The New RN and Emergency Patient Care Scenarios: How Simulation Can Help

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Abstract

Failure to rescue a patient that is experiencing deteriorating symptoms is a major cause of mortality in the acute care settings. The nurse is at the forefront of prevention and recognition of patient distress. Failure to rescue patients that are displaying symptoms of deterioration is becoming a national crisis due to treatment complications and missed signs and symptoms of impending arrest [1]. New nurse graduates must have additional training to assist them in the recognition of the signs of impending crisis. This paper will discuss the need for additional training after nursing school to address this issue and assist the new graduate nurse in their transition to practice. The development of a New Graduate Nurse simulation education program for Littleton Regional Healthcare and their Alliance Hospitals was the primary focus of this project. *PICOT*: *How will the use of simulated emergency scenarios with intermittent audit/feedback impact the knowledge level and clinical reasoning of new nurse graduates in an acute care setting?* High Fidelity Simulation patient scenarios of impending crisis were developed for a 4-hour educational workshop. New nurse graduates with under 2.5 years experience attended the training with results showing that high fidelity simulation training scenarios with intermittent audit feedback assisted the new nurses to recognize signs and symptoms of impending crisis, how to develop skills to work as a team member, and gave them more confidence in reporting mistakes and voicing concerns. The literature search completed for this study shows that the new graduate nurse needs to develop clinical reasoning skills and gain experience on how to respond to patients with clinical emergencies and simulation can assist with this knowledge to practice gap [2].

Subject Areas

Simulation Education, Nursing

1. The New RN and Emergency Patient Care Scenarios

1.1. How Simulation Can Help

It is important for nurses to recognize and respond appropriately to patients that are experiencing deteriorating symptoms and pending emergency situations. The new graduate nurse needs to develop these skills and gain experience. Research points to new graduate nurses as lacking clinical reasoning skills to detect deterioration in their patients, which results in critical patient incidents and negative patient outcomes [2].

The new graduate RN and the use of simulation training to assist with the process of clinical reasoning skill development are important so that the new RN can gain the necessary assessment skills to respond to patient clinical emergencies. Nurses need to recognize and respond appropriately to patients that are experiencing deteriorating symptoms and potential emergency situations.

The development of a New Graduate Nurse simulation education program for Littleton Regional Healthcare was the primary focus of this project. The Northern Alliance Hospital Association, which includes Littleton Regional Healthcare, Weeks Medical Center, Androscoggin Valley Hospital and Upper Connecticut Valley Hospital, will utilize the new graduate simulation program that is the result of this project.

1.2. Significance of Practice Problem

Failure to rescue a patient that is experiencing deteriorating symptoms is a major cause of mortality in the acute care settings. The recognition of patients experiencing deteriorating symptoms often lands on the medical surgical nurse. These nurses need to feel confident in caring for acutely ill patients and they may not get the needed experience by the time they arrive on the medical surgical floor as a new graduate RN [3].

Significant areas relating to the problem of the new graduate RN not being able to identify patients experiencing increasing signs of medical emergency include gaps in academic nursing programs and the level of experience of the graduate nurse. New nurses must experience and have special training to be able to clinically reason through the process of patient assessment. Nursing schools need to lead the change and incorporate more clinical reasoning exercises and decrease didactic content to a reasonable level. The differences in nursing programs and the different educational entry level of a new graduate RN also are significant when looking at the need for evaluation and training of new hires [4]. While this is an ongoing dilemma in nursing education, healthcare leaders must

look at ways to assist the new graduate nurses' transition to practice to promote positive patient outcomes in a cost effective manner.

Research done by Everett-Thomas, Valdes, Fitzpatrick, Rosen, and Birnback [5], shows that nurse residency programs can actually reduce costs associated with training new nurses through retention. Their study showed that with the incorporation of simulation to provide new nurses with five basic scenarios, new onset of myocardial infraction, hypoglycemic and hyperglycemic episodes, cardiac arrest and heart failure with severe respiratory distress could reduce turnover rates of new nurses by 30%. For nurse leaders that is a significant amount of cost savings for training new nurses through retention.

At the forefront of prevention is the nurse. Garvey, [1] states, "Nurses hold a significant key to addressing the issue." He goes on to discuss that failure to rescue is becoming a national crisis due to treatment complications and missed signs and symptoms of impending arrest. With the need to transition new graduate nurses to practice the development of a comprehensive high fidelity training program to assist the new graduate nurse in gaining experience with critical situations may be an important step towards better patient outcomes, decreased hospital stays, and patient/family satisfaction. The development of simulation scenarios that target assessment skills and clinical clues for potential patient deterioration in symptoms can improve patient outcomes. More research is needed on the impact of patient outcome measures [6].

2. PICO

How will the use of simulated emergency scenarios with intermittent audit/feedback impact the knowledge level and clinical reasoning of new nurse graduates in an acute care setting?

2.1. Problem Recognition

Step 1: Problem Recognition

It is important for nurses to recognize and respond appropriately to patients that are experiencing deteriorating symptoms and emerging emergency situations. The new graduate nurse in the acute care setting needs to develop these skills and gain experience. Research points to new graduate nurses as lacking clinical reasoning skills to detect deterioration in their patients, which results in critical patient incidents [2].

