Implementation of Obstetrical Hemorrhage Drills
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Objectives:
• Learn the benefits of participating in a quality care collaborative
• Understand how to develop and implement obstetrical emergency drills
• Describe the assigned tasks and responsibilities necessary to run drills
• Appreciate lessons learned and growth though continued change

A little bit about us...
• On the Magnet Journey
• On the Baby Friendly Journey
• High Risk Maternal Transport Program
• Level III NICU
• 5448 births 12/1/2009-11/30/2010 (average of 454/month)
• Age/Race of population we serve
  – Age: 3% <18, 28% 18-24, 51% 25-35, 18% 36-45, 0.3% >45
  – Race: 37% Hispanic, 29% Caucasian, 17% Black/African American, 13% Asian, 3% Other
Case Report

- G3P1, post dates induction: Cervidil and Oxytocin
  - Vacuum-assisted delivery with immediate hemorrhage
  - Treatment within 20 minutes of delivery: improvement
    - Massage, Methergine, Hemabate, Curettage
  - OB leaves hospital.
  - OB returns (35 minutes later) after continued bleeding and hypotension.
    - Above steps repeated twice, plus packing.
  - Delay in getting and administering blood and higher level medical attention.
  - Patient codes.
  - First unit of PRBC given 2½ hours after hemorrhage starts.
  - Multiple organ failure, anoxic brain injury.
  - Death 14 days postpartum.

Maternal Circulatory Changes

- RBCs, Plasma, Clotting Factors
- Heart Rate, Stroke Volume, Cardiac Output, Tissue Perfusion
- Peripheral Vascular Resistance, Colloid Osmotic Pressure
- Renal Blood Flow, Glomerular Filtration Rate
- Uterine Blood Flow
  - (600-800 mL/min)!

Postpartum Hemorrhage

- >500 cc for vaginal delivery and >750 cc for cesarean are traditional definitions, but these amounts are actually average
- WHO considers EBL of >500 cc an “alert line” and >1000 cc an “action line”
- 4-5% of women experience blood loss greater than 1000 cc: a clinically significant amount
- 0.3 - 3.2% of women are transfused postpartum
- 95% of hemorrhage occurs in first 24 hours

- 1/3 have NO risk factors
Can we do better?

- Review of all pregnancy related deaths
  - Chart review of all cases by review committee
    - OB, MFM, OB anesthesiologists, co-chairs of ACOG/CDC maternal mortality study group
- Hemorrhage cause of death in 14% of cases, 93% of these were preventable


How so?

- Response to OB hemorrhage (OBH) needs a protocol, drills and a team response
- Improve team communication
- Both physician and nurses can activate an emergency hemorrhage protocol
- Increase early recognition and “triggers” for recognizing and responding to hemorrhage and abnormal vital signs

Collaborative Effort

- Partnering in a Quality Care Collaborative is key...
  - Provides the foundation for change
  - Facilitates organization in executing a team response to OBH
  - Creates accountability/responsibility to improve outcomes
  - Drills part of this process
California Maternal Quality Care Collaborative (CMQCC)

- Data-driven OB Quality Improvement
- Develop and Refine OB Quality Measures
- Develop a State-wide Effort for Collaborative OB Quality Improvement
  - Leverage existing professional groups and hospital systems
- Reduce Disparities in OB Outcomes
- Develop professional standards
- Develop prevention strategies
- Analyze and align quality with incentives, i.e., negative, positive, perverse

CMQCC: A Collaborative to advance maternity care through data-driven quality improvement.

CMQCC Key Partner Organizations

State Agencies:
- OSHPD Healthcare Information Division
- Office of Vital Records (OVR)
- Regional Perinatal Programs of California (RPPC)

Public Groups:
- California Hospital Accountability and Reporting Taskforce (CHART)
- March of Dimes (MOD)

Professional groups:
- American College of Obstetrics and Gynecology (ACOG)
- Association of Women’s Health, Obstetric and Neonatal Nurses (AWHONN)
- American College of Nurse Midwives (ACNM)

Key Medical and Nursing Leaders:
- University and Hospital Systems
- Kaiser, Sutter, Sharp, CHW, Scripps, Public hospitals

CMQCC: A Collaborative to advance maternity care through data-driven quality improvement.

