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Impact of Simulation on Nurses' Satisfaction, Confidence, and Communication in Neonatal Resuscitation

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This is to certify that the doctoral study by

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Abstract

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MSN, University of Phoenix, 2004

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Project Study Submitted in Partial Fulfillment

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Abstract

Teamwork and communication in clinical practice improves with simulation using the TeamSTEPPS program. However, there is limited research about simulation efficacy for improving neonatal resuscitation through enhanced communication. Based on a needs assessment and literature review specific to quality improvement strategies for neonatal resuscitation, an enhanced neonatal resuscitation provider (NRP) course was infused with TeamSTEPPS communication strategies, and an NRP case was adopted for simulation training. Also, utilizing clinician feedback, the flow of the resuscitation documentation was revised. The purpose of this project was to evaluate the perceived level of confidence, satisfaction, and communication skills in nurses performing neonatal resuscitation following the implementation of simulation into NRP training. The simulation exercise was guided by the National League for Nursing / Jeffries Simulation Framework (NLN/JFS). A purposeful sample of nurses (N=61) in a tertiary hospital volunteered to participate in the training and simulation exercise. Demographic information was collected and the Student Satisfaction and Self-Confidence in Learning Scale was used in a nonrandomized descriptive evaluation with a posttest one-group design. The analysis found 49% of the nurses were confident in their resuscitation skills, 50% were satisfied with the simulation experience, and 47% reported communication needed to be improved for an effective resuscitation process. This project contributes to social change by demonstrating enhanced NRP training within a simulated environment results in the integration of communication and teamwork skills essential to improve the process of neonatal resuscitation.

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Dedication

This project is dedicated to my loving husband, Daniel Rudd, and my children. Without their support and assistance, this project would not have been possible.

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I wish to acknowledge the guidance of my mentor, Julie Medas, my project mentor, Dr. Mary Verklan, my project chair, Dr. Palmieri, and my friends who supported me in this project. I would also like to acknowledge the nurses from the maternal child division at MetroHealth Medical Center (MHMC) for their contributions.

Table of Contents

List of Figures

List of Tables

Section One: Overview of the Evidence-Based Project

The successful transition to extrauterine life depends on the natural physiological changes that are successful in 90% of newborns (Fernandes, Weisman, & Kim, 2015). However, 10% of infants require some intervention in transitioning, and 1% require extensive resuscitation (Kattwinkel et al., 2010). As a result, in 1986 the American Academy of Pediatrics (AAP) and the American Heart Association (AHA) developed a neonatal resuscitation program to provide trained clinicians at every high-risk delivery (Halamek, 2008). Until 2011, staff education and training were conducted in a didactic format. Then, the neonatal resuscitation program (6^{th} edition), or NRP, recommended simulation case scenarios to evaluate clinical performance and resuscitation competency. The simulation cases reflect the most common neonatal resuscitation scenarios encountered by a neonatal or labor and delivery (L&D) nurse, including the demonstration process (Pilcher et al., 2012).

The revised neonatal resuscitation standards and training model was a paradigm shift in educational preparation for neonatal and labor and delivery nurses. As a result, nurses had mixed feelings, including concern and anxiety, about their level of preparedness to engage in a successful neonatal resuscitation. Importantly, the nurses reported their discomfort with appropriately documenting the resuscitation progression in the clinical records (J. Medas, personal communication, March 5, 2015). These issues led to an evaluation of nurse confidence, satisfaction, and communication in performing neonatal resuscitation following implementation of the Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS) program. Specifically, the program implemented included simulation, skill development, and documentation

training. An overview of the project, a review of the scholarly literature, and an outline of the project implementation process are provided in the next section.

Background/Context

MetroHealth Medical Center (MHMC) is a large publically owned health system consisting of a tertiary medical center and 17 health centers throughout Northeast Ohio. In 2015, the system delivered 3,066 newborns and supported a 49-bed Level 3 neonatal intensive care unit (NICU) (MetroHealth, 2015). Neonatal intensivists staff the unit 24 hours a day and service the community through ground and air transport. The NICU mission is to deliver high quality care to "critically ill infants, parents, and families who seek medical assistance for episodic, chronic, and terminal health care needs" (MetroHealth, 2015, p. 1).

The NICU unit at MHMC employs approximately a total of 100 registered nurses, as well as a complement of registered dieticians, respiratory therapists, occupational therapists, neonatologists, neonatal nurse practitioners, pharmacists, social workers, and case managers. Since the establishment of this NICU in the 1970s, the neonatal service including the neonatologists, neonatal nurse practitioners, a clinical nurse specialist, respiratory therapists, and neonatal nurses, have all attended neonatal resuscitation as a multidiscipline team. In 1986, the resuscitation process was standardized when the AAP and AHA introduced their jointly developed NRP. The successful completion of NRP results in the designation, "Neonatal Resuscitation Program (NRP) Provider," with a recommended renewal every two years (American Academy of Pediatrics, n.d.).

The L&D at MHMC employs approximately a total of 100 staff including registered nurses, obstetricians, perinatologists, obstetrical fellows, anesthesiologists, a clinical nurse specialist, registered diagnostic medical sonographer, social workers, genetic counselors, registered dieticians, diabetic counselors, and case managers. Providing the continuum of perinatal care, including high-risk, the obstetricians and perinatologists staff the unit 24 hours a day. In addition, the service provides regional air and ground transport within the Cleveland Perinatal Network. The mission for this unit is to serve the expectant mother by providing high-level perinatal and obstetrical care to her, as well as her baby and family (MetroHealth, 2015). The L&D has nine birthing rooms, five high-risk birthing rooms, six triage rooms, three operating rooms, a four-bed post anesthesia care unit, and an eight-bed antepartum unit. All L&D nurses must be NRP certified and recertified every two years.

In 2007, low-fidelity simulation was introduced to prepare nurses during the recertification process. The resuscitation process with documentation was often relegated to the least senior or inexperienced team member. For NRP, documentation is the standard recording to describe the resuscitation process. The Institute of Medicine (IOM) noted competent communication through interdisciplinary team training improves patient safety and reduces clinical risk (Kohn, Corrigan, & Donaldson, 2000). Furthermore, the IOM's International Liaison Committee on Resuscitation's (ILCOR) report recommends effective communication techniques to be emphasized, practiced, and clearly documented to achieve the expected quality and safety in clinical practice (Aebersold & Tschannen,

2013; Kattwinkel et al., 2010). For example, The Joint Commission (2004) identify poor communication as the root cause of neonatal disability or death in 34 cases of 47 cases (72%) sentinel event cases reviewed. Furthermore, Berglund and Norman (2012) reported 45% of documentation processes were unsatisfactory, adversely affecting neonatal outcomes. As such, nurses must be competent to communicate clearly with the resuscitation team to facilitate a successful resuscitation process.

Nurses at MHMC have expressed discomfort with current communication practices during the resuscitation process and the completion of the resuscitation documentation form (A. Fuchs, personal communication, April 15, 2015). An additional stated concern is the communication process throughout NRP requires improvement, including improved interdisciplinary teamwork. These concerns are consistent with research, for example, Hughes et al. (2014) demonstrated team members in hospitals are not exposed to team dynamics beyond technical skills. The crew resource management (CRM) process, pioneered by the aviation industry, can improve patient safety by reducing errors through high functioning team dynamics (Hughes et al., 2014).

In 2006, the Department of Defense (DoD) developed a program called TeamSTEPPS to advance team training at the Veterans Administration. CRM was adopted as the model for TeamSTEPPS to develop clinicians competent in leadership, assertiveness, decision-making, self-awareness, adaptability, and interpersonal communication. This is similar to the processes used in aviation for cockpit team training (Helmreich, Merritt, & Wilhelm, 1999). A systematic approach to communication skill

development practiced with simulation training, CRM improves patient safety and clinical efficiency (Nielsen & Mann, 2008). In 2006, the DOD worked with the Agency for Healthcare Research and Quality (AHRQ) to bring the TeamSTEPPS program to clinicians in all health service environments.

In 2012, MHMC initially evaluated the deployment of the TeamSTEPPS program. Then, two years later, MHMC developed a core group of master trainers in becoming a regional TeamSTEPPS training center (MetroHealth, 2015). Legal issues can result from incomplete documentation to describe the entire resuscitation process. A goal of this DNP project was to improve the quality of clinical resuscitation documentation through implementing the TeamSTEPPS program; focused on effective team communication to increase confidence in performance and overall satisfaction.

Problem Statement

For two decades, neonatal resuscitation trainees at MHMC learned through traditional “lectures accompanied by skills stations using low-tech mannequins and without a formal debriefing process, thereby only addressing knowledge and technical skills” (Arnold, 2011, p. 357). The Joint Commission, Institute for Healthcare Improvement, National Quality Forum, and Accreditation Council for Graduate Medical Education identified team communication as an essential attribute to deliver safe patient care (Baker, Krokos, & Amodeo, 2008). In a report to improve nursing working environments, Page (2004) recommended incorporating simulation to enhance knowledge acquisition and skill development in teamwork and communication.

Considering these recommendations, MHMC implemented simulation in 2011 with an emphasis on teamwork and communication. These elements are essential to advance neonatal resuscitation to reflect the complex behavioral skills essential for clinicians to provide a high quality resuscitation process (Arnold, 2011).

The TeamSTEPPS program, adopted for the health sector from other industries, improves clinical communication skills and advances behavioral capabilities (Chen, Duff, Grant, Kissoon, & Grant, 2007). The program consists of five key principles, including, team structure, communication, leadership, situation monitoring, and mutual support (Baker et al., 2008; Sawyer, Laubach, Hudak, Yamamura, & Pocrnich, 2013). High fidelity simulation, as introduced in the NRP (6^{th} edition) and complemented with the TeamSTEPPS program, provides a contemporary approach to advance effective resuscitation training at MHMC (AAP, 2012a).

Since the introduction of the NRP (6^{th} edition), MHMC nurses report mixed feelings about their preparedness in neonatal resuscitation (J. Medas, personal communication, March 4, 2015). Neonatal and L&D have reported inadequate preparation and proficiency to correctly complete the documentation form for the resuscitation process. The documentation process is the primary source of anxiety and frustration for the nurses (A. Fuchs, personal communication, March 28, 2015). As clinical documentation is an important component for resuscitation, this source of frustration and feelings of inadequacy needed to be addressed. Implementing simulation

in neonatal resuscitation informed by the TeamSTEPPS program is hypothesized to improve the self-assessment of confidence, satisfaction, and communication.

Despite multiple attempts to update the documentation form, the nurses have remained uncomfortable with the documentation component and dissatisfied with the often fragmented communication process (A. Fuchs, personal communication, March 28, 2015). At MHMC, the new NRP (6^{th} edition) training with the additional simulated resuscitation cases increased the stress in clinical performance during the resuscitation process. Similarly, Finan, Bismilla, Whyte, LeBlanc and McNamara (2012) reported "simulated neonatal resuscitations induce a significant stress response in neonatal trainees" (p. 287). Identified communication deficiencies can also result in the faulty relay of information, delays in treatment, needed actions not being taken, and near misses that may significantly impact neonatal outcomes (Gephart & Cholette, 2012). But, a TeamSTEPPS informed communication process with the NRP skill scenarios is reported to decrease perinatal mortality by 37%, compared to those trained in the classroom without simulation practice (Gephart & Cholette, 2012).

Purpose Statement

Documentation is a standard of nursing care for all areas of nursing practice. In a resuscitation event, documentation is critical for communication and interdisciplinary continuity of care. Documentation in neonatal resuscitation is the professional responsibility of the neonatal and labor and delivery nurse, and documentation may enhance or inhibit the smooth and safe delivery of care to the neonate. Improving

documentation can occur during simulated events. These simulations provide the nurse with opportunities to learn from errors and to ask questions in a low-risk environment. Simulation improves nurses' perceptions of their knowledge skills and confidence in training others in neonatal resuscitation (Amin, Aziz, Halamek, & Beran, 2013). As such, over the past two decades, simulation has been increasingly integrated into nursing education and professional development (Aebersold & Tschannen, 2013). The purpose of this project was to evaluate the self-identified nurse perceptions of confidence, satisfaction, and communication in performing neonatal resuscitation following new NRP training strategies, including the implementation of simulation, communication, and documentation.

Project Objectives

For this project, three objectives were identified. The first objective was to implement the TeamSTEPPS approach and CRM principles into the NRP training process at MHMC. TeamSTEPPS is an evidence-based teamwork system that improves teamwork and communication skills in the professional environment (U.S. Department of Health, 2015). The TeamSTEPPS program has not been fully implemented into the neonatal resuscitation process, as not all nurses have gone through the program. By integrating this team work and communication training into NRP, improved communication during the resuscitation process may result in improved outcomes. Education was provided to integrate the TeamSTEPPS program into the resuscitation training process.

The second objective was to revise the resuscitation documentation form based on end-user feedback to completely capture the critical data and information to appropriately describe the resuscitation process. Utilizing end-user feedback with expert and management contributions resulted in a complete and accurate documentation record. Finally, end-user education was provided, including practice with mock resuscitation events. The aim was to improve performance confidence by providing nurses with the knowledge and experience to contribute as members of the resuscitation team.

