Stop the Bleed and Seize Control: Educating Emergency Department Staff on Maternal Hypertension and Hemorrhage

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Stop the Bleed and Seize Control: Educating Emergency Department Staff on Maternal Hypertension and Hemorrhage

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N653: Nursing Internship

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Section I. Abstract

Problem: A Not-for-Profit Hospital accredited by the Joint Commission was fined for not having a current policy or procedure set in place for the treatment of obstetric emergencies. This quality improvement project implemented a simulation and a training video to prepare Emergency Department (ED) nurses and clinical staff for the awareness of preeclampsia and postpartum hemorrhage (PPH).

Context: This quality improvement project was implemented in two different Emergency Room locations for this Not-for-Profit Hospital. One of the campuses does not have a Labor and Delivery (L&D) unit while the other one does. The overarching goal is to increase awareness of obstetric emergencies on both campuses in addition to meeting the Joint Commission standards.

Intervention: With very limited time CNL students within the quality improvement team had to create a fictitious simulation scenario and a training video to prepare the ED staff for managing and treating preeclampsia and PPH.

Measures: The measures utilized for this quality improvement project were from the pre-and post-surveys that were completed by the ED staff that participated in the simulation. These surveys were used to assess the ED staff's knowledge and self-reported confidence in managing obstetric emergencies. In addition, the training video would be measured by the completion of the training at the knowledge center for this Not-for-Profit Hospital staff and newly hired.

Results: A total of 30 ED staff participated in both simulation days. The ED staff that participated in these simulations were ED Nurses, ED Technicians, ED directors, Clinical Nurse specialists, OB doctors, Midwives, and L&D nurses. The results were taken from the pre-and post-surveys. No result of the training video was given, the training video is not going to be implemented until the year 2023.
Conclusions: This quality improvement project showed that with the implementation of simulation and training videos the ED staff felt more confident to recognize and treat maternal complications. In addition, after completing both simulations, this Not-for-Profit Hospital did meet the Joint Commission standards.

Key Words: Microsystem, Postpartum Hemorrhage, Preeclampsia, Simulation training, Video training, Emergency Department, Joint Commission, Nursing Education
Stop the Bleed and Seize Control: Educating Emergency Department Staff on Maternal Hypertension and Hemorrhage

The Emergency Department (ED) is specialized in performing emergency medicine due to being presented with patients with life-threatening injuries or patients who require immediate medical attention. It is the healthcare entry point in charge of receiving, sorting, stabilizing, assessing, and managing patients arriving through its door with different degrees of urgency and complexity. According to the Centers for Disease Control and Prevention (CDC), in 2018 in the United States, about 130.0 million individuals visited an emergency department and that has been the rate until now (CDC, 2021). The ED is a fast-paced environment which can result in health care professionals burning out. When working in the Emergency Department, one must know a little bit about every specialty, for example, obstetric patients, oncology, etc. EDs are the most stressful and critical department of a hospital to work in with a constant flow of incoming patients suffering from either acute illness or injury.

While the field of obstetrics is full of joy and happiness, it can turn into a crisis filled with fear and despair. Like other areas in nursing, it requires nurses to quickly recognize and act to prevent life or death consequences. Research has found that in 2011, 20% more females visited the ED than males, and up to 25% of women seek care in the emergency room within the first 6 months of postpartum (Weiss AJ et al., 2011). During the postpartum period, mothers tend to have an appointment to visit their gynecologist for a postpartum visit. However, research has shown that within the six-week period of postpartum, 5% of women visit the ED before their postpartum visit (Sheen, J., 2019). Furthermore, Hypertensive disorder and Postpartum Hemorrhage (PPH) are some of the few causes of maternal morbidity and mortality. According to the CDC in the United States from 2014 to 2017, 10.7 % of pregnancy-related deaths are
caused by hemorrhage and 6.6% are caused by a hypertensive disorder during pregnancy (CDC, 2022). For this reason, there is a need for better management of pregnancy related-emergencies in which the first point of contact for postpartum women in the ED.

The Joint Commission (JC) has implemented 13 new provisions focused on providing safe quality care to women (Joint Commission, 2019). A way in which this has been done is through a new requirement to improve the quality of care provided to women, in all stages of pregnancy and postpartum by focusing on early recognition and timely treatment for maternal hemorrhage and severe hypertension/ Preeclampsia (PreE) to decrease maternal complications (Joint Commission, 2019). The California Maternal Quality Care Collaborative (CMQCC) is a multi-stakeholder organization devoted to ending preventable morbidity, mortality, and racial disparities in California maternity care. The CMQCC uses quality improvement toolkits to improve the healthcare response to leading causes of preventable death among pregnant and postpartum women. These toolkits are aligned with the 2021 Joint Commission Standards for Maternal Safety and National Partnership for Maternal Safety Hemorrhage Bundle (CMQCC, 2022). For this reason, the ED must be educated on the importance of recognizing the signs and symptoms of postpartum hemorrhage and preeclampsia.

Hypertension can develop before pregnancy, during pregnancy, and during the postpartum period. Perinatal hypertension can be caused as a result of preeclampsia, preexisting chronic hypertension, gestational hypertension, or secondary causes (Cleveland Clinic, 2021). Preeclampsia can typically develop after the 20th week of pregnancy and women who develop preeclampsia are often seen to have high blood pressure (hypertension) and high levels of protein in their urine (proteinuria) (Cleveland Clinic, 2021). Moreover, it can also affect other organs, for example, the liver and kidneys. If preeclampsia is not treated on time, there are potential
complications that can lead to cerebral infarction or hemorrhage, congestive heart failure, pulmonary edema, renal failure, or death (Baha, S.M, 2012). Postpartum preeclampsia can happen within two days of giving birth but can develop several weeks later. Signs of postpartum preeclampsia are swelling in the extremities, headaches, blurry vision, epigastric pain, and nausea. Complications can lead to seizures, stroke, and organ damage (Cleveland Clinic, 2021). Treatment for postpartum preeclampsia can be antihypertension and antiseizure medication.

Postpartum hemorrhage (PPH) is severe bleeding that can happen anywhere between the first 24 hours up to 12 weeks after delivery (DynaMed, 2022). According to the CMQCC, obstetric hemorrhage is defined as a cumulative blood loss of 1,000 mL for either vaginal delivery or cesarean delivery (CMQCC, 2022). Furthermore, the average amount of blood loss after birth in a vaginal delivery is about 500 ml (CMQCC, 2022). There are two types of PPH: the primary PPH which occurs within the first 24 hours after delivery, and the second stage which is after the first 24 hours up to 12 weeks of delivery (Cleveland Clinic, 2021). If PPH is not treated on time it can lead to shock and death. Studies show that about 3% to 5% of women experience hemorrhage and preventable events that are the cause of one-fourth of maternal death (Fontaine, A. E. A. M., 2017).

Furthermore, patients rely on nurses for the safety of their health and to help them recover from their illness or injury. The Clinical Nurse Leader (CNL) role is to help improve the quality of patient care outcomes in the healthcare system. CNLs respond to patients and their families within a microsystem of care. As a leader in the healthcare system, the CNL has to design and evaluate clinical decision-making and client and community advocacy. Using evidence-based practice is important to achieve the goal of providing the most effective care in order to better improve the patients’ outcomes. By using evidence-based practice, the CNL
provides care to individuals, specific groups, and communities in a microsystem. CNL's role is to fill in the gaps by assuring that both the patient and their family’s needs are being addressed. In this quality improvement project, the CNL students would be helpful in creating a clinical simulation, and educational video, and providing in-service education to emergency staff on the importance of recognizing the signs and symptoms of postpartum hemorrhage and preeclampsia. As a leader in the microsystem, the CNL needs to develop strategies in order to manage postpartum complications in the Emergency Department.

**Problem Description**

The Joint Commission (JC) is an organization that helps improve health care for the public by evaluating the healthcare organization and making sure that they do provide safe and high-quality care. Moreover, the JC made a new requirement on July 1, 2020, to improve the quality of care provided to women, in all stages of pregnancy and postpartum because the United States ranked 65th in maternal death (Joint Commission, 2019). Consequently, the JC utilized expert literature reviews to determine the areas that held the most potential impact on maternal safety. After a thorough literature review, the Joint Commission wanted to focus on early recognition and timely treatment for maternal hemorrhage and severe hypertension/preeclampsia to decrease maternal complications.

With this, the Joint Commission made 13 new provisions to improve the quality of care for women in all stages (Joint Commission, 2019). Three of the new provision were utilized for this quality improvement project which was the Element of Performance (EP) two, three, and five. EP 2 explains that each hospital should develop a written evidence-based procedure for managing pregnant and postpartum patients with severe hypertension/preeclampsia. In addition, EP 2 explains that hospitals should have emergency response medications that are stocked and
immediately available for use (Joint Commission, 2019). Furthermore, EP 3 focused on providing role-specific education to all staff and providers who treat pregnant/postpartum patients about the hospital evidence-based procedure. The ED is often where patients with symptoms or signs of severe hypertension present for care after delivery. Therefore, education should be provided to staff and providers in the ED regardless of the hospital’s ability to provide Labor and Delivery (L&D) services (Joint Commission, 2019). Lastly, EP 5 focused on conducting drills at least annually to determine system issues as part of ongoing quality improvement efforts (Joint Commission, 2019).

The Not-for-Profit Hospital X is a medical foundation with more than 1,000 primary care and specialist physicians and is recognized for its Neurosciences, Orthopedics, Cancer Care, High-Risk Obstetrics, and others. Hospital X’s mission is to improve the health of the communities where they serve with quality and compassion. Furthermore, Hospital X has the two largest medical centers: one that has 554-licensed beds only designated for the trauma center (Hospital A) and the second with 244 licensed beds for the medical centers (Hospital B).

For this quality improvement project, the two microsystems that are being addressed are the Emergency Department in Hospitals A and B. Hospital A has been recognized as one of the nation, state, and region’s premier for eight consecutive years for the areas of specialty which are: high and low-risk obstetrics, pediatric, orthopedic, etc. This Hospital A does have an obstetric department and if the emergency department needed obstetric assistance is immediately available. While Hospital B, has been recognized for its cancer care and cardiac care but has other services including general surgery, orthopedic, and neurology. However, Hospital B does not have an obstetric department and must have an obstetric provider on call for any obstetric emergencies that arrive at its ED.
A Joint Commission executive evaluated Hospital X to see if it is meeting the standards of the Joint Commission. Since this Not-for-Profit Hospital X is accredited by the JC and must meet the standard to improve the quality of care for women. Unfortunately, Hospital X was fined by the Joint Commission because it failed to have a protocol or policy in place for managing and treating preeclampsia and PPH. In addition, Hospital X did not have yearly training nor provided role-specific education for staff. Furthermore, Hospitals A and B EDs were two years behind in implementing a protocol that follows the Joint Commission standard. This can be due to the fact that both Hospital A and B EDs do not see a high number of obstetric patients but are not a reason to not provide the most up-to-date care. Therefore, to not jeopardize losing accreditation of the Joint Commission this quality improvement project was developed.

**Available Knowledge**

The PICOT question that was used to research for early recognition of postpartum hemorrhage and preeclampsia for this project was “In emergency department staff (P), will implementing curated maternal hemorrhage and preeclampsia simulation training and recorded simulation video modules (I) improve staff’s knowledge of treatment modalities for PreE and PPH (O) as compared to prior simulation (C)?” which is shown in Appendix A.

The research for the literature review was conducted by utilizing PubMed and CINAHL databases. The database was searched using keywords from the PICOT question, like: emergency room, postpartum hemorrhage, preeclampsia, simulation, and training. Through conducting literature search it was found that there were insufficient articles when searching for specific simulation/ training in the emergency department about postpartum hemorrhage and preeclampsia. Limitations were set to include English-only and peer-reviewed articles, with
publications no earlier than 2013. Seven articles were chosen based on the PICOT question and the goal of the project.

