Improving Code Cart Education for New Graduate Nurses

Derek Huffman

College of Nursing, East Carolina University

Doctor of Nursing Practice Program

Dr. Janet Tillman

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Section I. Introduction

Background

Code blue events are defined as emergent situations resulting in patients needing immediate intervention often as a result of cardiac or respiratory arrests and occur in every hospital setting daily. Code blue events are medical emergencies that require quick staff responses and often the utilization of emergency medications and equipment. Education surrounding crash carts for nurses is limited and most often gained through experience during these events. Advanced Cardiac Life Support (ACLS) is additional training available for nurses; however, it is not required by all departments for nursing staff. At the institution, ACLS is only mandated for nurses in high acuity areas, such as intensive care units and emergency departments. As a result, new nurses working in other areas have limited exposure to and knowledge of crash carts and their contents.

Organizational Needs Statement

The facility currently has approximately 960 inpatient beds (Duke Health, 2021). With the increasing number of patients and a substantial number of newly graduated staff nurses at the institution, there is a need to ensure that new nurses are properly educated and prepared for code blue events. Nurses need to understand what is located inside crash carts and how to use the materials found inside of them (K. Kester, personal communication, June 28, 2021).

Crash carts are currently available on every inpatient unit; however, despite common presence, very little education is provided to newly hired nurses related to crash carts during hospital or unit orientations. While the patient response team responds to code blue events on intermediate and step-down units, staff members on these units are the first to identify deterioration in patient condition and respond during these emergent situations. Improving their

knowledge regarding crash carts would benefit patient outcomes by allowing for earlier interventions during emergent events. Utilizing items inside carts, such as suction set-ups, fluids, and abboject syringe medications would reduce time spent attempting to locate supplies while allowing emergency supplies to be readily available for immediate interventions.

This project aims to meet objective HDS-02 set by Healthy People 2030 to reduce coronary heart disease deaths (U.S. Department of Health and Human Services, n.d.). The most common medical emergencies that trigger a code blue are arrests. Cardiac arrests account for 50-60% of inpatient arrests, with respiratory conditions being the second leading cause of arrest (Anderson et al., 2019). Appropriate implementation of ACLS protocols coupled with improved nurse understanding and application of crash carts will improve post-arrest outcomes as timely intervention is crucial in improving patient outcomes (Panchel et al., 2020).

The Triple Aim was designed to optimize the performance of healthcare systems by improving patient care (Institute for Healthcare Improvement (IHI), 2021). Education plays a vital role in providing safe, quality care to patients. By developing education related to crash carts, there could be a reduction in the number of deaths from cardiac arrests as early interventions improve patient and family healthcare experiences while decreasing inpatient hospital stays. Through the improvement of these metrics, per capita costs associated with healthcare would be decreased and aid in meeting all three dimensions of the Triple Aim framework (IHI, 2021).

Problem Statement

Education regarding crash carts for new graduate nurses is limited. Attempts to improve understanding of the materials inside, their proper use, and the locations of necessary items would allow nurses to feel more comfortable using crash carts during emergent situations.

Purpose Statement

This DNP project in association with new graduate nurses and will promote preparation for emergent situations by improving nurses' comfort with using crash carts. The purpose will be accomplished through the implementation of an educational initiative to familiarize nurses with the contents and correct utilization of the supplies maintained in the crash carts.

Section II. Evidence

Literature Review

A literature search was conducted through the Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Proquest databases. The terms used for these databases were nursing education and code carts. The initial search resulted in 418 total entries. Only articles with level of evidence of 1-3 were desired. Entries were then narrowed down using the inclusion criteria of publication within the last five years, peer-reviewed status, English language, and full-text availability.

Articles were included if they pertained to the clinical question of code blue education for nursing staff in the inpatient setting and contained the appropriate level of evidence. Following further review, evidence levels I through IV were considered due to the lack of available research regarding the subject matter. The articles included were quasi-experimental in design.

Exclusion criteria included studies not pertaining to the clinical question, studies that did not apply to nursing education, were unavailable in English, or studied medications not utilized during code blue events. No expert opinion or editorial pieces were included in the literature review. After using the inclusion and exclusion criteria, thirteen articles were read in entirety and evaluated for appropriateness to the clinical question. Three articles were used in the final literature review.

