Maternal Safety Bundle for Obstetric Hemorrhage

January 14, 2014
Obstetric Hemorrhage: Key Elements

- Can obstetric hemorrhage be anticipated?
  - Risk assessment

- Can obstetric hemorrhage be prevented?
  - Universal active management of 3rd stage of labor

- Are you prepared to handle obstetric hemorrhage?
  - Blood bank (MTP)
  - Cart & medication kit
  - Hemorrhage team
  - Drills/education

- What do you do when obstetric hemorrhage occurs?
  - Checklist
  - Debrief
Can obstetric hemorrhage be anticipated?

✓ Risk assessment
Risk Assessment: Prenatal Assessment

• Suspected previa/accreta/increta/percreta
• Pre-pregnancy BMI >50
• Clinically significant bleeding disorder
• Other significant medical/surgical risk (consider patients who decline transfusion)

Transfer to appropriate level of care for delivery *

* Review availability of medical/surgical, blood bank, ICU, and interventional radiology support
Risk Assessment: Antepartum Assessment

Timing of Delivery:

- Placenta accreta: Deliver 34 0/7-35 6/7 wks
- Placenta previa: Deliver 36 0/7-37 6/7 wks
- Prior classical C/S: Deliver 36 0/7-37 6/7 wks
- Prior myomectomy: Deliver 37 0/7-38 6/7 wks
  - If extensive: Deliver 36-37 wks
Risk Assessment: Placenta Accreta Management

• For one or more prior C/S, placental location should be documented prior to scheduled delivery.

• Patients at high risk for placenta accreta should:
  
  – Obtain proper imaging to evaluate risk prior to delivery, and
  
  – If accreta is suspected, be delivered by obstetricians and specialists experienced in accreta management at a hospital with ICU facilities available for post-operative management.
## Risk Assessment: Labor & Delivery Admission

### Medium Risk
- Prior cesarean, uterine surgery, or multiple laparotomies
- Multiple gestation
- >4 prior births
- Prior PPH
- Large myomas
- EFW >4000gm
- Obesity (BMI >40)
- Hematocrit <30% & other risk

**Type & SCREEN, review protocol**

### High Risk
- Placenta previa/low lying
- Suspected accreta/percreta
- Platelet count <70,000
- Active bleeding
- Known coagulopathy
- 2 or more medium risk factors

**Type & CROSS, review protocol**
Risk Assessment: Intrapartum

**Medium Risk**
- [ ] Chorioamnionitis
- [ ] Prolonged oxytocin >24 hours
- [ ] Prolonged 2\textsuperscript{nd} stage
- [ ] Magnesium sulfate

**High Risk**
- [ ] New active bleeding
- [ ] 2 or more medium (admission &/or intrapartum risk factors

Type & SCREEN, review protocol

Type & CROSS review protocol
Can obstetric hemorrhage be prevented?

☑ Universal active management of the 3rd stage of labor
Universal Active Management of 3rd Stage of Labor

• Oxytocin 10-20 units/1000 milliliters vs. 10 units intramuscularly

• Titrate to uterine tone

• Vigorous fundal massage for at least 15 seconds
Are you prepared to handle obstetric hemorrhage?

☑ Blood Bank (MTP)
☑ Cart & Medication Kit
☑ Hemorrhage Team with education and drills
Blood Bank: Massive Transfusion Protocol

*In order to provide safe obstetric care institutions must:*

1. Have a functioning Massive Transfusion Protocol (MTP)

2. Have a minimum of 4 units of O-negative PRBCs

3. Have the ability to obtain 6 units PRBCs and 4 units FFP (*compatible or type specific*) for a bleeding patient

4. Have a mechanism in place to obtain platelets and additional products in a timely fashion
Blood Bank: Massive Transfusion Protocol

I. PATIENT CURRENTLY BLEEDING & AT RISK FOR UNCONTROLLABLE BLEEDING

1. Activate MTP
2. Draw stat labs

II. IMMEDIATE NEED FOR TRANSFUSION
(type and crossmatch not yet available)

Give 2-4 units O-negative
“OB EMERGENCY RELEASE”
Blood Bank: Massive Transfusion Protocol

