

The University of San Francisco

USF Scholarship: a digital repository @ Gleeson Library | Geschke Center

Master's Projects and Capstones

Theses, Dissertations, Capstones and Projects

Spring 5-20-2022

Stop the Bleed and Seize Control: The use of Simulation and Video Modules in Educating Emergency Department Staff Regarding Maternal Hypertension and Hemorrhage

Jared Maxwell Talsky
jmtalsky@usfca.edu

Follow this and additional works at: <https://repository.usfca.edu/capstone>



Part of the [Maternal, Child Health and Neonatal Nursing Commons](#), and the [Medical Education Commons](#)

Recommended Citation

Talsky, Jared Maxwell, "Stop the Bleed and Seize Control: The use of Simulation and Video Modules in Educating Emergency Department Staff Regarding Maternal Hypertension and Hemorrhage" (2022). *Master's Projects and Capstones*. 1330.
<https://repository.usfca.edu/capstone/1330>

This Project/Capstone - Global access is brought to you for free and open access by the Theses, Dissertations, Capstones and Projects at USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. It has been accepted for inclusion in Master's Projects and Capstones by an authorized administrator of USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. For more information, please contact repository@usfca.edu.

Running head: STOP THE BLEED

**Stop the Bleed and Seize Control: The use of Simulation and Video Modules in Educating
Emergency Department Staff Regarding Maternal Hypertension and Hemorrhage**

Jared “Max” Talsky

School of Nursing and Health Professions: University of San Francisco

NURS 653-01: Internship

Professor Lisa Brozda

May 10, 2022

Table of Contents

Abstract	4
Problem Description	6
Literature Review	8
Project Framework	10
Specific Project Aim	11
Methods	12
Community and Microsystem Assessments	13
Five P's.....	13
Root Cause Analysis	15
Strengths, Weakness, Opportunities, and Threats Analysis	15
Failure Mode Effect Analysis	16
Cost Analysis	16
Intervention	17
Simulation PDSA.....	18
Simulation Video PDSA.....	18
Study and Measures	19
Pre-Survey.....	19
Debrief Questions/Discussion.....	20
Post-Survey.....	20
Results	20
Simulation Results	20
Participants.....	20
Pre-Survey.....	20
Post-Simulation Results.....	21
Debrief Questions and Discussion.....	22
E-Learning Video Results	22
Discussion	22
Simulation	22
Shortcomings.....	23
Video	25
Shortcomings.....	25
Conclusion	26
References	27
Appendix A: Statement of Determination and Non-Research Determination Form	30
Appendix B: Community and Population Assessment	34

STOP THE BLEED

Appendix C: Root Cause Analysis.....	35
Appendix D: SWOT Analysis.....	36
Appendix E: Concept Map.....	37
Appendix F: PDSA Cycles.....	38
Appendix G: Simulation and Video Cost Analysis.....	41
Appendix H: Pre-Survey.....	43
Appendix I: Post-Survey.....	47
Appendix J: Survey Flyers.....	49
Appendix K: Simulation Debriefing Questions.....	50
Appendix L: Video Simulation Scripts.....	52

Abstract

In order to address shortcomings of the health care system within the United States surrounding the early recognition and response to preeclampsia (PreE) and postpartum hemorrhage (PPH) emergencies The Joint Commission (TJC) revised the accreditation requirements regarding implementing yearly maternal hypertension and hemorrhage simulation scenarios in emergency departments. A Quality improvement team of Clinical Nurse Leader (CNL) students at University of San Francisco, working alongside the emergency department and labor and delivery department nurse educators assisted a dual hospital system in the Bay Area of California to develop and implement training materials and simulations for the hospital system's Emergency Department (ED) staff. Pre and post simulation data were collected, and simulation debriefs were conducted to determine staffs level of awareness of hospital policies and procedures as well as comfort levels in recognizing and treating PreE and PPH prior to and after implementation of the simulation scenarios. The CNL students were also tasked with developing a staged and recorded example of two simulations, PreE and PPH, to be uploaded to the hospital system's knowledge center (online learning platform) in early 2023. Low survey response rates made results analysis difficult but the debriefs provided valuable insight into the usefulness of simulation and debrief to increase awareness of policies and procedures. The QI team and will not be able to obtain post-intervention data on the effectiveness of the video training materials until implementation in early 2023.

Key words: Maternal health, maternal hemorrhage, postpartum hemorrhage, maternal hypertension, preeclampsia, emergency medicine, emergency department, simulation, training, e-learning

Stop the Bleed and Seize Control: The use of Simulation and Video Modules in Educating Emergency Department Staff Regarding Maternal Hypertension and Hemorrhage

The early recognition, response, and treatment of hypertensive disorders of pregnancy/preeclampsia (PreE), and postpartum hemorrhage (PPH), two common causes of maternal death and morbidity, are of vital importance in preventing maternal morbidity and mortality in emergency situations (D'Alton et al., 2014). According to Hoyert (2021) the overall maternal mortality rates for 2019 were 20.1 deaths per 100,000 live births, rising significantly from the 2018 maternal mortality rate of 17.4 per 100,000 live births. In the non-Hispanic black population that number rises dramatically to a 2019 rate of 44.0 deaths per 100,000 live births.

To address these staggeringly high numbers, The Joint Commission (TJC) (2019) established new training and educational requirements to ensure Emergency Department (ED) staff are able to quickly recognize and treat PreE and PPH. TJC accredited hospitals are required to provide yearly simulation and education regarding the recognition and treatment of PreE and PPH to maintain their accreditation. In the case of Hospitals A and B, a two hospital system in The Bay Area of California, the Nurse Education team was tasked to design and implement training standards to meet TJC guidelines and maintain their accreditation. A group of Clinical Nurse Leader (CNL) students from the University of San Francisco was asked to help implement and evaluate the educational interventions.

The American College of Obstetricians and Gynecologists (ACOG) (2020) defines PreE as a multisystemic disorder characterized by new onset of hypertension (systolic blood pressure (SBP) greater than 140mmHg or diastolic blood pressure (DBP) greater than 90mmHG) arising after twenty weeks of gestation, often accompanied by proteinuria. Preeclampsia can be categorized as PreE or PreE with severe features to include a SBP of 160 mmHg or greater or a

STOP THE BLEED

DBP of 110 mmHG or greater, visual disturbances, intractable headache, thrombocytopenia, upper right quadrant abdominal pain, pulmonary edema, renal insufficiency, and impaired liver function. PreE with or without severe features can also lead to life-threatening seizures, strokes, and other sequelae. Per California Maternal Quality Care Collaborative guidelines (Druzin et al., 2021) treatment of PreE with severe features includes antihypertensives to decrease blood pressure to a target goal of SBP 140 mmHg as well as magnesium sulfate to decrease the risk of seizure.

Primary PPH, as defined by ACOG (2017), is a cumulative blood loss of 1,000 mL or more accompanied by signs or symptoms of hypovolemia within 24 hours of pregnancy.

