NYSPFP-ACOG District II
Joint Webinar on Maternal Emergencies

August 9, 2016

A partnership of the Healthcare Association of New York State and the Greater New York Hospital Association
## Agenda

<table>
<thead>
<tr>
<th>TIME</th>
<th>TOPIC</th>
<th>SPEAKER</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00 -11:05 a.m.</td>
<td>Welcome/Agenda Review</td>
<td>Wing Lee, NYSPFP</td>
</tr>
<tr>
<td>11:05 -11:10 a.m.</td>
<td>ACOG District II Update and Presenter Introductions</td>
<td>Kristin Zielinski, ACOG</td>
</tr>
</tbody>
</table>
| 11:10 - 11:35 a.m.| ACOG VTE Bundle Presentation                             | Ellen Steinberg, MD
Stony Brook University Medical Center |
| 11:35 - 11:45 a.m.| Severe Hypertension in Pregnancy Through the Eyes of Nursing Shared Governance | Susanne Curry, MS, RN, ACNS-BC, RN-BC, AE-C
Jeanne Boydston RN, BSN, C-OB, C-EFM
St. Luke’s Cornwall Hospital |
| 11:45 -12:00 p.m.| OB Improvement Project – Hemorrhage Management Initiative | Kathleen Blanchard RN RNC
Brenda Moore RN
Nancy Levac RN BSN
Maria Hayes RN MaEd
Champlain Valley Physicians Hospital |
| 12:00 – 12:15 p.m.| Q&A                                                       | Speaker Panel                                                          |
ACOG District II – SMI Update

REMINDER:
- Post-evaluation survey still active
  - [https://www.surveymonkey.com/r/SMIEVALUATION](https://www.surveymonkey.com/r/SMIEVALUATION)

YOU’RE INVITED:
- Next SMI Quarterly In-Person Meeting
  - October 20th - 10-2pm @ Grand Hyatt NYC

IN THE SPOTLIGHT:
- Voluntary; featuring hospitals’ achievements

GRAND ROUNDS & VISITS:
- Still interested? Contact ACOG District II

Questions

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Linda Calamaras
Assistant to Medical Education Department
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Maternal Safety Bundle for Venous Thromboembolism

Ellen Steinberg, MD
Clinical Professor of Anesthesiology and Obstetrics and Gynecology
Director, Obstetric Anesthesia
Stony Brook Medicine

REVISED NOVEMBER 2015
Disclaimer: The following material is an example only and not meant to be prescriptive. ACOG accepts no liability for the content or for the consequences of any actions taken on the basis of the information provided.

# PREGNANCY-ASSOCIATED MORTALITY IN NEW YORK CITY (2006 – 2010)

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemorrhage</td>
<td>38</td>
<td>27.3</td>
</tr>
<tr>
<td>Embolism</td>
<td>26</td>
<td>18.7</td>
</tr>
<tr>
<td>Pregnancy-induced hypertension</td>
<td>19</td>
<td>13.7</td>
</tr>
<tr>
<td>Cardiovascular condition</td>
<td>18</td>
<td>12.9</td>
</tr>
<tr>
<td>Infection</td>
<td>10</td>
<td>7.2</td>
</tr>
<tr>
<td>Cancer</td>
<td>5</td>
<td>3.6</td>
</tr>
<tr>
<td>Injury</td>
<td>3</td>
<td>2.2</td>
</tr>
<tr>
<td>Anesthesia complication</td>
<td>3</td>
<td>2.2</td>
</tr>
<tr>
<td>Other</td>
<td>16</td>
<td>11.5</td>
</tr>
<tr>
<td>Unknown</td>
<td>1</td>
<td>0.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>139</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

VTE PROPHYLAXIS

• Venous thromboembolism (VTE) is a leading cause of maternal mortality and severe morbidity

• Maternal death from VTE is amenable to prevention

• Protocols in the UK have led to significant reduction in maternal death from VTE

• Strategies for preventing VTE require minimal resources and are easily implementable

“Single cause of death most amenable to reduction by systematic change in practice.”

