

SSM System Maternal Hemorrhage Massive Transfusion Protocol

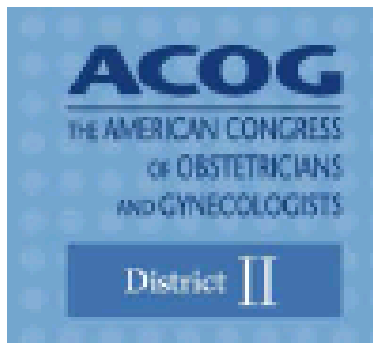


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Maternal Hemorrhage

Massive Transfusion Protocol



Maternal Safety Bundle for Obstetric Hemorrhage
Safe Motherhood Initiative

SSM System Approach

OB Clinical Pathway Team

OB Governance Team

The SSM System OB Clinical Pathway Team is a multidisciplinary team responsible for developing standardized clinical pathways based on evidence-based care and best practice. These pathways are developed to promote continuity of care and improve clinical outcomes.

HEMORRHAGE REMAINS A MAJOR CAUSE OF OBSTETRIC MORBIDITY AND MORTALITY

- **Post Partum Hemorrhage occurs in 4-6% of all Pregnancies**
- **More than half of all Maternal Deaths occur within 24 hours Post Partum**
- **Studies indicate over 50% of Maternal Deaths could be preventable. Post-Partum Hemorrhage is the most preventable cause of Maternal Death.**
- **Examples: Delay in Treatment, Inappropriate Treatment, Lack of proper preventative measures**

ACOG – Postpartum Hemorrhage

Definition (Traditional):

VD > 500cc blood loss

C/S > 1000cc blood loss

Definition (Revised /ACOG Endorsed)

Cumulative blood loss of > 1000 mL OR blood loss accompanied by sign/symptoms of hypovolemia within 24 hours following the birth process

Cumulative blood loss of 500-999 mL alone should trigger increased supervision and potential interventions as clinically indicated

Incidence:

4-6 % of Pregnancies



**Everything is made in
China. Except for babies.
They're made in VaChina**



Maternal Hemorrhage

Massive Transfusion Protocol

Lessons from the Field

- ✿ It takes a broad team
- ✿ Easy wins matter
- ✿ Goals and timelines are very useful
- ✿ It takes time and persistence to get the systems running smoothly
- ✿ Must have champions

Figure 1. Breadth of the Implementation Team

Disciplines & Departments	Needed?
Obstetrics	Y e s
Nursing	
Anesthesia	
Blood Bank	
Laboratory	
Operating Room	
Support personnel	
IT/EMR	
Others unique to your setting?	

PATIENT SAFETY SERIES

**Comprehensive maternal hemorrhage
protocols reduce the use of blood products
and improve patient safety**

Laurence E. Shields, MD; Suzanne Wiesner, RN; Janet Fulton, RN, PhD; Barbara Pelletreau, RN



Wednesday, October 28, 2015

11:00 a.m. Eastern

Dial In: 888.863.0985

Conference ID: 56627279

Safety Action Series

National Improvement Challenge on
Obstetric Hemorrhage Winning QI Programs

Obstetric Hemorrhage Safety Bundle

- Readiness
- Recognition
- Response
- Reporting /
Systems Learning



The Obstetric Hemorrhage Safety Bundle is organized into four domains – the four R's:

READINESS (Every Unit)

- Hemorrhage cart
- Hemorrhage medications
- Response team
- Massive and emergency-release transfusion protocols
- Unit education

RESPONSE (Every Hemorrhage)

- Stage-based emergency management plan
- Support program for patients, families, and staff

RECOGNITION & PREVENTION (Every Patient)

- Hemorrhage risk assessment
- Cumulative quantitative (measured) blood loss
- Active management of 3rd stage

REPORTING & SYSTEMS LEARNING (Every Unit)

- Huddles and debriefs
- Multidisciplinary reviews
- Monitor outcomes

Main et al, 2015

Why Perform A Risk Assessment?

