Massive Transfusion Protocol for Obstetrical Hemorrhage

I. PRINCIPLE
The Massive Transfusion Protocol (MTP) for Obstetrical Hemorrhage is intended for antepartum; intrapartum or postpartum patients deemed candidates based on requirement for massive blood volume replacement. Currently at The University Hospital, University of Cincinnati, an MTP is in place. This protocol has been modified to meet the special needs of the obstetrical hemorrhage patient.

II. CLASSIFICATION OF OBSTETRICAL HEMORRHAGE
A. LOW RISK: Minimal bleeding with reassuring maternal/fetal status. Vaginal bleeding, which will be expectantly managed.
B. MODERATE RISK: Vaginal bleeding which requires active management. Transfusion of blood products as well as fetal/maternal intervention may be necessary.
C. HIGH RISK: Vaginal bleeding which requires active management. Transfusion of blood products as well as fetal/maternal intervention will be necessary. A subset of these patients will require the implementation of the Massive Transfusion Protocol.
   1. Antepartum presentation to ER or OB Triage with abruption, previa or accrete and DIC from any source.
   2. Intrapartum hemorrhage immediately following 3rd stage of labor.
   3. Postpartum hemorrhage occurring during recovery period or on postpartum unit.

III. IMPLEMENTATION OF MTP (HAVE A LOW THRESHOLD FOR INITIATION)
A. Criteria for implementation of MTP (any of below)
   1. EBL > 2000 cc with ongoing blood loss of >150 cc/min. Obstetricians under estimate blood loss. (Refer to Box 1: Guidelines for Estimation of Blood Loss)
   2. Hypotension decrease of BP by 20% in the setting of acute hemorrhage
   3. Tachycardia HR >110 in the setting of acute hemorrhage
   4. Mental status changes in the setting of acute hemorrhage
   5. Chest pain/EKG changes in the setting of acute hemorrhage
6. O2 Saturation <95% with O2 treatment in the setting of acute hemorrhage or significant change in O2 saturation
7. Prior to the onset of hemorrhage in special cases. (See Section IV: INITIATION OF THE MTP PRIOR TO THE ONSET OF VISIBLE HEMORRHAGE)
8. Absence/Decrease in urine output.
9. INR > 1.5
10. Temp < 96.5
11. Base Deficit > -6.0

B. Acceptable scenarios
1. Known accreta
2. Known previa with greater than 2 prior cesarean sections.
3. Strong suspicion of large concealed abruption.
4. Active bleeding disorder at the time of operative delivery
5. In other cases, where there is a very high likelihood for massive obstetrical hemorrhage, the MTP can be implemented prior to a scheduled delivery.

Box 1.

<table>
<thead>
<tr>
<th>Guidelines for Estimation of Blood Loss</th>
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<tbody>
<tr>
<td><strong>Suction Canister</strong></td>
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<tr>
<td>(Side pockets must be suctioned during C/S for accurate measurement)</td>
</tr>
<tr>
<td>As measured</td>
</tr>
<tr>
<td><strong>Saturated Laparotomy Pad</strong></td>
</tr>
<tr>
<td># Laps x 100 cc</td>
</tr>
<tr>
<td><strong>Unsaturated Laparotomy Pad</strong></td>
</tr>
<tr>
<td># Laps x 50 cc</td>
</tr>
<tr>
<td><strong>Estimation of Amniotic Fluid</strong></td>
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<tr>
<td>Amount subtracted as estimated by surgeon</td>
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C. Notification of personnel – OB charge nurse (513-584-5422)
1. The following personnel will be notified at the time criteria has been met for implementation of the MTP
   a. OB Attending (513-325-0304)
   b. Anesthesia Attending and Team (513-314-2969)
   c. Notify blood bank of situation (513-584-7888)
   d. OB Tech (to set up OB OR if necessary)(513-584-5740/5741)
2. Call for backup (OB Attending, Gyn Onc [Dr. Richards 513-432-2614 Cell], MFM [513-504-6099], Trauma Surgeons [513-994-0911])

D. Decision for implementation
1. The decision to implement the MTP must be a joint decision by the OB and Anesthesia attending
E. Laboratory Evaluation: (Label, “OR-Obstetrical Crash”)
   1. At the implementation of the MTP the following laboratory studies will be sent.
      a. Type and Match (if not current) (pink tube)
      b. CBC with Platelets (purple tube)
      c. PT/PTT/INR (blue tube)
      d. Fibrinogen (blue tube)
      e. D-Dimer (blue tube)
      e. Renal panel, Ionized Calcium, Magnesium (serum separator or red top), Phosphorous
      f. ABG (blood gas kit)
      g. VBG (blood gas kit)
      h. Lactic Acid (grey on ice)
   2. This series of laboratory studies will be known as the MTP Lab Panel.
   3. The MTP Lab Panel will be sent at the initiation of the MTP and Q 2 hours thereafter until the MTP has been terminated.