Current State of Knowledge

Following a thorough literature review, minimal evidence was available related to crash cart education for new graduate nurses. This topic, while important, has not extensively been researched. Parmesha et al. (2016) suggested that student nurses need improvement in education regarding their familiarity with crash carts. Many are inadequately prepared for operating crash

carts during emergency events once employed as staff nurses based on pre-test results regarding

emergency equipment where 65% of nurses responded they had moderately adequate knowledge

and 12% reported they had inadequate knowledge (Parmesha et al., 2016). This knowledge

deficiency must be addressed as student and new graduate nurses quickly become nursing

leaders (Parmesha et al., 2016).

New nurses would benefit from resources to address the lack of educational support as

they transition from student to novice nurses (Parmesha et al., 2016). The main focus in current

literature for code blue emergency events focuses on improving initial actions of staff utilizing

mock code scenarios. There are currently no guidelines for education surrounding crash carts or

structured guidelines for crash cart content organization.

Current Approaches to Solving Population Problems

Providing education in the inpatient setting can be difficult due to time constraints, the

effects on patient care, and the inability of staff to attend educational events. In situ simulations

(ISS) have become a popular form of education that can help to improve education for hospital

staff (Wilfong et al., 2020). This type of education allows the educational resources to be brought

to the clinical units in need of educational opportunities without requiring staff to make plans to

attend organized simulation-style educational events at pre-determined locations (Wilfong et al.,

2020). Utilizing this educational approach allows staff to perform tasks using the equipment

found on their units and practice with the team they work with regularly (Wilfong et al., 2020).

While this method can be beneficial, there are several obstacles when implementing this

educational approach. Securing a location to conduct education on the unit can pose as a barrier

(Wilfong et al., 2020). Having adequate space to allow for individuals to gather with resources, such as crash carts, may not be feasible for every unit.

Those teaching the classes may be difficult to secure as nurse educators are not typically readily available at all institutions (Wilfong et al., 2020). Encompassing the entire health care team poses another challenge as physicians and advanced practice providers are often unable to leave their workplace duties to partake in training sessions (Wilfong et al., 2020). While this model also allows staff to remain on the unit, patient care needs may arise during training sessions, requiring staff to be pulled from sessions preventing learning (Wilfong et al., 2020).

Parmesha et al. (2016) sought to address the crash cart knowledge gap of year four student nurses and staff nurses. A self-instructional module was utilized, along with a pre-test and post-test, to determine the participant's knowledge of crash carts (Parmesha et al., 2016). The questionnaire focused on three main topics: general information that pertained to definitions, purposes, and contents, alongside types of emergency carts, and cart maintenance (Parmesha et al., 2016). With this approach, post-test scores were improved following implementation of the educational module regarding crash carts (Parmesha et al., 2016). The overall knowledge score between the pre-test and post-test showed a mean improvement of 5.34 (Parmesha et al., 2016). Knowledge of the contents and purposes of code equipment also saw a mean improvement of 1.27 (Parmesha et al., 2016). Lastly, the knowledge regarding types of emergency carts showed improvement with a difference of 3.46 between the pre and post-tests (Parmesha et al., 2016).

Evidence to Support the Intervention

Providing education to new graduate nurses using an approach similar to that of Wilfong et al. (2020) would aid in resolving the clinical problem of limited education regarding crash cart

education for new graduate nurses at the facility. This approach would be beneficial to the staff as many of the educational requirements are performed with employees from the entire hospital system, resulting in nurses being placed in learning environments with unfamiliar staff. Performing education on the units with familiar staff will promote a better learning environment while allowing individuals to ask questions that might otherwise be withheld (Wilfong et al., 2020). According to Wilfong et al. (2020), research has shown that this approach will increase communication between staff and improve teamwork. Allowing individuals to work in their designated unit also promotes participants to act in their own role while using their own equipment enhancing the validity of the educational experience (Wilfong et al., 2020).

In situ simulation allows staff to work in an environment where they are comfortable with the resources, they would use during an emergency event (Wilfong et al., 2020). For new staff, this would be beneficial as it helps orient them to the resources and location of essential emergency items on their designated unit. Using this approach at the facility is vital as the room orientation is slightly different depending on which building the unit is located in. Performing education in this manner will improve staff's ability to find crash carts and where to set up suction in rooms for emergent airways more efficiently.

Lastly, this type of education prevents the need to travel to sites for learning opportunities or plan for educational opportunities outside designated working days (Wilfong et al., 2020). Allowing for education to come to staff can help prevent the loss of these opportunities due to factors such as shift work, inability to have extensive time away from the bedside, and lack of nursing staff to allow new graduates to attend. Promoting education that utilizes resources readily available on site will additionally decrease the cost of providing necessary education for staff (Wilfong et al., 2020).

