SWEDISH MEDICAL CENTER

# OBSTETRIC HEMORRHAGE

| Clinical Protocol | |
|---|---|
| **Approved:** June 2017 | **Next Review:** June 2020 |
| **Clinical Area:** Perinatal Services, Perioperative Services | |
| **Population Covered:** All recently delivered women | |
| **Campus:** Ballard, Edmonds, First Hill, Issaquah | **Implementation Date:** May 2005 |

***Related Procedures, Protocols, Job Aids, and Order Sets***

Blood Management: Blood Administration (Adult)
Bloodless Program: Adult
Code Blue: Adult
Post-Incidence Team Debriefing
Postpartum Uterine/ Fundal Assessment (addendum to *PACU Postoperative Care: Phase I and PACU*)
Uterine Tamponade Balloon: Insertion for OB Hemorrhage
Hemorrhage Orders for OBG patients Order Sets [2636]

***Go Directly To:***



## Purpose

To guide staff and licensed independent practitioners (LIPs) in managing an obstetric hemorrhage.

## Policy Statement

Swedish Medical Center (SMC) caregivers will evaluate for risk factors on admission, throughout labor and postpartum at least at every shift change or each patient handover. (See Addendum: OB Hemorrhage Risk Factors Evaluation Guidelines)

On admission, verify if patient is enrolled in *Bloodless Program: Adult*.

Active management of third stage of labor (AMTSL) will be performed as clinically appropriate to prevent obstetric hemorrhage.

## LIP Order Requirement

Elements of this protocol require a licensed independent practitioner's order.

## Responsible Persons

Registered nurse (RN), LIP, health unit coordinator (HUC), licensed practical nurse (LPN), nursing assistant-certified (NAC), Respiratory care therapy (RCP), surgical technician, anesthesia technician

## Prerequisite Information

A postpartum hemorrhage is defined as estimated or QBL/cumulative greater than 500 mL for a vaginal delivery or greater than 1000 mL for a cesarean delivery.

Primary postpartum hemorrhage occurs in the first 24 hours following delivery.

Secondary postpartum hemorrhage occurs after 24 hours, but before 6-12 weeks postpartum.

**Table 1: Description of OB Hemorrhage Staging**

Staged responses provide a team approach to prevent denial and delay of care when considering management of an OB hemorrhage.

The California Maternal Quality Care Collaborative (CMQCC) created a toolkit that details readiness, recognition and response. This table summarizes the staging criteria around recognition of worsening OB hemorrhage.

| | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|
| **QBL** | QBL >500 ml vaginal delivery<br>QBL >1000 ml cesarean delivery | <1500 ml cumulative blood loss<br><br>AND<br><br>Continued bleeding *or* continued vital sign instability | QBL >1500 ml cumulative blood loss *and/or* Continued bleeding |
| **Vital Signs** | HR > 110<br>Blood Pressure ≤ 85/45 or >15% drop<br>Oxygen Saturation 95% | | Continued vital sign instability |
| **Additional Signs and/or Symptoms** | Anything outside of within defined limits (WDL) | | Suspicion for disseminated intravascular coagulopathy (DIC) |
| **Link to CMQCC Table** | Addendum CMQCC Stage 1 | Addendum CMQCC Stage 2 | Addendum CMQCC Stage 3 |

Reference: Modified from California Maternal Quality Care Collaborative V. 2.0 approved by W/C OB Hemorrhage Workgroup September 2016

**OB Hemorrhage Emergency Response (per campus resources):**
**Notify:**

- LIP
- Charge nurse
- House Supervisor as needed
- HUC

**For *severe* (>1000mLs/vaginal or >1500 mLs/cesarean) OB Hemorrhages also notify:**

- Blood bank (Transfusion Lab Services) via phone call.
  ►Order products in electronic medical record (EMR) as directed by LIP.
- Laborist and/or backup LIP
- Anesthesiologist/CRNA
- Scrub Tech/Surgical Team
- House supervisor
- Internal resource for arterial blood gas (ABG) collection as needed

