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# Impact of Maternal Fetal Triage Index on Emergency Healthcare Providers

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IMPACT OF MATERNAL FETAL TRIAGE INDEX ON EMERGENCY  
HEALTHCARE PROVIDERS

A Scholarly Project Submitted to the Graduate School  
in Partial Fulfillment of the Requirements  
for the Degree of  
Doctor of Nursing Practice

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Pittsburg, Kansas

May 2023

# IMPACT OF MATERNAL FETAL TRIAGE INDEX ON EMERGENCY HEALTHCARE PROVIDERS

An Abstract of the DNP Scholarly Project by  
Samantha Shepard

Care of obstetrical patients in non-delivering facilities is increasing. Obstetrical service availability in rural areas has decreased by more than 50% in recent years, according to Hung et al. (2018). Healthcare providers in these areas lack confidence and competence due to lack of regular training and encounters with obstetrical patients. The Maternal Fetal Triage Index (MFTI) provides a standardized approach for triaging the obstetrical population. The purpose of this project was to determine if staff confidence and competency improves within 30 days following the review of the MFTI when compared to evaluations completed prior to the review. The project consists of a 17-question pre- and post-implementation survey that tested the knowledge and perceived confidence of the healthcare provider before and after education and review of the MFTI. Target population for the selected departments included licensed nurses within Ascension Via Christi ED In Fort Scott, Kansas. Data was collected from twelve eligible participants and analyzed from six participants that met full participation criteria. Results were evaluated using descriptive *t*-tests with comparison. A statistical significance increase in provider confidence noted between pre-survey ( $m = 17.3$ ,  $SD = 4.58$ ) and post survey ( $m = 21.3$ ,  $SD = 3.7$ ) testing;  $t(5) = -3.03$ ,  $p = 0.02$  and provider knowledge with pre-survey ( $m = 6.16$ ,  $SD = 1.83$ ) and post survey ( $m = 7.83$ ,  $SD = 0.40$ ) testing;  $t(5) = -2.5$ ,  $p = 0.05$ .

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## **CHAPTER I**

### **INTRODUCTION**

Care of the pregnant population in the emergency department (ED) is becoming increasingly common. There are several factors that contribute to this phenomenon. First, obstetrical patients often present to the ED for both non-emergent and emergent care instead of to their provider or the OB unit.. In an observational study with 223 participants, Kilfoyle et al. (2016) found that 84% utilized a hospital emergency department during pregnancy. A second factor contributing to the issue is decreasing obstetrical services in the rural areas. This is due to both absence of obstetrical services and the closure of rural hospitals entirely. According to Hung et al. (2018), obstetrical service availability in rural areas has decreased by more than 50% in recent years. With closures of rural hospitals increasing, the number of pregnant women presenting for care in the ED is only going to increase. Communities have developed other healthcare models to help combat these closures and provide healthcare to their communities. There has been an uptick of freestanding emergency departments developed in rural communities.

According to Kilfoyle et al. (2016), Emergency department utilization during pregnancy increased due to lack of insurance and non-English speaking (p. 181), with the most common reason for presentation being concerns there was an emergency or being



referred by a healthcare provider. The lack of access prompts presentation of obstetrical patients to less appropriate health care facilities such as freestanding emergency departments. Emergency room staff are not accustomed to caring for pregnant women on a regular basis. This often affects their competency and confidence levels and can negatively affect the quality of care provided. According to a consensus statement between the Emergency Nurses Association and the Association of Women's Health, Obstetric and Neonatal Nurses (2020), "Care of a pregnant or postpartum patient necessitates specialized education, training, and competencies that are not routinely acquired by emergency nurses" (p.1). Anxiety in healthcare workers is also a problem that is exacerbated by lack of protocols, annual training, and experiences dealing with pregnant patients. Negative effects on healthcare personnel and patients can result due to inadequate or absent applicable protocols.

### **Description of the Clinical Problem**

Lack of training and specialized triage protocols significantly contribute to reducing competence and confidence of staff caring for the obstetrical population. This is especially true for healthcare professionals that do not care for the obstetrical population daily. According to Kozhimmanil (2018), loss of obstetrical services increase travel times for obstetrical patients seeking care and has resulted in an increase in births at non-delivering facilities as well as out-of-hospital births.

Freestanding emergency departments are increasing and do not have the ability to call the obstetrical department for assistance when there is an emergent delivery. Lack of training, procedures, and policies create considerable risk for poor outcomes when caring for obstetrical patients in this setting. Nurses and healthcare providers who are

professionally trained in obstetrics, especially those caring for populations in the rural community, can contribute to the decline of maternal mortality in the United States. Triage protocols can improve the emergency room personnel's ability to provide competent care and can have significant impact on the health and wellbeing of the obstetrical population.

### **Significance**

This project has the potential to impact the quality of care delivered by nurses. The use of a triage index can help guide nurses in recognizing concerning vital signs, signs and symptoms of labor, as well as risk factors that place mother and fetus at high risk. Improved triage assessment by nurses using the MFTI could improve patient outcome by contributing to the expedition of the appropriate level of care.

### ***Significance to Nursing***

Prenatal care is not just limited to the obstetrical unit. According to Kilfoyle et al. (2017), use of an emergency department by pregnant women is common, even though this population has access to health insurance and scheduled routine examination throughout pregnancy (p. 181). Hung et al. (2017) states, "The loss of hospital obstetric services raises concerns for rural residents' access to obstetric care, as more than twenty-eight million women of reproductive age live in rural counties of the United States, and nearly half a million women give birth each year in rural hospitals" (p. 1663). Decreased access to specialty care centers and increased travel times increases the occurrence of presentation to the emergency department for obstetrical needs.

Inadequate or under-utilized obstetrical triage protocols in the emergency department can lead to increased maternal-newborn morbidity and mortality as well as

decreased confidence, competency, and efficiency by the emergency department staff. According to Cox (2018), “The steadily rising maternal death rate in the United States is now 26.4 per 100,000 births” (p. 428). Approximately 700 women die annually and according to the Centers for Disease Control and Prevention (2019), 60% of these maternal deaths are reported to be preventable. Maternal and neonatal morbidity and mortality in the United States are one of the highest when compared to other developed nations.

Many emergency rooms and emergency response healthcare staff are not adequately prepared when caring for the pregnant population. The obstetrical population requires specialty care. Nursing education of obstetrical care lacks depth, and there is typically no hands-on experience. Providers may have more hands-on experience, but years of not treating obstetrical patients means that their knowledge and skills may be outdated and subpar.

With healthcare models and resources continually changing it is imperative to implement protocols and procedures to care for the obstetrical population. Implementation of a triage protocol could greatly increase the perceived competence and confidence levels of emergency room and emergency response providers. It can also allow providers to coordinate and advance the patient to the most appropriate level of care in the most expedient manner. Not only can this triage protocol improve staff competence and confidence level, but it can also increase the quality of patient care and improve patient outcomes

### ***Significance to Patients***

A major contributing factor to maternal morbidity and mortality is lack of skilled healthcare professionals. This problem is increasing with the growing number of hospital closures and the development of new healthcare models predominately in rural areas. According to Kozhimannil (2019), “Rural residents had a 9% greater chance of experiencing severe maternal morbidity and mortality, compared with urban residents” (p. 1902). Nurses and providers that do not typically care for the pregnant population are seeing an increase in the number of obstetrical patients present for care. A sensitivity analysis by Briggs et al. (1994), “suggests that between 16% and 33% of all maternal deaths could be avoided through skilled attendance” (as cited by Graham et al., 2001, p.112).

According to Ameh et al. (2019), research has shown that most obstetrical and fetal deaths occur immediately after birth. Their systemic review showed that with proper education and training including adhering to emergency protocols, patient adverse events can be reduced. In addition, decreased access to obstetrical services makes it imperative that proper obstetrical triage protocols are implemented and utilized in the emergency room and emergency response settings.

Competent care in the emergency room provided by physicians, nurses, and support staff is crucial in ensuring the health and wellbeing of patients. This is especially important for precipitous and emergency deliveries in the emergency department. Since nurses and physicians are not regularly caring for this population, competencies and confidence levels of the staff may not be optimal and can negatively affect the care provided.

According to the World Health Organization (2020), “The presence of a skilled health professional (doctor, nurse, or midwife) during delivery is crucial in reducing maternal and child deaths” (p. 1). With lack of regular encounters or experiences with obstetrical patients, it is best to develop practices and procedures, for when these patients present to the emergency department for deliveries or complications with their pregnancies.

Skilled provider attendance is a critical aspect in providing competent obstetrical care. In an everchanging healthcare field, providers in all areas need to be prepared to care for obstetrical patients. According to Wong and Kitsantas (2019), “lack of coordination of care among providers for pregnant women with chronic disease, fragmentation, or substandard of care and late prenatal care initiation are among the domain of processes of care that were noted to negatively influence maternal health outcomes” (p. 3355). Skilled care providers can reduce maternal and neonatal morbidity and mortality significantly. In facilities not accustomed to caring for obstetrical patients, it is essential to implement protocols to manage these patients and have regular training to keep current on skill sets.

### **Specific Purpose**

The purpose of this project was to determine if staff confidence and obstetrical triage knowledge improves within 30 days following the review of the Maternal Fetal Triage Index when compared to evaluations completed prior to the review.

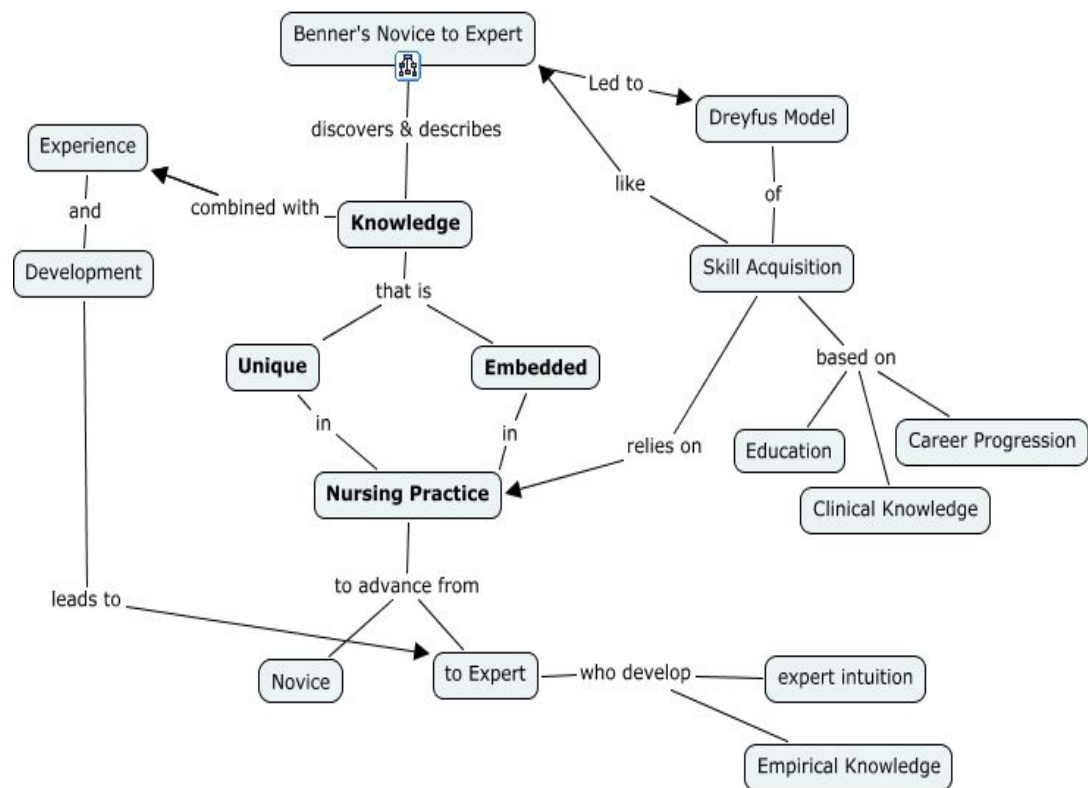
### **Theoretical Framework**

The theoretical model this project is based from is Patricia Benner's model of skill acquisition in nursing. This model focuses on the five levels of skill acquisition: novice,

advanced beginner, competent, proficient, and expert. According to Alligood (2018), "The level of performance is not an individual characteristic of an individual performer, but a function of a given nurse's familiarity with a particular situation in combination with her or his educational background" (p. 100). These five levels of skill acquisition build upon one another moving the nurse from novice to expert. Even nurses with multiple years of experience are not necessarily experts. Additionally, a nurse can be considered an expert in one area and still be at lower levels in other areas.

