safety Bundle Committee created a novel Perinatal VTE Epic tool based on CMQCC guidelines.

- The Perinatal VTE Epic tool was implemented on 6/1/2020

CFCC L&D VTE Safety Bundle Initiation

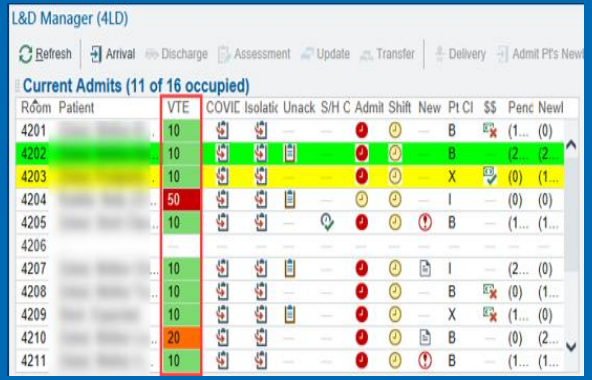
METHODS

- All peripartum women cared for at the Colorado Fetal Care Center (CFCC) were screened for VTE risk factors by using the VTE Epic tool:
  - At their first prenatal visit
  - With in 24 hours of admission
  - Immediately post-delivery
  - At discharge
- VTE risk score was generated from the Epic tool and placed on L&D Manager

Low risk score of 10 (green) = SCD's only

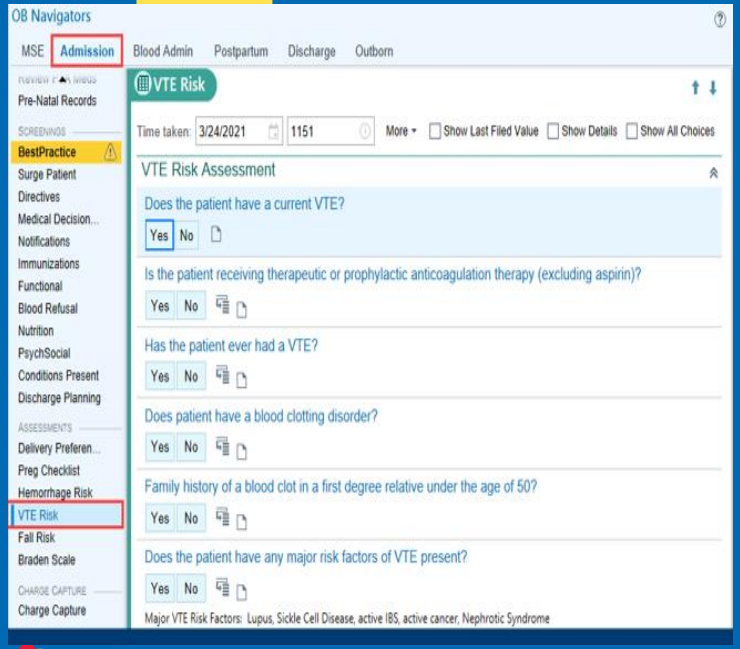
Medium risk score of 20 (orange)= daily enoxaparin

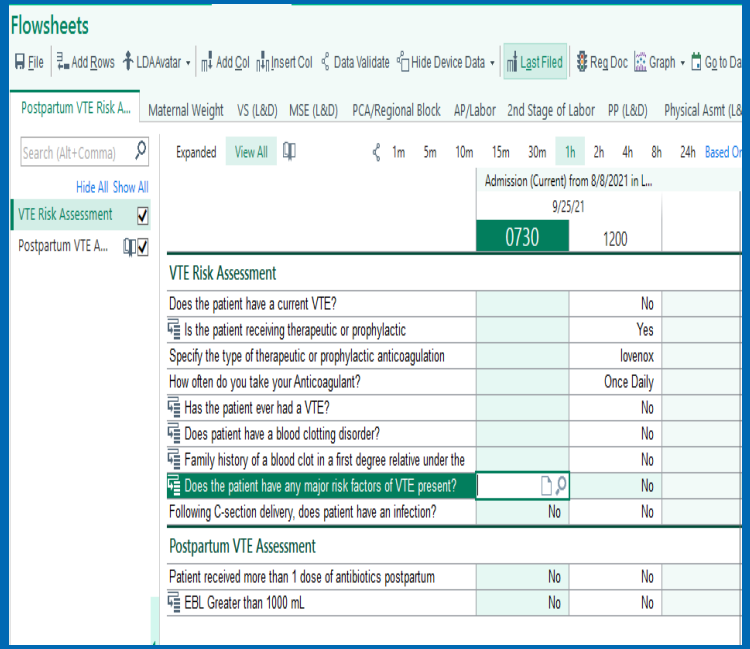
High risk score of 50 (red) = BID enoxaparin