Clark, SL. Semin Perinatol 2012;36(1):42-7
### Prophylaxis in Vaginal Delivery Hospitalizations

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>NO Prophylaxis</th>
<th>ANY Prophylaxis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>All Patients</td>
<td>2,605,151</td>
<td>97.4</td>
</tr>
<tr>
<td><strong>Year of Delivery</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>366,317</td>
<td>98.4</td>
</tr>
<tr>
<td>2007</td>
<td>374,851</td>
<td>98.3</td>
</tr>
<tr>
<td>2008</td>
<td>352,438</td>
<td>97.8</td>
</tr>
<tr>
<td>2009</td>
<td>354,460</td>
<td>97.3</td>
</tr>
<tr>
<td>2010</td>
<td>367,470</td>
<td>96.9</td>
</tr>
<tr>
<td>2011</td>
<td>402,359</td>
<td>97.1</td>
</tr>
<tr>
<td>2012</td>
<td>390,881</td>
<td>97.2</td>
</tr>
</tbody>
</table>

### Underuse of Post-Cesarean Thromboembolic Prophylaxis

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>None</th>
<th>Mechanical</th>
<th>Pharmacologic</th>
<th>Combination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>955,787 (75.7)</td>
<td>278,669 (22.1)</td>
<td>16,639 (1.3)</td>
<td>12,110 (1.0)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year of Surgery</th>
<th>None (%)</th>
<th>Mechanical (%)</th>
<th>Pharmacologic (%)</th>
<th>Combination (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>115,663 (91.6)</td>
<td>8,717 (6.9)</td>
<td>1,274 (1.0)</td>
<td>664 (0.5)</td>
</tr>
<tr>
<td>2004</td>
<td>124,230 (87.4)</td>
<td>15,674 (11.0)</td>
<td>1,319 (0.9)</td>
<td>923 (0.7)</td>
</tr>
<tr>
<td>2005</td>
<td>131,220 (84.6)</td>
<td>21,013 (13.5)</td>
<td>1,889 (1.2)</td>
<td>1,051 (0.7)</td>
</tr>
<tr>
<td>2006</td>
<td>154,876 (81.0)</td>
<td>32,302 (16.9)</td>
<td>2,413 (1.3)</td>
<td>1,608 (0.8)</td>
</tr>
<tr>
<td>2007</td>
<td>145,589 (74.7)</td>
<td>44,842 (23.0)</td>
<td>2,451 (1.3)</td>
<td>2,053 (1.1)</td>
</tr>
<tr>
<td>2008</td>
<td>131,250 (66.0)</td>
<td>62,545 (31.4)</td>
<td>2,852 (1.4)</td>
<td>2,294 (1.2)</td>
</tr>
<tr>
<td>2009</td>
<td>125,096 (60.5)</td>
<td>75,315 (36.4)</td>
<td>3,609 (1.8)</td>
<td>2,753 (1.3)</td>
</tr>
<tr>
<td>2010</td>
<td>27,863 (58.4)</td>
<td>18,261 (38.3)</td>
<td>832 (1.7)</td>
<td>764 (1.6)</td>
</tr>
</tbody>
</table>

VTE PROPHYLAXIS

• Agency for Healthcare Research and Quality defined VTE as the “number one patient safety practice” for hospitalized patients

• Safe practices published by the National Quality Forum (NQF) recommend:
  ✓ Routine evaluation of hospitalized patients for risk of VTE
  ✓ Use of appropriate prophylaxis

• ENDORSE Survey:
  ✓ Evaluated prophylaxis rates in 17,084 major surgery patients
  ✓ More than one third of patients at risk for VTE (38%) did not receive prophylaxis
  ✓ Rates varied by surgery type

NQF. National Voluntary Consensus Standards for Prevention and Care of Venous Thromboembolism, 2006.
Cohen, et al., 2008.
**VENOUS THROMBOEMBOLISM PREVENTION SAFETY BUNDLE**

**READYNESS (Every Unit)**
- Use a standardized thromboembolism risk assessment tool for VTE during:
  - Outpatient prenatal care
  - Antepartum hospitalization
  - Hospitalization after cesarean or vaginal deliveries
  - Postpartum period (up to 6 weeks after delivery)

**RECOGNITION (Every Patient)**
- Apply standardized tool to all patients to assess VTE risk at time points designated under “Readiness”
- Apply standardized tool to identify appropriate patients for thromboprophylaxis
- Provide patient education
- Provide all healthcare providers education regarding risk assessment tools and recommended thromboprophylaxis

**RESPONSE (Every Unit)**
- Use standardized recommendations for mechanical thromboprophylaxis
- Use standardized recommendations for dosing of prophylactic and therapeutic pharmacologic anticoagulation
- Use standardized recommendations for appropriate timing of pharmacologic prophylaxis with neuraxial anesthesia

**REPORTING/SYSTEMS LEARNING (Every Unit)**
- Review all thromboembolism events for systems issues and compliance with protocols
- Monitor process metrics and outcomes in a standardized fashion
- Assess for complications of pharmacologic thromboprophylaxis
READINESS