Secondary maternal hemorrhage is differentiated by the timing, occurring between 24 hours and twelve weeks post-delivery (Lenahan, et al., 2019).

Problem Description

According to the CDC, from 2014 to 2017 maternal hemorrhage was the fourth leading cause of pregnancy-related death while HDP/PreE ranked as the seventh leading cause of pregnancy-related death (CDC, 2020). The rate of PreE in the US increased by 25% between 1987 and 2004 (Wallis et al., 2008). HDP occur in 8-10% of pregnancies in the US (Mogos et al., 2018). Specifically in California, from 2002 to 2007 HDP was the second leading cause of mortality in pregnancy with 60% of cases considered to have been preventable (California Department of Public Health, 2018).

The Joint Commission (2019) reports that the US ranks 65th among industrialized nations in pregnancy and postpartum maternal mortality and found that the early recognition and timely treatment for PreE and maternal hemorrhage had the highest impact in decreasing maternal complications. To address the systemic shortcomings of the US healthcare system in recognizing

STOP THE BLEED

and treating PreE and PPH, TJC revised its hospital accreditation requirements to include role specific education to all staff and providers who treat pregnant and postpartum patients. This annual education must cover the organizations PPH and PreE procedures as well as conduct annual simulations to determine system issues in the response to PreE and PPH.

To sum up TJC's requirement, rationale, and reference (2019) standards governing response to maternal hemorrhage there are seven provisions hospitals must meet. They must complete an assessment utilizing a tool to determine hemorrhage risk on admission to labor and delivery (L&D) and postpartum care, and develop stage-based written procedures for management of PPH. Obstetric units must have a dedicated hemorrhage supply kit, provide role-specific education to all staff and providers who treat pregnant and postpartum patients, conduct multidisciplinary annual drills to determine system issues, review hemorrhage cases that meet criteria, and provide education to patients and families.

In relation to PreE the same TJC document enumerates five provisions hospitals must meet to attain and/or keep accreditation. They must develop written procedures to guide measuring and remeasuring blood pressure, develop procedures for managing PreE, provide role specific education to all staff and providers who treat pregnant and postpartum patients, conduct drills at least annually to determine system issues, and review cases of PreE.

As of early 2021 the EDs in Hospitals A and B had not yet met TJC guidelines of performing annual PreE and PPH simulation scenarios with their staff. This paper describes a quality improvement project (QI) developed by the QI team in coordination with the Nurse Educators within the Emergency Department (ED) and L&D of Hospitals A and B. The QI team aims to increase the level of awareness of new hospital policies and procedures and comfort in recognizing and treating PreE and PPH within the ED staff of both hospitals.

STOP THE BLEED

In developing the QI project, a PICO question was devised to guide the examination of the current literature surrounding early recognition of PreE and PPH, investigate healthcare industry shortcomings, and identify tools to guide the development of training processes and procedures to address those shortcomings.

The PICO questions is as follows; in emergency department staff, what is the effectiveness of curated maternal hemorrhage and preeclampsia simulation training and/or recorded simulation video modules as on increasing staff knowledge of hospital policy and procedures and improving self-reported comfort levels in recognizing and treating PPH and PreE? Will these interventions meet TJC requirements for accreditation.

Literature Review

To guide the QI team in the development and implementation of simulation and video-based education, a comprehensive literature review was completed to determine the efficacy of the use of simulation and e-modules in medical education and determine the extent of the problem of missed diagnoses, untimely treatment, and inappropriate treatment of PreE and PPH.

In a 2011 retrospective cohort study of an urban perinatal network by Torre et al., 63 severe and near-miss obstetrics (OB) hemorrhage cases were documented across eleven hospitals. Of the 63 cases, 54% were largely due to issues within provider-level recognition of hemorrhage and errors in treatment and were determined to be preventable. Similarly, a 2021 retrospective cohort study by Kantorowska et al. demonstrated that of 213 women who presented to an academic hospital in New York with an obstetric hypertensive emergency, more than half experienced a delay in treatment. Risk factors for receiving delayed treatment including white-race and a time of presentation between 2200 and 0600.

STOP THE BLEED

According to the California Maternal Quality Care Collaborative (CMQCC) (Druzin et al., 2019), PreE contributes to preterm birth, neonatal morbidity and mortality, and a higher risk of maternal and infant adverse outcomes as well as major costs to the health care system estimated to be approximately \$1.15 billion for neonatal and infant care and \$1.03 billion for maternal care. The CMQCC's hemorrhage toolkit suggests that 80% of all PPH is due to uterine atony and is associated with a high likelihood of readmission (Fein et al., 2021).

To address TJC standards for maternal safety and offer a roadmap to meeting TJC requirements and reducing negative outcomes associated with PreE and PPH the CMQCC developed new PreE and PPH toolkits. These toolkits establish and teach the most up to date algorithms utilized to guide clinical decision making when presented with cases of PreE and PPH. The toolkits also develop and offer the use of simulation scenarios to appropriately train and assess staff on their recognition and response to PreE and PPH (Druzin, et al., 2021).

The use of simulation in healthcare training is well documented and simulation is well situated to address the shortcomings in the recognition, treatment, and build skills associated with urgent and emergent illness and injury (Moslehi et al., 2022). Sullivan et al. (2015) demonstrated the usefulness of in-situ short and frequent trainings in decreasing CPR and defibrillation response times over standard American Heart Association classroom training methodologies. The use of simulation in training post-graduate emergency medicine doctors significantly increased trainees' self-efficacy, knowledge, and skills in pediatric emergency care (Ahluwalia et al., 2021). More specifically, simulation has been found to be an effective means to train residents in family practice medicine to deal with obstetric emergencies (Magee et al., 2013).

Finally, mobile-based video and e-learning platforms have also been found to be as effective (Huynh, 2017) if not more effective than conventional methods of learning about the management of PreE and eclampsia (Rahmatia et al., 2018).

Utilizing simulation training and implementing video-based e-module content not only satisfies TJC requirements but also provides effective educational modalities to ensure ED staff are able to quickly and appropriately treat PreE and PPH.

Project Framework

CNLs are uniquely situated to implement quality improvement projects based on their didactic training in project management, lateral integration of patient care, collaboration with all healthcare staff, evidence-based practice (EBP), theories of change, and research evaluation (King and Gerard, 2016). Furthermore, ED staff have the ability to play a role in protocol development and the quality improvement process (White, 2006). The utilization of evidence-based standards through the implementation of Clinical Decision Rules allows ED providers to participate in hospital-level policy development and implement standard order sets to guide clinical decision making in the rapidly evolving, hectic environment of a busy ED (Stiell and Bennet, 2008).

