An Evidence-Based Educational Intervention for Staff Nurses and the Rapid Response Team

Grace Katherine Gembrowski

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AN EVIDENCE-BASED EDUCATIONAL INTERVENTION FOR STAFF NURSES AND 
THE RAPID RESPONSE TEAM

Grace Katherine Gembrowski

A Dissertation Submitted to the Faculty of
GRAND VALLEY STATE UNIVERSITY
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Dedication

I would like to dedicate this dissertation to my fiancé Nate and to my loving family. Nate, you have been the most understanding and supportive husband-to-be that I could have ever hoped for. To my family, especially my parents, your examples of perseverance, words of encouragement, and love for others have greatly influenced the person I am today. I am truly blessed to have you all in my life.
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Thank you to my committee members Lisbeth Votruba, Deborah Bambini, and Glenna Decker for providing their knowledge, expertise, and valuable time. To the Nursing Office and the Simulation Lab team at Mercy Health Saint Mary’s, thank you for allowing me to conduct my project at your site and for providing continued support and assistance. To the Statistical Counseling Center at GVSU and Sango, many thanks for providing support during the development of data tools and analysis.

Thank you to my friends and cohorts for listening and providing a sympathetic ear and reassurance at times when I most needed it.
Abstract

Rapid response systems (RRSs) have been proven to decrease mortality, cardiac arrests, and ICU admissions. The three major health care system issues lead to failure to rescue: failure to communicate, failure to plan, and failure to recognize deteriorating conditions. It is crucial in a hospital setting that nurses have a basic knowledge base of why, when, and how the RRS should be activated as they are the first line of defense to recognizing signs of deterioration in patients. Previous research has shown that, although signs of patient deterioration are seen by staff, they are not always acted upon (Pusateri et al., 2011).

Nurses require training regarding the specific RRS programs in place at the hospitals in which they work. Enhancement of knowledge, skills, and critical thinking for bedside nurses is needed for positive patient outcomes. Nurses appreciate and can grow from feedback through participation in simulation activities based around activation of the RRS as demonstrated in the following studies that have determined the usefulness and education-enhancing properties of simulation-based training for bedside nurses (Leonard, Shuhaibar, & Chen, 2010; Sittner, Schmaderer, Zimmerman, Hetzog, and George, 2009; Wehbe-Janek et al., 2012).

The goal of this evidence-based project is to develop an educational intervention related to rapid response teams (RRTs) by determining attitudes and perceptions of experienced registered nurses who have already attended Nursing Excellence Academy (NEA) and are currently employed at the project site (Sample 1), using the information from the previous step to create an evidence-based RRT PowerPoint® presentation and evidence-based simulated RRT educational intervention, and pilot testing and evaluation the evidence-based intervention with newly hired experienced registered nurses attending NEA (Sample 2).
The design of the project included: 1) a sample of nurses who received an electronic survey measuring participation, knowledge, and satisfaction with their RRT and 2) a sample of nurses who received an RRT educational presentation, pre and posttest, simulation, and simulation evaluation tool. Statistical analysis included descriptive statistics, means, and percentages for survey questions in Sample 1. Sample 2 was sample size was very low and therefore only means and percentages were calculated.
# Table of Contents

List of Tables ..........................................................................................................................9

List of Appendices ..................................................................................................................10

Chapter

1 INTRODUCTION
   Nurses Perspectives and Perceptions of RRSs .................................................................13
   Simulation .........................................................................................................................15
   Barriers .........................................................................................................................16
   Interventions ...............................................................................................................18
   Potential Outcome and Influence ...............................................................................20
   Summary .....................................................................................................................20

2 LITERATURE REVIEW
   Effect of Rapid Response Systems on Outcomes .........................................................22
   Perceptions of Nurses on RRSs ...............................................................................26
   RRS Educational Interventions ..............................................................................34

3 CONCEPTUAL FRAMEWORK
   The Learning Organizational Model ...........................................................................41
      Systems Thinking ....................................................................................................42
      Personal Mastery ...................................................................................................42
      Mental Models .......................................................................................................44
      Shared Vision .........................................................................................................44
      Team Learning .......................................................................................................45
   The PARiHS Framework ...............................................................................................46
      Assumptions ...........................................................................................................46
      Implementation Model ............................................................................................48
   Summary ....................................................................................................................52

4 METHODS
   Agency Overview ..........................................................................................................54
   PARiHS Framework .....................................................................................................56
   The Learning Organizational Model ............................................................................57
   Procedures ..................................................................................................................57
      Sample 1 ..................................................................................................................57
      Sample 2 ..................................................................................................................58
   Instruments ..................................................................................................................61
   Data Analysis ...............................................................................................................63
   Human Subjects Consideration ...................................................................................63
   Barriers and Facilitators .............................................................................................64
List of Tables

<table>
<thead>
<tr>
<th>TABLE</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sample 1 Survey Participation Section</td>
<td>66</td>
</tr>
<tr>
<td>2</td>
<td>Sample 1 Survey Knowledge and Satisfaction Section</td>
<td>69</td>
</tr>
<tr>
<td>3</td>
<td>Knowledge and Clinical Judgment Pre-Posttest Scores</td>
<td>76</td>
</tr>
<tr>
<td>4</td>
<td>PNCI® Simulation Effectiveness Tool Findings</td>
<td>77</td>
</tr>
</tbody>
</table>
List of Appendices

APPENDIX

A  Hierarchy of Evidence .................................................................92
B  The PARiHS Diagnostic and Evaluative Grid ...............................94
C  MHSM Professional Practice Model ..............................................96
D  MHSM Criteria for RRT Activation .............................................98
E  MET/RRT Survey .................................................................105
F  Rapid Response System Staff Knowledge and Satisfaction Survey 109
G  Information Summary – Assessment Survey for Registered Nurses 112
H  Rapid Response Team Training for Enhancing Patient Safety (STEPS) Scenario 114
I  Information Summary – Simulation Intervention for New Hire Registered Nurses 116
J  Rapid Response Pretest and Posttest ............................................118
K  PNCI® Simulation Effectiveness Tool ........................................123
L  Meshed Survey .......................................................................125
M  GVSU and MHSM IRB Approvals ...........................................133
N  Sample 1 Demographics, Experience, and Roles within the RRT 138
O  Sample 2 Informed Consent ......................................................142
P  RRT Education Presentation ....................................................148
Q  RRS Staff Knowledge and Satisfaction Survey Permission for Use 157
R  Pre and Posttest Permission for Use ........................................159
S  PNCI® Tool Permission for Use ...............................................161
T  MET/RRT Survey Permission for Use .....................................163
CHAPTER 1
INTRODUCTION

Rapid response systems (RRSs) have been in use since the early 1990s, beginning in Australia (Galhotra et al., 2006). Their purpose is to decrease failure-to-rescue rates, mortality rates, and cardiac arrest events (Pusateri, Prior, & Kiely, 2011; Williams, Newman, Jones, & Woodard, 2011). The rapid response teams (RRTs) that are part of an RRS usually include an intensive care unit (ICU) registered nurse (RN), a respiratory therapist, and a critical care physician or hospitalist who assists the bedside RN in stabilizing deteriorating patients. The three major health care system issues that lead to failure to rescue are failure to communicate, failure to plan, and failure to recognize deteriorating conditions (Sittner, Schmaderer, Zimmerman, Hertzog, & George, 2009). Thus, in the hospital setting, it is crucial that floor nurses have a basic knowledge base of why, when, and how the RRS should be activated.

Medical emergency teams (METs) are similar to rapid response teams (RRTs). They are both included under the category of RRS models, which is the unifying term according to the 2006 first consensus conference on METs (DeVita et al., 2006). The difference is in the team structure, although the purpose of the teams is the same: to intervene and provide care to patients during the critical period before cardiopulmonary or respiratory arrest. METs can include a critical care physician or hospitalist and nurses, whereas an RRT includes these members with the addition of a respiratory therapist. The review of literature in chapter 2 addresses this in more detail.

Patient survivability in non-critical care units depends on early identification of patient deterioration. Nurses at the bedside are first in line for activation of RRSs. However, nurses who do not work on ICU and emergency room (ER) units do not receive the same training as ICU and
ER nurses in identifying patients who are clinically worsening (Chan et al., 2008). They are also less likely to have experience in critical situations. Previous research has shown that, although signs of patient deterioration are seen by staff, they are not always acted upon (Pusateri et al., 2011).

When signs of cardiac and respiratory deterioration are identified early, patient lives can be saved. According to the Institute for Healthcare Improvement, signs of deterioration are evident up to eight hours before respiratory or cardiac arrest (Brown, Anderson, and Hill, 2012). The RRS is not always utilized by the bedside nurse, so failure in the system can occur. The study by Brown et al. (2012) explored nurses’ knowledge and perceptions of the RRT in place at the organization. Nurses were able to determine that changes took place in their patients’ status, but they were weak in recognizing changes that justified activation of an RRT.

The purpose of this project is to determine nurses’ perceptions about RRSs, including (a) ease of use, (b) their knowledge of criteria for activation, (c) the communication process during activation, (d) the support received, and (e) their perception of their own skills. This project will apply the limited research that has been previously conducted on this topic. There is need for an evidence-based project that determines nurses’ interactions with RRTs and how these interactions may be improved upon through nursing education. Organizational and nursing professional facilitators and barriers to the successful implementation of an evidence-based intervention were identified and described. Strategies to overcome barriers were implemented. Outcomes of a proposed educational intervention for proper RRT use, communication skills, and other topics that arose as assessment and implementation took place were evaluated.
Nurses’ Perceptions and Perspectives of RRSs

Previous research has been conducted to better understand nurses’ perspectives of RRSs and advance their use and efficacy. Additional research topics have included how RRSs influence the hospital environment and whether they benefit patients and staff to inform theory development and future practice. For example, a survey that took place identifying nurses’ experiences with RRTs found that nurses highly supported their use. The authors called for each hospital employing RRTs to conduct follow-up assessments of why the call was made “to assess the quality, timeliness and outcomes of care provided” (Williams et al., 2011, p. 271).

Williams et al. (2011) studied how nurses’ perceptions of RRTs affected the nurse, team, and system. However, the study took place at a single site, so findings may or may not be generalizable across multiple hospitals. Wehbe-Janek et al. (2012) studied nurses’ perceptions of simulation-based interprofessional training for RRT events. Subjects included nursing staff from multiple hospitals, but lacked other interprofessional team members on the RRT. This examination of nurses’ perspectives led to an understanding of how simulation can positively influence self-perceptions of assurance, organizational culture, and patient safety. This study also provided support for the application and use of simulation training programs for nurses who work with RRTs.

A study conducted by Bagshaw et al. (2010) evaluated nurses’ beliefs and behaviors about an RRT system three years after its implementation. Several issues were evaluated in the survey, including the nurses’ understanding of the potential benefits of the RRT, whether they found the RRT useful when managing sick patients, and whether they faced obstacles to activating the RRT. Additional issues that were identified included whether the RNs believed that a particular patient- and/or system-related factor resulted in patients needing the RRT and
whether they believed that the RRT affected either their abilities or their skills for managing sick patients outside of the ICU. Nurses outside of the ICU valued the RRT and indicated that it increased their sense of security in dealing with deteriorating patients.

Salamonson, VanHeere, Everett, and Davidson (2006) also used a survey to determine nurses’ satisfaction with an MET; their perceptions of its benefits and their suggestions for improvement were determined. Results from the survey also identified the characteristics of nurses who were more likely to activate the MET. Sixty-eight percent (68%) of nurses in the sample rated their satisfaction with the MET as meeting expectations “well” or “very well.” Twenty-one percent (21%) rated their satisfaction as “not applicable.” Perceived benefits of the MET included immediate attention, early interventions, backup support, and access to medical experts. Suggestions for improvement included more education on emergency situations and poor attitudes of MET staff including statements like “why did you call me?” for patient situations for which floor nurses were uncertain.

Pusateri et al. (2011) used a survey format to determine the nursing staff’s familiarity and perceptions of the MET at a hospital. The survey consisted of a 30-item questionnaire using a 5-point Likert scale; background, experience, and perception questions were included. The nurses who participated in the study were non-ICU staff, and they participated on a voluntary and anonymous basis. Seven of the items were based on demographics and six items dealt with their background experience with METs. Out of the nurses that responded, 97% were familiar with the MET, 72% had participated in the MET, and 58% had activated the MET.

Understanding nurses’ perceptions and knowledge is important in continuing to improve upon the effectiveness of RRTs. Again, nurses at the bedside are first in line for activation of RRTs, so their knowledge of the RRT is crucial in relation to patient morbidity and mortality. By
obtaining a clear view of their perceptions and knowledge base, an educational intervention can be formulated to improve patient outcomes.

**Simulation**

Training for nurses that are exposed to RRTs has taken different forms in hospitals, including online education, presentations, computer simulation, and high-fidelity simulation. The benefits of simulation training have been referenced in several studies on the capabilities of nurses in critical care emergencies (Leonard, Shuhaibar, & Chen, 2010; Sittner et al., 2009; Wehbe-Janek et al., 2012). Simulation provides nurses with hands-on experiences resembling clinical practice in which they can integrate skills, knowledge, and critical thinking.

Wehbe-Janek et al. (2012) investigated nursing perceptions of the training received during an interprofessional simulation for rapid response and cardiac arrest events. Perspectives of nurses were studied during a mandatory simulation-based multidisciplinary program. The RRT simulation team included unit nurses, respiratory therapists, pharmacy staff, and internal medicine and anesthesiology residents. A voluntary questionnaire at the end of the program gathered qualitative data in the form of narrative responses and quantitative data utilizing a 5-point Likert scale. Results included 10 main themes in response to the question, “What do you perceive as the most valuable experience of the training session?” The top answer was the “opportunity to engage in hands-on practice and experience” (p. 46).

Researchers found that after simulation training for RRTs, nurses perceived that they increased their knowledge, skills, awareness, and preparedness for RRT events. The nurses also needed to develop a better understanding of their roles and responsibilities during an RRT. The researchers suggested that simulation training successfully addressed the nurses’ “concerns about their performance and understanding of rapid response and resuscitation events” (Wehbe-Janek
et al., 2012, p. 48). At the hospital where the study took place, a mandatory RRT and cardiopulmonary arrest training simulation program for all new nurses was implemented as part of general nursing orientation.

Nursing capability depends on the knowledge and skills of nurses. These studies have demonstrated the usefulness and education-enhancing properties of simulation-based training for bedside nurses. Nurses require training regarding the specific RRS programs in place at the hospitals in which they work. Enhancement of knowledge, skills, and critical thinking for bedside nurses is needed for positive patient outcomes. It appears that nurses appreciate and can grow from feedback through participation in simulation activities based around activation of the RRS.

**Barriers**

Barriers to the proper use and acceptance of, and communication within, RRSs have been previously researched by several authors. These barriers will be identified during this project as part of the assessment of bedside nurses’ perceptions of the RRSs.

Bedside nurses are the individuals who initiate the RRS most frequently because they are more in tune with the patients’ status. Dwyer and Mosel (2002) found that nurses’ abilities to recognize and interpret signs and symptoms of deterioration were poor, and training programs were necessary to increase these skills. Most nurses have been found to have a good opinion of RRTs, although some barriers remain. These include non-acceptance by physicians and nurses, lack of role clarity, and team performance (Jones et al., 2006). Lack of role clarity and team performance can be enhanced with the proper mandatory education on RRTs, specifically designed for each hospital setting.
Poor communication plays a large part in the failure of RRSs. Leonard et al. (2010) listed three reasons why communication errors are made: (a) physicians and nurses are trained to communicate differently, (b) hierarchies in health care can inhibit individuals from speaking up, and (c) there is a lack of standardized communication and procedures in health care. If communication is lacking, there is a higher chance for delay in RRS activation and collaboration during a rapid response event, potentially leading to poorer patient outcomes. Nurses have the opportunity to practice communication skills during critical care simulations among themselves, the team leader, and the RRS. Enhancement of communication skills is a goal in practice simulation; mistakes can be made in a safe environment instead of during an actual critical care emergency.

A supportive culture is defined by a team effort in treating unstable patients in which the nurses are not hesitant to activate the RRT and are supported by their coworkers, members of the RRT, and other health care providers (Shapiro, Donaldson, and Scott, 2010). An unsupportive organizational culture in the hospital setting can be a barrier to proper activation and use of RRSs. Problems in dealing with chain of command, such as calling the physician first instead of activating the RRS according to established criteria, fall under challenges that may be encountered. Administrators also have been found to not fully support nurses who activate the RRS. A well-functioning RRS throughout the hospital is ideal but can be hindered by this barrier.

In the study by Bagshaw et al. (2010), authors evaluated nurses’ beliefs and behaviors about the RRT system. A few associated barriers were identified by the nurses who participated: fear of criticism, long-standing hospital culture, and disagreements about the management of patient care between members of the RRT and staff on the unit.
These barriers suggest the need for an interprofessional educational intervention for both medical and nursing staff. Several barriers to RRSs exist, including non-acceptance, lack of role clarity, poor team performance, communication errors, and an unsupportive hospital culture. With proper training, educational interventions, and a supportive organizational culture, these barriers have the potential to be overcome.

Interventions

Findings from the literature have indicated that there is a benefit in clarifying nurses’ perceptions on the topic of RRSs outside of the ICU. The researchers of these specific studies identified gaps in nursing practice with non-ICU nurses who activate RRSs most frequently. Individual perceptions affect staff nurses’ reasoning for activation of the RRS, so understanding these perceptions is necessary to address learning needs. Research to date has supported the use of educational interventions in the form of simulations and programs to increase nurses’ clinical knowledge and skills in recognizing when the RRS is necessary, what the activation criteria are, and the nurses’ role in assisting the RRS (Brown, et al., 2012).

The evidence-based intervention in this project has several steps. The first step was to gather information on nurses’ perceptions of the RRS that has been in use at a particular hospital setting. The information was gathered via a survey to assess the following topics: (a) nurses’ understanding of the potential benefits of the RRS system, (b) nurses’ perspectives on the usefulness of the RRS system in managing sick patients, (c) the obstacles nurses face when activating the RRS, (d) the patient factors and/or system factors involved with RRS activation, (e) the circumstances under which nurses do or do not activate the RRS, and (f) the nurses’ beliefs about how the RRS affects their abilities or skills for managing deteriorating patients (Bagshaw et al., 2010). The survey was taken on a voluntary basis by those nurses who work on
specifically chosen non-ICU units. Those nurses who are employed in management or educational positions were not able to participate.

Organizational facilitators for the implementation of this educational intervention included access and use of resources through the Kirkhof College of Nursing and/or the project location, access to a high-fidelity simulation laboratory, and cooperation from the facility administrators regarding where the intervention will take place. The precise content of this educational intervention was determined by the outcomes of the assessment survey.

Organizational barriers did not include obtaining approval from the facility, limited access to staff, sufficient time to implement the intervention, financial constraints with initiating the educational intervention, and a non-supportive hospital culture. A barrier that did occur was participation of nurses in Sample 2.

After the results from the survey were gathered and analyzed, the next step was to decide what type of educational program to implement for the participating nurses at the particular hospital. A thorough review of the survey results was needed to determine what focal areas were deemed important and valued by the nurses. An educational simulation program was created based upon the results of this survey. Implementation of an RRS simulation took place for those nurses who participated in the survey to better prepare them in their role during an RRS.

Nursing staff were the focus of this educational intervention, although participation and collaboration with other disciplines during the natural progression of an RRS in the simulation was included. The use of simulation afforded nurses the opportunity to practice communication skills during critical care simulations among themselves, the team leader, and the RRS, enhancing role clarity and increasing team performance. The planning and implementation of the
intervention included the identification and possible resolution of barriers revealed during the project.

**Potential Outcomes and Influence**

The intended outcomes for those nurses who participated in the simulation and educational intervention were enhanced communication skills, greater knowledge, and increased awareness of their role in working with the RRS. It is hoped that the nurses had an increased awareness of the process that is expected during critical situations and were able to enhance their preparedness for working with RRSs. Greater role definition and clarity was an expected outcome of the intervention so that nurses now know what is expected of them during an RRS event to prevent cardiac arrests. Increased self-confidence and comfort with performing in an RRS due to the evidence-based intervention was a potential outcome.

In assessing the impact of the interventions, the use of a survey was the most accessible, feasible evaluation method and is supported by previous research (Sittner, et al., 2009; Wehbe-Janek, et al., 2012). Questions included in the program evaluation were modeled after a combination of items from research studies and from the onsite assessment. The questions assessed the effect on nurses’ perceptions of the RRS simulation. The survey was beneficial in determining what factors did or did not need improvement to increase positive outcomes for sustainability.

**Summary**

The potential interventions and outcomes that are proposed are supported by evidence-based practice and literature as an initiative to affect health care reform. Nurses’ education, clinical skills, and knowledge are important in maintaining and increasing positive patient outcomes. In implementing this proposed practice project, the goals include: increasing
communication, enhancing clinical skills, and expanding knowledge for nurses in their collaboration with RRS systems. The strength of the research evidence surrounding the use of educationally based interventions, including simulation, is discussed in the next chapter.
The literature search process for this project began with the use of several databases, including CINAHL, ProQuest, Science Direct, Cochrane, and UpToDate. Four inclusion criteria for studies were utilized: (a) the intervention discussed focused on the implementation or improvement of a rapid response system (RRS) or determined nursing perceptions, (b) the intervention was published in a peer-reviewed journal, (c) the study had a publication date no older than the year 2000, and (d) the study was published in English. Studies were also reviewed when they reported on the outcomes and processes of RRSs and/or on educational simulation interventions used for increasing the effectiveness of RRSs. Levels of evidence were determined according to Melnyk and Fineout-Overholt’s (2011) hierarchy of evidence (See Appendix A, Figure A1).