The third objective was to assess the nurse perception of satisfaction in the performance of their NRP skills following the TeamSTEPPS informed education and simulated resuscitation practice during resuscitation recertification. The outcome of this objective was evaluated with a posttest to measure the perceived level of confidence and satisfaction after the nurse completed the education, training, and practice.

Project Question

What is the nurse perceived level of confidence, satisfaction, and communication skill in performing neonatal resuscitation following the implementation of simulation, communication, and documentation training informed by TeamSTEPPS?

Evidence-Based Significance of the Project

A nurse documenting a resuscitation process is not only responsible for recording the clinical data and actions but also giving the team important information to the immediate resuscitation process. For example, NRP indicates time specific doses of epinephrine to achieve the optimum physiological response. During resuscitation, the

team leader and other team members are often unaware of the time specific to critical actions, the spacing between epinephrine doses. The documentation nurse is responsible for providing the team with this information necessary for an effective resuscitation. Also, Apgar scoring provides information about the status of the neonate at birth. Collecting and reporting data such as this are also the responsibility of the documentation nurse.

If team members are not prepared for resuscitation, unfamiliar with their roles, create overlap in roles, or engage in activities beyond their competency, the resulting care may be incomplete, ineffective, and/or incompetent. Furthermore, undefined role delineation and unclear clinical responsibilities may result in miscommunication and omissions in care. Miscommunications and omissions in care can result in metabolic acidosis, hypothermia, hypoglycemia, hypoxia, ischemic encephalopathy, and even death (Kattwinkel, 2010).

The documentation completed during a resuscitation event should provide an accurate record, clinically and legally, specific to the care delivered to the patient, including by whom, at what time, and the responses to the interventions. In addition to contributing to the health record, this process also constitutes a legal record, or the evidence of what transpired during the resuscitation process. Neonatal resuscitations are high-risk events that have the potential for serious litigation if the resuscitations outcome results in permanent injury or death. The only reliable evidence for a legal proceeding is the complete and accurate health record. Resuscitation documentation is standardized by

the NRP, and modifiable documentation templates are available for institutions to customize.

MHMC adopted a new documentation form that was implemented for neonatal resuscitation; however, the MHMC nurses reported they are not confident in their ability to complete this form (A. Fuchs, personal communication, March 28, 2015). The proposed solution, simulation, has been reported to increase confidence levels when practicing stressful scenarios, as it provides real-life events in a nonthreatening environment (Pilcher et al., 2012). In addition to practicing case scenarios, the simulation process will help nurses learn how to use the documentation form in a simulated environment for transfer into real-life resuscitation (Amin et al., 2013).

Reduction of Gap

Neonatal asphyxia accounts for 20.9% of neonatal deaths (Chadha, 2010). Although only 10% of newborns require some form of resuscitation, and 1% extensive resuscitation, the overall resuscitation goal is to decrease morbidity and mortality associated with hypoxic-ischemic tissue injury (Chadha, 2010). Neonatal resuscitation is important as any neonate “who has experienced perinatal compromise or has ongoing respiratory distress may have dysfunction or delayed perinatal adaptation of the brain, heart, gastrointestinal tract, kidneys, or other organs” (Australasian College for Emergency, 2010, p. 448). With delayed resuscitation, severe neurological deficits can result in lifelong care requirements, an extremely costly situation (Dunn, Gies, & Peters, 2005).

In Ohio, between 60-70% of deaths in the first year of life are attributed to prematurity (Mathews & MacDorman, 2010). Furthermore, premature newborns requiring resuscitation at birth often develop respiratory distress syndrome, bleeding in the brain, hearing and vision loss, immunity issues, central nervous system problems, and gastrointestinal problems (March of Dimes, 2010). These neonates are then admitted to an NICU where they may be hospitalized for weeks to months until they are a self-sustaining infant.

Eventually when the infants are discharged, they often have long-term deficits related to the prematurity. The costs incurred for the NICU as well as for the permanent deficits are tremendous. For example, an estimated $26 billion was spent on premature infants in American hospitals (CDC, 2015). Premature infants make up 67.1% of the resuscitations (Edwards et al., 2015). Effective teamwork in resuscitating preterm neonates is essential to limiting deficits and reducing costs. But, effective teamwork requires new clinician competencies as “delivery room resuscitation and stabilization is a complex activity involving many individuals from different disciplines” (Edwards et al., 2015, p. 1).

Implications for Social Change in Practice

Simulation is a demonstrated method for improving competency in clinical practices, including resuscitation (Aebersold & Tschannen, 2013). For example, simulation-based resuscitation training has improved outcomes in multiple areas of practice in comparison with no intervention (Mundell, Kennedy, Szostek, & Cook, 2013).

Additionally, simulation is effective for implementing practice improvement, developing team and advancing group dynamics, and integrating feedback to improve performance (Mundell et al., 2013).

Simulation is the standard of clinical education for clinicians working in high-risk environments (Lindamood & Weinstock, 2011). Neonatal resuscitation occurs in incredibly complex, chaotic, and dynamic environments, which requires the assimilation of cognitive, psychomotor, and behavioral skills to perform well despite high-pressure and cognitive overload (Halamek, 2008). The simulated real-life scenarios in a familiar practice environment provides nurses an opportunity to practice clinical skills in challenging situations. As such, nurses are able to learn from errors and imperfect practices in order to integrate new skills and knowledge into excellent resuscitation performance. The outcome is their dramatically improved delivery of safe, effective, and efficient care.

Timely and effective resuscitation can result in a neonate being promptly returned to their mother with minimal interruption and without clinical sequelae. Nurses skilled in neonatal resuscitation and team communication can positively influence the overall birth experience while providing high-risk neonatal care. The ILCOR Consensus Guidelines in 2010 recommend simulation for resuscitation education and training be widely implemented (Perlman et al., 2010) For example, Edwards et al. (2015) reported 82% of audited neonatal intensive care units (N=84) were using simulation for resuscitation education and training. With advancements through simulation, the neonatal resuscitation

practices first established in 1986 continue to evolve to improve long-term outcomes of neonates.

Definitions of Terms

For the purpose of this project study, the following terms are defined below:

Apgar: A scoring scale developed in 1952 by Dr. Virginia Apgar to measure the health of the newborn at 1 minute and 5 minutes. Five criteria are assigned a score of 0, 1, or 2: heart rate, respiratory effort, reflex irritability, muscle tone, and grimacing (AAP, 2006).

Crew resource management: A team-building communication process used in the aviation industry to improve patient outcomes, enhance team dynamics, and decrease errors (Hughes et al., 2014).

Documentation: The process of providing authentic or substitutive evidence of events that occur during delivery of patient care (AAP, 2014).

Epinephrine: A catecholamine also known as adrenaline that is responsible for the fight or flight response in the body. Epinephrine is used to treat cardiac arrest (Sicherer & Simons, 2007).

*Full term***:** A newborn child born after 37 completed weeks of gestation (Mathews & MacDorman, 2010).

Neonate: A newborn child who is less than 1 month of age (Chadha, 2010).

*Nursing confidence***:** Measured using the Student Confidence and Self-Satisfaction in Learning Scale (Jeffries & Rogers, 2009). This scale is used to measure how confident

nurses are regarding their skills and knowledge on specific simulated patients (Jeffries & Rogers, 2009).

Preterm: A newborn child born before 37 completed weeks of gestation (Mathews & MacDorman, 2010).

Resuscitation: The process of correcting physiological disturbances in the body through the use of advanced life support (AAP, 2004; Chadha, 2010).

Simulation: The act of imitating a real-world process through demonstration, testing, training, or education (Aebersold & Tschannen, 2013).

Transitioning process: **"**The transition from a fetus to a newborn is the most complex adaptation that occurs in human experience. Lung adaptation requires the coordinated clearance of fetal lung fluid, surfactant secretion, and the onset of consistent breathing" (Hillman, Kallapur, & Jobe, 2012, p. 769).

TeamSTEPPS: A teamwork system for health care professionals that focuses on communication and evidence-based teamwork skills developed by the Agency for Healthcare Research and Quality and the Department of Defense (Baker et al., 2008).

Assumptions and Limitations

Several assumptions and limitations associated with this project are outlined in the following section.

Assumptions

The hypothesis for the project is simulation training for skills, communication, and documentation would improve the feeling of confidence and satisfaction for nurses at

MHMC. Improved nursing skills in neonatal resuscitation may translate into improved patient care delivery and outcomes. Also, the assumption is nurses involved in neonatal care would want to use simulation in neonatal resuscitation to improve their feelings of confidence and satisfaction for actual resuscitation-associated activities. Preparation in neonatal resuscitation skills may decrease the stress level of nurses and facilitate daily learning from resuscitation activities. Additionally, communication during resuscitations was assumed to improve with TeamSTEPPS training, resuscitations practice in educational offerings, and the experience from the biannual renewal of NRP. Simulation in neonatal resuscitation may be used to enhance development of cognitive, technical, and behavioral skills needed to achieve optimal patient care outcomes. Overall, the project assumed improvements in the quality of education and training can result in changes in nursing performance.

Limitations

There were three major limitations associated with this project. First, the project is specific to one neonatal intensive care and labor and delivery unit at a single hospital. Second, the sample population was small because participation was voluntary. Finally, the third limitation was no prior studies were found that focused on nursing education related to simulation in neonatal resuscitation. As a result, this project included methods from existing education provided to nursing students and medical personnel. However, the applicability of these methods in the NICU and L&D unit has not been studied in detail.

This project was conducted over a period dependent on conditions naturally occurring during the project. These conditions included but were not limited to delivery rates, rates of resuscitation calls, and delivery of preterm versus full-term infants. Additionally, determining the exact stress source manifesting in simulations was not possible. For example, Finan et al., 2012 reported multiple sources of stress in the form of fear or anxiety related to the facilitator or one-on-one assessment of practice skills

Summary

Simulation has recently been integrated into health care practice from the aviation sector and the military complex. Knowledge gained from other disciplines, and research has indicated simulation improves teamwork and behavioral skills (Amin et al., 2013; Soliman et al., 2004; Thomas, Sexton, et al., 2006). With an emphasis on teamwork and communication, simulation was incorporated into neonatal resuscitation to teach all aspects of medical and nursing care to enhance knowledge, skills, communication, and behavioral training (Chen et al., 2007). However, there is conflicting evidence at MHMC whether simulation during neonatal resuscitation has resulted in self-identified perceptions of confidence, satisfaction, and communication skills among nurses in the neonatal resuscitation process. This project included a descriptive evaluation of a posttest design to describe self-identified nurse perceptions of confidence, satisfaction, and communication in neonatal resuscitation and nurses' self-perception of simulation and its impact on their future practice in neonatal resuscitation.

Section 2: Review of Scholarly Evidence

Knowledge of neonatal physiology, decompensation during resuscitation, and therapeutic interventions to help stabilize a neonate has advanced over the past 40 years (Halamek, 2008). Mastery of neonatal resuscitation skills is necessary to rescue neonates in distress (Halamek, 2008). Historically, deviations in effective communication, teamwork, and leadership during neonatal resuscitation were often present (Halamek, 2008). Traditional approaches to neonatal resuscitation involved didactic instruction followed by a skills station. Real delivery area experiences often do not occur for weeks or months after the recertification of neonatal resuscitation. The NRP (6^{th} edition) introduced simulation as a methodology to bridge the gap between the didactic format and real-life resuscitations to prepare for real resuscitation experiences (AAP/AHA, 2012a).

Simulation is a method offering visual, auditory, and tactile cues to create a high level of physical, biological, and psychological fidelity to a resuscitation scenario (Halamek, 2008). Simulation-based teaching and learning strategies build self-confidence in nurses by allowing them to practice assessment and critical thinking skills in a realistic but nonthreatening environment (Birkhoff & Donner, 2010). This section presents a literature review and an explanation of the theoretical and conceptual frameworks for this project. The chapter includes the TeamSTEPPS program and the current literature and research related to simulation and the National League for Nursing/Jeffries Simulation Framework (NLN/JFS) (Jeffries, 2007).

Review of the Literature

In a review of the literature, the following databases and libraries were accessed: The Cochrane Library database, National Institute of Child Health and Human Development (NICHD), Neonatal Research Network, the Children's Hospitals' Neonatal Consortiums (CHNC), Vermont Oxford Network (VON), Internet-based Newborn Improvement Collaborative for Quality (iNICQ), OVID Technologies, EBSCOhost, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Medline, Agency for Healthcare Research and Quality (AHRQ), National Clearinghouse, Academy of Neonatal Nursing, National Association of Neonatal Nurses, American Academy of Pediatrics, American Heart Association, Martindale's The "Virtual"-Medical Center Obstetrics-Neonatal Center, British Research Journal, National League for Nursing, Institute of Medicine (IOM), PubMed Medline, ProQuest Nursing and Allied Health Sources, and the American Nurses Association. Key search terms for the literature review included *Neonatal Resuscitation 6th edition*, *documentation*, *neonatal resuscitation documentation*, *Knowles adult learning theory*, *crew resource management*, *TeamSTEPPS*, *high-fidelity simulation*, *low-fidelity simulation*, *simulation in nursing education*, *National League for Nursing/Jeffries Simulation Framework (NLN/JSF)*, *failure to document in neonatal resuscitation*, *neonatal nursing confidence in resuscitation*, *nursing satisfaction in resuscitation performance*, *teamwork communication*, *neonatal resuscitation-American Heart Association*, *American Association of Pediatrics-neonatal resuscitation*, and *neonatal deaths*. Boolean search

strings included *Neonatal resuscitation* AND *Knowles adult theory, neonatal resuscitation* AND *nursing satisfaction, neonatal resuscitation* AND *nursing confidence, neonatal resuscitation* AND *TeamSTEPPS principles, neonatal resuscitation* AND *crew resource management*, *documentation* AND *neonatal resuscitation*, *neonatal deaths* OR *team communication* OR *documentation*, *simulation* OR *high-fidelity* OR *low-fidelity* OR *neonatal resuscitation*, and *simulation* OR *nursing satisfaction* OR *nursing confidence*. The aim was to conduct a thorough search of peer-reviewed publications.