For the purpose of this project the QI team utilized Lewin's Change Theory and stages of change. Lewin's theory illustrates the concepts of driving forces, or the forces driving change, restraining forces, the forces resisting change, and equilibrium. The driving force for change is the new TJC standards, resistance to that change is likely based on staff's perception of TJC. Lewin enumerates three stages of change. The first stage is unfreezing, during which methods are found to enable people to let go of old patterns. The second stage is change, during which

STOP THE BLEED

changes in thoughts, feelings, and behaviors are enacted. Finally, the refreezing stage solidifies the change and incorporates the change into no standard operating procedures (Shirey, 2013).

Lewin's theory seemed a particularly simple yet appropriate framework with which to approach the project as the key stake-holders, including the Nurse Educators, Managers, Nursing Staff, Healthcare Providers, MDs, obstetrics and gynecology providers (OB/GYNs), Certified Nurse Midwives (CNMs), and Techs all understand the TJC requirements to be highly rigid. It is necessary for the hospital and staff to meet them to retain accreditation thus making the unfreezing stage particularly easy. The nurse educators also did a great job building excitement around the simulation scenarios. The changing/moving stage of Lewin's theory was similarly effective as the simulations are intended to be quick, highly informative, and include a thorough debrief and evaluation of the simulation experience as well as in-depth conversations with OB providers, nurse-midwives, nurses, and ED techs surrounding new developments and hospital policies, procedures, and algorithms in the treatment and recognition of life-threatening peripartum conditions. This informal, thorough, and informative debrief also helped solidify the refreezing cycle as the staff would come to understand this to be an annual requirement. Finally, in developing new e-module based curriculum the nurse educators and QI team hopes to implement fun, exciting, and comprehensive materials to include the simulation videos creating a broader sense of interest in completing the education requirements put forth by TJC.

Specific Project Aim

By implementing annual simulation training the QI team aims to fulfill one of TJC requirements necessary for accreditation while increasing ED staff's reported comfort levels in recognizing and responding to PPH and PreE by 10% by May 2022. Finally, the QI team aims to

introduce PPH and PreE simulation videos as new training modalities in the hospital system's knowledge center by January 2023 based on the hospital system's schedule.

Methods

Introduction to Methods

The QI team first developed a statement of determination and IRB non-research determination (Appendix A) followed by a comprehensive community health needs and demographics review (Appendix B), as well as an understanding of the microsystems in which the team was operating utilizing a five P's assessment. Through literature review The QI team developed a root cause analysis (RCA) to determine the need and rationale for the new TJC requirements (Appendix C). A failure, mode, effect, analysis (FMEA) was conducted as the QI project is aimed at preventative measure addressing country-wide issues rather than addressing hospital system specific shortcomings. A strengths, weaknesses, opportunities, and threats (SWOT) analysis was then performed to guide development and determine the best ways to encourage buy-in (Appendix D). The QI team developed a concept-map to guide conceptualization and decision making (Appendix E) and Plan-Do-Study-Act cycles to guide the development and progression of the simulation and e-learning module implementation (Appendix F). The team conducted a cost analysis (Appendix G), developed pre and post simulation surveys (Appendices H and I), created flyers with QR codes to distribute the surveys and reduce barriers to survey response by increasing ease (Appendix J) and developed and utilized debrief questions for the simulations. Observation of debrief and answers to the debrief questions were used to guide qualitative analysis (Appendix K). Finally, through observation of simulations and utilizing the most current CMQCC (2021) toolkit the QI team developed scripts for PreE and PPH simulation videos (Appendix L) and produced and edited simulation videos to upload to the hospital system's knowledge center.

Community and Microsystem Assessments

The community demographics/health needs assessment was conducted utilizing information provided by the hospital system. The community has a total population of 750,746 made up of 59.8% White, 18.2% Asian, 14.5% Hispanic/Latinx, 2.4% African American, 0.2 % Native American/Alaskan Native, and 0.2% some other race. Of the total population, 6.2% live below the poverty line, 3.0% are unemployed, 5.5% are uninsured, and 5.8% are adults with no high school diploma. See Appendix A for a comprehensive breakdown of demographics.

Five P's

The Five P's is a framework in which to analyze the purpose, patients, professionals, processes, and patterns of a microsystem. The QI teams microsystem consists of the EDs of Hospital A and Hospital B to be referred to as A and B. A and B are located just over seven miles from each other and provide comprehensive emergency care to the community described above. Hospital A has a 224-bed capacity and no L&D services while Hospital B has a 554-bed capacity as well as an L&D unit, Mother/Baby unit, NICU, and Pediatrics unit along with the designation of a Level II Trauma Center.

Purpose. The purpose of ED A and B is to provide quality, timely, comprehensive emergency care to a diverse patient population, including the population of interest for this project, pregnant and postpartum women.

Patients. The patient demographics described above represent the diversity of patients seen at A and B.

Professionals. The professionals of A and B include Healthcare Providers (HCPs), Registered Nurses (RNs), Nurse Educators, Nurse Managers, Certified Nursing Assistants, ED

STOP THE BLEED

Techs, the emergency medical service (EMS) and care providers, on-call OB/GYNs and Certified Nurse Midwives (CNMs), and in the case of B, on-site OB/GYNs and CNMs

Processes. Fast-paced emergency care units rely on interdisciplinary teams to work together to ensure timely and accurate triage of patients and high-quality, effective, patient care. Through conversations with ED staff, these processes begin with the EMS system. Within the context of this project, EMS providers generally attempt to bring pregnant and postpartum patients to B as they know B has the resources to provide comprehensive peripartum care. Upon arrival to the ED, patients are triaged and admitted. ED techs, and CNAs generally prep admitted patients and obtain vital signs, and gather other necessary equipment such as electrocardiogram electrodes to monitor heart rate and rhythm, and oxygenation sensors. RNs assess the patient and utilize the electronic health record system to access standardized order sets, inform the providers as to the status of the patient, and to obtain further orders. The HCPs will then assess the patient and care plans are developed and managed. In the context of PPH and PreE, at A, an on-call OB/GYN will be notified and must arrive within 30 minutes to provide care. At B there are L&D RNs, and OB/GYNs or CNMs onsite ready to assist. For the treatment of PreE and PPH, A+B developed algorithms based on the newest CMQCC and ACOG recommendations to be used to guide clinical decision making in PPH and PreE patients.

Patterns. Through conversations with the RNs, CNAs, and ED Techs, the ED staff is generally uncomfortable working with pregnant or post-partum patients and will contact the on-call OB provider or transfer the patient to L&D as quickly as possible. The ED staff at both A and B also report a low prevalence of PreE or PPH patients presenting to the ED. More general patterns include shift huddles at the beginning of shift to disseminate important information and facilitate patient hand-off between nurses. Other patterns that came to light and were addressed

STOP THE BLEED

throughout the development of policy and simulation scenarios included a lack of ED access to certain pharmaceutical interventions. For example, Ptoicin, utilized in PPH to stimulate uterine contraction was previously unavailable in both A+B's ED medication distribution system.

Another such example are the intravenous bags of magnesium sulfate the ED has on hand.

