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## Increasing Labor and Delivery Nurse Knowledge of Triageing Non-Obstetrical Medical Emergencies in Pregnant Women Through the Use of Simulation

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INCREASING LABOR AND DELIVERY NURSE KNOWLEDGE OF TRIAGING  
NON-OBSTETRICAL MEDICAL EMERGENCIES IN PREGNANT WOMEN  
THROUGH THE USE OF SIMULATION

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May 2012



THE GRADUATE COLLEGE

We recommend the Doctoral Project prepared under our supervision by

**Julie Hoffman**

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Non-Obstetrical Medical Emergencies in Pregnant Women Through the  
Use of Simulation**

be accepted in partial fulfillment of the requirements for the degree of

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## Abstract

The purpose of this study was to evaluate the effect simulation training has on an OB nurse's ability to correctly triage pregnant patients. Registered Nurses (RNs) working in OB triage must be able to correctly and expediently identify the care a pregnant patient needs. OB triage nurses are trained to recognize pregnancy related issues that commonly present during the months leading up to delivery. It is as important for these nurses to have the skills to realize when a pregnant patient is having a non-obstetrical health crisis. A group of OB triage RNs participated in simulation-training scenarios based on non-obstetrical emergency conditions with which pregnant patients frequently present to hospitals. Five essential learning concepts were identified for each scenario and knowledge of the RN participants was determined based on whether or not the RNs correctly addressed each concept. The RN participants were able to correctly identify four of the five concepts. They struggled with the concept of rapid, focused assessment. Although the RNs consistently performed a thorough obstetrical assessment, they did not carry out an assessment for the non-obstetrical condition in any of the scenarios.

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Increasing Labor and Delivery Nurse Knowledge of Triage Non-obstetrical  
Medical Emergencies in Pregnant Women Through the Use of Simulation

**CHAPTER 1**

**Introduction**

**Background**

Over 4.1 million women deliver newborns in United States hospitals every year (Hall, DeFrances, Williams, Golosinskiy & Schwartzman, 2010). These deliveries generate anywhere from 4.92 million to 6.15 million visits to obstetrical (OB) triage units (Paisley, Wallace & DuRant, 2011). Pregnant women present to OB triage for a variety of reasons, most of which are directly associated with pregnancy. Paisley, Wallace & DuRant (2011) note that almost half of all visits to OB triage were for reasons such as rule out labor, preterm labor and no fetal movement. They further found that an additional 37% of pregnant patients presented to OB triage with concerns related to abnormal discharge, pain due to contractions, and decreased fetal movement.

Pregnant women can also require care for medical problems. An RN working in the triage setting of a Labor and Delivery unit must be able to correctly and expediently identify the care a pregnant patient needs. OB triage nurses are trained to recognize pregnancy related issues that commonly present during the months leading up to delivery. It is as important for these nurses to have the skills to realize when a pregnant patient is having a non-obstetrical health crisis. A pregnant patient that presents with a non-obstetrical issue may have a medical

problem that can have serious consequences for both the mother and her unborn child.

### **Purpose of OB Triage**

Merriam-Webster defines triage as sorting patients according to their need for receiving medical care (Merriam-Webster, 2011). Obstetrical triage exists to meet this same purpose. As pregnant women present to the hospital, the nurse working in OB triage must determine which patient's medical needs require immediate care in order to ensure that both mother and baby remain in or are transitioned to a stable physical condition.

When pregnant women present to a hospital they usually begin their care in OB triage. This may be a room that is separate from the Labor and Delivery unit or patients may be triaged in a Labor and Delivery room. Patients inform the OB triage RN about their health concern(s), both pregnancy and non-pregnancy related, that has brought them to the hospital. The OB triage RN evaluates the patient and confers with the patient's provider. The provider may be a physician or an advanced practice nurse. It may be necessary to involve other departments in the patient's care, such as radiology, for additional testing or procedures. Once a thorough assessment of the patient is completed, the RN and the provider determine if the patient will be admitted to the hospital or discharged to home.

### **Significance of the Study**

This study looked at the effect simulation triage training has on OB triage nurses' ability to correctly triage pregnant patients. Correct triage is critical for

the well being of a woman and her newborn. In accordance with the Emergency Medical Treatment and Labor Act (EMTALA), all pregnant women presenting to a hospital for care must receive a medical screening exam (Angelini & Mahlmeister, 2005). The OB triage RN performs this medical screening exam, which will determine whether or not the patient has an emergency medical condition. If the patient is determined to have an emergency medical condition, EMTALA guidelines require that the patient be stabilized prior to discharge or transfer. Correct triage also helps to ensure that resources, both those of families and those of health care systems, are utilized in an optimal manner.

A patient who is incorrectly triaged will either be admitted to the hospital without a medical condition that necessitates admission, or be sent home in a potentially unstable state. Patients who remain in the hospital unnecessarily can always be discharged home later, generally with no adverse outcomes. There are a variety of outcomes for the unstable patient who is incorrectly triaged and sent home. A pregnant patient at 22 weeks gestation presented to the hospital where the director of this study worked. This patient had been seen in her physician's office earlier in the day and had received a prescription for antibiotics to treat a urinary tract infection (UTI). The patient came into OB triage complaining of increased pain. The OB triage RN performed the usual assessment of a pregnant patient; the patient was asked whether or not she had ruptured her membranes, had any vaginal bleeding, felt fetal movement and/or contractions. The patient was placed on a fetal monitor and the obstetrician was called. The obstetrician subsequently determined that the patient was suffering

from a UTI and the patient was discharged to home. The patient returned to the emergency department (ED) later that evening and was correctly diagnosed with appendicitis. Several days after having an emergency appendectomy the patient miscarried. Due to extreme prematurity, her baby died shortly after being born.

For a laboring patient, the biggest concern is delivery outside of the hospital setting. These deliveries may or may not have complications. The greater risk lies with the patient who is incorrectly triaged and sent home with an unstable medical condition. Pregnant patients may have a variety of health issues of an acute or chronic nature. A Centers for Disease Control (CDC) Morbidity and Mortality Weekly Report (MMWR) notes that although maternal mortality has decreased overall, women with chronic illnesses have seen an increase in mortality during pregnancy (Chang, et al., 2003). In order to provide care for a patient with a pregnancy that is complicated by chronic illness, OB triage RNs must correctly assess the patient and present a complete and accurate picture of the patient's situation to the provider.

Health care providers strive to have the best possible outcomes for all patients. Women in the United States have no reason to believe that their pregnancies will result in anything other than a healthy newborn. Adverse patient outcomes can occur with any patient, but are seen as especially devastating in the maternal and newborn population. Andreatta, Bullough & Marzano (2010) found that every year 20,000 OB visits to hospitals in the United States result in an adverse outcome. This may be one factor that contributes to the high occurrence of lawsuits filed by families of newborns who suffer a birth injury.

Hankins, MacLennan, Speer, Strunk & Nelson (2006) found that approximately three-fourths of all obstetricians have been sued at some point in their career. According to Gawande (2005), this averages out to a lawsuit every six years for American obstetricians. Birth injury cases that go to trial and lose receive awards averaging half a million dollars. The high cost of malpractice insurance along with the fear of litigation has driven many obstetricians away from the practice of obstetrics (Clark, Belfort, Dildy & Meyers, 2008). Clark, et al., (2008) further note that obstetrics is an area of medicine that has no tolerance for any outcome less than a “perfect” newborn. Obstetricians, hospitals and OB nurses are all at risk of lawsuits following deliveries where adverse outcomes occurred, even when the patient’s care was without error (Clark, et al., 2008).

### **Study Question**

The following question was addressed in this study:

1. Are OB RN's that undergo simulation training able to correctly identify the essential learning concepts regarding caring for non-obstetrical medical emergencies in OB patients?

### **Population Identification**

To determine the non-obstetrical reasons that pregnant patients typically present to outpatient triage, a 12-month review, from July 2010 through June 2011, of triage diagnoses for pregnant women was completed by the ED director at the hospital where the study director is employed. The ED director provided the most common diagnoses during this time period, as well as the numbers of



patients that presented and were assigned these diagnoses. No personal identifying information was included in the data.

The number of visits that occurred over this time period was 7953. Four ICD-9 diagnoses were identified as the most common (J. Shepard, personal communication, September 13, 2011). Forty five percent of all non-obstetrical visits made by pregnant women to the ED were due to asthma, 17% of these visits noted headache as the primary complaint, 26% of visits were due to chest pain and the remaining 13% of visits stated UTI as their primary concern.

### **Key Stakeholders and Organizational Assessment**

Persons identified as being stakeholders in this study included the clinical supervisor for the Labor and Delivery unit, the simulation educators, the hospital research liaison and senior management. The clinical supervisor, educators and senior management were invested in continually improving both the safety and quality of care provided to patients. The research liaison was interested in developing a system whereby persons in the community wanting to do research in a hospital setting would have the option of doing research at the hospital where the study occurred. For this reason, the research liaison was interested in and very supportive of any research studies done by hospital staff. The hospital culture consistently looked for ways in which to further develop high standards of patient safety. The culture was supported at all levels of the organization, up to and including senior management. The hospital and a sister hospital owned a simulation lab. To ensure that the use of the simulation lab for this study would be supported, senior management and the director of education were included in

planning discussions. All were supportive of the study and the need for the study to take place in the simulation lab.

### **Assessment of Available Resources**

This study was conducted at the simulation lab owned by the two community hospitals in the Phoenix area. Participants came from one of the hospitals. The hospital had 240 plus-beds and a Maternal Child Health (MCH) department that averaged 320 deliveries a month and had 80 labor and delivery RN staff. Approximately 50 of these RNs were trained to work in OB triage. The RNs that were trained to work in OB triage were randomly assigned to participate in the simulation-training project. All RNs that worked in the MCH department were assigned to two simulation-training exercises every year. The Perinatal Safety RN made these assignments. The assignments were determined based on which nurses had the clinical background that was appropriate for each exercise. Consideration of the individual RN's work and personal schedules was also part of the process.

### **Team Selection and Formation**

Two persons conducted the simulation-training course. Both of these educators were employees at the hospital that owned the simulation lab where the study occurred. One of these persons was the educator for the OB department. She had a bachelor's degree in nursing and a master's degree in nursing with an emphasis on nursing education. Her clinical expertise was in labor and delivery and post-partum.

The second educator was a charge nurse in the Labor and Delivery unit. At the time of the study she was taking courses to complete her BSN studies and was the Perinatal Safety RN for the MCH department. The educator and the Perinatal Safety RN had received training specific for the use of simulation as a teaching tool in the hospital setting.

These two educators co-chaired a simulation committee. The other committee members took part in the simulation scenarios by preparing the “patient” and the setting to make both as realistic as possible. For all of these scenarios a staff RN played the patient. The two RNs that played the role of patients were provided copies of the scenarios prior to the simulation exercise so that they knew the sequence of events in the simulation as well as their role.

### **Cost Benefit Analysis**

The Labor and Delivery unit in which the RNs worked had already committed that all RNs on staff would participate in two simulation exercises beginning in 2012. A simulation exercise would take approximately two hours, and the average RN’s salary was about \$40 an hour. This study proposed that four groups of eight RNs each spend four hours taking part in a simulation scenario, as well as completing both a pre- and a post-test.