The study by Wilfong et al. (2020) was conducted with 70% of participants identifying as nurses. The data collected post-simulation showed greater than 85% positive response as "strongly agree" was selected as the participants' responses for questions regarding learning and feelings towards the education received (Wilfong et al., 2020). One response received following the intervention demonstrates a need to include those who do not work the traditional day shift when education typically occurs and would benefit from targeted intervention to ensure they are included (Wilfong et al., 2020, p.468). Ninety-nine percent of the staff involved agreed that this form of training was worthwhile and 97% believed that this was helpful to their respective roles (Wilfong et al., 2020).

Evidence-Based Practice Framework

This project will be executed utilizing Lewin's Theory of Planned Change, which consists of three parts: unfreezing, moving, and refreezing (Shirey, 2013). This framework best fits the project as there is an identifiable need to better serve the organization (Shirey, 2013). During the first step, unfreezing, the problem is identified, and plans are developed to solve the problem (Shirey, 2013). Once completed, the second step, moving, can occur (Shirey, 2013). During this phase, the process of change begins to move toward the desired outcome (Shirey, 2013). Finally, refreezing can occur, and the changes can be incorporated into new practices or protocols of the organization (Shirey, 2013). Lewin's Theory of Planned Change is applicable to this project as there is a plan to solve the educational deficits related to crash carts for new graduate nurses.

Ethical Considerations & Protection of Human Subjects

There are no ethical considerations for this project as it will be equitably distributed to all participants. All new graduate nurses currently working on a step-down or intermediate floor will be allowed to attend. There is no potential harm associated with this project, nor will anyone be taken advantage of.

The project was prepared for formal approval utilizing the CITI training modules and framework provided. This framework helps to ensure integrity and professionalism in the production of ethical research (CITI, n.d.). IRB approval is not needed for this project as this project has been deemed a quality improvement (QI) project by the project site as well as the quality self-assessment process.

Section III. Project Design

Project Site and Population

The site of this DNP project was a 1000 bed tertiary care center located in central North Carolina. The focus of this intervention was new graduate nurses employed on three units with the highest number of code blue events. The three units selected were cardiac step-down units. Barriers to this project include time constraints, resistance to change, lack of support from unit managers, and participation from staff. Facilitators for this project include support from leadership, flexibility with the timing of interventions, and low cost of the project.

Description of the Setting

. The setting for this project was a large, academic, tertiary care center. This 1000 bed center is part of a larger health care system located in central North Carolina. The project was conducted on three cardiac step-down units. These units care for primarily cardiac medicine and general medicine patients. Two of the selected units consist of 31 beds each and one consists of 17 beds. Education occurred on the selected units and was conducted on the day and night shifts.

Description of the Population

The population of focus consisted of registered nurses that met the criteria of new graduate nurses. These criteria include having less than 12 months of clinical experience or have not completed their 12-month nurse residency program. Nurses hired with less than 12 months of work experience at another facility must complete a nurse residency before promotion to Clinical Nurse II. All nurses in this project were working on the selected step-down units. New graduate nurses from intensive care units or the emergency department were excluded as they are required to obtain their advanced cardiac life support certificate and have annual unit specific skills education related to code carts. ADN and BSN nurses were included in this study, however,

nursing students were excluded from participation. At the time of the project, there were

approximately 62 new graduate nurses who fit this description.

Project Team

The project team consisted of the DNP student as the primary investigator. The Heart

Center Clinical Operations Manager and Cardiac Intensive Care Unit clinical lead were the site

champions. These individuals assisted in acquiring resources for educational intervention,

provided unit demographics to aid in the selection of the project setting, and project

development. East Carolina University clinical faculty aided in project development.

The DNP student designed the project, created the educational model, surveys, and

implemented the project. The student was responsible for the collection, analyzation, and

interpretation of all data collected from staff surveys. Based on the data, the student was

responsible for developing conclusions and identifying recommendations and improvements for

future studies.

Project Goals and Outcome Measures

This project aims to improve the reported comfort level for new graduate nurses with

equipment essential during code blue events through educational intervention resulting. Staff

knowledge, comfort with equipment, and benefit from the educational intervention were

measured using a five-point Likert scare. See Appendix A. IRB approval was needed as this

project is strictly a quality improvement project.