2.2. Needs Assessment

Step II: Needs Assessment

This practice issue was identified through research while reviewing the need for and development of a New Graduate Nurse simulation education program for Littleton Regional Hospital (LRH) and their alliance hospitals as discussed with Dr. Catherine Flores, education coordinator, as a specific need for the new nurse graduates in the acute care setting at LRH. This new grad program is cur-

rently expanding to all four Alliance Hospitals in the North Country Healthcare Alliance. This health care alliance was forming at the time this project began, and was completed at the end of the project.

2.3. Population of Interest

Population/Patient Problem

The population of interest for this study includes new graduate nurses that work in the acute care setting, that have passed the NCLEX National State Board Licensing Exam, and have less that 2.5 years experience in acute care nursing.

There were four critical access community hospitals within a 45 miles radius that were approached to participate. The new graduate nurses of these facilities were considered and approached by nursing leadership to participate in the study and gain the learning experience using high fidelity simulation.

There were 8 new graduate nurses at LRH that met criteria, 2 at Weeks Medical Center that met criteria, 4 that met criteria at Upper Connecticut Valley Hospital and 0 at Androscoggin Valley Hospital (AVH). The CNO from AVH stated that within the next two years there would be many new graduate nurses hired at that facility due to the average age of the nurse at AVH was 60, and they had no new RN hires in the past 5 years. With the inclusion of the other hospitals this will give a greater sample size. Project participation included one new nurse from LRH, one from Weeks Medical, and one from Concord Hospital.

The Intervention

- The intervention: Simulated emergency scenarios with intermittent audit/feedback.

Comparison

- Comparison: Current practice of no simulated scenarios.

Outcome and

- Outcome: Increased knowledge and clinical reasoning.

Timeframe

- Timeframe: An 8 - 10 week time frame was given for this study. The development of the scenario situations, evaluation tools and time to plan training and obtain adequate supplies was ongoing throughout the study.

3. Theoretical Framework

The theoretical framework used for this project is a framework used by the education department in the United Kingdom. It is an Education Outcome Framework (EOF) with a domain, definitions of expected outcomes and defining partnerships with stakeholders and education. This framework was developed in 2012 by the department of Health when they were developing the healthcare workforce: Healthcare workforce: from design to delivery [7].

The developing principles for EOF include using a system wide approach, minimizing the need for new data requirements, ensuring relevance to the whole healthcare workforce and setting outcomes in terms of the impact for the pa-

tients and caregivers [7].

This framework was utilized to incorporate simulation education into the new nurse graduate program at Littleton Regional Healthcare and their Alliance Hospitals. This framework can also be used for other educational/healthcare related projects.

Goal of EOF: Ensure that the health workforce has the right skills with training available to support delivery of excellent healthcare. This was accomplished with the introduction of the new nurse graduate simulation scenarios into the orientation program of nurse interns at the facility. There were two simulation scenarios utilized for the initial training.

The domains of the framework include: excellent education, competent and capable staff, flexible workforce receptive to research and innovation, positive values and behaviors, with widening participation. With the implementation of this project and subsequent use of two scenarios in the training program for new nurse graduates is the start of high fidelity simulation into the educational framework for Littleton Healthcare. With positive results during the study, one Alliance hospital placed the scenarios in their yearly competency training for all RNs. As this education grows at each facility and is accepted, widening participation will result with the end result being a workforce of RNs that are competent, capable and promote positive values with the focus on research an innovation.

Outcomes: Excellent experience for patients, effectiveness, and safety. The Aim of the Domains equals quality care [7].

The Education Outcome Framework was a good fit for this project as it was educationally focused toward positive change in healthcare outcomes. The simulation scenarios project promoted education through high fidelity simulation to promote a higher-level care initiative for new RN graduates while caring for patients experiencing deterioration in symptoms.

4. Synthesis of Literature

A similar thread runs through all the literature pertaining to simulation education for nursing. Simulation education can assist the new graduate nurse to promote positive patient outcomes with the use of practice of skills and clinical reasoning without the threat of harming the real patients. It gives new nurses the added confidence to care for patients and to gain experience with critical situations and interventions. Simulation has not been implemented in nurse education training to its fullest potential and more studies are needed to look at actual patient outcomes.

In the article "Simulation in Nursing Practice: The Impact on Patient Care" [8] discuss how simulation has been used throughout history in aviation, nuclear power and the military to teach learning strategies. Simulation has become more popular in nursing and physician education in the last 20 years. The study also states that simulation education has not been integrated to the fullest potential in

the development of skills for nursing and that there is a lack of evidence for what simulation education actually does for patient outcomes.

Adamson and Kardong-Edgren, [9], describe methods to facilitate psychometric assessments for simulation evaluation instruments. The Lasater Clinical Judgment Rubric, the Creighton Simulation Evaluation Instrument and the Seattle University Evaluation Tool all provide valid student performance evaluations during simulation.

A study by Dunn, Osborne and Link [10] demonstrates that high fidelity simulation training can give baccalaureate-nursing students a level of self-efficacy in communication and physical care of patients. This increased level of self-efficacy can promote a beneficial influence for the new nurse.

Broussard, Myers and Lemoine [4] discuss the aspects relating to pediatric nursing and the need for simulation education. With the nursing shortage new graduate nurses are being hired directly into pediatric units with no clinical experience. The ability to prepare new nurse graduates with skills and complex technology needs and nursing care management can be accomplished with simulation-based learning. This article also discusses the difficulties nursing schools are having finding clinical placement in pediatrics so they arrive into clinical practice with the need for more education.