The inclusion of the pre- and post-test in this study was eliminated, and only 25 RNs participated in the simulation scenarios. Two educators were also present, as well as six members of the simulation committee. The educators and the committee members were at the lab two entire days, or sixteen hours. Thus, the study costs were the salaries to pay 25 RNs for two hours each, and the two

educators and six committee members for sixteen hours apiece. This came to just over \$7000. The hospital system that owns the simulation lab had paid perinatal claims as high as \$10 million (B. Pelletreau, personal communication, November 2011). It would thus appear that the relatively low cost of this study, as well as any additional education via simulation, could potentially offset very large costs that could be generated from claims filed by patients or family members.

### **Summary**

Pregnant patients in the United States generate between 5 and 6 million visits to OB triage units every year. These visits occur due to concerns patients have about their health. As these concerns can be of either an obstetrical or medical nature, it is crucial that OB triage RNs are able to rapidly and correctly identify whether or not a presenting pregnant patient is stable or unstable.

In order to assess OB triage RN knowledge regarding care of the pregnant patient presenting with a non-obstetrical emergency, a project was developed whereby RNs would participate in simulation of non-obstetrical scenarios. This project had the potential to positively impact staff by increasing their knowledge of non-obstetrical emergencies and by doing so, to possibly decrease the liability of the hospital through improving the care provided to pregnant patients that present with these types of concerns.

## **CHAPTER 2**

### **Literature Review**

#### **Introduction**

In order to provide as comprehensive a review as possible for the topic of OB triage, several areas of literature were examined. The study director began by discussing why it is critical to appropriately respond to medical emergencies that occur in pregnancy. The section that follows medical emergencies is a discussion of obstetrical triage. This section reviews both what triage is used for and also briefly describes characteristics that are needed to be successful in the role of OB triage RN. An examination of the literature on the use of simulation training in the health care setting is also included. The final section is on simulation training. This section covers how this type of training has been used in the obstetrical setting. The majority of this literature review was found in CINAHL. For those sections that had minimal information in CINAHL, a search was also done in PubMed.

#### **Medical Emergencies in Pregnancy**

Medical emergencies in all patient populations must be correctly and expediently diagnosed and treated. Practitioners providing emergency care to pregnant women are further challenged by the fact that they are caring for two patients: the mother and her fetus. The fetus will be impacted by the mother's condition, as well as any care received by the mother, but the practitioner only has a limited ability to monitor changes in the fetal status as the fetus is in utero.

Osman, Campbell & Nassar (2009) note that because life-threatening emergencies in pregnant women are rare occurrences, many clinicians struggle to respond appropriately when these situations happen. Nwagha, Nwachukwa, Dim, Ibekwe & Onyebuchi (2010) state that in order to decrease or prevent maternal mortality the amount of time that passes once an obstetrical emergency occurs until treatment is received must be minimized. An article by Strachan (2010) states that as many as half of all deaths of mothers and babies could be prevented if health care providers improved both their clinical and teamwork skills.

### **Obstetrical Triage**

McBrien (2009) defines triage as a process that sorts patients and prioritizes their care. Wolf (2008) notes that nurses are the health care providers responsible for patient care in Labor and Delivery units and in OB triage. OB triage RNs perform initial patient assessments and interventions, and they are responsible for alerting the providers to when they are needed on the unit. Obstetrical emergencies that present to OB triage include vaginal bleeding, abdominal pain, pre-term labor and maternal hypertension. The OB triage RN must be able to use his or her clinical judgment to quickly and correctly decide what care each patient requires (Ament, 1999). Hankey (1994) further notes that triage RNs must be expert problem solvers.

In Wolf's study (2008), emergency department triage visits were audited and incidents of incorrect triage were noted in the month prior to the simulation training. Both a post-test of nursing knowledge and a triage audit were

conducted following the training. Results showed an increase in nursing knowledge and a decrease in incorrect patient triage.

A study conducted by Paisley, Wallace & DuRant (2011), found that pregnant women present to hospitals for non-obstetrical reasons as well as obstetrical concerns. The researchers reviewed triage visits in a four-hospital system over a period of 17 months. Close to 19,000 patients were seen by the four hospitals throughout the course of the study. Paisley, et al., (2011) found that pregnant women presented due to respiratory distress, chest pain, trauma, and a variety of mental and psychosocial issues.

Schatz et al. (2010) noted that the most common non-obstetrical complaint that pregnant women present with is exacerbation of asthma. This finding came from a study that was conducted at 13 distinct Maternal Fetal Medicine centers. All the centers were associated with the National Institute of Child Health and Human Development (NICHD). The intent of the study was to look at quality of life for pregnant women with asthma. Three hundred ten pregnant women participated in the study.

### **Simulation as a Training Method**

There are a number of methods of simulation available to nursing educators. These include role-playing, the use of actors, models such as Resusci-Annie, virtual patients, and electronic patients (Rosen, 2008). All methods of simulation provide nurses the opportunity to learn and practice clinical skills in a controlled setting (Daniel & Simpson, 2009). Simulation is able to consistently replicate situations without any risk to actual patients (Cioffi, 2001,

Ironside, et al., 2009, Jeffries, et al., 2009; Larew, et al., 2006) and simulation allows nurses to learn skills that are high risk yet low frequency (Daniel & Simpson, 2009).

The more sophisticated simulators (electronic patients) are computer driven high-fidelity simulators. Andreatta, et al. (2010) note that the term fidelity reflects how closely the simulator mimics reality. High-fidelity simulators are extremely realistic and may simulate bodily functions such as respirations, sweating, vomiting and bleeding (Jeffries, et al., 2009). Saissakos, Crofts, Winter, Weiner & Draycott, 2009, found that individuals who trained with high-fidelity simulators were more successful when the practiced scenarios occurred in the hospital setting than those individuals who trained with other types of simulators. High-fidelity simulators can be used with learners at any level of expertise, due to the computer's ability to "adjust" the response of the simulator during the training session (Larew, et al., 2006).

### **Simulation in the Obstetrical Setting**

Larew, et al., (2006) define simulation as "the artificial representation of a phenomenon or activity" (p. 17). Simulation has been used as a means of education in the obstetrical setting for hundreds of years (Andreatta, et al., 2010). In the 1600s simulators called phantoms were used to educate nurse midwives about normal and abnormal birth processes (Clark, et al., 2008; Jeffries, et al., 2009). Dolls and stillborn fetuses were used for this same purpose in the 1800s (Andreatta, et al., 2010). By the 1970s, full size obstetrical simulators had been



developed, although they were not widely available for another twenty years (Clark, et al., 2009).

Birch, et al. (2007) found no studies that demonstrated statistical significance regarding the benefits of simulation training for obstetrical emergencies. These researchers performed a study that looked at three methods of learning; lecture only, simulation only and simulation with lecture. Due to a small sample size of 36 providers, study findings were not statistically significant, although the simulation only group did retain the most information three months after the study. This group also reported the most enjoyment from their training.

Saissakos, et al. (2009), found obstetric units that used simulation for drills had better clinical outcomes and the staff that received this training sustained improvements in their knowledge and confidence levels where obstetric emergencies were concerned. Saissakos, et al. also noted that obstetric units and clinicians who had regular training as part of their culture were eligible for lower malpractice rates.

Pennington, Pennington, Delaney & Blankenship (2009) discussed how simulation of obstetrical emergencies improved the knowledge of fire crews in Kentucky. The crews all took a pre- and a post-test. The average scores were 88% on the pre-test and 98% on the post-test. The post-test followed didactic instruction, and review of and participation in a simulation scenario.

Strachan (2010) reviewed a simulation training exercise that took place at two hospitals in the United Kingdom. The purpose of the exercise was to

compare the impact of low- and high-fidelity simulation and see how both improved teamwork and retention of information. Teams consisting of five members attended both the low- and the high-fidelity exercises. All the teams were made up of both physicians and midwives. Strachan reported that all team members, regardless of whether they participated in a low- or a high-fidelity training exercise, demonstrated increased knowledge on the post-test. Strachan further noted that the impact on teamwork and knowledge retention was not statistically significant for the providers that took part in the low-fidelity exercise versus those who participated in the high-fidelity exercise.

A study reported by Osman, Campbell & Nassar (2009) reviewed the results of a simulation exercise that took place at three Beirut hospitals. Each hospital participated in two scenarios. In the first scenario, a pregnant woman presented to the hospital with complaints of headache. These complaints were followed by simulation of a grand mal seizure. The second scenario involved a woman presenting with heavy bleeding. The study noted that about eight staff members (physicians, nurses and support staff) participated in each drill. Surveyors used checklists to determine if appropriate interventions occurred during each simulation. This study found the main benefit of the simulation exercises was the identification of problems within the hospital processes that required correction. Participants did verbalize increased comfort in handling obstetrical emergencies following their experience with the simulation training.

## **Summary**

Practitioners have recognized the importance of obstetrical simulation as a training tool for hundreds of years. A literature review on simulation reveals that there are numerous modalities that can be used in simulation exercises, such as high fidelity, computer-driven simulators, actors portraying patients, and low-fidelity simulators such as dolls. Studies have shown that regardless of which type of simulator is used, participants report increased knowledge and comfort in handling similar situations when these situations are encountered in the hospital setting. Practitioners that are able to react quickly and competently to emergencies in the obstetrical setting may be able to prevent or mitigate maternal and neonatal injuries that may occur. The literature supports the use of simulation as a method to train practitioners to successfully respond to emergencies.

