

State Mandated Training in Obstetric Hemorrhage: the Illinois Model

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INTRODUCTION

Obstetric hemorrhage remains one of the leading causes of maternal morbidity and mortality in the United States as well as in countries that have less abundant resources^{1,2}. The death rate has increased according to recent statistics. In the state of Illinois, 20 maternal deaths were recorded during the period of 2001–2006 as a direct result of hemorrhage³. Of these, 90% were deemed to be potentially avoidable, as the majority occurred in hospitalized women. The deaths occurred at every level of care throughout the state and affected women from all socioeconomic backgrounds³.

BACKGROUND

Based on the Maternal Mortality Review Committee (MMRC) report 2007⁴, the Illinois Department of Public Health (IDPH) implemented mandatory state-wide training in obstetric hemorrhage in 2009. The main purpose of this project was to reduce maternal mortality and morbidity secondary to hemorrhage through the combined processes of education and simulation drills. The Obstetric Hemorrhage Education Project (OHEP) was then developed and implemented by IDPH. This was based on the hemorrhage project that has been in place in New York⁵. All providers in obstetric care including physicians, nurses, midwives and anesthesia personnel were targeted.

This chapter reports the implementation of this project at a major teaching hospital in the City of Chicago that caters for under-insured and impoverished women, many of whom do not speak English as their first language.

The project focus included:

- (1) Risk assessment and preparation for possible hemorrhage;
- (2) Estimation of blood loss;
- (3) Recognition and treatment of hemorrhage/hypovolemia;
- (4) Development of a rapid response team.

COMPONENTS OF THE OBSTETRIC HEMORRHAGE EDUCATION PROJECT

The project was initiated in 2008. All hospitals were given 1 year to implement the curriculum and report to the IDPH. The components of the project were developed by the OHEP workgroup which consisted of ten members, physicians and nurses, representing the perinatal centers across the state. The components were as follows:

- (1) Benchmark assessment validation (30 min);
- (2) Didactic lecture and discussion (90 min);
- (3) Skill stations (30 min);
- (4) Simulation drills (30 min each);
- (5) Debriefing (60 min).

RESULTS FROM OUR INSTITUTION

Our hospital embarked on the project as mandated. Physicians, midwives, nurses and anesthesia staff were included.

Benchmark assessment

A 25 question pre-test was administered prior to the education session. Questions involved issues related to estimating blood loss, recognizing hemorrhage and hypovolemia, recognizing risk factors for postpartum hemorrhage (PPH) and, finally, detailed knowledge of blood volume replacement. This was followed by didactics and simulation drills.

Six months after the drill, a post-test consisting of exactly the same questions was administered. The results are illustrated in Figure 1, and clearly demonstrate improved provider knowledge and perspectives on obstetric hemorrhage after the training and retention of this knowledge.

Didactic lecture and discussion

A PowerPoint presentation was provided by the state for educating the providers. The presentation consisted of statistics, the basis for the project and each of the objectives of the OHEP. Case scenarios were

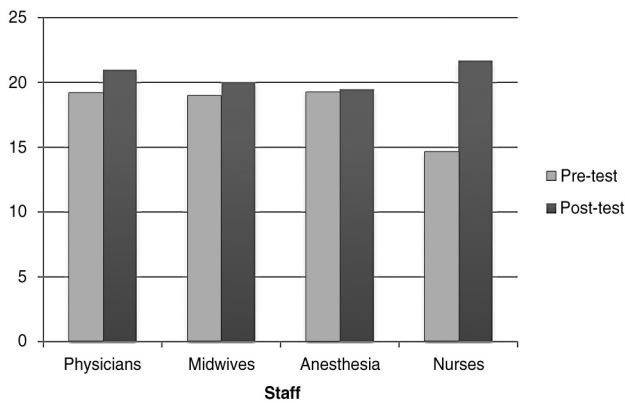


Figure 1 Benchmark test results across providers at a perinatal center. Results are the average scores across providers (maximum score of 25). There was a significant improvement in knowledge and retention among the nurses (36%) compared to physicians (16%), midwives (8%) and anesthesia staff (4%)

presented and discussions focused on steps involved in care of obstetric hemorrhage. A plan to improve care was put forward and discussed.

Skill stations

Skills stations included estimating blood loss, introducing intrauterine balloon tamponade and discussion of

surgical techniques, especially the B-Lynch suture. For the first station, providers were expected to visually estimate blood loss. Grape jelly and juice was used to simulate blood and clots on laparotomy sponges, sanitary pads and under-buttock drapes. Providers were then educated on the individual variation of blood loss estimation and how under- or overestimation can influence decision making. Station 2 demonstrated techniques for uterine tamponade. Station 3 demonstrated the B-Lynch suture, where providers were shown how to place the suture using tissue simulation (bovine tongue).