**ADVANCED
PLANNING**



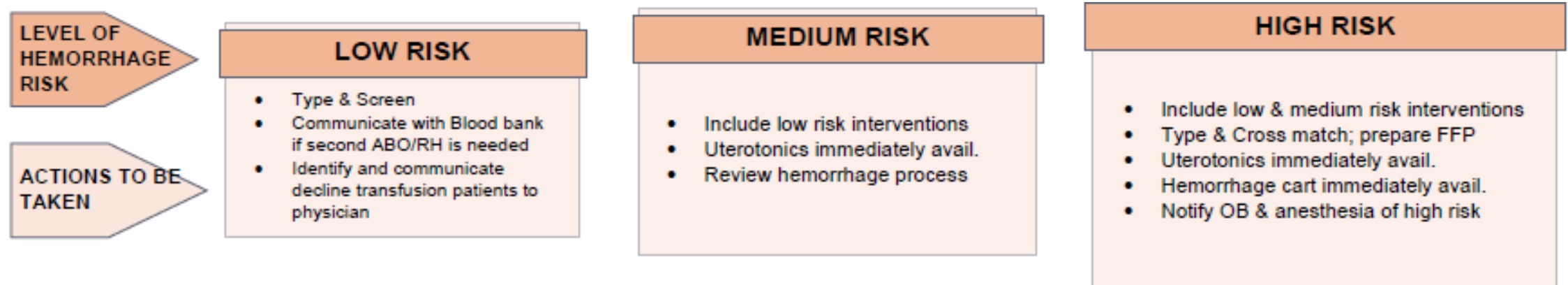
**INCREASED SURVEILLANCE
AFTER BIRTH**



PREVENTION OF ADVERSE OUTCOMES

Maternal Hemorrhage

Action Items Based on Risk



Undelivered Hemorrhage Risk Assessment

Undelivered Low Risk Factors	Undelivered Medium Risk Factors	Undelivered High Risk Factors
No previous uterine incision Singleton pregnancy Less than or equal to 4 previous vaginal births No known bleeding disorder No history of post-partum hemorrhage BMI less than 40 No low risk factors identified	Prior cesarean birth or uterine surgery Multiple gestation Polyhydramnios Greater than 4 previous vaginal births Chorioamnionitis History of previous post-partum hemorrhage Large uterine fibroids or abnormal uterine anatomy Estimated fetal weight 4000 gm or greater Intrauterine fetal demise BMI greater than or equal to 40 Magnesium Sulfate treatment Hematocrit less than 30% No medium risk factors identified	Placenta previa, low lying placenta, abnormal placentation Suspected placenta accreta, percreta, increta Platelets less than 100,000 Anticoagulant therapy Known coagulopathy Active bleeding No high risk factors identified

Delivered Hemorrhage Risk Assessment

Delivered Low Risk Factors	Delivered Medium Risk Factors	Delivered High Risk Factors
Greater than 24 hours from delivery or last hemorrhage Greater than 12 hours from Bakri balloon removal Singleton pregnancy Less than 5 total previous vaginal births No known bleeding disorder No history of post-partum hemorrhage Uncomplicated vaginal delivery No genital tract trauma No low risk factors identified	Greater than 24 hours from delivery or last hemorrhage Greater than 12 hours from Bakri balloon removal Cesarean birth or uterine surgery Multiple gestation Polyhydramnios Greater than or equal to 5 total vaginal births Chorioamnionitis History of previous post-partum hemorrhage Large uterine fibroids or abnormal uterine anatomy Prolonged Oxytocin use greater than 24 hours Application of forceps or vacuum Genital tract trauma (3 rd or 4 th degree)	Greater than 24 hours from delivery or last hemorrhage Greater than 12 hours from Bakri balloon removal Platelets less than 100,000 Anticoagulant therapy Known coagulopathy Active bleeding Retained placenta No high risk factors identified

Postpartum Hemorrhage Risk Assessment Actions

Low Risk	Medium Risk	High Risk
Patient will accept blood products Patient will NOT accept blood products	Notified Care Provider Patient will accept blood products Patient will NOT accept blood products Type and screen (see order) Uterotonics immediately available Remains medium risk all action items validated as complete	Notified Care Provider Notified Anesthesia Provider Patient will accept blood products Patient will NOT accept blood products Type and cross matched (see order) Hemorrhage cart immediately available Uterotonics immediately available Remains high risk all action items validated as complete



Hemorrhage Risk Assessment Orders

“Risk for Maternal Hemorrhage Standing Orders.”

