Mission Statement of the OHI

- Decrease short- and long-term morbidity and mortality related to obstetric hemorrhage in women who give birth in Florida
- Guide and support maternity care providers and hospitals in implementing successful, evidence-based quality improvement programs for obstetric hemorrhage

Annual rates of postpartum hemorrhage caused by atony, by mode of delivery, and by induction status (United States, 1994–2006)

Florida Pregnancy Associated Mortality Review FL PAMR

- Hemorrhage is one of the top two causes of maternal mortality from 1999 to 2010 (15% of deaths) in Florida
- Causes:
  - Uterine atony/postpartum bleeding
  - Placenta accreta, percreta or increta
  - Retained placenta
  - Ruptured ectopic pregnancy
Overview: 1999-2010 Florida Pregnancy-Related Mortality Findings
- PAMR screening committee selected 756 pregnancy-associated deaths for investigation during 1999-2010
- Identified 470 (62%) deaths as pregnancy-related

Number of Pregnancy-Related Deaths by Cause, Florida 1999-2010 (N=470)

- Hemorrhage-related deaths (35%)
- Hemorrhage (32%)
- Ectopic (11%)
- Atony (11%)
- Accreta (10%)
- Retained Placenta (8%)
- Other (7%)

The Florida OHI Initiative:
Recognition, Treatment, and Management of Hemorrhage

Toolkit available at:
http://health.usf.edu/publichealth/chiles/fpqo/ohi

**IMPROVE READINESS**
- Implement standardized protocols
  - Hemorrhage Cart
  - Procedural Instructions (balloons, stitches)
  - Partnership with the blood bank
  - Regular unit-based drills (with debriefs)
  - Ensure rapid availability of medications
  - Special case resources (previa, Jehovah’s Witness)
  - Unit Education to protocols

**IMPROVE RECOGNITION**
- On-going assessment of hemorrhage risk
  - Prenatally
  - On Admission
  - Prior to delivery
  - Postpartum
- Early Warning Tools for vital signs and symptoms
- Quantitative CUMULATIVE blood loss assessment
**IMPROVE RESPONSE**

- Perform regular hemorrhage drills
- Unit-standard OB Hemorrhage Protocol with checklists
- Massive transfusion protocols

**Issues with Hemorrhage Response**

- Denial
- Delay
- Lack of practice with rare occurrences
- Imperfect estimation/quantification of blood loss
- Poor utilization of blood products
- Insufficient communication

**IMPROVE REPORTING**

- Improve reporting of OB hemorrhage by standardizing definitions and consistency in coding and reporting.
  - This is accomplished by standardizing our definitions, following protocols, quantifying blood loss, practicing our responses, and consistent coding and reporting.

**Key Elements of the OHI**

1. Develop an Obstetric Hemorrhage Protocol
2. Develop a Massive Transfusion Protocol
3. Antepartum Risk Assessment
4. Active Management of the Third Stage of Labor
5. Quantification of Blood Loss
6. Construct an OB Hemorrhage Cart
7. Ensure Availability of Medications and Equipment
8. Perform Interdisciplinary Hemorrhage Drills
9. Debrief after OB Hemorrhage Events

**Core Elements of Any Protocol**

1. Develop an Obstetric Hemorrhage Policy
   - Develop an effective written document for responding to maternal hemorrhage
   - Rapid response to hemorrhage emergency
   - Coordination among: physicians, nurses, anesthesiologists, blood bank
   - Complete set of prewritten orders to instantly execute
   - Escalation through stages
Why a Protocol for Obstetric Hemorrhage?

- Now a complex series of steps that involve many staff members and departments
- Communications!
- PPH seems to always happen at night or weekends...(when people may be tired or there are less resources)
- We can improve…

2. Massive Transfusion Protocol

“Whole blood” is good for OB hemorrhage

- After 2u PRBCs, start FFP
- Massive transfusion protocol: 1:1 ratio FFP/RBC
- 6 RBC + 4 FFP + 1Ph pack (Stanford+)
- 4 RBC + 4 FFP, pk and cryo on request (CPMC)–think ahead!
- Keep up!

Two Stages: Resuscitation and Treatment

- Resuscitation, transfuse per clinical signs
- DIC treatment, transfuse per lab parameters

Supportive measures are critical

- Warm patient (Bair Hugger®, fluid warmer)
- Correct metabolic acidosis

Lessons from Combat in Iraq

Lowest losses ever from hemorrhage
Key: increased FFP:RBC ratio

3. Antepartum Risk Assessment

Risk Assessment

- Risk factor identification
- A prewritten order set for admission to L&D includes “risk scoring” for obstetric hemorrhage
- Definition checklist
- Risk assessment can also occur intrapartum
Ongoing Hemorrhage Risk Assessment

<table>
<thead>
<tr>
<th>Condition</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antepartum</td>
<td>No previous uterine incision</td>
<td>Prior cesarean birth(s)</td>
<td>Placenta previa</td>
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<tr>
<td></td>
<td>Singleton pregnancy</td>
<td>Prior uterine surgery</td>
<td>Low-lying placenta</td>
</tr>
<tr>
<td></td>
<td>≤4 previous vaginal births</td>
<td>Multiple gestation</td>
<td>Suspected placenta accreta</td>
</tr>
<tr>
<td></td>
<td>No known bleeding disorder</td>
<td>Hypertension-associated Conditions</td>
<td>Hematocrit &lt;30</td>
</tr>
<tr>
<td></td>
<td>No history of PPH</td>
<td>History of previous PPH</td>
<td>Platelets &lt;100,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Large uterine fibroids</td>
<td>Active bleeding at admission</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Estimated fetal weight greater than 4 kg</td>
<td>Known coagulopathy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Morbid obesity (BMI &gt; 35 l/m²)</td>
<td>Abruptio Placenta</td>
</tr>
<tr>
<td>Intrapartum</td>
<td>Induction or augmentation of labor</td>
<td>Polyhydramnios</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Protracted labor or arrest disorder</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chorioamnionitis</td>
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</tbody>
</table>