• Thromboembolism prophylaxis is a Joint Commission quality measure

• Joint Commission states all patients should receive VTE prophylaxis or have documentation why no VTE prophylaxis was given:

  ✓ “The day of or the day after hospital admission”

  ✓ “The day of or the day after surgery end date for surgeries that start the day of or the day after hospital admission”
Excluded populations Joint Commission measure:

- Patients with **ICD-9-CM Principal** or **Other Diagnosis Codes of Obstetrics**
- Sample Codes:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>642.50</td>
<td>SEVERE PREECLAMP-UNSPEC</td>
</tr>
<tr>
<td>642.51</td>
<td>SEVERE PREECLAMP-DELIVER</td>
</tr>
<tr>
<td>642.52</td>
<td>SEV PREECLAMP-DEL W P/P</td>
</tr>
<tr>
<td>642.53</td>
<td>SEV PREECLAMP-ANTEPARTUM</td>
</tr>
<tr>
<td>642.54</td>
<td>SEV PREECLAMP-POSTPARTUM</td>
</tr>
<tr>
<td>642.60</td>
<td>ECLAMPSIA-UNSPECIFIED</td>
</tr>
<tr>
<td>642.61</td>
<td>ECLAMPSIA-DELIVERED</td>
</tr>
<tr>
<td>642.62</td>
<td>ECLAMPSIA-DELIV W P/P</td>
</tr>
<tr>
<td>642.63</td>
<td>ECLAMPSIA-ANTEPARTUM</td>
</tr>
<tr>
<td>642.64</td>
<td>ECLAMPSIA-POSTPARTUM</td>
</tr>
<tr>
<td>642.70</td>
<td>TOX W OLD HYPERTEN-UNSP</td>
</tr>
<tr>
<td>642.71</td>
<td>TOX W OLD HYPERTEN-DELIV</td>
</tr>
<tr>
<td>642.72</td>
<td>TOX W OLD HYP-DEL W P/P</td>
</tr>
<tr>
<td>642.73</td>
<td>TOX W OLD HYPERANTEPART</td>
</tr>
<tr>
<td>642.74</td>
<td>TOX W OLD HYPER-POSTPART</td>
</tr>
<tr>
<td>642.90</td>
<td>HYPERTEN PREG NOS-UNSPEC</td>
</tr>
<tr>
<td>642.91</td>
<td>HYPERTENS NOS-DELIVERED</td>
</tr>
<tr>
<td>642.92</td>
<td>HYPERTENS NOS-DEL W P/P</td>
</tr>
<tr>
<td>642.93</td>
<td>HYPERTENS NOS-ANTEPARTUM</td>
</tr>
<tr>
<td>642.94</td>
<td>HYPERTENS NOS-POSTPARTUM</td>
</tr>
</tbody>
</table>

Full list available in the 2015 Joint Commission Specifications Manual for National Hospital Inpatient Safety (Appendix A, Table 7.02)
RECOMMENDATION:
Joint Commission measure should be extended to the obstetric population

All patients should be assessed for VTE risk multiple times in pregnancy, including during:

- Presentation for prenatal care
- Hospitalization for antepartum indication
- Delivery hospitalization (in-house postpartum)
- Discharge from a delivery hospitalization
RECOGNITION

• VTE risk assessment tools should be applied to every patient

• Risk assessment tools are based on recommendations from major society guidelines:
  ✓ American College of Obstetricians and Gynecology (ACOG)
  ✓ American College of Chest Physicians (ACCP)
  ✓ Royal College of Obstetricians and Gynaecologists (RCOG)

• Pharmacologic prophylaxis may be with unfractionated heparin (UFH) or low-molecular weight heparin (LMWH)
ACOG recommends: Prophylactic or therapeutic anticoagulation for women “at significant risk of VTE during pregnancy or the postpartum period such as those with high risk acquired or inherited thrombophilias”

ACCP recommendations are more specific: Prophylaxis recommended for very high risk women: reduced mobility, history of VTE or known thrombophilia

Chest, Feb 2012; 141
ACOG Practice Bulletin No 123, 2011
RECOGNITION:

First Prenatal Visit

Clinical history

- Multiple VTE episodes
- VTE with high-risk (HR) thrombophilia
- VTE with acquired thrombophilia

- Idiopathic VTE
- VTE with pregnancy or oral contraceptive
- VTE with low risk (LR) thrombophilia
- Family history of VTE with HR thrombophilia
- HR thrombophilia