A non-experimental study was found specifically on managing preeclampsia and eclampsia through a simulation. The purpose of this study was to provide obstetric residents and nurses with skills in managing preeclampsia, eclampsia, and emergent hypertension with current guidelines. The simulation was performed in the laboratory and in the L&D unit at Hofstra University Northwell Health System. Prior to the simulation, the participants were given guidelines on the management of preeclampsia and eclampsia. Obstetric residents were the only ones to complete a questionnaire before and after the simulation. Nurses were not given questionnaires because they didn't have educational time. The questionnaire measures the confidence of the participants in diagnosing and managing preeclampsia, eclampsia, and emergent hypertension. The result of this study was demonstrated that the 37 residents who participated in the simulation were able to manage preeclampsia and emergent hypertension, but none were able to manage the eclampsia or stop the seizure due to the low incidence of this obstetric emergency. Overall, the learners reported that the simulation was very valuable in managing eclampsia, and having the guidelines were helpful in guiding their ability to diagnose (Abraham & Kusheleva, 2019).

Another non-experimental study was utilized on how an obstetric emergency simulation training course was performed in a private-public partnership in Brazil. The main objective of this study was to train public health sector personnel on the management of obstetric emergencies using a high-fidelity mannequin, simulation-based, multi-professional course (Siaulys et al, 2019). This experiment was held for a 14-month period and had training sessions that consisted of 4 modules on preeclampsia, hemorrhage, sepsis, and resuscitation. These
training modules were taught over a two day period of 16 hours duration. Prior to completing these modules, a pretest questionnaire was given to assess their knowledge and a post-test was given to assess short-term knowledge acquisition. In the simulation portions, the participants were then split into two groups of five. Each team was placed in separate rooms and trained how to diagnose and manage the condition using real equipment and high-fidelity mannequins. The result of this study was that there was a significant increase in the post-test scores in all four modules; scores increased by 55% in hypertension and 65-69% in the hemorrhage, sepsis, and resuscitation modules. The training course captured high satisfaction scores and improved the knowledge of public sector health professionals in managing the main causes of maternal mortality (Siaulys et al, 2019).

A randomized controlled study on a simulation training program for midwives analyzed the effectiveness of simulation training on the performance and knowledge to manage postpartum hemorrhage. This study compared a simulation training group versus a no training group. The interventions for this study included pre-study e-learning and simulation training. The pre-study e-learning was conducted a day before the simulation training. Which consisted of four modules: physiology of PHH, assessment of hemorrhagic shock, managing PHH, and role-play video on managing PHH. On the day of the simulation, the participants had to bring a certification of the completion of the e-learning modules. The simulation consisted of three sections; how to respond to PHH, treating hemorrhagic shock, and blood transfusion. The result of this randomized controlled study was that the intervention group (simulation training) had better knowledge and performance in managing postpartum hemorrhage than the no training group (Kato & Kataoka, 2017).
Furthermore, a mixed-methods study was reviewed to evaluate the learning from practical obstetric multi-professional training and its impact on patient outcomes in Australia using a Kirkpatrick framework (Kumar et al., 2018). This study design had a pre-test and post-test for all the participants that attended the Practical Obstetric Multi-Professional Training (PROMPT). PROMPT was a simulation program that taught emergency obstetric skills to providers, anesthetists, and midwifery staff. In addition, PROMPT consisted of short, interactive lectures, scenario-based drills and was followed by a debriefing section. The clinical scenario included eclampsia, neonatal resuscitation, shoulder dystocia, and postpartum hemorrhage. This study found that there was an improvement in both clinical and non-technical skills such as communication, principles of teamwork, leadership, and prioritization in an emergency situation. Moreover, this study showed there was a change in the management of postpartum hemorrhage through early recognition and intervention such as using a balloon tamponade. Overall, the staff that participated in this study reported positive outcomes from this learning experience and increased their confidence in managing obstetric situations (Kumar et al., 2018).

A prospective cohort study explored the use of simulation to enhance self-efficacy in the management of preeclampsia and eclampsia in obstetrical staff nurses. The aim of this project was to see if the high-fidelity human simulation was an effective strategy to train obstetrical staff nurses in the management of preeclampsia and eclampsia. This study performed a pre-test, immediate post-test, and 8-week post-test on staff that attended the simulation. This study had two different scenarios and had five phases: pre-brief (presentation on preeclampsia and eclampsia), simulation, observation, debriefing, and remediation. The first scenario was on a laboring patient with preeclampsia and the second scenario covered the postpartum management of a mother and a compromised newborn. The result of this study showed that obstetric nurses’
overall self-efficacy with preeclampsia and eclampsia management increased in high-fidelity human simulation training. Overall, the results showed a significant improvement in the management of preeclampsia and eclampsia, as a result, it was implemented as part of the annual education program at the birthing center (Christian & Krumwiede, 2013).

A methodological study was performed in Mexico to implement team training in obstetric and neonatal emergencies using realistic simulation. PRONTO (Programa de Rescate Obstétrico y Neonatal: Tratamiento Óptimo y Oportuno) is a highly realistic, low-tech simulation based obstetric and neonatal emergency training program. The aim of this study was to assess the interprofessional team (midwives, nurses, and physicians) knowledge, self-efficacy, and teamwork. The PRONTO training consisted of two modules that were run two to three months apart. Module I focused on teamwork, obstetric hemorrhage, strategic planning, and neonatal resuscitation that ran for 16 hours. Module II focused on building on teamwork and communication concepts, reviews of hemorrhage, and introducing preeclampsia, eclampsia, and shoulder dystocia training that was run for 8 hours. Data was collected by pre-and post-test in staff knowledge and self-efficacy of obstetric emergencies and neonatal resuscitation. The result of this study showed an increase in knowledge and self-efficacy in both physicians and nurses in the management of obstetric hemorrhage, general obstetric emergencies, preeclampsia/eclampsia, and neonatal resuscitation (Walker et al, 2014).

Another non-experimental study was utilized to review a quality improvement project on multidisciplinary in situ simulation-based training in postpartum hemorrhage. This study was conducted at a military tertiary care medical center. The multidisciplinary team that participated in this study were maternal-fetal medicine, anesthesia, obstetric, transfusion services, nursing, and neonatology. The simulation scenario included either obstetric hypertensive emergency or
shoulder dystocia which was followed by postpartum hemorrhage. The participants were required to activate the institutional obstetric massive transfusion protocol and obtain simulated blood products from the blood bank. The result of this study was that the participants reported higher comfort levels in managing obstetric emergencies and postpartum hemorrhage after simulation training compared to before training. In addition, a decrease was observed in the time to prepare simulated blood products over the course of the simulation and a decrease in postpartum hemorrhage. Overall, this quality improvement project showed that multidisciplinary in situ simulation exercise improves confidence in managing obstetric emergencies (Lutgendorf et al., 2017).

Overall, these studies showed that simulation and educational training have increased early recognition to manage both preeclampsia and postpartum hemorrhage. In addition, providing education management in treating obstetric emergencies shows interdisciplinary team preparedness in recognizing the symptoms of these obstetric emergencies. Furthermore, the simulation-based training was found to be an effective strategy for the retention of skills such as communication, leadership skills, ordering proper medication, fundal massage, and blood products. Lastly, the CMQCC and the Agency for Healthcare Research Quality (AHRQ) toolkit were reviewed for the creation of the algorithm in this quality improvement due to their guidance on improving the recognition and management of obstetric emergencies.

**Rationale**

John Kotter’s eight-step process for leading changes was developed by a Harvard business school professor (Kotter, 2021). This eight-step change model is a popular framework for successfully implementing organizational change and is being used in many industries. This theoretical theory includes:
1. Increase Urgency

2. Build a Guiding Coalition

3. Develop the Vision

4. Communicating the Vision

5. Enable Action by Removing Barriers

6. Generate Short-term Wins

7. Sustain Accelerations

8. Institute Change

Kotter’s eight-step process for leading changes was used as a conceptual theoretical framework that helped guide this quality improvement project for Hospital X. This theory was used as follows: (1) In this Hospital X setting, the Joint Commission penalized them for not meeting the new standards of preparedness for preeclampsia and PPH in the ED. Hospital X was given a deadline to meet and performed these specific standards from the JC in both EDs. (2) This consists of the Nurse Educator, ED Nurse Educator, CNS for the L&D unit, CNL students, and other professional development specialists collaborating on ways to prepare the ER staff in managing preeclampsia and PPH to meet the JC standards and achieve it before the deadline. (3) In meeting these standards, a fictitious simulation scenario was created and implemented on two different days, which contained both PPH and preeclampsia creating a vision to ensure ED staff preparedness in the event precipitous labor presents at this Hospital X where obstetric services are not available. (4) The CNL students created flyers and went to morning huddles to announce the two simulation days that were going to be held in both Hospital A and B. Moreover, the ED Nurse Educator would announce the two simulation days throughout Hospital X via email. (5) After both simulations were performed and receiving the pre-survey results, the CNL students
noticed that there were educational gaps in ED nurses in treating and managing obstetric emergencies. (6) On both simulation days, more than 10 ED nurses and a few ED doctors attended the simulation. The majority of the ED staff commented that the simulation was very helpful and effective. Being that the ED staff reported the simulation to be effective, the CNL students suggested creating a simulation video to be implemented in the hospital’s knowledge center. (7) To determine any improvement needed, a debrief session was provided to hear feedback on ways the simulation can be improved. Some feedback was given in splitting the simulation scenario into two; one focused on PPH and Preeclampsia. In addition to running the scenario multiple times for more staff to participate. (8) To not jeopardized losing accreditation from the Joint Commission, Hospital X must implement yearly simulation training and training videos for the awareness and preparedness of ED staff on preeclampsia and PPH.

Specific Aim

By implementing annual simulation training we aim to fulfill one of the Joint Commission guidelines necessary for accreditation while increasing ED staff comfort in recognizing and responding to maternal hemorrhage and hypertension/preeclampsia by 10% by April 2022, as well as introducing maternal hemorrhage and preeclampsia simulation videos as new training modalities by January 2023.

Section III. Methods

Context

A microsystem is defined as a small group of healthcare professionals that works together to provide care to a certain population (Likoskly, 2014). The clinical microsystem produces quality, safety, and cost outcomes at the front line of care (Harris et al., 2018). When implementing a change, two microsystem units were assessed for this Not-for-Profit Hospital X
to have a successful intervention. To assess these two microsystems, the 5Ps was utilized as a framework for the analysis. The 5 Ps that are used to assess a unit are: purpose, patients, professionals, process, and patterns.

The purpose of this microsystem is to provide emergency services for serious accidents, injuries, and conditions that require immediate medical care. The professionals working in this unit includes Registered Nurse, ER Technicians, ER Doctors, OBGYN Doctor, Nurse Managers, Unit Secretaries, Pharmacy, and Housekeeping. The unit also receives support from Physical Therapists, Occupational Therapists, Respiratory Therapists, Phlebotomy, Social Workers, and the Lift team. Both of these microsystems are led by management to ensure that the units are meeting Hospital X’s goals. The key stakeholder of the microsystems would be ED Nurse Educator, Nurse managers, and ED educators.

The patient population in both of these microsystems is a diverse population that requires immediate medical care for a wide range of injuries and conditions. The patient's age can range from newborn to geriatric populations. The patient demographic for this Hospital X is White, Asian/pacific islander, Hispanic/Latinos, African American, and others, which is shown in Appendix B. The total number of patients that are seen in this Hospital X is 1,323,913 individuals in a year which is seen in Appendix B.

This Hospital A and B microsystem process include team huddles and patient hand-offs at the beginning of each shift. Hospital B does not have a Labor and Delivery unit, when an obstetric emergency is brought to the ED, an on-call OB provider has 30 min to arrive for a consultation then patients are transported to Hospital A because this hospital has an obstetric service. In Hospital A, an L&D team is readily available for assistance during any maternal
emergency in the ED. The unit culture for Hospital X prioritizes the patients and works collaboratively to ensure positive outcomes.

The pattern for these two Microsystems is spontaneous and infrequent maternal hemorrhage or hypertension/preeclampsia admissions. The ED staff displayed uncomfortableness and avoidance of these maternal emergencies. Nurses need to work collaboratively to provide the best patient care, ensure patient satisfaction, and improve clinical outcomes.