Key points for simulation technology and the new graduate nurse include: they can make poor decisions due to many factors that include lack of experience, poor prioritization of care skills, standardized training in internship programs may assist them in attaining the goal of safe practice and that simulation training can become a familiar way to train and assist new graduate nurses to transition to practice [5].

Garvey [1] discusses failure to rescue and the nurse's impact to clinically intervene with the use of communication to escalate concerns regarding the patient condition. The need to assess the patient and seek advice if needed as failure to rescue is a major issue in current nursing practice in the acute care setting.

What is known about the significance of the issue: It is known that recognition of early interventions given to patients that are developing deteriorating conditions is a function of the nurse. With the use of simulation to assist with the development of clinical reasoning skills and perceived ability increases their confidence when responding to patient clinical emergent situations. It is also known that simulation has advantages in that participants can practice nursing interventions and develop clinical reasoning skills without the threat of harm to real patients [3].

Simulation training for the new graduate RN residency program can be utilized to measure clinical performance and identify knowledge gaps. This can set training prioritization as the new nurse transitions to practice [3].

Hayden, Smiley, Alexander, Kardong-Edgren, and Jeffries [11] conducted The NCSBN National Simulation Study which showed that with high fidelity simulation educators can present patient care scenarios to students so they can practice their nursing skills as well as increase critical thinking in an environment which

will not harm patients.

A study done in 2012 [12] by Hinton, Mays, Hagler, Randolph, Brooks, De-Falco, Kastenbaum, Miller and Weberg shows that measuring Post-Licensure competence to evaluate nursing performance can be done with simulation. The use of high fidelity clinical simulation can discern the clinical competency of newly licensed nurses. A 41 item instrument is described with categories essential for safe practice. In the study the more experienced nurses made fewer errors than the nurse with less experience. This instrument could be utilized to validate levels of competence and identify unsafe nursing practice.

We know that nursing education has been using simulation for many years in many forms to build nursing skills and promote learning in nursing students and nursing in general. High fidelity manikins have changed the landscape of simulation to promote high technology that brings more realism into play. High fidelity manikins can mimic signs and symptoms of impending emergency situations and assist the new nurse to gain experience with these scenarios [13].

In the 2015 quality improvement project done by Ozekcin, Tuite, Willner & Hravnak [6] the early identification and treatment of patients experiencing deteriorating symptoms was address with the use of simulation and e-learning. The rationale was that earlier response times with clinical deterioration of the patient would result in improved patient outcomes. A plan, do, study, act framework was utilized and performance of the activities was assessed. The specific markers used were instability identification, notification, and recognition, the use of SBAR, the situation, background, assessment, and recommendation communication tool. The conclusion of this project showed that e-learning and simulation with organized debriefing and the use of the SBAR communication tool can improve the recognition of unstable patients and communications which result in improved knowledge and lessens time for critical actions for patient care.

This project has the potential to fill the gap for a portion of nursing simulation for new graduate nurses and the impact that simulation can have on how they are able to perceive a patients deteriorating condition and use their knowledge to promote early interventions for a better patient outcome.

5. Practice Recommendations

The evidence indicates that simulation education is an effective approach to the practice issue of new graduate RNs having difficulty seeing the signs of impending crisis with their patients. The use of simulation technology can assist the novice nurse with gaining confidence and experience in caring for the critically ill patients without the risk of harming the patient. The conclusion of a study done in 2003 by Guillaume, Hunt, Gordon and Harwood [14] shows that simulation training for pre-licensure undergraduate nursing majors is a valuable tool to equip students with minimum skills needed before they reach the practice setting.

Practice recommendations for new nurse graduates indicate the need for standardized training in the phase of the nurse internship or residency program.

This may assist the new graduate nurse in their transition to practice. The prioritization of patient care and the demanding nature of nursing practice requires that new nurse graduates gain experience and practice in the real workplace, help with decision making and practice can be started with the use of simulation technology [5].

Everett-Thomas *et al.*, [5] recommend a simulation curriculum design, which incorporates five specific simulation-training scenarios. These scenarios include acute onset of myocardial infarction, hyperglycemic crisis, hypoglycemic crisis, sudden cardiac arrest, and heart failure with severe respiratory distress.

New graduate RN simulation training can assist the new nurse with the much-needed clinical reasoning skills to respond to patient clinical emergencies in the acute care setting. There is a need for further education to support these new nurses in their practice setting. This project addressed the needs of the new nurse with patient safety and improving patient care outcomes. New graduate RNs need specialized training in clinical reasoning and the ability to "rescue" patients that are showing acute deterioration of their medical issues. Nurse education with the use of simulation can assist with narrowing the theory practice gap that is seen in our new graduate RNs [2].

The National League for Nursing in 2011 [15], states that nurses should be prepared to meet the needs of the workforce when they graduate from nursing school. Simulation can assist the transition to practice by providing a safe environment for new novice nurses to improve clinical and critical thinking skills.

Research points towards the use of high fidelity simulation training for new graduate nurses to increase their confidence and ability to recognize signs and symptoms of impending crisis in their patients in the acute care setting. Everett-Thomas, Valdes, Fitzpatrick, & Birnback [5], discuss the need for standardized training programs to transition the new graduate nurse. The simulation design included five conditions that included acute onset of myocardial infarction, hyperglycemic crisis, hypoglycemic crisis, sudden cardiac arrest and heart failure with severe respiratory distress. The needs for this training can alleviate some of the stress that new graduate nurses encounter and reduce high turnover rates and decrease the cost of recruitment and retention.