The inclusion criteria necessitated that Boolean operators, subject headings, footnote chasing, and cited reference searching were used to more efficiently explore available literature. Search terms and keywords included “nurse perceptions,” “rapid response teams,” “medical emergency teams,” “nursing and emergency response,” “nursing and decision making,” “simulation intervention,” and “simulation education.” In this chapter, the evidence surrounding RRSs and nurse perceptions is explored, along with the use of simulation educational interventions for increasing knowledge and skills among non-ICU and non-ER bedside nurses.

**Effect of Rapid Response Systems on Outcomes**

Systems of emergency response that include rapid response systems (RRSs) have been found to be effective in quickly detecting and treating episodes of acute critical illness. The
expert attendees at the 2005 International Conference on Medical Emergency Teams determined that hospitals would benefit from implementing an RRS that had (a) a limb consisting of crisis detection and response, (b) another limb of the predetermined rapid response system, (c) an organizational structure to supply resources, and (d) a method to evaluate crisis precursors to prevent adverse events (DeVita et al., 2006).

Research supports the notion that the use of RRSs results in decreased morbidity, mortality, cardiac arrests, length of stay, cost, and admissions to the ICU (Salamonson et al., 2006; Bellomo et al., 2004; Sebat et al., 2005). Bellomo et al. (2004) sought to determine whether intensive care METs would decrease adverse outcomes in patients having major surgery. This quasi-experimental, prospective, Level III, controlled trial took place at a university-affiliated hospital (See Appendix A, Figure A1 for hierarchy of evidence). The population studied included those patients admitted to the hospital for a four-month control phase followed by a four-month intervention phase. All patients admitted to the hospital who had major surgery were considered part of the study, and major surgery was defined as an operation with a hospital stay greater than 48 hours.

During the control period, there were 336 adverse outcomes in 190 surgical patients (301/1,000 surgical admissions) and there were 73 inpatient deaths. Fifty-two MET calls were made during the intervention period. The number of adverse outcomes decreased to 136 in 105 patients during the intervention period (127/1,000 surgical admissions). Also during this period, ICU admissions decreased from 89 to 48, hospital survival after an MET call was 89.4%, and there were only 45 inpatient deaths. Introducing the MET reduced the incidence of adverse outcomes in postoperative patients as well as the mortality rate and the length of hospital stay.
Buist et al. (2002) researched the use of early interventions via an MET, including whether use of the MET resulted in a reduction in the incidence of mortality from cardiac arrest. This Level III study took place before and after the implementation of an MET. Results included an incidence of 3.77 cardiac arrests per 1,000 hospital admissions before the intervention and 2.05 per 1,000 after (p < .001). The mortality rate of patients who coded was 77% before MET introduction and 55% after (p < .001). These results suggest that use of the MET significantly reduced the incidence of mortality from unexpected cardiac arrest in unstable patients.

Jones et al. (2005) conducted a prospective, quasi-experimental, Level III, historically controlled before-and-after study of the effects of an MET on long-term incidence of cardiac arrests. The follow up took place four years after the implementation of the MET at a teaching hospital. There was a reduction in cardiac arrests from 4.06/1,000 admissions to 1.3/1,000 admissions, or a 69% reduction in arrests. There was an inverse relationship between the number of METs called per 1,000 admissions in each calendar year and the number of cardiac arrests per 1,000 admissions for the same year. For every 17 MET calls, one cardiac arrest was averted.

Hillman et al. (2005) studied whether an MET system would reduce the incidence of cardiac arrests, unplanned admissions to the ICU, and patient deaths during a six-month study period. This was a randomized, Level II control trial that took place in Australia; the sample included 23 hospitals that had an MET in place or were expected to implement an MET. Control hospitals did not have an MET in place during the study. Randomization of the hospitals to receive MET implementation or to be a control was concealed from the project investigators and participating hospitals.

The MET implementation increased activation calls from 3.1/1,000 admissions to 8.7/1,000 admissions (p = .01). The call rate for patients who were found to have signs and
symptoms of documented MET calling criteria in association with cardiac arrest was higher in unplanned admissions ($p = .001$); 50% of these patients had documented evidence of activation criteria before the MET was called. Only 30% of the 50% of patients had an MET call before admission to the ICU. Cardiac arrests decreased ($p = .003$) as well as unexpected deaths ($p = .01$). However, there was no significant difference between the MET and control hospitals for any outcome.

Chen, Bellomo, Flabouris, Hillman, and Finfer (2009) studied the relationship between emergency team calls and the incidence of serious adverse events in a Level II, cluster, randomized control trial of a medical emergency team implementation (MERIT study). Adverse events included cardiac arrests, death, and unplanned admissions to the ICU. A post-hoc analysis was conducted of the control data collected from hospitals with no RRS in place and the experimental data from those that used an RRS.

There were 23 hospitals that participated, and data regarding 11,242 adverse events and 3,700 RRS calls were collected. The results showed a 10% increase in RRS calls at the experimental hospitals, which reduced unexpected cardiac arrests by 1.99/10,000 admissions (95% CI, -2.6 to -1.4); reduced unexpected deaths by 0.94/10,000 admissions (95% CI, -1.4 to -0.5); and reduced all cardiac arrests by 2.21/10,000 admissions (95% CI, -2.9 to -1.6). There was no significant relationship between unplanned ICU admissions and early RRS calls. The increase in the amount of RRS calls resulted in a lower occurrence of emergency events, supporting a conclusion that early intervention decreases adverse events.

The purpose of the review of these studies was to assess the importance of having rapid response systems implemented in hospitals. The strength of the research according to the hierarchy of evidence included Level II and III studies. Only one study did not find any
significant differences in outcomes of cardiac arrests or unexpected deaths, while all others resulted in positive outcomes. The results from the studies suggest that outcomes improve when RRSs are introduced into emergent patient situations.

Perceptions of Nurses on RRSs

The evidence surrounding RRSs and nurse perceptions is growing; new research studies are being conducted as the need for additional research is evident. As reviewed previously, RRSs are put in place to prevent unnecessary cardiac arrests, reduce patient mortality, and reduce unplanned ICU admissions. The following current studies explore nurses’ perceptions of RRSs and how RRTs and METs affect the medical team and system within the hospital. Research studies are grouped by methods, including surveys (descriptive and cross-sectional), focus groups, and mixed-methods approaches.

Brown, Anderson, and Hill (2012) explored nurses’ knowledge and perceptions of the RRT in place at a 175-bed non-teaching regional hospital. The study was a prospective, quantitative, descriptive design in which 57 nurses participated. Data were collected through the use of a survey titled Rapid Response Team Survey. The tool consisted of three parts: (a) hypothetical case studies to measure knowledge, (b) identified barriers, and (c) nursing perceptions. Both identified barriers and nursing perceptions were rated by importance on a six-point Likert scale ranging from “never important” to “extremely important.” Ten previously identified barriers that nurses could choose from included items such as physicians’ positive response to the RRT, knowledge of the RRT criteria, knowledge of the process for calling the RRT, and the way the nurse is treated by the RRT. The results from the study implied that education was needed for prompt identification of unstable patients. The authors suggested that “nursing knowledge and utilization of the RRT will be enhanced through the development of
strong policies and protocols, with the establishment of clear calling criteria and a program that is easy to use” (Brown et al., 2012, p. 100).

Pusateri et al. (2011) also used a survey tool comprised of demographic questions, open-ended questions, and a five-point Likert-style agreement scale to better understand the role of nurses in RRSs by determining their familiarity with and perceptions of the MET at a hospital in Philadelphia. On the Likert scale, 1 represented “strongly disagree,” 3 represented “neutral,” and 5 represented “strongly agree.” There were 131 non-ICU nurses out of 388 who voluntarily returned the survey. Results from the survey showed 97% were familiar with the MET, 72% had participated in an MET, and 77% had initiated an activation call.

The majority of nurses agreed or strongly agreed that the MET enhanced patient care (92%) and the work environment (83%). Forty-one percent of nurses were comfortable in their role during the MET response and agreed they felt prepared to administer nursing care during an MET event. There were 52% of nurses who agreed or strongly agreed that an increase in experience with the MET correlated with an increase in preparedness. However, only 28% felt that the MET education they had received equipped them to participate effectively with the MET. Overall, there were several barriers identified regarding the use of the MET by bedside nurses. These included unclear roles for the staff nurses during an MET, little education about METs provided by the hospital, physician discouragement to call an MET, and uncertainty about the severity of a patient’s condition.

Galhotra et al. (2006) developed an anonymous questionnaire to determine nurses’ perceptions about METs and their effect on patient care and nursing at an acute care teaching hospital. The sample size was 248. The questionnaire was created by critical care and advanced nurse practitioners. Demographics, nursing experience, perceptions of MET impact, work
environment, and decision-making processes were topics covered via yes/no responses or a Likert-style format. Results from this survey indicated that 98% were familiar with the MET, 93% thought it improved care, 84% thought it improved the work environment, and 65% would consider MET use as a factor in future employment. One hundred percent of nurses who had called the MET more than two times valued their ability to do so. Similarly, 95% of those nurses who had activated the MET once also valued their ability. Improvements to the MET were recommended by 15% of the ICU nurses versus only 5% of the non-ICU nurses. The authors concluded that nurses who worked with METs had positive perceptions as they believed that productivity and patient safety increased, immediate crisis support was provided, and autonomy was increased.

Jones et al. (2006) assessed whether nurses valued the MET and determined if any barriers to use existed. The study took place at a university-affiliated hospital in Australia in which educational preparation was conducted during the one year before the introduction of the MET. A review of the MET took place four years after implementation, using a survey. The education program was provided to all staff over one year. The survey was a 17-item Likert-style questionnaire; the scale was anchored with 1 as “strongly disagree,” 3 as “uncertain,” and 5 as “strongly agree.” These 17 items focused on the benefits, usefulness for staff, and the obstacles for nurses when activating the MET.

The survey sample included 351 nurses who participated in the educational program and completed the survey. The majority of nurses felt that the MET prevented cardiac arrests (91%) and effectively managed critically ill patients (97%). Two percent of participating nurses were fearful regarding decision making when activating the MET, and 10% feared criticism if the patient was not unstable or ill enough to call the MET. Seventy-two percent of nurses indicated
they would call the physician before calling the MET, which was inconsistent with hospital protocol, and 81% indicated they would call the MET if the physician was not available. Sixty-two percent of the participating nurses specified they would call the MET for a patient that met criteria but did not look unwell, and 56% would call the MET for a patient with stable vital signs but looked unwell. Continuing education was described as potentially beneficial to ensure proper use of the MET.

Bagshaw et al. (2010) utilized a survey with demographics and Likert-style questions to evaluate nurses’ beliefs about behaviors related to the MET in place at a large academic hospital in Canada. Out of 614 nurses, 275 participated and completed the survey. The survey was previously validated by Jones et al. (2006). The questionnaire consisted of 19 questions focused on demographics and beliefs about the MET. The sample included the following: 84% were registered nurses and 16% licensed practical nurses; 48% worked on surgical floors and 52% worked on medical floors; 44% had more than 10 years of nursing experience and 27% had less than three years of nursing experience.

The majority of the participating nurses thought the utilization of the MET prevented cardiac arrests in critically ill patients (84%). Many (94%) thought the MET allowed care to be sought out for patients who needed extra attention. Seventy-eight percent indicated they would call the physician before activating the MET, which was against hospital protocol; 15% would be hesitant to activate the MET for fear of criticism; and 48% would activate the system for a patient that they felt needed assistance even if vital signs were stable. The MET was perceived as a valuable tool for nurses and critically ill patients. However, barriers to care such as fear of criticism and/or notifying the attending physician remained.
Salamonson et al. (2006) used open-ended questions on their survey tool to explore nurses’ satisfaction with the MET, perceived benefits of having an MET, and suggestions for improvement. The study took place at a regional hospital in Sydney, Australia. The sample consisted of 73 nurses who returned the questionnaire. Years of experience ranged from less than one year to 37 years, and half worked full time and half worked part time. Nurses with more experience were more likely to activate the MET than nurses who were less experienced; 78% of the nurses had previously activated the MET.

Sixty-eight percent of nurses felt the MET met their expectations “well” or “very well.” Four categories of benefits from the use of the MET emerged: immediate attention (41%), early interventions (34%), backup support (33%), and access to medical experts (18%). Two categories for improving the MET included more education about medical emergencies (25%) and improvement of the poor attitude of MET team members (11%). The other 22% were happy with the current MET system. The poor attitude of the MET members was described as the trivialization of borderline cases by MET staff, evidenced by statements such as “Why did you call me?” (p. 141). Nurses overall seemed to be happy with the MET system, although increasing the availability of education about medical emergencies would meet the identified needs of participating nurses.

A study by Sarani et al (2009) focused on nurses’ perceptions and MET activation, but also included resident physician perceptions of the influence of an MET on skills and provider knowledge. The survey took place at an academic medical center and was administered to 141 internal medicine and general surgery residents and 497 nurses. There was a 67% response rate for residents and 83% response rate for nurses. Questions included those that pertained to participant demographics and the participants’ opinions about the effect of the MET on their own
skills and their education. A five-item Likert scale was anchored with 1 as “strongly disagree” and 5 as “strongly agree.”

Ninety-eight percent of the residents and 73% of the nurses had been involved in one or more METs. Both nurses and residents felt that the MET increased patient safety, but nurses felt more strongly regarding this statement. Residents were neutral toward the statement that the MET decreased their opportunity for gaining critical care skills and education. The nurses disagreed and felt they had opportunities to improve their skills and knowledge. Medical residents involved in MET calls felt more strongly that it improved patient care compared to surgical residents. Those nurses and residents who felt they were part of the MET call had more positive attitudes.

Williams et al. (2011) chose a focus group methodology to study nurses’ thoughts and perceptions about experiences with RRT use. The goal was to promote discussions on the meaning of RRT use at a 156-bed community hospital where this team was implemented in 2005. The RRT consists of an ICU nurse, an ER nurse, and a respiratory therapist. A total of 13 nurses participated in the focus groups, and data were collected through the use of notes and audio recordings. The average nursing experience among the participants was 12 years, and the sample included nurses from both day and night shifts.

There were three themes that were identified, along with subthemes for each of the three themes. The first theme of the individual nurse included the subthemes of developing knowledge, benefiting patients, experiencing autonomy, and using intuition. The second theme of team included the subthemes of solving problems collaboratively and evaluating the team. The third theme of system included the subthemes of working with people and processes and advocating patient safety. After reviewing the results, the researchers found that the participating
nurses supported the use of RRTs and wanted to see them continued. Advantages of the RRT included not only improved patient outcomes but also improved nurse independence, intuition, and knowledge. The RRT system was also viewed as a problem-solving tool by nurses in cases where they understood extra help for the patient was needed but were unclear about what the specific problem was.

Shapiro et al. (2010) also chose focus groups as their method to gain insight into nurses’ perceptions of what they considered a successful RRT, their experiences with the RRT, and challenges encountered during RRT utilization. A group of 56 nurses from 18 hospitals in 13 states participated in small focus groups. In this sample, average experience as a nurse was approximately 14 years, and the number of years spent on a specific floor was 8.9. Data collection consisted of digitally recorded discussions and transcriptions of the recordings in this qualitative study. Nurses found their RRTs to be a tool to accelerate patient care during an emergency and were able to do so with a phone call. Challenges of using the RRT included contradictory instructions from leadership on when to activate the RRT and pulling nurses away from patient care who were part of the RRT. The findings indicated that the presence of RRTs improved nurses’ work setting and allowed them to feel secure in providing care despite the challenges encountered.

Another study by Astroth, Woith, Stapleton, Degitz, and Jenkins (2013) used a qualitative design. Open-ended questions were used for nurses to describe facilitators and barriers to activating RRTs. There were 15 nurses who participated from a medical center in the Midwest. The number of times the nurses had activated the RRT ranged from two to 20. The interview consisted of nine open-ended questions. Themes of the analyzed data included facilitators and barriers, with subthemes of RRT characteristics and unit culture.
Facilitators that were identified included the expertise of the RRT staff and support from leadership. Barriers that were identified included poor communication from the RRT staff and uncertainty whether to call the physician first. There were notable inconsistencies regarding the method the hospital used for education about the RRT. Some nurses received education during orientation, some received it during a review in their performance appraisal, and some did not receive any orientation or education other than when the RRT was implemented. The authors concluded that poor communication was a barrier to RRT activation that especially needed attention among the RRT members and physicians when interacting with nurses.

Overall in these studies, nurses provided feedback about their perceptions, beliefs, and satisfaction with MET and RRT systems in their hospitals. A few studies demonstrated the increased nurse autonomy that utilization of RRSs provide. The majority of nurses studied had participated in an MET. Significant barriers during the process of activating an MET were identified, including not feeling comfortable in their role, fear of criticism from leadership and/or physicians, going against hospital protocol and calling the physician first, poor communication, and being unsure of their clinical judgment. Nurses, however, did have strong feelings about the effectiveness and worth of RRSs in improving patient care, the work environment, and their perceptions of autonomy. They also appreciated the emergency backup and resource RRSs provided when a patient became unstable.

The majority of these studies were consistent in their findings. Qualitative and quantitative descriptive studies with cross-sectional, single-site designs were the most common. The use of survey tools without established psychometric properties and convenience sampling limited the strength of these studies.
RRS Educational Interventions

As demonstrated in the studies surrounding nurses’ perceptions of RRSs, education was an important factor in nurses feeling prepared to take on the role of activating and participating in RRTs and METs. Some of these studies focused on the use of simulation interventions as one of the better educational methods for emergent patient situations.

Nurses are required to put their critical thinking skills to the test when a patient is deteriorating rapidly. Recognizing the signs of deterioration is necessary for bedside nurses and critical for activation of the RRS. The continuing education needs of nurses who participate in RRSs are significant, and the knowledge gained affects all patients under each individual nurse’s direct care. Regular, updated information on the system in place at specific hospitals should be included for all nursing staff that will be involved in the use of emergency response teams (Jenkins & Lindsey, 2010).

The value and use of simulation has been known and in practice for many centuries used by those in military and aviation for specialized training that would be too unsafe or expensive otherwise (Sanford, 2010). High fidelity simulation in the recent past has been incorporated into nursing and medical fields as a way to assess and improve clinical skill with the ability to make mistakes without the threat of harming patients. High-fidelity simulation is defined as techniques of human simulation that replicate realistic physiological responses to learner interventions (Durham & Alden, 2008).

There are several theories that have evolved over time related to simulation. Many learning theories can be applied to understanding simulation including those with topics of educational technology, cognitive psychology, computer science, and other social sciences. Some examples include experiential learning, instructional design theory, and active learning.
The question is what is the type of learning that takes place in simulation? Simulation is used as a health care education technique that is informed by research and theories on how people learn (Burke and Mancuso, 2012).

Simulation, especially high-fidelity, is a great learning method as it provides a safe place to make mistakes and learn from them. The Institute of Medicine (IOM) (2000) recommends simulation training to improve patient safety whenever possible. In its publication To Err is Human, the IOM authors recommended that “health care organizations and teaching institutions should participate in the development and use of simulation for training novice practitioners, problem solving, and crisis management especially when new and potentially hazardous procedures and equipment are introduced” (p. 179). Human patient simulation is a teaching strategy that has the potential to promote patient well-being and excellence of care (IOM, 2000).

Following the publication of To Err is Human, the IOM produced two other reports, one in 2001 titled Crossing the Quality Chasm (IOM, 2001), and the other titled Keeping Patients Safe (IOM, 2004). In these additional reports highlight the importance of patient safety and what we as nursing professionals can do to affect change.

Safety within health care organizations is one of the six aims for improvement within Crossing the Quality Chasm (IOM, 2001). Building upon safety discussed in the first publication, the IOM emphasized that patients should not be injured by care that is intended to help and that errors can cause injury. The use of simulation as an education tool creates a safe environment for nurses in which mistakes can be made and learned from in a controlled environment all while not causing harm to patients.

The safety theme continues in Keeping Patients Safe (IOM, 2004) as promoting a culture of safety and key elements are discussed. Some of these include patient safety policies and
procedures, undergoing training related to safety concepts and practices, and encouraging communication. Human patient simulation improves upon safety for patients and requires all of these elements in order to be a successful part in the education of nursing staff and to be incorporated as a necessary part of a culture of safety.

A total of 360 nurses who took part in a simulation study by Wehbe-Janek et al. (2012) went through a six-month process in which they were trained on rapid response and resuscitation events. The simulation program was created to “enhance awareness and use of RRTs with an emphasis on early recognition and effective communication” (p. 44). All unit nurses were required to participate in the three-week training program; responding to a survey to provide perceptions of the program was optional. Objectives for the program were determined based on staff feedback prior to the program relating to roles during critical situations.

After the simulation training, nurses completed a survey composed of open-ended questions and Likert-style statements. A total of 203 staff returned the survey. Demographic data regarding nursing experience showed a range of less than one year (26%), one to two years (16.3%), three to five years (15.6%), and more than six years (41.4%). Using content analysis, 10 main themes were identified from the responses to the open-ended question, “What do you perceive as the most valuable experience of the training session?” The 10 themes included: opportunity for hands-on experience (18.4%), increased awareness and preparedness (15.1%), role clarity (12.7%), teamwork and interprofessional team training (12.7%), increased knowledge and skills (9.9%), communication (7.8%), increased confidence and comfort (7.1%), simulation experience (6.6%), debriefing and reflective learning (6.1%), and patient outcomes (2.4%). The percentage of the sample that identified with the theme is listed in parenthesis.
As established in the section on nurses’ perceptions of RRSs, a barrier to the system is an underestimation or failure to notice signs and symptoms that should warrant an RRT or MET call. The study above found that nurses perceived an increase in their knowledge and clinical skills after the simulation training program. However, the study did not examine via formal testing if there was a tangible increase in knowledge and skills, so future studies on post-training results are warranted.

