OBSTETRIC CLINICAL PRACTICE GUIDELINE
Prevention and Management of Obstetrical Hemorrhage

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PURPOSE: To provide guidelines for the optimal response of the multidisciplinary team in the event of obstetric hemorrhage. Optimal response to obstetric hemorrhage requires the coordination of effort of team members from multiple disciplines and departments. The obstetric unit, anesthesia department, blood bank, operating room, and other appropriate services work together to identify necessary system supports and processes for mounting an efficient and coordinated response to obstetric hemorrhage. Physicians, obstetric RN's, anesthesiologists, and other appropriately qualified clinicians are authorized to mobilize the team to respond to an obstetric hemorrhage.

This guideline should not be considered as dictating an exclusive standard of care. It is not intended to substitute for the independent professional judgment of the treating clinician. Variations in practice may be warranted when, in the reasonable judgment of the treating clinician, such course of action is indicated by the condition of the patient, limitations of available resources, or advances in knowledge or technology. Best practice requires that the plan of care and its rationale be documented in the medical record.

DEFINITIONS:
Early Postpartum Hemorrhage (reVITALize): Cumulative blood loss of ≥1000ml or blood loss accompanied by signs or symptoms of hypovolemia within 24 hours following the birth process (includes intrapartum loss).

Stage 1 Hemorrhage: Blood loss ≥ 500 mL for vaginal birth or ≥ 1000 mL for cesarean birth, or change in baseline vital signs by > 15% (or HR ≥110, BP ≤ 85/45, or O2 sat <95%)

Stage 2 Hemorrhage: continued bleeding or continued vital sign instability, cumulative blood loss < 1500 mL

Stage 3 Hemorrhage: Cumulative blood loss ≥ 1500 mL regardless of route of delivery or etiology of hemorrhage

PROCEDURE:
A. **Stage 0 Hemorrhage** (prevention & recognition):
1. Active management of third stage for **all deliveries**: See AMTSL Standard Work.
2. Ongoing quantitative evaluation of blood loss (Assess blood loss at birth, prior to delivery of the placenta whenever possible and reassess cumulative blood loss after delivery of the placenta.
3. Ongoing evaluation of vital signs and QBL

B. Hemorrhage Anticipation: An anticipatory approach may further reduce the incidence of hemorrhage and morbidity in women who are identified as high risk for post-partum hemorrhage.

1. High risk factors for post-partum hemorrhage:
    a. History of prior post-partum hemorrhage
    b. uterine over-distension – multiple gestation, hydramnios, fetal macrosomia
    c. prolonged oxytocin administration during labor – induction or augmentation
    d. chorioamnionitis
    e. Parity ≥ 5
2. The following steps should be implemented at delivery to monitor for signs and symptoms of hemorrhage and to speed the response:
    a. Obstetric hemorrhage cart brought into room at the time of delivery and kept in delivery room until transfer to mother-baby unit.
    b. Remain in L&D for first 4 hours post-delivery for enhanced monitoring
    c. LIP evaluation of patient performed before transfer to mother-baby unit
    d. QBL continued for first 24 hours after delivery

C. **Stage 1 Hemorrhage**:
Cumulative blood loss > 500 mL vaginal birth or > 1000 mL for cesarean birth -OR-
Vital signs > 15% change or HR ≥ 110, BP ≤ 85/45, O2 sat < 95% -OR-
Increased bleeding during recovery or postpartum.

Response:

1. **Primary Nurse**:
    a. Notify Ob care team, Shift Manager, and Anesthesiology.
    b. Bring PPH cart to patient's room
    c. Establish IV access if not present, at least 18-gauge, increase IV fluid rates
    d. Increase oxytocin rate, titrate to uterine tone
    e. Continue vigorous fundal massage
    f. Administer Methergine (methylergonovine maleate) 0.2 mg IM per protocol (if not hypertensive); give once, if no response, use alternate uterotonic agent; if good response from Methergine, may give additional doses every 2 hours.
    g. Administer tranexamic acid 1000 mg undiluted over 10 minutes at a rate of 100 mg/min (1 mL/min). Give within 3 hours of the diagnosis of post-partum hemorrhage. May be repeated in 30 minutes if bleeding continues.
    h. Vital signs, including O2 sat & level of consciousness (LOC) every 5 minutes
    i. Weigh materials, calculate and record cumulative blood loss every 5-15 minutes
    j. Administer oxygen as needed to maintain O2 saturation > 95%
    k. Empty bladder: place Foley with urimeter
    l. Type and Crossmatch for 2 units RBC's STAT (if not already done)
    m. Keep patient warm.