The key point is that nurses can pass the NCLEX-RN exam and have the basic nursing knowledge to enter the profession of nursing and still lack skills and clinical reasoning to react during a crisis situation when their patients are experiencing the signs and symptoms of impending clinical doom. Studies suggest that nurses need clinical experience and cognitive abilities to handle stressful situations with their patients. To achieve best patient care outcomes and prevent reoccurrence of the disease process new nurses need added training [5].

The intervention of adding high fidelity simulation training to the new graduate nurse internship-training program will benefit the new nurse in the education to practice knowledge gap, incorporate excellence in nursing practice by promoting high quality patient care. The simulation scenarios allow the new

graduate nurse to prepare for situations where their patients experience signs and symptoms of impending doom and give them the confidence in recognizing these signs, intervening appropriately, communicating with the healthcare team and hand off reporting for smooth patient transition of care. A comprehensive report tool was designed and used by participants in this study [Appendix 1]. The potential to incorporate high fidelity simulation scenarios in yearly nursing competencies may be an important strategy to reinforce training and have nurses' gains further skills and clinical reasoning.

6. Project Setting

It is important for nurses to recognize and respond appropriately to patients that are experiencing impending emergency situations. The new graduate nurse in the acute care setting needs to develop these skills and gain experience. Research points to new graduate nurses as lacking clinical reasoning skills, which results in critical patient incidents [2].

The Organizational Need for this project was established through literature review, a SWOT analysis, and discussion with the director of education of Littleton Regional Healthcare Dr. Catherine Flores. She expressed a need for simulation educational training for new nurse graduates that are in the new graduate nurse program at LRH. It was decided to use this project as a jumping off point to add simulation to the new nurse internship program for new graduate nurses that were hired at the facility. At the time of this project implementation LRH was forming a clinical alliance with three other hospitals so this project will also be shared with the other hospitals in the North Country Hospital Alliance for their new graduate nurses.

The SWOT analysis showed that the internal forces for this project would be increased quality of patient care increased patient and family satisfaction scores, increased satisfaction of the new graduate nurse and a high energy-learning environment. Opportunities for this project included opportunities for new graduate nurses but also to include other staff members to assist with training and learn about simulation, develop areas of mentorship and promote teamwork. Weaknesses for the project were that change could create fear; the original design was for five scenarios. It was decided to develop two scenarios for this pilot study. The threats to the study were defined as a potential for low numbers of new graduate nurse participation.

Primary stakeholders and organizational support pertaining to this project included the Directors of Nursing and the Department Directors from LRH and Weeks Medical Center, the Northwood's Education Center Simulation Lab Director, LRH Education Director, the nurse Educator for simulation center, and the CEO of LRH.

The setting for this project was a high fidelity simulation center in Whitefield New Hampshire. Weeks Medical Center allowed the use of the facility for this project and was forming a clinical Alliance with my sponsoring hospital Littleton Regional Healthcare at the time of the study. The simulation center provided

Gaurmard scientific patient simulator mannequins, which were used with standardized scenarios for all participants.

The short term objectives for this project included training the new graduate nurses using two simulation educational scenarios that provide training to assist in clinical reasoning skills and detection of patients with impending emergency situations. The long-term objectives of this project include these scenarios and training techniques into the new graduate training program of LRH and the alliance hospitals.

The risks and unintended consequences in this project were low participation due to low new graduate numbers currently on staff at LRH. There were eight new graduate nurses at LRH, two at Weeks Medical Center, 4 at Upper Connecticut Valley Hospital and zero at Androscoggin Valley Hospital (the average age of the nurse at AVH is 60 with no new graduates hired in the past five years). That facility CNO stated a great need for this program in the next few years, as they would need to hire many new nurses, as their average aged nurse was 60. The new CNO had plans for new graduate hires to start this year.

The participation in the study turned out to be extremely low with only three participants. The areas that could have affected this was the project was in the summer months with numerous vacations, the hospitals did not pay the participants it was solely done through volunteering of time, the education center was located over 40 miles from two hospitals and no new graduates at one facility.

Other risks and unintended consequences included budget restraints to pay new graduate nurses for this training in the future. While this seemed to impact the project it is unknown whether the hospitals will be willing to pay the training time in the future. If it is in the internship week seven training, it appears that it will be paid time for the new graduates with mandatory attendance. The risks and unintended consequences for this project are largely unknown. The potential for positive patient and new graduate RN learning outcomes should outweigh negative aspects that could arise.

6.1. Project Description

The change model that was selected for this project is "The Star Model" by Stevens, [16], it encompasses the concept of Discovery, Summary, Translation, Integration, and Evaluation. For expert nursing practice to be utilized for this project, the star model reflects the aspects of autonomy, the nurse patient relationship, role models, recognition and positive nurse and provider relationships.

The STAR Model can be used for knowledge transformation and the conversion of research to impact health outcomes. This is done with a series of 5 stages: discovery, summary, translation, integration, and evaluation and that is the reason this model was selected for this organizational change to incorporate high fidelity simulation into new graduate RN training.

Discovery

Discovery is the knowledge generating stage; new knowledge is discovered with the use of traditional research in the form of research results, a literature

review was done in the discovery phase of this project. The idea was formed and then the PICO question was written.