Magnesium Sulfate is used in PreE to reduce the risk of seizures and at A and B is available in only two gram bags while the recommended loading dose of magnesium sulfate for use in PreE is four to six grams.

Root Cause Analysis

A root cause analysis (Appendix C) was conducted utilizing the five why's approach in which you ask "Why" five or more times to get to the root of a problem (Nelson et al., 2007). The RCA was done through literature review to ascertain the reasoning behind TJC's decision to implement yearly simulation requirements and to guide A and B to fulfill TJC requirements in a timely manner. The RCA and TJC identified increasing numbers of PreE and PPH within the US and the importance of prevention and early recognition in reducing maternal and neonatal complications. TJC implemented 13 new provisions delineating how hospitals must approach PreE and PPH for accreditation purposes. Hospitals A+B must provide annual simulation drills to meet TJC standards, and provide role-specific education to all staff and providers who treat pregnant and postpartum women.

Strengths, Weakness, Opportunities, and Threats Analysis

A SWOT analysis (Appendix D) was also complete to determine Strengths, Weakness, Opportunities and Threats analysis was completed to determine best approaches to engage staff and ensure successful implementation of the simulation scenarios and debriefs. Strengths identified include hands-on training, a faculty committing to developing new critical thinking

STOP THE BLEED

skills, a high level of collaboration among ED and L&D units, and the support of all staff during the simulation. Weakness identified include the time constraints in the development of the training scenario, running the simulation scenarios in the middle of a busy day in the ED, and low levels of participation due to only running one simulation at each site. Opportunities include increasing the readiness and recognition of PreE and PPH, and increasing awareness of new standardized order sets and supplies. The threats identified were budget constraints, poor attitudes of staff towards TJC requirements and an unwillingness to participate in the training.

The threats were largely addressed by the nurse educators. Timing the simulations to run during regular working hours for staff already onsite limited the budgetary constraints and demonstrating the value in getting hands-on experience in types of cases the ED staff see very rarely generated excitement among the staff.

Failure Mode Effect Analysis

Through the FMEA numerous failure points were identified including the lack of Ptoicin in A and Bs medication distribution system, a lack of knowledge and understanding of PreE and PPH, a lack of experience in recognizing and treating PreE and PPH, and a lack of knowledge regarding the A and B's policies, procedures, and the algorithms and order sets utilized to guide clinical decision making. All of these failure modes have the potential to negatively affect pregnant and postpartum mothers and the care of newborns.

Cost Analysis

A cost analysis (Appendix E) was performed to determine the overall costs of developing new hospital policy and simulation scenarios, implementing the simulation scenarios and developing the videos. Professionals considered within the cost analysis include RNs, the RN ED directors and managers, the simulation lab manager, IT staff, and the simulation scenario

STOP THE BLEED

participants to include RNs, ED Techs, CNAs, CNMs, and Nurse Educators. While doctors were involved in policy and simulation development, they are not hospital employees but rather paid by a third party and therefore were not considered in the cost analysis as their time should not affect the hospitals bottom line.

The supplies utilized for the sim itself include IV kits, syringes, simulated meds including IV bags, vials, syringes and needles, and a realistic L&D simulation mannequin (The Noelle Maternal Birthing Simulator by Gaumard) that can give real-time feedback, receive IM injections, IVs, “breathe”, has a palpable pulse, and can simulate hemorrhages. This fantastic tool was already purchased by the hospital for simulation training on the L&D unit and thus its cost was not factored into the total cost analysis.

The total cost for the development of policy, simulation scenarios, video resources, and the implementation of simulation scenarios and video, based on hospital staff wages is estimated to be \$7,574.05 dollars.

Intervention

A single simulation scenario that covered both PreE and PPH was developed and implemented through the following PDSA cycles, see Appendix D for full PDSA cycle descriptions. The simulations were run during AM shift in open patient care rooms within the EDs and participants were staff working in the units at the time of simulation.

At hospital A the simulation scenario was run on March 3rd at 0900. Starting at 0700 the nurse educators and QI team began to prepare for the simulation and encourage staff participation during shift huddles and through announcements at the various nurses’ stations. The simulation ran for approximately 20 minutes with a 40 minute debrief afterwards. Similarly, at hospital B, the same processes were utilized on March 16 however due to the high level of staff

STOP THE BLEED

participation and extra time in the nurse educators' day, the team was able to run two simulation scenarios back-to-back. Following the second simulation, the simulation scene was reset and the QI team was able to record the PreE and PPH simulation videos.

A detailed breakdown of the PDSA cycles guiding both simulation and video development can be found in Appendix F.

Simulation PDSA

A detailed breakdown of both PDSA cycles can be found in Appendix F.

Plan. This PDSA cycle included literature review and analysis, and a determination of whether A and B were meeting the current TJC standards. Meetings were held with the Nurse Educators to determine the scope of the QI team's project and how the team could help the Nurse Educators implement the simulation scenarios. Nurse Educators worked with the ED managers to inform staff of the upcoming simulation dates.

Do. The simulation scenario was developed, survey and debrief questions were finalized, and staff was surveyed through email and QR code delivery to determine level of comfort in dealing with preeclampsia and postpartum hemorrhage prior to the simulations.

The first simulation was carried out in A. The times were announced during 0700 huddle and staff voluntarily participated in the simulation as time allowed. A comprehensive debrief was completed after the scenario was terminated. Approximately two weeks later the simulation scenario was repeated in B.

Study. Post-simulation surveys were distributed and debrief questions, responses, and the conversations with the L&D and ED manager and participating staff were summarized and utilized to determine effectiveness of the simulation.

STOP THE BLEED

Act. The emergency department nurse educators for Hospitals A and B will be evaluating the scenarios based on the feedback provided from participants, the ED and L&D directors, and the QI team to redesign the annual simulation scenarios as needed to best fit their training schemas.

Simulation Video PDSA

Plan. Literature review and analysis was conducted and the aim of meeting TJC requirements by adding education materials and videos to the knowledge center was developed. The first simulation was analyzed and utilized to create a draft script to present to the RN Educators for editing and final approval. Scripts were then edited and finalized and after the second simulation day's final debrief, reworked slightly to meet the nurse educators' goals.

Do. The film was created after the second simulation scenario was completed as the team had access to the mannequin, simulation lab manager, and supplies. The videos were edited and sent to the IT staff to upload to the knowledge center early 2023.

Study/Act. As, due to hospital scheduling constraints, the educational videos will not be uploaded to the knowledge center until 2023 the QI team will not be able to complete the study and act phases of this PDSA, however, the team expects the videos, in combination with other materials, to be effective in educating staff that are unable to participate in simulation regarding current processes and interventions for PreE and PPH and expects hospitals A and B to continually update and continue with e-learning.