The purpose of Benner's theory regarding education and the application of resources is to determine the level of skill acquisition of the healthcare worker and what is needed to progress to the next level. Benner defines the purpose as, "consisting of extending practical knowledge (know-how) through theory-based scientific investigations and through the charting of the existent (know-how) developed through clinical experience in the practice of that discipline" (as cited in Alligood, 2018, p. 99). Using Patricia Benner's theory from Novice to Expert within the study will aid in determining the perceived skill acquisition level of emergency personnel and guide education and protocol implementation to increase competence and confidence levels.

**Figure I**  
*Concept Map*



*Note.* A concept map showing Patricia Benner’s Model of Skill Acquisition “From Novice to Expert,” by

Karen Howard.  (<https://cmapspublic.ihmc.us/rid=1LDBXL8TP-1YX0HF-1W9R/Benner.cmap>)

## Logic Model

A logic model (See Figure II below) was developed for this scholarly project to illustrate the relationship between the project’s inputs, activities, and intended effects with introduction of the Maternal Fetal Triage Index and education of healthcare providers in the ED. The intended effects or outcomes were discussed in timeline of immediate, mid-term, and ultimate. The ultimate desired effect is to improve provider access, knowledge, and confidence with obstetrical triage as well as improve patient satisfaction and patient care outcomes.

**Figure II**  
*Logic Model*

<b>Logic Model Implementation of Obstetrical Triage Protocol</b>				
<b>Project:</b> Introduction and educational review of MFTI in the ED				
Goal: Improve healthcare workers ability to utilize an obstetrical triage index to improve competence and confidence levels in the emergency room setting				
INPUTS	ACTIVITIES	OUTCOMES		
<ul style="list-style-type: none"> <li>• Administrative hospital staff</li> <li>• Emergency staff personnel</li> <li>• Hospital education personnel</li> <li>• DNP Student</li> </ul>	<ul style="list-style-type: none"> <li>• Education of existing Maternal Fetal Triage Index</li> <li>• Gain hospital approval for application implementation</li> <li>• Facilitate access to information through hospital education department</li> <li>• Emergency department personnel</li> <li>• Collaborating EMS facilities</li> <li>• Consulting physicians</li> </ul>	<i>Immediate Effect</i> <ul style="list-style-type: none"> <li>• Improved awareness of available OB triage protocol</li> <li>• Staff educated regarding the location and use of the obstetrical triage protocol</li> </ul>	<i>Mid-Term Effect</i> <ul style="list-style-type: none"> <li>• ED staff continues to utilize the protocol in appropriate situations</li> <li>• ED staff and collaborating facilities adopt the same triage</li> </ul>	<i>Ultimate Effect</i> <ul style="list-style-type: none"> <li>• Improved access to OB triage for ED personnel through protocol education and availability</li> <li>• Improve provider knowledge when caring for pregnant women in the ED</li> <li>• Continued improvement in patient satisfaction</li> <li>• Improved care outcomes</li> </ul>
<b>Outputs</b> <ul style="list-style-type: none"> <li>• Surveys comparing pre-application use and post use determining increase in confidence and competence levels</li> </ul>		<b>(i) Context/Conditions</b> <ul style="list-style-type: none"> <li>• Protocol will align and incorporate any existing protocols that are currently in place</li> <li>• Health care personnel attitudes and willingness to participate</li> </ul> Hospital administration approval needs to be acquired		



## **Project Questions**

Triage protocols have been shown to be effective in determining patient acuity, improving treatment regimens, and improving patient outcomes. A triage index is a tool used by providers to improve assessment and guide treatment. Project questions for the implementation include:

1. Will staff confidence improve within 30 days with the review of the Maternal Fetal Triage Index when compared to evaluations completed prior to implementation?
2. Will staff knowledge improve within 30 days with the review of the Maternal Fetal Triage Index when compared to evaluations completed prior to implementation?

## **Key Terms/Variables**

***Obstetrical Triage*** - As defined by the Association of Women's Health, Obstetric and Neonatal Nurses (2015), “the brief thorough and systematic maternal and fetal assessment performed when a pregnant woman presents for care, to determine priority for full evaluation” (para, 1).

***Protocol*** - “A detailed plan of a scientific or medical experiment, treatment, or procedure” (Merriam-Webster, 2020, para. 4).

***Freestanding Emergency Department*** - An emergency healthcare institution that is independent of any supporting inpatient services.

***Self-efficacy*** – “a person’s beliefs in his/her capability to succeed in a specific situation or task” (Kim et al., 2020, p. 539)

## **Summary**

There are increasing number of pregnant women presenting to the emergency for non-urgent, urgent, and emergent care. This is due to a growing number of rural hospital closures, loss of access to appropriate specialty care, and increased travel distances for the obstetrical population. Emergency personnel are not typically prepared to care for this population. This is due in part to the lack of clinical experience and appropriate care protocols. The lack of systematic care regimens contributes to decreased confidence and competence in these healthcare workers. In addition, it also can contribute to poor patient experience and increased maternal-infant morbidity and mortality.

Triage protocols have been shown to be beneficial in improving personnel performance and patient outcomes. The implementation of an obstetrical triage protocol can be beneficial in improving emergency personnel confidence and competence levels. With improved performance it is likely that patient outcomes and experiences will also improve.

Lack of access to care results in increased presentation of the pregnant population to the emergency room. The increase in the utilization of emergency services makes it imperative that emergency personnel be prepared to triage, treat, and transport the pregnant population. A triage protocol application will allow emergency personnel to provide high quality patient care, improve patient outcomes, and increase competence and confidence levels in emergency healthcare providers.

## CHAPTER II

### LITERATURE REVIEW

A literature review of maternal and neonatal morbidity and mortality, risk factors associated, and interventions that decrease the risk within the United States is necessary to evaluate if a change in practice is needed. The purpose of this study will be to determine if staff confidence and obstetrical triage knowledge improves within 30 days following the review of the Maternal Fetal Triage Index when compared to evaluations completed prior to the review.

The literature review will consist of evaluating maternal morbidity and mortality, factors that impact provider care, and obstetrical triage protocols. A search of CINAHL Plus with Full Text and PubMed was performed using the terms *maternal morbidity*, *obstetrical triage protocols*, *skilled provider attendance*, *self-efficacy*, *staff confidence*, *staff competency*. The search on maternal morbidity within the United States yielded 388 results on CINAHL and 3414 results on PubMed. 12 articles were selected for the literature review and articles were excluded that did not pertain to care of the population in atypical healthcare establishments such as emergency departments or healthcare clinics. The literature review will aim to review what is known about maternal morbidity and mortality, obstetrical triage protocols, provider confidence, and provider confidence when caring for obstetrical patients.

## **Maternal and Neonatal Morbidity and Mortality**

Maternal and neonatal morbidity and mortality are statistically high within the United States, according to a comparative analysis by Tikkanen et al. (2020) the U.S. had the highest maternal mortality rate when compared to 10 similarly developed countries. There are many factors that contribute to maternal and neonatal morbidity and mortality. According to Serbanescu et al. (2019) factors that contribute to maternal mortality and morbidity are related to pregnancy complications as well as non-medical factors. The three non-medical factors outlined by Serbanescu et al. (2019) that contribute to a large portion of maternal deaths include, “(1) delayed recognition of a pregnancy complication and decision to go to a facility, (2) delays in reaching an emergency obstetric care facility, and (3) lack of receipt of timely, adequate, and appropriate obstetric care at a health care facility” (p. 49).

## **Impact of Competence on Provider Confidence**

Kim et al. (2020) conducted a secondary data analysis of provider knowledge, confidence, and scope of practice when caring for obstetrical patients. The study evaluated how exposure to obstetrical tasks impacted provider confidence after the implementation of Saving Mothers and Giving Life (SMGL), an obstetric and newborn care program. The analysis was conducted in sub-Saharan Africa namely Uganda and Zambia. According to Kim et al. (2020), 574 providers, which included doctors (6%), nurses (24%), and other healthcare staff, that provide direct obstetrical and newborn care were included in the study. Sixty-nine percent of the study participants were reportedly female. The providers that were evaluated worked in hospitals that had low birth rates, high maternal mortality rates, and provider shortages.

Data collections were performed from May 2013 to July of 2013. Quasi-random post-testing evaluated by several linear regression models. The participants completed three questionnaires that evaluated provider knowledge, job satisfaction, scope of practice and clinical confidence. Questionnaires were conducted face-to face with the exception of the knowledge test. The knowledge evaluation consisted of 60 multiple choice questions involving basic obstetrical knowledge and the score was calculated out of a 100-point total. A previously validated obstetrical knowledge questionnaire by John Hopkins University and international guidelines set forth by the World Health Organizations were the basis for the questionnaire.

Confidence was assessed based on the providers perceived ability of 27 obstetrical tasks. Providers rated themselves on a Likert-type scale and an average score was calculated out of 100 points. Scope of practice was assessed by using the same 27 tasks and a evaluating the application of these tasks in the previous 3 months again calculating the average score out of 100 points.

Providers were then broken up into 3 levels of clinical practice, low (0-48%), average (50-65%), and high (69-100%), based on their scores. Three sensitivity analysis were conducted: The initial analysis included knowledge and scope of practice based on level of education; the second evaluated knowledge and scope of practice within the entire field of participants; the final analysis were evaluated the control and intervention facilities separately.

The data were statistically analyzed using Stata SE Version 16.0. Statistically P-values deemed significant were lower than 0.05. A moderate association was found

between provider knowledge and provider confidence (95% CI 0.08, 0.17). Additionally, the study found that females were found to be less confident than males.