- 1st VTE provoked
- Family history of VTE with LR thrombophilia
- LR thrombophilia (no prior event)

Anticoagulation

Treatment dose
LMWH or UFH

Prophylactic
LMWH or UFH

No treatment

Chest, Feb 2012; 141
ACOG Practice Bulletin No 123, 2011
In-patient antepartum hospitalization for at least 72 hours:

- All patients → consider pharmacologic prophylaxis
- Women at high risk of delivery or bleeding → utilize mechanical thromboprophylaxis
- Consider prophylaxis with unfractionated heparin near time of expected delivery rather than low molecular weight heparin (LMWH) to facilitate intrapartum conduction anesthesia
RECOGNITION & RESPONSE: Vaginal Delivery

All patients

- Early mobilization
- Avoid dehydration

Postpartum pharmacologic prophylaxis with LMWH or UFH based on risk factors

- History of VTE or thrombophilia
- Already receiving LMWH or UFH as outpatient

For women with multiple risk factors for VTE by RCOG criteria

- May consider pharmacologic prophylaxis with LMWH or UFH

Safe Motherhood Initiative

Columbia University Medical Center

ACOG
The American Congress of Obstetricians and Gynecologists

District II
RECOGNITION & RESPONSE:  
Cesarean Delivery

Women undergoing cesarean delivery should receive:

• Sequential compression devices perioperatively and postpartum
• Pharmacologic prophylaxis (LMWH or UFH) based on risk factors

An “opt-out” strategy where all women undergoing cesarean delivery receive prophylaxis with LMWH or UFH unless there is a specific contraindication is also an acceptable approach
**CHEST RECOMMENDATIONS**

- Pharmacologic prophylaxis (LMWH) recommended → **one major** or **two or more minor** risk factors
- Mechanical prophylaxis recommended → contraindications to pharmacologic prophylaxis

<table>
<thead>
<tr>
<th><strong>MAJOR RISK FACTORS</strong></th>
<th><strong>MINOR RISK FACTORS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Immobility (strict bed rest ≥1 week in the antepartum period)</td>
<td></td>
</tr>
<tr>
<td>• Postpartum haemorrhage ≥1000 mL with surgery</td>
<td></td>
</tr>
<tr>
<td>• Previous VTE</td>
<td></td>
</tr>
<tr>
<td>• Preeclampsia with fetal growth restriction</td>
<td></td>
</tr>
<tr>
<td>• Thrombophilia</td>
<td></td>
</tr>
<tr>
<td>Antithrombin deficiency</td>
<td></td>
</tr>
<tr>
<td>Factor V Leiden (homozygous or heterozygous)</td>
<td></td>
</tr>
<tr>
<td>Prothrombin G20210A (homozygous or heterozygous)</td>
<td></td>
</tr>
<tr>
<td>• Medical conditions</td>
<td></td>
</tr>
<tr>
<td>Systemic Lupus erythematosus</td>
<td></td>
</tr>
<tr>
<td>Heart disease</td>
<td></td>
</tr>
<tr>
<td>Sickle cell disease</td>
<td></td>
</tr>
<tr>
<td>• Blood transfusion</td>
<td></td>
</tr>
<tr>
<td>• Postpartum infection</td>
<td></td>
</tr>
<tr>
<td>• BMI &gt;30 kg/m²</td>
<td></td>
</tr>
<tr>
<td>• Multiple pregnancy</td>
<td></td>
</tr>
<tr>
<td>• Emergency caesarean</td>
<td></td>
</tr>
<tr>
<td>• Smoking &gt;10 cigarettes/day</td>
<td></td>
</tr>
<tr>
<td>• Fetal growth restriction</td>
<td></td>
</tr>
<tr>
<td>• Thrombophilia</td>
<td></td>
</tr>
<tr>
<td>Protein C deficiency</td>
<td></td>
</tr>
<tr>
<td>Protein S deficiency</td>
<td></td>
</tr>
<tr>
<td>• Preeclampsia</td>
<td></td>
</tr>
</tbody>
</table>

*Chest, Feb 2012; 141*
## RCOG Scoring System

### 4 Points
- Previous VTE (except for a single event related to major surgery)
- Ovarian hyperstimulation syndrome (1st trimester only)