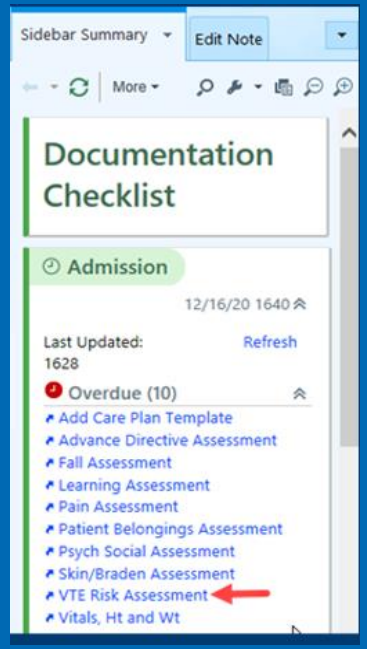


CFCC L&D VTE Safety Bundle Documentation

EPIC RN Required Documentation on Admission & Post Delivery

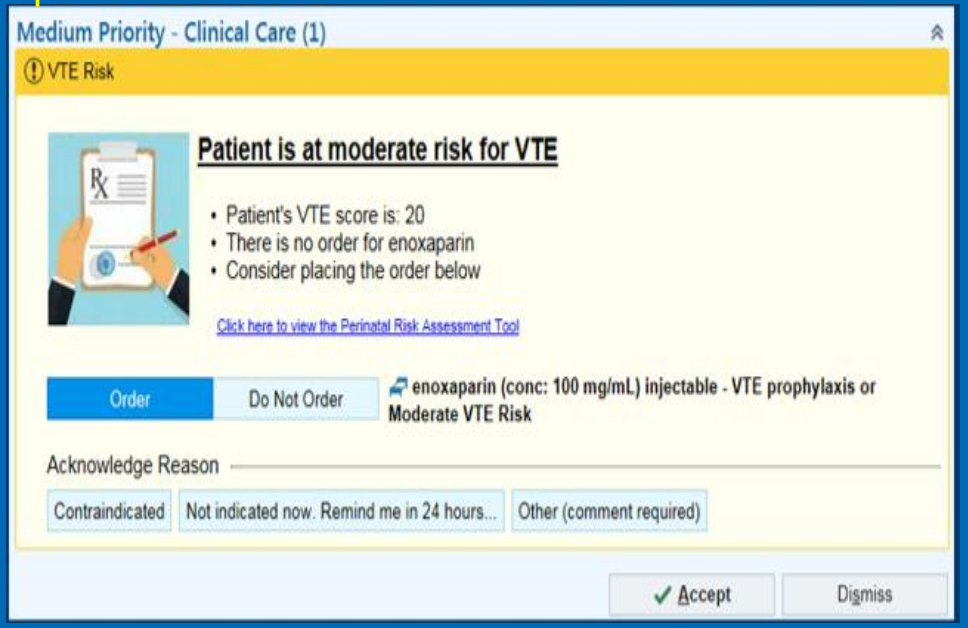


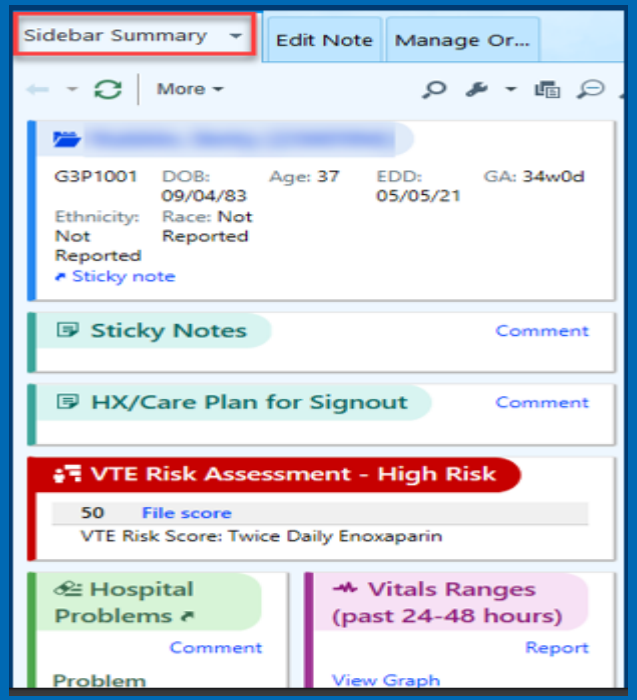




VTE BPAS Generated From RN Epic Tool

- The provider has the option of acknowledging BPAS or overriding the advised treatment plan.





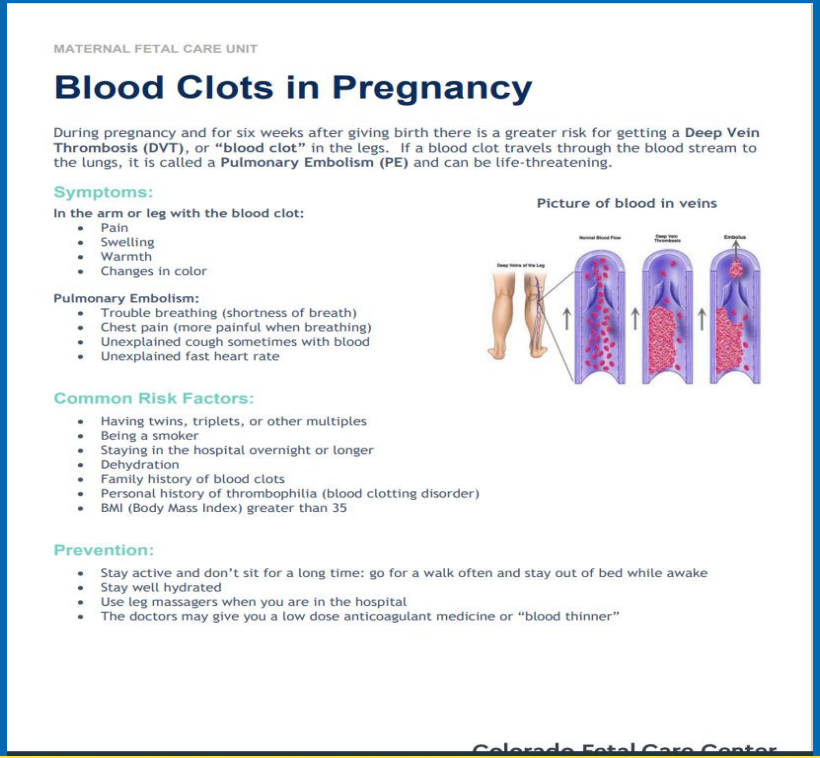
VTE Preventative Measures

Rn Completion of Epic **VTE Risk Assessment tool on:**

- CFCC initial prenatal visit
- L&D admission
- Post-delivery

CFCC/ L&D Staff :

- Provide patient education (handout)
- Encourage ambulation/ activity
- Promote Hydration
- SCD use while in bed
- **Administer low dose anticoagulant (Enoxaparin) per order.**



MATERNAL FETAL CARE UNIT

Blood Clots in Pregnancy

During pregnancy and for six weeks after giving birth there is a greater risk for getting a **Deep Vein Thrombosis (DVT)**, or **"blood clot"** in the legs. If a blood clot travels through the blood stream to the lungs, it is called a **Pulmonary Embolism (PE)** and can be life-threatening.