DeVita, Schafer, Lutz, Wang, and Dongilli (2005) developed a human simulation training course to improve MET performance for nurses, physicians, and respiratory therapists at a university-affiliated tertiary hospital. All participants were ACLS trained and already had experience in emergency care situations. The course had four sections: (a) Web-based presentation and pretest, (b) a reinforcing didactic session on the day of the course, (c) three of five different simulated scenarios, and (d) a debriefing and analysis session by the team. The simulation was videotaped to assist with debriefing.

Ten courses of training were conducted between March 2002 and May 2003. There were 138 participants, with each group consisting of eight people. There were 69 critical care nurses, 48 physicians, and 21 respiratory therapists. Survival of the patient was measured by task completion or managing oxygenation, ventilation, and circulation within 60 seconds and delivering definitive treatment within three minutes.

Cochran’s Q significance test was used to assess changes in outcomes. This significance test is a variant of chi-square and used for categorical data. It is used when samples are not independent and there are three or more samples (Vogt & Johnson, 2011). It was found that overall simulated survival rose from 0% to 90% over the three simulated sessions in the one-day course. This was a statistically significant difference based on the three sessions in one day.
(Cochran’s $Q = 12.6, p = 0.002$). The first simulated survival rate was 10%-45% and it rose to 80%-90% by the third session.

Kendall’s $W$ significance test was used to track improvement in the task completion role across the three scenarios. Kendall’s $W$ is a statistical test that ranges from 0 (no agreement) to 1.0 (complete agreement) and measures the concurrence among rankings of sets of variables (Vogt & Johnson, 2011). The improvement in overall task completion role was statistically significant ($Kendall’s \, W = 0.91, p < .001$). The data suggests that multidisciplinary team training using simulation is effective in increasing positive patient outcomes and improving communication between team members during MET response.

Sittner, Schmaderer, Zimmerman, Hertzog, and George (2009) used a pre-and post-test design for a pilot study with a simulation intervention to determine the effect of the Simulated Training for Enhancing Patient Safety (STEPS). The training program was implemented in an attempt to improve nurses’ RRT knowledge and clinical judgment. The study took place at a Midwestern medical center on a progressive care unit; 11 nurses completed the entire study, including the pre- and post-tests and the high-fidelity simulation program. The RRT scenario, which focused on a patient with pneumonia, was developed by the research team. Pneumonia is a medical condition that requires appropriate assessment skills to identify warning signs that can lead to critical conditions and cardiac arrest (Sittner et al., 2009). A SimMan$^{\text{©}}$ was used in the simulation. Vital signs, patient complaints, and mental status could be controlled when presented to the participants. Three instruments were used to evaluate the training experience: the Educational Practices Simulation Scale, the Simulation Design Scale, and the Satisfaction and Self-Confidence in Learning Scale.
Responses to the Educational Practices Simulation Scale (Sittner et al., 2009) were based on a five-point Likert scale, with 1 representing “strongly disagree with the statement” and 5 representing “strongly agree with the statement.” The responses determined that nurses placed a high importance on teamwork during the simulation. The highest scores were for the items labeled “presence of educational practices in simulation” (M = 4.76, SD = 0.59) and “the importance to the learner” (M = 4.65, SD = 0.55).

The Simulation Design Scale (Sittner et al., 2009) evaluated the scenario using the features of (a) support, (b) problem solving, (c) objectives and information, (d) feedback, and (e) fidelity. Content validity was determined by 10 content experts with experience in simulation development. The results from the scale indicated that “design features and fidelity” scored the highest (M = 4.87, SD = 0.31).

The Satisfaction and Self-Confidence in Learning Scale (Sittner et al., 2009) used a five-point Likert scale, with 1 representing “strongly disagree with the statement” and 5 representing “strongly agree with the statement.” Content validity was supported in a review by nine clinical specialists. The instrument measured if nurses were confident in the skills they learned and if those skills could be put into practice (M = 4.25, SD = 1.02). The mean for their satisfaction with the STEPS experience was 4.32, (SD = 1.14). Overall, nurses were highly pleased with their experience and there was a slight increase in their knowledge.

The pre- and post-tests included 19 identical questions to test the participants’ knowledge. The mean for the pre-test scores was 14, for the immediate post-test scores was 14.45, and for the 3-month post-test scores was 14.90 out of 19. Thus, the mean increased over time. However, there were no statistically significant differences over time (F(1, 10) = 1.12, p <
This pilot study leaves room for future studies to be completed on the effect of high-fidelity simulation training on nurses’ clinical judgment and skills.

Research regarding educational interventions in the form of simulation training programs suggests that they are effective in increasing nurses’ perceptions of readiness and knowledge of RRS protocols. Only one of the studies showed statistically significant improvement in clinical knowledge, although all showed improvement in the perception of communication, feelings of preparedness, and skills and judgment during emergency situations.

The first chapter discussed proposed interventions and outcomes that are supported by evidence-based practice and literature as an initiative to affect health care education. In this chapter, the strength of the research evidence surrounding the use of RRSs and educationally based interventions of simulation is discussed and evaluated. RRS outcomes and nurse perceptions are integrated into the design of effective simulation educational interventions. The following chapter will discuss the conceptual frameworks used to drive the design of the interventions and guide implementation.
For the proposed project plan, the use of two conceptual frameworks assisted in the design of interventions and guided their implementation. A conceptual framework is important because it aids in the creation of how the project goals will be carried to completion. The Learning Organization (LO) model by Senge (1990) and the Promoting Action on Research Implementation in Health Services (PARiHS) framework by Kitson, Harvey, and McCormack (1998) together will supply a framework for understanding nurses’ perceptions of rapid response systems (RRSs) and determine how the intervention aspect of the project will be approached.

The Learning Organizational Model

Senge’s (1990) LO model is based on five learning disciplines that create structures and processes for organizations to become continuous learning units. The five disciplines include (a) systems thinking, (b) personal mastery, (c) mental models, (d) shared vision, and (e) team learning (Senge, 1990). The model’s five disciplines are intertwined, and true organizational learning cannot occur without all five.

According to Senge (1990), organizational learning occurs at the individual, group, and organizational levels. Nurses who participate in RRSs do so as individuals, as team members, and also as organizational members. Hospitals that have RRSs in place tend to facilitate organizational learning so that staff members can more effectively identify and prevent patient deterioration.
Systems Thinking

Systems thinking has evolved into the way organizations must be perceived given their inherent complexity (Porter-O’Grady, 2009). Fields that are increasingly using systems thinking include healthcare, computing, engineering, epidemiology, information science, manufacturing management, and sustainable development (Richardson, 2007). When individuals view their environment through a systems thinking perspective, they have the ability to transform policy, practice, and research. According to Best and Holmes (2010), systems thinking highlights “the importance of coordinated and effective interventions across multiple levels of change and the importance of collaborative leadership and accountability throughout the system” (p. 154). These authors describe a Knowledge To Action (KTA) model of systems thinking in which evidence and knowledge, leadership, networks, and communications are interconnected.

Senge (1990) defined systems thinking as a way to perceive patterns and learn to reinforce or change them effectively to achieve a competitive advantage. This discipline focuses on the ability to see the whole picture as a system of multiple interrelationships instead of individual unlinked aspects (Al-Abri & Al-Hashmi, 2007). Systems thinking is the foundation for the LO model as it links the other disciplines to form a cohesive system. Through systems thinking members can attain organizational, investigative, and critical thinking skills. Nurses who are part of an organization with a rapid response system (RRS) in place are expected to enhance their investigative and critical thinking skills so they can recognize changes and take steps to prevent emergent situations.

Personal Mastery

Personal mastery, the second of Senge’s five disciplines, contains the three elements of personal vision, creative tension, and commitment to truth. Personal vision is the ability to focus
on ultimate desires with a sense of purpose (Senge, 1991). All individuals have a personal vision, though what they desire varies from person to person. Individual nurses, as key members of an organization, may each have a very different personal vision from that of other organizational members. Personal vision helps the individual focus on a higher purpose. For example, a nurse with a strong personal vision would perhaps be more likely to participate and give feedback in determining nurse perceptions of an organizational standard like a RRS.

Creative tension occurs when there is a gap between one’s vision and current reality; one needs to use the gap between what is wanted and what exists to find what is needed to create change (Senge, 1991). Tension encourages creativity, which can potentially lead to change. This creative tension encourages employees to become part of the solution. For example, after determining nurses’ perceptions of an existing RRS, the use of creative tension to initiate change in determined barriers would be an asset to change.

Commitment to truth is the willingness to challenge the way one perceives the world and those in it (Senge, 1991). The ability to be objective about a situation allows for change and desired results to occur. Moral courage is required in this commitment to truth; one’s perceptions may need careful thought and deliberation during the process (Comer and Vega, 2011). Nurses participating in a simulation intervention for increasing knowledge and skills in the RRS, for example, will need open-mindedness.

In summary, the three elements create a discipline in which the focus is commitment to individual learning and simplification of personal vision. Confidence gained from personal mastery allows an individual to face new challenges (Al-Abri & Al-Hashmi, 2007).
Mental Models

One’s understanding of how the world works and what actions are taken is based on ideas and assumptions called mental models. Mental models can limit people to familiar ways of thinking and govern how they make sense of the world (Senge, Kleiner, & Roberts, 1994). They are “deeply ingrained assumptions, generalizations, or even pictures and images, that influence how we understand the world and how we take action” (Senge, 1990, p. 8). Individuals often will hold to their true subconscious mental models instead of other theories. In a group setting, challenging others’ assumptions and ideas requires moral courage, although it also allows for recognition of individual mental models and how a shared model can be achieved (Coldwell & Fried, 2011).

The mental models of nurses who use a RRS are important in understanding why certain actions were taken (or not) in the time leading up to activation of the system. Individual mental models joined together represent a mutual awareness, which is an important part of teamwork. A shared mental model is the understanding of a process or situation that is shared among team members through communication (Bossche, Gijselaers, Segers, Woltjer, & Kirschner, 2011). It is ideal for an organization in understanding common goals and expectations.

Shared Vision

Shared vision, Senge’s fourth discipline, needs to be held by all parties in a learning organization; it provides focus and encourages experimentation, risk-taking, and commitment long-term (Senge, 1991). It is a key concept in transformational leadership. Each member must understand, share, and contribute to the shared vision for it to take place. A personal vision is essential for personal mastery and a shared vision is essential for organizational mastery. When
an organizational vision is shared, success is more likely to be found; employees are likely to put more effort and energy into their work (Coldwell & Fried, 2011).

Those using the RRS must have a shared vision among involved individuals in order to function at the highest level of care. RRSs rely on team mentality. This involves open communication, information sharing, role clarity, mutual support, and strong leadership. Shared vision is an important aspect of RRSs functioning as a team.

**Team Learning**

Team learning involves “commitment to continual improvement, sharing a vision of greatness, building on the disciplines of shared vision and personal mastery and mastering practices of dialogue and discussion” (Senge, 1991, p. 8). RRS teams, unit-based nurses, and other staff members who are involved in the activation and use of the RRS need to work together for there to be a successful outcome. Team learning requires members to focus on specific tasks and new ways of thinking to achieve the desired results (Coldwell & Fried, 2011). Team learning is an important Institute of Medicine (IOM) competency. This core competency is defined as “cooperation, collaboration, communication, and integral care in teams to ensure that care is continuous and reliable” (Institute of Medicine, 2001, p. 45).

There is a great need for interprofessional collaboration built on trust and respect. Each of the five disciplines brings aspects of knowledge and skills required for the RRS, facilitates the effectiveness of the RRS. The five disciplines together create a model for organizational change and leadership. Systems thinking is the predominant discipline that links learning, leadership, and change (Best & Holmes, 2010). The LO model supports change based on mutual values and joint leadership (Caldwell, 2012).
The PARiHS Framework

The PARiHS framework was created to assist in the successful implementation of research as it moves into practice. This model is useful for accurately representing the complexities of implementation, explaining variability in the success of implementation projects, and guiding clinicians who are charged with implementing research into practice (Kitson et al., 1998). The PARiHS Diagnostic and Evaluative Grid defines that successful implementation (SI) is represented as a function (f) of the nature and type of evidence (E), the qualities of the context (C) into which the evidence is being introduced, and the way the process is facilitated (F) or the formula SI equals f (E, C, F) (Kitson et al., 2008) (See Appendix B, Figure B1 for the grid).

“Successful implementation of a research into practice intervention requires a facilitated process involving interplay between individuals, evidence, and context to promote evidence-informed practice” (Rycroft-Malone et al., 2013, p. 13).

Implementation of an educational simulation intervention on the topic of RRSs fits well with the PARiHS model. High fidelity simulation education is a great example of implementing research into practice. Use of the most recent evidence and application to the current environment for involved nursing individuals can be best guided by this model.

Assumptions

The assumptions underlying the PARiHS framework will assist in providing a roadmap for the project’s facilitation. The first assumption states that “evidence involves structured and unstructured sources of knowledge, including research evidence, clinical experience, professional knowledge, patient preference and experiences and local information” (Kitson et al., 2008, p. 2). The project will need to draw from several areas of knowledge in order to be considered well-rounded. In addition to the literature review covered in Chapter 2, the author
will need to gather knowledge from the floor nurses participating in the intervention and also gain insight from those involved in the process, whether directly or indirectly. These include the RRS’s nurses, respiratory therapists, and physicians who participate in the RRS or have been involved in an RRS. The leadership team involved in the RRS including managers, clinical nurse leaders (CNLs), and clinical nurse specialists (CNSs) will also be sought out for feedback.

The second assumption states that “implementing evidence into practice involves negotiation and developing a shared understanding about the benefits, risks and advantages of the new over the old and requires team effort” (Kitson et al., 2008, p. 2). Those nurses who will be involved in the project and intervention will need to have a clear understanding of why they were asked to participate. Introduction of the project and goals well before the start date will be necessary to allow time for questions and clarification.

The third assumption states that “some environments are more favorable to the successful implementation of evidence into practice than others; these include environments that have transformational leaders, features of learning organizations and appropriate monitoring, evaluative and feedback mechanisms” (Kitson et al., 2008, p. 2). The nursing leadership at the project site pride themselves on fostering an open and communicative learning environment. This environment supports the philosophy of patient-centered care and nursing research.

The fourth assumption states that there is a need for support to assure successful implementation. The “state of preparedness relies on acceptance and comprehension of evidence, openness in the workplace to change, a leadership style and values” (Kitson et al., 2008, p. 2). Those who are labeled as facilitators improve implementation by working side-by-side with individuals and teams for support. This assumption links successful implementation with preparedness. Nurses who participate in the project will have a better chance of successfully
comprehending the intervention and fully involving themselves. The DNP student is the facilitator and will devote 175 hours this semester to successfully implement this project.

**Implementation Model**

These assumptions of the PARiHS framework underlie the main features of the three-dimensional model in which successful implementation is found. The framework has three core dimensions: the level and nature of evidence, the context, and facilitation (See Appendix B, Figure B1 for the model). Two dimensions range along a continuum from high to low: evidence and context (Kitson et al., 2008). The style used for facilitation, the third dimension, depends on the ratings of the other two dimensions in the model.

The three integrated dimensions of the model can create the ideal situation for the implementation of evidence into practice. The framework proposes that successful implementation of an evidence-based intervention into practice is a function of these three integrated dimensions. Evidence and context can range from weak to strong concerning support for the implementation project being proposed. Flexibility of facilitation style, along with openness and role clarity, create an ideal facilitation design.

The three dimensions of the framework can be applied to the proposed project objectives. Chapter 2 describes the level and nature of the evidence surrounding RRSs, nurse perceptions and simulation education. Linking evidence and context within the organization will need to occur before facilitation. Context issues within the project organization may include professional issues, communication challenges, and lack of clarity. It is hoped that the context will be receptive and open to changes to additional education on the RRS in place based on the evidence and organizational assessment. Facilitation of the project will rely on the meshing of evidence and context, creating an open environment and reception for implementation.
Evidence consists of four sub-elements: 1) research evidence from studies and clinical practice guidelines, 2) clinical experience, 3) patient preferences and experiences, and 4) local information (Helfrich et al., 2010). Effectiveness of the evidence ranges from low to high, as visualized in the model. Before implementation takes place, assessment of the strength of evidence in addition to the other two dimensions must occur.

Research evidence is strong surrounding RRSs for implementation and growth in nursing education, especially for simulation as discussed in Chapter 1 and 2. Nurses are at the forefront of activation of the RRS. They have varying ranges of years of experience and level of education. Those nurses who do not work on ICU and emergency room (ER) units do not receive the same training as ICU and ER nurses in identifying patients who are clinically worsening (Chan et al., 2008). In addition, performing an evaluation of the current nursing education and being open to continual growth and change is strongly recommended by the Institute of Medicine (2011). Clinical experience within the project site is evaluated by critical reflection and examination.

Patient preferences and experiences do not apply with the project as it is focused on nurses. Weak support for this area suggests patients are involved indirectly through a strong partnership with nursing staff. Local data and information that is collected on the topic of the project site’s rapid response team (RRT) strongly suggests that it is effective in decreasing mortality and preventing cardiopulmonary and respiratory arrests. Information on perceptions of nurses on RRSs is valued and reflected upon within the organization.

The RRT nurses who work at the project site were approached during the organizational assessment to give their tips and advice for nurses when interacting and using the RRT. This advice was grouped into common themes and serve as local information. The following are some
of the tips collected: 1) The patient’s primary nurse is responsible for documentation of assessments and interventions during an RRT call; 2) RRT nurses are a bridge to therapy…the patients’ physician should be aware of what is happening as they are ultimately responsible for the care (orders) for that patient; 3) Keep your charge RN in the loop. They are a great resource; utilize them; 4) If the RRT RN does not physically see the patient, please do not chart they have been at the bedside. This can be a disadvantage if an issue comes up; 5) Never be afraid to call, we love to help out and be a "big brother or sister" to new staff. No question is a bad question.

Context is a major concept in this model. It is the “understanding of the forces at work which give the physical environment a character and feel” (Kitson et al., 1998, p. 152). This dimension includes four sub-elements: receptive culture, organizational culture, leadership, and evaluation. In order to determine the how and why of how nurses interact with RRSs, the context of the project site will need to be assessed before implementation.

A receptive culture includes appropriate decision making processes, power and authority processes, a receptiveness to change, the initiative fits with goals, and the project addresses a key practice issue. Within the project site, a receptive culture will be necessary to carry the proposed intervention to completion (Kitson et al., 1998).

Organizational culture is the ability to define a culture in terms of values and beliefs. This culture will hopefully promote a learning environment and value teamwork and relationships with each other. Leadership within context encompasses transformational leadership, effective teamwork, role clarity, effective organizational structures and enabling teaching, learning and managing. Both culture and leadership will be vital to the introduction, planning, implementation, and completion of the project.
Evaluation is to include performance feedback given at the individual, team, and system or the organizational level. Evaluative methods include clinical performance, economic impact, and experience level with RRSs (Stetler, Damschroder, Helfrich, and Hagedorn, 2011). An organizational assessment will be conducted to determine the organization’s overall context on the following sub-elements.

Context is rated on a scale ranging from low to high. High levels of context include aspects of valuing people, promoting organizational learning, and the existence of transformational leadership (Helfrich et al., 2010). Transformational leadership is effective and shared; leaders demonstrate a strong vision and values to those they are leading. Transformational leadership is adaptive and flexible with a leader with a deep sense of personal values and ideas. This type of leader encourages those they lead to embrace higher thoughts and values (Doody and Doody, 2012).

Facilitation is defined as “a technique by which one person makes things easier for others” (Kitson et al., 1998, p. 152). Support is essential to help individuals change their ways of thinking and behaving. Facilitators help others reach goals, provide encouragement, and promote accomplishment. Facilitation includes three sub-elements: purpose, the role of facilitators, and their associated skills and attributes. Purpose is defined as facilitation that supports achievement of a certain goal or enables teams to change their mindset and work habits. The role of facilitators and their skills/attributes refers to the ways in which they help others understand why change is needed. Facilitators put aside personal biases to bridge professional and organizational boundaries; their focus must be on the development of the team’s relational and group skills (Kitson et al., 1998).
For implementation to be successful and integrated, the environment needs to be receptive to change. Each of these factors is equally important in successful implementation of research into practice. The latest update of the PARiHS framework by the authors recommends that facilitation is more effective and essential when a supportive “context into which the new knowledge can be introduced exists and an assessment of practitioners’ understanding of and acceptance of the evidence itself is conducted” (Kitson et al., 2008, p. 10). Determination of how much learning and change is needed depends on team receptiveness; therefore, an assessment for readiness must be performed.

**Summary**

Both the LO model and the PARiHS framework focus on organizational growth through the use of domains or dimensions. These models are logically organized and easy to follow. Each assesses the organization’s readiness to adapt to a new or refined way of thinking. Both deem that each domain or dimension relies on the others and cannot be separated to achieve the best results.

The LO model looks at learning and growth of an organization from the individual, group and organizational viewpoints. It is aimed at guiding individuals to think in a certain manner and embrace teamwork. The PARiHS framework, however, focuses more on the organization as a whole and the implementation of research into practice. The PARiHS has an end goal of completion of an intervention while the LO model transforms thinking to become open and receptive to the end intervention.