Thirty-five papers were located broadly meeting the identified subject of simulation in training. Then, ten papers were eliminated because they focused on nursing students or medical resident education. An additional five papers were excluded because they were associated with communication in ethical situations. Finally, the review yielded 20 studies for this review, which spanned the time frame from 1987 to 2015 and included seminal studies, theoretical literature, dissertations, foundational literature, and peer-reviewed literature. The review topic subjects included neonatal resuscitation, simulation in nursing education, Jeffries simulation theory, team communication during neonatal resuscitation, Knowles adult learning theory, documentation in neonatal resuscitation, nursing confidence and satisfaction during neonatal resuscitation, crew resource management, and TeamSTEPPS.

Specific Literature

"Simulation is the imitation or representation of one act or system by another" (Society for Simulation in Healthcare, 2015, para. 1). Simulation in healthcare care

includes education, assessment, research, and health system integration (Society for Simulation in Healthcare, 2015). Simulation in neonatal resuscitation education is essential in developing teamwork, effective communication, clinical skills, pride, and constructive debriefing (AAP, 2012b). The process of simulation in NRP offers the nurse the freedom to make mistakes and to learn from customized learning, detailed feedback, and evaluation. “Dissemination and implementation of evidence into everyday clinical practice” is an essential component in adult learning conceptual modes, behavioral theories, social influence, health education, marketing, and organizational theories (Wood & Magyary, 2010, p. 22). Simulation in neonatal resuscitation is an effective dynamic method to educate clinicians in place of traditional static methods. The use of real medical equipment and low- or high-fidelity mannequins enhances the learning experience. Overall, the simulation experience improves skill acquisition and retention in a realistic but nonthreatening environment.

There is a growing body of research that addresses team training and debriefing in multidisciplinary teams with mastery in critical thinking skills, retention of knowledge, and resuscitation skills (Lindamood & Weinstock, 2011). Ten papers addressed non-nursing participants such as physicians, and residents (Bould et al., 2009; Bender, Kennally, Shields, & Overly, 2014; Curran et al., 2004). Only the research conducted by Bould et al. (2009) indicated simulation translated into prolonged retention of skills and effective teamwork. In contrast, Curran et al. (2004) and Bender et al. (2014) reported no

significant differences in teamwork behaviors in non-nursing personnel and a lack of sustained skill performance.

Several researchers found teamwork in neonatal resuscitation was improved with team training, which resulted in quicker response behaviors and improved observed communication (Thomas, Sexton, et al., 2006; Thomas, Sherwood, Mulholiem, Sexton, & Helmreich, 2004; Thomas, Williams, et al., 2010). Thomas, Sherwood, et al. (2004) reported broad organizational and interpersonal factors influenced teamwork through improved communication. Breakdowns in communication and teamwork is detrimental to neonatal resuscitation (Thomas, Williams, et al., 2010). High-fidelity simulation training showed higher teamwork frequency than control groups who did not receive the teamwork training (12.8 vs 9.0 behaviors per minute, $p < 0.001$) (Thomas, Williams et al., 2010). Williams, Lasky, Dannemiller, Andrei, and Thomas (2010) found that teamwork behaviors and resolving errors directly, rather than using them as a teaching opportunity, had more beneficial effects on team communication and development (Spearman's rho for vigilance and errors = -0.62, 95% CI -0.07 to -0.87, $p = 0.031$). Lee et al. (2011) found that intrapartum-related deaths decreased by 30% when neonatal resuscitation training was implemented. Problems in resuscitation can involve the team, leader, or both (Finer & Rich, 2010; Frankel, Gardner, Maynard, & Kelly, 2007). However, Thomas, Sherwood, et al. (2004) indicated that descriptions of what teams consisted of and how to integrate teamwork into neonatal resuscitation were inconsistent across studies.

Research conducted by the aviation industry during the 1970s resulted in the development of CRM as a method to improved communication, to address inadequate interpersonal communication, poor decision-making, and lack of leadership skills (Hughes et al., 2014). The CRM method is used in the operating, emergency, and delivery areas and is recommended by the Joint Commission (Finer & Rich, 2010). CRM related, as manifested through the TeamSTEPPS program aims to improve communication between disciplines, encourage situational monitoring throughout the delivery of care, foster mutual support and respect among caregivers, and promote the development of effective team leadership (Shea-Lewis, 2009).

The TeamSTEPPS curriculum focuses on five core teamwork competencies, including: Team structure, leadership, situational monitoring, mutual support, and communication (Thomas, Taggart, et al., 2007). In the labor and delivery area, principles of TeamSTEPPS training combined with simulation were shown to decrease neonatal resuscitation patient errors (Spearman's rho for vigilance and errors = -0.62, 95% CI -0.07 to -0.87, $p = 0.031$) (Williams et al., 2010). Formal teamwork led to reductions in errors and improvements in the ability to manage workload and to perform critically lifesaving skills faster (Thomas, Taggart, et al., 2007).

An updated CRM in 1997 included three major countermeasures that could explain a failure to effectively document in a neonatal resuscitation event. The first countermeasure was the pre-event communication of what role each team member is to play (Helmreich, Anca, & Kanki, 2010). The second countermeasure was to utilize

trapping errors by cross-checking data, such as checking a pulse oximeter with a stethoscope (Finer & Rich, 2010). The third countermeasure was mitigation or allowing all team members to voice concerns or different perspectives (Weaver et al., 2010). Shea-Lewis (2009) indicated that an improvement in patient outcomes results from team training, briefings, and debriefings.

Allan, Bell, and Pittard (2011) reported legible documentation was improved by 90% with the use of templates, which help to capture the relevant data fields and the occurrence of events. Results from NICUs participating in the Vermont Oxford Network (VON) Internet-based Newborn Improvement Collaborative for Quality (iNICQ) 2012 stated "neonatal teams can improve the quality and safety of delivery room care by implementing formal tools such as briefings, debriefings, checklists, and videotape reviews" (Edwards et al., 2015, p. 1). A quality improvement project conducted by Rich et al. (2010) demonstrated videotaping resuscitations is an "effective training and quality assurance tool and allows the timely recognition of many systematic and procedural errors" (p. 189). Education to strengthen algorithm familiarity and a dedicated recorder identified prior to the birth of the neonate are some factors reported to improve documentation (Perinatal Services, 2014).

Improving the documentation process in the delivery room by nurses enhances the recording of events that may translate into accurate and contemporaneous documentation leading to timely interventions and a means of quality control. In this project, the documentation form was revised, updated, and approved based on end-user feedback.

The documentation form was ergonomically edited for easier data entry and to accommodate the flow of information through the resuscitation process. For example, the revision included moving the drying and stimulating of the infant, which are the first measures recorded in most resuscitations, to the beginning of the form. The updated form provided an even and orderly flow for data entry.

Factors that contribute to nurses' perceptions of preparedness in neonatal resuscitation were addressed in the literature and included the importance of teamwork, simulation as a means of practicing skills with low- and high-fidelity mannequins, and the importance of debriefing and re-education in the learning process. In my project, the neonatal resuscitation instructors were provided with education and updating of the instructor role, simulation, and debriefing. In 2016, the MHMC neonatal and labor and delivery area nursing staff renewed their neonatal resuscitation.

General Literature

Neonatal Nursing

Across more than four decades, neonatal nursing has developed into an advanced specialty nursing practice responsible for the care of neonates from birth to hospital discharge (Thomas, 2008). Technological improvements have helped neonatal nurses improve neonatal outcomes, especially for neonates born as early as 23 weeks and those born with congenital defects or other alterations. The advancing technology coupled with modern neonatal care resulted in the survivability for neonates decreasing 17% from 2000 to 2010 with 3.1 million newborns dying within the first month of life (Lawn et al.,

2012; Thomas, 2008). With younger neonates surviving as a result of increased technology, the neonatal and L&D nurse are required to manage more complex physiological and pathophysiological processes.

The new complexity of the typical neonatal patient requires the presence of a confident competent nurse in the delivery area to participate in the resuscitation process (Monterosso et al., 2005). Neonatal and L&D nurses must feel confident in their knowledge and competent in their ability to contribute to the resuscitation team. As technological advancement continues to improve neonatal care, neonatal and L&D nurses will require more education and professional development, including unique learning strategies offered by simulation and team work methods, to remain competent in current nursing practice.

Simulation in Nursing Education

Simulation in medical training evolved from the “blue box” training in flight simulators of the past (Rosen et al., 2008) to the clinical mannequin simulators of the present (Jeffries, 2005). Simulation has arrived as an accepted education method in both medicine and nursing. The history of computer simulation dates back to World War II, and the utilization in medicine to the 1980s. This delay of use in medicine occurred due to programming issues (Rosen, Hunt, Pronovost, Federowicz, & Weaver, 2012). Medical simulators were developed to train medical personnel in therapeutic and diagnostic procedures with the first medical simulators being human models used to teach disease states and diagnostic procedures. Simulation was developed for medical personnel to

demonstrate safe skill performance to prevent errors, injuries, and death; progressing to the current in situ training (Finan et al., 2012; Rosen et al., 2012). Simulation-based training provides participants the ability to practice simple to complex skills in a realistic but nonthreatening environment. The evolution of simulation in neonatal resuscitation appeared in the late 1980s with the use of mannequin heads to practice intubation, cardiopulmonary resuscitation (CPR), and suturing. In 2006, low-fidelity simulation was introduced in neonatal resuscitation with the use of mannequins to practice chest tube insertion and umbilical line placements.

The National League for Nursing (NLN) recommends educators to use the appropriate learning environments that can "facilitate students' critical thinking, self-reflection" and supports "graduates for practice in a complex, dynamic health care environment" (NLN, 2003, pp. 1-2). Nursing students learn through a variety of modalities, including auditory, visual, kinesthetic, and tactile; but simulation facilitates multimodal learning strategies. This multimodal learning supports Patricia Benner's perspective, "The goal of educational programs is to provide a broad base of clinical theory and skill that will provide the nurse with maximum flexibility and scope of practice after graduation" (1984, p. 185). Simulation enhances communication, increases nursing skills, improves integration of didactic learning, develops critical thinking, and facilitates teamwork (Hunter & Ravert, 2010). "Active learning is used interchangeably with constructivism, hands-on learning, and experiential learning. The literature supports

active learning as an important concept related to student understanding. Simulation is a prime example of active learning" (Hallmark, Thomas, & Gantt, 2014, pp. 349-350).

Simulation is essential in areas where "real-life experiences are discouraged due to the risk to others" (Decker, Sportsman, Puetz, & Billings, 2008, p. 75). Simulation offers the nurse the freedom to make mistakes and to learn from customized feedback and evaluation. The "dissemination and implementation of evidence into everyday clinical practice" is an essential component for adult learning conceptual models, behavioral theories, social influence, health education, marketing, and organizational theories (Wood & Magyary, 2010, p. 22). Simulation in neonatal resuscitation is an effective dynamic method to educate clinicians in place of traditional static methods. The use of real equipment and low-fidelity mannequins enhances the learning process. The underlying assumption is the simulation experience will improve skill acquisition and facilitate skill retention while practicing in a realistic but nonthreatening environment.

Communication in Resuscitation

TeamSTEPPS is utilized at MHMC, but was not routinely used in the labor and delivery area for neonatal resuscitations. In the recent past, the least experienced team member assumed responsibly for the documentation role, as they were often neither comfortable nor felt competent in neonatal resuscitation. Presently, in order to participate in neonatal resuscitations at MHMC, all team members must be NRP providers and complete the biannual renewal process. A clear communication process has not been implemented in the delivery area. Many individuals were not clear of their roles,

documentation process, documentation form, or the means of obtaining the necessary information needed to complete an accurate and contemporaneous record of the events in the delivery area. Communication was fragmented with documentation occurring after the fact. Documentation occurred after a review of what some team members perceived had happened, rather than what actually occurred. The introduction of a revised documentation form, a review of CRM, and TeamSTEPPS program focused on communication could help staff become more familiar with their roles and responsibilities, and understand events as they are occurred.