So we got together &...

- Best Practices Team (BPT)
  - OB, MFM, Anesthesiology, Women’s Pharmacy, Blood Bank, Nursing, Women’s OR staff (about 20 key individuals)
- Evaluation of how we can better mobilize resources to treat our patients
- Train and educate all individuals from all services
- Remember: 1/3 of women who experience OB hemorrhage have NO risk factors
CMQCC Stages for OB Hemorrhage Care

Stage 0
- Risk assessment
- Active management of the 3rd stage of labor
- Antepartum care and counseling
- Appropriate blood bank specimens on admission
- Quantify blood loss for all births

Stage 1: EBL >500 cc (vaginal) or >1000 cc (C/S) or HR >110, BP <85/45, O2 sat <95%
- Activate hemorrhage protocol
- Determine cause
  - Methergine IM for atony (unless contraindicated)
- Initiate preparations
  - Mobilize personnel
  - IV
  - Empty bladder
  - Blood bank: T and C 2 units
  - Quantify blood loss

OB Hemorrhage Code
**CMQCC Stages for OB Hemorrhage Care**

**Stage 2:** Ongoing bleeding and total EBL < 1500cc
- Advance through medications
  - Hemabate or misoprostol
- Advance through procedures
- Mobilize help
  - Rapid response team
- Blood Bank support
  - 2 units PRBC to bedside

**Stage 3:** Ongoing bleeding and total EBL > 1500cc or > 2 u PRBCs given or VS unstable or suspicion of coagulopathy
- Massive Transfusion Procedure – transfuse aggressively
  - Near 1:1 ratio PRBC: FFP
  - 1 PLTpheresis pack per 6 units PRBC
- Invasive surgical techniques
- Mobilize help
  - Advanced surgeon (gyn, gyn/onc, trauma, MFM)

**Translate into practice**
- Staff education regarding:
  - Massive Transfusion Procedure policy
  - Quantification of blood loss
  - Team behavior in an emergency
- How to accomplish? DRILLS! They...
  - Are a natural fit to educate and instill in practice
  - Integrate teamwork/communication skills with event management
  - Prepare staff for managing high acuity-low frequency perinatal events
  - Allow us to observe and assess our team performance & monitor progress in team performance
Translate into practice

- Why drills?
  - Crew resource management principles (behavioral or performance objectives) were developed by NASA psychologists...
  - We are modeling successful training from industries with much better safety and reliability data, i.e. aviation
  - Simulation based, hands-on training has foundations in adult learning theory - we learn best by doing!

So Leadership decided...

- Drill Team Development
  - Comprised of select leadership team members and bedside nurses that would meet monthly to facilitate and run OB emergency drills.
  - First meeting October 2009
  - Initially 2 types of drills: Postpartum hemorrhage (PPH) & Emergency c-section

Drill Team Meetings

- October - December 2009: We met to hammer out the details of running drills...
- Individual assignments given
  - Purchase equipment to be used in drills
  - Write drill scenarios, roles/responsibilities
  - Create positive buzz among staff
  - Reach out to other departments that would ultimately become a part of our drills and engage them from the outset
When to run drills?

- Organized a “Staff Enrichment Day” held 4th Wednesday each month
- Drills to be held on this day at a time convenient for champion or interested physician participation
- Staff to sign up to participate

The Sim Lab

- December 2009 Meeting held in Sim Lab
  - Noelle can do so much!
  - Opportunity to envision what our drills could look like
  - However...Drill team afraid of engaging?

Epiphany!