OB: RISK FOR MATERNAL HEMORRHAGE STANDING ORDERS (IP-SSM) [5142]	
OB Hemorrhage Risk Assessment	
Orders	
☒ OB MEDIUM RISK FOR POSTPARTUM HEMORRHAGE	
☒ UTEROTONICS READILY AVAILABLE	Details
☒ CALL PHYSICIAN	Notify OB Provider of Medium Risk (2) for postpartum hemorrhage
☒ MEDIUM RISK FOR POSTPARTUM HEMORRHAGE	Details
☒ OB HIGH RISK FOR POSTPARTUM HEMORRHAGE	
☒ NURSING COMMUNICATION	Routine, CONTINUOUS, After reviewing the high risk factors and patient's acuity level with the physician, a crossmatch may be ordered
☒ CALL PHYSICIAN	Notify OB and Anesthesia Providers of High Risk (3) for Postpartum Hemorrhage
☒ HEMORRHAGE CART READILY AVAILABLE	Details
☒ HIGH RISK FOR POSTPARTUM HEMORRHAGE	Details

Communication of Risk Assessment in Epic

- Patient lists
- Greaseboard
- Whiteboard
- L&D Manager

OB OR Time Out Checklist

Patient _____ DOB _____

Procedure _____

Surgeon Briefing

1. Patient Identified ☐
2. Procedure Confirmed ☐
3. Consent / H & P ☐
4. Site Marked / Visible ☐
5. Diagnostics / Images Available ☐
6. Allergies ☐
7. Antibiotics ☐
8. Blood ☐
9. DVT ☐
10. FSE Removed ☐
11. Hemorrhage Risk Assessment ☐
12. ☐
13. ☐

Fire Risk Score* ☐ Low ☐ Medium ☐ High

* Only Indicate in time-out if High

Example of Risk Assessment Results

Patients (64 Patients) Last refreshed: 1330 Search All My Lists

Admission Date	Department	Room/Bed	L&D Status	Del Hem Risk	Pre-Del Hem Risk
		542/01		☐	☐
ren 3/29/16	SMHC 5 LDR	509/02	Admitted	☐	☐
3/30/16	SMHC 5 LDR	511/02	Admitted	☐	☐
a 3/28/16	SMHC 5 LDR	507/02	Delivered	☐	☐
i S 3/29/16	SMHC 5 LDR	504/02	Admitted	☐	☐
el L 3/29/16	SMHC 5 LDR	503/02	Admitted	☐	☐
3/30/16	SMHC 5 LDR	559/06	Assessment	☐	☐
3/28/16	SMHC 5 LDR	512/02	Admitted	☐	☐
3/29/16	SMHC 5 LDR	506/02	Admitted	☐	☐
a 3/30/16	SMHC 5 LDR	559/03	Assessment	☐	☐
3/30/16	SMHC 5 LDR	514/02	Admitted	☐	☐
a L 3/30/16	SMHC 5 LDR	508/02	Delivered	☐	☐