III. ANTICIPATE ONGOING MASSIVE BLOOD NEEDS

OBTAIN MASSIVE TRANSFUSION PACK

– consider using coolers
– administer as needed in a 6:4:1 ratio

IV. INITIAL LAB RESULTS

1. Normal
2. Abnormal
Blood Bank: Massive Transfusion Protocol

**Important protocol items to be determined at each institution are:**

1. How to activate MTP
2. Blood bank number & location; notify as soon as possible
3. Emergency release protocol that both blood bank staff and ordering parties (*MD/RN/CNM*) understand
4. How will blood be brought to L&D?
5. How will additional blood products/platelets be obtained?
6. Mechanism for obtaining serial labs, such as with each transfusion pack to ensure transfusion targets achieved
# Hemorrhage Cart

## Vaginal

- Vaginal retractors; long weighted speculum
- Long instruments (*needle holder, scissors, Kelly clamps, sponge forceps*)
- Uterine balloon (*Bakri*)
- Banjo curette
- Bright task light
- Procedure diagrams (*balloon*)

## Cesarean/Laparotomy

- Hysterectomy tray
- #1 chromic or plain catgut suture & reloadable straight needle for B- Lynch sutures
- Uterine balloon (*Bakri*)
- Procedure diagrams (*balloon, B-Lynch, arterial ligations*)
Medication Kit

- [ ] Pitocin 20 units/liter 1 bag
- [ ] Pitocin 10 units 2 vials
- [ ] Hemabate 250 micrograms/milliliters 1 ampule *
- [ ] Cytotec 200 microgram tablets 5 tabs
- [ ] Methergine 0.2 milligrams/milliliters 1 ampule *

* Needs refrigeration
Hemorrhage Team

1. Surgical/Critical care support
   - Gyn Oncology, Maternal Fetal Medicine, General Ob-Gyn, Critical Care, General Surgery, Urology, Vascular, Trauma

2. Anesthesia support (2nd / 3rd person)

3. Nursing support (additional staff)

4. Administrative (blood bank and laboratory staff, logistical support)

*Drills and education for teams are critical.
What do you do when obstetric hemorrhage occurs?

✓ Checklist
Checklist: Introduction

• Call for assistance
• Response team to the bedside (1º Team)
  – Delivering attending MD/CNM
  – Primary RN
  – Covering anesthesiologist
• Appoint leader, recorder, nursing roles
• Identify hemorrhage stage → Document EBL and interventions
Checklist: STAGE 1

Blood loss >500 cc vaginal OR blood loss >1000 cc Cesarean WITH NORMAL VITAL SIGNS and LAB VALUES

- Record VS, O₂ sat every 5 minutes
- Record cumulative blood loss
- Insert Foley catheter
- IV access: at least 18 gauge
- Increase intravenous fluid (crystalloid 3:1 ratio without oxytocin)
- Fundal massage
- Determine and treat etiology
  (4 T’s - Tone, Trauma, Tissue, Thrombin)
- Blood bank: Type & Cross 2 units PRBCs
Checklist: STAGE 1 Medications

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dosage and Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxytocin (Pitocin)</td>
<td>40-80 international units/liter intravenously</td>
</tr>
<tr>
<td>Methylergonovine (Methergine)</td>
<td>0.2 milligrams intramuscularly (may be repeated every 2-4 hours)</td>
</tr>
<tr>
<td>15-methyl PGF$_{2a}$ (Hemabate, Carboprost)</td>
<td>0.25 milligrams intramuscularly (may repeat every 15 minutes, maximum 8 doses)</td>
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<tr>
<td>Misoprostol (Cytotec)</td>
<td>800-1000 micrograms rectally</td>
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</table>
Checklist: STAGE 2

Continued bleeding EBL up to 1500cc OR any patient requiring ≥2 uterotonics WITH NORMAL VITAL SIGNS and LAB VALUES