A subsequent research study was evaluated in relation to self-efficacy. Kim & Kim (2022) conducted a descriptive study that evaluated the relationship between triage competency, task performance, and self-efficacy. Twenty emergency departments with 111 nurse participants in Korea were surveyed for this study. Data from the study were collected from August 1 to August 31, 2019, and analyzed using independent t-tests and ANOVA, Pearson's correlation coefficient, and statistical software SPSS/WIN 21.0. This study found positive correlations between nursing task performance, self-efficacy, triage competency, and task performance.

### **Impact of Triage Protocols on Provider Competence**

Competent antenatal care is essential in reducing maternal morbidity and mortality. Brenner et al. (2022) conducted a descriptive observational study to assess the effect of competent and deficient childbirth services in the Democratic Republic of the Congo (DRC). The direct observation of 29 facilities located in Kwilu and Kwango provinces were evaluated for elements related to non-adherence and adherence to clinical standards. Sixty-nine uncomplicated births were observed from August to September 2018. Information that was collected according to Brenner et al. (2022) included assessment of labor room set-up, antepartum, intrapartum, postpartum monitoring, patients' parity status, and providers professional qualifications. Observations were conducted by trained data collectors upon admission through two hours after delivery. The data were then reviewed by a peer supervisor to ensure quality.

Findings for the observational study concluded that competent care was “significantly associated with higher case volumes ( $p=.03$ ), skilled birth attendance ( $p=.05$ ), and nulliparous women ( $p=.02$ )” (Brenner et al., 2022, p. 593). Deficient care, however, was found to be largely associated with lower delivery rates, lack of infection prevention in 62% of deliveries, and delays in care in 49% of the cases. Brenner et al. (2022) reported deficient care was most linked to lack of standard protocol adherence and the absence of skilled birth attendants.

### **Obstetrical Triage Tools**

A recent study performed by Heather Quaile (2018) found that the implementation of an obstetrical triage tool increased nursing competency. Quaile used a pre and post-test method after implementation of an obstetric triage protocol. She found that, “There was an increase in nursing knowledge from a pretest mean score of 79% to a posttest mean score of 95%” (Quaile, 2018, p. 293).

The implementation of an obstetrical triage tool aids in increased competence and confidence of nursing and provider care. According to Ameh et al. (2019), “Providing quality emergency obstetric care (EmOC) reduces the risk of maternal and newborn mortality and morbidity”. Ameh et al. (2019) review found an improvement in 50% of the facilities that utilized emergency obstetric care training.

Fakari et al. 2019, conducted a narrative review of tools and criteria used for the development of obstetrical triage. Multiple health related databases were utilized for the search. The review consisted of 8 articles that met inclusion criteria. According to Fakari et al. (2019), obstetrical triage is more specialized than other types of triages because it requires assessment of labor conditions, preparation of specific tests and interventions,

and assessment of mother and fetus. The review revealed seven obstetrical triage systems. The systems included were the Perinatal Emergency Team Response Assessment (PETRA), the Self-Assessment Questionnaire for Gynecologic Emergencies (SAQ-GE), the Florida Hospital Obstetric Triage Acuity Tool, the Maternal Triage Index (MFTI), the Birmingham Symptom Specific Obstetric Triage System (BSOTS), the Swiss Emergency Triage Scale (SETS), and the Obstetric Triage Acuity Scale (OTAS).

***Perinatal Emergency Team Response Assessment (PETRA)***

PETRA is an assessment tool used to measure team dynamics during an obstetrical emergency. Fakari et al. (2019) states, “tool consisting of seven main categories, namely mental model communication, situational awareness, leadership, followership, workload management, and positive/effective behaviors and attitudes” (p. 4). The data is then evaluated using a 5-point Likert scale.

A cohort study by Balki et al. (2017), was conducted to evaluate the validity of the PETRA. One hundred and nineteen participants were included in the study using high fidelity simulations of pre-eclampsia and post-partum hemorrhages. Fifty simulations were conducted according to Balki et al. (2017) with 42 simulations being performed by multidisciplinary teams and 8 by a group of actors (para. 2). Internal consistency was evaluated using Cronbach’s alpha and intra-class correlation coefficients and validity with the comparison of standardized scores and rater assessments as reported by Balki et al. (2017, para. 2). The study found that performances that were rather assessed as “good” were strongly correlated with higher PETRA scores leading, “suggesting strong construct validity” (Baki et al., 2017, para. 3).



### ***Self-Assessment Questionnaire for Gynecologic Emergencies (SAQ-GE)***

The SAQ-GE is a standardized questionnaire tool that was developed by French experts. The questionnaire according to Fakari et al. (2019), includes six categories, which include description, intensity, location, and time frame of pain, vaginal bleeding, and other signs. The questionnaire is aimed at identifying potentially life-threatening emergencies among pregnant women. A cohort study by Huchon et al. (2014) consisting of 516 participants as reported by Fakari et al. (2019) found that the SAQ-GE aided in identifying early potential life-threatening emergencies.

### ***Florida Hospital Obstetric Triage Acuity Tool***

Fakari et al. (2019) reported, this triage was first developed in 2007. It is a five-level triage tool that determines triage time based on severity of presentation. The categories are similar to the previously discussed triage systems, the 1<sup>st</sup> level requires immediate evaluation, 2<sup>nd</sup> level – assessment within 15 minutes, 3<sup>rd</sup> level – assessment within 30 minutes, 4<sup>th</sup> level – assessment within 60 minutes, and the 5<sup>th</sup> level requires examination within 2 hours. A search to validate the Florida Hospital Obstetrical Triage Acuity Tool did not produce any results. However, a study conducted to develop an obstetrical triage tool by Kathleen et al. (2011) as reported by Fakari et al. (2019) found that utilization of the tool did lead to time sensitive treatment of triaged patients.

### ***Maternal Fetal Triage Index (MFTI)***

The Maternal Fetal Triage Index (MFTI) was developed to standardize obstetrical triage. The tool was developed by the Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN). The triage index consists of an algorithm which encompasses five levels. According to Farkari et al. (2019) the levels included are, "1-Stat, 2-Urgent, 3-Prompt, 4-Non-urgent, and 5-Schedule or Requesting a Service, to

which a patient will be assigned based on the assessment of their clinical conditions” (p. 3). This tool is used to establish the acuity of the pregnant patient and promptly provide them with the appropriate level of care.

Content validity was established in a study by Ruhl et al. (2015) by conducting online surveying. Ruhl et al. (2015) reports that two rounds of content validation were conducted via an online survey of 45 healthcare providers. Initial validity of the MFTI was found to be 0.78% and increased to 0.95% after revisions to the MFTI (Ruhl et al. 2015, para. 3). Interrater reliability was then tested using an observational method. According to Ruhl et al. (2015) convenience sampling of nurses working in an obstetrical unit that had 5200 deliveries per year was conducted to select participants (p. 710). “The interrater reliability of the MFTI met the minimum strength of agreement threshold goal of 0.60 when used by nurses in a large birth unit to assign priority for evaluation” (Ruhl et al., 2015, p. 714).

### ***Birmingham Symptom Specific Obstetric Triage System (BSOTS)***

The BSOTS was developed by providers specializing in obstetrics and gynecology. The system uses a triage assessment index and color-coded system. Evaluation promptness is based on the associated color. Red – immediate assessment, orange – within 15 minutes, within 1 hour, and green – within 4 hours. The system also uses a standardized algorithm for the specific assessment of maternal and fetal well-being (Farkari et al. 2019). A structured audit of 994 maternity notes was conducted by Kenyon et al. (2017) as reported by Fakari et al. (2019). The goal of the study was to create and implement an obstetrical triage system for unwanted pregnancy according to Fakari et al.

(2019, para. 19). A scenario method found the triage system to have excellent reliability in determining maternal priority (Fakari et al., 2019, para. 19).

### ***Swiss Emergency Triage Scale (SETS)***

SETS was developed based on established triage scales such as CTAS and Triage scale. It was developed in 1997 and uses four levels. The levels included in the scale are immediate, potentially life-threatening, and stable, and non-urgent. Evaluation by provider is required within a certain time frame based on the established level. Fakari et al. (2019) reports that life threatening require immediate examination, potentially life-threatening within 20 minutes of presentation, stable presentation within 2 hours, and non-urgent can be referred for outpatient evaluation. According to Fakari et al. (2019) validity and reliability was established due to a 2-stage prospective study with 22 midwives, that was conducted by Rubin et al. (2017). Rubin's study found that interrater reliability increased from 0.748 to 0.812 after utilization of SETS in 30 simulation scenarios. Making SETS a reliable obstetrical triage tool.

### ***Obstetric Triage Acuity Scale (OTAS)***

The OTAS is a triage tool that uses the Canadian Triage Acuity Scale as its foundation. The tool according to Fakari et al. (2019) is color coded based on acuity and has significant inter-rater reliability and intra-rater reliability. The reliability study was conducted on 110 patient charts completed by 8 triage nurses. The scale considers many factors including hemodynamic stability, respiratory distress, pregnancy specific vital parameters, fetal well-being, physical, social, psychological, as well as labor assessments. This tool has been proven to be reliable and decreased waiting times. In a study by Smithson et al. (2013) as cited by Fakari et al. (2019) evaluated interrater reliability of

the OTAS at the five levels of acuity. The study found that IRR was 0.61-0.77 in the first four levels and 0.87 at the fifth level using Kappa values (Fakari et al., 2017). The study reviewed 110 triage charts of 8 randomly selected triage nurses.

The narrative review was performed to establish the reliability of the evaluated triage tools. The review showed an acceptable reliability for each of the triage tools. The tools are comparative, and each consists of a level system with an appropriate evaluation time frame. However, there is not a widely accepted standardized obstetrical triage within the United States, and Fakari et al. (2019) states, “A standardized obstetric triage tool may provide the means for better examination of the care quality and the triage of pregnant mothers and their fetus” (para. 34).

## **Summary**

There are many studies that highlight the incidence of maternal morbidity in the United States. This is especially prevalent in rural and impoverished areas. A large aspect of this is due to lack of skilled birth attendance and loss of specialty care. Increased travel times due to closures increase the likelihood of presentation to an emergency or other non-delivering facility. Obstetrical triage protocols have been shown to aid in the improvement of maternal and neonatal outcomes.

Comprehensive studies and literature reviews were used to gain an understanding of the severity of maternal morbidity and mortality in the United States. As well as interventions that can be applied to mitigate those factors. “Standards and protocols, effective communication and hospitalist care indicated positive maternal outcomes, including a reduction in maternal mortality” (Wong & Kitsantas, 2019, p. 3355).

As a result of reviewing the literature, research has indicated implementing standard obstetrical triage tools in clinics and emergency facilities will improve provider confidence and competence while caring for the obstetrical population. In addition, improving the presence of skilled birth attendants will contribute to decreasing the incidence of maternal and neonatal morbidity and mortality in these underserved areas.

## **CHAPTER III**

### **METHODS**

#### **Introduction**

The purpose of this project was to determine if staff confidence and competency improves within 30 days following the review of the Maternal Fetal Triage Index (MFTI) when compared to evaluations completed prior to the review. Benefits of this project include assessing if reviewing the MFTI standardized protocol increased healthcare providers ability to evaluate and treat obstetrical patients. This chapter covers the methodology, selection of participants, instrumentation, and data collection and analysis.

