Guideline for Management of Postpartum Hemorrhage

For hemorrhage of more than 500 mL (1000 mL for cesarean) estimated blood loss, but less than 1000 mL (1500 mL for cesarean):

- Start intravenous (IV) line if not present
- Increase IV fluid rate
- Increase IV oxytocin by increasing infusion rate, or by increasing concentration to 40-80 international units/L
- Empty bladder
- Conduct vigorous fundal massage
- Administer 0.2 mg of methylergonovine intramuscularly every 2-4 hours if patient is not hypertensive
- Make sure type and screen is current: if antibody positive, crossmatch 2 units
- Evaluate for retained product of conception, lacerations, uterine atony, and uterine inversion
- Administer 0.25 mg of 15-methyl prostaglandin F\textsubscript{2a} intramyometrially or intramuscularly (may repeat every 15-90 minutes for a maximum of eight doses), or 800-1000 micrograms of misoprostol rectally

If no response by 1000 mL (1500 mL for cesarean) estimated blood loss:

- Call for help – second obstetrician, anesthesia, blood bank, and nursing supervisor and consider gyn-oncologist
- Initiate massive transfusion protocol
- Assign transfusion point person to talk with blood bank (anesthesia)
- Assign Red Hat to manage checklist (charge RN)
- Red Hat identifies and assigns and sends runner to blood bank for green cooler
- Send labs in green bag (comes with blood in cooler). Blood bank orders labs and sends back blood and products.
- Begin blood product transfusion based on clinical signs and judgment
- Establish second large-bore IV line
- Administer oxygen as needed to maintain oxygen saturation greater than 95%
- Consider move to operating room for dilation and curettage or laceration repair
- Have OB hemorrhage chart moved to OR from anesthesia work room
- Consider intrauterine balloon or uterine packing
Consider warm blanket to prevent hypothermia
Place Foley catheter with urometer†
Determine disposition of patient (PACU, SCU, LDR)

If no response by 1500 mL (2000 mL for cesarean) estimated blood loss:
Decision made between transfusion point person and blood bank for further
blood products and labs
Consider uterine artery ligation, B-Lynch sutures, hypogastric artery ligation or
hysterectomy. Consider cell-saver only if readily available.
Notify blood bank when massive transfusion over

†typically requisite for cesarean delivery
*ultrasound should be performed to evaluate for retained placental tissue before uterine
instrumentation is undertaken
**refer to attached

Table 1: Medical Management of Postpartum Hemorrhage†

<table>
<thead>
<tr>
<th>Drug*</th>
<th>Dose/Route</th>
<th>Frequency</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxytocin (Pitocin)</td>
<td>IV: 10-40 units in 1 liter normal saline or lactated Ringer’s solution IM: 10 units</td>
<td>Continuous</td>
<td>Avoid undiluted rapid IV infusion, which causes hypotension</td>
</tr>
<tr>
<td>Methylergonovine (Methergine)</td>
<td>IM: 0.2 mg</td>
<td>Every 2-4 h</td>
<td>Avoid if patient is hypertensive</td>
</tr>
<tr>
<td>15-methyl PCF₂α (Carboprost) (Hemabate)</td>
<td>IM: 0.25 mg</td>
<td>Every 15-90 min, 8 doses maximum</td>
<td>Avoid in asthmatic patients; relative contraindication if hepatis, renal, and cardiac disease. Diarrhea, fever, tachycardia can occur. Avoid if patient is hypotensive. Fever is common. Stored frozen, it must be thawed to room temperature</td>
</tr>
<tr>
<td>Dinoprostone (Prostin E₂)</td>
<td>Suppository: vaginal or rectal 20 mg</td>
<td>Every 2 h</td>
<td></td>
</tr>
<tr>
<td>Misoprostol (Cytotec, PGE₁)</td>
<td>800-1000 mcg rectally</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

IV, intravenously; IM, intramuscularly; PG, prostaglandin
*all agents can cause nausea and vomiting
Table 2: Tamponade Techniques for Postpartum Hemorrhage

<table>
<thead>
<tr>
<th>Technique</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uterine tamponade</td>
<td>- Packing - 4-inch gauze; can soak with 5000 units of thrombin in 5 mL of sterile saline</td>
</tr>
<tr>
<td>- Foley catheter</td>
<td>- Insert one or more bulbs; instill 60-80 mL of saline</td>
</tr>
<tr>
<td>- Sengstaken-Blakemore tube</td>
<td></td>
</tr>
<tr>
<td>- SOS Bakri tamponade balloon</td>
<td>- Insert balloon; instill 300-500 mL of saline</td>
</tr>
</tbody>
</table>