Simulation drill

As the purpose of the drill was to educate all providers on the importance of team work and communication, several different scenarios of obstetric hemorrhage were enacted, and teams were video recorded for subsequent review. The drill was also used to help clarify the potential shortcomings of hospital systems.

Our institution developed a PPH protocol incorporating a rapid response team (Figure 2). A large volume transfusion protocol was initiated in conjunction with the blood bank that when activated allows providers to access blood products within 10 min (Figure 3).

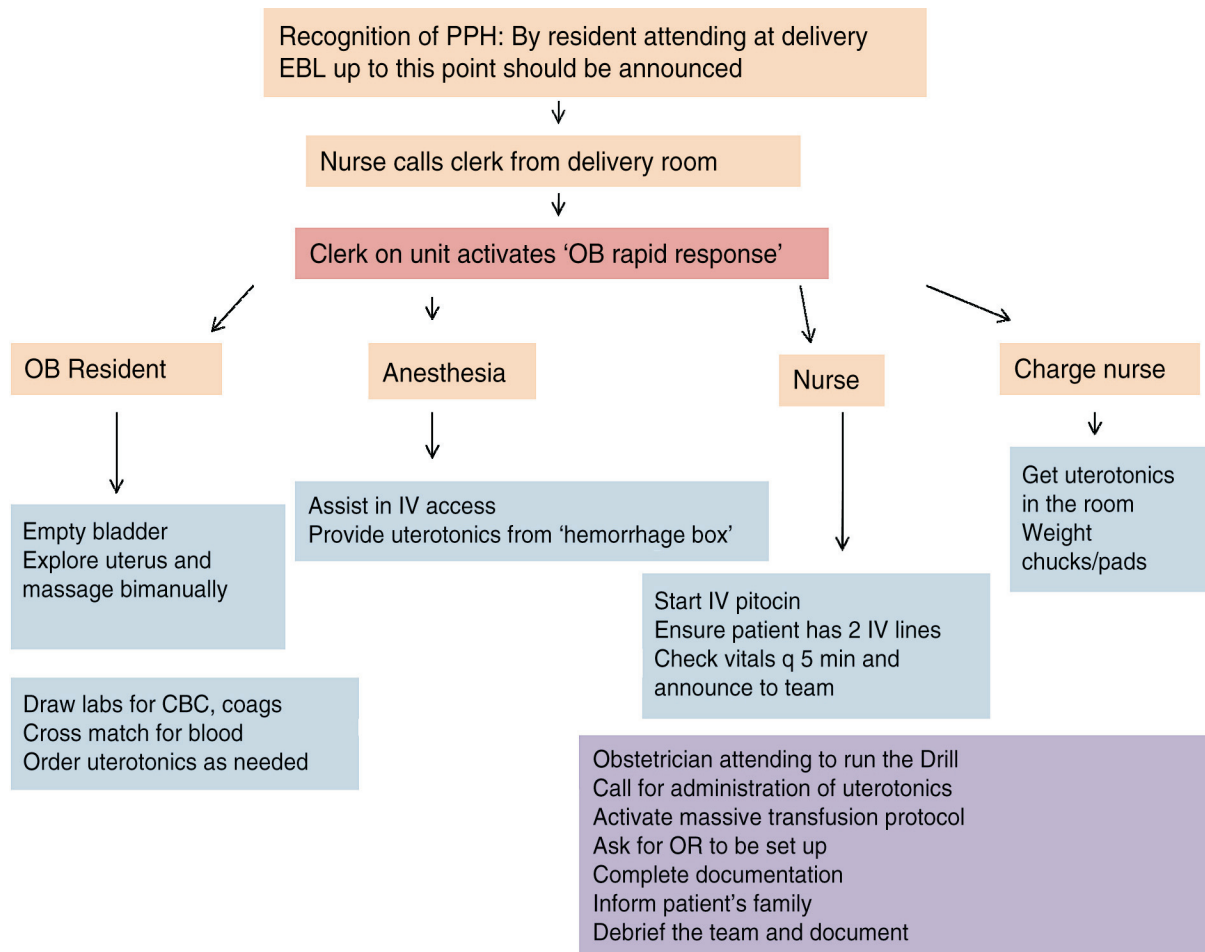


Figure 2 Algorithm for management of postpartum hemorrhage (PPH). EBL, estimated blood loss; OB, obstetric; CBC, complete blood count; coags, coagulation profile; OR, operating room