Study and Measures***Pre-Survey***

Pre-simulation surveys were administered via email approximately one week before the first simulation scenario at hospital A as well as distributed via flyers (Appendix J) with a QR

STOP THE BLEED

Code the morning of the simulation in staff huddle as well as on the message boards and at nursing stations in the EDs. The purpose of the pre-survey was to determine staff perceptions of, their exposure to, and their comfort with recognizing and treating PreE and PPH. The surveys utilized Likert scales with some open response questions and included questions such as “How comfortable are you in recognizing and treating PreE?” and “How often do you see postpartum hemorrhage patients in the ED?” The full surveys can be seen in Appendix H.

Debrief Questions/Discussion

A list of simulation scenario debrief questions can be found in Appendix K. The overall debriefing discussions were analyzed and summarized as well.

Post-Survey

Post-simulation surveys (Appendix I) were delivered via email to the simulation participants as well as distributed via flyers with QR codes within Hospital B. Surveys were designed to determine if there was a meaningful change in comfort levels in recognizing PreE and PPH.

Results**Simulation Results*****Participants***

In total, 30 members of A and B’s ED and L&D staff participated in the simulation. The Nurse Educators and QI team were happily surprised at the level of turnout given that the simulations were performed on the ED floor in the middle of AM shift with nurses and staff who were busy working on the floor at the time.

Pre-Survey

STOP THE BLEED

Survey responses were recorded and analyzed electronically. A total of 27 ED staff responded to the pre-survey across both sites. Approximately 70% of respondents replied that they saw 0-1 pregnant and/or postpartum patients per day while approximately 30% say they saw 2-4 per day. One-hundred percent of respondents say they saw 0-1 PPH patients per week. The incidence of maternal hypertensive disorders seen in the ED ranges from 0-1 times per week (85% of respondents) and two to four times per week (15% of respondents). Only three respondents (11.1%) reported previous experience working on an L&D or OB unit. Surprisingly, only 22.2% of respondents reported to be aware of the current hospital policies and protocols in place for treatment and management of PPH.

Respondents' comfort in recognizing and treating PPH, PreE, and PreE with severe features was gauged on a 1-10 scale, 33.3% of respondents reported being uncomfortable with it (response of three or less) and approximately 29.6% reported being comfortable with it (response of 7 or more). The remaining 37% reported being moderately comfortable with it (response of 4-6). Similarly, with PreE, 40.7% of respondents reported being uncomfortable with recognizing and treating PreE, while only 25.9% of participants felt comfortable, and 40.7% felt moderately comfortable. When you factor PreE with severe features, 37% of respondents felt uncomfortable in recognizing and treating PreE with severe features while 37% felt moderately comfortable, and 25.9% felt comfortable.

Respondent's perception of the ED staff's effectiveness in recognizing and treating PPH and PreE was also gauged utilizing a 1-10 Likert scale. Of the 27 respondents, 44.4% felt that the ED staff is effective in recognizing and treating PPH with 37% reporting the ED staff to be moderately effective. Similarly, 44.4% of respondents viewed the ED staff to be effective at recognizing and treating PreE and 51.8% viewed the ED staff as moderately effective.

STOP THE BLEED

Finally, free answers were collected from the respondents to determine the self-perceived gaps in knowledge. Main themes identified were lack of experience and exposure within the patient population, limited awareness of hospital policies and protocols, and lack of familiarity with pharmaceutical treatment modalities.

Post-Simulation Results

Post-simulation data was collected by sending out surveys the email as well as visiting the EDs in person to distribute flyers with a QR code to the charge nurses to present to shift huddles and were left with ED staff at the nurse's stations to ease barriers to participation. Unfortunately, the response rate for post-simulation surveys was incredibly low with the QI team receiving only three completed surveys.

Debrief Questions and Discussion

The debriefs provided useful real-time feedback from participants, ED RNs, Educators, MDs, and OB/GYNs regarding how the scenario went as well as information on the new algorithms and hospital policies and procedures. See the discussion for a broader analysis of the debriefs.

E-Learning Video Results

These results will be unavailable prior to implementation of the video and e-learning modules to the knowledge center in 2023.

Discussion**Simulation**

STOP THE BLEED

As post-simulation survey response rates were so low the QI utilized the debrief questions and discussions for both simulations provide the most relevant and actionable feedback from participants regarding the usefulness and effectiveness of the simulation experiences.

Participants largely felt that teamwork and communication within the simulation team was strong and allowed them to successfully recognize PreE and PPH and treat the patient appropriately. Lack of awareness in ED staff surrounding the importance of fundal massage in a PPH patient and limited awareness of the pharmaceutical interventions and the EDs ability to provide them were identified as gaps of knowledge within the treatment of the PreE and PPH patients.

The hospital system's newest policies, procedures, and algorithms were identified during debrief as well as the new system wide algorithms to guide clinical decision making when presented with a patient with PreE or PPH. New order sets had been added to the electronic medical record system to facilitate health care provider's ability to quickly generate the correct orders in PreE and PPH situations and these order sets were discussed within the context of the simulation scenario.

One area in which the director of Hospital B's L&D department identified as an issue was within the development of the simulation scenario itself. He describes the likelihood of a PreE patient presenting one week postpartum with PPH as highly unlikely suggests splitting the simulation scenario into individual scenarios in which only one condition is presented at a time.

Another bit of useful feedback surrounding the scenarios themselves was that there were so many people observing the simulations that as the scenario progressed and participants had pauses or questions the simulation quickly broke down into a full group discussion of the management of PreE and PPH. Possibly holding more than one simulation at each site could

STOP THE BLEED

decrease overall numbers at each simulation and ensure that only active participants were engaged in the simulation while the group could come together as a whole for debrief.

Through the simulation and debrief processes we can expect participants to report being aware and more knowledgeable of the ED's policies, procedures, and algorithms as well as the pharmaceutical interventions and how and where to find medications and supplies.

Shortcomings

While this simulation scenario meets the joint commission requirements and was largely viewed positively by participants, there are numerous shortcomings that the QI team would like to address.

As discussed with the director of L&D, it would be beneficial to split the combined simulation into separate PreE and PPH simulations to better match what we may expect to see in real life.

While between both hospitals 30 participants were able to partake in or observe the simulation scenarios, reaching the entire ED staff would greatly increase institutional knowledge and comfort levels in recognizing and treating PreE and PPH in the emergency setting. To address this, as supported by the literature review, multiple simulations could be run on multiple days to allow more participation. Alternatively, the hospital system could also implement mandatory simulation days for all ED staff in which the staff would all have the opportunity to participate in the simulation at a time they were not also busy working within the ED unit.

Surprisingly, neither A or B has an accurate way to quantify blood loss in PPH patients in the ED. This seems like a large oversight and was discussed briefly with the nurse educators and L&D department director. While on the L&D floor, cumulative blood loss is quantified through both using scales to weigh pads and measured through collection with drapes, the ED does not

STOP THE BLEED

utilize either of these systems. The nurse educators' hope is that both EDs will have the ability to accurately quantify blood loss such as, at the minimum, a scale to weigh pads and knowledge of the dry weights of all items that may become blood soaked (ACOG, 2015). Staff would of course need to be trained on the use and measuring of quantitative blood loss which would incur more training time and added costs.