2. **Physician:** Treat the specific underlying etiology: uterine atony, genital tract trauma/laceration, retained placenta, amniotic fluid embolism, uterine inversion,

coagulopathy, placenta accreta, uterine rupture. If vaginal or perineal laceration with continued hemorrhage, consider transfer to OR for repair. Consider intra-abdominal bleeding as a source even in patients who delivered vaginally. Remain at bedside if treatment with more than one dose of uterotonic drugs is required, until uterine atony has resolved.

D. **Stage 2 Hemorrhage**: continued bleeding or continued vital sign instability, cumulative blood loss < 1500 mL.

1. Primary Nurse (and/or Shift Manager/2nd nurse):
a. Assess and announce to obstetric team vital signs and cumulative blood loss every 5-10 minutes.
b. Set up blood administration set for transfusion
c. Obtain and administer meds, blood products and draw labs, as ordered
d. Keep patient warm
e. Insert Foley catheter
f. Alert scrub tech / scrub nurse
g. Assist with move to OR (if indicated)
h. Apply sequential compression stocking to lower extremities
i. Call medical social worker/ chaplain or assign other family support person.
j. Call for extra help as needed

2. **Physician** at bedside:
a. Order additional uterotonic medication for unresolved uterine atony.
Hemabate (15-methyl PGF2α) 250 mcg IM [if not contraindicated] OR Cytotec (misoprostol) 800-1000 mcg PR/SL. Can repeat Hemabate every 15 minutes to a total dose of 2000 mcg (8 ampules); (note – 75% respond to first dose).
b. *Sequentially advance through procedures and other interventions based on etiology* (see Appendix 2)
c. Bimanual uterine massage
d. Insert uterine tamponade balloon and instill with sterile water or saline for intrauterine tamponade
d. Move to OR
e. Order 2 units PRBC's and bring to the bedside; transfuse based on clinical assessment while labs are pending
f. Order labs STAT (CBC/platelets, comprehensive metabolic panel, PT/PTT, Fibrinogen, ABG)

E. Stage 3 Hemorrhage:
Cumulative blood loss >1500 mL, > 2 units PRBCs given, VS unstable or suspicion for DIC
Initiate the following steps simultaneously.
Obstetric or anesthesiology attending assumes role of Team leader.
Aggressive supportive care:
Restore normal circulation – volume expansion and/or vasopressors

Maintain normal body temperature – use fluid warmer, Bair Hugger, increase room temperature
Avoid acidemia – monitor blood gases and correct as indicated

Consider surgical intervention:
B-Lynch uterine compression suture
Uterine artery ligation
Hypogastric artery ligation
Hysterectomy

Activate additional resources as needed:
Anesthesiology
Surgical Back-up: Gyn Oncology, Vascular surgery, Urology or Urogynecology
Interventional Radiology
Additional Nurses
Consider Cell Saver

Obtain Emergency Blood by calling 4-2012
Options:
1. ACTIVATE Fast Blood
    -- 4 units packed red cells + 2 units FFP, single delivery
2. ACTIVATE Massive Transfusion Protocol
    -- 4 units packed red cells + 2 units FFP (first delivery)
    -- 6 units packed red cells + 2 units FFP + 1 unit platelets (recurring delivery)

Consider use of recombinant factor VIIa for refractory coagulopathy or after transfusion of 8-10 units of PRBCs and FFP

Modified post-partum management

Consider ICU admission for post-hemorrhage management

II **Anticipated Hemorrhage** (Morbidly adherent placenta / placenta accreta spectrum)