### 3 Points
- Previous VTE provoked by major surgery
- Known high-risk thrombophilia
- Any surgical procedure in pregnancy or puerperium except immediate repair of the perineum, e.g. appendectomy, postpartum sterilization
- Hyperemesis
- Medical comorbidities e.g. cancer, heart failure, active systemic lupus erythematosus, inflammatory polyarthritis or inflammatory bowel disease, nephrotic syndrome, type I diabetes mellitus with nephropathy, sickle cell disease, current intravenous drug user

### 2 Points
- Cesarean in labor
- Obesity (BMI >40kg/m2)

### 1 Point
- Family history of unprovoked or estrogen-related VTE in first-degree relative
- Known low-risk thrombophilia (no VTE)
- Age (>35 years)
- Obesity (BMI >30kg/m2)
- Parity > 3
- Smoker
- Gross varicose veins
- Preeclampsia in current pregnancy

- Assisted reproductive technology/in vitro fertilization (antenatal only)
- Multiple pregnancy
- Elective cesarean
- Mid-cavity rotational operative delivery
- Prolonged labor (>24 hours)
- Postpartum hemorrhage (>1 liter or blood transfusion)
- Preterm birth <37 weeks in current pregnancy
- Stillbirth in current pregnancy
RCOG CLINICAL RECOMMENDATIONS

• If total score > 4 antenatally, consider thromboprophylaxis from the first trimester

• If total score 3 antenatally, consider thromboprophylaxis from 28 weeks

• If total score > 2 postnatally, consider thromboprophylaxis for at least 10 days

• If admitted to hospital antenatally, consider thromboprophylaxis

• If prolonged admission (> 3 days) or readmission to hospital during the puerperium, consider thromboprophylaxis

RCOG, 2015 Green Top 37a
CAESAREAN THROMBOPROPHYLAXIS: Comparison of 3 leading guidelines

• 293 patients included in analysis

1% ACOG
All based on having a prior event

35% Chest
Emergency caesarean, Preeclampsia
Obesity, Multiple gestation
Postpartum haemorrhage

85% RCOG
Caesarean during labor, Maternal Age ≥35
Obesity, Pre-eclampsia, Infection, High Parity

RECOGNITION & RESPONSE:
Postpartum After Delivery Hospitalization

CLINICAL HISTORY

Multiple VTE episodes
VTE with high-risk (HR) thrombophilia
VTE with acquired thrombophilia

Idiopathic VTE
VTE with pregnancy or oral contraceptive
VTE with low risk (LR) thrombophilia
Family history of VTE with HR thrombophilia
HR thrombophilia (including acquired)
VTE provoked*
LR thrombophilia and family history of VTE*

* (two changes from initial assessment)

LR thrombophilia

ANTICOAGULATION

6 Weeks Treatment
LMWH/UFH

6 Weeks
Prophylactic
LMWH/UFH

No treatment

Chest, Feb 2012; 141  ACOG Practice Bulletin  No 123, 2011
## Protocols for Prophylaxis

<table>
<thead>
<tr>
<th>Agent</th>
<th>LMWH Enoxaparin</th>
<th>Dalteparin</th>
<th>Tinzaparin</th>
<th>UFH Unfractionated heparin</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weight based</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;50kg</td>
<td>20mg daily</td>
<td>2500 units daily</td>
<td>3500 units daily</td>
<td>First trimester 5000-7500 units Twice daily</td>
</tr>
<tr>
<td>50-90kg</td>
<td>40mg daily</td>
<td>5000 units daily</td>
<td>4500 units daily</td>
<td>Second trimester 7500-10000 units Twice daily</td>
</tr>
<tr>
<td>91-130kg</td>
<td>60mg daily*</td>
<td>7500 units daily*</td>
<td>7000 units daily*</td>
<td>Third trimester 10000 units Twice daily</td>
</tr>
<tr>
<td>131-170kg</td>
<td>80mg daily*</td>
<td>10000 units daily*</td>
<td>9000 units daily</td>
<td></td>
</tr>
<tr>
<td>&gt;170kg</td>
<td>0.6mg/kg/day*</td>
<td>75 units/kg/day</td>
<td>75 units/kg/day</td>
<td></td>
</tr>
</tbody>
</table>

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

*=may be given in two divided doses

*Adapted from ACOG Practice Bulletin 123, ACCP Recommendations RCOG Green Top Guideline 37a*
**PROTOCOLS FOR THERAPEUTIC DOSING**

<table>
<thead>
<tr>
<th>Dosing: Antepartum or Postpartum</th>
<th>LMWH Enoxaparin</th>
<th>Dalteparin</th>
<th>Tinzaparin</th>
<th>Unfractionated heparin</th>
<th>Warfarin (postpartum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1mg/kg twice daily</td>
<td>200 units/kg/day</td>
<td>175 units/kg/day</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>
<td></td>
</tr>
</tbody>
</table>
## TIMING OF NEUROAXIAL ANESTHESIA