Low
Risk

Medium
Risk

High
Risk

No Risk
Assessment
Completed



**MEASURED BLOOD LOSS – MBL
(QUANTIFIED BLOOD LOSS – QBL)**

Maternal Hemorrhage

Quantification of Blood Loss

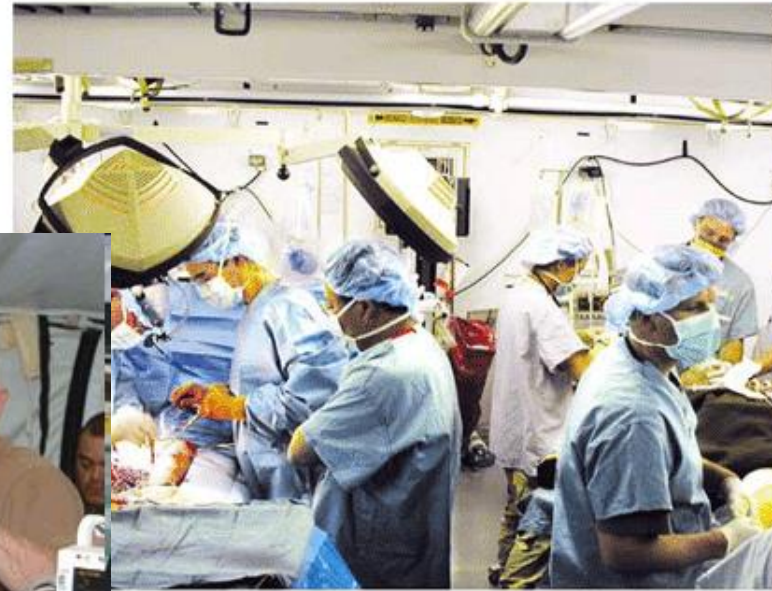
- Delay in recognition of large blood losses is a common finding in cases of maternal morbidity and mortality from hemorrhage
- Visual estimation has consistently been shown to significantly underestimate large volume blood loss by 33%-50% when compared to direct measurement
- Accurate measurement of blood loss is essential for
 - Recognizing potentially life-threatening hemorrhage
 - Managing blood product replacement

DENIAL leads to DELAY!



Lyndon et al, 2015

Lessons from Combat in Iraq



- Lowest losses ever from hemorrhage
- Key: increased FFP:RBC ratio

Blood Product	Additional Information
Packed Red Blood Cells (PRBC)	• Best first-line product for blood loss. • 1 unit = 200 mL volume • If crossmatch is not available, use O negative uncrossmatched or type specific uncrossmatched
Fresh Frozen Plasma (FFP)	• Highly desirable if > 2 units PRBCs given or for prolonged PT, PTT • 1 unit = 180 mL volume • Takes approximately 30 minutes to thaw
Platelets (PLTs)	• Priority for women with Platelets < 50,000 • Single-donor apheresis unit (6 units of platelet concentrates) provides 40-50 K transient increase in platelets
Cryoprecipitate (CRYO)	• Priority for women with fibrinogen levels < 80 • 10 unit pack (or 1 adult dose) raises fibrinogen 80-100 mg/dL • Best for DIC with low fibrinogen and don't need volume replacement • Takes approximately 35-45 minutes to thaw

Maternal Hemorrhage

PRBCs

- Four to six units of PRBCs are recommended in preparation for blood replacement
- The patient's hematocrit needs to be maintained at 21-24%
- A single unit of PRBCs should increase the hematocrit by 3-4% in a 70 kg patient
- However, the hematocrit may be slightly less for patients at term due to the expanded blood volume during pregnancy
- Good communication with the blood bank regarding the urgency of the situation is essential!

Lyndon et al, 2015

Maternal Hemorrhage

FFP

- FFP can be used up to 24 hours after thawing and up to 3-5 days if labeled as “thawed plasma”
- After the first two units of PRBCs, early transfusion with FFP is correlated with improved survival from hemorrhage
- After 2 units of PRBCs, we recommend a 1:1 of FFP:PRBC
- FFP usually requires 20-30 minutes to thaw and may not be available immediately

Lyndon et al, 2015

Maternal Hemorrhage

Platelets

- Replacing platelets is a priority for women with platelets $<50,000$
- A single donor apheresis unit is recommended, this is equivalent to 6 units of platelet concentrates
- This may increase the platelet count in a 70 kg patient by approximately 40-50,000/uL
- Platelets should be replaced at the following ratio:
 - 4:4:1 (FFP:PRBC:Platelets)

Lyndon et al, 2015





CMQCC Transfusion Guidelines

(California Collaborative)

- For massive ongoing hemorrhage
- Resuscitation transfusion not based on labs but clinical
- Seeks to AVOID coagulopathy
- Transfuse with uncrossed PRBCs until crossed blood available
- Goal near equal ratio of PRBC:FFP after first 2U
- One unit platelets given for every 4-6 units PRBCs
- Guidelines consistent with practice guidelines of the
- American Society of Anesthesiologists