The following chapter is an outline of the project methods. Together, these frameworks will lay the groundwork and create a guide for the project in order to achieve the desired results of determining nurse perceptions of RRSs and the planning and implementation of a simulated
educational session. For example, facilitators help teams to be mindful of their mental models and help to create a shared vision. They also improve both personal and group mastery. Context ties into systems thinking and the integration of evidence-based practice (EBP) into the principles of organizational systems. Aspects from both the Learning Organizational model and the PARiHS framework will be meshed in order to obtain the best from each framework yet not altering the structure of either.
CHAPTER 4

METHODS

This chapter provides an outline of how the intervention at the chosen agency was carried out and completed. It also provides information on the surveying of prior Nursing Excellence Academy (NEA) graduates to help plan and assess staff nurse perceptions. The goal was to implement an RRT educational presentation and simulation for experienced new hire registered nurses (RN’s) participating in a specialized program titled the Nursing Excellence Academy (NEA). The primary purpose for this education is to increase their knowledge and skills in the recognition of the need for a rapid response system (RRS) activation and evaluate their perceptions of the simulation. The focus of the education will concentrate on the rapid response team at the chosen hospital.

Agency Overview

The project took place at a 344-bed community-based hospital in downtown Grand Rapids, MI. It is part of a larger Catholic healthcare organization that spans over 21 states in the nation. This faith-based organization’s mission, vision and values emphasize the overall strong commitment to bettering the communities that are served. Their mission is to “serve together in the spirit of the Gospel as a compassionate and transforming healing presence within our communities” (Mercy Health, 2013). Values of the agency include reverence, commitment to those who are poor, justice, stewardship, and integrity (Mercy Health, 2013).

Nurses within the department of nursing at the agency work hard to improve and provide high quality, safe patient care, to increase both patient and staff satisfaction, and to retain the highest talent. The department of nursing was recently awarded Magnet® designation in May of
2013. This award recognized the agency for excellence in nursing (American Nurses Credentialing Center, 2014).

The department of nursing has registered nurses in a variety of services including women’s health, emergency and urgent care, palliative care, cancer services, psychiatric care, neuroscience, orthopedic medicine, and medical, surgical, cardiac and neonatal intensive care.

The department of nursing staff has a strong commitment to the practice model. This nursing professional practice model is the meshing of theory and systems and describes how nurses at the agency practice, collaborate, communicate, and develop professionally. This model along with the care delivery systems creates a guide for nurses to follow and embrace (see Appendix C for the model).

Within the department of nursing, the rapid response team (RRT) at this agency was developed and implemented in 2005. Since its inception, the number of cardiac arrests decreased by 27%. The RRT consists of an assigned RRT nurse, physician, and respiratory therapist. It is available 24 hours a day, 7 days a week and is activated by the RRT nurse. The RRT nurse, also called the rapid responder, has several years of experience as an ICU nurse and is hand-picked by management for his/her clinical knowledge, skill, and communication ability.

The RRT nurse carries a phone with a direct number for staff to call at any time. Staff are to contact the RRT nurse when the patient meets criteria such as changes in vital signs or neurologic status or if they, as nurses, are concerned about the patient’s current state (see Appendix D for the MHSM RRT policy). Per the RRT policy, if the staff nurse feels the patient needs more assistance than she or he can provide, the RRT call is made to activate the rapid response nurse who can summon additional help.
The department of nursing currently requires all experienced newly hired RNs to participate in the Nursing Excellence Academy (NEA). NEA is a two day mandatory orientation educational program that provides a range of topics relating to hospital procedures and policy. In addition, scenario based simulation is provided. The orientation on these two days lasts from 8am to 4pm. A simulation session occurs at the end of each day that includes two different high-fidelity simulations.

**PARiHS Framework**

Assessment of the level and nature of evidence is the first dimension of the PARiHS framework. The evidence has been evaluated using evidence in research and professional expertise and experience at the organization. An organizational assessment of the agency and its RRT was completed to begin this process. Examining the already gathered evidence of the RRT including mortality rates, cardiac arrest rates, data on nursing satisfaction and knowledge, and speaking with nursing staff who are involved with the RRT will begin the process.

Assessing context is the second dimension in the PARiHS framework. Evaluation of the organization’s context was conducted by determining the relevance of implementing an RRT simulation educational intervention at the agency, the key values of the culture of the agency, leadership roles, and the agency’s approach to evaluation. This evaluation was carried out by becoming involved in various activities, meetings and groups, especially the RRT at the agency. Formation of working relationships with the staff, management and others was important and was nurtured by the DNP student.

In order to provide support for those nurses at the agency to change attitudes, habits, and skills, facilitation was necessary. Those who received the implementation intervention and those who may be sustaining it in the future will need a strong facilitator who embodies openness,
credibility, clear role of authority, and a consistent facilitation style. The DNP student achieved this with help of the preceptor and simulation director at the agency. Clear and open communication with nursing staff was also an important aspect of this facilitation.

The Learning Organizational Model

Systems thinking was used to outline the idea of an RRT. The RRT cannot function with only one person or it is disconnected. With all persons involved working together as a whole, it becomes viable. Nurses who received the simulation intervention were introduced to the elements of personal mastery, mental models, shared vision and team learning during the educational presentation before the RRT simulation. Together, these elements helped to demonstrate to these nurses as individuals that there is a higher purpose of the agency to provide effective, safe and better healthcare through teamwork.

Procedures

Sample 1

Two samples of nurses were approached for participation. The first sample were those nurses who have already participated in NEA and still currently employed by the agency. An estimate of 80 or more nurses have participated in NEA since its beginning in January 2011. An assessment survey on participation, knowledge and satisfaction with the RRT at the agency was gathered from this group. Two published surveys were combined into one online survey to collect this descriptive data (see Appendix E and F for surveys). An available list of those nurses who completed NEA in the last two years was provided by the Health Stream director after IRB approval. The use of Survey Monkey® for data collection ensured respondents that data were confidential and only aggregate data were used. Data remained confidential through the use of

57
password protection on a designated computer and was kept locked in a file drawer in a secure office at the agency.

Nurses were queried via email to determine their willingness to participate in completing the assessment survey. An information summary providing a brief description of the purpose of the project and survey was included (see Appendix G). The survey was electronically completed through use of Survey Monkey, an online web tool. Demographic information gathered by the survey included years of nursing experience, level of education, and type of patient care area. A timeline of 2 weeks was given for employees to complete the survey. An email was sent after the first week as a reminder to complete the survey.

Review of the data from the assessment survey determined what further RRT education and review would be helpful for new hires during orientation. Also taken into consideration was information obtained through discussions with staff and Clinical Nurse Specialists (CNSs) about their observations of the use of the RRT. Development of the intervention was coordinated with the simulation director and staff. Only aggregated data synthesized into themes, means, percentages, etc. were shared with the simulation team or other members of the organization during planning and evaluating the RRT educational presentation and simulation.

**Sample 2**

The second sample received the intervention. This sample included experienced new hires who were already scheduled to participate in the NEA program by the simulation center. It was a convenience sample as the number of participants in NEA was not known until the day of orientation. The targeted group participated in NEA on March 19th, 2014. Each group varies in number with the average group size consisting of seven to eight nurses. The nurses asked to
participate excluded the neonatal intensive care unit and the operating room as they have internal processes for summoning additional assistance and do not use the RRT.

Before the beginning of the NEA education, an information summary was provided to the participants (See Appendix I). For those who chose to participate, a pre and posttest measuring transfer of knowledge for simulation was administered to the participants (See Appendix J). Debriefing was be held immediately afterwards as usual. A simulation evaluation tool was also administered to the participants after the simulation (see Appendix K).

The preceptor of the DNP student had a key role as the Clinical Coordinator for the Rapid Response Team since 2007. She is also the Magnet Program Director and clinical nurse specialist (CNS) of Heart and Vascular Services. She provided support and clarification of policy and procedures in place at the agency and serve as a liaison to nursing staff, management, and important decision makers within the agency during creation and implementation of the intervention.

Included in the education component of the intervention was a review of RRT activation criteria, how to reach the rapid responder, tips for staff nurses collected from rapid response nurses, and examples of situations that can lead to calling the rapid responder. The curriculum from the Rapid Response Team Training for Enhancing Patient Safety (STEPS) program (Sittner et al., 2009) served as a guide for development and implementation of the RRT educational presentation and simulation (See Appendix H for actual scenario). Allotted time for the presentation was 10 minutes. The simulation intervention was to occur in the last 30-45 minutes, including a pre and posttest, debriefing, and evaluation survey. The RRT educational presentation and simulation was created in collaboration with the director of simulation
education at the project site who holds a masters in nursing and critical care nursing certification and is a Professional Development Specialist.

Control of the simulation experience was provided through: an explanation of the simulation scenario to participants with a question and answer period before starting. The predesigned scenario that had been tested in a prior study was a guide for this simulation (Sittner et al., 2009). Experienced simulation team members assisted with MHSM simulation structure as they were already present for NEA. The specific end to the scenario included activation of the RRT and stabilization of the patient during the simulation.

Performance was evaluated as a team effort. No individual measurement during the simulation took place. The participants were expected to correctly assess the patient and take the necessary actions to mobilize additional assistance through the activation of the RRT and keep the patient safe. The debriefing session held immediately after the simulation included discussion of how well performance was thought to be by participants (See Chapter 5 for a more in depth discussion of the simulation and debriefing).

Lunch was provided to the four participants by the DNP student before the simulation began. The simulation intervention lasted 35 minutes. The simulation started with a briefing which included the background and history information on the patient the participants would be seeing and assessing in the simulation lab. The scenario was a patient with a pneumonia diagnosis that was unknown to the participants; assessment and subjective information was supplied (See Appendix H). The four participants were assigned roles for the simulation: bedside nurse, charge nurse, and 2 other unit nurses who would help if this was requested of them. All were present in the simulation lab during the start of the scenario.
The participants were then introduced to the other simulation team members who would be performing the roles of respiratory therapy, RRT nurse, nurse practitioner, and the patient’s voice. Phone numbers for respiratory therapy, RRT nurse, and the nurse practitioner were listed on the white board in the room and would ring to the corresponding team members’ phone when dialed. Equipment and medication locations such as oxygen delivery devices, intravenous fluids, stethoscopes, and blood pressure devices were shown to the participants. The simulation lab is equipped with a high-fidelity SimMan® that served as the patient. Next to the lab is a simulation control room in which a computer-run application interfaces with the SimMan®. A review of how the SimMan® functioned was also discussed with participants. The SimMan® can hear, talk, has pulses, lung and heart sounds, become diaphoretic, and has visible circumoral cyanosis when oxygen deprived.

**Instruments**

Two surveys, the Rapid Response System Staff Knowledge and Satisfaction Survey (Australian Commission on Safety and Quality in Health Care, 2012) and the Medical Emergency Team (MET) Survey (Pusateri, 2011) were meshed together to create this project’s survey that was given to those nurses who have already completed NEA (see Appendix L for meshed survey). This meshed survey included: factors that may prevent activation and use of the RRT, perceived helpfulness of the RRT in managing patient decline, and perceived efficiency of teamwork. Data from the combined survey were collected using the Survey Monkey® online tool.

The Rapid Response System Staff Knowledge and Satisfaction Survey (2012) is taken from the Australian Commission on Safety and Quality in Health Care (ACSQHC) and aims to evaluate nurse perceptions of rapid response systems. It was developed to help facilities collect
data evaluating different aspects of recognition and response systems. The survey consists of two sections, a demographics section and a 5-point Likert scale ranging from strongly disagree to strongly agree. The survey has 24 items with room for additional comments at the end. The survey has high reliability and validity (Australian Commission on Safety and Quality in Health Care, 2012); it has been utilized in numerous facilities for auditing. Permission to use has been granted.

The Medical Emergency Team (MET) Survey (Pusateri, 2011) aims to evaluate nurse perceptions and attitudes toward METs. The term RRT will be substituted with MET for use in this project. It consists of 3 sections; demographics, background experience and participation. Eight questions pertain to background experience and are either yes/no response or choose from an array of item responses. Seventeen items pertaining to participation are scored on a 5-point Likert scale ranging from strongly agree to strongly disagree. Data regarding reliability and validity of this survey were not available. Permission to use the survey has been granted.

Two tools were given to those participating new hire experienced nurses enrolled in NEA. The RRT Knowledge and Clinical Judgment Pre-Post Test (Sittner et al., 2009) were given before and immediately after the simulation intervention to measure transfer of knowledge. The pre and posttest contained 19 identical multiple choice items. This was used in a pilot study; results supported an increase in mean scores (Sittner et al., 2009). Scoring of this instrument was based on the number of the correct answers; each correct answer equaled one point. Room for additional comments was available at the end. Data were collected by use of paper copies of the tests. Data were protected by reporting de-identified aggregate data. Permission to use the test was granted.
The Program for Nursing Curriculum Integration (PNCI®) Simulation Effectiveness Tool (CAE Healthcare, 2012) was given to the second sample immediately after the simulation and the post-test were completed. Thirteen items pertaining to simulation effectiveness were scored on a 3-point Likert scale ranging from do not agree, somewhat agree, strongly agree, and not applicable. Room for additional comments was available at the end. The tool was deemed a reliable and valid instrument from the multi-site study; Chronbach’s alpha was found to be 0.93 (Elfrink et al., 2012). Data were protected by reporting de-identified aggregate data. Permission to use was granted.

**Data Analysis**

The assessment survey data were entered into a Microsoft Excel® spreadsheet. Outcome variable results were tabulated as percentages of the total responses. Means or medians were calculated for the Likert scale questions. Descriptive statistics were used to summarize demographic information. Tools submitted with missing data were still used; the differing numbers of respondents for each item were indicated. Additional qualitative comments were examined and grouped into themes based on common content.

The pre and posttest data were entered into a Microsoft Excel® spreadsheet. SPSS 18 for Windows was used to perform a data analysis. Dependent t-tests were to be used to measure for significant differences in means between the pre and posttest if the sample size was adequate. If the sample size was too small, a percent difference would be calculated. The simulation evaluation survey percentage for each rating level was calculated.

**Human Subjects Consideration**

Application to the International Review Board (IRB) for the project took place at both Grand Valley State University and Mercy Health Saint Mary’s (MHSM). Approval from both
sites was received in May, 2014 and the project was implemented on May 19th, 2014 (See Appendix M).

**Barriers and Facilitators**

Barriers to the implementation of the assessment survey could include low participation from either the Sample 1 currently employed nurses who took the survey or Sample 2 new hire nurses in the intervention. Barriers to implementation of the simulation intervention and sustainability of the intervention could include cost for nurse and educator time for an additional half an hour of simulation and education, lack of educators’ time, and adding to the scheduled time for Day 2.

To address the possibility of low participation rate for sample 1 reminder emails were sent out before and during the 2 weeks allowed for survey completion. Addressing the barrier of low participation for sample 2 included careful explanation of the RRT educational presentation and simulation and the benefit of higher understanding along with providing lunch for participants. No control was had over the number of participants and the final count was not known until the day of implementation.

Facilitators to implementation of the assessment survey included the strong mission, vision and values instilled in the staff at agency and assurance of confidentiality of responses through the use of Survey Monkey®. Facilitators to implementation of the simulation intervention included assurance of complete anonymity of responses by using de-identified aggregate data, eagerness for additional education on the RRT voiced by staff nurses, managers, and advanced practice registered nurses (APRNs) employed by the project site, and the strong mission, vision and values among the nurses and other staff for practice excellence.
CHAPTER 5

RESULTS

The purpose of this chapter is to share the results of the rapid response team (RRT) assessment survey and the educational intervention with pretest and posttest with simulation evaluation tool. The assessment survey includes questions on participation, knowledge, and satisfaction with the RRT at the project site. The pre and posttest with the simulation evaluation tool measure effectiveness of the RRT education presentation and simulation. Findings from the assessment survey show the majority of nurses value and appreciate the RRT at the project site. Findings from the pre and posttest show the education presentation increased scores and nurses stated they found the simulation to be a valuable and helpful educational intervention.

Sample 1 Respondents

Approval for the study was obtained from the Institutional Review Board (IRB) at both the project site and the university. There were 23 out of 54 eligible nurses who responded to the assessment survey. This signifies a 43% response rate for the survey. The nurses were given a total of two weeks to complete the survey. Of those surveys that were returned, 16 respondents completed the entire survey, while the remaining respondents skipped up to 10 of the 51 total questions. Answers to the remainder of the incomplete surveys were included in the results. This may be because of respondent burden. There were no specific questions that were consistently not answered. See Appendix N, Table N1 and Table N2 for the total number of respondents that answered each statement. Results are categorized into 3 sections: demographics, participation, and knowledge and satisfaction.
**Demographics**

There was a wide range in the type of unit that the respondents identified. All 23 respondents answered the demographic questions. The question allowed them to type in the response that best suited where they currently worked. One nurse worked in neurology, two in labor and delivery, two on the psychiatric unit, two in oncology, two worked per diem in varying units, three on the cardiac unit, two on geriatric units, four in the intensive care unit (ICU), and one on the general medical unit. The majority of nurses (55%) had their bachelor’s degree in nursing while 32% held an associate’s degree and 14% held a master’s degree (See Appendix N, Figure N1). One individual did skip this question. As for clinical experience, 4% of nurses had less than 1 year of nursing experience, 35% of nurses had 1-3 years of experience, 22% had 4-5 years, 22% had 6-10 years, and 17% had more than 10 years (See Appendix N, Figure N2).

**Participation Survey Section**

The participation section of the survey consisted of a combination of yes and no, 5-point Likert style, and free text questions. The questions were designed to evaluate background experience and participation with the RRT at the study site. Seventeen out of the 23 respondents answered all questions in this section.

Table 1

*Sample 1 Survey Participation Section*

<table>
<thead>
<tr>
<th>Statement</th>
<th>Number of Respondents</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Undecided</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I could do more during a RRT</td>
<td>17 answered</td>
<td>0%</td>
<td>23.5% (4)</td>
<td>47.1% (8)</td>
<td>23.5% (4)</td>
<td>5.9% (1)</td>
</tr>
<tr>
<td>I feel that I participate to the fullest</td>
<td>17 answered</td>
<td>11.8% (2)</td>
<td>58.8% (10)</td>
<td>23.5% (4)</td>
<td>5.9% (1)</td>
<td>0%</td>
</tr>
<tr>
<td>My knowledge of a patient affects how much I</td>
<td>17 answered</td>
<td>17.7% (3)</td>
<td>41.2% (7)</td>
<td>17.7% (3)</td>
<td>23.5% (4)</td>
<td>0%</td>
</tr>
<tr>
<td>Statement</td>
<td>Number of Respondents</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Undecided</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>-----------------------</td>
<td>----------------</td>
<td>-------</td>
<td>-----------</td>
<td>----------</td>
<td>-------------------</td>
</tr>
<tr>
<td>participate in the RRT</td>
<td>17 answered</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have felt intimidated during a RRT by other members of the RRT</td>
<td>17 answered</td>
<td>5.9% (1)</td>
<td>11.8% (2)</td>
<td>11.8% (2)</td>
<td>64.7% (11)</td>
<td>5.9% (1)</td>
</tr>
<tr>
<td>In the past I have not fully participated in a RRT because I have felt intimidated</td>
<td>17 answered</td>
<td>0%</td>
<td>5.9% (1)</td>
<td>17.7% (3)</td>
<td>70.6% (12)</td>
<td>5.9% (1)</td>
</tr>
<tr>
<td>During a RRT I usually defer to the ICU nurse team members to administer the nursing care</td>
<td>17 answered</td>
<td>0%</td>
<td>11.8% (2)</td>
<td>23.5% (4)</td>
<td>58.8% (10)</td>
<td>5.9% (1)</td>
</tr>
<tr>
<td>My patient assignment does not affect my participation in a RRT</td>
<td>17 answered</td>
<td>5.9% (1)</td>
<td>35.3% (6)</td>
<td>23.5% (4)</td>
<td>29.4% (5)</td>
<td>5.9% (1)</td>
</tr>
<tr>
<td>I have always had enough time to see a RRT through to the end</td>
<td>17 answered</td>
<td>5.9% (1)</td>
<td>53% (9)</td>
<td>29.4% (5)</td>
<td>11.8% (2)</td>
<td>0%</td>
</tr>
<tr>
<td>I feel fully prepared to administer nursing care during a RRT</td>
<td>17 answered</td>
<td>17.7% (3)</td>
<td>76.5% (13)</td>
<td>5.9% (1)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>The RRT education I received this agency has prepared me for my role during a RRT</td>
<td>17 answered</td>
<td>11.8% (2)</td>
<td>70.6% (12)</td>
<td>11.8% (2)</td>
<td>5.9% (1)</td>
<td>0%</td>
</tr>
<tr>
<td>As my RRT experiences have increased, I have felt more prepared</td>
<td>17 answered</td>
<td>17.8% (3)</td>
<td>70.6% (12)</td>
<td>11.8% (2)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>I feel comfortable with my role as a member of the RRT</td>
<td>17 answered</td>
<td>23.5% (4)</td>
<td>47.1% (8)</td>
<td>29.4% (5)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Statement</td>
<td>Number of Respondents</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Undecided</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>-----------------------</td>
<td>----------------</td>
<td>---------</td>
<td>-----------</td>
<td>----------</td>
<td>-------------------</td>
</tr>
<tr>
<td>I know what my role is as a member of the RRT</td>
<td>17 answered</td>
<td>23.5% (4)</td>
<td>64.7%</td>
<td>11.8%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>I feel that I am a valued member of the RRT</td>
<td>17 answered</td>
<td>23.5% (4)</td>
<td>52.9%</td>
<td>23.5%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>I think that the RRT improves patient care</td>
<td>17 answered</td>
<td>35.3% (6)</td>
<td>64.7%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>I value my ability to call a RRT</td>
<td>17 answered</td>
<td>41.2% (7)</td>
<td>58.8%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>I think that the RRT improves my working conditions</td>
<td>17 answered</td>
<td>35.3% (6)</td>
<td>64.7%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Note. Number in parentheses equals the number of respondents

Twenty-three percent of nurses had been hesitant to call a RRT in the past. Comments that were listed as reasons they had been hesitant included being unsure if their patients met criteria for a RRT call to be made and difficulties in coordinating care with respiratory therapists. Roles that nurses took on during a RRT call can be found in Appendix N, Figure N3. Respondents indicated that the majority of the time they monitored vital signs, relayed patient information, and initiated the RRT call.