Simulation has a prominent role in influencing behavior through enhanced teamwork (Thomas, Sexton, et al., 2006). Improved perceptions in knowledge, skills, and confidence were demonstrated by clinicians (Amin et al., 2013; Soliman et al., 2004). Multiple studies reported simulation increased participant perceptions of preparedness and their confidence performing assigned tasks (Amin et al., 2013; Bender et al., 2014; Birkhoff & Donner, 2010; Blum, Borglund & Parcells, 2010; Jeffries, 2005; Soliman et al., 2014). Simulation is demonstrated to build self-confidence in nursing students by allowing them to practice critical thinking skills in an environment where committing errors contributes to learning (Birkhoff & Donner, 2010). The NLN has published the Student Satisfaction and Self-Confidence in Learning Scale, which is a tool that can be used to measure these variables (see Appendix A). Studies addressing self-confidence and satisfaction with high-fidelity simulation have consistently noted positive outcomes (Blum et al., 2010; Hallmark et al., 2014; Jeffries, 2005).

Teamwork, as described by Tuckman (1965), involves the process of forming, storming, norming, and performing. Forming occurs when the team member begins to find their place in relation to others (Tuckman, 1965). Storming develops when the team lacks unity and there are conflict and polarization around interpersonal issues (Bonebright, 2010). Norming then occurs when the group develops cohesion with shared mental models and the development of effective ways of performing together (Bonebright, 2010). In the final stage of performing, the team is a functional and problem-solving unit with flexible and functional roles (Bonebright, 2010).

Zeffane (2010) reported promoting effective communication was essential for developing team trust. Furthermore, the trust cannot be generated by job satisfaction but only through open communication, care, and feelings of mutual respect. Similarly, Mickan and Rodger (2000) found effective collaboration, coordination, and communication are important in effective teamwork activities. Importantly, team-led guided debriefing strategies demonstrated superior team processes as compared to unguided debriefing (Eddy, Tannebaum, and Mathiew 2013). Overall, teamwork and communication skills are essential to improving organizational effectiveness (Eddy et al., 2013).

Theoretical Framework

Communication and clinical skill competencies are essential prerequisites for successful neonatal resuscitation. Failure to communicate and to work as cohesive team results in errors, omissions, and poor patient outcomes (LaFond & VanHulle Vincent,

2012; Lindamood & Weinstock, 2010). The widespread use of simulation is premised on the andragogic, or adult education, framework provided by Adult Learning Theory (Knowles, 1985) situated within the NLN/JFS theoretical framework (Jeffries, 2005). Beyond the acquisition of skills and achieving confidence in those skills, the nurse must be able to communicate as an integral member of the resuscitation team. The incorporation of the TeamSTEPPS program strategies to enhance communication, within the context of the NLN/JFS theoretical framework, contributes to the teamwork necessary to coordinate a successful neonatal resuscitation, secondarily resulting in an accurately documented clinical process.

National League for Nursing/Jeffries Simulation Framework

The underlying theory supporting the principles within the NLN/JFS theoretical framework is the Adult Learning Theory (Knowles, 1985)). Adult Learning Theory, or ALT, assumes that the adult learner is an autonomous and self-directed learner (Mitchell & Courtney, 2005; Knowles, 1957). As a humanistic theory, ALT emphasizes the teacher and student as collaborators in developing an effective relationship (Mitchell & Courtney, 2005). The andragogic, or adult education, model derived from ALT has six major elements. These elements assume adults: 1) have a need to know, 2) take responsibility for their learning, 3) apply information to one's life situation, 4) identify their experiences as a resource for one's learning, 5) are motivated to learn, and 6) have problem-centered learning with real-life problems rather than only through content orientation (Mitchell & Courtney, 2005). ALT applies to this project because nurses must

be responsible for their own learning through identification of their self-identified weaknesses. The process of neonatal resuscitation is integral to the role of the nurse with real-life, day-to-day problems that every nurse who participates in neonatal resuscitation will encounter. These experiences provide the backdrop to the initiative of increasing one's learning capabilities (Cioffi, Purcal, & Arundell, 2005).

Other theories have been cited for use in simulation include Benner's novice to expert, Bandura's social cognitive theory, Resnick's self- efficacy, and Kolb's experiential learning (LaFond & Van Hulle Vincent, 2012). After considering each of these theories and the application to implementation research, ALT as embedded in the NLN/JFS theory was selected to guide this project. Importantly, the NLN/JFS theory has been implemented into clinical practice through a comprehensive framework specific to simulation, linking student experiences to outcomes (LaFond & Van Hulle Vincent, 2012). Furthermore, ALT in the context of the NLN/JFS framework brings learners to the level of understanding necessary to meet clinical objectives (Clapper, 2010).

The NLN/JFS framework is used to design, implement, and evaluate nursing strategies for clinical simulation (Jeffries, 2005). There are five constructs of the NLN/JFS framework that include best practices in education. As seen in Figure 1, these factors include student factors, teacher factors, educational practices, simulation design characteristics, and outcomes (Jeffries, 2007).

Simulation, as defined by Jeffries (2005), is the activities that "mimic the reality of a clinical environment are designed to demonstrate procedures, decision-making, and

critical thinking through techniques such as role-playing and the use of devises such as interactive videos or mannequins" (p. 97). Simulation is grounded in theories focused on "learner-centered practices, constructivism, and collaboration between individuals with different backgrounds" (Jeffries, 2007, p. 23). For example, instruction during simulation is student-learning focused rather than the traditional instructor-driven focus, where the instructor facilitates student learning in a dynamic process (Jeffries, 2005). In this paradigm, the instructor provides support to the student throughout the learning process with debriefing concluding the experience (Jeffries, 2007). With the context of the NLN/JFS framework, the student is an active versus passive participant as they achieve designated learning outcomes during structured evaluations (Jeffries & Rogers, 2009). As such, the student is immersed and engaged in the learning activity to obtain immediate feedback, to receive reinforcement cues, and to participate in reflective learning (Comer, 2005; Jeffries, 2005). Expected outcomes from this framework include knowledge acquisition, skill performance, learner satisfaction, critical thinking, and self-confidence (Jeffries, 2005).

Knowledge of skill performance and self-confidence are two of the described student outcomes of the NLN/JFS framework (Jeffries, 2005) related to this project. Specifically, the model encourages active participation and proving feedback through a formal debriefing process. In addition, the framework provides for the transference of skills from the learning environment to the clinical setting to increase self-confidence and improve clinical judgments (Jeffries, 2005). Nursing educators hypothesize experience is

generated by the simulated learning process thereby “the experience should promote the insight needed for the development of clinical judgment that promotes quality patient care” (Jeffries, 2007, p. 76).

TeamSTEPPS Program

The TeamSTEPPS program provides an assortment of evidence-based strategies that are bundled to improve communication and build teamwork skills (AHRQ, 2015). The system is effective in optimizing information flow, increasing team awareness, clarifying member roles and responsibilities, and enhancing conflict resolution to support optimal team performance. (AHRQ, 2015). Optimal team performance in health care is an important strategy to reduce the 19.5 billion per year attributed to preventable medical errors. Communication failures are identified as one of the leading causes of preventable deaths caused by medical errors (AHRQ, 2015). Although health care professionals and leaders understand the importance of good communication and teamwork, there has been limited teamwork training and seldom opportunities to practice teamwork principles Krokos & Amodeo, 2008).

Integration of the TeamSTEPPS program within a simulated based learning environment will enhance communication for members of the resuscitation team. This system for team member communication clarifies roles, supports teamwork, and assists in resolving conflicts resulting from highly charged and emotional laden neonatal resuscitations.

Specifically, the TeamSTEPPS program, requires each member of the neonatal resuscitation team to be aware of their role before entering the labor and delivery suite and to be able to practice the team work principles to enhance patient outcomes. Communication through the TeamSTEPPS program results from the closed looped system where communication is directed one-to-one through visualization and directed line-to-line from member to member. The flow of information with clear communication decreases ambiguity, prevents conflicts, and clarifies unclear directions by team leaders and other members.

Conceptual Model

A conceptual model guides empirical inquiry developed from a set of critical concepts established to outline an inquiry or a set of actions (White & Dudley-Brown, 2012). Multiple frameworks and conceptual models have been developed to guide the task of implementing evidence-based projects and practices (White & Dudley-Brown, 2012). The evidence-based practice model utilized for this project was the John's Hopkins nursing evidence-based practice conceptual model (JHNEBP). The JHNEBP model guides nurses to use the best available evidence to inform clinical decisions (Schaffer, Sandau, & Deidrick, 2013); promoting a culture of critical thinking and continuous learning that sustain clinical decision-making (White & Dudley-Brown, 2012). The model includes three domains, nursing practice, education, and research, "to evaluate current evidence and translate research findings into patient care" (White &

Dudley-Brown, 2012, p. 11). The three phases derived from the domains are practice question, evidence, and translation (White & Dudley-Brown, 2012).

The first phase of the JHNEBP has five steps. The first step is the identification of the practice question. The second step is to recruit an inter-professional team. The third step is to define the problem with agreement from key stakeholders. The fourth step is to assign a team leader. And, the fifth step is to schedule and hold team meetings (White & Dudley-Brown, 2012).

The second phase in the JHNEBP, or the evidence phase, requires a diligent search for evidence related to the defined practice question. The practice question is more manageable and amenable for the search using the PICO method. During this stage, the evidence is collected, investigated, critiqued, and summarized to determine the strength and applicability of the evidence to the question (White & Dudley-Brown, 2012).

The third and final phase is the translation phase in which an action plan is developed, change is implemented, and evaluation and communication of the outcomes occur (White & Dudley-Brown, 2012). The JHNEBP model is nurse friendly and assists the nurse to deliver the highest quality of care through evidence that promotes optimal patient outcomes while providing equivalent care at lower costs or time (White & Dudley-Brown, 2012).

For this project, the practice question was defined with the PICO method. The population is nurses who participate in neonatal resuscitation in the NICU and L&D areas. The intervention is the 2011 American Heart Association simulation of neonatal

resuscitations. The desired outcome is nurses accurately completing the documentation form during a simulated resuscitation and to evaluate self-identified feelings of confidence, communication, and satisfaction in the NRP process. The outcomes are premised on the development of critical thinking skills and debriefing with remediation.

Summary

Neonatal resuscitation requires specialized skills to provide critically ill neonates with lifesaving therapies such as ventilation, chest compression, or medications (Thomas, Sexton, et al., 2006). NRP was designed to develop lifesaving skills for health care professionals. Simulation provides a nonthreatening setting for participants to practice simple and more complex skills, where mistakes and errors lead to learning. Thomas et al. (2010) discussed how the breakdown in communication and teamwork is detrimental to neonatal resuscitation. AHRQ (2015) identified that failures in communication is a leading cause of preventable deaths. This project measured perceptions of knowledge of the documentation process in neonatal resuscitation and self-perception of its impact on their future practice in neonatal resuscitation with the NLN's Student Satisfaction and Self-Confidence in Learning Scale.

Section 3: Approach

This project incorporated a nonrandomized descriptive evaluation posttest design. Posttest examination of documentation criteria in the neonatal resuscitation process provided a descriptive evaluation of the effectiveness of education in the simulation process with nurses in the performance of NRP. In this practice initiative, the self-perception of nurses in terms of the impact of education and simulation on their future practice in neonatal resuscitation was evaluated. This section provides a description of the project design, setting, population, recruitment and sampling, data collection, instrumentation, data analysis, project evaluation plan, and ethical considerations.

Project Design and Methods

The purpose was to assess the self-identified perceptions of confidence, satisfaction, and communication of nurses in the performance of their NRP skills following the institution of simulation in neonatal resuscitation education. Through the integration of the TeamSTEPPS communication strategies into the NRP simulation, the first objective was improved communication during the resuscitation process. Education was provided for the integration of TeamSTEPPS into the resuscitation process. The second objective was to improve confidence of nurses in their ability to perform competently as members of the resuscitation team. The outcome for this objective was evaluated through a self-identified posttest assessment of the feelings of nurses, in regard to their confidence and level of satisfaction following the intervention (see Appendix A). The chosen method was a descriptive evaluation of a posttest one-group design. Posttest

descriptive evaluation of documentation criteria in the neonatal resuscitation process addressed the perceived effectiveness of provided education in the simulation documentation process of nurses in NRP, and self-identified levels of confidence and satisfaction for the performance of these skills.

Population and Sampling

Setting

The setting was an NICU and L&D area in the Northeast region of the United States. The NICU is licensed as a Regional Level IIIB, which provides care for not only critically ill neonates and infants, but comprehensive care for neonates 1,000 grams or less or 28 weeks gestation or less (AAP, 2012b). The NICU provides advanced respiratory support, surgical care, advanced neonatal resuscitation, imaging with interpretation on an urgent basis, transfer capabilities to a higher-level facility, nutritional and pharmacy support, social services, pastoral care, and 24-hour onsite medical coverage for pediatric and subspecialties (AAP, 2012b). The L&D area provides care for high-risk pregnancies with 24-hour onsite obstetrical coverage.

Target Population

Fifty-two percent of the entire population for this project were baccalaureate prepared nurses, 20% were diploma prepared nurses, and 28% were associate degree prepared nurses. In both areas and similar to national data, 96% of the nurses are female. The nurses in the NICU and L&D had varying degrees of experience from 6 months to 34 years. The population assessed was practicing nurses who completed the online didactic

portion of the neonatal resuscitation program as outlined by the AAP and the AHA. All sections of the didactic portion were completed by the nurses and completion certificates were presented before the simulation component was scheduled during the months of the scheduled renewal due date. Due to the participation of nurses with previous neonatal simulation experiences and nursing school curricula containing simulations, some participants may have had previous experience with simulation. This reality was not controlled but descriptive data related to this situation was collected and analyzed.