| **PROCEDURE: *PREVENTION* OF OB HEMORRHAGE**<br>► *Requires an LIP order* | | |
|---|---|---|
| **Responsible Person** | **Steps** | **Supplemental Guidance** |
| RN, LIP | **ACTIVE MANAGEMENT OF THIRD STAGE OF LABOR (AMTSL)**<br><br>The following will be performed as clinically appropriate to prevent obstetric hemorrhage:<br>• ► Oxytocin administration to uterine tone per LIP order<br>(*See*: OB Hemorrhage Medication Pack: Uterotonics)<br>• Evaluate uterine tone, fundal massage as necessary<br>• Express uterus for blood and clots<br>• Assess bladder; empty as indicated and per LIP order<br>• Ongoing evaluation with quantitative of blood loss (QBL)<br>• Weigh blood soaked materials (1gm = 1ml)<br>• Ongoing evaluation of vital signs (VS). Notify charge RN and LIP for persistent abnormal VS. | Delayed cord clamping can continue while AMTSL is initiate per LIP discretion. |
| **PROCEDURE: ACTIVE HEMORRHAGE MANAGEMENT**<br>► *Requires an LIP order* | | |
| **NOTE: The following actions are not necessarily completed in order and will often need to happen concurrently.** | | |
| RN, LIP | **INITIAL HEMORRHAGE RESPONSE**<br><br>• Notify LIP for bedside evaluation.<br>• Activate "OB Hemorrhage Emergency Response" (listed above)<br>• Bring:<br>  ○ Hemorrhage supply cart<br>  ○ Hemorrhage Med Kit | Consider potential etiology:<br>• Uterine atony<br>• Trauma/laceration<br>• Retained placental fragments/membranes<br>• Uterine inversion<br>• Coagulopathy (acquired or preexisting)<br>• Abnormally adherent placenta<br>• Uterine rupture |

| | | |
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| RN, LIP | **NOTE**: RN responsible for returning used med kits to the pharmacy. All med kits that have been out of the unit medication refrigerator for greater than 1 hour must be returned the pharmacy. Unused med kits that have been out of the unit medication refrigerator for less than 1 hour must be returned to the unit medication refrigerator.<br><br>• Initiate OB Hemorrhage Worksheet<br>• ▶Establish IV access with large bore (16-18 gauge) catheter if not present<br>• ▶Consider 2nd IV access<br><br>• Obtain labs<br>  ○ ▶ Order blood products per LIP order STAT<br>  ○ ▶Repeat OB Hemorrhage labs (STAT) every 30 minutes with ongoing bleeding<br><br>• ▶Titrate IV Oxytocin infusion rate to uterine tone<br>• Apply vigorous fundal massage to uterine tone<br><br>**NOTE:** ▶Administer uterotonics per LIP order see: OB Hemorrhage Medication Pack: Uterotonics<br><br>**NOTE**: If one dose of each uterotonic and bedside interventions do not control the bleeding, move patient to the operating room (O.R.).<br><br>• Monitor vital signs, including 02 sat & level of consciousness (LOC) q 5 minutes<br>  ○ ▶Administer oxygen at 12-15 to maintain 02 sats at >95%<br>  ○ Maintain thermoregulation<br><br>• Weigh materials, calculate and record cumulative blood loss q 5-15 minutes<br><br>• ▶Place indwelling bladder catheter with urimeter<br><br>• ▶Per LIP order, prepare and transfuse blood products.<br><br>**NOTE**: Do not wait for lab results to transfuse. Transfuse for clinical signs/symptoms. | Place 2nd IV catheter before vasoconstriction develops. Consider drawing labs with IV start: OB Hemorrhage Risk Factors Evaluation Guidelines<br><br>Consider concurrent administration of anti-diarrheal medication when treating the patient with hemabate.<br><br>*Any caregiver* can suggest moving to the O.R. based on clinical signs and symptoms.<br><br>Announce vital signs every 5 minutes and cumulative blood loss every 5-15 minutes<br><br>Keep patient warm: consider use of warming device.<br><br>Measuring the amount of bleeding is done by using a scale and weighing the blood-soaked materials. The weight of clean materials is subtracted from the weight of the blood-soaked materials. **One gram of blood is equal to one milliliter (mL).**<br><br>Blood Administration: Adult |