Furthermore, a SWOT analysis of each microsystem was completed detailing the Strengths, Weaknesses, Opportunities, and Threats, which are shown in Appendix C. A SWOT analysis is a strategic planning and management technique used to help organizations to identify strengths, weaknesses, opportunities, and management in project planning (Investopedia, 2021). The strength of each microsystem included staff willingness to collaborate in the hands-on training and willingness to improve their teamwork among ED staff and OB staff. In addition, using the expertise of CNS of the L&D unit to coordinate OB knowledge and supporting staff during simulation. The weakness found in each microsystem included time restraints and the time given to conduct both simulations because it was conducted during regular business hours. This prevented ED staff from attending the simulation and gave low attendance for both simulation days. The opportunities for growth include increased readiness for recognition and treating hemorrhage and preeclampsia. Moreover, opportunities for growth would be the overall preparedness for supplies and medication needed to treat these obstetric emergencies in both emergency departments. Lastly, threats include unwillingness to participate in the simulation and poor attitudes of the ED staff. Another threat of this quality improvement is the time crunch that this project was given to be complete no later than early March 2022.
A Root Cause Analysis (see Appendix D) was developed for this project to identify the appropriate solution and formulate problem-solving strategies. This tool is used to understand and solve a problem. It figures out what negative events are occurring and then identify key points of failure (Mind Tool, 2022). It was noted that Hospital X did not have a protocol or policy in place for managing obstetric emergencies. In addition, at Hospital X both EDs did not have the correct dosages of Magnesium Sulfate to treat preeclampsia and did not have Pitocin in their Pyxis MedStation ready to treat PPH. Furthermore, ED staff lacked the confidence in managing PPH and preeclampsia in a timely manner by not knowing when to perform the fundal massage, medication dosage, and timing.

Moreover, during the development of this project, a Plan-Do-Study-Act (PDSA) cycle was made to help carry out the project, which is found in Appendix E. This tool is made to test a change that is implemented through four steps: Plan-Do-Study-Act (Minnesota Department of Health, 2022). This PDSA cycle ran for a 12-week course. The “Plan” phase begins in weeks 1-3 with literature review, background research of PPH and Preeclampsia, survey creation to assess staff knowledge, and consulting on the implementation of simulation (Appendix E). The next step of this action plan begins in weeks 4-6 with the “Do” phase, which consists of putting the simulation together, dispersing flyers with QR codes with the pre-survey question to staff, and implementing the first simulation at the Hospital A and B. The “Study” phase begins in weeks 7-9, which consisted of analyzing results from the pre-and post-survey responses by staff that participated in the simulations. In weeks 10-12, the “Act” phase begins, with CNL students collaborating with the leadership team to determine if any changes are needed.

A second PDSA cycle was developed for the training video, which is shown in Appendix E. In weeks 1-3, the “Plan” phase begins with literature review and background research on PPH
and preeclampsia and creating the script for the training video. The “DO” phase included recording the two simulation training videos to be implemented in Hospital X's knowledge center. In the “Study” phase, the views and completion of this training video by the Hospital X staff were analyzed. Lastly, the “Act” phase begins, with CNL students collaborating with the leadership team to determine when this training video is going to be implemented in the knowledge center. Both of the PDSA cycles for this project were important to help determine any changes needed in each of the 4 phases of this framework.

Cost-Benefit Analysis

The implementation of this quality improvement project did not require any new expenses for Hospital X. This Hospital X already owned the high-fidelity human mannequin and equipment needed for the simulation at both EDs, these were not included in the overall cost analysis. Furthermore, the medical doctor was also not included in this cost analysis because wages are paid through a third-party contractor and therefore not considered as part of the costs associated with policy development, simulation development, and training. In addition to the training video, the equipment needed to record was already owned by Hospital X’s IT team. Hospital X already conducts education through the knowledge center and thus quality improvement can be incorporated into the current practice.

The key components of the cost for this project were based on the median RN wages ($80.00/hr), median ED tech wages ($29.00/hr), and median San Francisco Bay Area wages for the RN ED directors ($99.49/hr), managers ($83.60/hr), Median IT ($41.15/hr), and simulation lab managers ($53.68/hr), which is shown in Appendix F. Unfortunately, the CNL students weren't able to see how much this Hospital X was penalized but hope that this quality improvement project can help Hospital X not get penalized in the future by the Joint
Commission. The cost-benefit analysis represents the overall cost of $7574.05 to the Hospital X system in meeting the current Joint Commission standards.

**Intervention**

In order to meet the JC Standards, the CNL students began this quality improvement intervention by meeting with the Hospital’s ER Nurse Educator, and CNS for the L&D units to discuss the overall aim of this project and for the creation of a simulation to be implemented in the ER departments at Hospitals A and B. This project aimed to educate the ER staff in early recognition and treatment of postpartum hemorrhage and preeclampsia with simulation training and training videos to provide prompt early interventions, improve outcomes, and meet the Joint Commission standards by March 4, 2022.

The simulation specifically meets the EP 5 standard of the JC. In addition, to meet the EP 2 standard, an algorithm was created to establish a written evidence-based procedure for managing pregnant and postpartum patients with severe hypertension/preeclampsia and PPH. Furthermore, to meet the EP 3 standard, an educational PowerPoint was created for the ED nurses to utilize as a reference at the nursing station. In addition, to further meet EP3 standards, the CNL students created a training simulation video to be uploaded to this Hospital X’s knowledge center. All staff that currently work and are newly hired from this Hospital X will be required to complete this training video yearly and will have 30 days to complete it. Upon completing this project, this hospital will meet the Joint Commission standards for preeclampsia and postpartum hemorrhage.

The CNL students begin by reviewing expert literature reviews to get familiar with how simulation and training videos help in the early recognition and treatment of PPH and preeclampsia to improve maternal mortality and morbidity rates. Next, the CNL students created
a concept map (see Appendix H) to help organize and visualize the relationship between each concept. The concept map included the sign and symptoms, treatment, intervention, and complications of both preeclampsia and PPH. It also included the steps in creating a simulation in a hospital such as funding, overall cost, and who is involved in creating/participating in a simulation. Then, the Joint Commission’s 13 new standards were reviewed to get familiar with the policies and understand the importance of this practice change. In addition, CMQCC was reviewed to view the new algorithm that was implemented in the year 2021 for preeclampsia and PPH. This was reviewed as a source in creating an algorithm and policy set in place for this Hospital X to follow when an obstetric emergency takes place.

A pre-survey questionnaire was created (see Appendix H) to assess the ED nurses’ current self-reported confidence and readiness in treating or managing preeclampsia and PPH. Also, the CNL students asked how often both EDs see an obstetric emergency. The pre-survey was first sent out to staff via Hospital X’s email but eventually, a flyer was made with the QR code of the questionnaire to be advertised throughout both Hospital A and B (see Appendix I for flyers). In addition, the CNL students went to Hospital A and B’s EDs to announce both simulation days and times and reminded staff to complete the pre-survey questionnaire prior to going to the simulation.

The simulation scenario was already created by the ED Nurse Educator and CNS when the CNL students were involved in this quality improvement project (see Appendix J for the scenario). The simulation had a 2-in-1 scenario utilized to keep staff engaged and required little time as this was performed during their shift. The 2-in-1 scenario was a fictitious patient scenario, that came into the ED experiencing both PPH and preeclampsia. The learning objective for this scenario was to provide patient care that promotes safety and minimizes the risk of error,
applies the nursing process in clinical decision making, and good interpersonal communication. The nursing intervention that was expected for the interdisciplinary team was to investigate the history of symptoms, take vital signs, check deep tendon reflexes, perform fundal massage, and initiate a treatment plan promptly. In addition, the ED staff had to use the new algorithm and policy that was made for this Hospital X to help guide the simulation. The materials included OB high fidelity simulation mannequin, hemorrhage and preeclampsia care, and vital signs that were projected onto the screen.

Following the simulation, a short debriefing session was conducted which included a 10-question debriefing questionnaire that was made for the CNL students to guide the debriefing (see Appendix K). The CNL students allowed nurses to ask questions, voice concerns, and provide feedback on how this fictitious scenario could be improved. These debriefing questions were written down and sent to the Joint Commission as evidence that the simulation was conducted. Lastly, the CNL students created a post-survey (see Appendix L) and a flyer with the QR code of the post-survey for the staff that participated in the simulations to fill out (see Appendix I for the post-survey flyer) to see if the simulation scenario was helpful and educational.

Furthermore, the CNL students created a training video to be posted in this Hospital X knowledge center to be done yearly for educational purposes. The CNL students created two scripts one for preeclampsia and one for PPH (see Appendix M) that were closely reenacted to the in-person simulation. The aim of this training video was to show the healthcare professionals the correct intervention skills in treating PPH and preeclampsia. The CNL students were the ones that acted on this training video and edited the video to be implemented in this Hospital X’s knowledge center. In this training video, the same high-fidelity human mannequin and material
used in the simulation were used in creating the video. Furthermore, the training video is to be implemented in the knowledge center by January 2023 because the training modalities were already established for 2022 training.

**Study of the Intervention**

The study of the intervention was done on a weekly and monthly basis. The measurement approach was to assess the successfulness of the change being implemented including the staff pre-and post-surveys for comparison and debriefing questions for improvements for this quality improvement project (see Appendix H for Pre-Survey; Appendix L for Post-Survey; Appendix K for Debriefing questions). The results from self-report debriefing and the pre-and post-survey were evaluated and analyzed by the CNL students, ER Nurse Educator, and CNS.

The debriefing session allowed either the ED staff that participated or observed to voice concerns about the simulation and to ask general questions or questions regarding PPH and preeclampsia. Due to the many questions that were asked, it was noted that the staff was not confident, nor did they have a proper treatment plan for managing obstetric emergencies. The CNL students allowed the debriefing session to be an open discussion for the ED staff to learn the proper interventions in treating PPH and preeclampsia.

Moreover, the pre-and-post flyers (Appendix I) were utilized as tools for the study of the intervention as they were used to remind staff through Hospitals A and B to complete the questionnaires. As a second reminder in completing the questionnaires, they were also sent via email to Hospital Xs’ participating staff. As for the training video, a tool that was utilized for the study of the intervention would be the completion of the training video in the knowledge center, when it's published in January 2023.

**Measures**
The measures used for this quality improvement project were the data collection of the pre-and post-survey result (see Appendix N for Pre-Survey Results; Appendix O for Post-Survey Results). These questions were measured through a Likert scale ranging from 1 to 10, 1 being totally uncomfortable to 10 being totally comfortable. The pre-survey was to assess the ED nurses’ current self-reported confidence and readiness in treating or managing preeclampsia and PPH, and how often these EDs treat obstetric emergencies. Some question that was asked was about the comfort levels of treating or recognizing preeclampsia and PPH and having prior experience with working directly with L&d patients. To see who completed the questionnaire, the job title was asked before submitting this questionnaire.

The post-survey result was to assess if the simulation scenario increased self-reported confidence and readiness in treating or managing preeclampsia and PPH. Some question that was asked in the post-survey was the comfortable levels of treating or recognizing preeclampsia and PPH after the simulation, any gap in knowledge, and if they attended the simulation training. For the training video, the measurement that would be used would be a completion certification that allows the CNL students to know that the Hospital X staff are viewing and completing the training. The CNL students would no longer run this project after their last semester, so the ED Nurse Educator would take over in implementing and measuring the outcome of the training video.

**Ethical Considerations**

The policy development team in this quality improvement project included ED Director, CMC ED Manager, ED MD Director, ED RN Educator, CNS, and CNL students. The participants during both simulations included RN, ED techs, ED doctors, CNS, OBGYN doctors, CNL students, and a high-fidelity human mannequin. The scenario was not based on actual
patient information but was created from fictitious patient scenario. During both simulations, a signup sheet was provided so that the CNL students could keep track of the participants that were involved to compare the pre-and post-survey to collect their data. There were no HIPPA violations in conducting this quality improvement project. This project was reviewed by the University of San Francisco and was an evidence-based activity that does not require IRB approval (Appendix P).

Section IV. Results

The goal of this project was for this Hospital X to meet the standard of annually training ED staff in OB emergencies per Joint Commission by implementing a fictitious simulation scenario and a training video in both Hospital A and B for recognizing and treating PPH and preeclamptic patients. Overall, attendance for Hospital B simulation was 12 ED staff and Hospital A had a total of 18 ED staff attend. The ED staff that attended this simulation were ED nurses, ED techs, ED director, CNS/PDS, OB doctor, Midwife, ED doctor, and L&D nurses (for Hospital A only). Each simulation allowed 5 staff to participate in the simulation while the rest of the staff were there to observe.

