

Postpartum
hemorrhage:
improving
preparedness
through simulation



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Introduction

Maternal mortality is a highly discussed topic in women's healthcare today as statistics show the United States continues to fall short on reducing maternal deaths. One of the most common causes leading to this issue is postpartum hemorrhage (PPH). PPH in the labor and delivery (L&D) setting involves a significant amount of blood loss due to factors surrounding delivery such as uterine atony, laceration trauma, retained placenta, etc. PPH criteria was recently revised in 2017 by the American College of Obstetricians and Gynecologists as blood loss greater than or equal to 1000mL or if the patient shows symptoms of hypovolemia (Belfort, 2018). PPH is said to be a highly preventable problem if risk factors are assessed early in labor, swift action is taken at time of delivery, and interdisciplinary teamwork is utilized.

Northwestern Memorial Prentice Women's Hospital is not immune to the incidence of PPH and sees its occurrence all too often. One nurse preceptor stated that although the unit technology continues to improve, PPH continues to occur. The nurses on the unit state the unit is constantly working to improve its outcomes and preparedness for PPH and that the state of Illinois has taken a greater role since 2016 to also help combat the PPH problem. It was identified how more education and practice simulations on the topic could help experienced and new nurses on the unit feel better prepared for an obstetric emergency should it arise.

Since 70% of PPH deaths are preventable, it is important to continue to educate and work with the Prentice Women's L&D staff on ways to improve

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the way hemorrhages are handled and prepared for (Belfort, 2018). In turn, nurses and other staff could feel confident in the care being given. Prentice Women's L&D has also recently hired a large number of new nurses to the unit, so an improved PPH education plan and interdisciplinary simulation could greatly benefit PPH outcomes in the immediate future. This could also provide continued education to the experienced nurses on the unit and improve teamwork with incoming nurses.

Literature Review of Problem

A vast amount of research and information are available on what is causing the United States to fall short on how PPH is prevented and managed.

Driving factors appear to be lack of interdisciplinary communication and training as well as insufficient education opportunities.

Trossman (2017) brought to light that although the United States is technologically advanced, there are still two to three women dying each day from pregnancy complications, including PPH. Trossman states this is a problem that nurses are noticing more as they are on the front lines of patient care. The long-time idea that mothers giving birth are healthy and won't have adverse events causes delayed care and interventions of PPH. More specifically, 54%-93% of bleeding related deaths in postpartum women could be prevented if nurses or providers were quicker to respond (Trossman, 2017). She states the need for nurses to be more educated on blood loss quantification and PPH risk assessments. It is also explained that after birth, the mother is so fatigued that she does not realize she is

experiencing symptoms, so early recognition and intervention through vital signs and blood loss estimation are key.

Woiski et al. (2015) stated that PPH remains an issue in regards to maternal morbidity, even in high income countries. The authors also noted that improved technical and non-technical skills as well as sticking to evidence-based protocols can improve PPH outcomes. They conducted a study of both patients and medical professionals including nurses to determine which obstacles and facilitators effect “ delivery of high-quality PPH care” (Woiski et al., 2015). One-on-one qualitative interviews with patients who had experienced a PPH showed that lack of provided risk factor information before and during labor, inconsistent information from providers, and lack of informative explanation post-PPH were all factors that affected their PPH care. Focus groups of medical professionals showed that lack of team collaboration, need for more frequent-skills training, and absence of flowcharts or checklists in the delivery room were all factors that inhibited quality PPH intervention and care. It was determined that making improvements in these areas could improve outcomes and care in PPH situations.

Literature Review of Solution

The University of South Alabama Children’s and Women’s Hospital implemented a biannual interprofessional simulation program for PPH due to concern of staff unpreparedness and an influx in newly hired RNs (Davis, Rudd, Lollar, McRae, 2018). They hoped the simulation experiences would improve staff teamwork as well as PPH outcomes. The program consisted of

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online PPH education trainings pre-simulation, in situ simulation, and post-simulation debriefing. Members participating in the eight-person simulations included attendings, residents, nurses, anesthesiologist, and blood bank staff. Simulations were conducted on the L&D unit with a simulation mannequin. Healthcare team members stated that they felt better prepared for PPH scenarios after the trainings, and the simulation program was also set to be implemented in the high-risk obstetric unit and pediatric unit (Davis et al., 2018).