| | | |
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| Charge RN or Delegate RN/LIP | **ONGOING HEMORRHAGE**<br><br>**ASSIGN ROLES**<br>• Ensure team leader<br>• Assign 2nd RN and/or runner<br>• Assign single person to communicate with blood bank<br>• Assign support person for family, as needed<br><br>**MOBILIZE AND ACT**<br>• Ensure "OB Hemorrhage" Emergency Response is activated<br>• Ensure O.R. readiness:<br>  ○ Transfer the patient location to O.R. in EPIC<br>  ○ Notify surgical technician<br>  ○ Ensure open setup<br>  ○ Assign head-of-the-bed RN or anesthesia technician<br>• Call anesthesiologist/CRNA/anesthesia technician to bedside<br>• ►Activate Hemorrhage Orders for OBG patients [2636]<br>• Ensure OB Hemorrhage Worksheet is initiated<br>• ► Repeat uterotonics per LIP order *See*: OB Hemorrhage Medication Pack: Uterotonics<br>• ► Continue IV oxytocin and provide additional IV crystalloid solution as clinically indicated per LIP order<br><br>**NOTE**: Do not delay other interventions while waiting for response to medications<br><br>• If considering **selective embolization,** call-in interventional Radiology Team and second Anesthesiologist/CRNA/back-up OB coverage | |
| RN, LIP | **STABILIZE**<br>• Once stabilized, modify postpartum management with increased surveillance according to LIP order. | |
| ALL | **DEBRIEF**<br><br>1. Review the following:<br>  a. Confirm procedure.<br>  b. Verify blood loss.<br>  c. Confirm and document vaginal packing count, if applicable.<br>  d. LIP to notify RN and oncoming LIP of the expected plan for removal of uterine balloon and/or vaginal packing. See Uterine Tamponade Balloon: Insertion for OB Hemorrhage.<br>  e. LIP to inform the patient and her significant other of vaginal packing placement and expected time of removal.<br>  f. Discuss concerns for recovery. | |

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| | 2. Perform Post-Incident Debrief<br>S*ee:* Post-Incident Team Debriefing and Post-Incident Team Debriefing, Addendum (Team Debriefing Tool). | A post-incident debrief allows for reflection on team performance after critical events. |
| ALL | **DOCUMENTATION**<br>1. Document all care in the electronic medical record (EMR). | |

## Definitions

*Swedish Bloodless Program (SBP).* Supports the patient's right not to choose blood, blood components, or blood products. The patient is counseled by a program counselor and signs a durable power-of-attorney indicating her specific limitation on blood use.

## Forms

None.

## Supplemental Information

None.

## Regulatory Requirement

None.

## References


American College of Obstetricians and Gynecologists. (2006, reaffirmed 2015). ACOG Practice Bulletin: Clinical management guidelines for obstetrician-gynecologists, Number 76. Postpartum Hemorrhage. Obstet Gynecol, 108, p. 1039.

California Maternal Quality Care Collaborative (2015). OB hemorrhage toolkit V 2.0.

Quibel, T, Ghout, I, Goffinet, F, et al. (2016). Active management of the third stage of labor with a combination of oxytocin and misoprostil to prevent postpartum hemorrhage. Obstetrics & Gynecology Vol. 128 (4) pp. 805-811

Simpson, K. R. Creehan, P.A. (2014). Perinatal Nursing. (4th ed.). Lippincott, Williams, and Wilkins


## Addenda

OB Hemorrhage Medication Pack (Uterotonics)
OB Hemorrhage Risk Factors Evaluation Guidelines
CMQCC Stage 1: OB Hemorrhage
CMQCC Stage 2: OB Hemorrhage
CMQCC Stage 3: OB Hemorrhage