<table>
<thead>
<tr>
<th>Antepartum/Intrapartum</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UFH ≤10,000IU/day</strong></td>
<td>No contraindications to timing of heparin dose and performance of neuraxial blockade¥</td>
</tr>
<tr>
<td><strong>UFH &gt;10,000IU/day</strong></td>
<td>Wait 12 hours after last dose prior to neuraxial blockade or check aPPT *</td>
</tr>
<tr>
<td><strong>IV Heparin</strong></td>
<td>Wait 4-6 hours after discontinuation of IV heparin; consider checking aPPT</td>
</tr>
<tr>
<td><strong>LMWH prophylaxis</strong></td>
<td>Wait 12 hours post last dose prior to neuraxial blockade</td>
</tr>
<tr>
<td><strong>LMWH therapeutic</strong></td>
<td>Wait 24 hours post last dose prior to neuraxial blockade</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Postpartum</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UFH ≤10,000IU/day</strong></td>
<td>Heparin may be administered at any time interval after epidural catheter removal or spinal needle placement</td>
</tr>
<tr>
<td><strong>UFH &gt;10,000IU/day or IV Heparin</strong></td>
<td>Wait ≥1 hour after epidural catheter removal or spinal needle placement</td>
</tr>
<tr>
<td><strong>LMWH prophylaxis</strong></td>
<td>Wait ≥4 hours after epidural catheter removal or spinal needle placement</td>
</tr>
<tr>
<td><strong>LMWH therapeutic</strong></td>
<td>Avoid therapeutic dosing with epidural catheter in situ. Wait at least 24 hours after catheter removal or spinal needle</td>
</tr>
</tbody>
</table>

¥ No specific society guidelines for management of patients also receiving aspirin

* No specific society guidelines for management

*FDA Drug Safety Communication Nov, 2013; NYP protocol; ASRA guidelines*
Unfractionated heparin (UFH)

- Patient may receive standard order of 5000 units SC every 12 hours starting any time before or after spinal anesthesia placement or epidural catheter placement or removal

- Reasonable clinical strategy: administer first dose of 5000 units SC when patient meets PACU discharge criteria
Low-molecular-weight heparin (LMWH)

- Patient should receive first dose of LMWH no sooner than 6 hours postoperatively regardless of anesthesia technique.

- If epidural catheter remains in situ for pain control, it should not be removed until 12 hours after last dose of LMWH.

- If epidural catheter is to be removed prior to a dose of LMWH, the LMWH may not be given until 4 hours after removal.
Heparin Induced Thrombocytopenia (HIT)

• Extremely rare complication in obstetric population receiving UFH/LMWH for VTE prevention

• For patients expected to be on either UFH or LMWH for greater than >7 days, a reasonable clinical strategy is to check complete blood count 7-10 days after initiation of therapy

• Some guidelines, such as those from ASRA, recommend that patients receiving prophylaxis have CBC checked 4 days after prophylaxis is initiated
REPORTING SYSTEMS/LEARNING

RECOMMENDATION:

• Review all thromboembolism events for systems issues and compliance with protocols

• Monitor process metrics and outcomes in a standardized fashion

• Assess for complications of pharmacologic thromboprophylaxis
CONCLUSION

• All patients require VTE risk assessment at multiple time points in pregnancy and postpartum

• All patients undergoing cesarean delivery require mechanical prophylaxis, early ambulation, and adequate hydration

• Women with additional risk factors for VTE after delivery will benefit from pharmacologic prophylaxis

• Empiric pharmacologic prophylaxis is a reasonable option for
  o All women undergoing cesarean delivery
  o All antepartum hospital admissions >72 hours

Columbia University Medical Center
ACOG
Safe Motherhood Initiative
Severe Hypertension in Pregnancy

Through the Eyes of Nursing Shared Governance

August 2016

Susanne Curry, MS, RN, ACNS-BC, RN-BC, AE-C
Clinical Educator, Nursing Education

Jeanne Boydston RN, BSN, C-OB, C-EFM
Director, Birthing Center & NICU
The process of Nursing Shared Governance allows us to draw upon the expertise of both leadership and staff in the creation of a strong process for safe patient care.
Why Was This Project Chosen?