A **Schedule in Main OR: Preferred location for scheduled cases is OR 2029 but urgent cases with suspected morbidly adherent placenta may occur in OR 2025 if IR is not anticipated to be utilized or in the event of emergency**
1 Coordinate with Consultants - NICU, IR and Gyn Oncology Surgery team
2 Block elective L&D procedures
3 Informed Consent
4 Coordinate/Discuss role and presence of FOB for delivery

B **Antepartum Consults (as appropriate to each patient)**
1 Anesthesia
2 Surgical Back-up (Gyn Onc, Vascular surgery, etc.)
3 Interventional Radiology

4 Urogynecology or Urology (especially if stents are planned or if bladder involvement is anticipated)
5 NICU
6 L&D Nursing: Pre-Op EFM; Baby nurse
7 Consider Cell Saver

C **Blood Bank:** notify of possible need for large number of blood products
D **"3-Way" Foley**
E Consider **patient positioning (lithotomy)**
F Consider **Post-Op SICU bed**
G **Consider Glucocorticoid administration to optimize fetal lung maturity**
H **Elevator Key** (for emergent transport to another service area)
I **Identify Contacts** Phone Number list (attached)
Special considerations in for cases done in Interventional Radiology
o extra lead aprons
o head lights
o extra step stools
o Vaginal prep before placing balloon catheters
o Place 3-way Foley before placing balloon catheters
o prophylactic antibiotics prior to abdominal incision
o dedicated runner to OR
o Cord clamp(s)
o Radio-opaque sponges on IR table (especially after laparotomy)

III **Post-op considerations**
A Patient counseling / Family meeting
B Attempt to have consistent providers round on patient
C Assess for Pituitary Necrosis (Sheehan's syndrome)
D Antibiotics
E Thromboprophylaxis
F Notify Risk management / Piedmont Liability Trust as appropriate
G Follow-up on Pathology

OBSTETIC HEMORRHAGE EMERGENCY RESPONSE CART AND MEDICATIONS

1. Hemorrhage cart: The unit maintains 3 identically stocked hemorrhage carts, two of which remain in Labor and Delivery and the third remains on the Mother-Baby Unit. The cart is checked for correct and adequate stock weekly on Mondays and restocked after each use. The L&D Shift Manager is responsible for these checks.

   Contents:
   Non-rebreather oxygen mask
   Pulse oximetry sensor probe
   Arterial blood gas syringes
   Alcohol wipes
   IV kit and venipuncture kit
   IV dressings and 2x2” gauze
   Tape: 1 inch clear, 2 inch silk, foam tape
   Saline flushes: 3 mL and 10 mL
   Safety syringes, 3 mL
   Syringes, 10 mL
   Needles, 20 g and 23 g
   Filter straws
   Surgilube, individual packets
   Vicryl suture: 00 (SH), 000 (SH), 000 (CTB)
   Sterile scissors
   Typenex blood bands, blood bank specimen bag
   IV tubing (125” IV system, gravity set, extension set, transfusion set, Alaris set)
   IV pressure bag
   Anesthesia tray
   L&D episiotomy tray
   Flashlight and D batteries
   Masks and protective eyewear
   Gloves, sterile, sizes 6 through 8 ½
   Blue chux pads
   Betadine
   Sterile scopettes
   Packs of lap sponges
   Val-Pro I&O urinary catheters and CHG wipes
   Foley catheter with urimeter collection set
   Bakri and/or ebb balloon
   Sterile bowl
   Sterile water, 500 mL bottle, 60 mL syringes

Instruments: vaginal speculums, small curette, banjo curette

2. Medications: All patients admitted for delivery have emergency post-partum hemorrhage medications ordered in the standard order sets. In Pyxis, the POSTPARTUM HEMORRHAGE KIT can be pulled and contains methylergonovine 0.2 mg (one vial), oxytocin 10 units (one vial), tranexamic acid (1000 mg) and misoprostol tablets 200 mcg (four tablets). Hemabate 0.25 mg is also ordered for each patient but stored in the refrigerator in Pyxis.