The 17 Likert scale items were the responses that were related specifically to participation; results will be discussed grouped into agree, uncertain, and disagree. The majority of nurses felt that they participated to the fullest during an RRT call. Most nurses felt they could stay until the end of the RRT call, administer nursing care during the call, and had appropriate education on the RRT preparing them for their role during calls. The majority of nurses also felt more prepared as the number of calls in which they participated increased, knew what their role was as the primary nurse, felt valued as a team member, and felt that the RRT improves working conditions and patient care.
Knowledge and Satisfaction Survey Section

This section of the survey consisted of 24 Likert style questions in which results will be discussed grouped into the responses of agree, uncertain, and disagree. Somewhere between 16 to 18 respondents answered these questions. All nurses were in agreement that patients in the hospital have complex problems and that the RRT is effective in providing an emergency response.

Table 2

Sample 1 Survey Knowledge and Satisfaction Section

<table>
<thead>
<tr>
<th>Statement</th>
<th>Number of Respondents</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Undecided</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients in the hospital have complex medical problems</td>
<td>18 answered</td>
<td>61.1% (11)</td>
<td>38.9% (7)</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Patients receive effective emergency assistance from the rapid response team</td>
<td>18 answered</td>
<td>55.6% (10)</td>
<td>44.4% (8)</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>I feel confident in activating the rapid response team</td>
<td>18 answered</td>
<td>50% (9)</td>
<td>44.4% (8)</td>
<td>0%</td>
<td>5.6% (1)</td>
<td>0%</td>
</tr>
<tr>
<td>The rapid response team allows me to seek help for my patients when I am worried about them</td>
<td>18 answered</td>
<td>55.6% (10)</td>
<td>44.4% (8)</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>The rapid response team is not helpful in managing sick patients on the floor</td>
<td>18 answered</td>
<td>0%</td>
<td>5.6% (1)</td>
<td>0%</td>
<td>50% (9)</td>
<td>44.4% (8)</td>
</tr>
<tr>
<td>If I cannot contact the covering physician I activate the rapid response team</td>
<td>18 answered</td>
<td>16.7% (3)</td>
<td>61.1% (11)</td>
<td>0%</td>
<td>11.1% (2)</td>
<td>11.1% (2)</td>
</tr>
<tr>
<td>I am reluctant to activate the rapid response team for my patients because</td>
<td>18 answered</td>
<td>0%</td>
<td>5.6% (1)</td>
<td>11.1% (2)</td>
<td>50% (9)</td>
<td>33.3% (6)</td>
</tr>
<tr>
<td>Statement</td>
<td>Number of Respondents</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Undecided</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>-----------------------</td>
<td>----------------</td>
<td>-------</td>
<td>-----------</td>
<td>----------</td>
<td>-------------------</td>
</tr>
<tr>
<td>I will be criticized that they are not unwell</td>
<td>17 answered</td>
<td>0%</td>
<td>0%</td>
<td>11.8% (2)</td>
<td>58.8% (10)</td>
<td>29.4% (5)</td>
</tr>
<tr>
<td>Rapid response team calls are required because the management of the patient by the physicians has been inadequate</td>
<td>17 answered</td>
<td>0%</td>
<td>0%</td>
<td>5.8% (1)</td>
<td>52.9% (9)</td>
<td>41.2% (7)</td>
</tr>
<tr>
<td>I would activate the rapid response team for a patient I am worried about even if their vital signs are normal</td>
<td>16 answered</td>
<td>12.5% (2)</td>
<td>68.8% (11)</td>
<td>6.3% (1)</td>
<td>12.5% (2)</td>
<td>0%</td>
</tr>
<tr>
<td>If my patient meets rapid response team calling criteria but does not look unwell, I would not make a rapid response call</td>
<td>17 answered</td>
<td>0%</td>
<td>5.9% (1)</td>
<td>5.9% (1)</td>
<td>64.7% (11)</td>
<td>23.5% (4)</td>
</tr>
<tr>
<td>Interns and/or residents support my decision to call rapid response</td>
<td>17 answered</td>
<td>23.5% (4)</td>
<td>47.1% (8)</td>
<td>23.5% (4)</td>
<td>5.9% (1)</td>
<td>0%</td>
</tr>
<tr>
<td>Attending physicians support my decision to call rapid response</td>
<td>17 answered</td>
<td>11.8% (2)</td>
<td>70.6% (12)</td>
<td>17.7% (3)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Staff nurses support my decision to call rapid response</td>
<td>17 answered</td>
<td>35.3% (6)</td>
<td>64.7% (11)</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Charge nurses and/or nursing management support my decision to call rapid response</td>
<td>17 answered</td>
<td>35.3% (6)</td>
<td>64.7% (11)</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Using the rapid response team increases my work load when caring for a sick patient</td>
<td>17 answered</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>82.4% (14)</td>
<td>17.7% (3)</td>
</tr>
<tr>
<td>Statement</td>
<td>Number of Respondents</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Undecided</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>-----------------------</td>
<td>----------------</td>
<td>-------------</td>
<td>-----------</td>
<td>----------</td>
<td>------------------</td>
</tr>
<tr>
<td>I understand my role during rapid response calls</td>
<td>17 answered</td>
<td>17.7% (3)</td>
<td>82.4% (14)</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>The rapid response team reduces my skills in managing sick patients</td>
<td>17 answered</td>
<td>0%</td>
<td>5.9% (1)</td>
<td>0%</td>
<td>64.7%</td>
<td>29.4% (5)</td>
</tr>
<tr>
<td>Rapid response team calls teach me how to better manage sick patients in my unit</td>
<td>17 answered</td>
<td>17.7% (3)</td>
<td>70.6% (12)</td>
<td>11.8% (2)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>The rapid response team responds to calls in an appropriate time frame</td>
<td>17 answered</td>
<td>23.5% (4)</td>
<td>70.6% (12)</td>
<td>5.9% (1)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>The rapid response team encourages effective team work</td>
<td>17 answered</td>
<td>11.76% (2)</td>
<td>82.4% (14)</td>
<td>5.9% (1)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>The rapid response team communicates effectively</td>
<td>17 answered</td>
<td>17.7% (3)</td>
<td>70.6% (12)</td>
<td>11.8% (2)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>The ongoing plan for the patient is clearly documented after a rapid response call</td>
<td>17 answered</td>
<td>17.7% (3)</td>
<td>76.5% (13)</td>
<td>5.9% (1)</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

*Note. Number in parentheses equals number of respondents*

The majority of nurses agreed that interns and/or residents, attending physicians, staff nurses, and charge nurses and/or management supported their decision to call the RRT. Also all nurses felt they understood their role during a call while 15 out of 17 respondents felt that RRT calls taught better management skills of sick patients. Furthermore 16 out of the 17 respondents who answered this item believed the RRT encouraged teamwork and effective communication.

There was room for additional comments at the end of the survey, though none were left.

**Sample 2 Participants**
There were 4 out of 6 eligible nurses who consented to participate in the simulation intervention. The number of nurses who were participating was not known until the day of the Nursing Excellence Academy (NEA), May 19th, 2014. The two nurses who did not participate called in ill for the hospital orientation. At 7:45 am, after general introductions were made by one of the NEA team members, introductions were made by the DNP student and a brief synopsis of the simulation intervention was given. Those who chose to participate signed the IRB approved consent form and were given a copy of the document (See Appendix O). They then took a multiple choice pretest that took 5-15 minutes for completion.

After this, the educational RRT PowerPoint® was presented first by the DNP student followed by the other presenters for general orientation during the morning period. The topic was listed as failure to rescue on the agenda (See Appendix P for presentation).

**Educational Presentation**

Based on the results of the survey from Sample 1 and input from the rapid response nurses and other leaders of the rapid response team, an educational PowerPoint® was created for the Nursing Excellence Academy (NEA). The results from the Sample 1 survey indicated that the majority of nurses who responded to the survey determined that the RRT was an effective and valuable part of the hospital system that prevented further deterioration of patients and provided nursing support. There were, however, nurses who participated in the Sample 1 survey who expressed some discomfort in making the call or participating during the call (17%).

To address this, the PowerPoint® included: 1) an overview and history of the RRT, 2) discussion of team members and their qualifications, 3) RRT policy per the project site, 4) identification of deteriorating patients, 5) activation criteria, steps to activation and interventions a RRT nurse can implement, 6) preliminary data from the survey from Sample 1, and 7) tips
from RRT nurses. The tips from RRT nurses were gathered during the organizational assessment stage of the project in which the DNP student spoke with various members collecting their advice for nurses calling the RRT. Some advice included: the patient’s primary nurse is responsible for documentation of assessments and interventions during an RRT call; the patient’s physician should be aware of what is occurring during an RRT as they are ultimately responsible for the orders for that patient; and the charge nurse must be kept in the loop as they are a valuable resource. Additional tips provided can be found in Appendix P.

The presentation of the RRT PowerPoint® took place from 8:10 am until 8:30am. During and after the presentation, questions were welcomed and answered. The DNP student’s mentor and clinical coordinator of the RRT was present and also answered questions.

**Simulation**

The simulation began with the patient being transferred from the Emergency Department (ED) to the Progressive Care Unit (PCU). The total simulation lasted from 2 pm to 2:35 pm. The goal of the simulation was for the participants to correctly assess the patient, call the RRT, and collaborate to stabilize the patient. The simulation manikin was operated by a simulation team member. When participants met criteria for the clinical interventions such as applying or increasing oxygen, assessing lung sounds, and relaying appropriate assessment information to health care providers, the team member would advance the simulation to the next stage.

Participants were expected to respond to changes in vital signs and signs and symptoms of respiratory decline. Participants first placed the patient on a nasal cannula because oxygen saturation levels were at 89%. The oxygen saturation levels increased after application, only to decrease later in the scenario to 80%. Participants then placed a non-rebreather mask on the client which supplies a very high concentration of oxygen. A few calls were made to the rapid
response nurse, respiratory therapy, and the health care provider. The simulation was completed when participants activated the RRT and received a stat chest x-ray order from the provider due to the assessment finding of rales heard in the lungs and continued decreases in oxygen saturation. Participants were asked to return to the classroom for debriefing.

**Debriefing**

A 30 minute debriefing session took place after the simulation. The DNP student led the discussion though the simulation team also asked and answered questions and provided advice. The first question posed to the participants was “What went well?” There were varied responses from the group. Main themes of what went well included improved time management, making connections with the patient, and increased preparedness. The following are some comments recorded during the debriefing:

“I felt that the simulation helped me to process things in a more timely and structured way. It was helpful to attempt to get into the mind frame of simulation as we had already had simulations before this one during the first day of NEA.”

“I think that we were with the patient a lot of the time and tried to walk her through her difficult time.”

“I learned about myself and how I handle stress. It is a stressful situation, even though it is a simulation, I feel more prepared for what I would do next time.”

The second question posed was “What did not go so well?” Main themes included difficulty committing to the simulation, poor communication, and unfamiliarity with simulations. Some comments recorded are as follows:
“It was hard for me to commit to the idea that the simulation was real. Things just didn’t happen in the way I thought they would in the real world where you would have all of the support you need. I guess I needed to be more open to the idea.”

“Communication seemed a little behind. I feel like there would be two people talking at the same time and it would be hard to understand what was going on.”

The third and final question posed to the group was “What would you do differently?”

Main themes included understanding importance of the nursing assessment and improving communication. Some comments recorded are as follows:

“I was looking for answers and a diagnosis right away and I don’t think I had the correct pattern of thinking after hearing others talking about the right progression of the simulation. I have learned that as a nurse I need to do a complete and accurate assessment then report to the physician or primary provider the findings. I have realized that it is not my place to ask for certain medications or lead others into thinking a certain way.”

“I would try to be more relaxed. I felt that the whole thing flew by and I wasn’t thinking clearly enough because I was nervous. I also thought that our communication could have been better; it seemed like there were a lot of things being said at one time.”

“I have been in situations where communication in an emergency was better than what just occurred. We needed more teamwork and clarity.”

After the debriefing, the participants were given the posttest and the simulation evaluation form to fill out. This took place from 3:05 to 3:30 pm. Participants were thanked for their involvement and this concluded the simulation intervention.

Pretest, Posttest, and Simulation Evaluation
All four participants completed the pretest, posttest, and simulation evaluation. The pre and posttest consisted of 18 identical items. The range of scores answered correctly was between 12-15 on the pretest and between 11-17 on the posttest. The posttest showed that 3 participants increased their scores each by 2 points. Overall, based on the means, there was a 7% change between scores. There was no question that all participants answered incorrectly.

Table 3

**Knowledge and Clinical Judgment Pre-Posttest Scores**

<table>
<thead>
<tr>
<th>Test Scores</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest scores</td>
<td>4</td>
<td>13.5</td>
<td>1.29</td>
</tr>
<tr>
<td>Posttest scores</td>
<td>4</td>
<td>14.5</td>
<td>2.65</td>
</tr>
</tbody>
</table>

*Note. N = Participants who completed the entire study*

The PNCI® Simulation Effectiveness Tool had 13 statements in which all participants either somewhat agreed or strongly agreed. The statements could be rated from do not agree, somewhat agree, strongly agree, or not applicable.

Table 4

**PNCI® Simulation Effectiveness Tool**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Number of respondents</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>The instructor’s questions helped me to think critically</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>I feel better prepared to care for real patients</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td>I developed a better understanding of the pathophysiology of the conditions in the SCE</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td>I developed a better understanding of the medications that were in the SCE</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td>I feel more confident in my decision-making skills</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td>I am more confident in determining what to tell the healthcare provider</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>My assessment skills improved</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>I feel more confident that I will be able to recognize changes in my real patient’s condition</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>I am able to better predict what changes may occur with my real patients</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Completing the SCE helped me understand classroom information better</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td>I was challenged in my thinking and decision-making skills</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>I learned as much from observing my peers as I did when I was actively involved in caring for the simulated patient</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td>Debriefing and group discussion were valuable</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

*Note. 0 = Do not agree, 1 = Somewhat agree, 2 = Strongly agree, N/A = Not applicable*

**Barriers and Facilitators**

With interventions, there are usually unexpected barriers and facilitators. One barrier occurred before the simulation. The simulation director was out of state at a conference and it was planned that she would have the scenario ready on the simulation computer. It was found
that the planned pneumonia simulation had not been uploaded to the computer in the lab. Therefore, the simulation had to be restructured from an existing congestive heart failure (CHF) scenario. This delayed the start time of the simulation. To facilitate resolving the problem, another presenter took the simulation time slot while the scenario was restructured. One of the simulation team members was able to restructure the simulation so that the criteria as outlined in the approved IRB protocol were met.

Summary

In summary, the nurses in Sample 1 agreed that they felt prepared in knowledge, satisfaction, and participation in the Rapid Response Team. Nurses from Sample 2 agreed or strongly agreed that their simulation experience was an important and helpful learning experience. Three out of four participants in Sample 2 also increased their scores in knowledge and clinical judgment after the education presentation.

The findings of this project may not directly show that simulation is an effective way to educate nursing on RRTs because of the small sample size for Sample 2. Sample 1 respondents did establish the idea that those surveyed had high praise for the RRT at MHSM and that they felt prepared in areas of knowledge, participation, and satisfaction.

Referring back to the literature review in Chapter 2, a substantial majority of studies reviewed supported the notion that RRTs decrease mortality, cardiac arrests, and unplanned ICU admissions. Studies also indicated that simulation can be an effective and desirable educational tool that keeps patients and nurses safe. An in depth discussion of the final outcomes of the project will take place in Chapter 6.
CHAPTER 6
DISCUSSION

The purpose of this chapter is to discuss the findings from the project related to the sample groups that were discussed in Chapter 5. The chapter will also review the DNP roles in
relation to project implementation and findings. Furthermore, discussion of the effectiveness, sustainability, and feasibility of the project will be included.

**Respondents and Project Site**

The project took place at Mercy Health Saint Mary’s (MHSM) in downtown Grand Rapids, Michigan. Nurses at MHSM display great pride in working for this organization; it can be seen through their recent achievement of Magnet status, involvement in hospital organizational projects and committees, and the overall positive environment.

Nurses at MHSM frequently receive surveys through their work email requesting their completion of these surveys on various subjects. Because of this fact, it was expected that there would be a strong response rate after speaking with nurse leaders. The DNP student also spoke of the upcoming project implementation with management personnel, clinical leaders, and rapid response nurses. Themes from the conversations included explanation and expectations of the project, education on the DNP role, cost and timeline of the project, and resources needed. The response rate received was adequate considering the DNP student was not well known to all nurses in the hospital setting and that the survey was not mandatory.

The participation of all four eligible nurses in Sample 2 can be attributed to the participants’ involved and positive attitude toward employment at MHSM. Their understanding of the project and how their participation would be useful for possible future changes to NEA simulation was also comprehended by these four eligible nurses.

**Sample 1 Survey Results**

Nurses at the organization have a good understanding of the RRT and feel comfortable in their role in activating and participating in RRT calls. It also suggests that the NEA and hospital orientation are adding to the proper education of the MHSM nurses on the topic of the RRT.
There were only 16 respondents who fully completed the survey without skipping any questions. There was a total of 51 questions in the survey. There was the option to skip forward without submitting an answer. Reasons for skipping questions may be attributed to question of confidentiality, undecidedness, disinterest in the topic, or respondent burden.

**Participation**

In this section of the survey, the majority of nurses were familiar with the RRT and felt that they participated fully in the RRT when appropriate. These findings are not surprising as the culture at MHSM allows for an openness to change and a focus on furthering education, and actively supports patient and nursing satisfaction. The few nurses that did not select agree or strongly agree with the statements as discussed in Chapter 5 mostly selected uncertain or neutral. This may be because they were confused about what the statement was referring to or they truly did not feel strongly either way about the RRT.

Out of the 23% of nurses that were hesitant to call a RRT in the past, a few left comments as to why they were hesitant. These comments included not knowing the criteria to call an RRT and difficulty in coordinating care with respiratory therapy. Possible solutions to these concerns would be to include specific RRT education in all hospital orientation for newly hired nurses, as was done for the participants in Sample 2. As for difficulties in coordinating care with respiratory therapy, basic chain of command would need to be followed in determining a solution to lack of communication.

**Knowledge and Satisfaction**

Again, the results for this section were not surprising. The respondents felt confident in their knowledge of the RRT as it pertains to MHSM and felt that the staff of the RRT were easily
approachable. The respondents also trusted the RRT staff’s instincts when reporting that patient was in danger and needed assistance.

The project site heavily emphasizes trusting one’s instincts and “gut feeling” when calling the RRT for additional help. It is encouraging to see that the majority of nurses in Sample 1 knew that the most important criteria in calling the RRT is the perception by the nurse or caregiver that the patient requires prompt intervention to prevent further deterioration. These criteria are described in the RRT policy at MHSM (See Appendix D).

**Sample 2 Pre and Posttest and Simulation Evaluation Results**

It was fortunate that all nurses who were at the mandatory hospital orientation for newly hired nurses chose to participate in the simulation intervention. It would have been hoped for more participants, though the other 2 nurses that were expected called in ill the day of the intervention. The four remaining participants completed a pretest, posttest, and simulation evaluation tool in their entirety.

The simulation itself went well. The participants interacted and communicated effectively with one another, the DNP student, and the simulation team. The participants were able to meet the goal of the simulation and activate the RRT while effectively stabilizing the patient. The debriefing session went better than expected, as the DNP student had little experience leading debriefing after simulations. The simulation lab team were helpful in aiding the DNP student and filling in where needed during the simulation and debriefing session. Conversation among the participants, the DNP student, and simulation staff flowed well and important points and questions were brought up during debriefing.
Important points and questions that were brought up and discussed included common themes of RRT call criteria, contact information for RRT staff, difficulty committing to the idea of simulated education, and the desire to have more opportunities to participate in simulations.

The one barrier encountered was not having the simulation ready on the simulation computer. This did alter the timeline for the day, though the simulation team was able to alter another preprogrammed simulation to mock the pneumonia simulation that was to be used for the project. Other presenters were also flexible and gave their presentation a bit early or later to accommodate for the change in schedule. This barrier might have been avoided by the DNP student following up more than once with the director to make sure the simulation was prepared and/or scheduling the simulation on a day that the simulation director was not out of state.

The pretest and posttest results were favorable though the 7% difference between the two scores was not compelling. The mean for the pretest was fairly good at 13.5 (75%) and then increased to 14.5 (81%) for the posttest. This may be because the nurses were experienced, they already had a higher knowledge base before taking the pretest. It was found that all but 1 participant increased their scores on the posttest. It is good that the knowledge scores did increase for three out of the four participants, though a comparison of results from Sample 2 participant’s scores with future groups would be helpful in determining effectiveness. The simulation scenario should also in the future reflect other clinical problems in order to bring variety to the NEA.

The fact that the posttest was not much higher may be due to some possibilities. The participants may have been fatigued from the continual lectures throughout the course of the day of the NEA and were not paying as close attention to the presentation. They also may have
wanted to finish up with the day and hurried the posttest and simulation evaluation tool in order to leave sooner.

The simulation evaluation results found that all participants either strongly agreed or somewhat agreed with all 13 statements within the tool. This is encouraging as there was an overall general consensus from the nurses that they found the simulation helpful and valued their experience during the simulation and debriefing session.