- Evidence based practice is the cornerstone of nursing care.
- ACOG’s *Maternal Safety Bundle for Severe Hypertension in Pregnancy* was identified and adopted as best practice by the nurses in the birthing center (both managers and staff).
- Realizing that these patients may present to the Emergency Department and the ICU, the Birthing Center nurses wanted to extend the best practice to these areas. *We treat based on the patient, not the setting.*
- As this condition extends to a woman up to 6 weeks post-partum, we want to assure that this population is identified.
Our Engaged Nurses

**Birthing Center**
- Brenda Cramer, Staff RN
- Sue Formisano, Staff RN
- Elaine Lopez, Clinical Nurse Manager, BC
- Jeanne Boydston, Director, BC

**Emergency Department**
- Sarah Dwinall, Staff RN
- Rachel Garry, Staff RN
- Christina Troy, Staff RN
- Kim Dixon, Clinical Nurse Manager, ED
- Kathy Sheehan, Director, ED

**Nursing Education**
- Susanne Curry, Clinical Educator and Project Facilitator

**Intensive Care Unit**
To be determined in Phase II of the project
Our Process

- A Nursing Shared Governance committee was formed comprised of leadership and staff nurses from the Birthing Center, Emergency Department, ICU, and Nursing Education.

- Utilizing the Birthing Center nurses as the experts, education regarding the Safety Bundle was provided to all members.
  - The content of the education came directly from the evidence based guidelines supported by ACOG.
  - The “train the trainer” methodology was deployed as we trained the ED nurses
  - Staff education in the ED was provided by the staff nurses to their peers with the support of nursing education and Birthing Center nurses.
Our Process

- The goal was for staff from the Birthing Center to be seen as an approachable expert, and staff from ED to be seen as the resource persons on their units.

- Resource binders were created for each unit with content that was determined by the nurses. This included the evidence based guidelines, hospital policies, and laminated algorithms.

- ED Assessment revised to include a question, “Date of last delivery”, to capture the postpartum population in the ED.
Our Improvement Data

# Maternity patients with persistent HTN that were admitted to ICU

ACOG Definition of Persistent Hypertension:
SBP > 160 or DBP > 110 taken 15-60 minutes apart; need not be consecutive
Our Improvement Data

% Patient with persistent HTN treated w/in one hour of second elevated BP

<table>
<thead>
<tr>
<th>Date</th>
<th>% Treated</th>
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<tbody>
<tr>
<td>15-Oct</td>
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</tr>
<tr>
<td>15-Nov</td>
<td>50%</td>
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<tr>
<td>15-Dec</td>
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<tr>
<td>16-Mar</td>
<td>50%</td>
</tr>
<tr>
<td>16-Apr</td>
<td>50%</td>
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Our Next Steps

- Dissemination of best practice by our obstetricians to the Chair of Emergency Medicine and the Director of the ICU Intensivist Program
- Repeat the training process for ICU staff
  - Educate ICU Staff Champions
  - Utilize ICU staff champions to train the ICU staff
- Explore feasibility of the creation of an order sets
- Celebrate our successes
ACOG Safe Motherhood Initiative and NYSPQC/NYSPFP Obstetrical Improvement Project

Kathleen Blanchard RN RNC
Brenda Moore RN
Nancy Levac RN BSN
Maria Hayes RN MaEd
• LEVEL ONE
• RPC – ALBANY MEDICAL CENTER
• 1000 DELIVERIES PER YEAR
Safe Motherhood Initiative & Maternal Hemorrhage Management Initiative Key Points

- ACOG / SMI
  - Risk Assessments on all obstetrical patients for Risk Identification & Prevention and a hemorrhage checklist/algorithm
  - Universal Management of 3rd stage of labor (Pit 20u in 1000 ml vs. 10 u IM)
  - Have a functioning Massive Transfusion Policy and emergent readiness to obtain blood from Blood Bank (4U PRBC/4UFFP/1U Platelets)
  - Have Hemorrhage Cart available with appropriate medications
  - Have a Hemorrhage team to provide education as well as drills for all team members
  - Identify patients that required transfer to ICU, received >4U of blood (massive transfusion), required hysterectomy or died from obstetrical hemorrhage

- NYSPQC/NYSPFP
  - To help hospitals to rapidly advance improvements in the identification and treatment of maternal hemorrhage.
  - Compare completed risk assessments on all obstetric patients to identify if hospitals are properly identifying those patients at risk for hemorrhage.
  - Identify patients that receive one or more units of any blood product as well as review totals of blood products given.
  - Correlate patients symptoms and diagnosis with blood product usage.
FIRST STEP