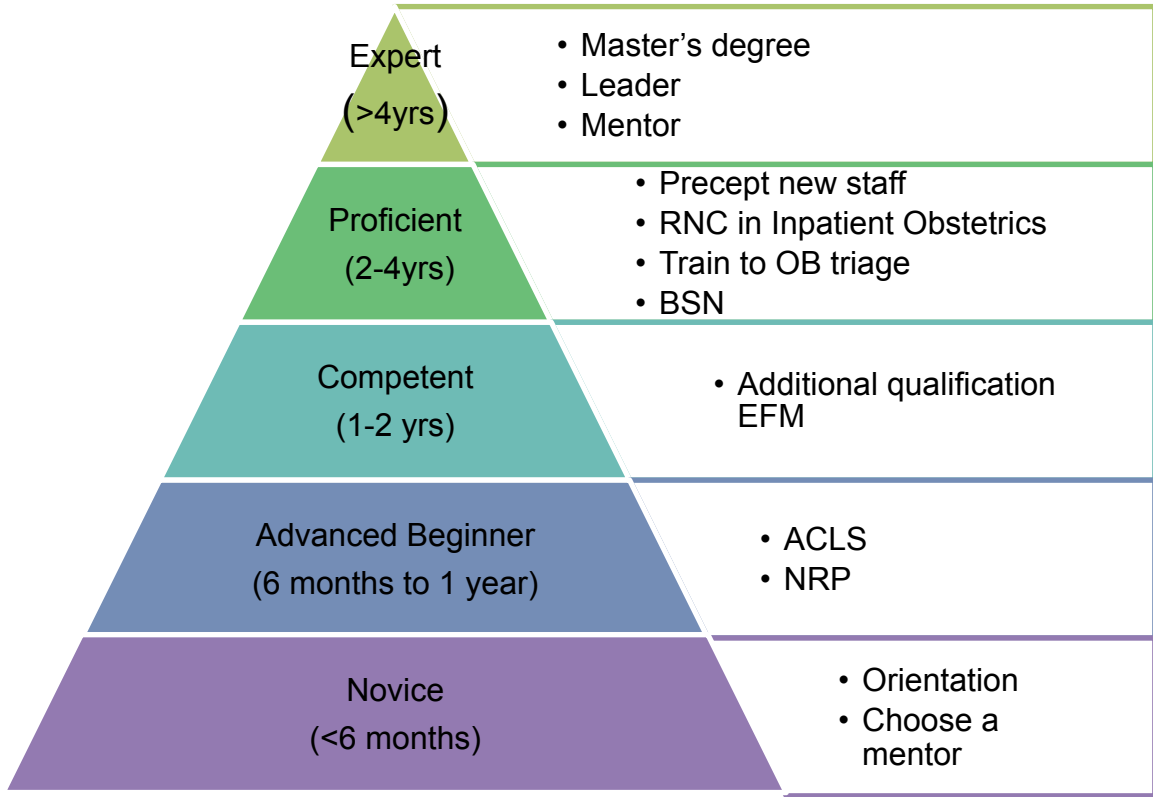
## **CHAPTER 3**

### **Theoretical Framework**

#### **Benner's Caring, Clinical Wisdom and Ethics in Nursing Practice**

The model that was used for this project is Patricia Benner's Caring, Clinical Wisdom and Ethics in Nursing Practice (Benner, 1982). This theory specifically addresses that a nurse's level of performance is a combination of the nurse's familiarity with the particular situation and his or her educational background (Benner, 1982). The model also notes that a nurse moves through five levels of skill acquisition, from novice to expert (Benner, 1982). This movement occurs as a nurse gains hands-on experience in his or her area of practice. Simulation is a form of hands-on experience that has successfully demonstrated an increase in knowledge and clinical skills for nursing and other healthcare professionals (Ironside, et al, 2009; Vincent, Burgess, Berg & Connolly, 2009) . Benner's model looks at what teaching and learning needs nurses have at all five levels of skill acquisition (Benner, 1982). Use of this model provides clear direction to tailor simulation training for nurses based upon their years of nursing experience. Figure 1 shows Benner's model adapted to reflect the skills of the OB triage RN.

Figure 1 – Labor and Delivery RN Novice to Expert



Adapted from “Five-Step Model of Professional Excellence” by S. G. Marble, 2009, *Clinical Journal of Oncology Nursing* 13(3), p. 311.

**Literature Review Benner’s Theory**

Benner’s theory of Caring, Clinical Wisdom, and Ethics in Nursing Practice is based on the Dreyfus model of Skill Acquisition (Benner, 2004). This model was originally used to follow the progression of pilots and professional chess players as their skills increased with experience and education. The model noted four aspects of the pilot’s performance that changed as they moved through the five levels of skill acquisition. These aspects are 1) moving from the use of principles and rules to reliance on past experiences; 2) changing from rule-based thinking to intuition; 3) gaining the ability to see situations in their entirety rather

than as pieces; and 4) becoming fully integrated into situations as opposed to watching or having only a minimal role (Alligood and Tomey, 2010).

Benner notes that as nurses gain experience they progress along a continuum of obtaining and developing their nursing skills (Benner, 2004). This continuum consists of five stages: novice, advanced beginner, competent, proficient and expert (Benner, 1982). Benner (1982) does state that not all RNs will make it to the stage of expert, and that nurses may regress to earlier stages when they encounter new situations for which they have no frame of reference. Benner found that nurses also went through the four performance aspects as they journeyed from novice to expert.

Novice nurses do not have clinical experiences relevant to specific situations, thus it is critical that nurses at this stage have rules by which they can practice (Benner, 1982). Most student nurses will fall into this stage. Nurses at this level function in a very limited scope, and their practice is typically mostly inflexible as they rely upon stringent rules to guide their actions (Benner, 2004).

Advanced beginners have some clinical experience, yet they still depend on more experienced nurses in most situations. Nurses at this stage are typically able to recognize aspects of care they have previously encountered (Benner, 2004). Advanced beginners are task-oriented; while they cannot anticipate, they strive to get everything the patient needs done correctly (Benner, 2004).

A nurse at the competent stage has begun to be able to predict what will happen in some patient care situations. Competent nurses usually have one to three years of experience. Nurses at this stage are not able to provide care as

rapidly as a more experienced nurse, but a competent nurse is well aware of why she is providing specific aspects of care as well as how the care will impact the patient in more than just the immediate situation (Benner, 1982). Typically this is the stage where nurses begin to function as advocates for their patients (Benner, 2004).

The proficient nurse begins to see the care of the patient from a big picture perspective, yet still may struggle with exactly what interventions are appropriate in critical situations (Benner, 1982). Nurses at this stage will begin to pick up on changes in a patient's condition based on very subtle physical alterations in the patient (Benner, 1982).

Nurses at the expert stage are able to view clinical problems holistically and address these problems with the methods they successfully utilized in previous scenarios (Benner, 1982). They are excellent time managers as they can very quickly determine not only what is wrong with the patient, but also what interventions the patient requires (Benner, 1982). Benner states that nurses with the ability to successfully communicate with and direct a multidisciplinary team are at the expert stage (1982). She further notes that expert nurses possess a level of intuition that makes their knowledge part of their core being. These nurses have such strong knowledge that they do not need to stop and think when confronted with a challenging situation. They simply react to it. Nurses at the expert level are able to react in this manner due to their ability to process information both consciously and unconsciously (Benner, 1982).

## **Use of Benner's Theory in the Hospital and University Settings**

Larew, et al., (2006) reviewed a simulation study that was developed for nursing students. The study addressed complications commonly found in post-operative patients. Benner's concepts were used to evaluate the learning needs of students with differing skill levels. The study findings supported Benner's statement that less experienced nurses will be slower to respond to cues indicating that a patient's status is changing. Based on this supposition, the students were provided with increasingly stronger, more direct cues as the scenarios progressed. Students were also permitted to work through the simulations at their own pace, regardless of situation urgency or content. Both of these interventions (self-pacing and increasing cues) gave student nurses in the novice and advanced beginner stages the opportunity to enhance their patient assessment skills in a non-threatening environment.

Marble (2009) discusses how a Phoenix hospital used Benner's model to promote professional excellence among oncology nurses. Marble's article shows a model that contains the five stages Benner has identified that nurses will progress through. The model also contains information that is specific to the oncology nurses working at the hospital. This provided a concrete visual tool for those nurses that were actively working to attain a higher level of competence. The article further discussed that the efforts to promote nursing professionalism helped establish a unit culture of continually working to improve nursing competence.



An emergency department in a community hospital in Massachusetts developed a simulation program to provide nurses with varying degrees of skill the opportunity to respond to high-risk, yet low frequency scenarios. The goal of the program was to provide nurses a setting in which they could acquire skills in a safe and controlled environment with no risk to patients. The program used Benner's novice to expert and skill acquisition writings to address the needs of nurses at all levels of experience (Wolf, 2008).

### **Summary**

Benner's theory of Caring, Clinical Wisdom and Ethics in Nursing Practice has been used successfully in both education and hospital settings. As the theory is able to address the needs of nurses at any point in their career, it can provide a framework to encourage and inspire nurses to be lifelong learners (Altmann, 2007). The theory can provide guidance both for nurses and the persons teaching or precepting the nurse by identifying which stage the nurse is at and adjusting the nurse's training accordingly. Understanding and recognizing the four aspects of performance that the nurse passes through as he or she travels from the novice to the expert stage can provide additional direction to help guide the educational development of the nurse.

## **CHAPTER 4**

### **Methodology**

#### **Study Design**

This study was a continuing education exercise assigned to nursing staff that works in the obstetrical triage area. Four distinct groups of nurses were assigned to the four simulation scenarios. The number of nurses that attended each scenario was determined based on the number of nurses that typically respond to emergencies in the workplace setting. It is realistic to expect up to four nurses to respond to an obstetrical emergency. The remaining participants were assigned the role of observers. Two simulations were scheduled on January 25, 2012, with one simulation scheduled in the morning and one scheduled in the afternoon. The remaining simulations were scheduled on February 1, 2012, with one in the morning and the final simulation in the afternoon.

Upon arrival at the simulation lab, the simulation educators assigned each of the nurses her role for the scenario. Roles included, but were not limited to: primary nurse responder, second responder, charge nurse and observer. Upon completion of the training, the nurses immediately attended a debriefing session facilitated by the simulation educators.

The first simulation scheduled was the chest pain scenario. A total of seven RNs were present. Two RNs were assigned the role of caregivers, and the other five RNs observed the simulation. Following the debriefing session for this simulation, the simulation educators noted that they felt there would be time

to do two scenarios with each group of RNs. Thus, while the first group only did one simulation, the remaining three groups participated in two simulations, for a total of seven simulations.

The scenario for the afternoon of January 25<sup>th</sup> was asthma. The educators determined that they would also have this group of RNs do the chest pain scenario. Five OB triage RNs attended this session. For the asthma scenario, two RNs acted in the role of caregivers, and the other three RNs observed. Following the debriefing session, the RNs switched roles for the chest pain scenario, with the observers providing patient care and the caregivers observing.

The third simulation scenario took place on the morning of February 1<sup>st</sup>. The topic was migraine, and seven RNs were present. Four of them observed, and three provided care to the patient. These same seven RNs participated in the chest pain scenario following debriefing. For the chest pain scenario, they reversed roles. This allowed the caregivers to become observers and vice versa.

The final scenario was on pyelonephritis. Six nurses attended this simulation, with three of them in the observer role and the other three in the role of providing patient care. After the debriefing these six nurses took part in the chest pain scenario. Just as with the previous two groups, the nurses that had been caregivers during the first scenario were now observers, and the observers were now caregivers.

Following completion of the simulations, all participants were asked to complete an evaluation form (Appendix A). This form asked the participants to

evaluate the simulation environment and equipment, the adequacy of the participant's orientation to the simulation lab, and the realism of the scenario. Participants were also asked to provide brief demographics for the purpose of this project. They were asked their age, gender, role and years of experience as an RN. While all participants were asked to complete an evaluation form, completion of the form was not mandated.

### **Simulation Educators**

Prior to the simulation exercises, the study director met with both simulation educators to discuss the flow of the simulation-training exercises. The simulation educators presented the four scenarios to the simulation committee for additional feedback and input (Appendices B, C, D and E). The committee discussed how to set up the lab as well as how to make the "patient" appear as realistic as possible for each scenario.

The simulation educators, and up to four members of the simulation committee, were present throughout the simulations and the debriefing sessions. The study director was at the simulation lab to observe all the scenarios and debriefing sessions. In order to evaluate the OB triage nurse's knowledge, a concept table was developed.

### **OB Triage Simulation Concept Table**

The following table was developed after reviewing OB triage visits at the ED in a community hospital in the Phoenix area. The review looked at a twelve-month period and identified the four most common diagnosis codes assigned to pregnant patients that presented to the ED. These were: chest pain, asthma,

headache and UTI. Four separate simulation scenarios were written to reflect how pregnant patients could present with these diagnoses.