The result of this project is based on the pre-and post-survey and debriefing questions that were conducted after the simulation. In the pre-survey results (see Appendix N), 27 ED staff completed this questionnaire, results showed that 60% of the ED staff majority reported being highly uncomfortable in recognizing and treating preeclampsia and PPH. While 20% of the ED staff reported that they were moderately comfortable in recognizing and treating Preeclampsia and PPH. Furthermore, the pre-survey also showed that about 1-4 obstetric patients are seen per day in both Hospital A and B’s EDs. In addition, 89% of ED nurses in both Hospital A and B do not have prior experience working directly with the L&D unit. Moreover, about 78% of ED
nurses were not aware of the current policies and protocols in place when patients present with obstetric emergencies. The gaps of knowledge regarding the treatment that the pre-survey result showed were the equipment used for either PPH or preeclampsia, medication cart, experience, etc.

The results from the debriefing session that was conducted after both simulations showed different responses from Hospital A and B’s staff. In Hospital B it was noticed that there was a gap in knowledge identified including a lack of experience and knowledge of this population and pathologies. It was also noticed that Hospital B had more questions on how to treat preeclampsia and PPH. In addition, the nurse had multiple check-ins with ED and OB to ensure the care they were providing was appropriate and effective. In Hospital A, since this hospital has an L&D unit, the staff was well prepared to address preeclampsia and hemorrhage. For both Hospital A and B, the ED nurses did not provide a fundal massage until the OB provider reported them to do it. In addition, in both Hospitals A and B, there was a lack of awareness of hospital policies, procedures, and order sets guiding clinical decision-making in these obstetric emergencies of preeclampsia and PPH (see Appendix K).

The post-survey (see Appendix L) was created to assess if participating in the simulation scenario would increase in self-reported confidence in treating or managing preeclampsia and PPH. The post-survey result (Appendix O) only had 3 responses from the ED staff that participate in the simulation. The 3 responses showed an increased comfort level in treating and recognizing PPH and preeclampsia after the simulation. The CNL students attempted multiple times to obtain more post-survey responses by going to both Hospital A and B for the staff to complete the post-survey questions which were also sent out to the staff via email as a second reminder. The literature review that was conducted, showed that simulation and educational
training have increased early recognition to manage both preeclampsia and postpartum hemorrhage. In addition, providing education management on treating obstetric emergencies shows interdisciplinary team preparedness in recognizing the symptoms of these obstetric emergencies. Although the CNL students do not know the impact of their quality improvement project just yet due to it being implemented over the course of a year, the CNL students were able to see an impact through the staff’s understanding and engagement in implementing this change.

Section V. Discussion

Summary

When making this quality improvement project some key findings were revealed in terms of how both of the EDs were not prepared in treating any obstetric patients. Hospital X’s EDs did not have a policy or procedure set in place for any obstetric emergencies. Therefore, violating EP 2 of the Joint Commission’s requirement of having an evidence-based procedure. In addition, this Hospital X’s EDs did not have the correct dosage of Magnesium Sulfate readily available it had 2 mg in place instead of 4mg. Magnesium sulfate is a medication to prevent seizures in women with preeclampsia, and thus not having the correct dosage can lead to women developing seizures and even death. Furthermore, Pitocin was not part of their Pyxis MedStation, this medication helps prevents excessive postpartum bleeding by helping the uterus contract. By not having these two medications, Hospital X is increasing their risk of having increased maternal morbidity and mortality rates. This shows how not well prepared Hospital X is for an obstetric emergency by not having the evidence-based procedure, correct medication, and materials which can delay the care for these patients.
Another key finding showed the lack of knowledge of nurses in the ED in responding to and treating preeclampsia and PPH. During the simulation ER nurses did not order blood products nor performed fundal massages until the ED doctor informed them to do so. The fundal massages are performed to encourage the uterus to contract and to prevent postpartum hemorrhaging. In addition to performing the fundal massage, encourage the release of any placenta fragments if any were left.

Furthermore, some limitations that this quality improvement project had was the limited time the quality improvement team had to complete this project. This Hospital X had a specific due date as part of the fine process to do remediation and meet the Joint Commission standards. Due to the limited time, the quality improvement committee was allowed to run one simulation scenario for both EDs of this Hospital X. With only having a one-time simulation scenario, this did not allow more ED staff to participate and have hands-on training. The CNL students recommended adding more simulation days or performing the simulation more than once at different times to have more ED staff participation. Another limitation was having the scenario combine 2-in-1, in which the patient came in having PPH and preeclampsia. The quality improvement team received feedback to provide two separate scenarios to improve their learning for each obstetrical complication. Lastly, the ED staff was willing to participate in the simulation but was not willing to complete the CNL student's post-survey questionnaire. The CNL students had a hard time collecting data and did not have concrete data on how successful the implementation of the simulation and training videos was.

Implementing a simulation did show a positive impact on the ED staff by instilling confidence and readiness in maternal complication situations. CNL students hope that the training video will also make an impact on the ED staff's confidence and readiness. One of the
strengths of this project was the ED staff’s willingness to participate and learn about obstetric emergencies. In addition, the ED staff was very supportive of the implementation of a change in their unit. Lastly, this Hospital X’s staff made it a safe learning environment and was not judgmental when their coworker didn’t know what to do but instead guide them through the process. This quality improvement project increased ED staff communication and leadership skills

**Conclusion**

Postpartum hemorrhage and preeclampsia are known to be a few causes of maternal morbidity and mortality. The Joint Commission established new standards to provide yearly obstetrical emergency training for medical personnel in the ED in order to decrease maternal morbidity and mortality rates in the United States. Reviewing the ED nurse feedback on the debriefing questions, pre-and post-surveys, and what a comprehensive literature review shows, implementing simulation training does contribute to improving ED staff self-reported confidence in treating and managing obstetric emergencies. Furthermore, the training video will help Hospital X’s staff by reinforcing the education previously received through the simulation on the interventions for managing preeclampsia and postpartum hemorrhage. Additionally, this will help onboarding staff or other specialty units know the basic knowledge in treating obstetric hemorrhage.

While change has been implied thus far, it is important to do this simulation training yearly not just to meet the Joint Commission standards but to reduce the rates of maternal morbidity and mortality. It is also recommended for this Hospital X, to follow more Joint Commission standards not only implement 3 out of the 13 new standards. In addition to
providing educational pamphlets to patients and their families about the signs and symptoms of postpartum hemorrhage and preeclampsia since this is one of the new standards.

A further recommendation is to implement the training video before the year 2023 because this would allow staff to have another education tool available to aid in reinforcing the education previously provided via simulation. In addition, the CNL students would be able to see if this quality improvement project was successful and have more data to support that this project was successful. Overall, this Hospital X was able to meet the Joint Commission standard and overall aim to increase their confidence in the event of an obstetric emergency presenting in the EDs where Labor and Delivery services are unavailable after implementing this project.
Section VI. References


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**Section VII. Appendices**

**Appendix A: PICOT Question**

PICOT Question: In emergency department staff (P), will implementing curated maternal hemorrhage and preeclampsia simulation training and recorded simulation video modules (I) improve staff’s knowledge of treatment modalities for PreE and PPH (O) as compared to prior simulation (C)?

<table>
<thead>
<tr>
<th>P</th>
<th>Patient, Population, Problem</th>
<th>Emergency Department Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Intervention, Prognostic Factor,</td>
<td>Implementation of maternal hemorrhage and preeclampsia simulation training and recorded simulation video modules</td>
</tr>
<tr>
<td></td>
<td>or Exposure</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Comparison to Pre-Intervention</td>
<td>Compared to prior simulation</td>
</tr>
<tr>
<td>O</td>
<td>Outcome</td>
<td>To improve staff’s knowledge of treatment modalities for PreE and PPH</td>
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</table>
### Appendix B: Community Health Needs Assessment: Population Demographics and Socioeconomic Data

<table>
<thead>
<tr>
<th></th>
<th>Tri-Valley/Contra Costa County</th>
<th>Eastern Contra Costa County</th>
<th>Western Contra Costa County</th>
<th>Northern Alameda County</th>
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<tbody>
<tr>
<td>Total Population</td>
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<td>318,900</td>
<td>254,267</td>
<td>587,090</td>
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<tr>
<td>White</td>
<td>59.8%</td>
<td>35.9%</td>
<td>23.4%</td>
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<tr>
<td>Asian</td>
<td>18.2%</td>
<td>10.2%</td>
<td>20.1%</td>
<td>20.3%</td>
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<tr>
<td>Hispanic/Latinx</td>
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<td>34.6%</td>
<td>35.2%</td>
<td>17.0%</td>
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<tr>
<td>African American</td>
<td>2.4%</td>
<td>13.1%</td>
<td>15.5%</td>
<td>16.2%</td>
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<tr>
<td>Pacific Islander/Native Hawaiian</td>
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<td>0.7%</td>
<td>0.4%</td>
<td>0.5%</td>
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<tr>
<td>Native American/Alaska Native</td>
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<td>0.3%</td>
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<tr>
<td>Some other race</td>
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<td>0.2%</td>
<td>0.6%</td>
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<tr>
<td>Multiple races</td>
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<td>5.0%</td>
<td>4.7%</td>
<td>5.3%</td>
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<tr>
<td>Living in poverty (&lt;100% Federal Poverty Level)</td>
<td>6.2%</td>
<td>12.7%</td>
<td>14.0%</td>
<td>16.6%</td>
</tr>
<tr>
<td>Children in poverty</td>
<td>6.3%</td>
<td>18.0%</td>
<td>19.7%</td>
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<tr>
<td>Unemployment</td>
<td>3.0%</td>
<td>3.1%</td>
<td>3.1%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Uninsured population</td>
<td>5.5%</td>
<td>9.6%</td>
<td>12.9%</td>
<td>9.0%</td>
</tr>
<tr>
<td>Adults with no high school diploma</td>
<td>5.8%</td>
<td>15.0%</td>
<td>18.2%</td>
<td>12.1%</td>
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</table>
### Appendix C: SWOT Analysis

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Hands-on Training</td>
<td>• Time constraints, both in development of training and time given to conduct simulation</td>
</tr>
<tr>
<td>• Faculty committed to develop new critical thinking skills</td>
<td>• Business of ED staff during simulation</td>
</tr>
<tr>
<td>• Collaboration among ED and L&amp;D units</td>
<td>• Low participation</td>
</tr>
<tr>
<td>• Support of all staff during simulation</td>
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</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Increased readiness of recognizing and treating preeclampsia and PPH</td>
<td>• Potential budget constraints</td>
</tr>
<tr>
<td>• Positive healthcare outcomes for obstetric cases presenting in ED</td>
<td>• Poor attitudes among ED staff</td>
</tr>
<tr>
<td>Quality improvement to prepare supplies and medications needed to treat these cases</td>
<td>• Unwillingness to participate in simulation</td>
</tr>
<tr>
<td></td>
<td>• Power dynamics among L&amp;D staff and ED staff</td>
</tr>
</tbody>
</table>
Appendix D: Root Cost Analysis

5 WHYS Root Cause Analysis

Define the Problem:
Early recognition of preeclampsia and postpartum hemorrhage in the emergency department.

Why is it happening?

1. Prevention and early recognition and timely treatment for maternal hemorrhage and severe hypertension/preeclampsia had the highest impact trying to decrease maternal complications.

2. 13 new provisions were made to the Joint Commission standards to improve the quality of care for women in all stages of pregnancy.

3. To fulfill new standard protocols, Hospital X must conduct drills annually to determine system issues as part of ongoing quality improvement efforts.

4. Review severe preeclampsia and postpartum hemorrhage cases that meet criteria established by the hospital to evaluate the effectiveness of the care, treatment, and services provided to the patient during the event.