- 2nd IV access (at least 18 gauge)
- STAT labs, with coags & fibrinogen
- Warming blanket
- For uterine atony → Consider intrauterine balloon, embolization or surgical interventions.
- Blood bank: DO NOT wait for labs. Transfuse per clinical signs/symptoms.
  - Notify of OB hemorrhage, bring 2 units PRBCs to bedside, thaw 2 units FFP
- Medications: Continue medications from Stage 1
- Consider moving patient to OR (better exposure, potential D&C)
- Mobilize additional team members as necessary
Checklist: STAGE 3
Continued bleeding with EBL >1500 cc OR >2 units PRBCs given OR Patient at risk for occult bleeding (post Cesarean, DIC) OR Any patient with Abnormal VS/Labs/Oliguria

1. Outline management plan → serial re-evaluation → Communicate with hemorrhage team


3. If unclear, identify etiology for bleeding → Rule out lacerations (exam), Coagulopathy (labs), Occult bleed (Imaging)

4. Hemostasis → Initiate immediately, interventions based on etiology. If poor response, adopt additional measures.
Checklist: STAGE 4

Cardio-vascular collapse

For patients with Cardio-Vascular collapse in setting of massive hemorrhage:

- Profound hypovolemic shock (blood loss not replaced)
- AFE (sudden C-V collapse followed by heavy uterine bleeding from uterine relaxation and associated coagulopathy)

In these situations, we suggest immediate surgical intervention to insure hemostasis (hysterectomy). This should take place with simultaneous aggressive blood and factor replacement and medical interventions regardless of patient’s coagulation status. Expeditious hemostasis is the only step that will maximize survival rates for these critical patients.
Checklist: Conclusion

- Clinical considerations
  - Debrief
- Document after team debrief
  - Discuss with patient
# HEMORRHAGE FLOW SHEET

<table>
<thead>
<tr>
<th>Date:</th>
<th>Time:</th>
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</thead>
</table>

## EVALUATION:

- Cumulative blood loss
- Symptoms (cold, clammy, dizzy, lightheaded, mental status)
- Blood pressure
- Pulse
- Oxygen saturation
- Imaging: Sono/CT Scan
- Urine output

## REPLACEMENTS:

- Fluids (crystalloid)
- RBC
- FFP
- Platelets
- Fibrinogen
- Cryoprecipitate
## HEMORRHAGE FLOW SHEET

### MEDS GIVEN:

<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Dose</th>
<th>Route</th>
<th>Time</th>
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<tbody>
<tr>
<td>Oxytocin (Pitocin)</td>
<td></td>
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<td>Misoprostol (Cytotec)</td>
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<td>Pressor agents</td>
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### LABS:

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<thead>
<tr>
<th>Test Name</th>
<th>Result</th>
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<tr>
<td>Hct/Hb</td>
<td></td>
</tr>
<tr>
<td>PT/PTT/INR</td>
<td></td>
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<tr>
<td>Platelets</td>
<td></td>
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<tr>
<td>Fibrinogen</td>
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<tr>
<td>pH</td>
<td></td>
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<tr>
<td>Lactate</td>
<td></td>
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<tr>
<td>Base deficit</td>
<td></td>
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<tr>
<td>INTERVENTION:</td>
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<td>--------------</td>
<td></td>
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<tr>
<td>D&amp;C</td>
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<tr>
<td>Intrauterine balloon</td>
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<td>B-Lynch</td>
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<tr>
<td>Uterine artery ligation</td>
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<tr>
<td>Hysterectomy</td>
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<thead>
<tr>
<th>CONSULTS/ESCALATION:</th>
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<tr>
<td>Specialty</td>
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Conclusion

• Early opportunities exist to assess risk, anticipate, and plan in advance of an obstetric hemorrhage.

• Multidisciplinary coordination and preparation, particularly with the blood bank, is critical in order to provide safe obstetrical care.

• A standardized approach to obstetric hemorrhage includes a clearly defined, staged checklist of appropriate actions to be taken in an emergency situation and can help to improve patient outcomes.
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<thead>
<tr>
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<tr>
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