Summary

Summary is the evidence analysis and in the STAR Model this depicts the stage where synthesis of the research is done. This is also a knowledge generating stage. For this project the summary phase consists of the research analysis as well as the project data that was acquired.

Translation

Translation is actually two phases, which consist of transformation of evidence into practice and integrating it into practice. In this stage of the project the research analysis and the study by Gordon and Buckley (2009) was used to implement the training project for new RNs. The training simulation scenarios were implemented and questionnaires used to see if the participants had developed more confidence in caring for patients that are experiencing emergency situations. Data was collected on reporting off to the people taking over care of the patient with the use of SBAR and a comprehensive report tool I designed for this experience [Appendix 1].

Integration

Integration involves changing individual and organizational practice. This is the adoption phase of the project. This project has been adopted into the new graduate training program at LRH week 7. It will also be offered to the North Country Alliance Hospitals for incorporation into their new graduate training, and has been adopted into Weeks Medical Center Hospital in their yearly competency training for RNs.

Evaluation

Evaluation is the final stage for the STAR Model knowledge transformation. The evaluation includes the impact of the evidence based practice project on new RN outcomes, provider and patient satisfaction, and economic analysis. The final outcome is geared toward evidence-based quality improvement for patient care.

The project setting was in the Northwood's Center for Continuing Education located in Whitefield NH. The use of the facility was granted by Weeks Medical Center and full access to equipment was given. I was given time on the education center schedule to review patient simulation scenarios, learn how to use the equipment, and practice run through of the scenarios prior to having participants arrive for the training days. The nursing educator from Weeks Medical Center was in attendance at the training sessions as well as the lab coordinator from the education center who helped with equipment. A graduate student was also in attendance at the training in the capacity of running equipment and learning the strategies for simulation education, she assisted with monitoring participants while they arrived and filled out the pre workshop questionnaires.

All participants were asked to sign in, provide an email address and sign an informed consent prior to participation. Participants were provided with the opportunity to ask questions at this time.

Each participant had one simulation-training day scheduled. A four-hour time block was scheduled to complete the training. The training consisted of the following.

The new graduate nurse subjects completed a pre-training questionnaire. They then received a high fidelity simulation training session utilizing Gourmand simulation mannequins that had standardized simulation scenarios. Two scenarios were used during the training days, symptomatic supraventricular tachycardia and a bradycardia with respiratory depression.

Intermittent audit and feedback was done during these scenarios. A specific set of criteria was evaluated pre and post training by the participants.

1) Recognize an unstable patient

2) Identify priorities

3) Call for help appropriately

4) Manage airway obstruction

5) Manage breathing difficulties

6) Interventions to support circulation

7) Perform defibrillation

8) Be identifiable as leader

9) Perform handover to emergency team

10) Support emergency team leader

11) Share information and inform others

12) Voice concerns to team

13) Listen and respond to others concerns

14) Use resources and external experts

Participants had learning tool templates available to give a comprehensive report [Appendix 1].

One participant participated in the scenarios at a time. They were allowed to talk and discuss the situation and interventions. The practice session was repeated during the debriefing that was done at the bedside of the simulated patient, discussion included airway management, equipment use, getting an EKG, and placement of cardiac leads and Zoll defibrillator pads, basic functions of the Zoll monitor/defibrillator all with hands on experience. After the simulation training was completed, the subjects was asked to complete a post-training questionnaire and a two-week follow up questionnaire was given to each participant to fill out after returning to work for two weeks.

All potential risks and management of those risks were provided to all subjects. Confidentiality of participant responses will be maintained. All educators included in the training were debriefed prior to the subjects training day and utilized the same training protocol. The main investigator was present and participated in all training sessions. The pre-training survey and post training survey were done on the training day and given on paper. They were then entered into the Qualitrics survey system database for analysis. The two-week follow up survey was given to participants prior to leaving the training in an envelope with the researchers name and address. All surveys were returned and entered into

the Qualitrics survey system, these surveys were not analyzed due to low participation and two participants did not have any patients that had experienced emergency situations in the two week period. Only one participant had completed that section of the survey. The pre and post survey were compiled for data analysis. All data was de-identified and will only be shared in any publications or presentation in aggregate form. All data from this study will be maintained for 7 years by the investigator in a password-protected device. After 7 years all electronic files will be destroyed.

The resources required for this project included myself, the education director at LRH, and those involved in the actual hands on training day. This included the lab coordinator, the nurse educator from Weeks Medical Center, a critical care nurse with a MSN degree that volunteered her time, and a graduate student in a MSN nurse educator's track.

The budget for this project included the major resource of sending the new graduate nurses to training with 96 hours calculated into the budget. This was not used LRH did not offer to pay the new graduates to attend training. Resources also included equipment used at the simulation center, supplies needed for the training day (which would include IV fluids, IV catheters, urinary catheter kits, demo medication supplies), and laundry service for soiled linen. Food supplies were purchased for each day of training. This is a non-revenue generating project at this time.

The major barrier for this project was recruitment of participants. Recruitment efforts were started by reaching out to the CNOs of all affiliate hospitals and my own sponsoring hospital 2 months before the training dates. As soon as permission from Weeks Medical Center to use the Northwood's Education training center was received the dates were set and flyers sent to all four hospitals. LRH was planning to send all new graduate nurses with under two years experience through the training. The CNO was given the dates and the participants would be scheduled to attend. The new graduate nurses were encouraged to attend on their day off and many were on vacation as it was during the summer so attendance was low. LRH is using the training program in their new graduate internship program moving forward so there is a potential to gain more participants in the future. This barrier may have been overcome with recruitment outside of the North Country Hospital Alliance.