#### **Project Design**

This author conducted a pre and post survey of staff confidence and competency to examine if improvement occurs within 30 days following the review of the MFTI when compared to evaluations completed prior to the review. The projects design consists of a pre and post survey of healthcare providers at Ascension Via Christi ED in Fort Scott, Kansas. The rationale for this type of design is to determine if the MFTI review increased provider competence and confidence. This type of research allows for an unbiased and uncomplicated assessment of the interventions applied to the selected participants (Stratton, 2019). This type of approach is low cost, does not need to include randomization, and is a quantitative research approach that will effectively evaluate the

outcome (Murdoch et al., 2014). The staff at Ascension Via Christi ED in Fort Scott, Kansas were surveyed before and after a review of the MFTI algorithm. Fort Scott is a small town located in Southeast Kansas with a population less than 8,000 residents. Healthcare available in Fort Scott consists of three primary care clinics, one urgent care center, and a freestanding emergency department.

### **Sample/Target Population**

The target population for this project was healthcare providers working within the emergency department at Ascension Via Christi in Fort Scott, Kansas. The decision to base the assessment and review of the MFTI in these areas is due the rural nature of the facility and the fact that healthcare providers who work in these selected areas do not routinely care for the pregnant population.

### ***Sample/Target Population Recruitment***

Subjects were chosen based on their involvement with direct patient care. Target population within the selected departments included licensed physicians and nurses within Ascension Via Christi ED in Fort Scott, Kansas. Contact with department administrators was made via email and telephone calls. A link to the survey was sent via email using Qualtrics survey tool to contact as many participants as possible and ensure the most completed surveys. The time frame of completion between pre-survey testing, review, and post-survey testing was within 30 days.

### ***Inclusion/Exclusion Criteria***

The inclusion criteria for this project included licensed healthcare providers performing direct patient care at the Ascension Via Christi emergency department located in Fort Scott, Kansas. For this project, the term providers included registered nurses.

Exclusion criteria included healthcare employees not providing direct patient care, healthcare facilities located in urban areas, and providers that routinely provide obstetrical care.

### ***Protection of Human Subjects***

Permission was obtained from The Pittsburg State University Institutional Review Board (IRB) and the Irene Ransom Bradley School of Nursing Protection of Human Subjects committee based on their requirements before the initiation of implementation and surveying. This project qualified for exempt status according to Pittsburg State University human subjects' guidelines. The sampled did not include vulnerable subjects. The participants included were licensed healthcare providers over 18 years of age that provide direct patient care. There were no more than minimal associated risks with the study survey. Qualtrics survey tool was used in the development and distribution of the survey. Responses for the survey were anonymous through the survey tool. No personal identifying demographic data was obtained to further aid in the confidentiality of the participants. A link was provided for the participants to complete the pre- and post-survey.

### ***Instruments***

The instruments utilized in this project included the surveys using the Likert Scale and multiple-choice case study questions. The Likert scale is used in surveys, questionnaires, and other documents by creating a rating system that standardizes the responses using responses such as strongly agree, agree, neutral, disagree, and strongly disagree. The responses can be valued numerically, and the data between pre- and post-survey can be evaluated statistically. The survey consisted of 5 questions to determine



self-perceived confidence of the provider, 6 case study scenario questions with the same two questions to evaluate participants knowledge of obstetrical triage before and after review of MFTI, and 4 questions over demographic data. The time frame between testing will be within 30 days.

## **Procedures**

### ***IRB (Institutional Review Board) Approval***

Permission was obtained from Pittsburg State University starting with the Irene Ransom Bradley School of Nursing.

### ***Mutual Agreement with Cooperating Agency***

Permission and approval was obtained from Ascension Via Christi Hospital. Compliance and administrative officers were contacted to gain approval for the administration of the MFTI review and pre- and post-surveillance of staff members. In addition, permissions were obtained from AWOHNN to utilize the MFTI and administer it for review within this project.

### ***Timeline of Project Phases***

This project occurred over a 4-week period. The pre-survey, review of the MFTI, and education presentation were completed from March 3 to March 19, 2023. Post-surveys were completed from March 3 to March 20, 2023. Participants were sent reminders to review and complete post-survey testing via email, text messages, and social media post. Data collection began following the post survey period.

### ***Resources Needed***

Resources needed for this project included computer and internet access. Personal resources included guidance of project committee members, staff, and permission from

cooperating facilities for their staff to participate in the project. Purchase the MFTI education module was required by AWHONN for use of the MFTI within the project. Purchase was completed through AWHONN's website at a personal cost of 60 USD's to this DNP student.

### ***Eligible participants/organizations***

Eligible participants included licensed medical personnel that provide direct patient care to the pregnant population at Ascension Via Christi in the emergency department. These criteria were used to determine their ability to participate in the study. Eligible participants within the organization was determined by working with the leaders within the organizations.

### ***Survey Description***

The survey consisted of a 17-questions that tested the knowledge and perceived confidence of the healthcare provider (See Appendix). 6 questions were knowledge based regarding obstetrical triage from case study scenarios. Each case study scenario contained the same two-part question. The first question asks the participant to assign the proper triage priority and the second question asked for the rationale for priority selection.. The case studies were developed based on the AWHONN's Maternal Fetal Triage Index. Five questions were used to determine perceive confidence when caring for the obstetrical population using the Likert Scale. Demographic data was collected to evaluate race, level of education, years of service as a registered nurse, and years working in the emergency department. After the pre-implementation survey was completed the obstetrical triage protocol and educational presentation was provided for the provider to review. Post-

survey was completed at the participants convenience following the review of the MFTI and educational presentation.

### ***Data Collection***

Data was collected at the end of a 3-week period. The information is stored in a password protected computer and was not disseminated to any individuals or organizations not involved in the research project or who have not obtained permissions. Three years following completion of the project, the files will be erased from the password protected computer.

### **Evaluation Plan**

This scholarly project's purpose was to discover if the review of the Maternal Fetal Triage index improved provider competence and confidence when caring for obstetrical patients. Reviewing and comparing the pre- and post-surveys showed the knowledge and confidence levels before and after MFTI review and educational presentation. The data collected was analyzed using descriptive statistics and paired t-tests to determine significant changes in competency and confidence.

### **Plans for Sustainability**

Healthcare models are forever changing. In recent years, the loss of specialized services in rural areas has caused an influx of obstetrical patients to seek emergent and routine care in atypical settings. The need for healthcare providers to have relevant knowledge to treat this population is imperative. Additionally, the use of an obstetrical triage protocol can improve providers confidence and competence by creating standardized assessment and treatment guidelines. Sustainability is the organization's responsibility to continually update the protocol according to current guidelines.

## **CHAPTER IV**

### **EVALUATION OF RESULTS**

The purpose of this project was to assess if there was an increase in provider confidence and knowledge of obstetrical triage after review and education with the Maternal Fetal Triage Index. Data was collected and analyzed from pre- and post-survey testing to determine if any statistical improvement was found after educational presentation of MFTI. This chapter provides discussion of population sample, data analysis, and overall findings to this project.

#### **Description of Sample Population**

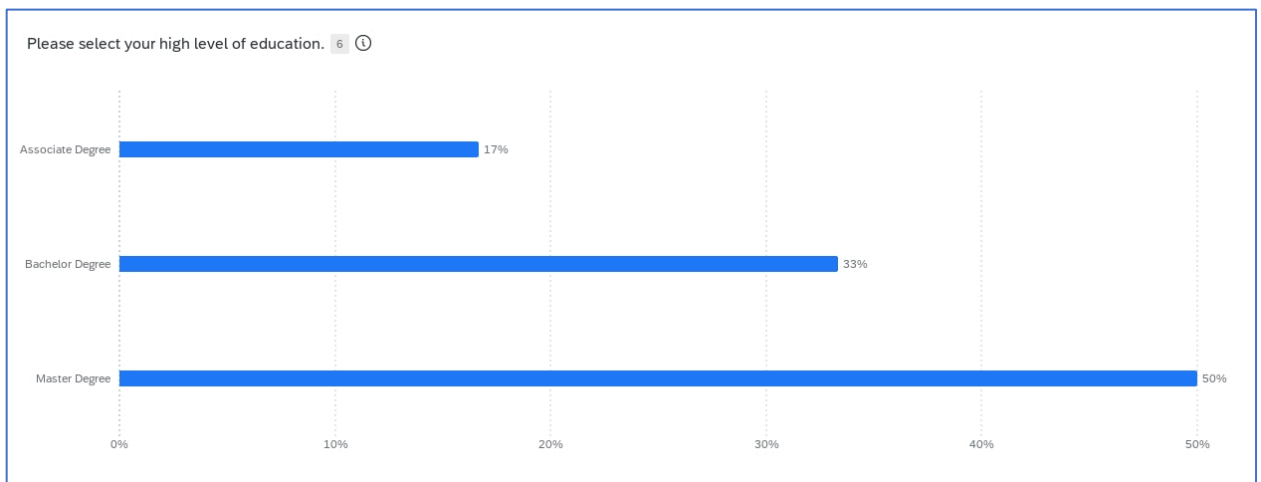
The sample population for this project was licensed registered nurses over the age of 18 years of age that were employed at Ascension Via Christi Fort Scott, Kansas during the project implementation phase. There were 12 individuals that met criteria for participation. Of these 12 individuals that participated in this survey all 12 completed the pre and/or post survey testing. There was data captured for 12 participants in the pre-testing survey and six completing the pre and post-test survey. Full participation was determined by participants completing pre-test survey, the review of education presentation and handouts, and post-survey testing. From the 12 participants data was obtained and evaluated from six participants using matching randomly generated unique codes form pre and post testing that had fulfilled the criteria for full participation in this

study. The other six participants had either not completed the pre-test or post-test survey, so their data was excluded from the pre/post comparison of means analysis. A comparison of means was conducted between the group that completed only the pre-test and those that completed the pre- and post-test to determine if there was a significant difference in their pre-test results.

The pre-test included demographical data including race, level of education (See Table I), years of experience as a registered nurse (See Table II), and length of time working in the emergency department (See Table III).