The Naval Medical Center in San Diego implemented a PPH bundle that included a two-day training with eight in situ simulations in a labor room on the L&D floor (Lutgendorf et al., 2017). The simulation also included blood loss estimation, care for the newborn, and intensive debriefing after each exercise. After the simulation, 113 participants were surveyed and it was found that comfort levels in managing PPH improved and improvement in teamwork and communication were noted. It was also found that four months after implementing the PPH simulation, a decreasing trend in PPH was seen (Lutgendorf et al., 2017). The article also points out that adult learners retain information best in a hands-on environment.

Appropriate and timely management of PPH is dependent on effective teamwork and communication. One major step towards this team effort is through the implementation of interdisciplinary PPH simulations that include in-service PPH education pre-simulation, in situ simulations that involve relevant PPH scenarios and blood loss estimation, and post-simulation debriefing. This proposed intervention combines the two reviewed solutions above.

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Implementation

The proposed intervention for improving PPH preparedness at Northwestern Memorial Prentice Women's Hospital involves interdisciplinary simulation consisting of four components. These include in-service PPH education given to all team members one month prior to the in situ simulation, four PPH in situ simulations, blood loss estimation workshop at the conclusion of the simulation, and a post-simulation debriefing including all members of the simulation team and two onlookers.

The roll-out plan for the project will be to have the first simulation in April 2019, as this is before L&D's busiest season, and then to continue the trainings biannually with the next being in November 2019. This means planning will need to start immediately. The education coordinators on the unit will hold in-services for the pre-simulation PPH education one month prior to simulation which will include facts, causes, treatment, protocol, benefits of simulation, and simulation components. They will distribute this information through email to all interdisciplinary members as well. They will work as liaison to plan the simulation schedule with residents, anesthesiology, and nurses on the unit. A brochure and flier will be made and posted on the unit describing the new initiative, details of the roll out, and what the simulation entails.

Each of the four simulation set-ups will be done using unit supplies and take place in a L&D room with an OB resident or attending, anesthesiology resident or attending, and two L&D nurses. Mannequins will be used for the laboring patient and newborn. Four scenarios will be created using past PPH

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cases that have occurred on the L&D floor. For the blood loss workshop portion of the simulation, fake blood using corn syrup will be utilized, and then estimates will be compared to weighed totals. Each member of the team must estimate the blood loss. The debriefing following each simulation will include all members involved in the scenario as well as two onlookers to share unbiased opinions on ways to improve.

Objectives during the simulation will be that each medical professional involved will display effective communication with members of the interdisciplinary team as well as be able to visually estimate blood loss within 100 milliliters (mL) of the actual total. Another outcome will be that members involved in the simulation will voice feeling more confident and better prepared for a PPH emergency than before simulation began in the simulation debriefing.

Effectiveness will be measured through the ability to meet the objectives as described above. The PPH rates pre-simulation implementation will also be compared to PPH rates one year after the initial roll-out. The intervention will be evaluated as successful if interdisciplinary communication during simulation is effective, blood loss is estimated within 100 mL of the actual by each participant during simulation, members involved in simulation voice feeling more confident in PPH management, and PPH rates decrease by 5% in the year span.

Northwestern currently does not have a PPH simulation plan in place and has not had a PPH simulation since 2017, so this intervention will provide education for experienced nurses and the large number of new nurses on the

unit as well as all medical professionals involved at the time of delivery. Since PPH care involves all members of the care team, having a simulation program to improve teamwork and communication is vital for better PPH outcomes and prevention. This program will help nurses and providers learn how to prepare for a PPH in a controlled, real-time, and safe learning environment.

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