Blood Product Administration

	Products	Comments
Initial (Stage 2)	2 Units PRBCs	O negative uncrossmatched <i>or</i> Type specific uncrossmatched <i>or</i> crossmatched if available
Ongoing (Stage 3)	4:4:1 FFP:PRBCs:Platelets	Start with FFP in order to get clotting factors onboard

- Designate someone to communicate with the blood bank
- Designate someone to be the blood bank runner
- Obtain rapid infuser and tubing as well as someone trained to use it
- Obtain and setup warming device (i.e. Bair Hugger) for thermoregulation
- Recommend utilizing a blood product tally board and keeping all of the empty blood product bags together in a biohazard bag for accurate documentation post hemorrhage



Key Points

- Outcomes are improved with early and aggressive intervention
- Both emergency blood release and massive transfusion protocols should be in place
- With significant OB hemorrhage, resuscitation transfusion should be based on patient assessment and should not be delayed waiting on lab results
- Vital signs, I&O, ABGs and labs should be monitored
- Direct patient warming may be needed to maintain euthermia and avoid added coagulopathy

Lyndon et al, 2015

Stage Based Hemorrhage Order Set



Pre-Admission: All patients – Assess Risk

Stage 0: All maternal patients – routine measures

Stage 1: Blood loss greater than 1000 mL vaginal or cesarean, or vital sign changes (by greater than 15%) or heart rate greater than or equal to 110, blood pressure less than or equal to 85/45, O2 sat less than 95%

Stage 2: Continued bleeding or vital sign instability and less than 1500 mL cumulative blood loss

Stage 3: Cumulative blood loss greater than 1500 mL, greater than 2 units PRBCs given, vital signs unstable or suspicion of DIC

Stage 1 Postpartum Hemorrhage

Notify the
blood bank
that the MTP
has been
initiated

OB: MASSIVE TRANSFUSION ORDERS (IP-ALL SSM) [5109]

OB Postpartum Hemorrhage Stage 1

Blood loss greater than 1000 mL Vaginal or Cesarean, or vital sign changes (by greater than 15%) or Heart Rate greater than or equal to 110, Blood Pressure less than or equal to 85/45, O2 Sat less than 95%

OB Stage 1

☒ OB PPH STAGE 1 PANEL

☒ HEMORRHAGE CART	Have readily available. STAGE 1
☒ FUNDAL MASSAGE	Routine, EVERY 4 HOURS, STAGE1
☒ FOLEY CATH TO GRAVITY, INSERT & MAINTAIN	STAGE 1
☒ WEIGH & TABULATE BLOOD LOSS	Routine, CONTINUOUS, At frequent Intervals STAGE 1
☒ VITAL SIGNS	☒ Routine, AS ORDERED BY PHYSICIAN, Every 5 minutes STAGE 1
☒ OXYGEN	☒ Routine, PRN Oxygen Device: NON-REBREATHER OXYGEN MASK Lter Flow (L/min): Keep SPO2 LESS THAN or equal to this %: Keep SpO2 GREATER THAN or equal to this %: 95
☒ CROSSMATCH RBC	Routine, ONCE Number of units to prepare: 2 - Two Units Red Blood Cell unit special need(s): STAGE 1
☒ PREPARE FFP UNIT(S)	Routine, ONCE Number of units to prepare: 2 - Two Units STAGE 1
☒ BODY TEMPERATURE REGULATION	Routine, CONTINUOUS, Keep patient warm (Bair Hugger) STAGE 1
☒ IP CONSULT TO ANESTHESIOLOGY	Routine REASON FOR CONSULT? Postpartum Hemorrhage Has consulting physician been notified? No, please notify consulting physician for this consult request STAGE 1

☒ OB PPH STAGE 1 LAB (ALL SSM EXCEPT SMUC/ASM)