Another problem area identified through simulation and discussed with the L&D and ED directors was the rigidity of the hospital system's new algorithms when choosing pharmaceutical approaches to managing PreE. For example, if a patient is started on hydralazine, per the algorithm, the HCPs are directed to continue the hydralazine algorithm until they've administered all doses of hydralazine before switching to a different and possibly more effective intervention based on the patient's response to hydralazine.

Video

It is anticipated that through participating in the video learning through the knowledge center, ED staff would become more familiar with and knowledgeable of the recognition and treatment of PreE and PPH.

Shortcomings

The drawbacks to the use of video in e-learning is that it only covers one treatment modality for the specific patient presenting in the simulation scenario being recorded. For example, there are numerous algorithms for the treatment of PreE depending on the antihypertensives used. The scenario only presents one such pathway and does not demonstrate the usefulness of having numerous pharmaceutical interventions available. The simulation scenario also fails to demonstrate the contraindications for the use of certain medications, the decision-making processes associated with determining the best treatment algorithm, or the

knowledge of patient medical history necessary to determine a proper course of treatment. Other e-learning methodology can be used to supplement the information presented in the simulation videos and provide some of the detailed information necessary to make clinical decisions in an emergent situation. In discussing the limitations of e-learning in emergency medicine, Roe et al., (2010) suggests that e-learning should promote group discussion and blended approaches that offer educator feedback and in-person experiences are often more beneficial to learning.

Conclusion

While the prevalence of PreE and PPH patients presenting to EDs A and B may not increase, the use of simulation has been shown to increase the hard skills sets and knowledge that staff, RNs, and providers need to address urgent and emergent medical needs.

While the simulation scenarios utilized fulfill the hospital systems requirements for TJC accreditation, numerous studies show the greater effectiveness of regular simulations in the acquisition and retention of knowledge and hard skills necessary to respond in a fast-paced environment like the ED (Sullivan et al., 2015)(Sutton et al., 2011). Given that the ED staff at both A and B rarely see perinatal emergencies, more frequent simulation, while costly, would be highly beneficial to staff's ability to recognize and treat life threatening conditions such as PreE and PPH.

References

- Ahluwalia, T., Toy, S., Gutierrez, C., Boggs, K., & Douglass, K., (2021). *International Journal of Emergency Medicine*, 14(1), 1-5.
- American College of Obstetricians and Gynecologists, (2017). Postpartum Hemorrhage: ACG practice bulletin, number 183.
- American College of Obstetricians and Gynecologists, (2020). Gestational hypertension and preeclampsia: ACOG practice bulletin, number 222. *Obstetrics and Gynecology*, 135(6) e237-e260.
- California Department of Public Health, (2018). The California pregnancy-associated mortality review. Report from 2002-2007 maternal death reviews.
- California Maternal Quality Care Collaborative (CMQCC), 2021. Improving health care response to hypertensive disorders of pregnancy, V2.0.
- Centers for Disease Control and Prevention (CDC), (2020). Pregnancy Mortality Surveillance system. <https://www.cdc.gov/reproductivehealth/maternal-mortality/pregnancy-mortality-surveillance-system.htm>
- D'Alton, Mary, Main, Elliott, Menard, M. & Levy, Barbara. (2014). The national partnership for maternal safety. *Obstetrics & Gynecology*, 123, 973-977.
- <https://doi.org/10.1097/AOG.0000000000000219>
- Druzin, M., Shields, L., Peterson, N., Sakowski, C., Cape, V., Morton, C., (2021). Improving health care response to hypertensive disorders of pregnancy, a California Maternal Quality Care Collaborative Quality Improvement Toolkit.
- Fein, A., Wen, T., Wright, J.D., (2021). Postpartum hemorrhage and risk for postpartum readmission. *Journal of Maternal-Fetal and Neonatal Medicine*, 34(2), 187-194.

Hoyert, D.L. (2021). Maternal mortality rates in the United States, 2019. *NCHS Health E-Stats*.

DOI: <https://doi.org/10.15620/cdc:103855>.

Huynh, R., (2017). The role of e-learning in medical education. *Academic Medicin*, 92(4), 430.

Kantorowska, A., Heiselman, C.J., Halpern, T.A., Akerman, M.B., Elsayad, A., Musdat, J.C.,

Sicuranza, G.B., Vintzileos, A.M., & Heo, H.J., (2021). Identification of factors associated with delayed treatment of obstetric hypertensive emergencies. *Obstetrical & Gynecological Survey*, 76(1), 7-9.

King, C.R., & Gerard, S.O., (2016). Clinical Nurse Leader Certification Review. *Springer Publishing Company, LLC*, New York, NY.

Lagrew, D., McNulty, J., Sakowski, C., Cape, V., McCormick, E., Morton, C.H., (2022).

Improving health care response to obstetric hemorrhage, a California Maternal Quality Care Collaborative Toolkit.

Lenahan, C., Hurst, H., & Littlefield, A., (2019). Recognition and management of secondary postpartum hemorrhage. *Women's Healthcare*, 40-44.

Magee, S.R., Shields, R., & NOthnagle, M., (2013). Low cost, high yield: simulation of obstetric emergencies for family medicine training. *Teaching & Learning in Medicine*, 25(3), 207-210.

Mogos M.F., Salemi J.L., Spooner K.K., McFarlin B.L., Salihu H.H., (2018) Hypertensive disorders of pregnancy and postpartum readmission in the United States: national surveillance of the revolving door. *Journal of Hypertension*, 36(3), 608-618.

Moslehi, S., Masoumi, G., Barghi-Shirazi, F., (2022). Benefits of simulation-based education in hospital emergency departments: a systematic review. *Journal of Education and Health Promotion*, 11(40).

- Rahmatia, R., Dehnavi, Z.M., Kamali, Z., Dehnavia, A.M., (2018). The effect of mobile-based and lecture based training methods on midwives' knowledge regarding management of preeclampsia and eclampsia. *Journal of Midwifery & Reproductive Health*, 6(4), 1430-1436.
- Roe, D., Carley, S., Sherratt, C., (2010). Potential and limitations of e-learning in emergency medicine. *Emergency Medicine Journal*, 27, 100-104.
- Shirey, M.R., (2013). Lewin's theory of planned change as a strategic resource. *Journal of Nursing Administration*, 43(2), 69-72.
- Sullivan, N.J., Duaval_Arnould, J., Twilley, M., Smith, S.P., Aksamit, D., Boone-Guercio, P., Jeffries, P.R., & Hunt, E.A., (2015). *Resuscitation*, 86, 6-13.
- The Joint Commission (2019). Provision of care, treatment, and services standards for maternal safety. *R3 report, requirement, rationale, reference*, 24.
- Torre, M.D., Kilpatrick, S.J., Hibbard, J.U., Scott, S., Koch, A., Schy, D., & Geller, S.E., (2011). Assessing preventability for obstetric hemorrhage. *American Journal of Perinatology*, 28(10), 753-759.
- Wallis, A.B., Saftlas, A.F., Hsia, J., & Atrash, H.K., (2008). Secular trends in the rates of preeclampsia, eclampsia, and gestational hypertension, United States, 1987-2004. *American Journal of Hypertension B*, 521-526.
- White, A., (2006). Emergency care of postpartum patients with preeclampsia and eclampsia. *Advanced Emergency Nursing Journal*, 28(3) 248-257.