Data Collection

Data collection for the project began once the project proposal was finalized and the institutional review board (IRB) approval was obtained from Walden University (04-22-16-0479264). The NICU and L&D nursing staff were given a letter requesting participation in the project initiative (see Appendix B). By signing the letter, participants consented to take part in the project. Post-simulation data was gathered following the mock code scenario by me and the NICU and L&D clinical nurse specialist (CNS) who administered the self-confidence and satisfaction tool (see Appendix A) and the demographic data tool (see Appendix C). The demographic data tool did not include subject identifiers to protect the privacy and confidentiality of subjects (see Appendix C). Data were collected on a monthly basis during NRP provider courses that are required for biannual renewal. These courses were attended once by each nurse during the months of January to June of 2016. The demographic tool was completed once by each participating nurse.

NICU and L&D nurses were provided a resuscitation scenario in which they completed the documentation component of the resuscitation code. The scenario was complex and included intubation, central line placement, chest compressions, and medication administration, all part of the 2011 NRP program developed and supported by the AAP and the AHA. The scenario was provided in a simulation environment where only the participants and the neonatal instructor, as a debriefer, were present. The gold standard for this documentation process was a completed resuscitation record by an identified neonatal nurse practitioner expert on the simulated resuscitation. This gold standard was then used to educate the neonatal and L&D nurses on the correct way to complete the resuscitation form, provide debriefing, and permit questions to be asked. The impact of the education was described using a posttest descriptive evaluation of self-identified perceptions, which identified nurses' perceptions of confidence and satisfaction as it affects their future practice in neonatal resuscitation (see Appendix A). The effects were examined for simulation on the confidence, satisfaction, and communication of practicing neonatal nurses in a Level 3 NICU and the high-risk L&D.

Instruments

Critical measurement of a project requires instrumentation that is selected to measure a specific variable (Grove, Burns, & Gray, 2013). Reliability refers to how consistently the tool measures a concept whereas validity is the extent to which the device reflects the concept being viewed (Grove et al., 2013). Permission to use the Student Satisfaction and Self-Confidence in Learning Scale was given by the National

League for Nursing with the expectation of proper citations and notification of changes (see Appendix D & Appendix E). This instrument is 13-items designed to measure satisfaction with the simulation activity and self-confidence in learning (NLN, 2015). "Reliability was tested using Cronbach's alpha" with satisfaction at 0.94 and self-confidence at 0.84 (NLN, 2015, p. 153). Validity has been demonstrated through the scale's use in many projects and research studies, but extensive studies are still needed (Franklin, Burns, & Lee, 2014; NLN, 2015).

The demographic tool was completed once by each participating nurse (see Appendix C). This tool included nine items addressing age, highest degree earned, unit where the nurses worked including the number of years, the number of years as an NRP provider, previous experience with simulation, whether the nurses feel simulation is valuable, and the number of resuscitations participated in over the last 6 months. This tool has been used in several projects and studies conducted at MHMC. This demographic tool was administered with the NLN satisfaction and confidence tool after the scenario.

Permission to use TPOT was obtained from the AHRQ. The TPOT consists of 25 items and is used to evaluate five domains of team performance (Bremner, Maguire, & Yanosky, 2014). The domains include team structure, leadership, situation monitoring, mutual support, and communication. Appendix F shows how TPOT includes a 5-point scale that ranges from 1 to 5 with the maximum score being 125 points (Bremner et al., 2014). The communication tool has been shown to be reliable and valid in a "simulated

clinical environment to provide formative and summative assessment of team performance" (Bremner et al., 2014, p. 4).

Protection of Human Subjects

This project presented minimal risk to participants. Permission to conduct this project was obtained from the IRB at Walden University (04-22-16-0479264). All NICU and L&D nurses hired to work at MetroHealth System were required to participate in the biannual recertification of neonatal resuscitation. All data collected from this study were anonymous to protect the privacy and confidentiality of the participants. The protection of human subjects is essential to "the ethical codes applying to scientific research" (Zaccagnini & White, 2011). The *Code of Ethics for Nurses with Interpretive Statements* (American Nurses Association, 2011) requires all nurses to protect human rights. In nursing research, nurses must protect human subjects in regards to privacy, self-determination, confidentiality, fair treatment, and protection from harm (Grove et al., 2013).

The subjects in this project were selected based on their role as a neonatal and labor and delivery room nurse at MHMC. The risks and benefits of participation were clearly presented to the subjects before their participation (Grove et al., 2013). Informed consent was obtained from the nurses, and they were able to choose whether to participate in the project (Grove et al., 2013). The subjects' participation was voluntary, and their right to refuse to participate was supported by a written description that failure to participate would not result in any discomfort, harm, or adverse effects (Grove et al.,

2013). Informed consent consisted of disclosure of essential information, comprehension, competence, and voluntarism (Grove et al., 2013). Hard copies of questionnaires and surveys are kept in a locked office, per the research coordinator at The MetroHealth System. Data will be held for 6 years in a secure environment.

Anticipated benefits. The project addressed whether simulation was helpful and whether the participants felt more confident and prepared to go into a real-life code situation in the labor and delivery room setting. This project may enhance patient safety by better preparing clinicians to respond to resuscitations. Improved resuscitation efforts and event documentation may decrease the incidence of litigation.

Potential risks. The project questionnaires were anonymous, making participant risk minimal. Minor discomfort may have occurred from answering questions. Participants completed the survey in a private place. Participants' names and other unique identifiers were not required to complete the survey. Finally, all comments written on the survey were anonymous.

Data Analysis

The question for this project was the following: What is the nurse perceived level of confidence, satisfaction, and communication skill in performing neonatal resuscitation following the implementation of simulation, communication, and documentation training using the TeamSTEPPS process? All data for this project were de-identified and anonymous when entered into the Research Electronic Data Capture (REDCap) database. REDCap is a Web-based system for collecting, storing, managing, and reusing data and

protecting them in a secure long-term storage site (Lyon, Garcia-Milian, Norton, & Tennant, 2014). Statistical Package for the Social Sciences (SPSS) Version 21 was used for all analyses. Descriptive data were analyzed using descriptive statistics including mean, frequencies, and standard deviations.

The NLN Confidence and Satisfaction Tool (see Appendix A) is a Likert-scale tool used to self-report psychosocial variables (Grove et al., 2013). The values for each item are summed to obtain a single score and are ordinal-level data (Grove et al., 2013). The tool was given to each participant following the simulation event. The survey results indicated whether there was a perceived feeling of confidence and satisfaction resulting from the neonatal resuscitation performance.

The demographic survey data sheet was a self-report questionnaire form composed of open-ended and closed questions designed to elicit facts about the participants in the program (see Appendix C). The survey included dichotomous yes/no options, fill-ins, and choices that were mutually exclusive. The TPOT tool was a 23-item observational tool used by the DNP student and the CNS with a rating scale from 1 to 5 (see Appendix F). This rating scale is used in projects for observational measurement to guide the data collection process (Grove et al., 2013). This tool was used to indicate the type of communication that occurs during the simulated resuscitation event. The tool was used during the simulated resuscitation events to rate team structure, communication, leadership, situation monitoring, and mutual support of each event. Those areas were

assessed and compared to determine whether additional TeamSTEPPS processes needed to be reviewed.

Project Evaluation Plan

Program evaluation is concerned with determining the impact of a program (Kettner, Moroney, & Martin, 2013). In the program assessment phase, the implementation process was assessed to determine whether the project was implemented according to plan and to identify the impact of the identified barriers and facilitators to implementation (Miake-Lye et al., 2011). The overall benefit to the neonatal population is proportional to the nurses' confidence in initiating neonatal resuscitation and their performance satisfaction. This evaluation included determining whether the nurses in the project had perceptions of satisfaction, confidence, and communication in the resuscitation process. The NLN satisfaction and confidence tool was used immediately after the simulation (see Appendix A).

TeamSTEPPS teambuilding was evaluated during the simulation process (see Appendix F). Evaluation took place during implementation or formative evaluation and after the fact, which is summative evaluation (Kettner et al., 2013). Evaluation of perceived nursing confidence and satisfaction during neonatal resuscitation was assessed during simulation with the TeamSTEPPS communication process as seen in Appendix F.

Strengths of the evaluation process are that it is directly representative of the feelings of preparedness of the nurses in their role in the resuscitation process. The areas to be described in the evaluation process are team structure, communication, leadership,

situation monitoring, and mutual support on a rating scale of 1 to 5. These observations were descriptively evaluated and scores of less than 3 will indicate that there is a need for additional education in those areas. Observing and debriefing the communication process assists in determining whether the nurses are demonstrating their competence in communication and provide other areas for future educational offerings. Short-term outcomes are that the nurses demonstrate feelings of satisfaction and confidence in neonatal resuscitation. Limitations are that the feelings of satisfaction and confidence are dependent on the nurses providing an honest reflection at the end of the simulation event.

Summary

Derived from aviation and military safety training, simulation for interdisciplinary team training has been integrated into clinical training. Knowledge gained from other disciplines' research demonstrates simulation improves teamwork including communication and enhanced behavioral skills (Amin et al., 2013; Soliman et al., 2004; Thomas et al., 2006). Team training with simulation has not been a fully integrated component in continuing education to develop important team building skills for clinical nurses (Aebersold & Tschannen, 2013). With its emphasis on teamwork and communication, simulation was incorporated into neonatal resuscitation in 2007 and has been used to teach all aspects of medical and nursing care, including knowledge, skills, communication, and behavioral training (Chen et al., 2007).

There is conflicting evidence at MHMC whether simulation during neonatal resuscitation has resulted in self-identified perceptions of satisfaction and self-confidence

while performing NRP. Despite TeamSTEPPS being utilized in this institution, this program was not clearly used in the L&D during neonatal resuscitations. As a result, communication and teamwork was fragmented and often the documentation occurred after the resuscitation. The documentation form had also gone under several revisions making the current form unfamiliar to the nurses. Simulation in neonatal resuscitation allows nurses to practice challenging situations for integration of communication and teamwork to improve the delivery of safe and effective care in the neonatal population. My project provided the institution with information as to how their nurses perceive their satisfaction, confidence, and communication in neonatal resuscitation.

Section 4: Findings and Recommendations

The final stage of this project was to evaluate the impact of simulation in neonatal resuscitation training on the self-identified perceptions of confidence, satisfaction, and communication through the TeamSTEPPS approach. The collection of data occurred over a six-month period in which the neonatal and labor and delivery nurses participated in simulation in the neonatal resuscitation process. The project objectives included incorporating the TeamSTEPPS strategies and CRM principles into the NRP process at MHMC, revising the resuscitation documentation form, and assessing the self-identified perceptions by the nurses of their performance of NRP skills.

Team members must be prepared for their roles and responsibilities during neonatal resuscitation. This can be accomplished with education followed by simulated practice. Early studies indicated improved learner confidence and demonstration of end-user evaluation with the implementation of simulation (Aggarwal et al., 2010). The success of simulation does not depend on the level of simulation, low- versus high-fidelity, but how the simulation is used by the participants through a systems approach (Aggarwal et al., 2010). Findings from this project demonstrated simulation-based training in resuscitation can impact neonatal outcomes through improved self-identified perceptions of nursing satisfaction and confidence. Section 4 presents the findings, implications, strengths and limitations, and analysis of self.

Summary of Findings

The purpose of the project was to evaluate the perceptions of confidence, satisfaction, and communication of nurses in performing neonatal resuscitation following the implementation of simulation, communication, and documentation in NRP training. The project included neonatal and labor and delivery nurses in simulated neonatal resuscitation exercises. The question addressed in the study was the following: What is the nurse perceived level of nurse confidence, satisfaction, and communication in performing neonatal resuscitation following the implementation of simulation, communication, and documentation training using the TeamSTEPPS process? Statistical analysis was conducted using SPSS Version 21for Windows. The SPSS program can be used to manage and analyze a large amount of data (Polit & Hungler, 1995). Data were entered into an Excel spreadsheet prior to being imported into the SPSS program.

Demographics

The sample for the project included 61 female nurses (N = 61). The ages of the participants varied from 21 years to 70 years. Descriptive statistics were used to analyze the demographic characteristics and to assist in representing the participants (Polit & Beck, 2008). The characteristics examined were age, assigned unit, highest level of education, number of years in the unit, number of years as a neonatal resuscitation provider, and the number of simulation events that the nurse has participated in over her career. These characteristics were reported as nominal data as frequencies and

percentages. Nominal is the lowest level of measurement and involves the assignment of numbers to classify characteristics into categories (Polit & Beck, 2008).

Most of the nurses identified themselves as 41 to 50 and 51 to 60 years of age. The baccalaureate degree was the most common level of education of these participants. The number of years in their units were identical to the mandated requirements of neonatal resuscitation certification. Most of the participants had fewer than five years of experience with the remaining participants having 16 to 31 years of experience. When asked to describe their simulation experiences, participants reported having more than three experiences. Most of the participants (52.5%) reported experiencing more than three resuscitations in the last 6 months of their employment. Table 1 shows the demographic characteristics.