☒ PT-INR	STAT, ONCE For 1 Occurrences, STAGE 1
☒ PTT	STAT, ONCE For 1 Occurrences, STAGE 1
☒ PLATELET COUNT AND CBC	STAT, ONCE For 1 Occurrences, STAGE 1
☒ FIBRINOGEN ACTIVITY	STAT, ONCE For 1 Occurrences, STAGE 1
☒ D-DIMER	STAT, ONCE For 1 Occurrences, STAGE 1

☒ OB PPH STAGE 1 LAB (IP-SMUC/ASM)

☒ PT-INR (SMUC,ASM)	STAT, ONCE For 1 Occurrences Is Patient Currently on Coumadin/Warfarin Anticoagulation Therapy and/or Heparin Anticoagulant Therapy? STAGE 1
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Stage 2 Postpartum Hemorrhage

Give PRBC,
prepare to
give
additional
products

Accept
duplicative
labs

OB Postpartum Hemorrhage Stage 2

Continued bleeding with total blood loss under 1500 mL or vital sign changes (by greater than 15%) or HR greater than or equal to 110, Blood Pressure less than or equal to 85/45, O2 sat less than 95%

OB Stage 2

☒ PPH STAGE 2 PANEL

☒ INITIATE OB MASSIVE TRANSFUSION PROCESS	Routine, CONTINUOUS, Call directly to Blood Bank to notify (Massive Transfusion Process-OB Hemorrhage). STAGE 2
☒ OK TO TRANSFER	To OR STAGE 2
☒ TRANSFUSE RED BLOOD CELL UNIT(S)	Routine, Transfuse 2 units Use Blood Warmer & Rapid Infuser STAGE 2
☒ CROSSMATCH RBC	Routine, ONCE Number of units to prepare: 4 - Four Units Red Blood Cell unit special need(s): STAGE 2
☒ PREPARE FFP UNIT(S)	STAT, ONCE For 1 Occurrences Number of units to prepare: 2 - Two Units STAGE 2
☒ PREPARE PLATELET PHERESIS UNIT(S)	STAT, ONCE Number of units to prepare: 1 - One Unit Platelet unit special need(s): STAGE 2
☒ PERIPHERAL IV, INSERT AND MAINTAIN	Routine, CONTINUOUS, Establish 2nd IV site with 18G STAGE 2
☒ SEQUENTIAL COMPRESSION DEVICE (IMPLEMENT)	Routine, CONTINUOUS TYPE? KNEE HIGH STAGE 2

☒ OB PPH STAGE 2 LAB (ALL SSM EXCEPT SMJC /ASM)

☒ CBC W AUTO DIFFERENTIAL	STAT, ONCE For 1 Occurrences, STAGE 2
☒ COMPREHENSIVE METABOLIC PANEL	STAT, ONCE For 1 Occurrences, STAGE 2
☒ BLOOD GASES ART	RT STAT, ONCE For 1 Occurrences, STAGE 2
☒ PT-INR	STAT, ONCE For 1 Occurrences, STAGE 2
☒ PTT	STAT, ONCE For 1 Occurrences, STAGE 2
☒ FIBRINOGEN ACTIVITY	STAT, ONCE For 1 Occurrences, STAGE 2

☒ OB PPH STAGE 2 LAB (IP-SMJC /ASM)

☒ CBC W AUTO DIFFERENTIAL	STAT, ONCE For 1 Occurrences, STAGE 2
☒ COMPREHENSIVE METABOLIC PANEL	STAT, ONCE For 1 Occurrences, STAGE 2
☒ BLOOD GASES ART	RT STAT, ONCE For 1 Occurrences, STAGE 2
☒ PT-INR (SMJC,ASM)	STAT, ONCE For 1 Occurrences Is Patient Currently on Coumadin/Warfarin Anticoagulation Therapy and/or Heparin Anticoagulant Therapy? STAGE 2
☒ PTT (SMJC,ASM)	STAT, ONCE For 1 Occurrences Is Patient Currently on Coumadin/Warfarin Anticoagulation Therapy and/or Heparin Anticoagulant Therapy? STAGE 2
☒ FIBRINOGEN ACTIVITY	STAT, ONCE For 1 Occurrences, STAGE 2