The table ensures that the scope of knowledge for each non-obstetrical medical issue is addressed equally and thoroughly. The table contains the four diagnoses, as well as the five concepts that were identified as essential learning concepts that must be met during an OB nursing triage visit with a patient. These concepts are: interviewing and communication, rapid, focused assessment, accurate problem identification, prioritization of needs, and decision-making. The concepts, and how they relate to the individual diagnoses, are shown in Table 1.

Table 1 *Diagnoses and Essential Concepts*

	<b>Interviewing and Communication</b>	<b>Rapid, Focused Assessment</b>	<b>Accurate Problem Identification</b>	<b>Prioritization of Needs</b>	<b>Decision Making</b>
<b>Asthma</b>	<ol style="list-style-type: none"> <li>1. Obtain medical history including current medications</li> <li>2. Obtain pregnancy history</li> </ol>	<ol style="list-style-type: none"> <li>1. Pulse oximetry</li> <li>2. Physical assessment of breathing – are accessory muscles in use, does patient appear exhausted with effort of breathing</li> <li>3. Standard assessment of pregnant patient</li> </ol>	<ol style="list-style-type: none"> <li>1. Pregnant patient having an acute exacerbation of asthma</li> </ol>	<ol style="list-style-type: none"> <li>1. Adequate oxygenation of patient</li> <li>2. Patient reassurance</li> <li>3. Address and treat other pregnancy-related risks</li> </ol>	<ol style="list-style-type: none"> <li>1. Patient provided with supplemental oxygen</li> <li>2. Provider notified and orders received</li> <li>3. Patient stabilized and sent home, or admitted as inpatient, or sent to ED</li> </ol>
<b>Migraine</b>	<ol style="list-style-type: none"> <li>1. Obtain medical history including current medications</li> <li>2. Obtain pregnancy history</li> </ol>	<ol style="list-style-type: none"> <li>1. Rule out preeclampsia</li> <li>2. Neuro exam</li> <li>3. Standard assessment of pregnant patient</li> </ol>	<ol style="list-style-type: none"> <li>1. Pregnant patient with a migraine HA</li> </ol>	<ol style="list-style-type: none"> <li>1. Pain relief</li> <li>2. Patient reassurance</li> <li>3. Check blood glucose</li> </ol>	<ol style="list-style-type: none"> <li>1. Provider notified and orders received</li> <li>2. Patient stabilized and sent home, or admitted as inpatient for pain relief</li> </ol>
<b>Acute Myocardial Infarction</b>	<ol style="list-style-type: none"> <li>1. Obtain medical history including current medications</li> <li>2. Obtain pregnancy history</li> </ol>	<ol style="list-style-type: none"> <li>1. Pulse oximetry</li> <li>2. Rule out preeclampsia</li> <li>3. Standard assessment of pregnant patient</li> </ol>	<ol style="list-style-type: none"> <li>1. Pregnant patient having an AMI</li> </ol>	<ol style="list-style-type: none"> <li>1. Obtain 12-lead EKG tracing on patient</li> <li>2. Pain relief</li> <li>3. Prepare for possible emergency cesarean delivery</li> <li>4. Prepare patient for cath lab</li> </ol>	<ol style="list-style-type: none"> <li>1. Get patient to ED</li> </ol>
<b>Pyelonephritis</b>	<ol style="list-style-type: none"> <li>1. Obtain medical history including current medications</li> <li>2. Obtain pregnancy history</li> </ol>	<ol style="list-style-type: none"> <li>1. Physical exam for flank pain</li> <li>2. Check patient temperature</li> <li>3. Standard assessment of pregnant patient</li> </ol>	<ol style="list-style-type: none"> <li>1. Pregnant patient with pyelonephritis</li> </ol>	<ol style="list-style-type: none"> <li>1. Obtain urine for analysis</li> <li>2. Pain relief</li> <li>3. Address and treat any pregnancy related issues</li> </ol>	<ol style="list-style-type: none"> <li>1. Provider notified and orders received</li> <li>2. Admit as inpatient for IV antibiotic therapy</li> </ol>

## **IRB Approval of Study**

The study was undertaken in a 240-bed facility located in a large southwestern city. Both the hospital and the health care system that owned the hospital were very supportive of projects and initiatives that strive to improve patient safety. The study director communicated with her direct supervisor about this project, as well as the simulation educators and the director of the education department, and received their full support. Documentation was submitted to both the Institutional Review Board (IRB) at University Nevada Las Vegas (UNLV), as well as the IRB at the hospital.

The IRB paperwork submitted proposed a study that would use a pre- and a post-test (Appendix F) to measure and evaluate any changes in nursing knowledge. This proposal received approval from the IRB committee at UNLV. After numerous discussions with IRB representatives at the hospital, the study director was informed that the project could not go forward without significant revisions. The IRB representatives' primary concern was that the study director was in a supervisory role over the nurses that participated in the project and as such could potentially view their lack of knowledge or poor performance in a scenario negatively when interacting with or evaluating these nurses in the future.

In order to address this concern the study director determined that the pre- and post-test would not be administered. Instead, the table of essential learning concepts would be used as a guide to identify which learning concepts were correctly identified by the OB triage RNs during both the simulations and the

debriefing sessions. Each time an RN mentioned one of the learning concepts; the study director noted which concept the RN had identified. The study director also indicated whether or not the learning concept was addressed in the simulation or the debriefing session, as well as the number of times an RN addressed the concept. The completed tables, with these results, are shown in Chapter 5.

### **Summary**

For the purposes of this study the study director developed four simulation scenarios and collaborated with persons trained in simulation education to provide the scenarios to OB triage RNs. Each scenario covered a non-obstetrical emergency that could occur in pregnancy. The original study design planned to evaluate the change in nursing knowledge by administering both a pre- and a post-test. When it was determined that the pre- and post-test would need to be eliminated from this study, the study director chose to use the table of essential learning concepts as a means of evaluating the performance of the OB triage RNs that participated in the simulations. The table contained learning concepts that were specific to each scenario. Using the table as a guide, the study director was able to note if the OB triage RNs identified the concepts during the simulations and/or the debriefing sessions, as well as how frequently the concepts were correctly acknowledged by the RN participants.



## **CHAPTER 5**

### **Evaluation**

#### **Sample and Response Rate**

Four simulation scenarios were scheduled for this study, and eight OB triage RNs were scheduled to attend each simulation. The plan was for four RNs to actively participate in each simulation while the other four RNs acted in the role of observer. Eight RNs were scheduled to attend each simulation, although the numbers of RNs attending varied.

#### **Sample Demographics**

All the RNs that participated in the simulation scenarios were asked to complete a brief demographic. This demographic was included as part of the evaluation form (Appendix A) that the RNs were asked to complete following their simulation experience. The RNs were asked their age, what their role was, how many years of nursing experience they had, and their gender. One RN did not complete any information, two RNs did not list their age, and one RN did not list her years of experience.

The 24 participants that completed the evaluation forms all identified themselves as female Labor and Delivery nurses. The nurses ranged in age from 29 to 61 years. Their years of experience as nurses ranged from four to 38. The group with the greatest diversity in both age and years of experience was the first group that came on the morning of January 25<sup>th</sup>. The oldest RN was 31 years older than her youngest counterpart. She also had 31 years more experience than this same colleague. The least diverse group was the group

that attended the simulation on the morning of February 1<sup>st</sup>. This group had only 10 years age difference as well as a ten-year difference in experience.

### **Evaluation of Study Question**

The purpose of this study was to determine if OB triage RNs that participated in simulation training were able to correctly identify the essential learning concepts regarding caring for patients that present with non-obstetrical emergencies. Evaluation of this question was determined by observing and listening to the RNs participate in both the simulations and the debriefing sessions that followed each of the simulations. During these debriefing sessions the RNs were asked several questions, one of which was whether or not they had found the simulations to be helpful learning experiences. The RNs were further asked if they preferred the simulations to unscheduled emergency drills, which most of them had participated in previously. All participants were also encouraged to complete an evaluation form. This form had three main areas of query: introductory materials, equipment/environment, and realism of the scenarios. RNs were asked to rate 16 items within these three areas on a scale of 0 – 5, with 0 being not applicable and 5 being excellent. The evaluation form also contained a section for the RNs to add comments.

### **Instrument Used to Evaluate Study Question**

In order to evaluate the OB triage RN's knowledge, the table that was constructed with the essential concepts for each scenario was used (Appendix G). The knowledge for each group of participants was evaluated during both the actual simulation as well as during the debriefing session. Tables 2, 3, 4 and 5

show which concepts were identified during each simulation and/or debriefing, as well as how many times the RNs identified the essential learning concept. The chest pain simulation was done by all four groups of RNs, thus the number of times concepts were correctly identified in this scenario was higher than the number of times concepts were correctly identified in the other scenarios.

Table 2 Asthma Scenario Essential Concepts with Simulation and Debriefing

Results

<b>Essential Learning Concept</b>	<b>Components of Essential Learning Concept Specific to Asthma Scenario</b>	<b>Number of Times Essential Learning Concept was Identified in Asthma Simulation</b>	<b>Number of Times Essential Learning Concept was Identified in Asthma Debriefing Session</b>
Interviewing and Communication	Obtain medical history including current medications	1	1
	Obtain pregnancy history	1	1
Rapid, Focused Assessment	Pulse oximetry	1	0
	Physical assessment of breathing – are accessory muscles in use, does patient appear exhausted with effort of breathing	0	0
	Standard assessment of pregnant patient	1	1
Problem Identification	Pregnant patient having an acute exacerbation of asthma	1	2
Prioritization of Needs	Adequate oxygenation of patient	1	0
	Patient reassurance	1	0
	Address and treat other pregnancy-related risks	1	1
Decision Making	Patient provided with supplemental oxygen	1	0
	Provider notified and orders received	1	1
	Patient stabilized and sent home, or admitted as inpatient, or sent to ED	1	0

Table 3 *Migraine Scenario Essential Concepts with Simulation and Debriefing Results*

<b>Essential Learning Concept</b>	<b>Components of Essential Learning Concept Specific to Migraine Scenario</b>	<b>Number of Times Essential Learning Concept was Identified in Migraine Simulation</b>	<b>Number of Times Essential Learning Concept was Identified in Migraine Debriefing Session</b>
Interviewing and Communication	Obtain medical history including current medications	1	1
	Obtain pregnancy history	1	0
Rapid, Focused Assessment	Rule out preeclampsia	2	2
	Neuro exam	0	2
	Standard assessment of pregnant patient	2	0
Problem Identification	Pregnant patient with a migraine HA	0	2
Prioritization of Needs	Pain relief	0	1
	Patient reassurance	2	0
	Check blood glucose	0	0
Decision Making	Provider notified and orders received	1	1
	Patient stabilized and sent home, or admitted as inpatient for pain relief	1	1

Table 4 *Acute Myocardial Infarction Scenario Essential Concepts with Simulation and Debriefing Results*

<b>Essential Learning Concept</b>	<b>Components of Essential Learning Concept Specific to Acute Myocardial Infarction Scenario</b>	<b>Number of Times Essential Learning Concept was Identified in Acute Myocardial Infarction Simulation</b>	<b>Number of Times Essential Learning Concept was Identified in Acute Myocardial Infarction Debriefing Session</b>
Interviewing and Communication	Obtain medical history including current medications	5	3
	Obtain pregnancy history	4	0
Rapid, Focused Assessment	Pulse oximetry	3	0
	Rule out preeclampsia	3	1
	Standard assessment of pregnant patient	4	0
Problem Identification	Pregnant patient having an AMI	2	3
Prioritization of Needs	Obtain 12-lead EKG tracing on patient	4	1
	Pain relief	1	0
	Prepare for possible emergency cesarean delivery	0	0
Decision Making	Get patient to ED	3	1

Table 5 *Pyelonephritis Scenario Essential Concepts with Simulation and Debriefing Results*

<b>Essential Learning Concept</b>	<b>Components of Essential Learning Concept Specific to Pyelonephritis Scenario</b>	<b>Number of Times Essential Learning Concept was Identified in Pyelonephritis Simulation</b>	<b>Number of Times Essential Learning Concept was Identified in Pyelonephritis Debriefing Session</b>
Interviewing and Communication	Obtain medical history including current medications	0	0
	Obtain pregnancy history	1	0
Rapid, Focused Assessment	Physical exam for flank pain	0	3
	Check patient temperature	1	0
	Standard assessment of pregnant patient	1	0
Problem Identification	Pregnant patient with pyelonephritis	0	3
Prioritization of Needs	Obtain urine for analysis	1	0
	Pain relief	0	1
	Address and treat any pregnancy related issues	1	0
Decision Making	Provider notified and orders received	1	1
	Admit as inpatient for IV antibiotic therapy	1	0

In addition to using the table as a guide to assess nursing knowledge, the study director was able to be present as an observer at all four simulation scenarios as well as for the debriefing sessions and was therefore able to hear

all the comments made by the OB triage RNs. The study director also reviewed the evaluation forms (Appendix A) completed by the RNs. These forms provided additional feedback on the RN's experience of the scenarios.