**Strengths**

Within this project, there were strengths that were noted. One is that the use of the survey for Sample 1 as a tool provided information regarding current nursing participation, satisfaction, and knowledge of the RRT at MHSM. This allowed for the creation of an up-to-date and well-informed educational presentation by using feedback from those who actually experienced NEA in the past. Another strength was that the project took place within the scheduled NEA day. This made the task of contacting and recruiting participants easier as they were already in one place as general hospital orientation is mandatory. Also, those nurses who are hired into MHSM, as found during the organizational assessment of the site, have a strong sense of educational advancement and willingness to aid others in reaching their goals as a team.

**Limitations**

There were also limitations to the project. The nurses in Sample 1 who received the survey email were only those who had participated in NEA in the past and not the whole of the nursing staff at MHSM. Convenience sampling was used in both samples and thus this may be a source of bias in survey responses. A few of nurses in Sample 1 had previous RRT experience serving as the rapid response nurse and were advanced cardiac life support (ACLS) certified. This may have altered some of the results to be more favorable toward the use and activation of
the RRT. Also for this group, those who responded may have been more involved in the organization and, therefore, more willing to take time to complete the survey.

Within Sample 2, a limitation was that the posttest was given to the participants on the day of the intervention. Participants may have had the knowledge beforehand of the questions being asked as they were experienced nurses, or they may have retained the information that was provided to them the day of the intervention by short term memory. To guarantee that both the pretest and posttest were returned, participants took both tests on the same day. However, use of a repeated measures analysis of knowledge scores before, after and a month after might have been more beneficial in determining long-term knowledge retention. Since there were only four participants this equals a very small size to show statistical significance, thus only descriptive statistics were used.

**DNP Essentials**

The DNP student applied the 8 American Association of Colleges of Nursing (AACN) foundational Essentials (AACN, 2006) that are expected to be acquired and practiced by a DNP prepared nurse. These Essentials contributed to the critical aspects of project design, implementation, and evaluation. Essential I pertains to the scientific underpinnings for practice. The DNP student was able to critique and implement evidence-based practice which was a foundational element of the project. A literature review of the most current and up-to-date research available on RRT’s and nurse perceptions and simulation interventions was undertaken to guide the development, implementation, and evaluation of this project.

Essential II pertains to organizational and systems leadership for quality improvement and systems thinking. Within the project site, the DNP student formed relationships with clinical nurse leaders, rapid response nurses, staff nurses, and others in order to work together toward
implementation of the project. The DNP student also employed resources in order to create updated safe and quality education for nurses which in turn promoted patient safety. The DNP prepared nurse is expected to support the nursing profession as well as supporting health care policy that address safe and quality care. Improving care of patients through enhanced education of nurses is a key goal of this project.

Essential III pertains to clinical scholarship and analytic methods for evidence-based practice. The DNP student researched and reviewed data collection on RRT effectiveness in decreasing codes, ICU admissions and cost savings at Saint Mary’s. The DNP student also conducted numerous chart reviews to attempt to determine a cause for the slight increasing trend in mortality at MHSM in 2013. Dissemination of the DNP student’s scholarly evidence-based project will contribute to the previous work of other nursing professionals and inform future work to improve the care of medically unstable patients.

Essential IV pertains to information systems/technology and patient care technology for the improvement and transformation of health care. The DNP student while at MHSM spent time creating, educating, and troubleshooting the patient access list (PAL) for the sepsis prevention protocol for use by rapid response nurses that assisted in following up on those with the diagnosis. The DNP student also demonstrated the ability to skill to develop and evaluation plan for through data extraction when determining what would be the best way to gather information from current registered nurses on their perceptions of the RRT and apply that data to educating newly hired registered nurses attending general hospital orientation.

Essential V pertains to health care policy for advocacy in health care. The DNP student was able to analyze the policy processes in place at MHSM during the organizational assessment. The ability to engage in competent action at an institutional level was demonstrated
with the creation of an updated and specialized RRT educational presentation and simulation intervention, including a pre and posttest to measure knowledge and specific simulation evaluation tool to measure satisfaction and perceived effectiveness.

Essential VI pertains to interprofessional collaboration for improving patient and population health outcomes. The DNP is not only expected to continue his or her own education through seeking out new information to enhance expertise but also by contributing to the education of others. The DNP student throughout the project became an educator on the topic of RRT’s at MHSM and helped to influence project participants through the use of simulation as an educational tool within the acute care setting. The DNP student also plans to disseminate the project findings within MHSM, to which all disciplines would be welcome.

Essential VII pertains to clinical prevention and population health for improving the nation’s health. The DNP student performed an organizational assessment, determined knowledge, participation, and satisfaction of nurses relating to the RRT, and provided an updated and specific educational simulation intervention based on these findings and institutional policy. Through these actions, the DNP student attempted to address possible gaps in care within the population of acute care and unstable patients by providing recommended simulation education specific to the RRT at MHSM.

Essential VIII pertains to advanced nursing practice. The DNP student demonstrated “advanced levels of systems thinking and accountability in designing, delivering and evaluating evidence-based care to improve patient outcomes” (AACN, p. 17). The DNP student surveyed nurses on their knowledge, participation, and satisfaction related to the RRT (which relies on prompt recognition of patient deterioration by the caregiver to keep patients safe) and meshed it
with an IOM recommendation to implement simulation when possible in nursing education by providing a RRT simulation scenario.

**Effectiveness and Sustainability**

The purpose of the scholarly project was to determine nursing perceptions of the RRT. Based on these perceptions an educational intervention was then created involving high-fidelity simulation. The effectiveness of this intervention was then evaluated. Sample 1 provided the needed information to determine nursing perceptions that were grouped into categories of participation, knowledge, and satisfaction with the RRT. Those newly hired nurses in Sample 2 received an educational RRT presentation and then participated in a simulation revolving around the RRT along with a pre/posttest and a simulation survey tool evaluation to measure knowledge and effectiveness.

Even though only four RNs participated in the educational simulation event, the long term impact on the nurses involved could be large. The added RRT education and simulation may have prepared and given the nurses the ability to protect their patients by: being able to better recognize the warning signs of patient deterioration; becoming more knowledgeable on the policy surround the RRT; and feeling more confident in high stress and emergent situations by understanding and utilizing their resources.

Sustainability of the project intervention will be preserved though the continuation of the project site’s focus and commitment to innovation, research, evidence-based practice, and interdisciplinary development. Use of the RRT education and simulation intervention can continue to be presented at NEA to provide clarification to those newly hired nurses as well as refine their clinical knowledge skills and encourage participation through the use of simulation.
The intervention also did not add extra time to the NEA day and was feasible in regards to no extra staff being utilized.

**Implications for Future Practice**

There are many other avenues for continuation of this quality improvement project for the future. Simulation offers different opportunities for nursing education. Practice RRT scenarios within simulation allow nurses to apply knowledge and clinical judgment to guide care. Continuation of the collaboration between MHSM and the Kirkhof College of Nursing will allow for DNP students to enact their various roles as well as benefit the hospital with new and innovative quality improvement projects. To disseminate the project’s findings and work toward sustainability, the Nursing Leadership Conference at MHSM would be a good starting point.

Continuation of the RRT education and simulation would be beneficial to explore as more data can be gathered on the effectiveness of the actual RRT simulation and education. Comparison of this first group to future groups’ pre/posttests would facilitate the ongoing effectiveness and evaluation of the RRT simulation in increasing knowledge. If MHSM considers use of the PNIC® simulation evaluation tool, it would measure overall satisfaction with just the simulation experience instead of grouping it in with the NEA feedback evaluation forms. The feedback from this first group of participants was positive. They felt that the experience was helpful in preparing them for participating in future RRT’s as well as refining their clinical skills.

**Conclusion**

The problem of U.S. health care costs is connected to this project. It is well known that the cost of health care continues to escalate though it needs to be stopped. In 1970, total cost of health care was $75 billion. In 2010, it was $2.6 trillion. In 2021, it is expected to reach $4.8
trillion (Centers for Medicare and Medicaid Services, 2014). By this estimation, health care spending will account for one-fifth of the U.S. economy; such a continued growth in cost cannot be sustained.

The impact of rapid response systems (RRS’s) within an acute care setting is significant in decreasing mortality, cardiac arrests, and unplanned ICU admissions (Chen et al., 2009; Salamonson et al., 2006; Bellomo et al., 2004; Sebat et al., 2005). Research supports the notion that RRS’s provide positive outcomes for patients because failure to rescue rates decrease. RRSs and educated competent nurses serve as patient safeguards and lead to positive outcomes. Human patient simulation education has been found to promote patient well-being and excellence of care and they are effective in increasing nurses’ perceptions of readiness and knowledge of RRS protocols (DeVita, et al., 2005; IOM, 2000; Sittner, et al., 2009; Wehbe-Janek, et al., 2012).

The significant outcomes of decreased mortality, cardiac arrests, and ICU admissions are in part helping to reducing health care costs as well as saving patient lives. Health care will continue to benefit from RRS use by providing quality, cost-effective, and safe care to patients. Nurses are the first responders in time of patient deterioration within the hospital setting. This is why understanding nursing perceptions of RRS’s including knowledge, participation, and satisfaction is necessary as well as providing current and pertinent RRS education and simulation scenarios.
<p>| Level I | Evidence from a systematic review of all relevant randomized controlled trials (RCT's), or evidence-based clinical practice guidelines based on systematic reviews of RCT's |</p>
<table>
<thead>
<tr>
<th>Level II</th>
<th>Evidence obtained from at least one well-designed RCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level III</td>
<td>Evidence obtained from well-designed controlled trials without randomization, quasi-experimental</td>
</tr>
<tr>
<td>Level IV</td>
<td>Evidence from well-designed case-control and cohort studies</td>
</tr>
<tr>
<td>Level V</td>
<td>Evidence from systematic reviews of descriptive and qualitative studies</td>
</tr>
<tr>
<td>Level VI</td>
<td>Evidence from a single descriptive or qualitative study</td>
</tr>
<tr>
<td>Level VII</td>
<td>Evidence from the opinion of authorities and/or reports of expert committees</td>
</tr>
</tbody>
</table>

F₁ = facilitation method for transforming weak context and strong evidence into a highly receptive context
F₂ = facilitation method to manage weak context and weak evidence situation – most challenging and possibly involves issues of safety, basic competence needs to be managed
F₃ = facilitation method to manage strong context and weak evidence situation – issues of routine and power involved

TITLE: RAPID RESPONSE TEAM FOR IMMEDIATE CLINICAL INTERVENTION

APPROVAL: President & C.E.O.

ORIGINATOR: Chief of Staff

POLICY STATEMENT:

1. In order to promote optimal care of patients, the medical staff hereby makes provisions for registered nurses to be empowered to seek immediate clinical support and/or medical intervention via in-house medical staff without a formal consult order.

2. This clinical intervention may be needed based on the result of an acute change in condition (defined below), or may involve the attending physician being unavailable, or not addressing the patient’s condition adequately for care-related question.

3. Activation of Rapid Response Team should be used to seek additional nursing and respiratory therapy assistance to prevent an actual or potential deterioration in a patient condition. Whenever possible, normal physician communication processes should be used for patient assessment and for obtaining orders.

4. The Rapid Response Team (RRT) consists of a Registered Nurse (RN) and a Respiratory Therapist (RT). The RN will be a nurse who has certification in Advanced Cardiac Life Support and achieved Level III on Clinical Advancement System.

POLICY EXCLUSIONS:

1. Activation of the Rapid Response Team can be used for all areas except the Operating Room and the Neonatal Intensive Care Unit. These areas are excluded as they have internal processes for summoning additional assistance.

2. The RRT should not be used in lieu of:
   b. Formal or informal Critical Care Consult when indicated.

3. The RRT should not be used to perform routine admission, discharge, transfer or transport functions.
Policy Outline:
A. Identifying Patients
B. Activating the Rapid Response Team (RRT)
C. Roles and Responsibilities
D. Implementing "Immediate Clinical Need" Process
Addendum – Immediate Clinical Need Flow Chart

PROCEDURE: Refer to Immediate Clinical Need Flow Chart, Addendum A.

<table>
<thead>
<tr>
<th>Responsibility</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Identifying Patients</td>
<td></td>
</tr>
<tr>
<td>Registered Nurse</td>
<td>1. Identifies patient to be either:</td>
</tr>
<tr>
<td></td>
<td>a. Clinically unstable or</td>
</tr>
<tr>
<td></td>
<td>b. High risk for becoming unstable or</td>
</tr>
<tr>
<td></td>
<td>c. Has an acute change in one or more of the following:</td>
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<tr>
<td></td>
<td>(1) Acute change in vital signs</td>
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<td></td>
<td>(2) Threatened Airway.</td>
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<td></td>
<td>(2) Acute drop in blood oxygen saturation.</td>
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<td></td>
<td>(3) Unstable acute drop in urine output.</td>
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<td></td>
<td>(4) Altered mental status that requires immediate intervention.</td>
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<tr>
<td></td>
<td>(5) Unexplained agitation.</td>
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<tr>
<td></td>
<td>(6) New, prolonged or recurrent seizures.</td>
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<tr>
<td></td>
<td>(7) New or recurrent chest pain.</td>
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<tr>
<td></td>
<td>(8) Perception by a caregiver that patient requires prompt intervention to prevent further deterioration.</td>
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<tr>
<td></td>
<td>(9) Uncontrolled pain</td>
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<tr>
<td></td>
<td>(10) Failure to respond to treatment</td>
</tr>
</tbody>
</table>

B. Activating the Rapid Response Team (RRT)

| Registered Nurse/Patient/  | 1. Places a call directly to the RRT RN by dialing #1600 or, places call or |
| Patient Visitor           | delegates to another staff person to call operator #6333 to request the operator page the Rapid Response Team using the overhead audible tones followed by the words “Rapid Response Team to _______ (unit name)." |
| Hospital Operators        | 2. After completing the overhead page, pages the Rapid Response Team's alpha pager group with the following message: "Rapid Response- _______ (unit name), _______ (room location)." |
Note: This group page will be sent to the following individuals:

a. Rapid Response Team Registered Nurse Designee
b. Rapid Response Respiratory Therapist
c. Clinical Resource Coordinator (CRC)
d. Clinical Service Director, ED/Trauma/Critical Care

Note: The Rapid Response Team (RRT) consists of a Registered Nurse (RN) and a Respiratory Therapist (RT). The RN will be a nurse who has certification in Advanced Cardiac Life Support and achieved Level III on Clinical Advancement System.

RRT Nurse

3. Quickly (within 5 minutes) proceeds to the patient's room and collaborates with the registered nurse caring for the patient to plan an appropriate course of action.

4. Notifies Respiratory Therapy Rapid Responder at #5462 for any patient with an acute change in respiratory status or a potential change in respiratory status.

Unit Staff

7. Gives the members of the Rapid Response Team the following current patient information:
   a. Situation.
   b. Background.
   c. Assessment
   d. Recommendation

Rapid Response Team Registered Nurse

8. Functions as the team leader of the Rapid Response Team in the absence of a physician.
   
   a. Assure the attending physician has been notified.
   
   b. Assures that the intern, resident, and/or intensivist / hospitalist has been paged.
   
   c. Remains on unit and at the bedside until the clinical situation is resolved or the patient is transferred to an appropriate level of care.

Note: See C, #2 below for more detail.

C. Roles and Responsibilities

Rapid Response Team

1. Works in partnership with the unit clinical staff to quickly assess the patient and implement plan to prevent deterioration.

2. Proactively rounds on at-risk inpatients:
   a. Patients discharged from Critical Care Unit (H2) within last
b. Patients identified in the Central Monitor Unit with unstable vital signs, EKG rhythms or Visensia Indices > 3.

c. Unstable patients identified by charge nurses during rounds on inpatient units.

d. Patients who have had a RRT activation within the last 24 hours.

e. Patients identified by the “Failure to Rescue Report.”

3. When time permits, uses normal physician communication channels for obtaining orders.

4. Requests bedside physician assessments, as needed.

5. When patient's clinical situation requires, implements the "immediate clinical need protocol."

6. Assists with invasive emergency procedures and cardiopulmonary arrests.

7. Completes a nursing progress note for all calls excluding IV starts.

8. Completes Rapid Response Team documentation form for quality improvement.

9. Actively participates in quality improvement process trending using both formal (PEERS) and informal processes.

10. In the absence of a physician or while awaiting a return call, may institute the following based on their assessment of the patient's condition:

   a. Start 0.9 NS IV.

   b. For hypotension (SBP less than 90) and clear lungs, begin 250 ml/15 minutes fluid challenge may repeat X1.

   c. Checks pulse oximeter reading.

   d. Adjust oxygen device and oxygen amount being delivered. (If BiPap/CPAP are needed, consults Critical Care immediately.)

   e. Requests a STAT EKG. Physician to interpret.

   f. Requests a STAT CXR (if not in previous 12 hours). Physician to interpret.

   g. Performs STAT ABGs. Physician to interpret.

   h. Performs STAT blood glucose assessment.

   i. Begins BLS/ACLS interventions.

11. Obtains order for any of the above diagnostics or interventions from an independent licensed practitioner who is responsible for
D. Implementing "Immediate Clinical Need" Process

Registered Nurse (Either Unit Staff or Rapid Response Team)

1. Notifies the Attending Physician with concerns.
   a. If a response is received from the Attending Physician:
      (1) If the Physician's orders adequately address the patient's condition, implements orders.
      (2) If the Attending Physician's orders do not adequately address the patient's condition, restates concern with Attending Physician or requests patient assessment by Attending Physician.

      Note: If this does not occur:

      (a) Pages the Intensivist (397-1351) for a nurse requested consult.
      (b) If the Intensivist cannot intervene due to clinical priorities, pages Hospitalist (339-2329).
      (c) Discusses event with one of the following Clinical Nurse Leaders as appropriate for time of day: Clinical Leader, Nurse Manager, Clinical Nurse Specialist, Educator, Clinical Resource Coordinator (CRC), or Clinical Service Director. It may also be escalated to the Nurse Administrator on Call (NAOC) or Vice President of Patient Care Services.

      Note: Alternate steps for Neonatal Intensive Care Unit (NICU) and obstetric patients: After Attending Physician, proceeds to contact physicians holding the Medical Staff Leadership roles as outlined in "Immediate Need for Follow-Up Communication" section which follows (step #11).

   b. If NO response is received from the Attending Physician:
      (1) Pages Intensivist (397-1351).
      (2) If the Intensivist cannot intervene due to clinical priorities, pages the Hospitalist (339-2329).
      (3) Discusses event with one of the following Clinical
Nurse Leaders as appropriate for time of day: Clinical Leader, Nurse Manager, Clinical Nurse Specialist, Educator, Clinical Resource Coordinator (CRC), or Clinical Service Director. It may also be escalated to the Nurse Administrator on Call (NAOC) or Vice President of Patient Care Services.

(4) Completes PEERS to communicate the scenario to Medical Staff Leadership so that prompt investigation, follow-up, and intervention can occur with attending physician. See "Immediate Need for Follow-Up Communication" section which follows (step #11).

Intensivist / Hospitalist
2. Assesses patient and provides clinical direction for care.
3. If quality issues are identified, completes PEERS and refers to Peer Review Process.

Registered Nurse
4. When there is an immediate need for follow-up communication, contacts the following in order listed. (See Addendum C for pager numbers.) If no response, contacts next role on list:
   a. Department Chief
   b. Chief of Staff
   c. Vice Chief of Staff
   d. Vice President of Medical Affairs
   e. Vice President Clinical Quality and Safety
5. If Intensivist or Hospitalist intervention has been required, notifies the intern, resident, and attending as soon as possible after the clinical event has stabilized.

Department Chief/Vice Chief of Staff/Chief of Staff/Vice President, Medical Affairs/Vice President, Clinical Quality and Safety
6. Determines the urgency for further contact or follow-up with Attending Physician after the intervention.
7. If quality issues are identified, completes PEERS and refers to the Peer Review Process.