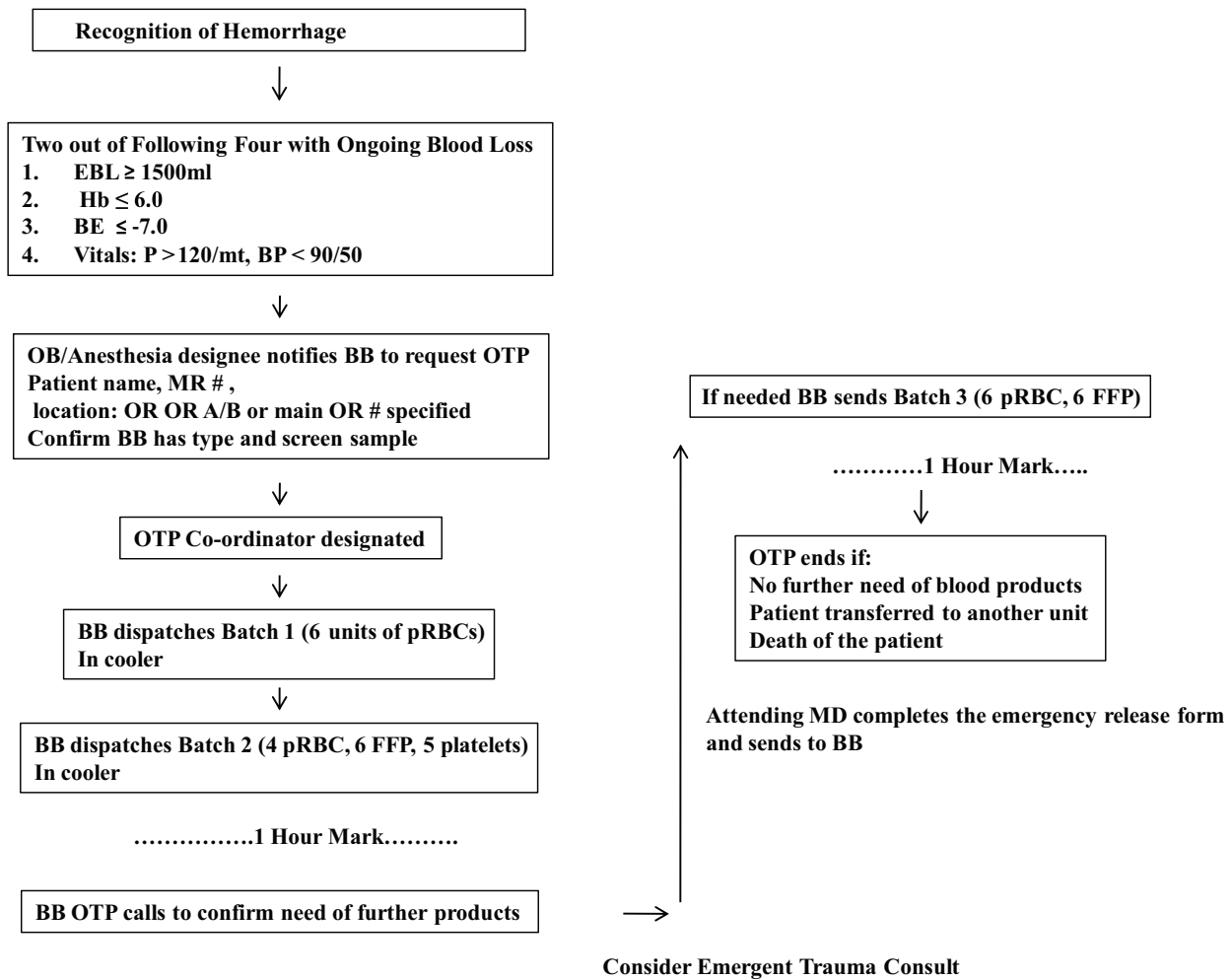


Figure 3 Obstetric hemorrhage large volume transfusion protocol. EBL, estimated blood loss; Hb, hemoglobin; BE, base excess; P, pulse; BP, blood pressure; OB, obstetric; BB, blood bank; OTP, obstetric transfusion protocol; MR, medical record number; OR, operating room; RBC, red blood cells; FFP, fresh frozen plasma

CONCLUSION

Following the initial drill and education, each hospital is currently mandated to perform the drills annually. Every obstetric center has an identified physician and nurse ‘champion’ who go through the ‘train the trainers’ session. These trainers are then responsible for carrying out the drills at their individual centers. Providers who practice at multiple centers have to go through the education session, skills station and drill at one institution, but are required to go through the skills station at each of the centers in order to become familiar with each center’s rapid response and emergency protocols.

Currently IDPH is in the process of receiving the results of the OHEP project from all the obstetric centers and evaluating the results to determine whether this has had an impact on maternal morbidity and mortality secondary to hemorrhage.

A similar initiative has been undertaken by the California Maternal Quality Care Collaborative (CMQCC)⁶. The task force was co-chaired by both nurse and physician team leaders. The goal was to identify key priorities for action and development of a

comprehensive hemorrhage guideline. The obstetric hemorrhage care guideline is presented in three formats: a comprehensive bedside checklist to guide team care and two cognitive aids (a table and a flowchart) that present the most critical points in different formats for ease of use by clinicians.

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