## STAKEHOLDERS

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**Addendum 1.**

## OB HEMORRHAGE MEDICATION PACK

**Table 3: Uterotonics**

| Uterotonic | Route and Recommended Dose | Rate | Considerations |
|---|---|---|---|
| **First-Line Intervention** | | | |
| Oxytocin | 30 units in 500 mL IV fluid<br>*Or*<br>10 units IM (if no IV access) | Continuous IV; titrate to uterine tone. | DO NOT ADMINISTER IV PUSH.<br>Potential fluid overload at total dose exceeding 80 units. |
| **Second-Line Intervention(s)** | | | |
| Methergine | 0.2 mg IM | Every 2-4 hours, up to 5 doses<br>Onset: 2-5 minutes | DO NOT ADMINISTER IV: Higher stroke risk for all.<br>Contraindication: Hypertension, protease inhibitors (commonly used for HIV treatment)<br>Potential for sudden hypertension and CVA. |
| Misoprostol | 200-600 mcg PO<br>200-600 mcg SL<br>800 mcg PR | One Time Dosing<br>**Route** / Onset / Duration<br>**PO** 8 min 2 hours<br>**SL** 11 min 3 hours<br>**PR** 100 min 4 hours | Rare Contraindication: Allergy to prostaglandins.<br>Common side effects: shivering, nausea and vomiting, headache, fever (6-30% dose related), diarrhea.<br>Most effective when used with other uterotonics. |
| **Third-Line Intervention** | | | |
| Hemabate | 250 micrograms IM or intramyometrial | Every 15-90 minutes, up to 8 doses | DO NOT ADMINISTER IV<br>Relative contraindication: Asthma |

**Addendum 2.**

| **Table 4: OB Hemorrhage Risk Factors Evaluation Guidelines** | | | |
|---|---|---|---|
| **Increase risk level to the next risk level if the following *additional risk factors* develop during labor:** | | | |
| ☐ Prolonged 2nd Stage of more than 4 hours<br>☐ Prolonged labor (with or without oxytocin) more than 24 hours<br>☐ Active bleeding<br>☐ Chorioamnionitis<br>☐ Magnesium sulfate therapy<br>☐ Precipitous delivery | | | |
| **Low (obtain hold tube)** | **Medium (obtain Type & Screen)** | **High (obtain Type & Screen)** | **Extreme (Obtain Type & Crossmatch)** |
| No previous uterine incision | Prior cesarean birth(s) or uterine surgery | Placenta previa, low lying placenta, previa with prior cesarean delivery, anterior or central previa | Suspected or known accreta, increta, or percreta |
| Singleton pregnancy | Multiple gestation | Hematocrit below 30 and other risk factors | Positive antibody screen (if not low-level anti-D from Rhogam) |
| Less than or equal to 4 previous vaginal births | More than 4 previous vaginal births | Platelets less than less than 100,000 | |
| No known bleeding disorder | Chorioamnionitis | Active bleeding (greater than show) on admission | |
| No history of PPH | History of previous postpartum hemorrhage | Known coagulopathy | |
| | Tocolytic therapy within 48 hours | | |
| | Prenatal hematocrit below 30 | | |
| | Large uterine fibroids | | |

**NOTE:** Hemorrhage risk screening-associated "hold or "type & screen" ordering will be done according to the protocol, unless there are extenuating circumstances that would warrant a different approach on a particular campus



## STAGE 1: OB Hemorrhage

**Cumulative Blood Loss >500ml vaginal birth or >1000ml C/S with continued bleeding -OR-**
**Vital signs >15% change or HR ≥110, BP ≤85/45, O2 sat <95% -OR-**
**Increased bleeding during recovery or postpartum**

### MOBILIZE

**Primary nurse, Physician or Midwife** to:

- ☐ Activate OB Hemorrhage Protocol and Checklist

**Primary nurse** to:

- ☐ Notify obstetrician or midwife (in-house and attending)
- ☐ Notify charge nurse
- ☐ Notify anesthesiologist