5. To provide role-specific education to all staff and providers who treat pregnant and postpartum patients in the emergency department to treat preeclampsia and postpartum hemorrhage patients in a timely manner.
Appendix E: PDSA Cycle

PDSA Cycle 1 (Simulation)

Plan (Weeks 1-3)

- Week 1: Perform literature review, research, baseline assessments
  - Through observation/analysis, it is evident that maternal morbidity rates are not declining, EDs A and B are not currently meeting the Joint Commission requirements
  - Talk to subject matter experts, other fellow leaders: Collaborate and discuss what should be the priority intervention, in tandem with evidence-based practice/research
    - Aim is established: Meet the Joint Commission’s requirement using simulation
  - Recognizing a source for improvement is to implement an annual maternal hemorrhage and hypertension/preeclampsia simulation training in the ED

- Week 2: Survey staff on proposed idea (physicians and nurses) and inform staff of the upcoming simulation dates
  - This information will allow the CNL to gauge how the unit currently feels about the addition of simulation for education, as well as assess motivation
  - The CNL provides education on the purpose and benefits associated with simulation
  - After providing education, meet with staff about the intervention
  - Gain buy-in from staff and allow time for staff to provide input and ask questions

- Week 3: Meet with nurse manager to discuss implementation of simulation and prepare presentation
  - Bring results to leadership team/nurse manager to see who will support the CNL in implementing simulation
  - A need for change has been shown
  - Explain that you have learned from community (other currently existing hospital-based programs) and want to test it in this microsystem
  - Present the evidence, staff feedback, and explain how the change aligns with community and Joint Commission standards.

Do (Weeks 4-6):

- Week 4: Putting Simulation Training Together
  - Create the simulation scenario, debrief questions, and survey questions

- Week 5: Disperse flyers with QR codes linking staff to a pre-simulation survey, disperse flyers and emails regarding upcoming simulation date

- Week 6: Carry out simulation at ED A
  - Announce simulation time in morning huddle
  - Recruit staff to participate
○ Perform a team huddle right before starting simulation to ensure that everyone is clear on roles and scenario
○ Carry out simulation and follow up with debriefing

Study (Weeks 7-9):
● Analyze the results
  ○ Review and compare staff survey results from pre-and post-simulation implementation
    ■ This will allow CNL to identify what is working and what is not
    ■ Has education been effective?
    ■ Do they feel it is worth continuing?
    ■ What changes/improvements would they like to see, if any?
  ○ Assess participation

Act (Weeks 10-12):
● CNL collaborates with the leadership team/nurse manager to decide whether the intervention being tested should be modified or abandoned based on the results and feedback attained before, during, and after simulation implementation
  ○ If feedback from staff was generally positive, EDs A and B may benefit from the permanent annual implementation of simulation
  ○ **Positive feedback was attained
    ■ Make changes to simulation based on results of the surveys
    ■ Move on to PDSA Cycle II to collect more evidence (i.e., more surveys to staff, more simulation days, collect maternal outcomes data from microsystem)
      ● Is only once annually sufficient? Do we need more participants?

PDSA Cycle 2 (Video)

Plan (Weeks 1-3)
● Week 1: Perform literature review, research
  ○ Through observation/analysis, a wealth of evidence and resources exist to aid in creating staff education on maternal hemorrhage and hypertension/preeclampsia (data and statistics, signs/symptoms, treatment, etc.)
    ■ Aim is established: Aid in meeting the Joint Commission’s requirement by adding staff education and videos to Knowledge Center
  ○ Recognizing a source for improvement is to implement annual maternal hemorrhage and hypertension/preeclampsia educational modules in the ED staff’s Knowledge Center
● Week 2-3: Create the video scripts, educational content, and pre-/post-quizzes
  ○ Assign roles
  ○ Send script to nurse educators for review and editing

Do (Weeks 4-6):
● Week 4: Film simulation training videos
  ○ 2 approximately 5-minute videos: 1 on maternal hemorrhage and 1 on hypertension/preeclampsia
  ○ Utilize 2 separate filming methods
● Weeks 5: Edit simulation video
● Week 6: Work with IT to upload videos, educational content, and pre-/post- quizzes onto staff Knowledge Center

Study (Weeks 7-9):
● Analyze the results
  ○ Review and compare staff result from pre-and post- quizzes
    ■ This will allow CNL to identify what is working and what is not
    ■ Has education been effective?
    ■ What changes/improvements would they like to see, if any?
  ○ Assess participation

Act (Weeks 10-12):
● CNL collaborates with the leadership team/nurse manager to decide whether the intervention being tested should be modified or abandoned based on the results and feedback attained before, during, and after Knowledge Center implementation
  ○ If feedback from staff was generally positive, EDs A and B may benefit from the permanent annual implementation of the educational module
  ○ **Positive feedback was attained
    ■ Make changes to module based on results of the quizzes
    ■ Move on to PDSA Cycle II to collect more evidence
      ● Is only once annually sufficient? Do we need more participants?
Appendix F: Cost-Benefit Analysis: Simulation and Video

Costs are estimated based on Median RN wages within the healthcare system, median ED tech wages within the healthcare system, and median San Francisco Bay area wages for RN ED Directors, Managers, and Simulation Lab Managers. MD wages are paid through a third-party contractor and therefore not considered as part of the costs associated with policy development, simulation development, and training. The hospital already owned the simulation mannequin and equipment and thus those equipment costs were not included in the overall cost analysis. The economic benefits are difficult to quantify, however, this chart represents the overall cost to the hospital system to meet current Joint Commission standards.

**Median RN Wage:** $80.00/hr  
**Median ED Tech Wage:** $29.00/hr  
**Median RN ED Director Wage:** $99.49/hr  
**Median RN ED Manager Wage:** $83.60/hr  
**Median Simulation Lab Manager Wage:** $53.68/hr  
**Median IT Wage:** $41.15/hr

<table>
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<th>Hours</th>
<th>Cost</th>
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<td>8</td>
<td>NA</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>$2744.72</td>
</tr>
<tr>
<td><strong>Simulation Development</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RNs (2)</td>
<td>16</td>
<td>$1280.00</td>
</tr>
<tr>
<td>Simulation Lab Manager (1)</td>
<td>8</td>
<td>$429.44</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>$1709.44</td>
</tr>
<tr>
<td><strong>Simulation Training</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prep RNs: (2)x 4 hours (x2) simulations</td>
<td>16</td>
<td>$1280.00</td>
</tr>
<tr>
<td>Role Description</td>
<td>Hours</td>
<td>Cost</td>
</tr>
<tr>
<td>------------------------------------------------------</td>
<td>-------</td>
<td>--------</td>
</tr>
<tr>
<td>Prep Simlab Mgr (1): 4 hours (x2 simulations)</td>
<td>8</td>
<td>$429.44</td>
</tr>
<tr>
<td>RN Participants (15) (1 hour)</td>
<td>15</td>
<td>$1200.00</td>
</tr>
<tr>
<td>ED Tech Participants (3) (1 hour)</td>
<td>3</td>
<td>$87.00</td>
</tr>
<tr>
<td>MD/Midwife Participants (8) (1 hour)</td>
<td>8</td>
<td>NA</td>
</tr>
<tr>
<td><strong>Data Collection + IT involvement</strong></td>
<td></td>
<td><strong>$2,996.44</strong></td>
</tr>
<tr>
<td>IT Staff (1)</td>
<td>3</td>
<td>$123.45</td>
</tr>
<tr>
<td><strong>Total Cost</strong></td>
<td></td>
<td><strong>$7574.05</strong></td>
</tr>
</tbody>
</table>
Appendix H: Pre-Survey Question

Maternal Hypertensive Disorders and Postpartum Hemorrhage Emergency Department Staff Survey

We are a group of Master’s Clinical Nurse Leader students from University of San Francisco examining the recognition and treatment of maternal hypertensive disorders and postpartum hemorrhage in the emergency department. We hope that you will complete this brief survey to help gauge the emergency department staff’s evaluation of their readiness to recognize and treat maternal hypertensive disorders and postpartum hemorrhage.

This survey is completely voluntary and should take less than five minutes to complete.

Thank you for your time and consideration.

1. On an average, how many pregnant and/or postpartum patients do you see in the ED? *
   - 0-1 Patients per day
   - 2-4 Patients per day
   - 5-6 Patients per day
   - 7+ Patients per day

2. How often do you see postpartum hemorrhage patients in the ED? *
   - 0-1 times per week
   - 2-4 times per week

3. How often do you see maternal hypertensive disorder patients in the ED? *
   - 0-1 times per week
   - 2-4 times per week
   - 5-6 times per week
   - 7+ times per week

4. How comfortable are you in recognizing and treating postpartum hemorrhage? *
   - 1 2 3 4 5 6 7 8 9 10
   - Totally Uncomfortable
   - Totally Comfortable

5. How comfortable are you in recognizing and treating preeclampsia? *
   - 1 2 3 4 5 6 7 8 9 10
   - Totally Uncomfortable
   - Totally Comfortable

6. How comfortable are you in recognizing and treating preeclampsia with severe symptoms? *
   - 1 2 3 4 5 6 7 8 9 10
7. Do you have prior experience working directly with labor and delivery or postpartum patients * on an obstetric unit?

- Yes
- No

8. Are you aware of the current JMH policies and protocols in place when a patient presents with postpartum hemorrhage in the ED? *

- Yes
- No

9. In your opinion, how effective is the ED staff in recognizing and treating a patient presenting with postpartum hemorrhage in a timely manner?

   1  2  3  4  5  6  7  8  9  10
   Highly Ineffective  -  -  -  -  -  -  -  -  -  Highly Effective

10. In your opinion, how effective is the ED staff in recognizing and treating a patient presenting with preeclampsia in a timely manner? *

   1  2  3  4  5  6  7  8  9  10

11. Can you identify gaps in your knowledge base regarding the treatment of postpartum hemorrhage and/or preeclampsia? *

   Long answer text

12. What is your job title at *?

   Short answer text
Appendix I: Pre-and Post-Survey Flyers
Appendix J: Simulation Scenario

SECTION I: SCENARIO OVERVIEW

**Scenario Title:** Emergency Department – Preeclampsia and OB Hemorrhage

**Original Scenario Developer(s):** Jamie Vincent, MSN, APRN-CNS, RNC-OB, C-EFM

**Date - original scenario:** 1/20/2022

**Validation:**

**Revision Dates:**

**Pilot testing:**

**QSEN revision:**

**Estimated Scenario Time:** 20-30 minutes

**Debriefing time:** 45 minutes

**Target group:** ED staff RN's and Providers

**Core case:** Postpartum patient admitted to ED with severe headache and increased vaginal bleeding

**QSEN/IOM Competencies:**

- Patient Safety
- Quality Improvement
- Teamwork & Communication

**Brief Summary of Case:**

A 27 year old woman 5’5”, 173 pounds, G3P2L2, with history of spontaneous vaginal delivery a week ago at 39.1 weeks presents to the ED complaining of a severe headache, epigastric pain, and increased vaginal bleeding.

OB History is unremarkable.

Medical History: HPV at 17 years old; h/o appendectomy (06/2005); Pap test normal during prenatal studies.

Current History: Patient is 1 week postpartum.

This scenario is appropriate for novice through experienced labor and delivery nurses skilled at circulating during cesarean section. It can be made more complex by making the patient unstable, e.g. hemorrhage and/or having the Surgeon refuse to participate, interrupt the learner or undermine new nurse.

**Evidence Based References**

SECTION II: CURRICULUM INTEGRATION

A. SCENARIO LEARNING OBJECTIVES

Learning Outcomes
1. Provide patient care that promotes safety and minimizes risk of error.
2. Apply nursing process in clinical decision making.
3. Apply principles of good interpersonal communication.

Specific Learning Objectives
1. Identify signs and symptoms of preeclampsia and obstetric hemorrhage upon clinical assessment.
2. Continuously monitor maternal well-being.
3. Communication occurs effectively between team members.
4. SBAR communication to provider.

Critical Learner Actions
1. Introduce self and role to patient.
2. Investigate history of symptoms. Take vital signs and check deep tendon reflexes.
3. Call or designate someone to call doctor using standardized communication tool (SBAR).
4. Initiate treatment plan promptly.
5. Administer IVP anti-hypertensive.
6. Recheck vital signs.
7. Designate someone to get and start Magnesium Sulfate for infusion.
8. Offer comfort and support to patient through education.