Appendix A

Statement of Determination and Non-Research Determination Form

Student Name: Jared Maxwell Talsky

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

Lyndon, A., Lagrew, D., Shields, L.E., Main, E., & Cape, V., (2015). Improving health care response to obstetric hemorrhage. California maternal quality care collaborative toolkit to transform maternity care. *California Maternal Quality Care Collaborative*.

Shields, D.M., Sakowski, C., Cape, V., & Morton, C., (2021). Improving health care response to hypertensive disorders of pregnancy, a California maternal quality care collaborative quality improvement toolkit.

STOP THE BLEED

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

Sullivan, N.J., Duval Arnould, J., Twilley, M., Smith, S.P., Aksamit, D., Boone=Guercio, P., Jeffries, P.R., & Hunt, E.A., (2015). Simulation exercise to improve retention of cardiopulmonary resuscitation priorities for in-hospital cardiac arrests: A reandmoized controlled trail. *Resuscitation, 86, 6-13.*

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>)

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:

	YES	NO
Project Title: Stop the Bleed and HELLP Moms: The use of simulation and simulation videos in educating staff regarding preeclampsia and postpartum hemorrhage.	X	
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.	X	
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.	X	
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.	X	
The project involves implementation of established and tested quality standards and/or	X	

STOP THE BLEED

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.	X	
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.	X	
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: <i>“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.”</i>	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): Jared Maxwell Talsky


Jared Maxwell Talsky
Signature of Student:

Jared Maxwell Talsky DATE 5/10/22

SUPERVISING FACULTY MEMBER NAME (Please print):

Lisa Brozda RN, MSN, CNS

Signature of Supervising Faculty Member

 RN, MSN, CNS **DATE** 5/14/2022

Appendix B

Community Health Needs Assessment: Population Demographics and Socioeconomic Data

	Tri-Valley/ Contra Costa County	Eastern Contra Costa County	Western Contra Costa County	Northern Alameda County
Total Population	750,746	318,900	254,267	587,090
White	59.8%	35.9%	23.4%	40.0%
Asian	18.2%	10.2%	20.1%	20.3%
Hispanic/Latinx	14.5%	34.6%	35.2%	17.0%
African American	2.4%	13.1%	15.5%	16.2%
Pacific Islander/Native Hawaiian	0.4%	0.7%	0.4%	0.5%
Native American/Alaska Native	0.2%	0.4%	0.3%	0.3%
Some other race	0.2%	0.2%	0.6%	0.4%
Multiple races	4.2%	5.0%	4.7%	5.3%
Living in poverty (<100% Federal Poverty Level)	6.2%	12.7%	14.0%	16.6%
Children in poverty	6.3%	18.0%	19.7%	18.8%
Unemployment	3.0%	3.1%	3.1%	2.9%
Uninsured population	5.5%	9.6%	12.9%	9.0%
Adults with no high school diploma	5.8%	15.0%	18.2%	12.1%

Appendix C

Root Cause 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.*

→ Why is that?



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

→ Why is that?



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

→ Why is that?



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.*

→ Why is that?



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.*

→ Why is that?



