

"No Woman Should Die While Giving Life" A Retrospective Analysis on the Effectiveness of a Maternal Hemorrhage Plan



Introduction

Massive hemorrhage, defined as blood loss greater than 1500ml, is the most common and preventable cause of pregnancy-related morbidity and mortality worldwide. The American College of Obstetricians and Gynecologists (ACOG) reports that, worldwide, one woman dies every four minutes from postpartum hemorrhage because she does not receive early and aggressive treatment. Furthermore, 90% of hemorrhage-related maternal mortality can be prevented through improved quality of care.

Background

Recognizing that standardized and coordinated intervention is critical for optimal maternal outcomes, a multidisciplinary team at our 728 bed non-profit Magnet hospital developed a Maternal Hemorrhage Plan (MHP) aimed at improved readiness, early identification, and rapid treatment of excessive bleeding.

2011- A multidisciplinary committee representing obstetrics, anesthesiology, gyn-oncology, maternal-fetal medicine, interventional radiology, labor and delivery nursing, pharmacy, laboratory, and transfusion services collaborated to develop the MHP. Components of the MHP included an admission risk assessment tool, maternal hemorrhage protocol with treatment algorithm, hemorrhage medpack containing uterotonics, massive hemorrhage pack containing 6PRBC:4FFP:1PLT, massive hemorrhage panel (1 order for all hemorrhage labs), quantification of blood loss (QBL) using visual posters, MHP debriefing tool, debriefing huddles following all hemorrhages, and standardized hemorrhage and post hemorrhage doctor's orders sets.

2013- Our hospital joined the Florida Perinatal Quality Collaborative Obstetric Hemorrhage Initiative (FPQC OHI). Based on FPQC recommendations, additional protocols were implemented, including ongoing MHP risk assessments (reevaluation of risk every shift), active management of third stage of labor (AMTSL), QBL using measurement, weighing, and visual posters, hemorrhage supply cart in Labor and Delivery, hemorrhage supply box in all Mother/Baby units, multidisciplinary MHP simulation drills, and data collection and reporting.

Purpose

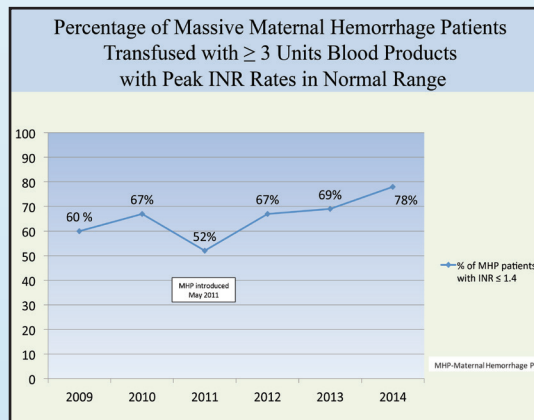
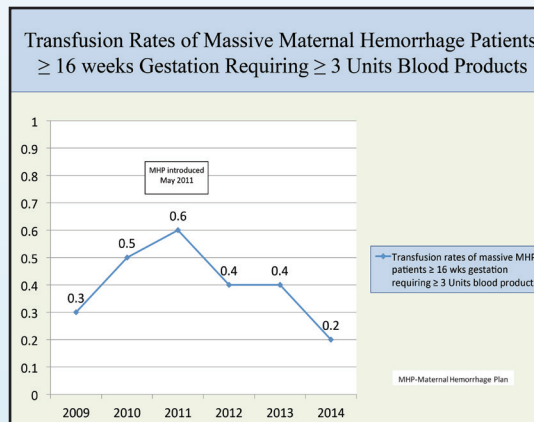
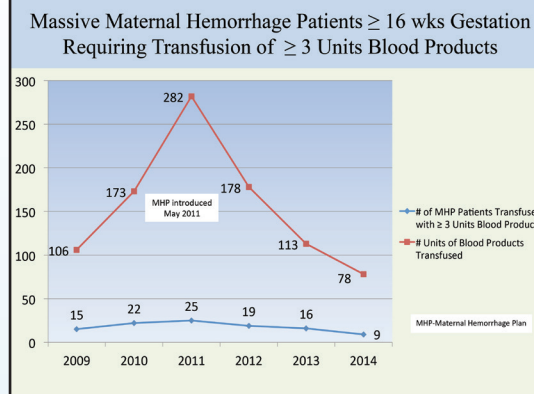
This study seeks to demonstrate the effectiveness of the MHP on maternal outcomes at our hospital.

Design

A pre and post intervention retrospective data analysis to compare maternal outcomes and blood utilization in women experiencing massive postpartum hemorrhage

Sample

All women greater than 16 weeks gestation treated in the obstetrics unit requiring transfusion of ≥ 3 units of blood products due to postpartum hemorrhage (n=106). The sample was divided into 2 groups; pre-implementation (2009-2011; n=62) and post-implementation (2012-2014; n=44). Exclusions included transfusions due to ectopic pregnancy, miscarriage, blood dyscrasias, and secondary postpartum hemorrhage following discharge from hospital.



Methods

Retrospective chart reviews using obstetrical transfusion records were performed. Extracted data included estimated blood loss, quantitative blood transfusions, INR results, intensive care unit (ICU) admissions, length of stay, and disseminated intravascular coagulation (DIC) and hysterectomy rates. Pre-implementation data from 2009-2011 was compared to post-implementation data from 2012-2014.

Results

Since implementation of the MHP, there has been a notable improvement in all outcome measures, including a

- 29% reduction in patients requiring hemorrhage-related transfusion of ≥ 3 Units of blood products (62 vs. 44)
- 67% decrease in massive transfusion rates (0.6% in 2011 to 0.2% in 2014)
- 34% reduction in blood product usage (pre-implementation 561 units vs. 369 units post-implementation)
- 29% decrease in DIC occurrences (14 vs. 10)
- 17% fewer hysterectomies (12 vs. 10)
- 27% reduction in hemorrhage related ICU admissions (26 vs. 19)
- 7% decrease in average length of stay (4.6 vs. 4.3 days)
- INRs (a test to determine how well blood is clotting) were kept within normal limits in 78% of MHP patients in 2014, compared to 52% of MHP patients in 2011.

Conclusion

Early identification and treatment of hemorrhage with implementation of a MHP protocol results in improved maternal outcomes.

Lessons Learned

A multidisciplinary effort is necessary to initiate and sustain a major initiative, and "buy in" by all stakeholders takes time. That effort involves continuous evaluation, adjustments, and improvement of processes.