B. PRE-SCENARIO LEARNER ACTIVITIES

Prerequisite Competencies

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Skills/ Attitudes</th>
</tr>
</thead>
<tbody>
<tr>
<td>•  Nursing process</td>
<td>•  Identify signs and symptoms of preeclampsia</td>
</tr>
<tr>
<td>•  Situational awareness</td>
<td>•  Identify signs of obstetric hemorrhage</td>
</tr>
<tr>
<td>•  SBAR communication</td>
<td>•  Prioritization of tasks (e.g. administer IVP anti-hypertensives then Magnesium sulfate)</td>
</tr>
<tr>
<td>•  Patient-centered care</td>
<td>•  SBAR communication to team members</td>
</tr>
</tbody>
</table>

SECTION III: SCENARIO SCRIPT

A. Case summary
Mrs. Ashley Jones is a 27-year-old woman 5’5”, G3P2L2, with a history of spontaneous vaginal delivery a week ago at 39.1 weeks, admitted to ED with severe headache, epigastric pain, and increased vaginal bleeding. Headache began about an hour ago and epigastric pain within the last 30 minutes.

**Medical History:** Asthma; HPV at 17 years old; Pap test normal during prenatal studies; s/p vaginal delivery 1 week ago

**Surgical History:** Appendectomy (06/2005)

**Social History:** Married; Works as an accountant; Lives at home with husband and newborn infant boy; no history of smoking or drug use. Occasional ETOH use.

**Current assessment:** Alert and oriented x4. Rates headache as 8/10, c/o epigastric pain, and soaking peripad with vaginal bleeding every hour. Blood pressure 176/102, RR 20, HR 93, T 99.3, SpO2 99% on room air.

### B. Key contextual details

ED Triage RN at patient bedside to assess patient status, collect medical history, and take vital signs. Objectives for the learners include identifying signs and symptoms of preeclampsia and obstetric hemorrhage, demonstration of clear communication with nurses, and proper SBAR with provider to initiate treatment.

### C. Scenario Cast

<table>
<thead>
<tr>
<th>Patient/Client</th>
<th>High fidelity simulator</th>
<th>Mid-level simulator</th>
<th>Task trainer</th>
<th>Hybrid (Blended simulator)</th>
<th>Standardized patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role</td>
<td>Brief Descriptor (Optional)</td>
<td>Learner</td>
<td>Learner</td>
<td>Learner</td>
<td>Learner</td>
</tr>
<tr>
<td>ED Triage RN</td>
<td>Assess patient status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ED RN</td>
<td>Prioritize patient care</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ED Provider</td>
<td>Implement treatment plan</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ED Tech</td>
<td>Monitor patient vital signs</td>
<td></td>
<td>Actor</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### D. Patient/Client Profile

<table>
<thead>
<tr>
<th>Last name:</th>
<th>Jones</th>
</tr>
</thead>
<tbody>
<tr>
<td>First name:</td>
<td>Ashley</td>
</tr>
<tr>
<td>Gender:</td>
<td>Female</td>
</tr>
<tr>
<td>Age:</td>
<td>27</td>
</tr>
<tr>
<td>Ht:</td>
<td>5’5”</td>
</tr>
<tr>
<td>Wt:</td>
<td>78.5g</td>
</tr>
<tr>
<td>Code Status:</td>
<td>FULL</td>
</tr>
<tr>
<td>Spiritual Practice:</td>
<td>Non-denominational</td>
</tr>
<tr>
<td>Ethnicity:</td>
<td>African American</td>
</tr>
<tr>
<td>Primary Language spoken:</td>
<td>English</td>
</tr>
</tbody>
</table>
1. History of Present Illness

A 27 year old woman with history of spontaneous vaginal delivery a week ago at 39.1 weeks presents to the ED complaining of a severe headache, epigastric pain, and increased vaginal bleeding.

| Primary Medical Diagnosis | Preeclampsia and obstetric hemorrhage |

2. Review of Systems

<table>
<thead>
<tr>
<th>System</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNS</td>
<td>Anxious; Alert &amp; oriented x4</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>BP 172/90; no bruits or murmurs heard</td>
</tr>
<tr>
<td>Pulmonary</td>
<td>Lungs clear to auscultation</td>
</tr>
<tr>
<td>Renal/Hepatic</td>
<td>WNL</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>WNL</td>
</tr>
<tr>
<td>Endocrine</td>
<td>WNL</td>
</tr>
<tr>
<td>Heme/Coag</td>
<td>No bruising or bleeding</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>Normal gait with good balance; Moves all extremities equally</td>
</tr>
<tr>
<td>Integument</td>
<td>WNL</td>
</tr>
<tr>
<td>Developmental Hx</td>
<td>WNL</td>
</tr>
<tr>
<td>Psychiatric Hx</td>
<td>None Reported</td>
</tr>
<tr>
<td>Social Hx</td>
<td>Denies drug use; no history of tobacco use. Occasional ETOH use</td>
</tr>
<tr>
<td>Alternative/ Complementary Medicine Hx</td>
<td>None</td>
</tr>
</tbody>
</table>

Medication allergies: None React: 
Food/other allergies: None React:

3. Home medications

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Route</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albuterol inhaler</td>
<td>2 puffs</td>
<td>Inhaler</td>
<td>Every 4 hours prn</td>
</tr>
<tr>
<td>Prenatal Plus</td>
<td>1 mg</td>
<td>p.o.</td>
<td>Daily</td>
</tr>
</tbody>
</table>

3. Current medications

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Route</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. Laboratory, Diagnostic Study Results

<table>
<thead>
<tr>
<th>Na:</th>
<th>K:</th>
<th>Cl:</th>
<th>HCO3:</th>
<th>BUN: 10</th>
<th>Cr: 0.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ca:</td>
<td>Mg:</td>
<td>Phos:</td>
<td>Glucose: 83</td>
<td>Hep. Bs antigen: Non-reactive</td>
<td></td>
</tr>
<tr>
<td>Hgb: 10.7</td>
<td>Hct: 32%</td>
<td>Plt: 220</td>
<td>WBC: 13</td>
<td>ABO Blood Type: O Positive</td>
<td></td>
</tr>
<tr>
<td>PT: 12.7s</td>
<td>PTT: 30.0s</td>
<td>ALT: 42</td>
<td>AST: 27</td>
<td>Antibody Screen: Negative</td>
<td></td>
</tr>
<tr>
<td>ABG-pH:</td>
<td>paO2:</td>
<td>paCO2:</td>
<td>HCO3/BE:</td>
<td>SaO2:</td>
<td></td>
</tr>
<tr>
<td>Rubella, IgG:</td>
<td>GBS: Negative</td>
<td>Herpes:</td>
<td>HIV: Negative</td>
<td>Syphilis: Non-reactive</td>
<td></td>
</tr>
<tr>
<td>RBC: 4.2</td>
<td>Chlamydia: Negative</td>
<td>Uric Acid: 5.6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

E. Baseline Simulator/Standardized Patient State
(This may vary from the baseline data provided to learners)

1. Initial physical appearance

<table>
<thead>
<tr>
<th>Gender:</th>
<th>Female</th>
<th>Attire:</th>
<th>Patient laying on gurney wearing blue t-shirt and black pants</th>
</tr>
</thead>
</table>

**Alterations in appearance (moulage):**

<table>
<thead>
<tr>
<th>X</th>
<th>ID band present, accurate</th>
<th>ID band present, inaccurate</th>
<th>ID band absent or not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>Allergy band present, accurate</td>
<td>Allergy band inaccurate</td>
<td>Allergy band absent or N/A</td>
</tr>
</tbody>
</table>

2. Initial Vital Signs Monitor display in simulation action room:

<table>
<thead>
<tr>
<th>No monitor display</th>
<th>Monitor on, but no data displayed</th>
<th>Monitor on, standard display</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP: 176/102</td>
<td>HR: 93</td>
<td>RR: 20</td>
</tr>
<tr>
<td>CVP:</td>
<td>PAS:</td>
<td>PAD:</td>
</tr>
<tr>
<td>AIRWAY:</td>
<td>ETCO²:</td>
<td>FHR:</td>
</tr>
<tr>
<td>Lungs: Sounds/mechanics</td>
<td>Left: Clear</td>
<td>Right: Clear</td>
</tr>
<tr>
<td>Heart:</td>
<td>Sounds:</td>
<td>ECG rhythm: NSR</td>
</tr>
<tr>
<td>Bowel sounds:</td>
<td>Normal</td>
<td>Other:</td>
</tr>
</tbody>
</table>

3. Initial Intravenous line set up

| Saline lock #1 | Site: RA | IV patent (Y/N) |
4. Initial Non-invasive monitors set up

<table>
<thead>
<tr>
<th>Monitor Type</th>
<th>Site</th>
<th>Fluid type:</th>
<th>Initial rate:</th>
<th>IV patent (Y/N)</th>
</tr>
</thead>
</table>

4. Initial Hemodynamic monitors set up

<table>
<thead>
<tr>
<th>Monitor Type</th>
<th>Site</th>
<th>Fluid type:</th>
<th>Initial rate:</th>
<th>IV patent (Y/N)</th>
</tr>
</thead>
</table>

5. Other monitors/devices

<table>
<thead>
<tr>
<th>Monitor Type</th>
<th>Site</th>
<th>Fluid type:</th>
<th>Initial rate:</th>
<th>IV patent (Y/N)</th>
</tr>
</thead>
</table>

Environment, Equipment, Essential props

1. Scenario setting: (example: patient room, home, ED, lobby)

2. Equipment, supplies, monitors

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bedpan/ Urinal</td>
<td>Foley catheter kit</td>
</tr>
<tr>
<td>IV Infusion pump</td>
<td>Feeding pump</td>
</tr>
<tr>
<td>Neptune Suction</td>
<td>ETT suction catheters</td>
</tr>
<tr>
<td>Defibrillator</td>
<td>Code Cart</td>
</tr>
<tr>
<td>PCA infusion pump</td>
<td>Epidural pump</td>
</tr>
<tr>
<td>IV fluid Type:</td>
<td>IV fluid additives:</td>
</tr>
<tr>
<td>Nasal cannula</td>
<td>Scale</td>
</tr>
<tr>
<td>BVM/Ambu bag</td>
<td>CSection drape</td>
</tr>
</tbody>
</table>

4. Documentation and Order Forms

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X Provider orders</td>
<td>Med Admin Record</td>
</tr>
<tr>
<td>Progress Notes</td>
<td>Graphic record</td>
</tr>
<tr>
<td>Med Reconciliation</td>
<td>Transfer orders</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X Lab Results</td>
<td>Hx &amp; Physical</td>
</tr>
<tr>
<td></td>
<td>Anes/PACU record</td>
</tr>
<tr>
<td></td>
<td>ED Record</td>
</tr>
<tr>
<td></td>
<td>Standing orders</td>
</tr>
<tr>
<td></td>
<td>ICU flow sheet</td>
</tr>
</tbody>
</table>
### 5. Medications (to be available in sim action room)

<table>
<thead>
<tr>
<th>#</th>
<th>Medication</th>
<th>Dosage</th>
<th>Route</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>#</th>
<th>Medication</th>
<th>Dosage</th>
<th>Route</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Actual medical record binder</th>
<th>Code Record</th>
<th>Prenatal record</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>Electronic Medical Record (Delivery Summary)</td>
<td></td>
</tr>
</tbody>
</table>
Appendix K: Simulation Debriefing Questions

Facility 1

1. Did you have the knowledge and skills to meet the learning objectives of the scenario?
   - Any knowledge and skills participants did not have were able to be filled through having a primary and secondary RN in the room and the ED Provider and OB provider readily available.

2. What GAPS did you identify in your own knowledge base and/or preparation for the simulation experience?
   - The unpreparedness of requesting blood in a timely manner
   - Not knowing the importance of immediate fundal massage in a hemorrhage situation
   - Checked for lacerations in a massively hemorrhaging 1-week postpartum patient as opposed to addressing the more likely scenario of uterine atony.

3. How would you handle the scenario differently if you could?
   - Possibly having the scenarios split into two different cases one being preeclampsia and the other scenario being postpartum hemorrhage
   - Having more than one scenario so instead of people voicing their ideas from outside others could have an opportunity to be hands on in participating
   - Having less people in the room as the scenario quickly shifted from a simulation to a discussion
   - Ensuring spectators are not participating in the simulation scenario but rather in the debrief.

4. In what ways did you feel the need to check ACCURACY of the data you were given?
   - Vital signs were unstable, and medication was not relieving the patients headache

5. In what ways did you perform well?
   - Great communication and teamwork
   - Everyone was willing to pick up a job and was on standby ready to help each other

6. What communication strategies did you use to validate ACCURACY of your information or decisions with your team members?
   - Multiple check-ins with ED and OB to ensure the care we were providing was appropriate and effective.