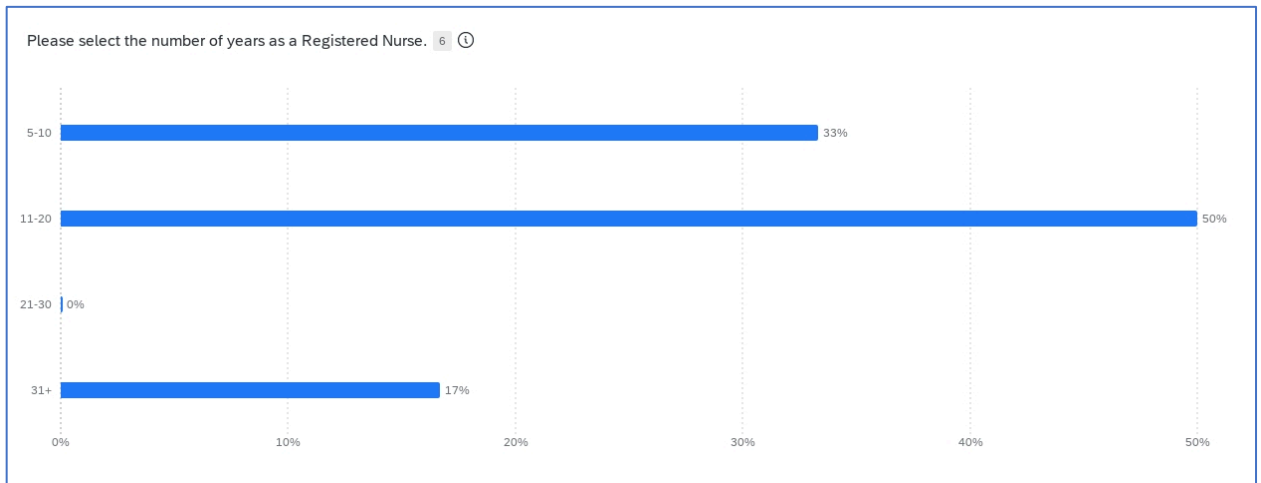
**Table I**

*Emergency Room Personnel Level of Education*



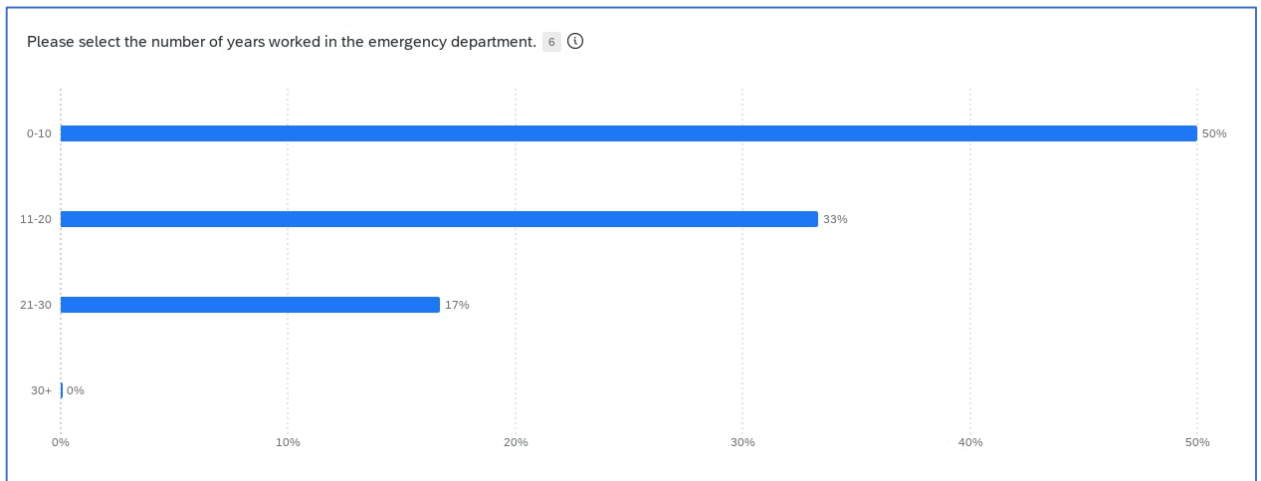
**Table II**

*Number of Years as Registered Nurse*



**Table III**

*Number of Years Working in Emergency Department*



Data was collected and examined from six (50%) of participating emergency room nurses out of twelve eligible participants. All participants identified as Caucasian (100%, n = 6). The majority of participants hold a master's degree (50%, n = 3), with some holding a Bachelor's degree (33%, n = 2), and the last holding a associates degree (17%, n = 1). The question relating to the years of working as a registered nurse was

broken down into year ranges of 5-10 years (33%, n = 2), 11-20 years (50%, n = 3), 21-30 years (0%, n = 0), and finally 31+ years (17%, n = 1). There were differences in years of experience in the emergency department among the nurses evaluated. This question was broken down in to year ranges of 0-10 years (50%, n = 3), 11-20 years (33%, n = 2), 21- 30 years (17%, n = 1), and 30+ years (0%, n = 0).

### **Description of Key Variables**

The resources for this project included the Maternal Fetal Triage index and the educational PowerPoint presentation that was presented to each of the participants following the pre-test survey. The means computed for this project include the pre and post-survey testing scores before and after MFTI and education presentation. The goal was to determine if perceived confidence levels and obstetrical triage knowledge was affected by the MFTI and education presentation.

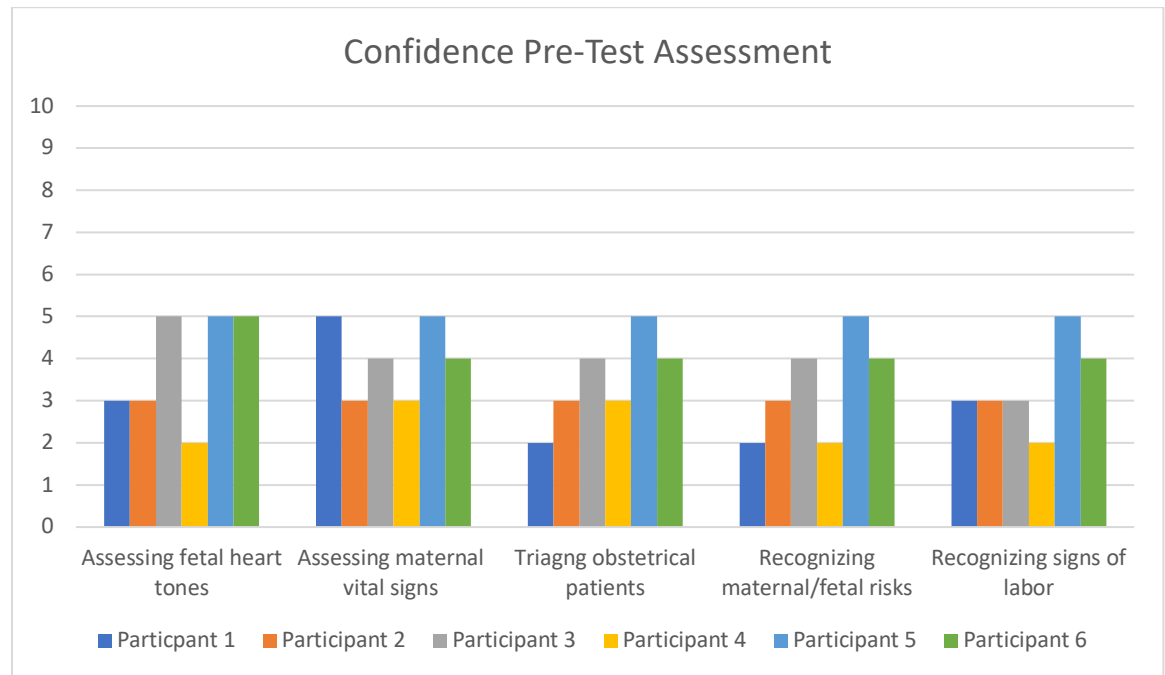
### **Analysis of Project Questions**

- 1. Will staff confidence improve within 30 days with the review of the Maternal Fetal Triage Index when compared to evaluations completed prior to implementation?*

According to data analyzed regarding provider confidence of obstetrical triage prior to review and education of the MFTI, the average baseline score for the pre-test survey was 17.3 (SD = 4.58) out of 25-point scale (See Table IV below).

**Table IV**

*Sum of Confidence Pre-Test*

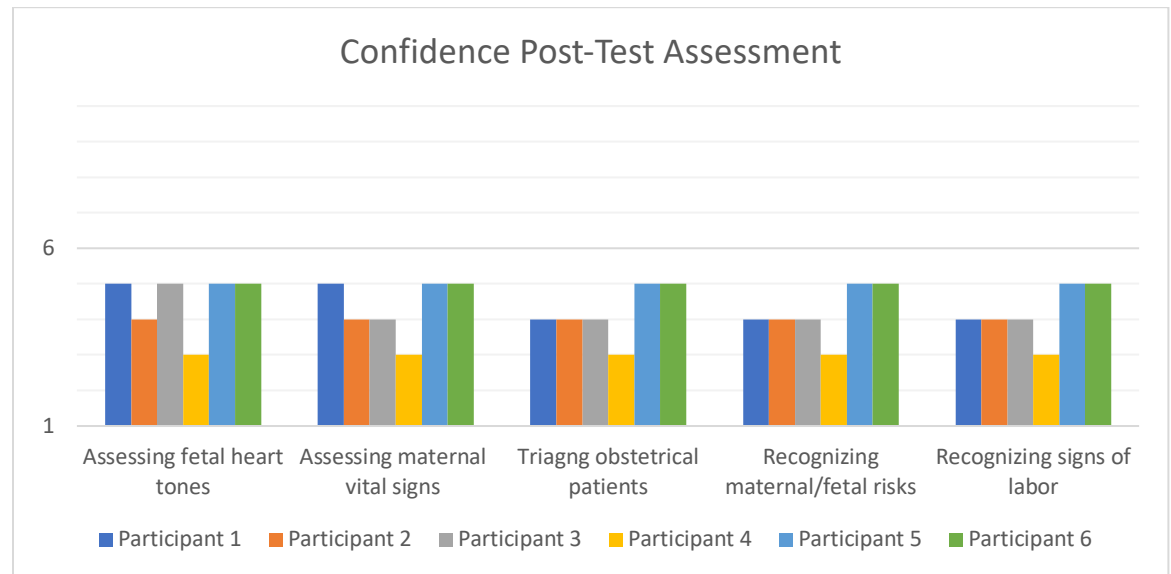


The post-test average score based on the analyzed data was 21.3 (SD = 3.7) on a 25-point scale (See Table V below). A paired t-test was performed comparing perceived confidence levels before and after MFTI education review. There was a statistical significance in provider confidence noted between pre-survey (m = 17.3, SD = 4.58) and post survey (m = 21.3, SD = 3.7) testing;  $t(5) = -3.03$ ,  $p = 0.02$ .