Participants were also asked on the demographic questionnaire if they felt simulation was a valuable tool. The Likert scale ranged from 0 (highly valuable) to 3 (not valuable). Most participants (60.7%) indicated that they perceived simulation to be highly valuable and 34.4% rated simulation as valuable. As shown in Table 2, 100% of participants felt that simulation improved communication between nurses and physicians and thereby improved patient outcomes.

The first objective of the project was to implement the TeamSTEPPS approach and CRM principles into the NRP process at MHMC. TeamSTEPPS is an evidence-based teamwork system that improves teamwork and communication skills in the professional environment (U.S. Department of Health, 2015). The TPOT tool measures team structure,

leadership, situation monitoring, mutual support, and communication. The tool was used on each team simulation event, and the results were reviewed by the NICU and L&D clinical nurse specialists and brought to the code pink resuscitation committee for review and for future educational events. The TPOT survey includes a 5-point Likert scale that ranges from 1 (very poor) to 5 (excellent) with the maximum score being 125 points (Bremner et al., 2014). The Likert scale measurement is ordered on the basis of the data standing relative to each other (Polit & Hungler, 1995).

The TPOT tool was used in 10 team performances throughout the 6-month period. In each of the performances, the DNP student or CNS reviewer rated the team as a 4 (good) in 16 out of 23 areas. The following areas were rated as a 3 (acceptable): Conducts briefs, huddles, debriefs, serves as role models in teamwork behaviors, monitors the status of the patient, monitors fellow team members to ensure safety and prevent errors, monitors the environment, effectively advocates for patient safety, and uses the two challenge rule to resolve conflicts. The TPOT assessment indicated that in these seven areas 47% of the participants were rated as acceptable. In the other 16 areas, the participants were rated as having a good performance in 100% of the simulated resuscitation events, as shown in Table 3.

The second objective was to revise the resuscitation documentation form based on end-user feedback to completely capture the critical data and information to appropriately describe the resuscitation process. Documentation has been identified as an important function to ensure continuity of care, the process of care, and evaluation of care delivery

(Cheevakasemsook, Chapman, Francis, & Davies, 2006). The ILCOR advisory statement about the resuscitation of the newly born infant noted that competent clinical care requires good communication among the team and that findings and the resuscitation of the infant at delivery requires full documentation (Kattwinkel et al., 1999). Standardization of documentation requires hospitals to collect the data of high-risk resuscitations and their outcomes, aggregate and analyze the data, identify undesirable patterns or trends in performance, and use this data analysis to make changes that will affect patient outcomes and reduce the incidence of sentinel events (The Joint Commission, 2012). The revision process took 9 months to complete. The original documentation form was used, through a simulation of the documentation process, by nurses in a minor resuscitation scenario and in a critical resuscitation scenario that included chest compressions, intubation, and medications.

Following the completion of these simulation events by 200 nurses, comments, suggestions, and complaints were compiled and brought forth to the document revision committee, which was responsible for the development of the resuscitation form. Changes were then made to the documentation form based on the end-user comments with physician and legal input. Then, the new documentation form was reinstituted after one-on-one education was completed by each nurse in the NICU and L&D areas. The updated form was incorporated into the resuscitation simulation scenarios that were completed in the project.

The third objective was to assess the nurse perception of satisfaction in the performance of their NRP skills following the TeamSTEPPS informed education and simulated resuscitation practice during the resuscitation recertification. The Student Self-Confidence and Satisfaction Scale was used to collect data on self-confidence and satisfaction related to simulation. Self-confidence and satisfaction were measured on a 5-point Likert scale that ranged from 1 (strongly disagree) to 5 (strongly agree). Reliability measurement of this tool using Cronbach's alpha was 0.94 (Jeffries, 2007).

Descriptive statistics were used to analyze the participant responses on the satisfaction subscale of the Student Satisfaction and Self-Confidence in Learning Scale. Descriptive statistics, means of self-confidence and satisfaction, and standard deviations were calculated to determine how self-confident and satisfied nurses were at the completion of the simulation. The scores for the subscale ranged from 2 (disagreed with statement) to 4 (agreed with the statement). The overall mean score was 3.67 (*SD* = 0.50), which indicated that 50% of the nurses were satisfied with learning from the simulation activity, as shown in Table 4.

Descriptive statistics were used to analyze participants' responses on the self-confidence in learning subscale of the Student Satisfaction and Self-Confidence in Learning Scale, an 8-item instrument measuring self-confidence in the performance of skills and the care of a neonate in neonatal resuscitation. Content validity was established by clinical experts in nursing and has a Cronbach's alpha score of 0.87 (Jeffries, 2007). Participants' scores for the confidence subscale ranged from 2 (disagreed with the

statement) to 4 (agreed with the statement). The overall mean score was 3.16 (*SD* =0.49), which indicated that 49% of the nurses felt self-confident in their ability to be prepared for neonatal resuscitation following this simulation event.

Discussion of Findings in the Context of the Literature

Simulation training is a demonstrated method to effectively build confidence, critical thinking skills, and recreate a clinical scenario in a nonthreatening environment (Birkhoff & Donner, 2010; Halamak, 2008; Jeffries, 2005). Following the ILCOR Consensus Guidelines in 2010 recommending simulation in resuscitation education, about 80% of the NICUs utilize simulation in neonatal resuscitation training (Edwards et al., 2015). Teamwork behaviors, as measured through the TPOT assessment, demonstrated good teamwork (Halamak, 2008). However, Curran (2004) and Bender et al. (2014) reported no significant differences in teamwork behaviors and a lack of sustained skill performance.

Documentation as reported by Allan, Bell, and Pittard (2011) improved with the use of a template that was updated by the nursing end-user. Repeated educational events with simulation scenarios permitted nurses to increase their exposure to the form and to practice their skills in documentation. When documentation was viewed in my project, debriefing indicated an increase in comfort with the form. The NLN recommends educators use learning environments that incorporate simulation activities. Satisfaction in learning increases performance and places learners in clinical simulation that increase their ability to problem-solve and critically think (Jeffries, 2007). This project found 49%

of the respondents were confident and 50% experienced satisfaction in the simulation experience. Mixed responses to confidence and satisfaction may be a result of inexperience in neonatal resuscitations even within an experienced group of neonatal nurses.

Implications Policy

Nursing policy should be updated to reflect contemporary nursing education and training knowledge derived from studies and projects such as this one. Overall, the results from this project are consistent with *The Future of Nursing* (IOM, 2010) recommendation that nurses practice to the full extent of their education and training. Stakeholders in this project included neonates and their families, nurses, nurse practitioners, and neonatologists. Education and inclusion of personnel can result in improved health care delivery systems (Sekar, 2010).

Simulation in neonatal resuscitation is now recommended in the NRP (6^{th} edition) (AHA/AAP, 2012a). This project demonstrated the need for continued communication training specific to teamwork using TeamSTEPPS strategies. The MHMC maternal child division has adopted the policy of utilizing simulation in neonatal resuscitation training of all registered nurses. Neonatal resuscitation training will continue every two years and there is discussion through the resuscitation team meetings of developing additional TeamSTEPPS training for communication and collaboration among the resuscitation team.

Practice

The project question is: What is the nurse perceived level of confidence, satisfaction, and communication skill in performing neonatal resuscitation following the implementation of simulation, communication, and documentation training informed by TeamSTEPPS?

The project question was evaluated with a descriptive analysis of participant perceptions of confidence, satisfaction, and communication in their performance following a simulation participation of neonatal resuscitation. The institution has utilized some simulation over the last several years for neonatal resuscitation but this current renewal of certification cycle fully embraced simulation with active debriefing.

The documentation form was revised with extensive feedback from the end-users and beta tested over a year-long period following one-on-one training of the nurses through a normal resuscitation and a critical resuscitation practice scenario. The input from these experiences informed the document revision. Comprehensive instructor training and reviewed TeamSTEPPS approaches and debriefing principles occurred prior to the biannual renewal period for neonatal resuscitation. The simulation conducted during the biannual resuscitation renewal highlighted self-identified strengths and weaknesses of the nursing staff. Potential division policy changes include mentoring new employees with experienced nurses when they participated in neonatal resuscitation.

Future practice may benefit from establishing a core group of nurses who participate in regular neonatal resuscitation practices; thereby, maintaining a high skill

level. Every maternal child nurse is required to renew their NRP provider status every two years but the daily practice competency is not assured by the renewal process as demonstrated by this project. Despite the multiple episodes of simulation exposure, many nurses, both inexperienced and experienced, are not routinely exposure to the neonatal resuscitation events. Although this reflects a robust high-risk clinical program, nurses are unable to maintain their competency at levels to self-identify as being confident and satisfied. Regularly scheduled simulation practice in neonatal resuscitation is a solution to this debacle. As such, simulated resuscitation practice should be minimally scheduled annually beyond the biannual recertification. This strategy will potentially maintain the competency of nurses with limited exposure and improve their satisfaction and confidence.

Further education needs to be conducted in the maternal child division as demonstrated through the TPOT scale of the TeamSTEPPS principles. These include briefs, debriefs, huddles, serving as a role model in teamwork behaviors, monitoring the status of the patient, monitoring fellow team members to ensure safety and prevent errors, monitoring the environment, effectively advocating for patient safety, and utilizing the two challenge rule to resolve conflicts. This institution is a TeamSTEPPS master training center but the maternal child division requires additional training on communication and teamwork principles within the resuscitation process. Additional education and training practice is needed to improve teamwork behaviors to improve patient safety and outcomes.

Research

Research, or the systematic application of a scientific method to answer questions or solve problems (Polit, 2010), needs to be conducted to determine the levels of confidence and satisfaction in neonatal resuscitation that increase with clinical experience, additional exposure to resuscitation events, more simulated practice events, or a combination. This project demonstrated that the participants reported the simulation experience was valuable. Despite this fact, the project also found many of these nurses were inexperienced and those with experience had infrequent exposure to neonatal resuscitation events. Future research would involve determining whether the increase in simulation resuscitation events not only translates into self-identified feelings of confidence and satisfaction but in team building skills.

Social Change

Simulation in health professional education has become the standard of care demonstrated to be effective in high-risk environments (Lindamood & Weinstock, 2011). Neonatal resuscitation occurs in a complex and chaotic environment that requires the assimilation of cognitive, behavioral, and psychomotor skills under pressure for effective clinical practice (Halamek, 2008). Nurses should be skilled in resuscitation through practice in a realistic but reduced stress environment with the integration of group dynamics afforded by simulation. In this simulated environment, mistakes and errors become formative learning experiences shaped by debriefings and group feedback sessions (Mundell et al., 2013). Timely and effective resuscitation results in improved

neonatal outcomes, including preventing permanent deficits. Furthermore, nurses skilled in neonatal resuscitation can positively influence the birthing experience of the family in these high-risk situations. Enhanced teamwork, improved coordination, and effective communication during the resuscitation process results in safe and effective care. Through the increased confidence and competence in resuscitation performance, nurses are continuously translating evidence-base into practices with simulation resulting in better patient and organization outcomes.

Project Strengths and Limitations

Strengths

Recertification in neonatal resuscitation is a biannual requirement for employment in the maternal child department at MHMC. Implementation of simulation has been introduced within the past several years, but no data has been collected on whether the nurses felt simulation helped to improve their confidence and satisfaction in performing NRP resuscitation. Strengths of this project are nurses were eager to participate, with 61 nurses participating. The nurses verbally expressed appreciation for the learning format, and although nervous at the beginning of the process, felt that simulation improved their ability to make mistakes without the consequences of those mistakes. Additionally, conducting the simulation with practitioners who functioned as team leaders was beneficial in improving dialogue, comments, and suggestions. For example, once the resuscitation documentation was changed, the nursing staff began to ask for additional information to thoroughly complete these forms, which represented a change for all team

members. Some practitioners have expressed a source of irritation at being interrupted during the resuscitation process. Once the simulation progressed, these practitioners realized the recorder role is challenging and requires experience in obtaining the required information during the resuscitation process. As a result, the dialogue allowed the free expression of each team member so that conflicts could be resolved outside of the high stress environment.

Limitations

A principle project limitation is that implementation occurred in one area at a single urban tertiary medical center. The data collection is a snapshot obtained over a six-month period of time. Additionally, stress and its impact on performance in the simulation environment is difficult to determine. The project needs to be replicated in order to support or contradict the findings. Another limitation is that the sample population for the project was small at 61 nurses, as participation in the project was voluntary. The last limitation, which is also a strength, is that prior studies identified focused on nursing education related to simulation in neonatal resuscitation.

Recommendations for Remediation of Limitations in Future Work

The project findings provide a snapshot of one unit and are not meant to be generalized. Explicit strategies are required to improve new nurse identified perceptions of satisfaction and confidence in neonatal resuscitation. Future work in simulation to train nurses in infrequent but high-risk events, such as neonatal resuscitation, is needed to maintain competency and improve performance. Conducting future studies on team

training and clinical performance in resuscitation events is necessary in order to determine the strengths and weaknesses of the team in high-stress environments.