## **Results**

With the exception of one chest pain simulation, the RNs correctly identified the patient's diagnosis in all of the scenarios. For both the chest pain and the asthma simulations nurses also stated other possible diagnoses they had considered during the simulation. These potential diagnoses included pulmonary embolism, amniotic fluid embolism and electrolyte imbalance (chest pain) as well as pulmonary edema (asthma).

In every simulation with the exception of the simulation on asthma, the RNs assigned to the role of caregiver met the essential concept of interviewing and communication by obtaining the patient's pregnancy history. The RNs providing care in all simulations also obtained the patient's medical history, again with the exception of the asthma simulation.

For the rapid, focused assessment concept, all participants spoke about actions they could have taken while they were in the debriefing session. During the simulation, the participants consistently performed the usual assessments that a pregnant woman would receive. The OB triage RNs did not perform or discuss physical assessments such as checking for flank pain (pyelonephritis), listening to the patient's lungs (asthma) and neurological exam (migraine with loss of vision) during the simulations. When prompted, the RNs were able to discuss these actions in the debriefing sessions.



Overall, the RNs did well with prioritization of needs. In every chest pain simulation, the caregivers correctly noted the need to obtain an EKG. All RNs were quick to identify additional resources they could call upon, such as the anesthesiologist and the in house critical response team. The RNs consistently provided reassurance to the patient and kept the patient apprised as to what was going on with her care. These updates to the patient allowed the study director to hear the thought processes of the RNs. The simulation that did not do well with prioritization of needs was that of asthma. The nurse that had been assigned the role of primary caregiver appeared to not know what to do for her patient.

The final essential concept was that of decision-making. In both the simulations and the debriefing sessions, the RNs were able to state what orders they would anticipate from the provider, as well as the appropriate disposition for the patient, whether this was admission to the Labor and Delivery Unit, or transfer to another unit within the hospital, such as the ED.

The study director's attendance at the debriefing sessions and review of the evaluation forms confirmed that the RNs found the simulations to be a beneficial method by which they increased their knowledge of non-obstetric situations that could present to OB triage. Review of the evaluation forms found that 88% of all responses indicated that the realism of the scenarios was either good or excellent. The remaining RNs rated the realism as adequate or suboptimal. The majority of the comments on the evaluation forms noted what equipment the RNs felt would add to the realism of the scenarios.

In the debriefing sessions nurses stated that they had found the simulation exercises to be beneficial learning experiences and that they preferred simulations to unscheduled emergency drills. One RN vocalized that as a nurse that worked regularly in the triage setting, she felt that she would be able to handle the scenarios if they occurred while she was working. Several RNs noted that having non-obstetrical simulation exercises would help them in future situations. They stated that they usually think immediately of possible obstetrical emergencies when patients present to triage, and that the simulation scenarios had helped them to think outside of the box.

### **Summary**

Use of the table to identify the essential learning concepts pointed out areas where the RNs had knowledge deficits. Overall, the majority of the essential learning concepts were correctly addressed in each simulation scenario. Both the evaluation forms and the comments made by the RNs reinforced that the experience was positive for the RNs in that it helped them to more thoroughly consider the possible emergency situations that could bring a patient to OB triage.

## CHAPTER 6

### Summary, Conclusions and Recommendations

#### Summary of the study

This study was set up as a quality improvement exercise with the goal of determining whether or not participation in simulation scenarios could improve knowledge of OB triage RNs that care for patients presenting to OB triage with non-obstetrical emergencies. Four simulation scenarios were developed with the topics of pyelonephritis, acute myocardial infarction (AMI), migraine and asthma. A group of OB triage RNs was assigned to attend each scenario. Half of the attendees were assigned the role of caregivers. The remaining attendees were observers. Following each simulation a debriefing session was held. Both the scenarios and the debriefing sessions were facilitated by two RNs that have received simulation training. Each RN that participated in the simulation scenarios was also asked to complete an evaluation form after the simulation and the debriefing session was complete.

Prior to the actual simulations the study director developed a table that listed essential learning concepts for each scenario. To evaluate the knowledge of the participants, the study director observed both the scenarios and the debriefing sessions and noted which essential concepts were identified by the RNs, as well as whether or not the concepts were identified in the simulation or the debriefing session. The study director also reviewed the evaluation forms completed by each RN for further insight into their perception of the simulation as a learning experience.

## **Discussion of the findings**

A total of 25 RNs participated in the simulations and debriefing sessions. All of the RNs stated that the simulations would be helpful with future patients as the RNs felt that the simulations provided them with an increased awareness of non-obstetrical emergencies that could present to triage. Prior to 2012, the RNs were accustomed to taking part in emergency drills on the unit where they worked. The RNs indicated that this method of learning, via simulation, was preferable to participating in unscheduled emergency drills. The RNs further noted that the simulations provided them with a better opportunity to learn in an environment that was focused on enhancing and improving upon their existing knowledge.

The study director was able to watch and listen for the RNs to address the essential learning concepts in each scenario. She identified these concepts as Interviewing and Communication, Focused Assessment, Problem Identification, Prioritization of Needs and Decision Making. In all four scenarios, the RNs correctly addressed each concept. The only concept they struggled with was that of focused assessment. While the RNs did a thorough job with the obstetrical assessment, they did not perform non-obstetrical assessments that would have been appropriate. In the debriefing sessions the RNs were able to identify which non-obstetrical assessments they could have performed on the patient.

## **Limitations of study**

While the majority of the RNs rated the realism of the simulations as good or excellent, many also included comments with suggestions of ways to make the scenarios more realistic. The simulation scenarios that were used for this capstone were among the first simulations done for staff education in the MCH department. As such, the RNs that facilitated the simulations were still working to improve upon the scenarios to make them more realistic and to ensure that staff had access to all the equipment they would have in an actual patient care setting.

The study director attended the simulations as an observer, but due to the fact that she was a supervisor for the RNs that participated in the simulation scenarios, it is possible that the performance of the RNs during the simulations or the content of the discussion during the debriefing sessions may have been somehow impacted. However, the presence of the study director was not a variable that could be both included and excluded from the project.

The original intent of this study was to use a pre- and post-test to measure the change in knowledge attained by the RNs. Ultimately, the study director was unable to receive approval to use this means of evaluation from the IRB committee at the hospital. Inclusion of results from a pre- and post-test could have shown a more definitive change in nursing knowledge.

## **Implications for practice**

The use of simulation as a means of education for health care staff has been used successfully in a variety of settings. This study used simulation, a

proven method of education, and used it as a way to educate staff on low frequency, yet high-risk patient situations. The scenarios that were used for this study are scenarios that may be emergencies when they occur in pregnant women. This study differed from many simulation projects as the scenarios addressed situations that are not routinely encountered in the clinical setting in which the simulation participants work. Although the simulations were not based on common obstetrical situations, the OB triage RNs felt that they were valuable learning experiences. This study could easily be replicated in other departments by using a similar model of creating scenarios that are outside the situations that RNs typically encounter in the units in which they work. The concept could be further extended to include staff from multiple areas, which would allow for multidisciplinary participation in simulation exercises.

### **Recommendations for further study and staff education**

The premise of this study could be expanded as a means of educating multidisciplinary staff within the hospital setting. There are a number of medical emergencies that require multiple hospital departments to function as a coordinated team. It could be very beneficial to do emergency simulation scenarios with staff from multiple areas. This would help everyone involved to be better prepared when an actual emergency occurred.

The RNs that participated in the project did not perform the focused assessment as it related to the non-obstetrical issues. While preparing for this project the simulation educators explained to the study director that the process they would usually follow would be to send out educational materials prior to a

simulation. Thus, had the educators followed their customary protocol, the RNs participating in this project would have received information regarding AMI, asthma, pyelonephritis and migraine in pregnancy. This information would have provided the RNs with a clearer expectation of the actions expected of them during the simulations, and as a result the RNs would have been better prepared to identify and act upon the essential learning concept of focused assessment. Providing this information would meet the need for staff to receive all the knowledge they should have to address the situations if the situations occur in the OB triage setting.

There was one RN that took part in the study that did not do well during the simulation exercise. This RN had worked in the MCH department for about five years, so if she had simulation experience it would have occurred at least five years prior to the study. Her unfamiliarity with the simulation setting may have been a factor in her poor performance. It is also possible that she became nervous due to the fact that a number of other RNs were observing her actions. After the simulation the study director spoke with the educators and the RN's direct supervisor to discuss how to best handle staff that do not perform well during the simulations. It was determined that this needed to be done in a way that would provide the staff person with confidence that he or she can handle similar situations that may arise in the future. It was also essential that this conversation with the staff person be addressed in a manner that was not perceived as punitive. It was determined that the simulation educators would

speak with any staff RNs that didn't perform well in simulations as the educators were not in a position of authority over the staff.

The hospital that owns the simulation lab where this project took place was a chest pain accredited center. Part of this accreditation involved ensuring that all hospital staff was educated about how to treat any patient that presented with complaints of chest pain. The simulation educators asked if they could use the AMI scenario as a means of educating staff in the MCH department. The study director approved this request and offered the remaining scenarios, as well as the pre- and post-tests as educational tools for any future needs.

## **Conclusion**

This study was initially developed based on two events that happened in the course of the study director's career. One event resulted in a fetal death. Fortunately, the second event had no adverse outcome. The original study design proposed involving both emergency department and maternal child health staff, and having both staffs receive training together on obstetrical and non-obstetrical emergencies.

While the scope of the project narrowed considerably from the initial idea, the final intervention, in the form of the simulation exercises, captured the original intent. OB triage RNs participated in a learning environment where they could experience a non-obstetrical emergency and learn how to better handle the emergency without any risk to a patient. The RNs provided feedback to the study director indicating that they had found the simulation exercise to be valuable.