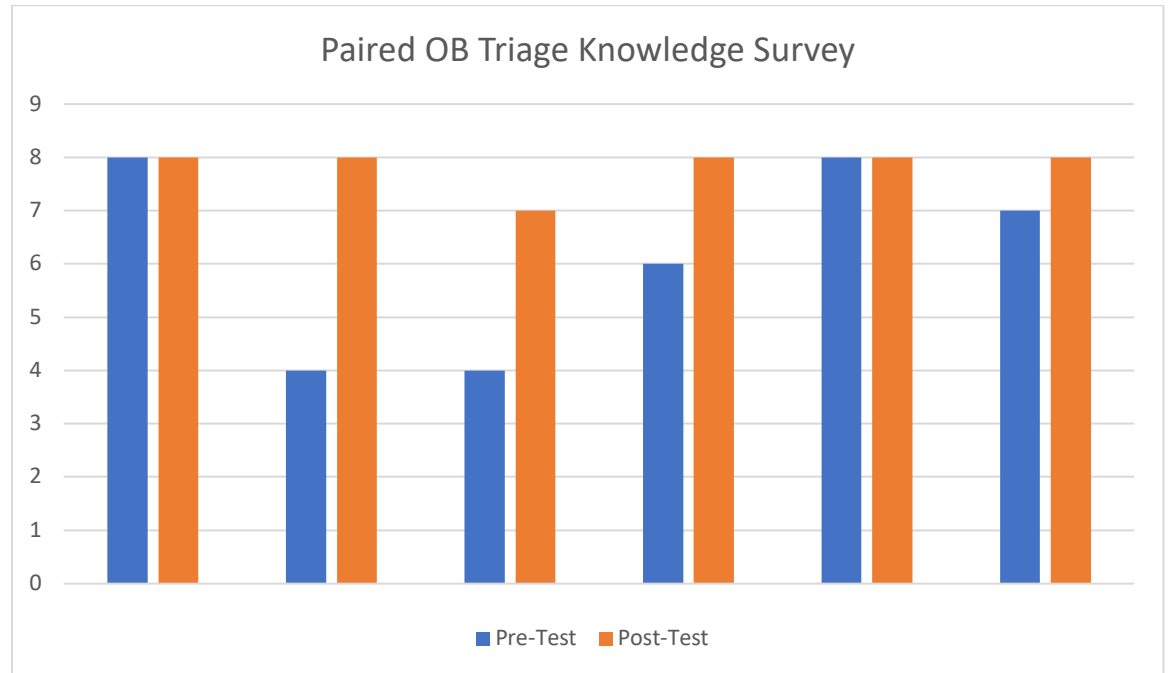
**Table V**

*Sum of Confidence Post-Test*



2. *Will staff competency improve within 30 days with the review of the Maternal Fetal Triage Index when compared to evaluations completed prior to implementation?*

Data gathered and analyzed regarding obstetrical triage knowledge prior to MFTI education showed a baseline average score of 6.16 (SD = 1.83) out of 12 possible points (See Table VI below). Knowledge post-testing was completed after reviewing the MFTI handout and viewing the educational presentation. The baseline average score was found to be 7.83 (SD = 0.40) out of 12 possible points (See Table VII below). A paired t-test was performed comparing the obstetrical triage knowledge review of MFTI education (See Table VIII below). There was a statistical significance observed between the pre-survey ( $m = 6.16$ ,  $SD = 1.8$ ) and post survey ( $m = 7.8$ ,  $SD = 0.4$ ) testing;  $t(5) = -2.5$ ,  $p = 0.05$ .

**Table VI***Sum of Knowledge Pre and Post-Test***Table VII***Paired Sample Tests for Knowledge*

t-Test: Paired Two Sample for Means

	Variable 1	Variable 2
Mean	6.16666667	7.83333333
Variance	3.36666667	0.16666667
Observations	6	6
Pearson Correlation	0.57849241	
Hypothesized Mean Difference	0	
df	5	
t Stat	-2.5	
P(T<=t) one-tail	0.02724505	
t Critical one-tail	2.01504837	
P(T<=t) two-tail	0.0544901	
t Critical two-tail	2.57058184	

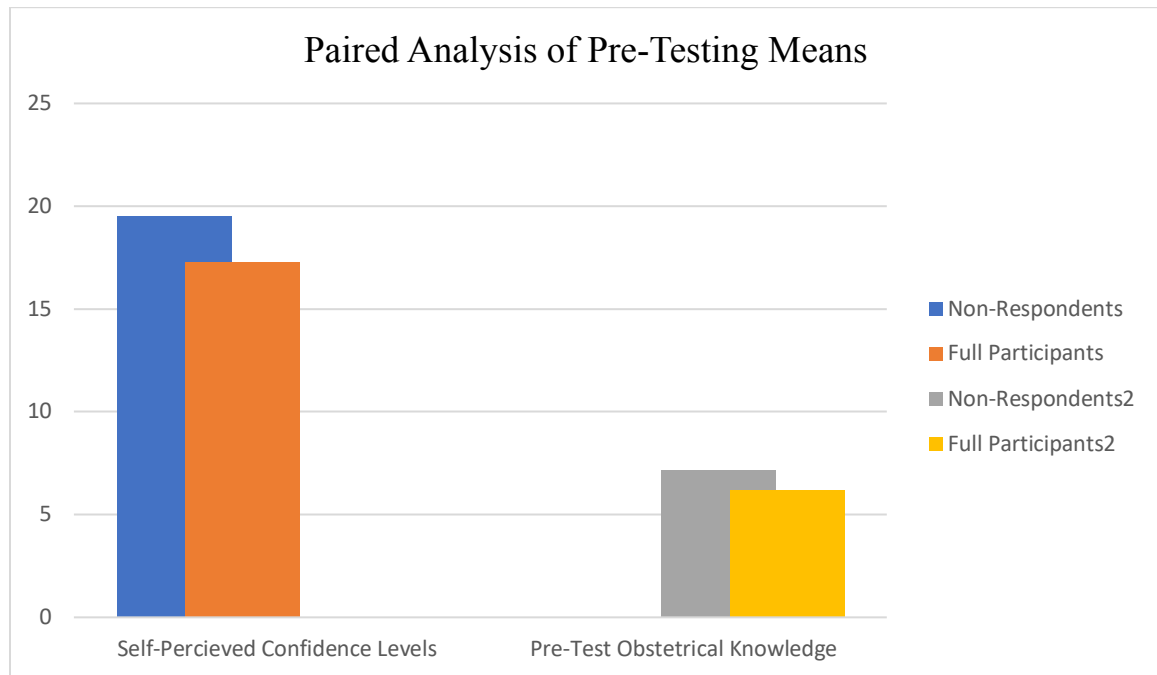
### **Additional Analysis Completed**

Additional analysis of this project was conducted in an effort to find a reasoning for participants not completing post-testing. Comparison of participants pre-test confidence scores and knowledge scores between full participants and post-test non-respondents were conducted (See Table VII). The baseline pre-test average score was found to be 19.5 (SD = 2.2) out of 25 possible points for non-respondents and 17.3 (SD = 4.5) for full participants. A paired t-test was performed for mean comparison. There was not statistical significance found between full participants OB confidence pre-survey ( $m = 17.3$ ,  $SD = 4.5$ ) and post-test non-respondents OB confidence pre-survey ( $m = 19.5$ ,  $SD = 2.2$ ),  $t(5) = -0.92$ ,  $p = 0.39$ . Based on the findings confidence pre- self-perceived confidence levels were not a factor in participants decision to not complete post-testing.

Comparison of the obstetrical knowledge portion of the survey was also conducted. The baseline pre-test average score was found to be 7.16 (SD = 2.3) out of 12 possible points for non-respondents and 6.16 (SD = 1.83) for full participants. A paired t-test was performed for mean comparison. A statistical significance not found between full participants OB knowledge pre-survey ( $m = 6.16$ ,  $SD = 1.83$ ) and post-test non-respondents OB confidence pre-survey ( $m = 7.16$ ,  $SD = 2.3$ ),  $t(5) = -0.75$ ,  $p = 0.48$ . According to the data analysis no correlation was found between participants pre-test obstetrical knowledge levels and failure to complete post testing.

**Table VIII**

*Comparison of Pre-Testing Means of Non-Respondents and Full Participants*



### Summary

The purpose of this project was to assess and determine if review of the MFTI would improve provider confidence and knowledge in triaging obstetrical patients. Pre and post-survey testing was conducted on a voluntary basis to collect data among eligible participants working in the emergency department. Through evaluation of paired t-test statistically significant improvement was noted in both confidence levels and improvement of knowledge. These results indicate that implementation of the MFTI could positively impact nursing knowledge and assurance when providing care to obstetrical patients.

## **CHAPTER V**

### **DISCUSSION**

#### **Relationship of Outcome to Research**

The purpose of this project was to determine the effect the Maternal Fetal Triage Index (MFTI) would have on providers confidence and knowledge when triaging obstetrical patients. Confidence of the participants did show statistically significant improvement between pre and post-survey testing following MFTI introduction and education review with an average baseline score of 3.5 in pre-testing improving to 4.27 out of a 5-point scale in post-test surveying. As previously discussed in the literature review several studies have shown that implementing a triage improves provider knowledge as well as confidence. The secondary analysis by Kim et al. (2020) did show a positive correlation between knowledge and confidence in providers. Reporting that confidence was shown to be improved when provider knowledge is increased. There is not widespread use of a standardized obstetrical triage tool used among health care providers.

The knowledge portion of the survey also showed statistically significant improvement between pre- and post-survey testing with an average score of 6.16 improving to a score of 7.83 in post-survey testing . Providing healthcare providers with an index to guide the triaging of obstetrical patients can improve patient outcomes by

increasing provider knowledge and confidence. A descriptive study conducted by Kim & Kim (2022) found positive correlation between the use of standardized obstetrical triage tools and improvement between nursing task performance, self-efficacy, triage competency, and task performance.

### **Observations**

General observations during this project related to participation and facility response. Upon collection of the data it was determined that 12 participants had completed the pre-test survey but only 6 had completed both pre-test, educational review, and post-test surveying. Multiple reminders were issued to the participants through various avenues. Data was excluded from the 6 participants that did not meet criteria for full participation. Setting a dedicated date, time, and location for the completion of the pre-testing, review, and post-testing might improve full participation in the future if the project was to be conducted again.

### **Evaluation of Theoretical Framework**

The theoretical framework used for this project was Patricia Benner's from Novice to Expert. This theory focuses on skill acquisition through enhancing practical knowledge with evidenced based practices developed through clinical experiences. The application of a MFTI to extend provider knowledge and guide practice fits within this theoretical framework. The results of this project support the focus of the theory by finding that applying education and a validated clinical tool does show a statistically significant improvement of confidence and knowledge of obstetrical triage among registered nurses working in the emergency department. The theory allows for career development, it puts training and education in place and allows the nurse to realize the

progression of learning. Long term effect and retention of education were not evaluated due to the limited time frame of this project. The findings of this project may implicate future quality improvement projects within the emergency department.

### **Evaluation of Logic Module**

The logic module illustrated in (See Figure 2) describes the inputs, activities, and expected outcomes involved with the introduction and education of the MFTI within the emergency department. Approval was gained from hospital administration and AWHONN for use of MFTI and administration of testing within the department. Short term outcome focused on increasing awareness of the MFTI and where the information could be obtained. The short-term goal was met by presenting education of the Maternal Fetal Triage Index. The intermediate effect aim was for staff to continue to utilize the MFTI and outlying collaborating facilities to adopt the same triage index. Administration has suggested that they are evaluating implementation of the MFTI within the hospital but currently have not made any decision to move in that direction. When the educational department was contacted regarding purchasing education modules for the MFTI, this researcher was informed that they had existing obstetrical education in place and believed that it covered the educational needs of the emergency department. The ultimate effect focus was to improve access to MFTI and to improve knowledge and confidence of registered nurses when triaging obstetrical patients. Unfortunately, without the hospital's purchase of the MFTI education and implementation toolkit the continued use of the MFTI is not available. Staff have reported that they feel more confident when triaging obstetrical patient with the utilization of the MFTI. Results of the study also show improved knowledge and confidence after education and introduction of the MFTI. The

results of this project may serve as a catalyst for the purchase and use of the MFTI within various departments in the hospital.