**Charge nurse:**

- ☐ Assist primary nurse as needed or assign staff member(s) to help

### ACT

**Primary nurse or designee:**

- ☐ Establish IV access if not present, at least 18 gauge
  Increase IV Oxytocin rate, 500 mL/hour of 10-40 units/500-1000 mL solution; Titrate infusion rate to uterine tone
- ☐ Apply vigorous fundal massage
- ☐ Administer Methergine 0.2 mg IM per protocol (if not hypertensive); give once, if no response, move to alternate agent; if good response, may give additional doses q 2 hr (if Misoprostol standard, misoprostol 800 mcg SL per protocol)
- ☐ Vital Signs, including O2 sat & level of consciousness (LOC) q 5 minutes
- ☐ Weigh materials, calculate and **record** cumulative blood loss q 5-15 minutes
- ☐ Administer oxygen to maintain O2 sats at >95%
- ☐ Empty bladder: straight cath or place Foley with urimeter
- ☐ Type and Crossmatch for 2 units Red Blood Cells STAT (if not already done)
- ☐ Keep patient warm

**Physician or midwife:**

- ☐ Rule out retained Products of Conception, laceration, hematoma

**Surgeon (if cesarean birth and still open)**

- ☐ Inspect for uncontrolled bleeding at all levels, esp. broad ligament, posterior uterus, and retained placenta

### THINK

Consider potential etiology:

- Uterine atony
- Trauma/Laceration
- Retained placenta
- Amniotic Fluid Embolism
- Uterine Inversion
- Coagulopathy
- Placenta Accreta

**Once stabilized:** Modified Postpartum management with increased surveillance

**If: Continued bleeding or Continued Vital Sign instability, and < 1500 mL cumulative blood loss proceed to STAGE 2**

## STAGE 2: OB Hemorrhage

**Continued bleeding or Vital Sign instability, and < 1500 mL cumulative blood loss**

### MOBILIZE

**Primary nurse (or charge nurse):**
- ☐ Call obstetrician or midwife to bedside
- ☐ Call Anesthesiologist
- ☐ Activate Response Team: **PHONE #:**_____
- ☐ Notify Blood bank of hemorrhage; order products as directed

**Charge nurse:**
- ☐ Notify Perinatologist or 2nd OB
- ☐ Bring hemorrhage cart to the patient's location
- ☐ Initiate OB Hemorrhage Record
- ☐ If considering selective embolization, call-in Interventional Radiology Team and second anesthesiologist
- ☐ Notify nursing supervisor
- ☐ Assign single person to communicate with blood bank
- ☐ Assign second attending or clinical nurse specialist as family support person or call medical social worker

### ACT

**Team leader** (OB physician or midwife):
- ☐ Additional uterotonic medication: Hemabate 250 mcg IM [if not contraindicated] **OR** Misoprostol 800 mcg SL
  - Can repeat Hemabate up to 3 times every 20 min; (note-75% respond to first dose)
- ☐ Continue IV oxytocin and provide additional IV crystalloid solution

**Do not delay other interventions (see right column) while waiting for response to medications**
- ☐ Bimanual uterine massage
- ☐ Move to OR (if on postpartum unit, move to L&D or OR)
- ☐ Order 2 units PRBCs and bring to the bedside
- ☐ Order labs STAT (CBC/PLTS, Chem 12 panel, Coag Panel II, ABG)
- ☐ **Transfuse PRBCs based on clinical signs** and response, **do not wait for lab results; consider emergency O-negative transfusion**

**Primary nurse (or designee):**
- ☐ Establish 2nd large bore IV, at least 18 gauge
- ☐ Assess and announce Vital Signs and cumulative blood loss q 5-10 minutes
- ☐ Set up blood administration set and blood warmer for transfusion
- ☐ Administer meds, blood products and draw labs, as ordered
- ☐ Keep patient warm

**Second nurse** (or charge nurse):
- ☐ Place Foley with urimeter (if not already done)
- ☐ Obtain portable light and OB procedure tray or Hemorrhage cart
- ☐ Obtain blood products from the Blood Bank (or send designee)
- ☐ Assist with move to OR (if indicated)

**Blood Bank:**
- ☐ Determine availability of thawed plasma, fresh frozen plasma, and platelets; initiate delivery of platelets if not present on-site
- ☐ Consider thawing 2-4 FFP (takes 30 min), use if transfusing > 2 units PRBCs
- ☐ Prepare for possibility of massive hemorrhage