F. Patient Preparation
   1. The patient must have at least 2 - 18G peripheral IV’s
   2. The patient must be relocated to a room with capability for central monitoring. Preferably, if the patient is in a labor room she should be transferred to Obstetrical OR Room 4, if possible.
   3. Foley catheter will be placed.
   4. Continuous pulse oximetry and EKG monitoring.
   5. Bair Hugger to maintain Normothermia
   6. All intravenous fluids must be warmed through fluid warmers.
   7. OR suite must be warmed to 27° Celsius (-80˚F).

IV. PROCEDURE FOR IMPLEMENTATION OF MASSIVE TRANSFUSION PROTOCOL
   A. Notification of Transfusion Services (Obstetrical MTP)
      1. The Blood Bank/Crossmatch Lab will be notified of the implementation of the MTP by ONLY one of the following responsible individuals: Attending OB, Attending Anesthesiologist, Chief Resident/Charge-circulating nurse
      2. The Blood Bank/Crossmatch Lab will be notified via telephone at 513-584-7888.
      3. The patient name, MR #, and patient location must be communicated to the Compatibility/Crossmatch Lab.
      4. It is best to say, “I would like to implement the Massive Transfusion Protocol for Obstetrical Hemorrhage…”
5. It is the responsibility of the contacting individual to ensure the appropriate blood specimen has been collected and sent to the Transfusion Service. Of note, most obstetrical patients will have a current Type and Screen and this specimen may not be necessary. Verify that type and screen is current.

6. In acute situations where there is no current Type and Screen, uncross matched O negative trauma blood may be used (location: blood bank 6th floor or main OR refrigerator). This must be authorized by signature on arrival of the blood products by the OB or Anesthesia Attending.

B. Acceptable Blood Specimen (Label “OR-Obstetrical Crash”)
   1. EDTA (purple or pink) tube appropriately labeled and initialed for blood bank. (PREFERRED)
   2. SST, plain red top tube. (ACCEPTABLE)
   3. CORVAC tube, hemolyzed specimen, improperly labeled specimen is UNACCEPTABLE.
   4. Specimen may have been stored at 2-8°C for ≤3 days.
   5. Nurse needs to label with patient sticker and dated, timed and signed with initials.

C. Transfusion Service Personnel Duties
   1. Perform ABO, Rh typing on specimen.
   2. Prepare products per protocol. See Box 2.
   3. Continue preparation of new products until protocol is terminated (See Section V. H. : Termination of MTP)
   4. Notify the charge nurse area that the products are available.
   5. Products will be stored in a cooler for storage and transport.

Box 2.

<table>
<thead>
<tr>
<th>Massive Transfusion Protocol for Obstetrical Hemorrhage</th>
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<tbody>
<tr>
<td>Cycle #</td>
</tr>
<tr>
<td>RBC</td>
</tr>
<tr>
<td>Plasma</td>
</tr>
<tr>
<td>Platelets</td>
</tr>
<tr>
<td></td>
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<tr>
<td>Cryo</td>
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D. Obtaining Products
   1. The OB tech or charge nurse designee will act as the runner to collect the products from the Blood Bank: Room 6158 of University Hospital, 6th floor.
E. Transfusion of Products
1. All transfusion, except platelets, will be performed using the Level 1 Fluid Warmer/Infuser
2. Transfusion will proceed in the following order:
   a. 2 units PRBC
   b. 2 units FFP
   c. 5 units pooled platelets
   d. 2-3 units PRBC
   e. 2 units FFP
   f. Repeat Steps a - e
   g. 10 pooled cryoprecipitate
   h. Repeat steps f & g as frequently as deemed necessary based on patient’s status and active blood loss

F. Documentation
1. Documentation will be maintained during the execution of the MTP including the following items:
   a. Vital signs Q 10 minutes (Temp, BP, HR, RR)
   b. Pulse oximetry
   c. Urine output
   d. Products administered
   e. Time of administration of products
   f. Medications administered
   g. Time of medication administration
   h. Laboratory studies
2. It will be the responsibility of the anesthesia team to maintain the above documentation in the OR (as noted in the anesthesia record) and by the charge nurse if patient is in the PACU or preoperative area.
3. All blood transfusion slips will be filed and attached to the chart of the patient by the RN/Anesthesia.

G. Termination of MTP
1. The termination of the MTP will only be determined by one of the following responsible individuals: Attending Ob or Attending Anesthesiologist.
2. The Blood Bank/Crossmatch Lab will be notified of the termination of the MTP by ONLY one of the following responsible individuals: Attending OB, and Attending Anesthesiologist, charge nurse.
3. All patients who go to the SICU will be transferred to the Trauma Service. Once on that service, they determine when to stop the protocol.
4. The Blood Bank/Crossmatch Lab will be notified via telephone at 513-584-7888.
5. Call for SICU bed 584-4433.