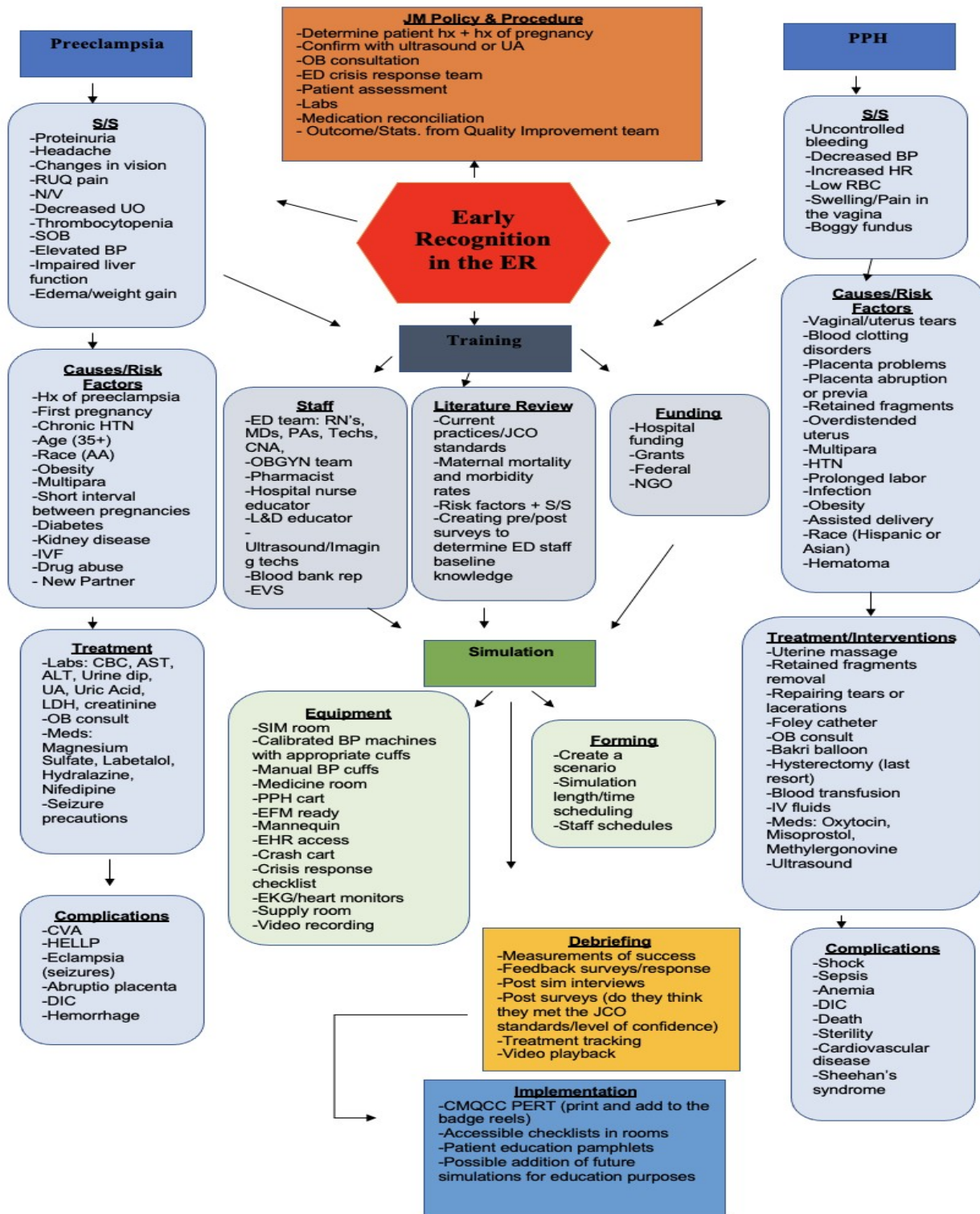
Appendix D

SWOT Analysis

<p style="text-align: center;">Strengths</p> <ul style="list-style-type: none">● Hands-on Training● Faculty committed to develop new critical thinking skills● Collaboration among ED and L&D units● Support of all staff during simulation	<p style="text-align: center;">Weaknesses</p> <ul style="list-style-type: none">● Time constraints, both in development of training and time given to conduct simulation● Business of ED staff during simulation● Low participation
<p style="text-align: center;">Opportunities</p> <ul style="list-style-type: none">● Increased readiness of recognizing and treating preeclampsia and PPH● Positive healthcare outcomes for obstetric cases presenting in ED● Quality improvement to prepare supplies and medications needed to treat these cases	<p style="text-align: center;">Threats</p> <ul style="list-style-type: none">● Potential budget constraints● Poor attitudes among ED staff● Unwillingness to participate in simulation● Power dynamics among L&D staff and ED staff

Appendix E

Concept Map



Appendix F

PDSA Cycles

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, emergency departments 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 pre-simulation survey, disperse flyers and emails regarding upcoming simulation date
- Week 6: Carry out first simulation at Concord ED
 - 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 debrief

Study (Weeks 7-9):

STOP THE BLEED

- 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, emergency departments A and B may benefit from 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 1 (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 meet 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 John Muir's staff Knowledge Center

Study (Weeks 7-9):

- Analyze the results
 - Review and compare staff results from pre- and post- quizzes

STOP THE BLEED

- 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?
- o 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
 - o If feedback from staff was generally positive, emergency departments A and B may benefit from permanent annual implementation of the educational module
 - o ***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 G

Simulation and Video Cost Analysis

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

Policy Development		Hours	Cost
	RNs (2)	16	\$1280.00
	RN ED Director (1)	8	\$795.92
	RN ED Manager (1)	8	\$668.80
	MDs (1)	8	NA
			\$2744.72
Simulation Development			
	RNs (2)	16	\$1280.00
	Simulation Lab Manager (1)	8	\$429.44
			\$1709.44
Simulation Training			
	Prep RNs: (2)x 4 hours (x2 simulations)	16	\$1280.00
	Prep Simlab Mgr (1): 4 hours (x2 simulations)	8	\$429.44
	RN Participants (15) (1 hour)	15	\$1200.00

STOP THE BLEED

	ED Tech Participants (3) (1 hour)	3	\$87.00
	MD/Midwife Participants (8) (1 hour)	8	NA
			\$1716.44
Data Collection + IT involvement			
	IT Staff (1)	3	\$123.45
Total Cost			\$7574.05

Appendix H

Pre-Survey

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 a day?

0-1	2-4	5-6	7+
times per week	times per week	times per week	times per week

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

0-1	2-4	5-6	7+
times per week	times per week	times per week	times per week

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

0-1	2-4	5-6	7+
times per week	times per week	times per week	times per week

STOP THE BLEED

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
Totally Uncomfortable					Totally Comfortable				

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

Yes

No

STOP THE BLEED

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

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

Highly
Ineffective

Highly
Effective

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

12. What is your job title at Hospital A/B?

Appendix I

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.

1. 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 Uncomfort -able					Totally Comfortable				

2. 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 Uncomfort -able					Totally Comfortable				

3. 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 Uncomfort -able					Totally Comfortable				

4. Do you have prior experience working directly with labor and deliver or postpartum patients?

STOP THE BLEED

Yes

No

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

6. What is your job title and JMHP?

7. Did you attend the Maternal Hypertensive Disorders and Postpartum Hemorrhage Simulation?

Yes

No

Appendix J

Survey Flyers

JOHN MUIR HEALTH

HELP US!

PLEASE TAKE OUR SURVEY

TAKE THE SURVEY

How comfortable are you in treating Preeclampsia or Postpartum Hemorrhage patients?

for more information visit the link

JOHN MUIR HEALTH

DID YOU PARTICIPATE

IN THE PREECLAMPSIA & POSTPARTUM HEMORRHAGE SIMULATION?

TAKE OUR SURVEY!

For more information visit the link!

USF UNIVERSITY OF SAN FRANCISCO

Appendix K

Simulation Debriefing Questions

ED A

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.
1. **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.
1. **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.
1. **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
1. **In what ways did you perform well?**
 - Great communication and teamwork
 - Everyone was willing to pickup a job and was on standby ready to help each other
1. **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.
1. **What three factors were most SIGNIFICANT that you will transfer to the clinical setting?**
 - Using the algorithm information from the simulation in the ED
1. **Discuss actual experiences with diverse patient populations.**
 - Not having an L&D floor in Concord we don't see very many pregnant or postpartum patients as they are typically brought directly to Walnut Creek.
1. **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.
1. **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.

ED B

1. **Did you have the knowledge and skills to meet the learning objectives of the scenario?**

STOP THE BLEED

0. One thing everyone noted was that until the OB provider entered the scenario no one provided a fundal massage to the hemorrhaging patient
1. 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?**
 0. Did not know we had Mag Sulfate and Ptoicin readily available and two give two 2mg doses of MagSulf to begin
 3. **How would you handle the scenario differently if you could?**
 0. 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?**
 0. 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?**
 0. Great communication and teamwork
 1. Everyone was willing to pickup 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
 1. **What three factors were most SIGNIFICANT that you will transfer to the clinical setting?**
 0. The use of the new order sets to guide clinical decision making
 1. The use of the algorithms for preeclampsia and hemorrhage
 2. The knowledge that pregnant and postpartum patients are very good at compensating for blood loss and then crash quickly.
 2. **Discuss actual experiences with diverse patient populations.**
- a. Walnut Creek 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
 1. **Discuss roles and responsibilities during a crisis.**
 0. 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.
 2. **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

Video Simulation Scripts

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 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

STOP THE BLEED

room 35. She's a 27-year-old female complaining of increased vaginal bleeding. She's soaking 1 peripad 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 satiating 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

STOP THE BLEED

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 bank 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

STOP THE BLEED

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

STOP THE BLEED

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

STOP THE BLEED

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

65

STOP THE BLEED

Ok. Looks like our blood pressure is now reduced and patient is stabilized.

ED Physician

Alright Maria. We're going to transfer your up to the L&D floor now that you're stabilized, ok?

Patient

Ok.

****END****