### THINK

**Sequentially advance through procedures** and other interventions based on etiology:

**Vaginal birth**
If **trauma (vaginal, cervical or uterine):**
- Visualize and repair

If **retained placenta:**
- D&C

If **uterine atony** or lower uterine segment bleeding:
- Intrauterine Balloon

If **above measures unproductive:**
- Selective embolization (Interventional Radiology if available & adequate experience)

**C-section:**
- B-Lynch Suture
- Intrauterine Balloon

If **Uterine Inversion:**
- Anesthesia and uterine relaxation drugs for manual reduction

If **Amniotic Fluid Embolism:**
- Maximally aggressive respiratory, vasopressor and blood product support

If **vital signs are worse than estimated or measured blood loss**: possible uterine rupture or broad ligament tear with internal bleeding; **move to laparotomy**

**Once stabilized:** Modified Postpartum management with increased surveillance

**Re-Evaluate Bleeding and Vital Signs**
**If cumulative blood loss > 1500ml, > 2 units PRBCs given, VS unstable or suspicion for DIC, proceed to STAGE 3**

## STAGE 3: OB Hemorrhage

**Cumulative blood loss > 1500ml, > 2 units PRBCs given, VS unstable or suspicion for DIC**

### MOBILIZE

**Nurse or Physician:**
- ☐ Activate Massive Hemorrhage Protocol

**PHONE #:**_____

**Charge Nurse or designee:**
- ☐ Notify advanced Gyn surgeon (e.g. Gyn Oncologist)
- ☐ Notify adult intensivist
- ☐ Call-in second anesthesiologist
- ☐ Call-in OR staff
- ☐ Ensure hemorrhage cart available at the patient's location
- ☐ Reassign staff as needed
- ☐ Call-in supervisor, CNS, or manager
- ☐ Continue OB Hemorrhage Record (In OR, anesthesiologist will assess and document VS)
- ☐ If transfer considered, notify ICU

**Blood Bank:**
- ☐ Prepare to issue additional blood products as needed – **stay ahead**

### ACT

**Establish team leadership and assign roles**

**Team leader** (OB physician + OB anesthesiologist, anesthesiologist and/or perinatologist and/or intensivist):
- ☐ **Order Massive Hemorrhage Pack** (RBCs + FFP + 1 apheresis pack PLTS—see note in right column
- ☐ **Move to OR** if not already there
- ☐ Repeat CBC/PLTS, Coag Panel II STAT and Chem 12 panel q 30-60 min

**Anesthesiologist** (as indicated):
- ☐ Arterial blood gases
- ☐ Central hemodynamic monitoring
- ☐ CVP or PA line
- ☐ Arterial line
- ☐ Vasopressor support
- ☐ Intubation
- ☐ Calcium replacement
- ☐ Electrolyte monitoring

**Primary nurse:**
- ☐ Announce VS and cumulative measured blood loss q 5-10 minutes
- ☐ Apply upper body warming blanket if feasible
- ☐ Use fluid warmer and/or rapid infuser for fluid & blood product administration
- ☐ Apply sequential compression stockings to lower extremities
- ☐ Circulate in OR

**Second nurse and/or anesthesiologist:**
- ☐ Continue to administer meds, blood products and draw labs, as ordered

**Third Nurse (or charge nurse):**
- ☐ Recorder

### THINK

**Selective Embolization (IR)**

**Interventions based on etiology not yet completed**

**Prevent hypothermia, academia**

**Conservative or Definitive Surgery:**
- Uterine Artery Ligation
- Hysterectomy

**For Resuscitation:**
**Aggressively Transfuse**
**Based on Vital Signs, Blood Loss**
**After the first 2 units of PRBCs use**
**Near equal FFP and RBC for massive hemorrhage:**
**4-6 PRBCs: 4 FFP: 1 apheresis Platelets**

**Unresponsive Coagulopathy:**
- Role of rFactor VIIa is very controversial. After 8-10 units PRBCs and coagulation factor replacement with ongoing hemorrhage, may consider risk/benefit of rFactor VIIa in consultation with hematologist or trauma surgeon

**Once Stabilized:** Modified Postpartum Management with increased surveillance; consider ICU