Maternal Hemorrhage

Recognition and Management of Maternal Hemorrhage to Improve Maternal Mortality and Morbidity in Massachusetts

Background

- Maternal peripartum hemorrhage is one of the greatest risk factors for women during labor and birth.
- Low frequency, high intensity event.
- Maternal death rate 1:10,000 - 1:20,000.
- Hemorrhage is often final common pathway for maternal death.
  - AFE
  - Placental abruption
  - Coagulopathy/ DIC
  - Placenta accreta/increta/percreta
  - Retained placenta
  - Uterine atony
  - Uterine rupture
  - Sepsis
  - Trauma

Background cont'

- Eighteen (18) maternal deaths related to maternal hemorrhage were reported in Massachusetts from 1997-2007
- An average of 1.8/year
- Approximately 75,000 births/year in MA
- Incidence of maternal death continues at a rate $\geq$ 1 per year in the 6 year period 2003-2008, with six (6) deaths reported from causes related to hemorrhage,

Maternal Morbidity and Mortality in Massachusetts

March 2012 Report of the MA Maternal Mortality and Morbidity Review Committee

- The pregnancy-related mortality ratio (PRMR) has not changed in MA from 2000-2007.
- PRMR is 7.0/100,000 live births.
- Recommendation 6. in that report states,

  Each maternity hospital should have clinical guidelines and protocols for the recognition and management of maternal hemorrhage including standardized timing and criteria for implementing a massive transfusion protocol. The guidelines and protocols should include procedures that effectively address the clinical risk and management of peripartum maternal hemorrhage.

Recommendations from Lehman Center OB Safety Expert Panel

Plan for each OB service to include:

- Recorded Maternal Risk Identification
- Clinical Definition of Maternal Hemorrhage
- Life-Threatening Clinical Indicators
- Physiologic Monitoring Methods and Parameters
- Identified Clinical Threshold for Activating Maternal Hemorrhage Response System

Recommendations cont'

- Maternal Hemorrhage Response System may include:
  - Rapid Response Team
  - Blood Bank Readiness for Massive Transfusion
  - Code Team/Trauma Team
  - Surgeon, Anesthesiologist, OR Team
  - Radiology Team
  - Laboratory Readiness
  - Resuscitation Support
    - Personnel
    - Equipment
      - Patient and fluid warming devices
      - Physiologic monitoring equipment
      - Rapid blood/fluid infusion devices

Recommendations cont'

- Structure for Communication and Teamwork
- Assigned persons for documentation
- Support for family

- Algorithm to outline steps in the Maternal Hemorrhage Response System with
  - Clear description of roles and responsibilities
  - Routine practice drills with debrief
  - Case review of each activation of the Maternal Hemorrhage Response System

Lehman Center Recommendations accepted

by the

Massachusetts Perinatal Quality Collaborative

for

Implementation

Implementation to Date:

- Education
- Review of the Literature: Bibliography
- Survey of Massachusetts Hospitals with Obstetrical Programs
- Analysis of Findings

Education

- Brian Bateman's presentation to the MPQC's November 5, 2012 Summit

Bibliography

- Comprehensive
- Includes recent articles from MPQC members
- Copy in handout
- Articles available by request

Maternal Hemorrhage Survey

- Convenience sample collected 11/5/12 at MPQC Summit
- Response from 55% of the 47 hospitals with OB programs in MA
- Distribution:
  - West 33%
  - Central 50%
  - Boston 75%
  - Northeast 50%
  - Southeast 50%

Survey Findings

1. Does your hospital track incidence of maternal hemorrhage within the department and hospital?

Yes = 24 No =3 Don't Know = 2

2. What is your working definition of maternal hemorrhage?

>500 ml EBL=15 Other = 6 None =1 NR=7

Survey Findings cont'

3. Is there a process in your institution for review and analysis of maternal hemorrhage events?

Yes = 24 No or Don't Know = 5

a. If yes, who is involved?

QA/QI = 13 OB Dept = 11 NR = 5

b. What is the process?

Structured Review=18 NR = 11

4. Has that process resulted in systems,care process and clinical outcomes improvement?

Yes = 11 Partial = 2 Don't Know = 16

Survey Findings cont'

5. Does your hospital have a massive transfusion protocol?

Yes = 21 No/? = 6 NR = 2

Is blood utilization tracked?

Yes = 19 No/? = 8 NR = 2

6. Are obstetrical patients included in the scope of the Massive Transfusion Protocol?

Yes = 19No/? = 5 NR = 5

Survey Findings cont'

7. Do you conduct drills to practice for maternal hemorrhage events?

Yes = 21 No/? = 7 NR = 1

8. Would you use education/consultation resources for risk recgnition and clinical management of maternal hemorrhage, if they were available?

Yes = 24 No = 0 Maybe =3 NR = 2

Conclusions

- Management of maternal hemorrhage varies among institutions.
- Not all have a massive transfusion protocol.
- Many do not have a system for review and performance improvement planning.
- 82% of respondents stated they would use education/consultation resources for risk recognition and clinical management if they were available.

Recommendations

- Distribute survey data, de-identified, to MPQC Steering Committee and membership.
- Add questions that identify systems and practice issues for smaller and more remote hospitals.
- Recruit and appoint a Maternal Hemorrhage Working group to assemble and consolidate references,best practices and success strategies.
- Identify from the Working Group a team who can travel as educators and consultants.
- Investigate problem identification, process and outcome improvements for Perinatal Collaboratives in other states: CA, WI, OH, NH/VT, NC.

Recommnedations cont'

- Review Lehman Center report and recommendations.
- Coordinate data collection and outcome measurement efforts with MA DPH, Maternal Mortality and Morbidity Review Committee.
- Seek guidance of the DPH Perinatal Advisory Committee.
- Survey hospitals who did not respond through the Regional Lead and personal contact.

Recommendations cont'

- Develop outcomes and resource utilization measures.
- Conduct a pilot on consultation/education/support with successful institutions first and then build a consultation service based from the MPQC.
- Investigate data sources: DPH, NPIC, Leapfrog, CRICO, etc.
  - Consider blood utilization as a measure.
  - Include "near miss" events

Recommendations cont'

- Assemble a reference bibliography.
- Seek grant funding.
- Consider a resurvey.

Next Steps

- Provide the summary and recommendations to MPQC Steering Committee.
- Consult with MA Department of Public Health.
- Report at May MPQC Summit
- Completion and extension of survey.
- Accept invitation to present findings at Mass Medical Society/ACOG meeting.
- Solicit suggestions/feedback.
- Assemble consult team.
- Construct outcome measurement.