Having the opportunity to observe the simulations and the debriefings gave the study director information to help direct future efforts in the provision of simulation education for staff. This study also identified additional areas of educational needs for the OB triage nursing staff.

The staff RNs that participated in this study worked in a department that had committed to having all nursing staff attend two simulations during calendar year 2012. The simulations that were developed focused on common obstetrical and NICU emergencies, as well as safety issues that were identified as being high risk to mothers or babies. The non-obstetrical emergencies that were used in this study provided an opportunity for OB triage RNs to increase their knowledge of caring for pregnant patients with some of the most challenging medical situations that present to OB triage. In order to ensure that all the mothers and babies cared for in the MCH department receive the best possible care, it is essential to constantly evaluate and work to grow the knowledge and skills of the OB triage RNs.

## APPENDIX A

### SIMULATION EVALUATION FORM

#### EVES TRAINING PROGRAM EVALUATION Chandler Regional Medical Center

**DATE OF SIMULATION:** \_\_\_\_\_  
**YOUR AGE:** \_\_\_\_\_ **YOUR GENDER:**           MALE           FEMALE  
**YOUR OCCUPATION:**                   MD   RN   NP           MIDWIFE   RT  
   HUC   PCT  
**SPECIALTY:** \_\_\_\_\_ **YEARS IN PRACTICE:** \_\_\_\_\_

Please rate the following aspects of this training program using the scale listed below:

3 =

1 = poor           2 = suboptimal           adequate           4 = good           5 = excellent

Use "0 = not applicable" if you did not experience or otherwise cannot rate an item.

#### **INTRODUCTORY MATERIALS**

reading materials	0	1	2	3	4	5
introductory lecture	0	1	2	3	4	5
review of trigger videotape	0	1	2	3	4	5
orientation to the simulator	0	1	2	3	4	5

Comments:

#### **EQUIPMENT / ENVIRONMENT**

general layout of the simulation room	0	1	2	3	4	5
mannequin(s)	0	1	2	3	4	5
patient monitors	0	1	2	3	4	5
code cart	0	1	2	3	4	5
medication supply	0	1	2	3	4	5
audiovisual equipment	0	1	2	3	4	5
overall realism of simulation environment	0	1	2	3	4	5

Comments:

#### **SCENARIOS**

realism of scenarios	0	1	2	3	4	5
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realism of visual cues	0	1	2	3	4	5
realism of auditory cues	0	1	2	3	4	5
realism of tactile cues	0	1	2	3	4	5
realism of confederates (actors) in scenarios	0	1	2	3	4	5

## APPENDIX B

### ASTHMA SCENARIO

Patient description: Patient is a 28-year old G1P0 at 25 weeks. Patient presents with c/o difficulty breathing and states that she “can’t catch her breath.” Patient is audibly wheezing upon arrival to triage. While helping patient put on her gown you note that she is using accessory muscles to breathe (Holley & Boots, 2009). She appears scared and agitated. The patient denies contractions, SROM, vaginal bleeding and states positive fetal movement.

Patient is placed on fetal monitor. No contractions are noted, FHTs 150. Patient states that she cannot lie on left side, she prefers to remain sitting up (Holley & Boots, 2009). O2 sat on room air is 90%, BP 80/50, P 60, R 32.

#### History:

Medical: Asthma since childhood. Patient has a prescription for an inhaler but has not used it during this pregnancy. No allergies to medications. Normal course of pregnancy thus far.

Social: Patient lives with her boyfriend. States she is safe at home. Boyfriend is a smoker but does not smoke in the home. Boyfriend is with patient (he drove her to hospital). He appears attentive and concerned. He has left triage once to go outside and smoke.

Baseline Lab Values: N/A

## **Learning Objectives:**

Cognitive: Correctly identify patient as having asthma exacerbation. Identify additional risk factors for pregnant patients with asthma. Identify that boyfriend's second hand smoking is likely culprit of asthma exacerbation (Kennedy, 2009).

Technical: Physical assessment of patient should include listening to breath sounds, placement of pulse ox, vital signs and usual assessment of pregnant patient. Patient should be asked about her health history and pregnancy history.

Behavioral: Primary RN clearly communicates situation to other RNs that present to help. Primary RN drives call to provider and recommends transfer to ED or is able to accept these ideas when they are offered by other RNs. Patient and patient's family are kept updated as to what is occurring. Be prepared for possible emergency C/S delivery.

**Target Trainees: OB Triage RNs**

**Anticipated Duration: 5 to 10 minutes**

## **SCENARIO SET-UP**

Room configuration: (may insert digital photo)

OB: Standard OB triage bay

Neonatal: N/A

Equipment: Standard equipment in OB triage bay

Manikin/task trainer preparations: (may insert digital photo)

Presets: N/A

Simulator:

Patient monitor:

Initial Presentation: As described at start of scenario

Miscellaneous: None

Chart Contents: N/A

Demonstration Items needed in Debriefing Room: None

## **SCENARIO LOGISTICS**

Expected interventions: Pulse oximetry, listen to breath sounds, check for FHTs and UCs, assess maternal vitals, provide supplemental oxygen, notify OB physician early on, call other RNs for help, transfer patient to ED.

Likely progression: Ask additional RNs for help, pulse ox, maternal vitals and fetal monitors placed simultaneously, supplemental oxygen provided, listen to breath sounds, call obstetrician, transfer to ED.

Expected endpoint: Patient is transferred to ED.

Distracters: Patient won't lie down making it difficult to listen to FHTs.

Additional/optional challenges: Correctly identify other risk factors for asthma in pregnancy: SGA, preterm labor, preeclampsia and increased risk of gestational diabetes due to use of corticosteroids, although this does not apply to this patient as she is not taking medications for her asthma upon presentation (Schatz, et al., 2010; Kennedy, 2009).

Videotape Guidelines (Priorities to capture on videotape) Entire scenario will be videotaped.

**Confederate Roles N/A**

**Trainee Roles RNs responding to scenario. Primary responder (1 RN), additional responders (3 RNs) and observers (4 RNs).**

**Debriefing Points** (State in form of open-ended questions you can ask during debrief)

Cognitive: What do you think this scenario was about?

What do you feel is the first priority when a patient like this presents to OB triage?

What are some other signs/symptoms you might expect to see in an asthmatic patient?

What cues helped guide you to your diagnosis?

Technical: What breath sounds do you expect to hear in an asthmatic patient?

Behavioral: Did the leader miss critical information about the patient's condition?

Are there changes in communication you would suggest to make the situation flow better towards the desired outcome?

## **SCENARIO SUPPORT MATERIALS**

### **Reference List**

### **Appendices**

Pertinent reference materials: (given ahead of time, available during program or reference list only) None

Visual aids/cognitive aids: (given ahead of time, located in sim room, located in debriefing room) Vital signs posted on monitor

Slide presentations on key topics:  YES  NO

## APPENDIX C

### MIGRAINE SCENARIO

Patient description: Patient is a 32 year-old G3P2 at 36 weeks gestation. She presents to OB triage with complaints of severe headache. Patient states she has had a headache for two hours. She reports feeling “spacey” just before the headache started and she thinks she may have briefly passed out. Patient was home alone so this event, if it occurred, was not witnessed. Patient states she took 400mg Advil one hour ago with no relief. Patient denies contractions, SROM, vaginal bleeding. She states positive fetal movement.

Patient is placed on fetal monitor. She is not contracting. FHTs 130, level II tracing. Patient is afebrile, O2 sat on room air is 98%, BP 110/60, P 80, R 20. Shortly after getting into triage bed, patient states that she cannot see out of her left eye (Ertresvåg, Zwart, Helde, Johnson & Bovim, 2005). She becomes very concerned and tearful.

#### History:

Medical: Patient reports no significant medical history.

Surgical: Patient had tonsillectomy as child and appendectomy in her 20s. She reports no complications with either surgery.

Social: Patient lives alone but has an extended family living nearby. Her cousin drove her to triage.

Baseline Lab Values: N/A

#### **Learning Objectives:**



Cognitive: Correctly identify patient as experiencing migraine headache. Identify additional risk factors for pregnant patients that have migraine headaches.

Technical: Physical assessment of patient should include neuro exam, assessment of all vital signs including pulse oximetry, and the usual assessment of a pregnant patient. Patient should be asked about her health history and her pregnancy history, both for this pregnancy and previous pregnancies. Patient should also be asked about family's neurological history.

Behavioral: Primary RN clearly communicates situation to other RNs that present to help. Code neuro should be called. Primary RN should drive call to obstetrician and calling of code neuro or should be able to accept these ideas when they are offered by other RNs. Patient and patient's family are kept updated as to what is occurring.

**Target Trainees: OB Triage RNs**

**Anticipated Duration: 5 to 10 minutes**

## **SCENARIO SET-UP**

Room configuration: (may insert digital photo)

OB: Standard OB triage bay

Neonatal: N/A

Equipment: Standard equipment in OB triage bay

Manikin/task trainer preparations: (may insert digital photo)

Presets: N/A

Simulator:

Patient monitor:

Initial Presentation: As described at start of scenario

Miscellaneous: None

Chart Contents: N/A

Demonstration Items needed in Debriefing Room: None

## **SCENARIO LOGISTICS**

Expected interventions: Neuro exam, call code neuro, call for additional nursing help, keep obstetrician informed, check for FHTs and UCs, assess maternal vitals, start IV, provide pain relief to patient, send labs to rule out preeclampsia, check blood sugar.

Likely progression: Neuro exam, check for FHTs and UCs, call for additional nursing help, assess maternal vitals, call code neuro, keep obstetrician informed, start IV, send labs to rule out preeclampsia, check blood sugar, provide pain relief to patient.

Expected endpoint: Patient admitted for observation and pain relief.

Distracters: None.

Additional/optional challenges: Correctly identify other risk factors for migraine in pregnancy: preeclampsia, thrombolytic events and gestational diabetes (Allais, Gabellari, Borgogno, Lorenzo & Benedetto, 2010). Correctly identify that migraine sufferers are less likely to have migraines in pregnancy, but if they do have migraines, it is more common to have migraine with aura. Correctly state that migraine presentation in pregnancy may be difficult to distinguish from TIA due to transient unilateral sensory, motor and visual disturbances (Ertresvåg, Zwart, Helde, Johnson & Bovim, 2005).

Videotape Guidelines (Priorities to capture on videotape) Entire scenario will be videotaped.

**Confederate Roles** None

**Trainee Roles** RNs responding to scenario. **Primary responder (1 RN), additional responders (3 RNs) and observers (4 RNs).**

**Debriefing Points** (State in form of open-ended questions you can ask during debrief)

Cognitive: What do you think this scenario was about?

What do you feel is the first priority when a patient like this presents to OB triage?

What are some other signs/symptoms that you might expect to see in a patient with a migraine headache?

What cues helped guide you to your diagnosis?

Technical: What are some normal and abnormal findings in a neurological exam?

Behavioral: Did the leader miss critical information about the patient's condition?

Are there changes in communication you would suggest to make the situation flow better towards the desired outcome?