Description of the Methods and Measurement

A questionnaire was used to collect data for the project. The questionnaire consisted of

demographic data and questions pertaining to the intervention. A Likert scale between 1 and 5

was used. One represented strongly disagree, and five represented strongly agree. The pre-test

and post-test data was then statistically analyzed and compared to assess improvement following

the intervention.

Discussion of the Data Collection Process

The data was collected through Qualtrics surveys utilizing a QR code that participants

could quickly scan and complete using their cell phones. A roster of all new graduate nurses was

obtained from each nurse manager to ensure participants are not involved in the intervention

more than once. A pre-test was administered before the intervention through a Qualtrics survey.

Following the intervention, a post-test Qualtrics survey was given.

Implementation Plan

This project was implemented in the Spring of 2022 from January until April. All

educational sessions occurred on the selected units in the breakroom with new graduate staff

working during this time. A pre-survey was administered using a QR code. Once completed, the

DNP student conducted an educational intervention lasting approximately 15 minutes, including

hands-on training with a crash cart. There were ten educational services that occurred during the

7a-7p and 7p-7a shifts on the selected step-down units. After completion of the activity, a post-

survey was administered using a QR code. This process was then repeated for each educational

opportunity, excluding nurses who have previously participated.

Timeline

This project began in May of 2021. This time was utilized from May until August of

2021 to establish a project partner, site champion, and achieve project support from the site.

August 2021 and September 2021 consisted of an extensive literature review regarding the

subject, determining IRB approval, and project design. October 2021 through December 2021

consisted of finalizing the project design for implementation, tool development, and coordinating

project implementation. January through May 2022 consisted of project implementation, data

collection, and data analysis. From May 2022 through August 2022, the finalization of the

project occurred, including a presentation of the study's findings. See Appendix C.

Section IV. Results and Findings

Results

Units in a local healthcare system were selected based on the high number of code blue events over the last year and the large number of new graduate nurses employed on each of these designated units. New graduate nurses were asked to participate in an educational intervention regarding code blue events and crash carts in their employee breakrooms. By utilizing a QR code linked to a Qualtrics survey, participants were asked to complete the seven-question pre-survey using their personal cellphones. Once all participants completed the pre-test survey, the PowerPoint was presented and an abboject was provided for participants to examine. After the educational event, participants were asked to complete the seven-question post-survey by scanning a second QR code linked to the post-test survey on Qualtrics.

Characteristics of Sample

There was a total of 30 participants in this quality improvement project. When broken down by highest degree obtained, 23 (77%) held a Bachelor of Science in Nursing (BSN) and seven (23%) held an Associate Degree in Nursing (ADN) (Appendix C).

Of the 30 participants', 11 (37%) had 0-6 months of nursing experience. Fourteen (47%) had 6-12 months of experience. Five (17%) had more than 12 months of experience (Appendix D). Participants reported the number of code blue events attended since becoming employed at the facility. 17 (57%) reported attending zero code blue events. Nine attended one to two events and four (13%) attended three or more (Appendix E).

Findings

Participants were asked to answer four questions pertaining to their comfort level involving crash carts and code blue events. These responses allowed participants to rank their feelings from extremely uncomfortable (1), somewhat uncomfortable (2), neither comfortable or

uncomfortable (3), somewhat comfortable (4), or extremely comfortable (5). Questions pertained to steps involved in initiating code blue events, code cart contents, administering medications with abbojects, and suction set-up.

When asked about their feelings towards the steps involved in initiating a code blue event, the mean pre-test score was 2.13 with a standard deviation of 1.06. The post-test score was 3.47 with a standard deviation of 0.92 (Appendix F). Comfort with code carts and their contents were found to have a mean pre-test score was 2.23 with a standard deviation of 1.09. The post-test mean score 3.67 with a standard deviation of 0.79 (Appendix G). Participants reported a mean pre-test score of 2.0 with a standard deviation of 1.03 when asked about abboject administration. The post-test resulted in a mean of 3.80 and a standard deviation of 0.79 (Appendix H). When reporting comfort with suction set-up, the pre-test mean was 3.40 with a standard deviation of 1.43. The post-test mean was 4.40 with a standard deviation of 0.61 (Appendix I).