7. What three factors were most SIGNIFICANT that you will transfer to the clinical setting?
   - Using the algorithm information from the simulation in the ED

8. Discuss actual experiences with diverse patient populations.
   - Not having an L+D floor in facility 1 we don’t see very many pregnant or postpartum patients as they are typically brought directly to facility 2

9. Discuss roles and responsibilities during a crisis.
   - Having a clear algorithm and working as a team increases the knowledge of role-specific actions. Through the simulation we established the roles of ED tech, Primary RN, Secondary RN, ED Healthcare Provider, and OB Provider. The team worked well together with easy, concise, and open communication.

10. Discuss the nurses’ role in design, implementation, and evaluation of information technologies to support patient care.
    - Creating a new order set specific to postpartum hemorrhage and preeclampsia within the EHR/MAR will help expedite clinical decision making and increase the timeliness of care in urgent and emergent situations.

Facility 2

1. Did you have the knowledge and skills to meet the learning objectives of the scenario?
   a. One thing everyone noted was that until the OB provider entered the scenario no one provided a fundal massage to the hemorrhaging patient
   b. Overall, the team was well prepared to address preeclampsia and hemorrhage and ask for the necessary consultations in a timely and effective manner.

2. What GAPS did you identify in your own knowledge base and/or preparation for the simulation experience?
   a. Did not know we had Mag Sulfate and Pitocin readily available and two give two 2mg doses of MagSulf to begin

3. How would you handle the scenario differently if you could?
   a. Would have treated the mannequin closer to a real patient
4. **In what ways did you feel the need to check ACCURACY of the data you were given?**
   a. As discussed in the debrief, the likelihood of having a preeclampsia patient who is also hemorrhaging one week after

5. **In what ways did you perform well?**
   a. Great communication and teamwork
   b. Everyone was willing to pick up a job and was on standby ready to help each other

6. **What communication strategies did you use to validate ACCURACY of your information or decisions with your team members?**
   a. Communicating throughout the simulation with supporting nurses and healthcare provider teams

7. **What three factors were most SIGNIFICANT that you will transfer to the clinical setting?**
   a. The use of the new order sets to guide clinical decision making
   b. The use of the algorithms for preeclampsia and hemorrhage
   c. The knowledge that pregnant and postpartum patients are very good at compensating for blood loss and then crash quickly.

8. **Discuss actual experiences with diverse patient populations.**
   a. Facility 2 location asks for assistance in the ED from the L&D unit if patients are admitted with other complications that would require further specialized help

9. **Discuss roles and responsibilities during a crisis.**
   a. The team was well-suited and prepared to address the peripartum crisis presented. One area which caused confusion and was addressed during debrief was the improbability of a postpartum patient presenting with preeclampsia and a hemorrhage.

10. **Discuss the nurses’ role in design, implementation, and evaluation of information technologies to support patient care.**
    a. Creating a specialized clear plan in how to triage and treat patients presenting into the ED with preeclampsia or postpartum hemorrhage symptoms to be able to provide care in a timely manner before calling the L&D unit for backup.
Appendix L: Post Survey Question

Maternal Hypertensive Disorders and Postpartum Hemorrhage Emergency Department Staff Post-Survey

We are a group of Master’s Clinical Nurse Leader students from University of San Francisco examining the recognition and treatment of maternal hypertensive disorders and postpartum hemorrhage in the emergency department. We hope that you will complete this brief survey to help gauge the emergency department staff’s evaluation of their readiness to recognize and treat maternal hypertensive disorders and postpartum hemorrhage.

This survey is completely voluntary and should take less than five minutes to complete.

Thank you for your time and consideration.

How comfortable are you in recognizing and treating postpartum hemorrhage after having participated in the training? *

1 2 3 4 5 6 7 8 9 10
Totally Uncomfortable  ○  ○  ○  ○  ○  ○  ○  ○  ○  Totally Comfortable

How comfortable are you in recognizing and treating preeclampsia after having participated in the training? *

1 2 3 4 5 6 7 8 9 10
Totally Uncomfortable  ○  ○  ○  ○  ○  ○  ○  ○  ○  Totally Comfortable

How comfortable are you in recognizing and treating preeclampsia with severe symptoms after having participated in the training? *

1 2 3 4 5 6 7 8 9 10
Totally Uncomfortable  ○  ○  ○  ○  ○  ○  ○  ○  ○  Totally Comfortable

Do you have prior experience working directly with labor and delivery or postpartum patients? *

○ Yes
○ No

Can you identify gaps in your knowledge base regarding postpartum hemorrhage and preeclampsia? *

Long answer text

What is your job title at  *

Short answer text

Did you attend the Maternal Hypertensive Disorders and Postpartum Hemorrhage Simulation

○ Yes
○ No
Appendix M: Video Script

Postpartum Hemorrhage

Primary RN, Secondary RN, and ED Tech enter room

Primary RN
Hi Maria my name is Raquel, and I’m going to be your nurse today.

Secondary RN
My name is Gabe, and I’ll be helping Raquel.

ED Tech
And my name is Mayra. I’ll be your ED Tech.

Primary RN
So, can I ask you: what brings you in today?

Patient
Yeah. I’ve been bleeding a lot recently.

Primary RN
And how much is your bleeding?

Patient
I changed my pad right before I got here, but I would say at least one pad every hour starting today.

Primary RN
Oh ok. And are you being followed by an OBGYN?

Patient
No. I haven’t had any contact with them.

*Primary RN*

Any history of hypertension during your pregnancy or before your pregnancy?

*Patient*

Um... No history of hypertension during pregnancy, but I do have asthma.

*Primary RN*

Ok, so we’re going to go ahead and assess your bleeding area. Ok?

*ED Technician*

I’m going to place your cardiac monitor on right now, and I’m going to take your blood pressure.

*Secondary RN*

I’m going to check your temperature really quick.

*Primary RN*

Ok. She is bleeding a lot. Ok Maria. I’m going to go and do a fundal massage. Your fundus is soft and boggy. I’m going to make sure to get your fundus firmed up.

*ED Technician*

Ok. Her blood pressure is 85/65, pulse is 115, her oxygen is 98, and her respirations are 20, and her temperature is 36.9.
Secondary RN
Alright, I'll go ahead and call the ED physician. Hi Dr. Talsky. This is Gabe calling from the ED. I have Maria in room 35. She's a 27-year-old female complaining of increased vaginal bleeding. She's soaking 1 peri pad every hour. She's a G3P2. Has a history of spontaneous vaginal delivery a week ago at 39 weeks. Her BP is currently 89/58, heart rate is 114, respiration rate is 20, temp 36.9 Celsius, and she's sating at 98%. I think she may be hemorrhaging based on her spontaneous delivery one week ago. She has no history of hypertension but does have asthma. I am concerned about her bleeding and vital signs. Are you able to come in soon and evaluate her?

ED Physician
Yes, I'm right around the corner. I'll be right in.

Secondary RN
Thank you.

ED Physician enters room

Primary RN
Gabe, can we start an IV access as well?

Secondary RN
Yes.
ED Physician
Hi Maria. My name is Max Talsky. I'm the ED Doc here. I'll be helping you out today, ok?

Patient
Ok.

ED Physician
Can you tell me what brought you in today?

Patient
Yeah. I've just been bleeding a lot recently.

ED Physician
Bleeding a lot? When did it start?

Patient
The bleeding started a couple of hours ago.

ED Physician
How much have you been bleeding? How many pad changes have you done?

Patient
At least 4 or 5 pads.

ED Physician
Have you noticed any clots or anything like that on the pads?

Patient
No, I haven't.
ED Physician
How about any dizziness or light headedness right now?

Patient
I definitely feel woozy and a little dizzy.

ED Physician
Ok. Do you have any complications during your pregnancy or during your labor or right after?

Patient
No. no complications.

ED Physician
Have you had any kind of history of asthma or hypertension or anything like that?

Patient
No history of hypertension, but I do have a history of asthma.

ED Physician
Alright so, we’re going to get a CBC, type and screen for possible transfusion, also going to get a CMP, and Gabe I’m going to have you start 10mg Pitocin IM.

Secondary RN
Ok. I’ll start the 10mg Pitocin.

ED Physician
We’re also going to start monitoring the estimated blood loss, and I’m going to call the OB provider.
OB Physician

Hi this is Dr. Kelsey.

ED Physician

Hi This is Dr. Talsky in Emergency. I have a 27-year-old 1-week postpartum patient. She's soaking a peripad about every hour. I've started her on Pitocin IM. She had a spontaneous delivery at 39 weeks and has been bleeding at home and has a history of asthma. I'm worried about blood loss from postpartum hemorrhage. I'm requesting a consult and direction.

OB Physician

You will need to order Methergine 0.2mg IM every 2-4 hours. Do not give Misoprostol due to the asthma history, and also initiate bimanual massage of the fundus and keep getting vitals every 15 minutes.

ED Physician

Alright, so were also going to do 0.2mg of Methergine IM and initiate bimanual fundal massage. We're also going to do vital signs every 15 minutes and recycle those right now.

Secondary RN

I'll go ahead and get that started.

Tech

I've recycled the blood pressure.

Recycling blood pressure.

Primary RN
Do you want to do the bimanual massage?

**ED Tech**
Blood pressure is 59/39, Pulse 115.

**ED Physician**
We'll also call blood blank and activate mass transfusion protocols or the “Keep Ahead” in Concord. Let's take a look and do the bimanual. Alright, Maria I'm going to have to reach inside you to do a bimanual fundal massage to try to stop the bleeding ok?

*15 minutes later*

**ED Technician**
Recycling blood pressure. It 62/42, Pulse is 113, temperature 36.9, oxygen pulse ox is 100%, respirations 20.

**Secondary RN**
Alright, I'll go ahead and call the blood bank.

**END**

**Preeclampsia**

Primary RN, Secondary RN, and ED Tech enter room

**Primary RN**
Hi Maria. My name is Raquel and I'm going to be your nurse today.
Secondary RN
My name is Gabe, and I’ll be helping Raquel. I’ll be checking your legs.

ED Technician
And my name is Mayra. I’ll be your ED Tech.

Primary RN
So, can I ask you what brings you in today?

Patient
I’ve had such a bad headache.

Primary RN
Can you rate your pain from your headache from a 0-10 for me?

Patient
Probably around an 8 or 9.

Primary RN
Ok, and when did your headache start?

Patient
For a couple of hours now.

Primary RN
Have you had any changes in your vision or any light sensitivity?

Patient
Yeah. I have some spots in my vision.
Primary RN
Have you taken any medication for your headache?

Patient

I've taken over-the-counter Advil, but it hasn't helped much.

Primary RN
Are you currently having any stomach pain or abdominal pain?

Patient

No. No stomach pain.

ED Technician
I'm placing you on a cardiac monitor right now.

Primary RN
I'm going to go ahead and start your IV access.

Secondary RN
Do you mind just relaxing your legs really quick?

She has +4 pitting edema and +3 DTRs and clonus.

Primary RN
Ok Gabe. Can you start some NS?

Secondary RN
Maria, do you have a history of hypertension or any pregnancy related complications?

Patient
No. I don’t have any history of hypertension or any complications.

ED Technician
Her blood pressure is 189/114, pulse is 113, respirations 20, pulse ox is 97, and temperature is 36.7.

Secondary RN
And have you taken any blood pressure medications while you were pregnant?

Patient
No. No blood pressure medication while I was pregnant or now.

Secondary RN
Ok, and lastly, have you gotten in contact with your OBGYN since you’ve given birth?

Patient
No, I haven’t been in contact with them. I just have this headache,

Primary RN
Ok, Maria. I’m going to go ahead and call the ED doctor, ok?
Hi Dr. Talsky. This is Raquel calling from the ED. I have Maria in room 37, She is a 27-year-old female complaining of a severe headache. She took
Ibuprofen 800 mg for severe headache prior to coming into the ER. She rates her headache an 8/10 with nausea. She has a history of spontaneous vaginal delivery at 39 weeks, BP currently is 189/114, heart rate 114, respiration 20, O2 at 98, temp 98.4. No history of hypertension, she has no history of asthma. She has a history of GERD post vaginal delivery 1 week ago. She also complains of visual changes along with her dangerously high blood pressure. +3 DTR, pitting edema present in the lower extremities. I am concerned about her vital signs and her physical complaints. Are you able to come evaluate her? And what blood pressure medications would you like me to start?