Symptoms:

In the arm or leg with the blood clot:

- Pain
- Swelling
- Warmth
- Changes in color

Pulmonary Embolism:

- Trouble breathing (shortness of breath)
- Chest pain (more painful when breathing)
- Unexplained cough sometimes with blood
- Unexplained fast heart rate

Picture of blood in veins

Common Risk Factors:

- Having twins, triplets, or other multiples
- Being a smoker
- Staying in the hospital overnight or longer
- Dehydration
- Family history of blood clots
- Personal history of thrombophilia (blood clotting disorder)
- BMI (Body Mass Index) greater than 35

Prevention:

- Stay active and don't sit for a long time: go for a walk often and stay out of bed while awake
- Stay well hydrated
- Use leg massagers when you are in the hospital
- The doctors may give you a low dose anticoagulant medicine or "blood thinner"

Colorado Fetal Care Center

CFCC VTE Perinatal Risk Assessment Tool

DESCRIPTION	MANAGEMENT	
	Outpatient	Inpatient

• [1]Low Risk Thrombophilia
  ○ Negative family history of VTE
  ○ Negative personal history of VTE
• [5]Prior provoked VTE
	No pharmacologic treatment	Sequential compression device (SCD) (all inpatients)

• [1]Low Risk Thrombophilia ○ POSITIVE family history of VTE	No pharmacologic treatment	SCD once admitted + Daily ENOXAPARIN (40 mg once a day) + [3]6 weeks postpartum regardless of mode of delivery

• Personal history of VTE:
  ○ Idiopathic
  ○ Pregnancy
  ○ Use of estrogen
  ○ [1]Low Risk Thrombophilia
• [4]Family member with both [2]high risk thrombophilia and VTE, patient status unknown
• [2]High risk Thrombophilia in patient, no prior VTE
• Antepartum (applies only after admission and with strict bedrest):
  ○ Admit 72 hours or greater
  ○ [5]Prior provoked VTE
• Admission with history of outpatient prophylactic anticoagulation
	Daily ENOXAPARIN (40 mg once a day)	SCD once admitted
		+
		Daily ENOXAPARIN (40 mg once a day)
		+
		[3]6 weeks postpartum regardless of mode of delivery
		
		Restart ENOXAPARIN 12 hours postpartum regardless of neuraxial or mode of delivery

• Current or multiple prior VTE • [2]High risk Thrombophilia with prior VTE • Admission with history of outpatient therapeutic anticoagulation	Twice Daily ENOXAPARIN (1mg/kg/dose twice a day)	SCDs once admitted + TWICE DAILY ENOXAPARIN (1mg/kg/dose twice a day) + 6 weeks postpartum regardless of mode of delivery

[1]Low Risk Thrombophilia: Factor V Leiden mutation (heterozygous), Prothrombin gene mutation (heterozygous). Protein S deficiency, Protein C deficiency

[2]High risk Thrombophilia: Factor V Leiden mutation (homozygous), Prothrombin gene mutation (homozygous), Compound heterozygote for Factor V and Prothrombin gene mutation, Antithrombin III deficiency, Antiphospholipid syndrome APS

[3]Exception: Antepartum greater than 72 hours is the ONLY risk factor that does NOT require postpartum anticoagulation

[4] Age less than 50 years and first degree relative

[5] Provoked VTE: examples include orthopedic surgery

Postpartum: ENOXAPARIN 40mg daily while admitted.