- Attended webinar “Using Simulation as a Strategy to Overcome the Practice Gap” 2 weeks before first scheduled drill
- Main take-away messages:
  - It’s about the methodology not the technology
  - Create “Immersive Patient Care Management” experience
  - Embed performance measures in drill (but this does not make it a competency checklist)
  - Debriefing is as or more important than drill (discovering performance gaps is opportunity to improve)
Performance Measures

- Common threads in the framework of all real or simulated emergencies
  - Cognitive skills (e.g., recognize postpartum hemorrhage)
  - Technical skills (e.g., IV start, documentation)
  - Behavioral skills (e.g., clear communication)
- Participants are made aware of these threads as they relate to the scenario and objectives

Scenario Writing

- Group of 4 RNs
  - Educator, Assistant Unit Manager, Coordinator, Bedside RN
- Embedded CMQCC Stages for OB Hemorrhage Care in performance measures
- Embedded Women’s BPT protocol in performance measures
- Staging guidelines listed
- Integrated debriefing guide included

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Ground Rules

Immersive Patient Care Simulation Experience

Respect for the simulation environment:
- No cell phones, pagers, Bluetooth, or texting
- Comply with Social Networking Policy
- Professional dress code
- Maintain a clean, organized environment
- Treat the manikin/live actor as you would a real patient
- Treat the simulation environment as real
- Participate in orientation to scenario prior to drill beginning

Respect for self and others:
- Maintain strict confidentiality agreement
- Maintain professionalism
- Laugh and enjoy but not at the expense of others
- Leave all personal baggage at the door
- Role model positive attitude and behaviors
- Be open to peer review
- Be open to new experiences
- Be open to role flexibility
- Expect to make mistakes and learn through them

Engage and participate
- Be punctual
- During debrief, raise hand to speak

Responsibility and Accountability:
- Accountable for all previous knowledge, skills, behaviors
- Orient to or observe simulation drill prior to first participation experience

Responsibility and Accountability (Facilitator and Technician only):
- Arrive 30 min prior to the start of scheduled simulation to ensure adequate preparation
- Completed written scenario with all supporting:
  - Documents
  - Supplies
  - References
  - Special Directions and Planning (Coordinated and finalized with Tech/Facilitator team in advance of scheduled learner experiences -- if not experience will be canceled)
- Ensures AV, IT and equipment is operational
- Ensures supplies are stocked for use
- Ensure coordination of scenarios “go live” checklists
- Monitor, support and mentor new simulation team members
- Have completed an approved course in simulation based training methodology for scenario writing, facilitation and debriefing prior to creating, leading or assisting with a learner experience (optional)

Our First Drill – Jan 2010

- Noelle is really heavy!
- Participants needed more preparation than we anticipated
- More moulage and “prop prep” was needed
- More unit notification of drill activity needed
- Confidentiality concerns during debriefing

Manikins v. Patient-Actors

- 140 participants randomized to 1 of 4 obstetric emergency training interventions (UK)
  - 1 day course at local hospitals, 1 day course at simulation center, 2 day course w/ teamwork training at local hospitals and 2 day course with teamwork training at simulation center
  - Local training used patient-actors/low-fidelity part-task trainers, simulation center training used computerized manikins/high-fidelity part-task trainers

Manikins v. Patient-Actors

• 3 weeks before & after training, participants managed 3 simulated obstetric emergencies.
• Patient-actors scored their care after each simulation using a patient-actor perception score (communication, safety, respect).


Manikins v. Patient-Actors

• Perception of safety & communication during postpartum hemorrhage was significantly improved following training with patient-actors compared with training with manikins.
• All multi-disciplinary training improved patient-actor perception of care. Training using a patient-actor may be better at improving perception of safety and communication than training with a computerized manikin.


Team Behaviors

Definitions
• Leader: Does 3 things -
  - Prioritizes decisions
  - Coordinates activities
  - Communicates a shared mental model
• Shared mental model: A common understanding of the situation and plan by all members of the team.
• Leadership Transfer: An explicit handoff of leadership from one team member to another.

Team Behaviors

Definitions

• Closed-loop communication: Verbal exchanges between parties who acknowledge receipt of information with reciprocal verbal interactions, in which there are no failures in exchange of key information, and recommendations are acknowledged.