Concurrent Consent(s):

Vice President & Chief Nursing Officer

Chief of Staff

nrsgadmin\p&ps\10-160\12-7-09

104
A) Background Experience

1. Are you familiar with the rapid response team (RRT)?
   Yes   No
2. At hire, were you aware of the RRT?
   Yes   No
3. Have you ever called an RRT personally?
   Yes   No
4. If yes, more than once?
   Yes   No
5. Have you ever been hesitant to call an RRT?
   Yes   No
6. If yes, why? Please type in space provided

7. What roles have you fulfilled during an RRT?
   • Initiated the call
   • Relayed patient information
   • Administered medication
   • Monitored vital signs
   • Directed other team members
   • Updated family members
   • Facilitated patient to move to a higher level of care
   • Documented RRT data
   • Other
B) RRT Participation

<table>
<thead>
<tr>
<th>Survey Item</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. I could do more during a RRT.</td>
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<td>9. I feel that I participate to the fullest.</td>
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<td>10. My knowledge of a patient affects how much I participate in the RRT.</td>
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<td>11. I have felt intimidated during a RRT by other members of the RRT.</td>
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<td>12. In the past I have not fully participated in a RRT because I have felt intimidated.</td>
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<tr>
<td>13. During a RRT I usually defer to the ICU nurse team members to administer the nursing care.</td>
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<td>14. My patient assignment does not affect my participation in a RRT.</td>
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<td>15. I have always had enough time to see a RRT through to the end.</td>
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<td>16. I feel fully prepared to administer nursing care during a RRT.</td>
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<tr>
<td>17. The RRT education I received this agency has prepared me for my role during a RRT.</td>
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<td>18. As my RRT experiences have increased, I have felt more prepared.</td>
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<tr>
<td>19. I feel comfortable with my role as a member of the RRT.</td>
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<tr>
<td>20. I know what my role is as a member of the RRT.</td>
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<tr>
<td>21. I feel that I am a valued member of the RRT.</td>
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</tr>
<tr>
<td>Survey Item</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Neutral</td>
<td>Agree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
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<tr>
<td>22. I think that the RRT improves patient care.</td>
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<tr>
<td>23. I value my ability to call a RRT.</td>
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<td>24. I think that the RRT improves my working conditions.</td>
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</tbody>
</table>

### Clinical area:

**Discipline:**
- Medical
- Nursing
- Other_____________________

**Years of clinical experience:**
- Less than 1
- 1 to 3
- 4 to 5
- 6 to 10
- more than 10

**I have received education related to our rapid response system in the last 12 months**
- Yes
- No

**I have a good understanding of the abnormal observations that require me to activate the rapid response system**
- Yes
- No

### PLEASE CONSIDER THE STATEMENTS BELOW AND CIRCLE YOUR RESPONSE, THERE IS SPACE TO WRITE ANY COMMENTS OR SUGGESTIONS YOU HAVE ABOUT THE RAPID RESPONSE SYSTEM AT THE END OF THE SURVEY.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients in the hospital have complex medical problems</td>
<td></td>
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<tr>
<td>Patients receive effective emergency assistance from the rapid response team</td>
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<tr>
<td>I feel confident activating the rapid response system</td>
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<tr>
<td>The rapid response system allows me to seek help for my patients when I am worried about them</td>
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</tr>
<tr>
<td>The rapid response system is not helpful in managing sick patients on the ward</td>
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<tr>
<td>When one of my patients is sick I call the covering doctor before calling the rapid response team</td>
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</tr>
<tr>
<td>If I cannot contact the covering doctor about my sick patient I activate the rapid response system</td>
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</tr>
<tr>
<td>I am reluctant to activate the rapid response system for my patients because I will be criticised if they are not that unwell</td>
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</tr>
<tr>
<td>Rapid response system calls are required because the management of the patient by the doctors has been inadequate</td>
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<td></td>
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</tr>
<tr>
<td>Statement</td>
<td>Strongly disagree</td>
<td>Disagree</td>
<td>Uncertain</td>
<td>Agree</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>I would activate the rapid response system for a patient I am worried about even if their vital signs are normal</td>
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<td>Disagree</td>
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<tr>
<td>If my patient meets rapid response system calling criteria but does not look unwell I would not make a rapid response call</td>
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<td>Uncertain</td>
<td>Agree</td>
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</tr>
<tr>
<td>Junior doctors support my decision to call a rapid response</td>
<td>Strongly disagree</td>
<td>Disagree</td>
<td>Uncertain</td>
<td>Agree</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>Senior doctors support my decision to call a rapid response</td>
<td>Strongly disagree</td>
<td>Disagree</td>
<td>Uncertain</td>
<td>Agree</td>
<td>Strongly agree</td>
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<tr>
<td>Ward/unit nurses support my decision to call a rapid response</td>
<td>Strongly disagree</td>
<td>Disagree</td>
<td>Uncertain</td>
<td>Agree</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>Senior nurses support my decision to call a rapid response</td>
<td>Strongly disagree</td>
<td>Disagree</td>
<td>Uncertain</td>
<td>Agree</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>Using the rapid response system increases my work load when caring for a sick patient</td>
<td>Strongly disagree</td>
<td>Disagree</td>
<td>Uncertain</td>
<td>Agree</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>I understand my role during rapid response calls</td>
<td>Strongly disagree</td>
<td>Disagree</td>
<td>Uncertain</td>
<td>Agree</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>The rapid response system reduces my skills in managing sick patients</td>
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<td>Disagree</td>
<td>Uncertain</td>
<td>Agree</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>Rapid response system calls teach me how to better manage sick patients in my ward</td>
<td>Strongly disagree</td>
<td>Disagree</td>
<td>Uncertain</td>
<td>Agree</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>The rapid response team respond to calls in an appropriate timeframe</td>
<td>Strongly disagree</td>
<td>Disagree</td>
<td>Uncertain</td>
<td>Agree</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>The rapid response team encourage effective teamwork</td>
<td>Strongly disagree</td>
<td>Disagree</td>
<td>Uncertain</td>
<td>Agree</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>The rapid response team communicate effectively</td>
<td>Strongly disagree</td>
<td>Disagree</td>
<td>Uncertain</td>
<td>Agree</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>The ongoing plan for the patient is clearly documented after a rapid response call</td>
<td>Strongly disagree</td>
<td>Disagree</td>
<td>Uncertain</td>
<td>Agree</td>
<td>Strongly agree</td>
</tr>
</tbody>
</table>

Additional comments:
Information Summary – Assessment Survey for Registered Nurses

You are being asked to complete an assessment survey. The purpose of this survey is to gather information on nursing participation, knowledge, and satisfaction with the current RRT system. The data obtained from this survey will be used in the creation of a high fidelity simulation educational intervention on the topic of rapid response teams (RRTs) and nurse perceptions.

Your participation is voluntary. You do not have to complete the assessment survey. It will not be known who completes the survey and who does not complete the survey. There will be no collection any information that will personally identify you. All of your responses will be anonymous. All outcomes from the survey responses will be reported in aggregate format. You will have 14 days to complete the survey through the Survey Monkey® program. It will take about 5-10 minutes to complete the survey.

Thank you for considering being part of the survey. If you have any questions about the survey, please contact Grace Gembrowski at gembrowg@mail.gvsu.edu.
APPENDIX H
### Table 1 Sample of Rapid Response Team Scenario

<table>
<thead>
<tr>
<th>SimMan® Action</th>
<th>Trainee Events</th>
<th>Scenario/Vocal Sounds</th>
<th>Instructor Guide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial State: Sinus 85pm LS crackles right and left Heart: Normal Bowel: Normal SpO2 92, etCO2 34, Temp 99.6 RR 20, Bp 145/82</td>
<td>1. Head to toe assessment (link to self) 2. ask about dyspnea (link to self) 3. Oxygen (link to frame 1) 4. Set Bp monitor (link to self)</td>
<td>Vocal sound: &quot;I just can’t catch my wind, No, I am not hurting&quot;</td>
<td>Have trainee review history, lab work and results Cefotaxime 1g IV q 8 h</td>
</tr>
<tr>
<td><strong>Frame 1:</strong> Sinus 97bpm, Unifocal PVC: 25 SpO2 91 Bp 150/80 Crackles wheezes</td>
<td>1. ask about pain (link to frame 2) 2. ask about SOB (link to frame 2) 3. review current lab 4. Apply O2 (link to self) 5. Call Resp Therapy Switch to nonrebreather 6. Order CXR (link to self)</td>
<td>MD Orders: CXR, ABGs, Blood Cultures, Sputum Cultures, Lasix 40 mg IV, Oxygen to keep SpO2 90%</td>
<td></td>
</tr>
<tr>
<td><strong>Frame 2:</strong> Sinus 125bpm, Unifocal SpO2 87 RR 30 Bp 174/99 Crackles, wheezes</td>
<td>1. Head to toe assessment (link to self) 2. <strong>Call RRT Notify MD of status</strong> (link to frame 3) 3. Increase oxygen to 4 liters 4. IV line (link to self) 5. IV fluid started</td>
<td>Add vocal sounds: “I can’t breath, do something!” X-ray available on the monitor: diffuse infiltrates.jpg</td>
<td>Call physician Dial “6” Mobilize RRT</td>
</tr>
</tbody>
</table>

**Background:** A 74-year-old female is being transferred from the Emergency Room to the Progressive Care Unit with a diagnosis of pneumonia. She has had a fever ranging between 101---104 for the past two days. Yesterday she was seen by her family physician and placed on oral antibiotics. Today she arrives to the Emergency Room with complaints of increased difficulty “catching her breath” and has a harsh productive cough. Chest X-Rays show bilateral infiltrates and early pneumonia. She is receiving 2 liters of oxygen per nasal prong, and SpO2 is 92%.

**Patient Information:** She has NKA, is a type 2 Diabetic with a history of hypertension. Current medications include: Glucotrol 30 mg b.i.d. and Hydrochlorothiazide 25mg po daily. She is married has and two children.

Information Summary – Simulation Intervention for new hire Registered Nurses

You are being asked to complete a rapid response team (RRT) educational session and high fidelity simulation along with a pre/posttest and evaluation tool immediately after. The purpose of this education is to supply additional knowledge to nurses on the current RRT in place at this organization and measure knowledge growth and perceptions of the intervention. The data obtained from this education and simulation will be reviewed for use in enhancing the current Nursing Excellence Academy (NEA) program.

Your participation is voluntary. You do not have to complete the education and simulation. There will be no collection any information that will personally identify you. All of your responses from the pre/posttest and evaluation tool will be anonymous. All outcomes from the pre/posttest and evaluation tool responses will be reported in aggregate format. The education and simulation will take about a half an hour to complete.

Thank you for considering being part of the RRT education and simulation intervention. If you have any questions, please contact Grace Gembrowski at gembrowg@mail.gvsu.edu.
Rapid Response Pretest/Posttest

Directions: This pretest consists of 18 multiple choice questions.

Please make sure that your Subject Code number is on the answer sheet.

1. Your patient is receiving a transfusion of PRBC’s and develops chills and elevated temperature. Which action should you take first?
   a) Notify the Rapid Response Team nurse
   b) **Discontinue the blood transfusion**
   c) Decrease the rate of the blood transfusion and give the patient warm blankets
   d) Catheterize your client for hemolysis of RBC’s

2. You received report from the day shift nurse. From report you know the physician held the patient’s digoxin due to heart rate in the 40’s. It is twelve hours later, and your patient’s pulse is averaging a rate of 42 – 50 per minute. Your priority nursing intervention for this patient now is to:
   a) Check the apical pulse, blood pressure, SpO2, and assess LOC
   b) Immediately call the Rapid Response Team nurse
   c) Continue to observe
   d) Call day shift nurse and verify pulse rate from previous shift

3. The patient with pulmonary edema is complaining of increased shortness of breath. You called the primary physician and receive an order for Lasix 40 mg IVP. Now the patient is now having increased shortness of breath, sternal retractions, and crackles bilaterally. You check an SPO2 and find it to be 86%. Your nursing intervention would be:
   a) Increase IV fluids to 150cc/hour
   b) Call Respiratory Therapy for a breathing treatment
   c) Administer another dose of Lasix 40 mg IVP
   d) **Call the Rapid Response Team nurse**
4. Upon entering your post-op pacemaker placement patient’s room you notice new seizure activity. Your response should be:
   
a) Start bagging the patient  
b) **Ensure safety of the client and Call the Rapid Response Team nurse**  
c) Notify the team coordinator as soon as possible  
d) Insert an oral airway

5. Your patient has been alert and oriented all day. At 1600 your client will not arouse. She is breathing and has a pulse. Your response should be:
   
a) Place a call to the primary care provider  
b) **Dial #1600**  
c) Call out to your peers for help  
d) Begin CPR

6. Your COPD patient has been on oxygen via nasal prongs at 2 liters per minute. You find the oxygen on the floor. Oxygen saturation is 87%. Your initial intervention should be:
   
a) Call the Rapid Response Team nurse  
b) **Apply oxygen at 2 liters per minute**  
c) Call Respiratory Therapy  
d) Reapply oxygen at 6 liters/minute

7. You are weaning dopamine on your CHF patient. Systolic blood pressure has been consistently in the low 100s. You wean from 4mcg/kg/min to 3 mcg/kg/min and the systolic blood pressure drops to 88. You should:
   
a) Check the blood pressure in another hour  
b) Increase the dopamine to 4mcg/kg/min  
c) Call the Rapid Response Team nurse  
d) **Re-check the blood pressure in 5 minutes**

8. While working on the Progressive Care unit you hear an alarm and notice that one of the patient’s has a straight line on the cardiac monitor. What is your initial nursing intervention?
   
a) Notify the physician  
b) Call the Rapid Response Team nurse  
c) **Assess the patient**  
d) Call a code

9. You have been in frequent contact with your client’s primary physician related to your patient’s respiratory distress. Your patient is now on bipap with $O_2$ at 60%. Your patient’s oxygen saturation is rapidly decreasing and is now 82%. You should:
10. Your patient was admitted with rule out acute myocardial infarction. She puts on her call light and tells you she is having midsternal chest pain. Your initial interventions should be:

a) Call the Rapid Response Team nurse  
b) Administer sublingual nitroglycerin  
c) Order a stat EKG  
d) Give Morphine 10 mg IV stat

11. Criteria for initiating the Rapid Response Team at Mercy Health Saint Mary’s is:

a) Concern/worry about the patient’s condition  
b) Acute increase in SpO2 and decreasing O2 requirements  
c) Acute increase in level of consciousness (LOC)  
d) A decrease in blood pressure while weaning dopamine

12. Members of the Rapid Response Team at Mercy Health Saint Mary’s include:

a) Critical Care Nurse, Hospitalist, and a Respiratory Therapist  
b) Critical Care Nurse, Emergency Room Physician, and a Respiratory Therapist  
c) Critical Care Nurse and a Respiratory Therapist  
d) Critical Care Nurse, Pastoral Care, and a Respiratory Therapist

13. One goal of the Rapid Response Team at Mercy Health Saint Mary’s is to:

a) Evaluate the bedside care provided by nursing staff  
b) Promote optimal care of patients by empowering registered nurses to seek immediate clinical support and/or medical intervention  
c) Increase the length of stay for unexpected admissions to Critical Care  
d) Decrease the number of telephone calls to the primary physician

14. The procedure for initiating the Rapid Response Team at Mercy Health Saint Mary’s is to:

a) Notify the physician, dial #1600, ask the Switchboard Operator to initiate the Rapid Response Team  
b) Notify the Critical Care Unit, dial #1600, ask the Switchboard Operator to initiate the Rapid Response Team
c) Dial #1600 to speak with the Rapid Response Team nurse or have another staff person call operator #6333 to request the operator page the Rapid Response Team using the overhead

d) Notify the Hospitalist, dial #1600 ask the Switchboard Operator to initiate the Rapid Response Team

15. Who is ultimately responsible for assuring documentation of assessments, interventions, and client responses associated with a Rapid Response Team event?
   a) The Hospitalist
   b) The Rapid Response Team Nurse
   c) **The Primary Nurse**
   d) The House Supervisor

16. You are unable to reach the pulmonologist who performed a bronchoscopy on your patient who develops stridor. Who would you notify for additional support during this situation?
   a) The Emergency Room Physician
   b) The Hospitalist “on call”
   c) **The Rapid Response Team nurse**
   d) The Code Blue Team

17. Your surgical patient has an epidural. On your hourly assessment the patient’s respiratory rate is 7 per minute and heart rate is 56 beats per minute. He is difficult to arouse but moaning in pain. What is the priority nursing intervention?
   a) Aggressively attempt to arouse your patient
   b) Give additional Morphine because your patient is in pain
   c) **Call the Rapid Response Team nurse**
   d) Call the surgeon

18. It is change of shift, and you have just received a new admit from the emergency room. Your patient presents with circumoral cyanosis, sternal retractions, and SpO2 of 82. You are the nurse, what is your primary intervention?
   a) Report off to the next shift and inform them of the new admission’s room number.
   b) Inform the nurse aide to get the patient settled in his room and take his vital signs.
   c) Call the physician and inform of admit.
   d) **Administer oxygen.**

Simulation in Nursing, 5(3), p. 119-127. Copyright 2009 by Barbara Sittner, PhD, RN, APRN-CNS. Adapted with permission.

APPENDIX K
Please rate the following statements on the scale provided. Mark NA if you have no experience with the statement.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Do Not Agree</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
<th>Not Applicable</th>
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</thead>
<tbody>
<tr>
<td>The instructor’s questions helped me to think critically</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>NA</td>
</tr>
<tr>
<td>I feel better prepared to care for real patients</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>NA</td>
</tr>
<tr>
<td>I developed a better understanding of the pathophysiology of the conditions in the SCE</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>NA</td>
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<tr>
<td>I developed a better understanding of the medications that were in the SCE</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>NA</td>
</tr>
<tr>
<td>I feel more confident in my decision-making skills</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>NA</td>
</tr>
<tr>
<td>I am more confident in determining what to tell the healthcare provider</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>NA</td>
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<tr>
<td>My assessment skills improved</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>NA</td>
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<tr>
<td>I feel more confident that I will be able to recognize changes in my real patient’s condition</td>
<td>0</td>
<td>1</td>
<td>2</td>
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<tr>
<td>I am able to better predict what changes may occur with my real patients</td>
<td>0</td>
<td>1</td>
<td>2</td>
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<tr>
<td>Completing the SCE helped me understand classroom information better</td>
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<tr>
<td>I was challenged in my thinking and decision-making skills</td>
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<td>1</td>
<td>2</td>
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<tr>
<td>I learned as much from observing my peers as I did when I was actively involved in caring for the simulated patient</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>NA</td>
</tr>
<tr>
<td>Debriefing and group discussion were valuable</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>NA</td>
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</tbody>
</table>
Demographics

1. Please provide the type of unit in which you currently work. Example: cardiac, neurology, oncology ...

2. Years of Clinical Experience
   - Less than 1
   - 1 to 3
   - 4 to 5
   - 6 to 10
   - More than 10

3. Highest level of education
   - Associates
   - Bachelors
   - Masters
   - Doctorate
   - Other (please specify)

4. I have received education related to our rapid response system in the last 12 months
   - Yes
   - No

5. I have a good understanding of the abnormal observations that require me to activate the rapid response system
   - Yes
   - No
An evidence-based educational intervention for staff nurses and the Rapid

<table>
<thead>
<tr>
<th>6. Patients in the hospital have complex medical problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
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<table>
<thead>
<tr>
<th>7. Patients receive effective emergency assistance from the rapid response team</th>
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</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
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<table>
<thead>
<tr>
<th>8. I feel confident activating the rapid response team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
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<table>
<thead>
<tr>
<th>9. The rapid response team allows me to seek help for my patients when I am worried about them</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>10. The rapid response team is not helpful in managing sick patients on the floor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
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</table>

<table>
<thead>
<tr>
<th>11. If I cannot contact the covering physician about my sick patient I activate the rapid response team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
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<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>12. I am reluctant to activate the rapid response team for my patients because I will be criticized if they are not that unwell</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
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Knowledge and Satisfaction

<table>
<thead>
<tr>
<th>13. Rapid response team calls are required because the management of the patient by the physicians has been inadequate</th>
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</table>
An evidence-based educational intervention for staff nurses and the Rapid

15. I would activate the rapid response team for a patient I am worried about even if their vital signs are normal

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
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</table>

16. If my patient meets rapid response team calling criteria but does not look unwell, I would not make a rapid response call

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
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<th>Uncertain</th>
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</table>

17. Interns and/or residents support my decision to call a rapid response

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
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<th>Uncertain</th>
<th>Agree</th>
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</table>

18. Attending physicians support my decision to call a rapid response

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
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<tbody>
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</table>

19. Staff nurses support my decision to call a rapid response

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
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<tbody>
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</table>

20. Charge nurses and/or nursing management support my decision to call a rapid response

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
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</table>

Knowledge and Satisfaction

21. Using the rapid response team increases my work load when caring for a sick patient

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
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<tbody>
<tr>
<td></td>
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</table>

22. I understand my role during rapid response calls

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
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<tbody>
<tr>
<td></td>
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</table>

23. The rapid response team reduces my skills in managing sick patients

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
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</table>

24. Rapid response team calls teach me how to better manage sick patients in my unit

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
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25. The rapid response team responds to calls in an appropriate time frame

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<tr>
<th>Strongly Disagree</th>
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26. The rapid response team encourages effective teamwork

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27. The rapid response team communicates effectively

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28. The ongoing plan for the patient is clearly documented after a rapid response call

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**Participation**

29. Are you familiar with the rapid response team?

- Yes
- No

30. At hire, were you aware of the rapid response team?

- Yes
- No

31. Have you ever called a rapid response team personally?

- Yes
- No

**Participation**

32. Have you called a rapid response team more than once?

- Yes
- No

33. Have you ever been hesitant to call a rapid response team?

- Yes
- No
34. Why have you been hesitant to call a rapid response team?

[Blank space]

Participation

35. What roles have you fulfilled during a rapid response call?

- Initiated the call
- Relayed patient information
- Administered medication
- Monitored vital signs
- Directed other team members
- Updated family members
- Facilitated patient to move to a higher level of care
- Documented rapid response team data
- Other (please specify)

[Blank space]

Participation

36. I could do more during a rapid response call

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<th>Strongly Disagree</th>
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37. I feel that I participate to the fullest in a rapid response team

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<th>Strongly Disagree</th>
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38. My knowledge of a patient affects how much I participate in the rapid response team

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<th>Strongly Disagree</th>
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39. I have felt intimidated during a rapid response by other members of the rapid response team

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40. In the past I have not fully participated in a rapid response because I have felt intimidated

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<th>Strongly Disagree</th>
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41. During a rapid response I usually defer to the ICU nurse team members to administer the nursing care

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<th>Strongly Disagree</th>
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42. My patient assignment does not affect my participation in a rapid response

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<th>Strongly Disagree</th>
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43. I have always had enough time to see a rapid response call through to the end

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## Participation

44. I feel fully prepared to administer nursing care during a rapid response call

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<th>Strongly Disagree</th>
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45. The rapid response team education I received this agency has prepared me for my role during a rapid response call

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<th>Strongly Disagree</th>
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46. As my rapid response team experiences have increased, I have felt more prepared

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47. I feel comfortable with my role as a member of the rapid response team

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<th>Strongly Disagree</th>
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48. I know what my role is as a member of the rapid response team

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<th>Strongly Disagree</th>
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49. I feel that I am a valued member of the rapid response team

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<th>Strongly Disagree</th>
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### Additional comments

#### 53. Additional Comments

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DATE: April 4, 2014

TO: Grace Gembrowski, BSN
FROM: Grand Valley State University Human Research Review Committee
STUDY TITLE: An evidence-based educational intervention for staff nurses and the Rapid Response Team
REFERENCE #: 14-162-H
SUBMISSION TYPE: New Project
ACTION: APPROVED
APPROVAL DATE: April 4, 2014
APPROVAL: April 4, 2016
EXPIRATION:  
REVIEW TYPE: Expedited Review

Thank you for your submission of materials for this research study. The Human Research Review Committee has approved your research plan application as compliant with all applicable sections of the federal regulations, Michigan law, GVSU policies and HRRC procedures. All research must be conducted in accordance with this approved submission.