ED Physician
Yeah, let’s start Labetalol 20mg IV push over 2 minutes, and I’ll be right in.

Primary RN
Confirming Labetalol IV push 20mg.

ED Physician enters room

ED Physician
Yes. Hi Maria, I’m Dr. Talsky. I’m a doctor in the ED here. Can you tell me: when did your headache start?

Patient
I’ve had this headache for a couple of hours and it hasn’t been relieved with Advil or anything. It hurts.
ED Physician
Ok. Do you have any changes in your vision or dizziness or are you seeing any stars or anything like that?

Patient
No, I don't have any abdominal pain but I have had some spots in my vision.

ED Physician
Ok. So no abdominal pain. No kind of any upper right side pain or chest pain or anything like that?

Patient
No. I don't have any trouble breathing or any abdominal pain.

ED Physician
Have you taken any medications for your headache and any kind of antihypertensive medications or anything like that?

Patient
No. No meds.

ED Physician
Did you have any complications during your pregnancy, did you have preeclampsia or hypertension during your pregnancy or any complications during your labor?

Patient
No. No complications.

ED Physician
Do you have asthma or a history of asthma or anything like that?

Patient
No history of asthma.

**ED Physician**

Let’s recycle her vital signs and I’ll call the OB for a consult.

**Primary RN**

Ok. Recycling blood pressure.

**ED Technician**

Ok her blood pressure is 162/106, pulse is 94.

**ED Physician**

Hi this is Dr. Talsky, down in the ED.

**OB Physician**

Hi, this is Dr. Kelsey.

**OB Physician enters room**

**ED Physician**

We have a 27-year-old woman complaining of a persistent 8/10 headache. It’s been unresponsive to over-the-counter medications. She came in with a BP of 189/114, I’ve started labetalol and it’s come down to 160/105. She gave birth uncomplicated labor one week ago. She has no history of hypertension. She is showing signs of Preeclampsia with severe features, changes in her vision. I’m requesting OB consult and some more direction.

**OB Physician**

Yeah. So you’ll need to order magnesium sulfate loading dose of 4mg over 30 minutes with a maintenance dose of 2mg per hour. This will be for prophylactic measures to help prevent seizures. You’ll also want to order labetalol 40mg IV push
over 2 minutes and keep having the vitals obtained every 15.

**ED Physician**
So Raquel, we’re going to start mag sulfate 4gm over 30 minutes and then go to 2mg every hour as a maintenance dose, and we’re going to do another dose of labetalol to bring her hypertension down. 40mg over 2 minutes IV push.

**Primary RN**
I’m going to go ahead and put the magnesium loading dose. Ok Maria, I’m also going to give you another dose of labetalol. This is a blood pressure medication that’s going to help to decrease your blood pressure, ok?

**Patient**
Ok.

*15 minutes later*

**Primary RN**
Can we recycle the blood pressure?

**ED Technician**
Recycling blood pressure. Ok. Blood pressure is 147/97, pulse is 89.

**Primary RN**
Ok. Looks like our blood pressure is now reduced and patient is stabilized.
Alright Maria. We're going to transfer you up to the L&D floor now that you're stabilized, ok?

Patient

Ok.

**End**
Appendix N: Pre-Survey Result

1. On an average, how many pregnant and/or postpartum patients do you see in the ED?

<table>
<thead>
<tr>
<th>Value</th>
<th>Percent</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1 Patients per day</td>
<td>70.4%</td>
<td>19</td>
</tr>
<tr>
<td>2-4 Patients per day</td>
<td>29.6%</td>
<td>8</td>
</tr>
</tbody>
</table>

Totals: 27

2. How often do you see postpartum hemorrhage patients in the ED?

<table>
<thead>
<tr>
<th>Value</th>
<th>Percent</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1 times per week</td>
<td>100.0%</td>
<td>27</td>
</tr>
</tbody>
</table>

Totals: 27

3. How often do you see maternal hypertensive disorder patients in the ED?

<table>
<thead>
<tr>
<th>Value</th>
<th>Percent</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1 times per week</td>
<td>85.2%</td>
<td>23</td>
</tr>
<tr>
<td>2-4 times per week</td>
<td>14.8%</td>
<td>4</td>
</tr>
</tbody>
</table>

Totals: 27
4. How comfortable are you in recognizing and treating postpartum hemorrhage?

<table>
<thead>
<tr>
<th>Value</th>
<th>Percent</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>18.5%</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>11.1%</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>3.7%</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>22.2%</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>11.1%</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>3.7%</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>7.4%</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>18.5%</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>3.7%</td>
<td>1</td>
</tr>
</tbody>
</table>

Total: 27

5. How comfortable are you in recognizing and treating preeclampsia?

<table>
<thead>
<tr>
<th>Value</th>
<th>Percent</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>18.5%</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>14.8%</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>7.4%</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>14.8%</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>18.5%</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>18.5%</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>7.4%</td>
<td>2</td>
</tr>
</tbody>
</table>

Total: 27
6. How comfortable are you in recognizing and treating preeclampsia with severe symptoms?

<table>
<thead>
<tr>
<th>Value</th>
<th>Percent</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25.9%</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>7.4%</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3.7%</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>14.8%</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>18.5%</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>3.7%</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>3.7%</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>14.8%</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>7.4%</td>
<td>2</td>
</tr>
</tbody>
</table>

Totals: 27

7. Do you have prior experience working directly with labor and delivery or postpartum patients on an obstetric unit?

<table>
<thead>
<tr>
<th>Value</th>
<th>Percent</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>11.1%</td>
<td>3</td>
</tr>
<tr>
<td>No</td>
<td>88.9%</td>
<td>24</td>
</tr>
</tbody>
</table>

Totals: 27
8. Are you aware of the current JMH policies and protocols in place when a patient presents with postpartum hemorrhage in the ED?

Value | Percent | Responses
--- | --- | ---
Yes | 22.2% | 6
No | 77.8% | 21
Totals: 27

9. In your opinion, how effective is the ED staff in recognizing and treating a patient presenting with postpartum hemorrhage in a timely manner?

Value | Percent | Responses
--- | --- | ---
1 | 3.7% | 1
2 | 7.4% | 2
3 | 7.4% | 2
4 | 18.5% | 6
5 | 14.8% | 4
6 | 3.7% | 1
7 | 22.2% | 6
8 | 18.6% | 5
10 | 3.7% | 1
Totals: 27
10. In your opinion, how effective is the ED staff in recognizing and treating a patient presenting with preeclampsia in a timely manner?

11. Can you identify gaps in your knowledge base regarding the treatment of postpartum hemorrhage and/or preeclampsia?

12. What is your job title at [redacted]?
## Appendix O: Post-Survey Result

### Summary Report for Maternal Hypertensive Disorders and Postpartum Hemorrhage Emergency Department Staff Post-Survey

1. Choose a rating below:

<table>
<thead>
<tr>
<th></th>
<th>1 - Totally Uncomfortable</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10 - Totally Comfortable</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>How comfortable are you in recognizing and treating postpartum hemorrhage after having participated in the training?</strong></td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>33.3%</td>
<td>0.0%</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Count</strong></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Row %</strong></td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>33.3%</td>
<td>0.0%</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

**Totals**
- **Total Responses**: 3
2. Do you have prior experience working directly with labor and delivery or postpartum patients?

<table>
<thead>
<tr>
<th>Value</th>
<th>Percent</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>100.0%</td>
<td>3</td>
</tr>
</tbody>
</table>

Totals: 3

3. Can you identify gaps in your knowledge base regarding postpartum hemorrhage and preeclampsia?

4. What is your job title at [Redacted]?

[Redacted] nurse, trauma, emergency, medications, dosages, experience.
5. Did you attend the Maternal Hypertensive Disorders and Postpartum Hemorrhage Simulation?

<table>
<thead>
<tr>
<th>Value</th>
<th>Percent</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>100.0%</td>
<td>3</td>
</tr>
</tbody>
</table>

Totals: 3
Appendix P: Self-Determination

**Project:** Stop the Bleed and Seize Control: Educating Emergency Department Staff on Maternal Hypertension and Hemorrhage

**Student Name:** Mayra Portillo-Guerra

**Title of Project:** Stop the Bleed and HELLP Moms: The use of simulation and simulation videos in educating staff regarding preeclampsia and postpartum hemorrhage.

**Brief Description of Project:** Developing and implementing simulation training and a recording simulation video to train emergency department staff in the early recognition and treatment of preeclampsia and postpartum hemorrhage to satisfy new Joint Commission Standards.

- **Data that Shows the Need for the Project:** OB hemorrhage is the leading cause of maternal mortality in California from 2002-2004 (Lyndon et al., 2015), while PreEclampsia is the second leading cause of pregnancy-related mortality in California from 2002-2007, over 60% of those deaths were deemed preventable (Shields et. al., 2021). Early recognition and timely, appropriate treatment of these two pathologies can greatly reduce mortality and morbidity rates (Simpson, 2010). Frequent simulation training decreases the time of staff response rates and increases treatment information retention (Sullivan et. al., 2015).

- **Aim Statement:** We aim to increase ED staff awareness and comfort in recognizing and responding to PHDs and PPH by 10%, by increasing the amount of training ED staff receives via simulation by April 2022. As well as implementing a video as a new training modalities by January 2023.

- **Description of Intervention(s):** Simulation scenarios developed by hospital ED and L+D education development teams as well as the simulation lab manager and a separately recording acted simulation to be uploaded to the Knowledge Center education training by early 2023.

- ** Desired Change in Practice:** An increased awareness and comfort with recognizing and treating PreE and PPH in the emergency department.

- **Outcome measurement(s):** Staff surveys ascertaining their exposure to, and comfort with addressing PreE and PPH in the ED.

**Resources**


Simpson, (2010). Perinatal Patient Safety. *St. John’s Mercy Medical Center, St. Louis, MO.*

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used: ([http://answers.hhs.gov/ohrp/categories/1569](http://answers.hhs.gov/ohrp/categories/1569))

☐ This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). Student may proceed with implementation.

☐ This project involves research with human subjects and must be submitted for IRB approval before project activity can commence.

Comments:

**EVIDENCE-BASED CHANGE OF PRACTICE PROJECT CHECKLIST** *

*Instructions: Answer YES or NO to each of the following statements:*

<table>
<thead>
<tr>
<th>Project Title: Stop the Bleed and HELLP Moms: The use of simulation and simulation videos in educating staff regarding preeclampsia and postpartum hemorrhage.</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>The aim of the project is to improve the process or delivery of care with established/accepted standards, or to implement evidence-based change. There is no intention of using the data for research purposes.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>The specific aim is to improve performance on a specific service or program and is a part of usual care. ALL participants will receive standard of care.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>The project is NOT designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case control). The project does NOT follow a protocol that overrides clinical decision-making.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>The project involves implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does NOT develop paradigms or untested methods or new untested standards.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>The project involves implementation of care practices and interventions that are consensus-based or evidence-based. The project does NOT seek to test an intervention that is beyond current science and experience.</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP.  

| X |

The project has **NO** funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.  

| X |

The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., **not** a personal research project that is dependent upon the voluntary participation of colleagues, students and/or patients.  

| X |

If there is an intent to, or possibility of publishing your work, you and supervising faculty and the agency oversight committee are comfortable with the following statement in your methods section: “This project was undertaken as an Evidence-based change of practice project at X hospital or agency and as such was not formally supervised by the Institutional Review Board.”  

| X |

**ANSWER KEY:** If the answer to **ALL** of these items is yes, the project can be considered an Evidence-based activity that does **NOT** meet the definition of research. **IRB review is not required.** Keep a copy of this checklist in your files. If the answer to **ANY** of these questions is **NO**, you must submit for IRB approval.

*Adapted with permission of Elizabeth L. Hohmann, MD, Director and Chair, Partners Human Research Committee, Partners Health System, Boston, MA.*

**STUDENT NAME (Please print):** Mayra Portillo- Guerra

| Signature of Student: | DATE: 05/10/2022 |

**SUPERVISING FACULTY MEMBER NAME (Please print):**

| Lisa Brozda RN, MSN, CNS | 5/14/2022 |

**Signature of Supervising Faculty Member**

| Lisa Brozda RN, MSN, CNS | DATE | 5/14/2022 |