6.2. Project Evaluation

The aim of this project was to improve the clinical reasoning and confidence level of the new RN with the use of simulation scenarios with emergent patient conditions. Descriptive statistics was used. The results section focuses on what the data explains about the intervention of having the new RN have a simulation training workshop with emergency scenarios and how they scored their comfort and clinical reasoning skills to identify deteriorating patient conditions and appropriate nursing interventions before and after the training.

Participants N = 3 with one having an associates degree RN and two RNs with Bachelor degrees. The Associates degree RN was enrolled in a BSN program, one Bachelor RN had just received their degree that week and the third participant was in the middle of a graduate degree program in nursing education. Participants ranged from 3 months experience to 27 months. One male and two females participated in the study. Previous medical experience prior to nursing ranged from none, EMT and Paramedic.

For data analysis questionnaire responses were compared from before the workshop and after completion of the simulation scenarios. The collection tool used was used by Gordon and Buckley [3], in their study of the effect of high-fidelity simulation training on medical surgical graduate nurses'. It consisted of 14 questions that participants score regarding recognition, prioritization and recruitment of help. Formative evaluation was utilized during the scenarios with audit and feedback provided.

The formative data results showed that participants showed increased confidence in the following. Recognition of an the unstable patient, calling for help appropriately, interventions to support breathing and circulation, performing manual defibrillation, being identifiable as a leader until emergency team arrives, sharing information, voicing concerns, listening to others, feeling safe to report mistakes, feeling confident to recognize patient clinical deterioration, feeling confident to respond to an unstable patient, utilizing a systematic assessment tool, feeling empowered to coordinate immediate responders in an escalation of care protocol and giving an SBAR report, and performing a handover to emergency team leader. Identification of priorities and support of the emergency team leader remained the same. All participants strongly agreed that simulation provided an opportunity for self-approval and addressed a knowledge practice gap.

The basic bar graph is used to display the results of the pre and post survey evaluation results. The project results that were linked to the findings point to an increase in confidence and clinical reasoning as well as an increase in feeling confident to voice concerns and report mistakes (see Figure 1 & Figure 2).

Qualitative data collected from the question: The most useful aspect of participating in the simulation experience today included: "Simulation provide a safe environment to practice and learn new skills as well as refresh previous skills", "working as a team, helping me feel more confident in understanding, reacting, responding to clinical deterioration", and "critique of my performance to constructively suggest areas for improvement".

The important elements of this project and the conclusion section include what the recommendations for continued study in the area of simulation education for new graduate nurses. A longitudinal study could be used for the addition of more data to validate conclusions with the increased number of participants. There is substantial research that shows simulation education gives positive results and increased confidence for new graduate nurses transition to practice. The recommendation is to encourage the study in the area of specific
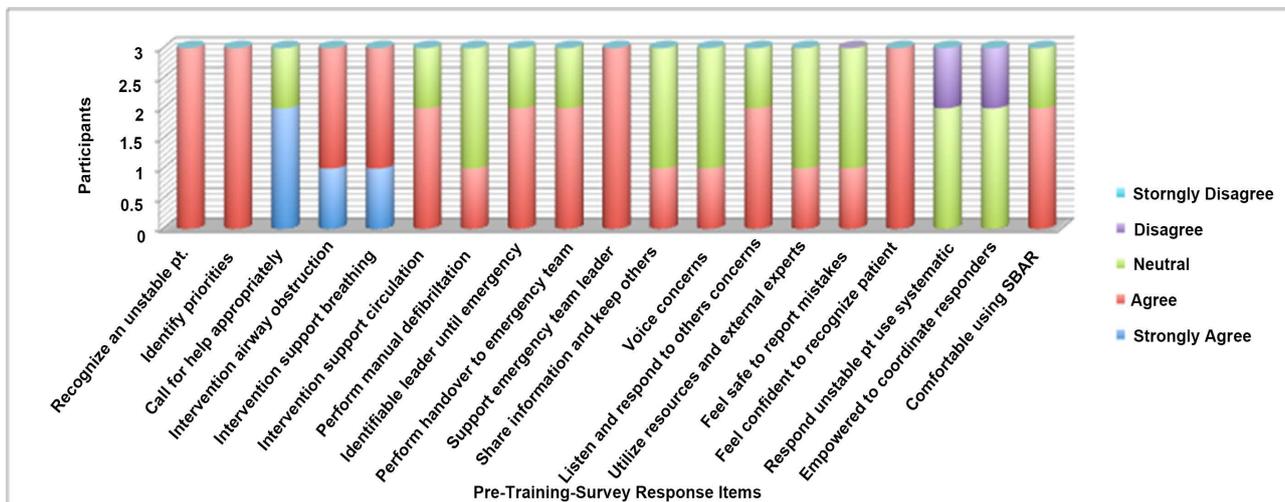
Figure 1. Pre-training-survey response items: participants were given a pre-training survey with the resulting data collection. Data Analysis.
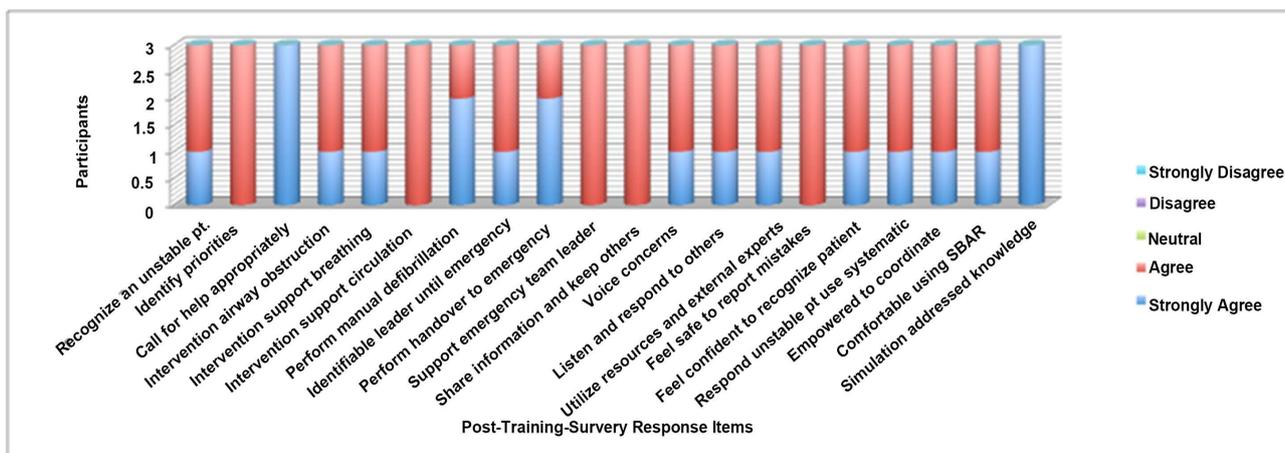