### **Limitations**

There are several limitations found within this study. First, the sample size is small, consisting of only 6 participants. With a small sample size, the results may not apply to a larger group of nurses. Challenges have been seen at various points within this study. The MFTI was selected to use for this project because it is a validated standardized obstetrical triage tool. AWHONN has created an educational course related to the MFTI to educate about the triage tool and how to use it. This DNP student petitioned administration at the facility where research was being conducted to purchase this educational course for the emergency department personnel but the request was declined. Permission for use of AWHONN's MFTI education post-test was obtained but later permission was rescinded. The knowledge portion of the questionnaire is modeled after AWHONN's MFTI questionnaire. Participation was done on a voluntary basis and the pre and post-survey testing was sent through Qualtrics survey system. Participants had the ability to take the pre and post-testing at their convenience and complete it at their own pace.

Participation was another limitation in this project. All twelve participants completed the pre-test survey for this project and only six completed post-testing to achieve full participation status. Due to fifty percent of individuals failing to respond to the post-test this DNP student was unable to gain a complete picture of the effectiveness of the intervention for this facility.



### **Indications for Future Projects/Research**

Findings within this project support the use of the Maternal Fetal Triage Index within emergency departments to aid in increasing provider confidence and knowledge when caring for obstetrical patients. There is a need for further research due to the limited sample size. A larger sample size may be indicated to validate this project. Future research may include a wider array of providers such as nurses, physicians, and nurse practitioners. In addition, the educational aspect of this project could be improved to further aid in the enhancement of learning and knowledge retention.

### **Implications for Future Practice/Education**

This project can serve as a stepping stone for future education of emergency room nurses. Standardized triage index are shown to improve provider knowledge thus leading to improved patient outcomes. Annual education within the department can help evaluate knowledge retention and serve as refresher of the MFTI components. Implementation of a standardized triage index has shown to improve provider confidence and knowledge base. The knowledge learned through the education and utilization of the MFTI can help guide nurses in triaging obstetrical patients in a timely manner. Having a triage index to guide care can help improve care and patient outcomes.

### **Conclusion**

Triage of obstetrical patients entails specialized criteria. Nurses that work in the emergency department do not routinely care for obstetrical patient and thus can have decreased knowledge and confidence when caring for this population. The utilization of a standardized obstetrical triage index can assist in guiding nursing assessment of obstetrical patient. The MFTI is a standardized triage index that helps nurses assign

priority to obstetrical patients. Appropriate triage of obstetrical patients expedites patient evaluation and treatment. With hospital and labor and delivery unit closures the presentation of obstetrical patients presenting to the emergency department is increasing. Nurses working in this department need continued education and assessment tools to improve their confidence and knowledge when caring for obstetrical patients.

The purpose of this project was to evaluate the effect the introduction and review of the MFTI had on provider confidence and obstetrical triage knowledge. Participants for this study included registered nurses working in the emergency department at Ascension Via Christi, Fort Scott. Perceived confidence and obstetrical triage knowledge were measured through comparison of pre and post-survey testing prior to and after MFTI education presentation and handout. The results of this study showed statistical significance in the improvement of perceived confidence levels and obstetrical triage knowledge among registered nurses. These results indicate that use of the MFTI can enhance obstetrical triage completed by registered nurses within the emergency department. This DNP student hopes that this project contributes to the current and future research of obstetrical triage and further impacts practice change within healthcare facilities.

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## **APPENDIX**



## Appendix A

Code\_\_\_\_\_

### OB Triage Knowledge and Confidence Survey

Please choose the appropriate selection that applies to you.

1. Please select your race.

- A. Caucasian
- B. African-American
- C. Hispanic
- D. Other

2. Please select your high level of education.

- A. Associate Degree
- B. Bachelor Degree
- C. Master Degree

3. Please select the number of years as a Registered Nurse.

- A. 5-10 years
- B. 11-20
- C. 21-30
- D. 31+

5. Please select the number of years worked in the emergency department.

- A. 0-10
- B. 11-20
- C. 21-30

### **Pre-Test**

Please complete the following 5 questions on the questionnaire on a scale of 1-5. 1 not being confident at all and 5 being extremely confident.

1. How confident are you assessing fetal heart tones?

1      2      3      4      5

2. How confident are you in assessing maternal vital signs?

1      2      3      4      5

3. How confident are you triaging obstetrical patients?

1      2      3      4      5

4. How confident are you in recognizing maternal/fetal risk factors?

1      2      3      4      5

5. How confident are you in recognizing signs of labor?

1      2      3      4      5

The following are case study scenarios to evaluate knowledge of obstetrical triage. Each scenario has 2 questions. The first is to assign a priority level to the patient based on the Maternal Fetal Triage Index. The second question is to provide a rationale for assigning that priority level. Please complete both question on the following 6 case studies.

Case Scenario #1

Justine

25-year-old female G2P1 at 36 weeks' gestation presents to the ED with complaint of headache and dizziness for the past 3 hours. Patient reports no significant medical history. States she took two 500mg Tylenol tablets 2 hours ago but is still rating her headache at a 6 on a pain rating scale 0-10. Denies contractions

Vital Signs: HR 110; BP 155/98; RR 16; SpO2 97%. FHR: 135 without decelerations

1. Please select the triage priority that applies to Justine.
  - A. Priority 1 – Stat
  - B. Priority 2 – Urgent
  - C. Priority 3 – Prompt
  - D. Priority 4 – Non-urgent
  - E. Priority 5 – Scheduled/Requesting
2. Select the rationale for priority selection
  - A. Level 1 abnormal vital signs
  - B. Immediate maternal/fetal interventions required
  - C. Imminent birth
  - D. Level 2 abnormal vital signs
  - E. Severe pain
  - F. High risk situation
  - G. Level 3 abnormal vital signs
  - H. Prompt attention required
  - I. Non-urgent interventions required
  - J. Scheduled/Requesting service

## Case Scenario #2

### Celest

32-year-old female G1P0 at 32 weeks' gestation presents to the ED with complaint intermittent sharp pain/cramping located in her lower pelvic region and back. Reports pain began 1 hour ago after tripping down 2 stairs and landing on her abdomen. Rates pain at an 8 on pain scale 0-10 and occurs irregularly every 10 to 15 minutes. Patient reports no significant medical history. Denies any vaginal bleeding.

Vital Signs: HR 125; BP 103/52; RR 18; SpO2 97%. FHR: 155

3. Please select the triage priority that applies to Celest.

- A. Priority 1 – Stat
- B. Priority 2 – Urgent
- C. Priority 3 – Prompt
- D. Priority 4 – Non-urgent
- E. Priority 5 – Scheduled/Requesting

4. Select the rationale for priority selection

- A. Level 1 abnormal vital signs
- B. Immediate maternal/fetal interventions required
- C. Imminent birth
- D. Level 2 abnormal vital signs
- E. Severe pain
- F. High risk situation
- G. Level 3 abnormal vital signs
- H. Prompt attention required
- I. Non-urgent interventions required
- J. Scheduled/Requesting service

Case Scenario #3

Kira

28-year-old female G3P1 at 35 weeks' gestation presents to the ED with complaint of painful contractions occurring every 5 to 15 minutes. Reports pain began 4 hours ago and is breathing calmly through contractions. Rates pain at a 6 on pain scale 0-10 and occurs irregularly. Patient reports no significant medical history. Denies any vaginal bleeding. Vital Signs: HR 105; BP 115/68; RR 15; SpO2 100%. FHR: 145 with no decelerations

5. Please select the triage priority that applies to Kira.
  - A. Priority 1 – Stat
  - B. Priority 2 – Urgent
  - C. Priority 3 – Prompt
  - D. Priority 4 – Non-urgent
  - E. Priority 5 – Scheduled/Requesting
6. Select the rationale for priority selection
  - A. Level 1 abnormal vital signs
  - B. Immediate maternal/fetal interventions required
  - C. Imminent birth
  - D. Level 2 abnormal vital signs
  - E. Severe pain
  - F. High risk situation
  - G. Level 3 abnormal vital signs
  - H. Prompt attention required
  - I. Non-urgent interventions required
  - J. Scheduled/Requesting service

Case Scenario #4

Kaylee

21-year-old female G1P0 at 25 weeks' gestation presents to the ED with complaint of nausea and vomiting. Reports intermittent nausea and vomiting for 2 days. Denies any pain or fever. Patient reports no significant medical history. Denies any vaginal bleeding. Vital Signs: HR 102; BP 123/56; RR 16; SpO2 100%. FHR: 138 with no decelerations

7. Please select the triage priority that applies to Kaylee.

- A. Priority 1 – Stat
- B. Priority 2 – Urgent
- C. Priority 3 – Prompt
- D. Priority 4 – Non-urgent
- E. Priority 5 – Scheduled/Requesting

8. Select the rationale for priority selection

- A. Level 1 abnormal vital signs
- B. Immediate maternal/fetal interventions required
- C. Imminent birth
- D. Level 2 abnormal vital signs
- E. Severe pain
- F. High risk situation
- G. Level 3 abnormal vital signs
- H. Prompt attention required
- I. Non-urgent interventions required
- J. Scheduled/Requesting service

Case Scenario #5

Amber

33-year-old female G3 P3 at 3 weeks postpartum presents to the ED with complaint heavy vaginal bleeding and dizziness. Reports for the past 3 hours she has been soaking a sanitary pad every hour and having large blood clots. Denies fever. Reports abdominal cramping rating pain at an 8 on a pain scale of 0-10. Patient uncomplicated vaginal delivery 3 weeks ago.

Vital Signs: HR 128; BP 98/56; RR 16; SpO2 100%.

9. Please select the triage priority that applies to Amber.

- A. Priority 1 – Stat
- B. Priority 2 – Urgent
- C. Priority 3 – Prompt
- D. Priority 4 – Non-urgent
- E. Priority 5 – Scheduled/Requesting

10. Select the rationale for priority selection

- A. Level 1 abnormal vital signs
- B. Immediate maternal/fetal interventions required
- C. Imminent birth
- D. Level 2 abnormal vital signs
- E. Severe pain
- F. High risk situation
- G. Level 3 abnormal vital signs
- H. Prompt attention required
- I. Non-urgent interventions required
- J. Scheduled/Requesting service

Case Scenario #6

Shannon

24-year-old female G2P1 at 33 weeks' gestation presents to the ED with burning with urination and fever. Denies any abdominal pain or cramping. Patient reports no significant medical history. Denies any vaginal bleeding.