Stage 3 Postpartum Hemorrhage

4:4:1
FFP:PRBCs:
Platelets

Accept
duplicative
labs

OB Postpartum Hemorrhage Stage 3

Total blood loss over 1500 mL or greater than 2 units PRBCs given or Vital Signs unstable or suspicion of DIC

OB Stage 3

☒ OB PPH STAGE 3 PANEL

☒ TRANSFUSE RED BLOOD CELL UNIT(S)	☒ Routine, Transfuse 4 units Use Blood Warmer & Rapid Infuser STAGE 3
☒ TRANSFUSE FRESH FROZEN PLASMA UNIT (S)	☒ Routine, Transfuse 4 units STAGE 3
☒ TRANSFUSE PLATELET PHERESIS UNIT(S)	☒ Routine, Transfuse 1 unit STAGE 3
☒ INTAKE AND OUTPUT	Routine, 3 TIMES DAILY, STAGE 3
☒ CROSSMATCH RBC	STAT, ONCE Number of units to prepare: 4 - Four Units Red Blood Cell unit special need(s): STAGE 3
☒ PREPARE FFP UNIT(S)	STAT, ONCE Number of units to prepare: 4 - Four Units STAGE 3
☒ PREPARE PLATELET PHERESIS UNIT(S)	Routine, ONCE Number of units to prepare: 1 - One Unit Platelet unit special need(s): STAGE 3

☒ OB PPH STAGE 3 LAB (ALL SSM EXCEPT SMJC/ASM)

☒ CBC W AUTO DIFFERENTIAL	STAT, ONCE For 1 Occurrences, STAGE 3
☒ COMPREHENSIVE METABOLIC PANEL	STAT, ONCE For 1 Occurrences, STAGE 3
☒ BLOOD GASES ART	RT STAT, ONCE For 1 Occurrences, STAGE 3
☒ PT-INR	STAT, ONCE For 1 Occurrences, STAGE 3
☒ PTT	STAT, ONCE For 1 Occurrences, STAGE 3
☒ FIBRINOGEN ACTIVITY	STAT, ONCE For 1 Occurrences, STAGE 3

☒ OB PPH STAGE 3 LAB (IP-SMJC/ASM)

☒ CBC W AUTO DIFFERENTIAL	STAT, ONCE For 1 Occurrences, STAGE 3
☒ COMPREHENSIVE METABOLIC PANEL	STAT, ONCE For 1 Occurrences, STAGE 3
☒ BLOOD GASES ART	RT STAT, ONCE For 1 Occurrences, STAGE 3
☒ PT-INR (SMJC,ASM)	STAT, ONCE For 1 Occurrences Is Patient Currently on Coumadin/Warfarin Anticoagulation Therapy and/or Heparin Anticoagulant Therapy? STAGE 3
☒ PTT (SMJC,ASM)	STAT, ONCE For 1 Occurrences Is Patient Currently on Coumadin/Warfarin Anticoagulation Therapy and/or Heparin Anticoagulant Therapy? STAGE 3
☒ FIBRINOGEN ACTIVITY	STAT, ONCE For 1 Occurrences, STAGE 3

OB: POST STAGE 3 MASSIVE TRANSFUSION ORDERS (IP-ALL SSM) [5143]

OB Post Stage 3 Massive Transfusion Orders

OB POST STAGE 3 MTP ORDERS (IP-ALL SSM EXCEPT SMJC/ASM)

☒ CBC W AUTO DIFFERENTIAL	STAT, ONCE For 1 Occurrences
☒ COMPREHENSIVE METABOLIC PANEL	STAT, ONCE For 1 Occurrences
☐ BLOOD GASES ART	RT STAT, ONCE For 1 Occurrences
☒ PT-INR	STAT, ONCE For 1 Occurrences
☒ PTT	STAT, ONCE For 1 Occurrences
☒ FIBRINOGEN ACTIVITY	STAT, ONCE For 1 Occurrences
☒ TRANSFUSE RED BLOOD CELL UNIT(S)	Routine, Transfuse 4 units Use Blood Warmer and/or Rapid Infuser
☒ TRANSFUSE FRESH FROZEN PLASMA UNIT(S)	STAT, Transfuse 4 units
☒ TRANSFUSE PLATELET PHERESIS UNIT(S)	STAT, Transfuse 1 unit
☒ CROSSMATCH RBC	STAT, ONCE For 1 Occurrences Number of units to prepare: 4 - Four Units Red Blood Cell unit special need(s):
☒ PREPARE FFP UNIT(S)	STAT, ONCE For 1 Occurrences Number of units to prepare: 4 - Four Units
☒ PREPARE PLATELET PHERESIS UNIT(S)	STAT, ONCE For 1 Occurrences Number of units to prepare: 1 - One Unit Platelet unit special need(s):