## **SCENARIO SUPPORT MATERIALS**

**Reference List**

**Appendices**

Pertinent reference materials: (given ahead of time, available during program or reference list only) None

Visual aids/cognitive aids: (given ahead of time, located in sim room, located in debriefing room) Vital signs posted on monitor

Slide presentations on key topics:  YES  NO

## APPENDIX D

### ACUTE MYOCARDIAL INFARCTION SCENARIO

Patient description: A 36-year-old G4P0212 at 34 weeks presents to triage after the onset of severe chest pain. The chest pain was sudden in onset and had awoken her from sleep in the early morning. She also noted diaphoresis and nausea. She did not have dyspnea, dizziness, syncope, hemoptysis, cough, or fever.

Patient notes that her current pregnancy was complicated by hyperemesis gravidarum, and she had required total parenteral nutrition support through a peripherally inserted central catheter for the past 12 weeks. Her only medication was Pepcid. She denies tobacco, alcohol and drug use.

Patient is afebrile, BP 88/60, P 108, R 20. O<sub>2</sub> sat 98% with the patient breathing room air. An examination of the neck showed no jugular venous distention or carotid bruits, and auscultation of the chest revealed no wheezes or crackles.

The heart sounds were normal, and there was no murmur, rub, or gallop. There was no cyanosis, clubbing, or edema of the arms or legs. A peripherally inserted central catheter in her left arm was functioning well. The fetal heart rate was approximately 150 beats per minute. Patient is not having contractions.

Electrocardiography showed sinus tachycardia with ST-segment elevation.

#### History:

Medical: Patient states no significant medical history but notes that both of her other deliveries were preterm. Patient also states she had an ectopic pregnancy two years ago that was resolved with methotrexate.

(Nallamothu, Saint, Saint & Mukherjee, 2005)

**Surgical:** None

**Social:** Patient is married and was brought to OB triage via ambulance. Her husband rode with her. Patient states that her mother-in-law is at her home caring for her other children.

Baseline Lab Values: N/A

**Learning Objectives:**

Cognitive: Correctly identify patient as having AMI.

Technical: Physical assessment of patient should include listening to cardiac sounds, examination of patient for other signs/symptoms of cardiac issues, vital signs including pulse ox, and the usual assessment of the pregnant patient. The patient should be asked about her health history and her family's health history.

Behavioral: Primary RN clearly communicates situation to other RNs that present to help. Primary RN drives call to provider, getting STAT EKG, and recommends transfer of patient to the ED or is able to accept these ideas when they are offered by other RNs. Patient and patient's family are kept updated as to what is occurring. Be prepared for possible emergency C/S delivery.

**Target Trainees: OB Triage RNs**

**Anticipated Duration: 5 to 10 minutes**

**SCENARIO SET-UP**

Room configuration: (may insert digital photo)

OB: Standard OB triage bay

Neonatal: N/A

Equipment: Standard equipment in OB triage bay plus 12 lead EKG machine

Manikin/task trainer preparations: (may insert digital photo)

Presets: N/A

Simulator:

Patient monitor:

Initial Presentation: As described at start of scenario

Miscellaneous: None

Chart Contents: N/A

Demonstration Items needed in Debriefing Room: None

## **SCENARIO LOGISTICS**

Expected interventions: Obtain 12-lead EKG, assess all vitals, listen to heart sounds, call CRT, keep obstetrician informed, address patient's pain, check FHTs and UCs, call other RNs for help, assess patient for signs/symptoms of cardiac disease, obtain labs to rule out preeclampsia, be prepared for emergency C/S.

Likely progression: Obtain 12-lead EKG, assess all vitals, call CRT, call other RNs for help, keep obstetrician informed, listen to heart sounds, address patient's pain, check FHTs and UCs, assess patient for signs/symptoms of cardiac disease.

Expected endpoint: Patient is transferred to ED or cardiac cath lab.

Distracters: Patient's large extended family arrives once diagnosis is made and they enter triage unannounced.

Additional/optional challenges: Correctly assess for other signs/symptoms that a patient with cardiac disease could present with.

Videotape Guidelines: Entire scenario will be videotaped

**Confederate Roles: RNs observing will act as family members and barge in unannounced during scenario.**

**Trainee Roles RNs responding to scenario. Primary responder (1 RN), additional responders (3 RNs) and observers (4 RNs).**

**Debriefing Points** (State in form of open-ended questions you can ask during debrief)

Cognitive: What do you think this scenario was about?

What do you feel is the first priority when a patient like this presents to OB triage?

What are some other signs/symptoms you might expect to see in a patient with cardiac disease?

What cues helped guide you to your diagnosis?

Technical: Was RN able to correctly listen to heart sounds and perform physical assessment that would reveal signs/symptoms associated with cardiac disease?

Behavioral: Did the leader miss critical information about the patient's condition?  
Are there changes in communication you would suggest to make the situation flow better towards the desired outcome?

## **SCENARIO SUPPORT MATERIALS**

**Reference List**

**Appendices**



Pertinent reference materials: (given ahead of time, available during program or reference list only). None

Visual aids/cognitive aids: (given ahead of time, located in sim room, located in debriefing room). Vital signs posted on monitor

Slide presentations on key topics:  YES  NO

## **APPENDIX E**

### **PYELONEPHRITIS SCENARIO**

Patient description: 23-year-old patient presents at 25 weeks with complaints of left flank pain that woke her up. Patient states general malaise with fever and chills. Patient was seen in provider's office earlier in the day and reports that her urinalysis was negative for UTI. Patient denies contractions, SROM, vaginal bleeding. Patient states baby is moving.

Patient is placed on fetal monitor. Toco shows uterine irritability. FHTs 160.

You note that patient's skin is warm to your touch. Oral temperature is 103.1, P 110, BP 90/50, R 14, O2 sat on room air is 96%.

#### History:

**Medical:** Patient states history of frequent UTIs in childhood that resolved following a surgery at 3 years of age. Patient still has UTIs but rarely, less than once a year. Patient states that current pain is not like UTI pain.

**Surgical:** Blocked ureter repaired at 3 years of age. Tonsillectomy at 11 years of age. Patient states no issues with either surgery.

**Social:** Patient is married and has good family support in town. Husband and patient's mother both came into hospital with patient.

Baseline Lab Values: Urine is positive for bacteria.

#### **Learning Objectives:**

Cognitive: Correctly identify patient as having pyelonephritis. Identify additional risk factors for pregnant patients with pyelonephritis: preterm birth, low birth weight, perinatal mortality and anemia (Rahn, 2008; Jolley & Wing, 2010).

Technical: Physical assessment of patient should include checking for flank pain on both sides, vital signs including pulse ox and usual assessment of pregnant patient. Patient should be asked about her health history and pregnancy history.

Behavioral: Primary RN clearly communicates situation to other RNs that present to help. Primary RN drives call to provider and recommends admission for IV antibiotics or is able to accept these ideas when they are offered by other RNs. Patient and patient's family are kept updated as to what is occurring.

**Target Trainees: OB Triage RNs**

**Anticipated Duration: 5 to 10 minutes**

## **SCENARIO SET-UP**

Room configuration: (may insert digital photo)

OB: Standard OB triage bay

Neonatal: N/A

Equipment: Standard equipment in OB triage bay

Manikin/task trainer preparations: (may insert digital photo)

Presets: N/A

Simulator:

Patient monitor:

Initial Presentation: As described at start of scenario

Miscellaneous: None

Chart Contents: N/A

Demonstration Items needed in Debriefing Room: None

## **SCENARIO LOGISTICS**

Expected interventions: Assess flank pain bilaterally, assess all vital signs including pulse oximetry, check for FHTs and UCs, keep obstetrician updated, call other RNs for help, start IV and hydrate patient, admit patient, address pain needs of patient, obtain clean catch urine for urinalysis.

Likely progression: Obtain clean catch urine for urinalysis, assess flank pain bilaterally, check for FHTs and UCs, assess all vital signs including pulse oximetry, keep obstetrician updated, call other RNs for help, start IV and hydrate patient, address pain needs of patient, admit patient.

Expected endpoint: Patient is admitted for IV antibiotics.

Distracters: Provider told patient earlier in the day that she did not have a UTI.

Patient has history of UTI and states that this does not feel like a UTI.

Additional/optional challenges: Correctly identify other risk factors for pyelonephritis in pregnancy: low birth weight, preterm delivery, perinatal mortality and anemia, which occur in 25% of pyelonephritis cases during pregnancy (Rahn, 2008; Jolley & Wing, 2010). Correctly state that asymptomatic bacteriuria is more likely to develop into pyelonephritis as opposed to symptomatic bacteriuria (Jolley & Wing, 2010). Correctly identify that pyelonephritis is more common in the second and third trimesters than in the first trimester (Jolley & Wing, 2010).

Videotape Guidelines Entire scenario will be videotaped

**Confederate Roles N/A**

**Trainee Roles RNs responding to scenario. Primary responder (1 RN), additional responders (3 RNs) and observers (4 RNs).**

**Debriefing Points** (State in form of open-ended questions you can ask during debrief)

Cognitive: What do you think this scenario was about?

What do you feel is the first priority when a patient like this presents to OB triage?

What are some other signs/symptoms you might expect to see in a pregnant patient with pyelonephritis?

What cues helped guide you to your diagnosis?

Technical: How would you physically assess this patient based on her complaints of pain?

Behavioral: Did the leader miss critical information about the patient's condition?

Are there changes in communication you would suggest to make the situation flow better towards the desired outcome?

## **SCENARIO SUPPORT MATERIALS**

### **Reference List**

### **Appendices**

Pertinent reference materials: (given ahead of time, available during program or reference list only) None

Visual aids/cognitive aids: (given ahead of time, located in sim room, located in debriefing room) Vital signs posted on monitor

Slide presentations on key topics:  YES  NO

## APPENDIX F

### OB SIMULATION PRE- AND POST-TEST

1. It is uncommon for pregnant patients to present to the hospital complaining of exacerbation of asthma.

True

False

(Schatz, et al., 2010)

2. Pregnant women with asthma are at risk for preterm birth, SGA and preeclampsia.

True

False

(Schatz, et al., 2010)

3. Your patient is a non-smoker. She lives with her parents, both of who smoke. She asks you if second hand smoke can exacerbate her asthma. You tell her that this is:

True

False

(Kennedy, 2009)

4. What are the breath sounds you would expect to hear during auscultation of an asthmatic pregnant patient's lungs?

A. Crackles

B. Wheezing on inspiration

C. Wheezing on expiration

- D. Rhonchi
- E. All of the above

5. The following are signs of severe asthma (check all that apply)

- A. Patient is agitated
- B. O2 sat on room air is less than 90%
- C. Patient is using accessory muscles to breathe
- D. Patient is hypertensive
- E. All of the above

(Holley & Boots, 2009)

6. Migraine without aura is more common than migraine with aura in pregnancy.

- True
- False

(Ertresvåg, Zwart, Helde, Johnson, Bovim, 2005)

7. Patients that have a history of migraines tend to have worse migraines during pregnancy.

- True
- False

(Ertresvåg, Zwart, Helde, Johnson, Bovim, 2005)

8. Pregnant patients that suffer migraines are at an increased risk of thrombolytic events such as stroke.

- True
- False

(Allais, Gabellari, Borgogno, Lorenzo, Benedetto, 2010)

9. A pregnant patient with a migraine may present with complaints of loss of vision or motor disturbances just prior to onset of migraine headache.