Active Management of the Third Stage of Labor

- **Oxytocin** (10 to 30 U in 500 cc) IV with delivery of infant or placenta tитrated to fundal tone
- Vigorous fundal massage (at least 15 sec) after placenta delivery
- Controlled cord traction is an optional component to be applied by a skilled care provider

Quantification

- EBL method used most often is visual estimation
- Visual estimation is unreliable and inaccurate
- Underestimated as much as 50% of time
Institute most accurate methods: Quantification of Blood Loss

- Accurate QBL prompts the Nurse on critical actions such as mobilizing the team
- Critical decisions are made based on QBL
- QBL leads to earlier interventions & improved outcomes
**Recommendations**

- Many centers will customize their approach to quantification using a combination of approaches for different settings
  - Vaginal deliveries
  - Cesarean sections
  - Minimal loss
  - Greater than usual loss
  - Massive loss
- The process is intentional—a formal effort!
  - No more vague “Guesstimates”
  - Continues and is cumulative

**Who should determine QBL?**

- Anesthesia is at the head of the table and often does not see it all
- OB’s aren’t looking at the suction bottles or at the collective sponges
- No one is doing it in a standardized manner—obstetricians need help! Collaboratively!
- We should be able to answer:
  - How much blood is in the suction bottle (after amniotic fluid)?
  - How much blood is on sponges?
  - How much blood is on the floor/on the table?
  - In a big case, hourly and cumulatively

**6. Construct an Obstetric Hemorrhage Cart**

**Hemorrhage Carts, Kits and Trays**

- Checklist of medications and procedures
  - Diagrams depicting various procedures
    - B-Lynch
    - Uterine artery ligation
    - Balloon placement
    - Set of vaginal retractors
    - Sponge Forceps
    - Sponge to B-Lynch sutures
    - Vaginal Packs
    - Uterine Balloons
    - Banjo curettes
    - Uterine forceps
    - Long needle holder

**7. Ensure Availability of Medications and Equipment**

**OB Hemorrhage Medication Kit**

- Pitocin 20 units per liter NS 1 bag
- Hemabate 250 mcg/ml 1 ampule
- Methergine 0.2 mg/ml 2 ampule
- Cytotec* 200mg tablets 5 tabs

*There is no strong evidence that misoprostol is useful as primary or adjunctive therapy of postpartum hemorrhage in addition to standard injectable uterotonics.
8. Perform Hemorrhage Drills

Importance of Drills / Simulations
Safety and QI Leader: Paul Preston, MD

“Medicine is the last high-risk industry that expects people to perform perfectly in complex, rare emergencies but does not support them with high-quality training and practice throughout their careers.”

“Certain individual and team skills require regular practice that cannot ethically occur in routine care.”

Debriefs

- After major OB hemorrhage event or simulation drill, provides opportunity to:
  - Decompress
  - Discover areas for improvement
  - Benefit from immediate feedback
  - Enhances retention of information
  - Increases learner engagement
  - Leads to higher staff confidence
  - Improves teamwork skills
  - Is a learning opportunity, not punitive

Debriefs

- Designed to improve outcomes:
  - An accurate reconstruction of key events
  - Analysis of why the event occurred
  - What should be done differently next time

- Most effective when
  - Conducted in environment where mistakes are viewed as learning opportunities
  - Relate to specific team goals

- Maintain effectiveness by not assigning blame or failure to an individual
Debrief Critical Elements

- Develop debrief checklist
- Designate trained facilitators to conduct all debriefings
- Designate time and place for huddle, set ground rules, document, communicate findings to team
- Encourage learning by asking questions
- Goal is for clear understanding of events for everyone
- Debrief often so it becomes comfortable

OB Hemorrhage Checklist

Vital Signs are Often Ignored

- Concept of "Triggers"
  - Triggers identify patients that need more attention (from on-call physician, in-house physician, or rapid response team (RRT))
  - Prevent such patients from being ignored
  - Independent of diagnosis, useful for all OB emergencies
  - Used in many areas of hospital medicine
  - Do not wait for lab results before acting

FPQC OB Hemorrhage Care Guidelines Algorithm

Systems Approach to Obstetric Hemorrhage

- Department: OB Hemorrhage Protocol with stages
- Hospital: Massive Transfusion Protocol
- Summary Flow algorithm: graphic or tabular
- Nursing checklist by stages
- Documentation forms: OB Hemorrhage Report
- Worksheets to assist with assessment of blood loss
- Hemorrhage cart/kit
- Instruction cards for new procedures in cart or OR
- Drills
Successes

- Physicians are embracing the change—over 20 physicians across the state have volunteered to speak about OHI to further the initiative
- One large hospital system has indicated that beyond their 4 OHI hospitals, they are incorporating OHI system wide
- Aha! Quantification of blood loss much different than estimation
- Protocols and drills have improved skills and responses
- Needed equipment has been obtained
- Changes to practice as a result of drills

Technical Assistance is Available

- Website with tools and archived monthly learning webinars
- Monthly learning webinars
- Speaker’s Bureau available for presentations
- Peer to peer connections
- Expert Advisory Panel for assistance with clinical questions
- Site visits to participating hospitals to review data and assess progress on implementation

Resources and More Information available at: [http://health.usf.edu/publichealth/chiles/fpqc/oHi](http://health.usf.edu/publichealth/chiles/fpqc/oHi)

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QUESTIONS OR COMMENTS