Analysis of Self

As Scholar

With the development of the project, I have gained extensive experience in not only the process of project design but in my knowledge of simulation, neonatal resuscitation, and structured education of experienced neonatal and labor and delivery room nurses. My educational preparation for the completion of the project has been extensive, but despite the preparation, the process was daunting at times. The ability to address complex practice questions requires a strong foundation of practice (American Association of Colleges of Nursing (AACN), 2006). My scholarship journey is represented through the AACN essentials with the completion of a clinical project that demonstrates a synthesis of these essentials and lays the groundwork for future scholarship (AACN, 2006). As outlined in Essential One of scientific underpinnings for practice, I have been able to integrate nursing science, science-based theories and concepts, and develop new practice approaches utilizing nursing and non-nursing theories (AACN, 2006). The educational journey with the project has required me to integrate and develop my skills related to nursing as a science and as an art (Zaccagnini & White, 2011). My primary development has been in navigating the application of systems thinking to the health care environment through micro and macro systems (Zaccagnini &

White, 2011). The scholarly approach to the DNP project will serve as a foundation for future scholarly practice and inquiry.

As Practitioner

Throughout the development of the project, I have become more adept at my nursing craft. I have become immersed in neonatal resuscitation, simulation principles, and the education of experienced nurses. I have had extensive nursing experience in a neonatal intensive care unit but the project has helped to develop my leadership skills. I have been able to translate the evidence-based practices related to simulation and neonatal resuscitation from educational principles into practice, which impacts present and future nursing practice and positively impact patient outcomes. By emphasizing the TeamSTEPPS approach in the project, these principles will be able to be translated into positive nursing and health care team members' behaviors and performance. As outlined in the DNP Essentials Two, I have developed my communication skills to be able to lead in quality improvement and patient safety initiatives in health care systems (AACN, 2006). I was able to mesh leadership and improved evidence-based practices with the implementation of my project that positively impacted other health care practitioners. The implementation and completion of the project has been crucial in my development as an advanced practice practitioner.

As Project Developer

As a project developer, I have learned to navigate organizational systems and the impact of both micro and macro forces on these systems. The area of project developer

was the area in which I saw the most growth in my development. Prior to the project, I was part of many committees that implemented projects and evaluated their outcomes. The development of my own project was very challenging and one in which I have learned a great deal. As a project developer, I have learned to navigate the multi-tiered health care environment to improve the vulnerable neonatal population's health outcomes at the most critical time in their lives. Through the DNP Essential Six, I have been able to learn to collaborate with a variety of disciplines to improve patient outcomes through team development, participation, and leadership (AACN, 2006). As the project developer, I learned the importance of each stakeholder and their contributions to the project's success. The improvements in care delivery require each stakeholder's investment in the project and a coordination of the organizational structure. As a program developer, I was able with the guidance of my mentor, to accomplish integration, coordination, and implementation of this project.

Future Professional Development

As a professional and as a scholar I have demonstrated a lifelong commitment to reflective learning and the application of new knowledge as well as to teaching others (Aargawal et al., 2010). Throughout this process, I have been able to reinforce existing knowledge I have developed over thirty years of working in neonatal nursing, as well as learning to apply new knowledge in my didactic and clinical practice. Simulation involves reflective learning by the participant and it has been important to encourage the embracement of simulation as a tool to aid in learning across the cognitive, behavioral,

and psychomotor competencies (Aargawal et al., 2010). As a professional, I have dedicated my career to the education of future and current nurses. I have demonstrated a commitment to nursing through my ethical practice and high standards of behavior.

My biggest professional development has been in the area of project leadership. As a life-long educator, my realm has been in individual or course development, implementation, and evaluation. Designing a project with my mentor was not as challenging as building a team of stakeholders. All parties involved in this process at this institution were motivated. By utilizing the SWOT analysis, I was able to "exploit strengths, compensate for weaknesses, exploit opportunities, mitigate threats, and communicate essential information "to those involved in the project (White & Dudley-Brown, 2012, p. 219).

At the beginning of the project, the redesigning of the code pink documentation sheet required a large input from the nursing staff, practitioners, the legal department, and management. The redesigned documentation form required extensive in servicing and re-education before the newly updated form was instituted. Once the form was instituted, preparations were made for neonatal resuscitation instructors to have an update on the new documentation form, consistency in the simulation process, and changes instituted by the American Heart Association and the American Academy of Pediatrics in regards to NRP. The project then began once IRB approval was obtained from MHMC and Walden University. The flow of the project occurred very smoothly and nurses were invited to participate in the data collection process.

Summary and Conclusions

The purpose of the project was to evaluate the self-identified nurse perceptions of confidence, satisfaction, and communication of nurses in performing neonatal resuscitation following the implementation of simulation, communication, and documentation in NRP training. Analysis of the results indicated that about half of the participating nurses identified simulation in the practice setting of neonatal resuscitation recertification increased their perceptions of confidence, satisfaction, and communication through the health care team.

The project was structured so that during the implementation phase education was provided on the newly designed resuscitation documentation. The Joint Commission, previously known as the Joint Commission on the Accreditation of Health Care Organizations, reported that between 1995 and 2004 there were approximately 3,000 sentinel events that were attributed to poor communication (Aggarwal et al., 2010). The Institute of Medicine (IOM) recommends that health care professionals utilize interprofessional training as a patient safety strategy to address poor communication (IOM, 2003). TeamSTEPPS core competencies include team leadership skills that includes directing and coordinating activities of team members, assessing team performance, assigning tasks, developing team knowledge and skills, motivating team members, planning and organizing, and establishing a positive team atmosphere (Aggarwal et al., 2010).

Section 5: Dissemination Plan

Dissemination strategies involve delivering the information, evidence, or interventions in a different manner within or across geographic locations or practice settings (Agency for Healthcare Research, 2013). There is a critical need for nurses to disseminate their evaluations of their evidence to indicate whether their interventions have demonstrated an effectiveness or change in practice (Oermann & Hays, 2016). Dissemination is the translation of evidence for change to occur at the bedside and innovations adopted (White & Dudley-Brown, 2012). Dissemination can occur at multiple levels, including poster presentation, oral presentations, and publications (White & Dudley-Brown, 2012). My dissemination plan is to present the findings in a poster presentation, considered to be a first level of dissemination, to the research conference at MHMC to provide the participating nurses with the results (see Appendix G). Then, the project abstract will be submitted to a national or international nursing conference for oral presentation, the second level of dissemination. Finally, the project paper will be revised and formatted for publication in either, *Nursing Education Perspectives*, *Journal of Nursing Education*, or *Nurse Education in Practice*, the third level of dissemination. The project and evidence compiled with the research from the National League for Nursing in their simulation research indicated that simulation improves the confidence and satisfaction of nurses in performing their daily care.

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Figure 1

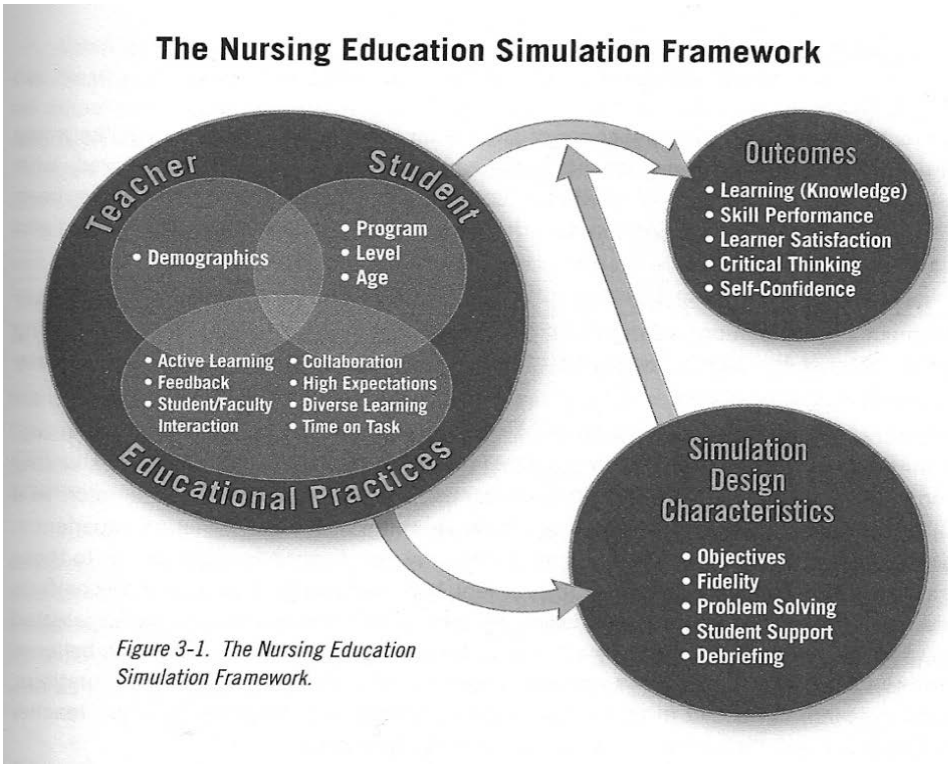

Figure 1. The nursing education simulation framework. Adapted from "The Nursing Education Simulation Framework," by P. R. Jeffries, 2007, *Simulation in Nursing Education: From Conceptualization to Evaluation*, p.23. Copyright 2007 by the National League for Nursing. Reproduced with permission.

Table 1

Demographic Characteristics

Characteristics	Response Options	Frequency	Percent
Current Age	No Response	1	1.6
	21-30 years	15	24.6
	31-40 years	9	14.8
	41-50 years	20	32.8
	51-60 years	15	24.6
	61-70 years	1	1.6
Total		61	100.0
Highest Degree in Nursing	Diploma	6	9.8
	Associate Degree	15	24.6
	Baccalaureate	35	57.4
	Master's	2	3.3
	Other	2	4.9
Total		61	100.0
Number of Years in Unit (Numbers of Years NRP Certified)	None	2	3.3
	Less than 1 year	24	39.3
	1-5 years	10	16.4
	6-10 years	3	4.8
	11-15 years	3	4.9
	16-20 years	3	4.8
	21-25 years	5	8.2
	26-30 years	10	16.4
	Over 31 years	1	1.6
Total		61	100.0
Number of Simulation Events	None	5	8.2
	1-3 events	22	26.1
	Greater than 3 events	34	55.7
Total		61	100.0
Number of Neonatal Resuscitations (last 6 months)	None	20	32.8
	1-5 resuscitations	9	14.8
	6-10 resuscitations	2	3.3
	Over 10 resuscitations	30	49.2
Total		61	100.0

Table 2

Demographic Statistics for Value and Improved Communication

Scale Content	Value	Frequency	Percent
Simulation Has Value	0	37	60.7
	1	21	34.4
	2	3	4.9
Total		61	100.0
Simulation Improves Communication	1		100.0
	2		0.0
Total		60	100.0

Table 3

Team Performance Observation Tool

	N	Minimum	Maximum	Mean	Std.
Team Structure					
Assembles team	10	4	4	4.00	.00
Assigns team roles	10	4	4	4.00	.00
Holds team accountable	10	4	4	4.00	.00
Includes patients and families	10	4	4	4.00	.00
Communication					
Provides brief, clear information	10	4	4	4.00	.00
Seeks information	10	4	4	4.00	.00
Uses check-backs	10	4	4	4.00	.00
Uses SBAR, call-outs, and handoffs	10	4	4	4.00	.00
Leadership					
Identifies goals and vision	10	4	4	4.00	.00
Uses resources efficiently	10	4	4	4.00	.00
Balances workload	10	4	4	4.00	.00
Delegates tasks	10	4	4	4.00	.00
Conducts briefs, huddles, and debriefs	10	3	4	3.69	.47
Role models and behaviors	10	3	4	3.69	.47
Situation Monitoring					
Monitors patient	10	3	4	3.69	.47
Monitors team members	10	3	4	3.69	.47
Monitors environment	10	3	4	3.69	.47
Monitors progress	10	3	4	3.69	.47
Fosters communication	10	4	4	4.00	.00
Mutual Support					
Provides task-related assistance	10	4	4	4.00	.00
Provides feedback	10	4	4	4.00	.00
Effectively advocates for patient	10	4	4	4.00	.00
Uses Two-Challenge Rule	10	3	4	3.69	.47

Table 4

Descriptive Statistics for Satisfaction

Scale Content	*N*	Minimum	Maximum	Mean	Std.
Methods Helped	61	3	4	3.72	.452
Promoted Learning	61	2	4	3.66	.513
Enjoyed Instructor In Simulation	60	2	4	3.68	.537
Teaching Motivation	61	2	4	3.62	.522
Suitability With Instructor	60	2	4	3.70	.497

Table 5

Descriptive Statistics for Self-Confidence in Learning

Scale Content	*N*	Minimum	Maximum	Mean	Std.
Content Mastery	60	3	4	3.40	.494
Critical Content	59	3	4	3.63	.488
Skills and Knowledge	61	2	4	3.49	.566
Utilization of Resources	61	3	4	3.74	.444
Student Responsibility	61	3	4	3.70	.460
Seeking Assistance	61	3	4	3.67	.473
Utilization to Obtain Critical Areas	61	2	4	3.67	.507
Instructor Responsibility	59	2	4	3.67	.507
Valid *N*	59				

Appendix A

Student Satisfaction and Self-Confidence in Learning

Instructions: This questionnaire is a series of statements about your personal attitudes about the instruction you receive during your simulation activity. Each item represents a statement about your attitude toward your satisfaction with learning and self-confidence in obtaining the instruction you need. There are no right or wrong answers. You will probably agree with some of the statements and disagree with others. Please indicate your own personal feelings about each statement below by marking the numbers that best describe your attitude or beliefs. Please be truthful and describe your attitude as it really is, not what you would like for it to be. This is anonymous with the results being compiled as a group, not individually.