Post Stage 3 Transfusion Orders are used when the patient requires an additional 4:4:1 (FFP:PRBCs:Platelets)



Systems Approach to Maternal Hemorrhage

- Department: OB Hemorrhage Protocol with stages
- Hospital: Massive Transfusion Protocol
- Summary Flow Algorithm: graphic or tabular
- Nursing checklist by stages (Protocol – Order set)
- Documentation / Metrics: OB Hemorrhage Report
- Epic Documentation tools to assist with assessment of blood loss
- Hemorrhage Cart
- Uterotonic Kits/Packs
- Instruction cards for new procedures on the cart or OR
- Simulation / Drills

SSM System Maternal Hemorrhage Massive Transfusion Protocol

- Laminated OB Hemorrhage Laboratory Specimen sign on the cooler lid is a visual reminder for the clinical staff that specimens need to be collected.
- Blood Bank or designee will do internal laboratory page informing staff of the OB Hemorrhage MTP upon the FIRST phone call placed to the Blood Bank by the clinical designated contact person.
- Core laboratory staff will respond to the page as to determine the need for extra assistance in the Blood Bank during the active OB Hemorrhage MTP. Specifics of this requirement to be determined per individual facility laboratories.
- Signage will be posted on the Blood Bank entrance stating an MTP is in progress and requesting that all non-emergent requests be held until the MTP has been resolved.
- Hematology/Coagulation staff are to immediately inform the Designated Communication Liaison when it is determined that coagulation testing will be extended due to indeterminate results or being unable to acquire result upon the first attempt of testing.
- Blood Bank should ensure an ample number of coolers are validated to use for 4 units of PRBC and 4 units of thawed plasma.

SSM System Maternal Hemorrhage Massive Transfusion Protocol

- Ensure that Blood Bank (BB) has the designated communication liaison's contact number and name documented upon the initial phone contact to the blood bank.
- Share the contact information with the Hematology/Coagulation department.
- Hem/Coag are to immediately inform the designated liaison when it is determined that coagulation testing results are going to be delayed for any reason, such as repeat testing due to inability to determine values. This will give the provider an indication of the clinical picture of the coagulation testing situation allowing them to make treatment decisions in a more timely manner than waiting on delayed result reports.
- Ensure that 'Room Temperature' stickers are placed on Cryo and Platelets upon issue. This is very helpful for the bedside staff.
- Laboratory department overhead page worked well for informing all departments of laboratory staff of the MTP. Allowed for trained BB staff to report to BB to determine need for increased staffing in the BB. Also vital to informing the core lab staff that specimens will be arriving at intervals for patient testing.
- Posting an informational sign at the entrance to the blood bank, stating an MTP is in progress, reduces the traffic and requests for non-emergent BB services during this critical time.
- As BB stays one cooler (or more) ahead of the patient needs, communication with the liaison is important as to not have excessive amounts of plasma thawing when the hemorrhage needs may be reducing.
- The "Stage" of the hemorrhage, as it concerns to BB, does not affect the chain of events for processes of the BB. Staff begin with supplying the initial 2 units, transition to the 4+4+1 and continue as such throughout the MTP. *Note: Early in the pilot the BB staff were focused on getting the contact liaison to state what STAGE the hemorrhage was at upon the initial contact call to BB. It quickly became apparent our processes were not altered by the Stage of the hemorrhage.*
- As the pilot progressed the providers and nursing staff refined the criteria which determined risk for a patient which directly affected the number of crossmatch orders being placed. This had a positive effect on BB.