Table 3: Blood Component Therapy

<table>
<thead>
<tr>
<th>Product</th>
<th>Volume (mL)</th>
<th>Contents</th>
<th>Effect (per unit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packed red cells</td>
<td>240</td>
<td>Red blood cells, white blood cells, plasma</td>
<td>Increased hematocrit 3 percentage points, hemoglobin by 1 g/dL</td>
</tr>
<tr>
<td>Platelets</td>
<td>50</td>
<td>Platelets, red blood cells, white blood cells, plasma</td>
<td>Increase platelet counts 5,000-10,000 mm$^3$ per unit</td>
</tr>
<tr>
<td>Fresh frozen plasma</td>
<td>250</td>
<td>Fibronegen, antithrombin III, factors V and VIII</td>
<td>Increased fibrinogen by 10 mg/dL</td>
</tr>
<tr>
<td>Cryoprecipitate</td>
<td>40</td>
<td>Fibrinogen, factors VIII and XIII, von Willebrand factor</td>
<td>Increase fibrinogen by 10 mg/dL</td>
</tr>
</tbody>
</table>

Reference:

1. ACOG Practice Bulletin #76. Postpartum Hemorrhage. October 2006
MASSIVE TRANSFUSION PROTOCOL
SEE FLOW CHARTS FOR SPECIFIC AREAS:
ED, OR, EAST TOWER, SCU/CTICU

IF YOU ANTICIPATE EMERGENT NEED FOR LARGE AMOUNTS
OF BLOOD IN A SHORT PERIOD OF TIME
Call Blood Bank 662-2121 As Soon As You Know
Identify a contact person to communicate with Blood Bank!

When You Call Blood Bank To Start The Massive Transfusion Process
TELL THEM: Pt name, dx, current location, next location, contact person
Keep them Informed Throughout the Whole Process
The More the Blood Bank Knows, the Better Things Will Go

ROUND #1
4 u uncrossmatched
RBC’s (Type O Rh neg)
or crossmatched
(if available)
If necessary, 2u AB plasma
(emergency release type
AB plasma already thawed)

RE-IDENTIFY
CONTACT PERSON
WHEN YOU HAND
OFF PATIENT TO
THE NEXT
LOCATION!
(e.g. ED to OR, SCU
or other destination)
AND
Communicate to
Blood Bank!

TALK to the Blood
Bank with
anticipated end of
MT and again at the
end of MT

ALL SUBSEQUENT
ROUNDS
1:1 RBC:FFP
(or as close to that ratio as
possible)
4 u crossmatched RBC’s
4 units FFP

RK:01May2012
OTHER RECOMMENDATIONS

FIRST SET OF LABS
- Type & Screen (if not already done)
- Massive Transfusion Coag Panel (INR, PTT, Fibrinogen, Plat Ct)
- CBC
- CMP
- Mg++
- Ionized Ca++
- ABG

LABS AFTER EACH ROUND OF BLOOD PRODUCTS
- CBC
- Massive Transfusion Coag Panel (INR, PTT, Fibrinogen, Plat Ct)
- Ionized Ca++
- ABG’s
- TEG (currently available in OR 6AM to 6PM M-F @ 662-4556)

PLATELETS
1 dose every 10-12 units
RBC in consultation with Blood Bank
(contingent upon platelet inventory and control of hemorrhage)

1. If INR >2.0: Give 3 additional units FFP
2. If fibrinogen < 100 mg/dL: give 10 units cryoprecipitate
3. CALCIUM: After the first 4 units RBC’s give with each 1-2 units:
   Calcium gluonate: 10 ml (~5 meq)
   Calcium chloride: 3 ml (~5 meq)
4. If pH <7: give NaHCO3 50 meq
5. **Permissive hypotension**
6. Normosol R: OK with blood products and is associated with less hyperchloremic acidosis than NS
7. Recombinant Factor VIIa
   Dose = 30 mcg/kg
   Ideal variables for rFVIIa therapy include:
   - pH >7.2
   - Platelet count > 100,000
   - Body Temp >36°C
   - Fibrinogen >100 mg/d
8. Consider use of cell saver

Green Zip-Lock bags

RK:14May12