Figure 2. Post-training-survey response items. Data Analysis.

simulation scenarios and which scenarios are the most beneficial. Other areas of further research include the incorporation of simulation in yearly competency training for nurses at all levels and see if it is beneficial at different years of experience. The significant increase in scoring in the areas of reporting mistakes and voicing concerns raises the question of whether further study with simulation could increase this area in nurses with more experience. Would this result in nurses feeling more comfortable to report mistakes and voice concerns resulting in better quality management.

The data collection tools used in this study was modified from the study done by Dr. Christopher Gordon and Dr. Tom Buckley in [3], permission was given from both Dr. Gordon and Dr. Buckley. A pre-workshop, post-workshop and two week after returning to work survey were used and completed by participants. The qualitative question asked in this survey was taken from the study done on simulation education, "Early Identification of Patient Physiologic Dete-

rioration by Acute Care Nurses" in 2015 by Ozekcin, Tuite, Willner and Hravnak [6]. Permission was given for the use of this question from Dr. Linda Ozekcin.

The limitations of this study include a low participant number, which was not large enough to achieve statistical significance. This resulted due to the inability to collect data as planned on all new graduate RNs in the chosen facilities.

Human rights were protected during this project. All participants were given a consent form to sign prior to participation in the study. An IRB pre-screening form was completed and reviewed by Chamberlain College of Nursing Institutional Review Board (IRB) for the Protection of Human Subjects, it was determined that this project did not require oversight from the IRB. The study was congruent with accepted professional standards and ethical guidelines.

7. Discussion and Implications for Nursing and Healthcare

This use of simulation education scenarios using patient scenarios with deteriorating symptoms has the potential to fill the gap of education to practice for new graduate nurses. Simulation can have an impact on confidence levels and how new graduates are able to perceive a patients deteriorating condition and use their knowledge to promote early interventions for improved patient outcomes.

The measurable outcomes of this project look at the focus of the micro system level and then slowly broaden outward to the communities surrounding the simulation training hospital. This project affects the four hospitals in the North Country Healthcare alliance that will benefit from this project in new graduate internship training programs and yearly competencies. The expectation is that the new nurse graduates will become more proficient in identifying patients that are experiencing impending emergency situations. This will increase patient care and have better outcomes for our patients or customers.

The PICO question was identified as: How will the use of simulated emergency scenarios with intermittent audit/feedback impact the knowledge level and clinical reasoning of new nurse graduates in an acute care setting? The PICO question was answered as: The problem of new nurse graduates needing additional training to develop clinical reasoning skills to be able to detect deteriorating symptoms in their patients is real and relevant to healthcare and the site of this project, Littleton Regional Healthcare. The program development and implementation of simulation training for new graduate nurses that are hired by Littleton Regional Healthcare (LRH) need to include cost, quality and efficiency aspects. Simulation training can provide support for new graduate nurses as they begin practice, offering specific simulation opportunities to develop safe practice is an important aspect of leadership in hiring and training new nurses [5].

The new graduate RN and the use of simulation training to assist with the process of clinical reasoning skill development are important so that young nurses can gain the necessary assessment skills to respond to patient clinical

emergencies. Nurses need to recognize and respond appropriately to patients that are experiencing deteriorating symptoms and potential emergency situations [2]. The education department and administrative leadership of LRH are committed to this educational program.