Please insert the following sentence into your information/consent documents as appropriate. All project materials produced for participants or the public must contain this information.

Note that in accord with HRRC policy # 910 this project has been approved for two years.

This research protocol has been approved by the Human Research Review Committee at Grand Valley State University. File No. 14-162-H Expresion: April 4, 2016.

Please remember that informed consent is a process beginning with a description of the study and assurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require that each participant receive a copy of the signed consent document.

This approval is based on the HRRC determination that no greater than minimal risk is posed to research participants. This study has received expedited review, 45 CFR 46.110 category 7, based on the Office of Human Research Protections 1998 Guidance on Expedited Review Categories.

Please note the following in order to comply with federal regulations and HRRC policy:

1. Any change to previously approved materials must be approved by this office prior to initiation. Please use the Change in Approved Protocol form for this submission. This includes, but is not limited to, changes in key personnel, study location, participant selection process, etc. See HRRC policy 1010, Modifications to approved protocols.
2. All UNANTICIPATED PROBLEMS and SERIOUS ADVERSE EVENTS to participants or other parties affected by the research must be reported to this office within 7 days of the
event occurrence, using the IRBSAE Report form. If the adverse event includes a fatality, hospitalization, or security breach of sensitive information immediately notify the Human Research Review Committee Chair, Dr. Paul J. Reitmeier, 331-3417 AND Human Research Protections Administrator, Mr. Jon Jellisma, in the Office of the Provost, 331-2400. See HRRP policy 1020, Unanticipated problems and adverse events.

3. All instances of non-compliance or complaints regarding this study must be reported to this office in a timely manner. There are no specific forms for this report type. See HRRP policy 1030, Research non-compliance.

4. All required research records must be securely retained in either paper or electronic format for a minimum of 3 years following the closure of the approved study. This includes original or digitized copies of signed consent documents. Research studies subject to the privacy protections under HIPAA are required to maintain selected research records for a period of at least 6 years after the close of the study.

5. At least 60 days prior to current approval expiration, please submit a Continuing Review form:
   - Protocols that are active and open for enrollment require both the Primary Investigator and Authorizing Official to electronically sign the Continuing Review submission in IRBNet.
   - Protocols that are active for data analysis or long-term follow-up ONLY require the Principal Investigator’s signature but do not need to be further authorized.
   - A copy of the informed consent/assent form currently in use in the study must accompany the submission unless the study has been closed to enrollment, and active only for data analysis, for more than 1 year.

If you have any questions, please contact the Research Protections Program, Monday through Thursday, at (616) 331-3197 or rpp@gsu.edu. The office observes all university holidays, and does not process applications during exam week or between academic terms. Please include your study title and reference number in all correspondence with our office.
NOTICE OF IRB NEW EXPEDITED APPROVAL

To: Grace Gembrowski, RN
2169 43rd Street SE, C6
Grand Rapids, MI 49508

Re: IRB# 14-0418-01
An evidence-based educational intervention for staff nurses and the Rapid Response Team

Date: May 1, 2014

This is to inform you that Mercy Health Institutional Review Board (IRB) has approved the above research study by expedited review. This also includes approval for:

- Protocol, Version 3/16/14
- Research Informed Consent Form, Version 04/30/2014
- Waiver of Documentation of Informed Consent for Survey
- Reminder Email for Assessment Survey
- Rapid Response Pre- and Post-Test, Version 4/14/14
- Recruitment Poster, Version 4/15/14
- Survey Tool (no version date)
- Study Information Tool (for current RNs who attended NEA in the past), Version 4/14/14

The approval period is from May 1, 2014 to April 30, 2015. Your study number is 14-0418-01. Please be sure to reference this number and/or your study title in any correspondence with the IRB.

Your responsibilities to the IRB do not end with this approval. You will be required to submit a continuing review report by the date indicated below or a notification of study closure form with a report of the study’s findings upon completion of the study.

Continued approval is conditional upon your compliance with the following requirements:

- A copy of the Informed Consent Form, which includes HIPAA authorization, approved as of May 1, 2014, is enclosed. No other consent form may be used. It must be signed by each subject prior to initiation of any protocol procedures. In addition, each subject must be given a copy of the signed consent form.

Institutional Review Board - 200 Jefferson Ave. SE - Grand Rapids, MI 49503 - Ph: 616.685.6196
• All protocol modifications to approved research must be submitted to the IRB and not be implemented until approved by the IRB except where necessary to eliminate apparent immediate risks to the study subjects.

• Significant changes to the study site and significant deviations from the research protocol and all unanticipated problems that may involve risks or affect the safety or welfare of subjects or others, or that may affect the integrity of the research must be promptly reported to the IRB.

• All forms of advertising (including but not limited to: television, radio, internet, flyers, brochures, posters) must be submitted to the IRB and must not be implemented until approved by the IRB.

• Unanticipated problems/events and adverse events, whether related to the study article or not, must be reported to the IRB.

• Please complete and submit reports to the IRB as follows:

  Renewal of the study - complete and return the Continuing Review Report/Request for Renewal by 03/01/2015. The study cannot continue after April 30, 2015 until re-approved by the IRB.

  Closure of the study - complete and return the Notification of Study Closure form.

Please call me if you have any questions about the terms of this approval.

Brenda Hoffman
IRB Chairperson

Copy: File
Jean Barry, PhD, RN, NEA-BC
Figure N1: Sample 1 Demographics

- Master's: 14%
- Bachelor's: 55%
- Associate's: 32%

Percentage of education degrees.
Figure N2: Sample 1 Clinical Experience

<table>
<thead>
<tr>
<th>Years of Clinical Experience</th>
<th>Percentage</th>
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<tr>
<td>More than 10 years</td>
<td>17%</td>
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<tr>
<td>6-10 years</td>
<td>22%</td>
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<tr>
<td>4-5 years</td>
<td>22%</td>
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<tr>
<td>1-3 years</td>
<td>35%</td>
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<tr>
<td>Less than 1 year</td>
<td>4%</td>
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</table>
Figure N3: Sample 1 RRT Roles

What roles have you fulfilled during a rapid response call?

- Documented rapid response team data: 41%
- Facilitated patient to move to a higher level of care: 65%
- Updated family members: 59%
- Directed other team members: 59%
- Monitored vital signs: 88%
- Administered medication: 71%
- Relayed patient information: 82%
- Initiated the call: 77%
Research Informed Consent Form

Study Title: An evidence-based educational intervention for staff nurses and the Rapid Response Team

Principal Investigator: Grace Gembrowski, RN, GVSU DNP student

Study Mentor: Lisbeth Votruba, MSN, RN, PCCN

"You" refers to the subject.

"We" refers to Mercy Health Saint Mary's.

1. Introduction

You are being asked to participate in a clinical research study. Clinical research is the study of human diseases in an attempt to improve diagnosis and treatment. In order to decide whether or not you should agree to be part of this research study, you should receive enough information about its risks and benefits to make a judgment. This process is called informed consent.

This consent form gives detailed information about the research study, which will be discussed with you. If you wish to participate in this study you will be asked to sign this form.

2. Purpose of This Research Study

The goal of this evidence-based project is to develop an educational intervention related to rapid response teams (RRTs) by:

1) determining attitudes and perceptions of experienced registered nurses who have already attended Nursing Excellence Academy (NEA) and are currently employed at Mercy Health Saint Mary's (MHSM)

2) using the information from step 1 to create an evidence-based RRT PowerPoint® presentation and evidence-based simulated RRT educational intervention

3) pilot testing and evaluation the evidence-based intervention with newly hired experienced registered nurses attending NEA

3. Reason for Invitation

Individuals are invited to participate in the project to gain additional knowledge on the current RRT in place at Mercy Health Saint Mary's (MHSM) and measure knowledge growth and perceptions of the education and simulation intervention.

4. How Participants will be Selected

- The inclusion criteria is being a newly hired experienced registered nurse participating in the Nursing Excellence Academy (NEA).
- Basis for exclusion from the project includes if you work or will work primarily in neonatal intensive care (NICU) or the operating room (OR). The NICU and OR have alternative methods of summoning additional assistance. Those who work in these areas do not use the RRT and cannot assist with this project’s intent.
5. Length of Your Participation
You will be asked to participate in a 20 minute simulation intervention along with debriefing. You will also be asked to complete a pre and posttest along with a simulation evaluation tool that will take about 15 minutes. This is a total of 35 minutes. You will only be asked to participate one time.

6. Where the Study is Being Done and Number of People Participating
The simulation intervention will be held at the simulation lab and classrooms at MHSM at 260 Jefferson SE, Grand Rapids, 49503, 3rd floor. The number of people participating will depend on those who are attending the Nursing Excellence Academy and choose to participate. Seven to eight nurses are expected to attend the mandatory orientation during which the voluntary simulation intervention will take place. It is hoped that at least 4 nurses participate in the study.

7. Study Procedures
   - A pretest and posttest will be administered to the participants in a simulation lab classroom in paper format before and after the simulation intervention. A simulation evaluation tool in paper format will also be completed after the simulation. The simulation will occur in the simulation lab and will be followed by a debriefing session.
   - The pre and posttest and simulation evaluation tool will take about 15 minutes to complete. The simulation intervention with debriefing is scheduled for 20 minutes.
   - There are no out of pocket costs to participants.

8. What Will Happen When You Complete the Study
When your participation in the study ends, you will no longer have access to the pre and post-test and simulation evaluation that you have completed.

9. Possible Risks or Side Effects of Taking Part in this Study
The project involves no more than minimal risk to participants. Participants will not be able to be identified from the information provided or be placed at risk of criminal or civil liability. The subject’s financial standing, employability, or reputation will not be damaged if responses were disclosed outside of the research.

10. Costs for Taking Part in this Study
There is no cost to you for participation in this educational simulation intervention.

If you are injured as a result of your participation in this research project, Mercy Health will assist you in obtaining emergency care, if necessary, for your research related injuries. If you have insurance for medical care, your insurance carrier will be billed in the ordinary manner. As with any medical insurance, any costs that are not covered or are in excess of what are paid by your insurance, including deductibles, will be your responsibility. Mercy Health’s policy is not to provide financial compensation for lost wages, disability, pain or discomfort, unless required by law to do so. This does not mean that you are giving up any legal rights you may have. You may contact Grace Gembrowski at (616) 685-6457 with any questions or to report an injury.
11. Payment for Taking Part in this Study
   No compensation will be given to study participants. There will be an incentive to participate in the
   project. Lunch will be supplied for all participants.

12. Possible Benefits to You for Taking Part in the Study
   Potential benefits for participants include a better understanding of the RRT at the project site,
   increased confidence in participating in the RRT, and knowledge gain from the education and
   simulation.

13. Potential Benefits to Society
   Potential benefits to society include current updated information and education for newly hired
   registered nurses, an increase in knowledge, participation, and satisfaction with the RRT at the
   agency, and increased utilization of RRTs by registered nurses who may have been affected by
   barriers to activation (fear of criticism, doubt of own clinical skills, uncomfortable in role).

14. About Participating in this Study
   Your participation in this study is voluntary. You may stop participating in this study at any time
   without any penalty to you. If you decide to stop taking part in this study, you should tell the
   investigator.

   The investigator and/or the Mentor may stop your participation in the study at any time if they decide
   that it is in your best interest. They may also do this if you do not follow instructions.

15. Compensation for Injury
   If you are injured as a result of your participation in this research project, medical care and/or
   hospitalization will be provided, if necessary. If you have health insurance, your insurance carrier
   will be billed in the ordinary manner. As with any health insurance, any costs that are not covered or
   are in excess of what is paid by your insurance, including deductibles, will be your responsibility.
   No funds have been set aside to pay you in the event of a study related injury.

   By signing this consent form, you will not waive any of your legal rights or release the parties
   involved in this study from liability for negligence.

16. Confidentiality of Study Records and Medical Records
   • Data for this project is being collected anonymously and researchers nor anyone else can link
     the data to the participant.
   • Data in paper and electronic form will be coded with a key. Paper data will be maintained
     separately in a locked file cabinet in a locked office on Mercy Health Saint Mary’s property.
     Electronic data will remain confidential through the use of password protection on a designated
     computer at the agency and be kept as an encrypted data file.
   • While members of the NEA team may know you name, all the information collected from you or
     about you will be kept confidential to the fullest extent allowed by law. In very rare circumstances
specially authorized university or government officials may be given access to our project
records for purposes of protecting your rights and welfare.
  o These people will have access to the data collected:
  ▪ Researchers and research staff
  ▪ Institutional Review Board (IRB)
  ▪ Mentors of the study project from Mercy Health Saint Mary’s and Grand Valley
    State University
  ▪ FDA (Food and Drug Administration) and OHRP (Office for Human Research
    Protection)

17. Release of Personal Information
We will do our best to ensure that your personal information is kept confidential and private to the
maximum extent required by law. We cannot guarantee absolute confidentiality and privacy. Your
personal information may be disclosed if required by law. If information from this study is published or
presented at scientific meetings, your name and other personal information will not be used.

18. Names of Contacts for Questions about the Study
Include the following statement:
If you have any questions about taking part in this study, or in the event of a research related illness or
injury, contact Grace Gembrowski at gembrowskit@mail.grsu.edu or (989) 714-7168 or Listeth Votuba at
votrubal@mercyhealth.org. If you have any questions about your rights as a research participant, you
may contact:
  Brenda Hoffman, Mercy Health Institutional Review Board (IRB) Chairperson
  200 Jefferson Ave. SE – Grand Rapids, MI 49503
  Telephone: 616-885-6198
DOCUMENTATION OF INFORMED CONSENT

By signing this consent form and HIPAA authorization and by initialing each page, you certify you have read this form, you have had the opportunity to ask questions about this study and this form, and you have received answers that fully satisfy those questions. You are voluntarily signing this consent form and HIPAA authorization as evidence of your decision to participate in this research study and you are giving authorization for release of all your protected health information relative to this research.

You are aware you may withdraw your consent and HIPAA authorization in writing at any time without harming my future medical care or losing any benefits to which you might be otherwise entitled. You have been advised that the investigator in charge of this study may discontinue your participation in this study if it is felt to be in your best interest, if you do not follow the study requirements or if the study is stopped.

You will receive a signed copy of this Research Informed Consent Form and HIPAA Authorization.

By signing this consent form, you have not waived any of your legal rights or released the parties involved in this study from liability for negligence.

__________________________  ________________________
Signature of Study Participant  Date

__________________________
Printed Name of Study Participant

__________________________  ________________________
Signature of Person Obtaining Consent  Date

__________________________  ________________________
Signature of Principal Investigator  Date

Version Date 4/30/2014
The Rapid Response Team
Mercy Health Saint Mary’s

Purpose

- The Rapid Response Team (RRT) serves as an immediate clinical intervention for patients in the hospital setting
- Rapid Response Systems (RRSs) were created to decrease failure to rescue
  - The inadequate or delayed response to clinical deterioration in hospitalized patients (Sittner, 2009)
History

- The RRT was created and initiated in 2005 at Mercy Health Saint Mary’s (MAHSM)
- Available 24 hours, 7 days a week
- After implementation of the RRT, mortality decreased by 27%

Mortality Chart
Team Members

- **RRT Nurse**
  - Has several years of ICU experience
  - Hand picked by management for clinical knowledge, skills, and communication abilities
  - Certified in ACLS and achieved Level III on the Clinical Advancement System

- **RRT Respiratory Therapist**
  - Usually has ICU experience
  - Good communication skills and strong clinical background

Policy

- In order to promote optimal care of patients, registered nurses are empowered to seek immediate clinical support
  - Based on acute change in condition or attending not available
  - Activation based on need for additional nursing and respiratory assistance

- RRT available for use in all areas except OR and NICU
What the RRT is not for

- Code 333 - cardiopulmonary arrest
  - If your patient is arresting, call the code, not Rapid Response
- Critical Care Consult
- Routine admission, discharge, or transfer functions

Identifying Patients

- Clinically unstable patient, high risk for becoming unstable or change in 1 or more of the following:
  - Acute change in vital signs
  - Threatened airway
  - Acute drop in blood oxygen saturation
  - Unstable acute drop in urine output
  - Altered mental status
  - Unexplained agitation
  - New, prolonged, or recurrent seizures
  - New or recurrent chest pain
  - Perception by caregiver that patient requires prompt intervention to prevent further deterioration
  - Uncontrolled pain
  - Failure to respond to treatment
Identifying Patients

- Clinically unstable patient, high risk for becoming unstable or change in 1 or more of the following:
  - Acute change in vital signs
  - Threatened airway
  - Acute drop in blood oxygen saturation
  - Unstable acute drop in urine output
  - Altered mental status
  - Unexplained agitation
  - New, prolonged, or recurrent seizures
  - New or recurrent chest pain
  - Perception by caregiver that patient requires prompt intervention to prevent further deterioration
  - Uncontrolled pain
  - Failure to respond to treatment

RRT Nurse Can Implement

- 0.9 NS IV bolus infusion for hypotension
- Adjust O2 delivery device
- STAT EKG
- STAT CXR
- STAT ABG’s
- STAT blood glucose
- BLS/ACLS interventions
Data from Survey on the RRT

▲ The survey was emailed to all those who has participated in NEA in the past
▲ Wanted to determine the general perceptions of nursing toward the RRT at MHSM with Likert style questions
▲ Data found that:
  ▶ I feel confident in activating the RRT - 94% agreed and only 5% disagreed
  ▶ I am reluctant to activate the RRT because I will be criticized if my patient is not that unwell - 83% disagreed, 11% uncertain and 6% agreed
  ▶ I would activate the RRT for a patient I am worried about even if their vital signs are normal - 82% agreed, 6% uncertain and 13% disagreed
  ▶ Attending physicians support my decision to make a RRT call - 83% agreed, 18% uncertain, none disagree

Tips from Rapid Response Nurses

▲ The patient’s primary nurse is responsible for documentation of assessments and interventions during an RRT call
▲ RRT nurses are a bridge to therapy...the patients’ physician should be aware of what is happening as they are ultimately responsible for the care (orders) for that patient
▲ Keep your charge RN in the loop. They are a great resource; utilize them!
▲ If the RRT RN does not physically see the patient, please do not chart they have been at the bedside. This can be a disadvantage if an issue comes up.
Tips continued

- IV starts
  - RN should try 1-2 times, then ask charge RN or other skilled RN to attempt
    - Wrap arm in warm blankets before attempting
    - Utilize the ultrasound or vein finder on your unit
  - RRT nurse should be the last person to ask for IV start if non-emergent

Tips continued

- Recognize early warning signs of patient problems or impending deterioration. Don’t hesitate to use your resources and call the RRT RN.

- “Never be afraid to call, we love to help out and be a "big brother or sister" to new staff. No question is a bad question.”
References

APPENDIX Q
Dear Grace,

Yes you have permission to use the Rapid Response Survey in print and electronic form for your dissertation. Let me know if you need anything else.

Thanks,

Vannary

Vannary Sar | Australian Commission on Safety and Quality in Health Care
GPO Box 5480 Sydney NSW 2001
(02) 9125 3503 | 0 (02) 9125 3613 | www.safetyandquality.gov.au

Please note, the Commission is relocating its offices

As of Monday, 10 March 2014 we will be located at:
Level 5, 255 Elizabeth Street, Sydney NSW 2000

All telephone numbers will remain the same as will the Commission’s mailing address of GPO Box 5480, Sydney, NSW 2001.

--- Forwarded by Mary-Anne Gordon ACSQMC Health on 28/02/2014 08:59 ---

Grace Gombrowsk <gombrowsk@evidence.vsu.edu> to mail@Safetyandquality.gov.au.

20/02/2014 09:24

Subject: Question about Permissions [SEC=No Protective Marking]
Hello Grace!

Here is my pretest/posttest...the tests are the same, the questions were rearranged for the posttest (instead of #1, it was #19). Hope this helps...a lot of it is hospital specific, and that was the idea behind it...at the time, the RRT wasn't used as it is now....so we were also reinforcing hospital policy.

Let me know if you have any questions...

Best of luck to you and you begin this process.

Barbara Sittner PhD, RN, APRN-CNS
Professor
College of Nursing
Bryan College of Health Sciences

5035 Everett St.
Lincoln, NE 68506-1398
Work: (402)-481-8846
Fax: (402)-481-8421
barbara.sittner@bryanhealth.org
www.bryanhealthcollege.edu
Grace

You have permission to use the Simulation Effectiveness Tool as part of your DNP dissertation, as long as you identify that it is copyrighted by CAE Healthcare.

I have also attached the published research article on the tool.

Good luck with completing your DNP.

Wendy Jo Wilkinson
Director of Clinical Support Solutions
The Academy
CAE Healthcare
6300 Edgelake Drive
Sarasota, FL 34240
T: +1 941-536-2859
C: +1 941-504-5241
www.caehealthcare.com
Hi Grace,

I happily give you my permission to use the survey we developed for your project. Please feel free to adjust the questions as needed for your purpose. Let me know if you have any questions - best of luck with your dissertation!

Meg Pusateri, M.D.
Resident Physician
Department of Emergency Medicine
University of Louisville
412-216-5063
References