MULTIDISCIPLINARY TEAM

MATERNAL HEMORRHAGE TASK FORCE

– LABORATORY
– PHARMACY
– TRANSPORT
– SECURITY
– NURSING
– MEDICAL PROVIDERS/PHYSICIAN CHAMPION
– ADMINISTRATIVE
– REGISTRATION
– INFORMATICS
– HOSPITAL INFORMATION SERVICES (MEDICAL RECORDS)
– Perioperative
SMI HEMORRHAGE – KEY ELEMENTS

• RECOGNITION AND PREVENTION (EVERY PATIENT)

• READINESS (EVERY UNIT)

• RESPONSE (EVERY HEMORRHAGE)

• REPORTING/SYSTEMS LEARNING (EVERY UNIT)
RECOGNITION AND PREVENTION

• RISK ASSESSMENT DEVELOPMENT
  - Educate staff in all areas
  - Initiated on every labor patient
  - Audited for compliance

• SMI POSTERS OF STAGES OF LABOR
  - In every Labor room
  - Post partum
READINESS

• MASSIVE TRANSFUSION PROTOCOL (MTP)
  – INITIATED AND EDUCATED

• REVIEW EQUIPMENT AND SUPPLIES ON THE UNIT
  – IMPLEMENTATION OF CARTS IN EACH AREA (L&D AND PP)
  – BAKRI BALLOON KIT EDUCATION – NURSING AND PROVIDERS
  – RAPID ACCESSIBILITY TO HEMORRHAGE DRUGS
    • PYXIS MEDICATION KIT

• EDUCATION TO ALL STAFF AND PROVIDERS
  – HEALTHSTREAM
  – MONTHLY PROVIDER MEETINGS

• PROVIDER ORDERS FOR STAGES OF HEMORRHAGE IN CPOE

• REVISED CODE WHITE PROTOCOL
READINESS

• DRILLS (ALL HOSPITAL STAFF INVITED)
• FRIST – Skills Fair included all medication, stages of hemorrhage, equipment, manikin practice, blood components, weighing. 99% of staff attended
• Perioperative, Emergency Room, Providers, and ICU staff attended

DRILL !!  DRILL!!  DRILL !!  DRILL!!
• CODE WHITE PROTOCOL
  – Management of a patient experiencing obstetrical emergencies
  – Reviewed and Revised
  – Code white call 6222 Overhead Page
  – Responders include:
    • Obstetrician
    • Obstetrical Staff
    • Anesthesiologist
    • Pediatrician
    • Emergency Physician
    • Ancillary staff from Progressive Care, ICU, OR, Laboratory, IV therapy, Patient Care Coordinator, Security, Social Services, transport, and Respiratory therapy.
DEBRIEFING

• RESULTS:
  – Multiple people calling lab for same reason
  – Not easy to identify Key people i.e. Recorder, Charge Nurse
  – Departments not understanding MTP process
  – Nurse needs to be assigned to Anesthesiologist to assist with A-line
  – Charge Nurse/COS – located outside area to direct individuals
  – Clinical Assistant assigned to Recorder
  – Communication to Recorder by Clinical assistant after each item is weighed.
REPORTING

• Obstetrical Dashboard includes monthly statistics & Case Review if appropriate
• Dashboard presented at monthly department meeting
• Dashboard presented at the yearly Overall Hospital Quality Review Board.
• Staff meeting huddles
• Debrief each incident – immediately after if possible
• Debrief each Drill
RESULTS

• UNDERSTANDING OF THE STAGES OF HEMORRHAGE
• ACCURATE MEASUREMENT OF BLOOD LOSS
• CLARIFICATION OF ALL ROLES
• MULTIDISCIPLINARY INVOLVEMENT
• ROUTINE DRILL IMPLEMENTATION
  – Drill in L&D day and night
  – Drill in PP
  – Drill in OR – main OR
NEXT STEP

SEVERE HYPERTENSION BUNDLE IMPLEMENTATION UTILIZING SAME PROCESS
THANK YOU
Summary & Next Steps

- Reminder Next Data Submission into the NYSPFP portal
  - Aug 15, 2016 - Hemorrhage/Hypertension June data
  - Sept 15, 2016 – Hemorrhage/Hypertension July data
  - Sept 30, 2016 – PC-01 1st Quarter 2016 data

- Mark your calendars –
  - NYSPFP/ACOG District II Final Webinar
    - Tuesday, September 20 at 11am – 12pm
# Contacts

<table>
<thead>
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