Mark:
1 = STRONGLY DISAGREE with the statement
2 = DISAGREE with the statement
3 = UNDECIDED - you neither agree or disagree with the statement
4 = AGREE with the statement
5 = STRONGLY AGREE with the statement

Satisfaction with Current Learning	**SD**	**D**	**UN**	**A**	**SA**
1. The teaching methods used in this simulation were helpful and effective.	O 1	O 2	O 3	O 4	O 5
2. The simulation provided me with a variety of learning materials and activities to promote my learning the medical surgical curriculum.	O 1	O 2	O 3	O 4	O 5
3. I enjoyed how my instructor taught the simulation.	O 1	O 2	O 3	O 4	O 5
4. The teaching materials used in this simulation were motivating and helped me to learn.	O 1	O 2	O 3	O 4	O 5
5. The way my instructor(s) taught the simulation was suitable to the way I learn.	O 1	O 2	O 3	O 4	O 5
Self-confidence in Learning	**SD**	**D**	**UN**	**A**	**SA**
6. I am confident that I am mastering the content of the simulation activity that my instructors presented to me.	O 1	O 2	O 3	O 4	O 5
7. I am confident that this simulation covered critical content necessary for the mastery of medical surgical curriculum.	O 1	O 2	O 3	O 4	O 5
8. I am confident that I am developing the skills and obtaining the required knowledge from this simulation to perform necessary tasks in a clinical setting	O 1	O 2	O 3	O 4	O 5
9. My instructors used helpful resources to teach the simulation.	O 1	O 2	O 3	O 4	O 5
10. It is my responsibility as the student to learn what I need to know from this simulation activity.	O 1	O 2	O 3	O 4	O 5
11. I know how to get help when I do not understand the concepts covered in the simulation.	O 1	O 2	O 3	O 4	O 5
12. I know how to use simulation activities to learn critical aspects of these skills.	O 1	O 2	O 3	O 4	O 5
13. It is the instructor's responsibility to tell me what I need to learn of the simulation activity content during class time..	O 1	O 2	O 3	O 4	O 5

 Revised December 22, 2004

Appendix B

Letter Requesting Participation in Study

Title: IMPROVING NEONATAL RESUSCITATION

You are being asked to participate in a project to evaluate the effectiveness of human patient simulation on NICU nurses' self-confidence and satisfaction in neonatal resuscitation. **Participating in this study is voluntary**. Your involvement will include answering surveys immediately before the simulation and at the conclusion of the day. Surveys will be handed out and then returned directly to the project staff as soon as they are completed. It will take you approximately 15 minutes to complete the surveys. Your name will not appear on any of the surveys so your comments will remain completely anonymous and confidential. By completing and returning the surveys, you are giving consent to participate.

Risks of participating in this study are minimal, but include breech of privacy or discomfort answering some of the questions. However, you may complete the surveys in a private place and may skip any questions you do not wish to answer.

There is no direct benefit to the participants or those conducting the study. However, the knowledge gained from these surveys will provide necessary information in determining the effectiveness of using simulation in neonatal resuscitation to assist nurses interacting with a multidisciplinary team in managing a crisis situation.

There is no cost to you for participation in this study.

You will not be paid or compensated for your participation in this study. No compensation for treatment is available if injury occurs.
If you do not wish to participate in this study, then simply do not complete the surveys.

You are not obligated to participate in this study; your participation is completely voluntary. Your decision to participate or not, will have no bearing on your employment. Your employer, supervisors, and co-workers will not be notified of your choice to participate or not participate in this study, nor will they have access to your responses to the survey questions. If you choose to participate, you may withdraw yourself from the study at any time.

If you have any questions about your rights as a research participant, or if you wish to express any concerns or complaints please contact the MetroHealth Center's Institutional

Review Board (which is a group of people who review the research to protect your rights) at 216-778 XXXX.

OPTIONAL: Please note that per Federal Regulations, we are allowing a space for your signature if YOU DO WISH for your name to be linked with this study. Please keep in mind that it is OPTIONAL to have your name linked to this project. If you do prefer documentation linking you to the project, you may sign and date this cover sheet below. It may be returned separately from your survey. Please make a copy for your records. If you wish participate anonymously, please disregard this page.

Appendix C

Demographic Survey Data Sheet

Date_____

1. Age Category

20-30	51-60
31-40	61-70
41-50	>70

2. Highest degree held_____
3. Number of years working in the NICU_____
4. Number of years as NRP Provider if different than years in NICU
5. How many education experiences have you had using simulation?

   None 1-2 3 or more

6. Do you think simulation is a valuable tool to assess clinical competency?

   Highly valuable

   Valuable

   Neutral

   Not valuable

7. Do you think simulation can help to improve communication between nurses and physicians and improve patient outcomes?

   Yes No

8. How many Code Pink/Delivery room situations have you been involved in over the past 6 months? _____

Appendix D

National League for Nursing

December 9, 2015

Kathryn Rudd
4514 Brooklyn Ave.
Cleveland, Ohio 44109

Dear Ms. Rudd,

The NLN has received your request for permission to use the figure of the NLN/Jeffries Simulation Framework within your capstone project at Walden University. We are pleased to grant you copyright permission according to the following.

"The NLN/Jeffries Simulation Framework," developed as part of the 2003-2006 NLN/Laerdal Simulation Study and most recently published on page 37 of the work noted below, may be used within your project paper for the dissertation, *The Nursing Education Simulation Framework*.

Jeffries, P. R. (Ed.) (2012). Simulation in nursing education: From conceptualization to evaluation. New York, NY: National League for Nursing.

In granting permission to use this Framework, it is understood that the following assumptions operate and "caveats" will be respected.

- The Framework will only be used for the purpose outlined above.
- The Framework will be included in its entirety and not modified in any way.
- The National League for Nursing is the sole owner of these rights being granted.
- No fees are being charged for this permission.

Regards,

M. Elaine Tagliareni, EdD, RN, CNE, FAAN
Chief Program Officer

Appendix E

The Voice of Nursing Education

National League
for **Nursing**

Tools and Instruments

Use of NLN Surveys and Research Instruments

The NLN's copyrighted surveys and research instruments are an important part of its research activities.

Permission for non-commercial use of surveys and research instruments (includes, theses, dissertations, and DNP projects) is granted free of charge. Available instruments may be downloaded and used by individual researchers for non-commercial use only with the retention of the NLN copyright statement. The researcher does not need to contact the NLN for specific permission. In granting permission for non-commercial use, it is understood that the following caveats will be respected by the researcher:

1. It is the sole responsibility of the researcher to determine whether the **NLN** research instrument is appropriate to her or his particular study.
2. Modifications to a survey/instrument may affect the reliability and/or validity of results. Any modifications made to a survey/instrument are the sole responsibility of the researcher.
3. When published or printed, any research findings produced using an NLN survey/instrument must be properly cited. If the content of the NLN survey/instrument was modified in any way, this must also be clearly indicated in the text, footnotes and endnotes of all materials where findings are published or printed.

Permission for commercial use of NLN surveys and research instruments must be obtained from the **NLN.** Commercial use includes publishing in journals, books, or inclusion in any product that is sold. Please submit a written request to copyrightpermissionnln.org. In most instances, requests for permission are reviewed within 4 weeks of their receipt.

Appendix F

TeamSTEPPS® 2.0

Team Performance Observation Tool

Date: _____
Unit/Department: _____
Team: _____
Shift: _____

Rating Scale
Please comment if 1 or 2.

1 = Very Poor
2 = Poor
3 = Acceptable
4 = Good
5 = Excellent

1. Team Structure	**Rating**
a. Assembles a team	
b. Assigns or identifies team members' roles and responsibilities	
c. Holds team members accountable	
d. Includes patients and families as part of the team	
Comments: **Overall Rating – Team Structure**	
2. Communication	**Rating**
a. Provides brief, clear, specific, and timely information to team members	
b. Seeks information from all available sources	
c. Uses check-backs to verify information that is communicated	
d. Uses SBAR, call-outs, and handoff techniques to communicate effectively with team members	
Comments: **Overall Rating – Communication**	
3. Leadership	**Rating**
a. Identifies team goals and vision	
b. Uses resources efficiently to maximize team performance	
c. Balances workload within the team	
d. Delegates tasks or assignments, as appropriate	
e. Conducts briefs, huddles, and debriefs	
f. Role models teamwork behaviors	
Comments: **Overall Rating – Leadership**	
4. Situation Monitoring	**Rating**
a. Monitors the status of the patient	
b. Monitors fellow team members to ensure safety and prevent errors	
c. Monitors the environment for safety and availability of resources (e.g., equipment)	
d. Monitors progress toward the goal and identifies changes that could alter the plan of care	
e. Fosters communication to ensure that team members have a shared mental model	
Comments: **Overall Rating – Situation Monitoring**	
5. Mutual Support	**Rating**
a. Provides task-related support and assistance	
b. Provides timely and constructive feedback to team members	
c. Effectively advocates for patient safety using the Assertive Statement, Two-Challenge Rule, or CUS	
d. Uses the Two-Challenge Rule or DESC Script to resolve conflict	
Comments: **Overall Rating – Mutual Support**	
TEAM PERFORMANCE RATING	

Impact of Simulation on Satisfaction, Confidence, and Communication on Nurses' Performance in Neonatal Resuscitation

Background

MetroHealth is a large publicly owned health system delivering 3,066 newborns per year and supports a 49-bed level three neonatal intensive care unit (NICU) (MetroHealth, 2015).

Every team member of the Maternal Child division, which includes over 200 nurses, neonatal nurse practitioners, residents, and physicians must renew their certification in neonatal resuscitation every two years.

In 2011, the Sixth Edition of the Neonatal Resuscitation Program (NRP) mandated the use of simulation as an educational model for recertification.

Nurses must be prepared to function with clear communication and be a functioning member of the resuscitation team to provide competent care to neonatal patients during the resuscitation process at MetroHealth Medical Center.

Objectives

1. Implement the TeamSTEPPS® and crew resource management principles into the NRP process.
2. Revise the code pink documentation form based on end-users suggestions.
3. Assess the self-identified feelings of preparedness of nurses in the performance of their NRP skills following the institution of simulation in the resuscitation education.

Abstract

The goal of the project is to evaluate the effect of simulation in developing satisfaction, confidence, and communication in nurses' performance in neonatal resuscitation. The project utilized a posttest one group design with a sample of 61 Maternal Child nurses who were renewing their biannual certification in neonatal resuscitation. Tools used were The National League for Nursing Confidence and Satisfaction Tool, a Demographic Survey Data Sheet, and the Team Performance Observation Tool (TPOT) from TeamSTEPPS. The results indicated that 49% of the nurses felt confident, 50% identified satisfaction with simulation, and communication and team behaviors need to improve in the resuscitation process. The project contributes to social change by providing real-life scenarios and a practice environment that allows nurses to practice challenging situations for integration of communication and teamwork to improve the delivery of safe and effective care in the neonatal population

Evaluation Plan

The NLN satisfaction and confidence tool was used immediately following the simulation evaluating whether the nurses felt prepared to perform their resuscitation skills.

The demographic survey highlighted the experience, educational level, and exposure to neonatal resuscitation simulation events and real scenarios in their daily employment.

The TPOT tool was utilized during the simulation event to determine team behaviors, communication, and response to each other and the simulated neonate.

Results

1. Ages of participants were between 21-70 years of age, with majority between 41-60 years (57.4%).
2. Majority (57.4%) were baccalaureate prepared.
3. Fifty-five percent of nurses had less than five years of experience with the remaining 24.6% having more than 20 years of experience.
4. Fifty-five percent stated that they had had more than three simulation events in their career and 49.2% indicated they had 10 or more NRP real events in the last six months.
5. 50% of the nurses indicated satisfaction in the performance of their NRP skills and 49% indicated that they were confident in their performance of NRP skills.
6. Team behaviors and performance indicated that the conducting of briefs, huddles, and debriefs, serves as role models in teamwork behaviors, monitors the status of the patient, monitors fellow team members to ensure safety and prevent errors, monitors the environment, effectively advocates for patient safety, and uses the two challenge rule to resolve conflicts were rated as acceptable. These areas are the area of future educational events

Design, Conceptual, and Theoretical Framework

Design: Descriptive evaluation of a posttest one group design.

Conceptual framework: John's Hopkins nursing evidence-based practice model is the conceptual framework for the project.

Theoretical Framework: The project utilized the Knowles adult learning theory within the National League for Nursing/Jeffries.

Data Collection/Methods

Data Collection: Post simulation data was gathered over a six month period following a mock code scenario.
Instruments:

1. A demographic survey was administered to 61 nurses.
2. A Student Satisfaction and Self-Confidence in Learning Scale from the NLN.
3. TeamSTEPPS® Performance Observation Tool (TPOT)

Social Impact and Change

Prompt and effective resuscitation will result in an improvement of the delivery of safe and effective care to neonates.

Nurses skilled in neonatal resuscitation can positively influence the birthing experience of the family in this high-risk situation.

Nurses able to translate evidence-based practices with simulation and neonatal resuscitation into practice will positively impact present and future nursing practice and outcomes.