The quality aspect of this project can be measured in increased patient satisfaction, limiting potential preventable patient deterioration and increased satisfaction for the new graduate RN, which could positively affect retention rates. Research done by Everett-Thomas, Valdes, Fitzpatrick, and Birnback [5] shows that standardized simulation programs used to help new graduate nurses transition to practice reduced turnover rates, increasing retention and recruitment as well as servicing as a practice model for safe patient care. The NHS values and behaviors encompass compassion, person centered care that enhances the quality of patient experience using education, training and continuing personal and professional development that shows respect for patients [17]. This can be seen in Figure 3.

The goal of this project was for new graduate nurses that participated in the simulation training scenarios would have a higher level of knowledge and be able to recognize the signs and symptoms of impending crisis in patients developing emergency situations that require nursing intervention. This was measured at the micro level with the new graduate nurses. Future data collection initiative may look at how this education for the new graduate nurse may affect the retention rates and the level of quality patient outcomes in the facility and community.

8. Project Sustainability

The simulation-training program has been placed into week 7 of the internship-training program at LRH. It has not been implemented at the other hospitals. Weeks Medical Center implemented the scenarios in their yearly competency training for nursing prior to the project completion.

The nurse educator at the simulation-training center has been trained in the scenarios and simulation training techniques for nursing as well as training a graduate student that works at LRH. These educators will have access to all training materials to be able to duplicate the training sessions and incorporate

Figure 3. Educational Outcomes Framework (EOF).

additional scenarios as described in the literature to promote excellent training materials for use in the internship programs of all alliance hospitals.

Continued work related to my practice problem consists of the following:

1) When the first group of new graduates goes through the internship training at LRH I have asked to be able to continue this study in a longitudinal approach to gather more data to achieve statistical significance.

2) Through my work at Plymouth State University (PSU) I have added the five scenarios into the simulation lab curriculum in the bachelorette nursing program.

3) A plan to continue this study through PSU by asking graduates of our nursing program that graduated in 2015/2016 to participate in this study. These nurses did not have the scenarios in their curriculum so would be on equal footing with the participants that have already completed the study.

9. Summary and Conclusions

In conclusion, we know that nursing education has been using simulation for many years in many forms to build nursing skills and promote learning in nursing students and nursing in general. It is time to bring this educational tool to the new nurse graduates in the clinical setting. High fidelity manikins have changed the landscape of simulation to promote high technology that brings more realism into play. High fidelity manikins can mimic signs and symptoms of impending emergency situations and assist the new nurse to gain experience with these scenarios [13].

The new graduate RN needs specialized training in clinical reasoning and the ability to "rescue" patients that are showing acute deterioration of their medical issues. Nurse education with the use of simulation can assist with narrowing the theory practice gap that is seen in our new graduate RNs [2]. Measurable outcomes can be seen in the quality aspect of this project and can be measured in increased patient satisfaction, limiting potential preventable patient deterioration and increased satisfaction for the new graduate RN, which could positively affect retention rates.

Implementation of simulation education training into the nurse residency programs including patient care scenarios that assist the nurse with clinical reasoning and the care of patients experiencing impending signs and symptoms of acute distress is important for hospitals to assist the new nurse transition to practice. In turn, this added expense during the orientation; clinical residency phase of the new nurse experience will result in decreased expenditure with turnover of workers and nurse satisfaction and retention. The additional experience for these novice nurses will increase patient satisfaction and positive patient outcomes.

Limitations of this study include the small sample size and the recruitment of rural nurses from critical access hospitals. A longitudinal approach may have achieved a higher sample size.

Further study is needed in the area of using simulation for competency assessment of new graduate nurses and how this can play a role in patient safety as well as building the confidence level of the new graduate nurse to successfully interpret the signs and symptoms of impending crisis in their patients. Competency assessment may include physical assessment skills and clinical documentation and how this affects the new graduates' ability to recognize signs of impending crisis in their patients.

Participants showed increased confidence in recognizing the unstable patient, calling for help, interventions to support breathing and circulation, performing manual defibrillation, being identifiable as a leader, sharing information, felt more confident to recognize patient clinical deterioration, displayed confidence to respond to an unstable patient, utilized a systematic assessment tool, felt empowered to coordinate immediate responders in an escalation of care protocol and gave SBAR reports with the use of a comprehensive assessment tool, and performed a handover to the emergency team leader. All participants strongly agreed that simulation provided an opportunity for self-approval and addressed a knowledge practice gap.

I look forward to continuing this project with a longitudinal study and looking at new areas of interest. One of which is to look at adding simulation to yearly competency training in hospitals to see if simulation has a positive effect on nurses feelings of confidence to report mistakes and voice concerns. This study showed that the new graduate nurses felt more comfortable to voice concerns and report mistakes, this area needs more research.

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Appendix

Appendix I. Comprehensive Report Tool

The New RN and Emergency Patient Care Scenarios
How Simulation Can Help Dr. Donna Driscoll DNP, RN, CEN

Driscoll's Comprehensive Patient Report Tool

When reporting off on your patient for transfer of care use the SBAR TOOL to assist you.

Situation, background, assessment, recommendation

A comprehensive report may include the following:

- Patients name, age
- Hx of admission/diagnosis
- Code status
- Abnormal occurrences
- Isolation precautions if applicable
- Allergies
- Vital signs
- Mental status/any changes
- Systems: lungs, heart, skin
- Abnormal labs
- Tests treatments, pending labs
- IV size, location
- Fluid status/I&O
- Changes in plan of care (*i.e.*, to ICU)
- Meds given/time
- Teaching-would include family
- Drains wounds dressing status
- Provider notified