True

False

(Ertresvåg, Zwart, Helde, Johnson, Bovim, 2005)

10. Your patient presents to OB triage with complaints of severe headache. She appears to be having some difficulty moving her left hand. To rule out a neurological injury, you perform a neurological exam that includes (check all that apply):

A. Have patient shrug their shoulders and check for equal, bilateral movement

B. Check blood pressure

C. Have patient follow your finger with her eyes without moving her head

D. Check patient for Homan's sign

10. What is the order in which you would do the following interventions on a patient that presents to OB triage with complaints of chest pain?

1. Monitor her for FHTs and UCs

2. Assess her to rule out preeclampsia

3. Order and obtain a STAT 12-lead EKG

4. Call the ED and get the patient out of OB triage

A. 4, 1, 2, 3

B. 3, 1, 2, 4

C. 1, 2, 3, 4



D. 2, 1, 4, 3

11. The frequency of acute myocardial infarction in pregnancy is 1 in 100,000.

True

False

(Kamran, Suresh & Ahluwalia, 2004)

12. Pregnant patients that have an AMI and are then delivered within a two week period have higher mortality than if they remain undelivered.

True

False

(Kamran, Suresh & Ahluwalia, 2004)

13. Patients with cardiac disease may have the following physical symptoms:

(check all that apply)

A. Clubbing of fingers and toes

B. Swollen ankles

C. Cyanosis

D. None of the above

14. A patient presents to OB triage with complaints of chest pain. You obtain a 12-lead EKG, which shows an elevated ST segment. You should prepare the patient for:

A. Admission to labor and delivery

B. Cesarean delivery

C. Transfer to the emergency department

15. Pregnant patients may have bacteria in their urine without signs or symptoms of a urinary tract infection. This is known as asymptomatic bacteriuria.

Are these patients at an increased risk for pyelonephritis?

**True**

False

(Jolley & Wing, 2010)

16. Pregnant patients with pyelonephritis are at an increased risk for preterm birth, SGA babies and sepsis.

**True**

False

(Rahn, 2008)

17. Half of all pregnant patients with pyelonephritis are anemic.

True

**False**

(Jolley & Wing, 2010)

18. A patient with a diagnosis of pyelonephritis will most likely be treated in OB triage and discharged to home.

True

**False**

19. A top priority in any situation in OB triage, including emergencies, is to keep the patient and the patient's family informed as to what is happening.

**True**

False

20. If a patient presents to OB triage with a problem that is clearly not pregnancy related, you do not need to assess her for contractions or FHTs.

True

False

## APPENDIX G

### TABLE 1 DIAGNOSES AND ESSENTIAL CONCEPTS

	<b>Interviewing and Communication</b>	<b>Rapid, Focused Assessment</b>	<b>Accurate Problem Identification</b>	<b>Prioritization of Needs</b>	<b>Decision Making</b>
<b>Asthma</b>	<ol style="list-style-type: none"> <li>1. Obtain medical history including current medications</li> <li>2. Obtain pregnancy history</li> </ol>	<ol style="list-style-type: none"> <li>1. Pulse oximetry</li> <li>2. Physical assessment of breathing – are accessory muscles in use, does patient appear exhausted with effort of breathing</li> <li>3. Standard assessment of pregnant patient</li> </ol>	<ol style="list-style-type: none"> <li>1. Pregnant patient having an acute exacerbation of asthma</li> </ol>	<ol style="list-style-type: none"> <li>1. Adequate oxygenation of patient</li> <li>2. Patient reassurance</li> <li>3. Address and treat other pregnancy-related risks</li> </ol>	<ol style="list-style-type: none"> <li>1. Patient provided with supplemental oxygen</li> <li>2. Provider notified and orders received</li> <li>3. Patient stabilized and sent home, or admitted as inpatient, or sent to ED</li> </ol>
<b>Migraine</b>	<ol style="list-style-type: none"> <li>1. Obtain medical history including current medications</li> <li>2. Obtain pregnancy history</li> </ol>	<ol style="list-style-type: none"> <li>1. Rule out preeclampsia</li> <li>2. Neuro exam</li> <li>3. Standard assessment of pregnant patient</li> </ol>	<ol style="list-style-type: none"> <li>1. Pregnant patient with a migraine HA</li> </ol>	<ol style="list-style-type: none"> <li>1. Pain relief</li> <li>2. Patient reassurance</li> <li>3. Check blood glucose</li> </ol>	<ol style="list-style-type: none"> <li>1. Provider notified and orders received</li> <li>2. Patient stabilized and sent home, or admitted as inpatient for pain relief</li> </ol>
<b>Acute Myocardial Infarction</b>	<ol style="list-style-type: none"> <li>1. Obtain medical history including current medications</li> <li>2. Obtain pregnancy history</li> </ol>	<ol style="list-style-type: none"> <li>1. Pulse oximetry</li> <li>2. Rule out preeclampsia</li> <li>3. Standard assessment of pregnant patient</li> </ol>	<ol style="list-style-type: none"> <li>1. Pregnant patient having an AMI</li> </ol>	<ol style="list-style-type: none"> <li>1. Obtain 12-lead EKG tracing on patient</li> <li>2. Pain relief</li> <li>3. Prepare for possible emergency cesarean delivery</li> </ol>	<ol style="list-style-type: none"> <li>1. Get patient to ED</li> </ol>
<b>Pyelonephritis</b>	<ol style="list-style-type: none"> <li>1. Obtain medical history including current medications</li> <li>2. Obtain pregnancy history</li> </ol>	<ol style="list-style-type: none"> <li>1. Physical exam for flank pain</li> <li>2. Check patient temperature</li> <li>3. Standard assessment of pregnant patient</li> </ol>	<ol style="list-style-type: none"> <li>1. Pregnant patient with pyelonephritis</li> </ol>	<ol style="list-style-type: none"> <li>1. Obtain urine for analysis</li> <li>2. Pain relief</li> <li>3. Address and treat any pregnancy related issues</li> </ol>	<ol style="list-style-type: none"> <li>1. Provider notified and orders received</li> <li>2. Admit as inpatient for IV antibiotic therapy</li> </ol>

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## **Curriculum Vitae**

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### EDUCATION:

Doctor of Nursing Practice, University Nevada Las Vegas, expected May 2012

Graduate Certificate in Public Health, University of Arizona, 2010

MBA, University of Arizona, 1998

BSN, University of Arizona, 1991

### EMPLOYMENT OVERVIEW:

2005 – Present → Director of Maternal Child Health at Chandler Regional Medical Center in Chandler, AZ. Manage 200 personnel. Responsible for three units: Labor and Delivery, Post-Partum and NICU. NICU is level IIEQ and the Labor and Delivery unit averages 300 deliveries a month.

- Opened a 12-bed private room NICU

- Co-chair of Perinatal Safety Improvement Coalition, an organization-wide committee that focuses on Perinatal patient safety
- Acknowledged by CHW for Outstanding Leadership in Perinatal Safety
- Member of the CHW Arizona Professional Practice Committee
- Transitioned Labor and Delivery to a Labor, Delivery, Recovery and Post-Partum model
- Initiated the annual preemie picnic for special nursery graduates
- Participated in a three-year Pursuit of Excellence effort that focused on improving patient safety. Project resulted in a 31% improvement in the safety attitude of staff and providers as measured by questionnaire.
- 98% of my Labor and Delivery RNs have achieved certification through the NCC in electronic fetal monitoring. Certification in a specialty area has increased from 2% to 49%. 52% of all department staff has a BSN or a master's degree.
- Engineered the nursery transition from a level II to a level IIEQ.
- Member of the IHI's Improving Perinatal Care project for a period of three years. Asked to lead a breakout session at the IHI national forum in 2007 on elective induction procedure developed by staff and providers.
- Oversaw implementation of Med Teams in Labor and Delivery.
- Participated in and supported the implementation of a protocol for caring for late preterm infants.

2000 – 2005 → Manager of Women's and Children's Outpatient Services.

Maricopa Medical Center, Phoenix, AZ

- Managed twelve outpatient clinics servicing 72,000 patients yearly: women's, pediatrics, antepartum testing, dental, cardiac rehab and diabetes education.
- Staff of 70 included RNs, LPNs, MAs, dental assistants, dentists, student externs, cardiovascular technicians and unit secretaries.
- Developed an improved revenue capture process resulted in a net \$30 increase per walk-in to the peds clinic. This resulted in an increase of \$40,000 annually for the peds clinic. Helped initiate dental services, which resulted in doubling the number of paying patients.
- During new clinics construction, had responsibility for purchasing equipment, coordinating utilities and overseeing installation of communication equipment, external communications, along with seamless transition of patient care between facilities.
- Assisted in the development and implementation of a Phase III cardiac rehab program.
- Volunteer ambassador in the Campaign for Caring. Focus on interacting with and encouraging high school students to consider health care careers.
- Helped develop and then implement a plan that reduces health care costs for uninsured patients.

April 2000 – October 2000 (The department was closed in October 2000) →  
Director Family Services. Tempe St. Luke's Hospital, Tempe, AZ

- Management of labor and delivery, post-partum and term nursery.  
Department did approximately 40 deliveries a month.
- Supervised staff of 20 comprised of RNs, LPNs, operating room technicians and nurse externs.
- Acted as house supervisor on a regular basis.
- Prepared for and successfully passed a JCAHO inspection after two months on the job.

1999 – 2000. Assistant Nurse Manager → Maricopa Medical Center, Phoenix,  
AZ

- Managed staff of 35 on a unit that did 400 deliveries a month. Staff included RNs, unit assistants and operating room technicians.
- Assisted with hiring and evaluating staff.
- Coordinated orientation and identified staff to precept new employees.
- Responsible for developing schedules.
- Responsible for payroll.
- Developed and wrote policies and procedures.
- Worked with nursing instructors to provide nursing students with a labor and delivery clinical experience.

1992 – 1999. Staff Nurse → University Medical Center, Tucson, AZ

- Nursing care of laboring mothers and their newborns, including postpartum care
- Recovery room nurse for patients following obstetric and gynecological surgery.
- Antepartum nursing care.
- Management and provider of care in a six-bed outpatient room.
- Precepting staff new to the unit.
- Charge nurse for a staff of ten to twelve persons, including RNs, LPNs, unit assistants, operating room technicians and housekeeping.
- Circulating nurse in the operating room for obstetrical and gynecological surgeries.
- Developed and carried out a project that identified problems that arose in the labor and delivery unit following the outsourcing of ancillary services and came up with potential solutions to these problems. One of these proposed solutions was implemented and used as part of the training of housekeeping staff.
- Member of the Continuous Quality Improvement Committee.
- Volunteer participation in the Professional Nursing Role.
- Development for nursing students at the University of Arizona.
- Member of the Labor Support Committee, a committee with a focus on patient satisfaction.

## PROFESSIONAL MEMBERSHIPS AND CERTIFICATIONS

Certified in Inpatient Obstetrics since 1995.

Member of AWHONN since 2005.

Member of Arizona Nurse's Association since 2005.

Member of Arizona Organization of Nurse Executives since 2005.

Certified in Electronic Fetal Monitoring since 2006.

Member of Sigma Theta Tau International Honor Society since 2011.

Member of Golden Key Honor Society since 2011.