- *Cesarean Delivery*
  - One Major Risk Factor: Body mass index (BMI) greater than 35, low risk thrombophilia (consider for 6 weeks postpartum), postpartum hemorrhage (PPH) with transfusion, infection, antepartum admission greater than 72 hours within last month, SLE, sickle cell disease, significant cardiac disease, active IBS, active CA, nephrotic syndrome
    OR
    Two Minor Risk Factors: multiple gestation, age greater than 40 years, PPH without transfusion, first degree relative VTE at age less than 50 years, smoker, pre-eclampsia
- *Vaginal delivery*
  - BMI greater than 40 **AND one of the following risk factors:**
    - Admission greater than 72 hours currently or within last month
    - Low risk thrombophilia (consider for 6 weeks postpartum)

Anticoagulation

Drug	Dose	Time Interval for Neuraxial Procedure after Last Dose	Restart medication after procedure	Indwelling cath: Time to stop & wait prior to removal	Time Interval to restart Medication after catheter removal
Enoxaparin	Daily dosing (40mg SQ) BID dosing (30mg SQ)	**12 hours**	**12 hours**	Do not give with catheter in situ	**12 hours after neuraxial/4 hours after cath removal**
Enoxaparin	Daily Dosing (1.5mg/kg SQ) BID dosing (i.e. 1mg/kg SQ)	**24 hours**	**24 hours**	Do not give with catheter in situ	**24 hours after neuraxial/4 hours after cath removal**
ASA* (Aspirin)	Any dose	No risk* unless given with heparin/Enoxaparin, then **24 hours**	No risk unless given with heparin / Enoxaparin	No risk unless given with heparin / Enoxaparin	No risk unless given with heparin / Enoxaparin

For neuraxial with patients on ASA and ANY heparin, including Enoxaparin: ASA should be stopped x 7 days OR Enoxaparin any dose) stopped x 24h

Case Review

J.C. is a 30-year-old G2P1 at 34w2d who has been inpatient for 72 hours for fetal surveillance.

Pmhx: GDMA2, current 1 pack a day smoker, Prothrombin gene mutation (homozygous)
Pshx: Prior Cesarean in 2019
Famhx: Mother has a history of a DVT s/p Surgery
Meds: PNV and ASA 81mg QD
NKDA

Case Review (TX Plan)

Important patient history points :

- ❖ 72 hour admission
- ❖ Smoker
- ❖ High Risk Thrombophilia
- ❖ Family Hx of DVT
- ❖ Currently on ASA

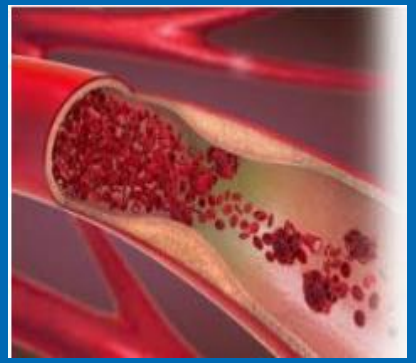
VTE Score

- ❖ 20 medium risk

Treatment

- ❖ Enoxaparin 40mg Q day (intrapartum, and output if d'cd pregnant)
- ❖ SCD use while in bed
- ❖ Patient Education

Summary



The CMQCC VTE Toolkit suggests:

- Early detection of pregnant women at risk for a VTE by use Perinatal Guidelines at first Prenatal visit, on admission, immediately post- delivery ,and discharge.
- RN completion of VTE Risk Assessment flowsheet
- Patient education on risk factors and prevention via patient handout.
- Promotion of hydration, increased activity, SCD use and/or thromboprophylaxis

From June 1, 2020 to Current:

- CHC VTE risk assessment was completed on all obstetrical patients admitted to Labor and Delivery, n=100.
- VTE risk factors were identified, and appropriate treatments were administered on 100% of pregnant women inpatient.
- No VTE events occurred inpatient.
- Early and frequent assessment led to identification of VTE risk factors which allows for prophylactic intervention, decreasing the occurrence of a peripartum VTE to 0%.

Questions???