Vital Signs: Temp. 100.8 HR 107; BP 120/65; RR 16; SpO2 100%. FHR: 148 with no decelerations

11. Please select the triage priority that applies to Shannon.

- A. Priority 1 – Stat
- B. Priority 2 – Urgent
- C. Priority 3 – Prompt
- D. Priority 4 – Non-urgent
- E. Priority 5 – Scheduled/Requesting

12. Select the rationale for priority selection

- A. Level 1 abnormal vital signs
- B. Immediate maternal/fetal interventions required
- C. Imminent birth
- D. Level 2 abnormal vital signs
- E. Severe pain
- F. High risk situation
- G. Level 3 abnormal vital signs
- H. Prompt attention required
- I. Non-urgent interventions required
- J. Scheduled/Requesting service



## Appendix B

### Educational PowerPoint Presentation of MFTI

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#### MATERNAL FETAL TRIAGE INDEX EDUCATION

DNP Scholarly Project

Samantha Shepard

Pittsburg State University

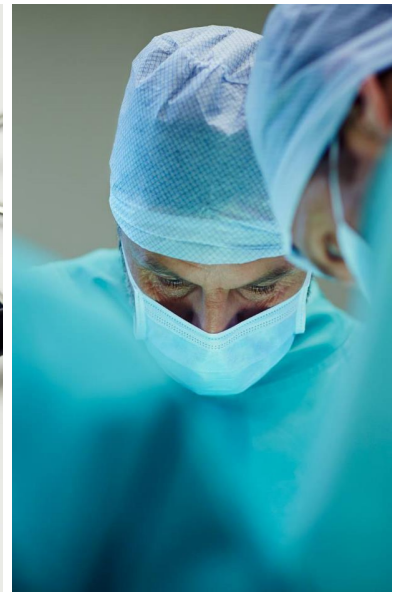


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## WHAT IS OBSTETRICAL TRIAGE?

Obstetrical Triage according to AWHONN 2015 is defined as:

The brief through and systematic maternal and fetal assessment performed when a pregnant woman presents for care, to determine priority for full evaluation.



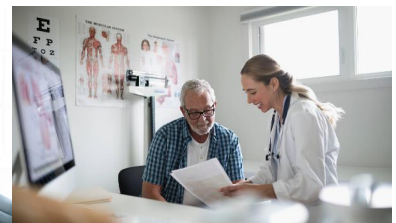
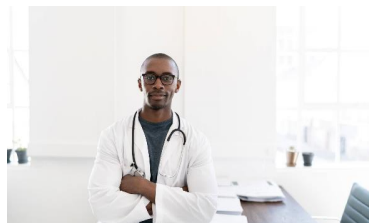
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## WHY IS OB TRIAGE IMPORTANT?

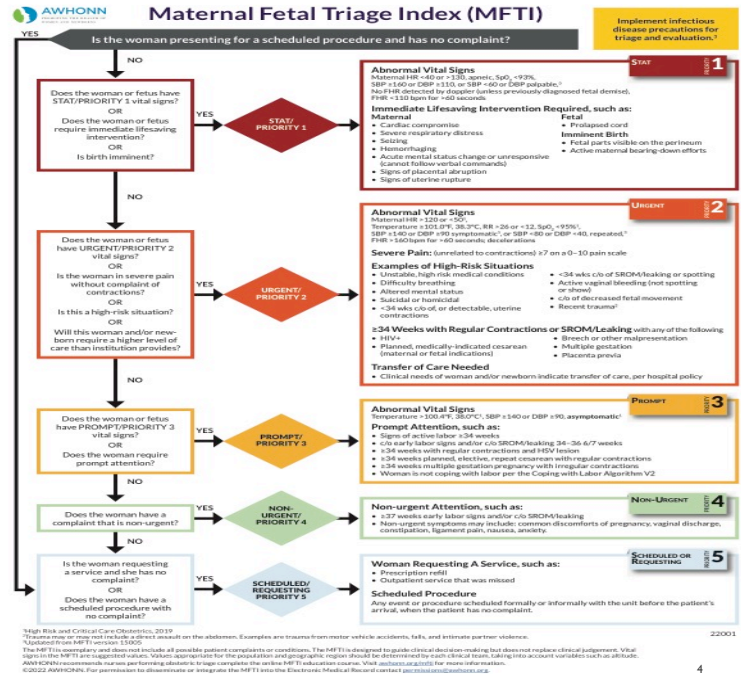
- Creates a standardized approach when triaging obstetrical population
- Reduce maternal/neonatal morbidity and mortality
- Aid in identifying and assigning priority patients



20XX

3

- Consists of 5 levels of acuity to establish priority for evaluation
- Levels based on clinical condition
- Key questions listed on the left of the index
- Clinical conditions and vital sign parameters listed to the right



## Key Questions

- Does the woman or fetus have STAT/Priority I vital signs

OR

- Does the woman or fetus require immediate life saving interventions?

OR

- Is birth imminent?

### Abnormal vital signs

- Maternal HR <40 or >130
  - Apnea; O<sub>2</sub> <90%
  - SBP ≥160 or DBP ≥110, or SBP <60 or DBP palpable
  - No FHR detected with doppler
  - FHR <110bpm for >60 seconds
- Fetal**
- Prolapsed cord
- Imminent Birth**
- Fetal parts visible
  - Maternal bearing-down efforts

**Immediate lifesaving interventions required, such as**

- Cardiac compromise
- Severe respiratory distress
- Seizing
- Hemorrhaging
- AMS/Unresponsive
- S/S Placental abruption
- S/S Uterine rupture

## URGENT PRIORITY 2

### Key Questions

- Does the woman or fetus have URGENT/Priority 2 vital signs  
OR
- Is the woman in severe pain unrelated to contractions?  
OR
- Is this a high risk situation?  
OR
- Will this woman and/or newborn require a high level of care?

### Clinical Condition

#### Abnormal vital signs

- Maternal HR <50 or >120
- Temp  $\geq 101.0^{\circ}\text{F}$ ; RR  $>20$  or  $<12$ ; O<sub>2</sub>  $<95\%$
- SBP  $\geq 140$  or DBP  $\geq 90$  symptomatic, or SBP  $<80$  or DBP  $<40$ , repeated
- FHR  $> 160\text{bpm}$  for  $>60$  seconds, decelerations

#### Severe Pain

- Unrelated to contractions  $\geq 7$  on a 1-10 pain scale

#### $\geq 34$ weeks with Regular Contractions or SROM/Leaking with any of the following

- HIV+
- Planned, Medically-indicated C-section
- Breech or other malpresentation
- Multiple gestation
- Placenta Previa

### Clinical Condition

#### Examples of High-Risk Situations

- Unstable, high-risk medical conditions
- Difficulty breathing
- AMS
- Suicidal or Homicidal
- $<34$  wks c/o, or detectable, uterine contractions
- $<34$  wks c/o, SROM
- Active vaginal bleeding, not spotting or show
- C/O decreased fetal movement
- Recent trauma

#### Transfer of Care Needed

## PROMPT PRIORITY 3

### Key Questions

- Does the woman or fetus have PROMPT/Priority 3 vital signs?  
OR
- Does the woman require prompt attention?

### Clinical Condition

#### Non-urgent Attention, such as:

- $\geq 37$  wks early labor signs and/or c/o SROM/leaking

### Clinical Condition

- Non-urgent symptoms may include:
  - Common discomforts of pregnancy
  - Vaginal discharge
  - Constipation
  - Ligament pain
  - Nausea
  - Anxiety

## NON-URGENT PRIORITY 4

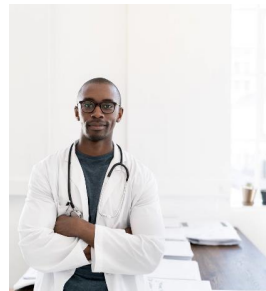
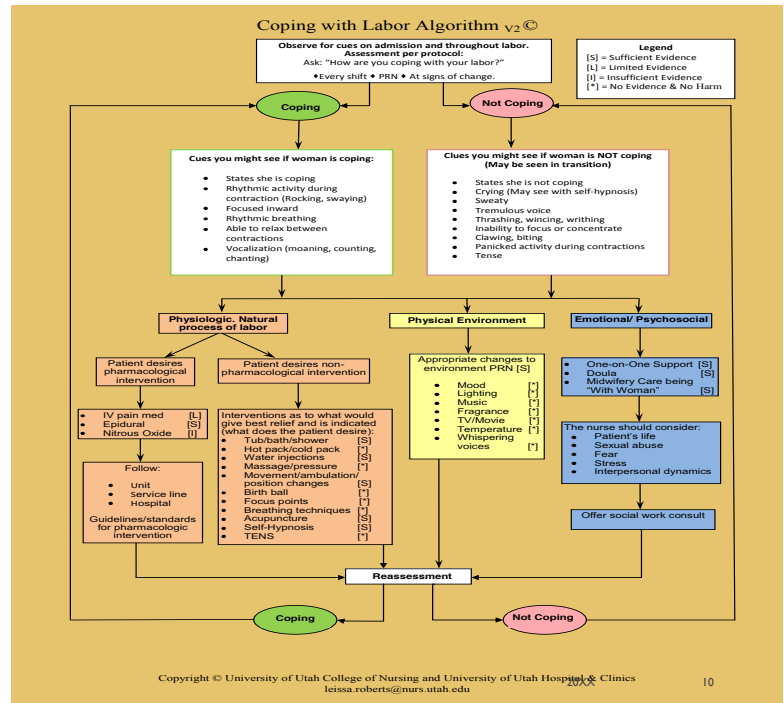
Key Questions	Clinical Condition	Clinical Condition
<ul style="list-style-type: none"> <li>Does the woman have a complaint that is non-urgent?</li> </ul>	<b>Abnormal vital signs</b> <ul style="list-style-type: none"> <li>Maternal HR &lt;40 or &gt;130</li> <li>Apnea; O<sub>2</sub> &lt;90%</li> <li>SBP ≥160 or DBP ≥110, or SBP &lt;60 or DBP palpable</li> <li>No FHR detected with doppler</li> <li>FHR &lt;110bpm for &gt;60 seconds</li> </ul> <b>Fetal</b> <ul style="list-style-type: none"> <li>Prolapsed cord</li> </ul> <b>Imminent Birth</b> <ul style="list-style-type: none"> <li>Fetal parts visible</li> <li>Maternal bearing-down efforts</li> </ul>	<b>Immediate lifesaving interventions required, such as</b> <ul style="list-style-type: none"> <li>Cardiac compromise</li> <li>Severe respiratory distress</li> <li>Seizing</li> <li>Hemorrhaging</li> <li>AMS/Unresponsive</li> <li>S/S Placental abruption</li> <li>S/S Uterine rupture</li> </ul>

## SCHEDULED / REQUESTING PRIORITY 5

Key Questions	Clinical Condition	Clinical Condition
<ul style="list-style-type: none"> <li>Is the woman requesting a service and she has no complaint</li> </ul> <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> <li>Does the woman have a scheduled procedure with no complaint?</li> </ul>	<b>Woman Requesting A Service, such as</b> <ul style="list-style-type: none"> <li>Prescription refill</li> <li>Outpatient service that was missed</li> </ul>	<b>Scheduled Procedure</b> <ul style="list-style-type: none"> <li>Any event or procedure scheduled formally or informally with the unit before the patient's arrival, when the patient has no complaint.</li> </ul>

## COPING WITH LABOR ALGORITHM V2

- Provides triage professionals cues that might suggest patient is not coping with labor
- Used in conjunction with the MFTI



## SUMMARY

After reviewing this education and the MFTI hand out please complete the post-survey.

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## THANK YOU

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