• Situational Awareness: A conscious recognition of salient factors and conditions that contribute to safe practice; it comes from monitoring one’s surroundings and continuously facilitating the design and redesign of the care plan with changing conditions.

First PPH Drill – Feb 2010

This drill went much better!

• Scenario synopsis review with ALL

• Instruction to participants to “Do what you would normally do in a real OB emergency”
  - Stay with patient/call for help comes 1st!

• Live patient-actor works better for our drills

First PPH Drill – Feb 2010

Team Communication

• SBAR

• Closed-loop Communication
  - Task Delegation
  - Task Responsibility
  - Task Completion

• “Thinking out loud”

Scribe

• A critical role delegated to a responder, typically an RN or LVN
Identification of Systems Issues!
• OBH Kit/Cart had duplicates & missing items
• Did not include additional disciplines

Candid Camera:
• “Acting as if” difficult

Facilitator & Technician:
Two separate roles!
• Facilitator remains focused on setting the tone and keeping the tone of drill/debriefing on track, gathers participants together, goes over drill scenario/content, answers questions about drill and guides the debriefing process.

• Technician will be responsible for staging, setting up props, helping prep confederates with their roles/scripts (done collaboratively w/ Facilitator), calling out clinical changes that learners are to respond to.
Monthly Discoveries

- Expanding drill to include other departments/disciplines is the best way to discover systems issues
  - Decision to use different tubing kept in OBH cart based on WOR involvement
  - Time delay noted in delivery of blood/blood product based on unclear communication

Drill Debriefing Decisions

<table>
<thead>
<tr>
<th>Name</th>
<th>Roll</th>
<th>Actions/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Julie Tilo</td>
<td>Observer</td>
<td>Scribe utilized with revised scribe form. Suggestions made to improve form yet again.</td>
</tr>
<tr>
<td>Syndee White</td>
<td>Observer</td>
<td>Improved scribe form yet again. We still write on the back of the form freehand.</td>
</tr>
<tr>
<td>Dr. Farinelli</td>
<td>Observer</td>
<td>Reminder to participants to use calm, normal volume voice, ideally one person at a time.</td>
</tr>
</tbody>
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Playing it close to the vest...

- Delineation of tasks/responsibilities for each role was very helpful in creating a cohesive team flow
ultimately vacuum extraction delivery of a 4600 gm (10 lbs 14 oz) neonate. Patient had a 3rd patient. Patient experienced a prolonged second stage requiring Oxytocin augmentation and spinal analgesia placed for pain management per her request at 6 cm dilation - effective per previous vaginal birth of a healthy baby girl 3 years ago. Labs on admission WNL (Hgb 12g/dL Uncomplicated prenatal course to date, reports no past medical or surgical history other than Cognitive:

T: 98.0 (orally)
CMQCC Stages for OB Hemorrhage Care

Unit Notification

This reminder is placed on the staffing sheet for the shift...

DATE:
DAY SHIFT COORDINATOR:
Please have staff inform current patients, newly incoming patients and visitors about our drill today.
The following script may be utilized:
Emergency Safety Drills will occur today between 1230-1330.
Pardon our high level of activity and noise.
These drills are conducted to improve your care.
We are making our BirthCare Center the safest place to have your baby.
*The drill may be cancelled based on unit census, acuities or ratios.*

Hurdles!

- Culture Change
- Priority
- Leadership Support
  - Departmental/Organizational
- Time
  - Staff
  - Facilitator, Technician
- Money
  - Staff
  - Supplies/Equipment
- Logistics
  - Space/Place
  - Continuing Education: CEUs, CMEs?
Where are we now?

• We have completed our first year of running drills, the focus being primarily postpartum hemorrhage, and have been able to improve our team response to this emergent situation and discover systems issues that we can change to lead to better teamwork and patient outcomes.

Where are we headed?

• We will be expanding the type and number of drills performed per month and the involvement of other units/disciplines as appropriate to the drill as we become more adept at running them.

Aren’t we all...

• A work in progress?!