Discussion of Major Findings

The results of this study indicate that the intervention was successful. Each of the questions demonstrated an improvement in mean scores following the intervention, indicating that the participants became more comfortable with the four topics after the educational intervention was provided. Given these findings, further support is fostered for a need to provide educational support for new nurses as their knowledge regarding emergency events is limited (Parmesha et al., 2016).

Wilfong (et al., 2020) suggested that providing educational interventions where employees work creates a good learning environment for staff. This study also found improvements in all four areas discussed after providing interventions on employees' home units with their co-workers that

they are comfortable with. A few areas of resemblance between this DNP project and scholarly

discourse can be made, yet the overarching gap between this project and present literature is that

there are limited studies available for comparison.

Overall, the project was well-received by all participants. No one refused to participate in the

project or attend the educational study. Many of the individuals voiced excitement to learn more

about the subject matter.

Section V. Interpretation and Implications

Cost and Resource Management

The cost of completing this project was minimal. The total cost was calculated to be $313.80. Expenditures for this project were decreased as the organization offers Qualtrics software free of charge to students and employees. Given this project was conducted by a student, there was a reduction in the overall cost considering the time spent planning and conducting the research. The estimated total cost of the project for the organization is $15,314 when considering the entirety of the project completed over the last two years. Once broken down to monthly expenditures, the cost to the organization is averaged at $625 (Appendix K). The estimated projected calculation was based on 500 hours needed for the DNP project multiplied by the average nurse hourly rate of $30.

When analyzing the project's cost, there is only one area easily identified that would assist in minimizing its price. To keep the cost of continuing this project low, student labor should be implemented whenever possible. The organization has many DNP students who concurrently work as employees. By utilizing these students, the overall price would remain low while allowing for the project's sustainability.

Given the low cost, the project would be equally beneficial to the organization and the students that continue the work. Of the $313.80, $300 is attributed to the cost associated with travel and would not be a direct cost to the organization if being completed by a student. Considering the identified improvement of new graduate nurses' knowledge as a result of the project and the low financial burden, it is beneficial to continue the project.

Implications of Findings

The data suggests that there is a need for education surrounding code carts for new graduate nurses. This is similar to the findings of Parmesha et al. (2016) which demonstrated a need for education based on the lack of perceived staff knowledge regarding emergency equipment. for Comparing the pre-test results to the post-test results, shows an overall improvement in reported comfort levels. The improvement in comfort existed regarding initiating code blues, contents of code carts, how to use abbojects, and setting up suction. In each area, participants reported feeling extremely uncomfortable prior to the intervention. Following the intervention, zero participants reported feeling uncomfortable with any of these four areas. Based on these findings, it is clearly evident that new graduates need further education regarding code blue events and the tasks required of them when participating in these events.

Implementation of this project demonstrated the need for staff education regarding code blue and code carts. Many participants were excited to participate in additional training and improve upon their knowledge to improve patient care.

Implications for Patients

By improving the education that new graduate nurses receive, patients are directly affected. Equipping new graduates with the knowledge needed to participate in code blue events decreases the time to life-saving interventions. Skills such as abboject use and suction set-up are essential parts of these events as they are necessary for medication administration and providing respiratory support for patients. Delayed patient care due to difficulties with medication administration or unfamiliarity with equipment negatively impacts patient outcomes.

Implications for Nursing Practice

Improving the comfort of the nursing staff caring for patients is important as it has an effect

on the care provided. Staff reported an improvement in overall comfort in the four topics

included on the survey. Wilfong et al. (2020) found that staff were more comfortable and

benefitted from learning in an environment that was familiar to them. This type of environment

can have an impact on their learning and has the ability to affect their future nursing practice.

Educating new nurses impacts their practice during code blue events as it provides skills

necessary during such events. Aspects commonly encountered during code blues, including

suction set-up and the use of abbojects, can be skills necessary for nursing practice outside of

emergency events. As a result of this project, nurses have reported an increase in their comfort

with these tasks following the intervention. This improvement benefits nursing practice at the

facility similarly to the benefit experienced by the participants of Parmesha et al. (2016) which

supported the transition of nurses from student to novice through education.

This project has benefitted the nursing practice at the facility. However, given the small

population size of this project, it is unlikely that it has made significant improvements at the

facility. This project was conducted on three similar units, yet due to limitations in broader

implementation, it was not conducted hospital-wide.

Impact for Healthcare System

This DNP project promotes education for staff to help improve patient outcomes. This

intervention is especially beneficial to the organization in relation to the low cost associated with

its implementation. Improving code blue execution greatly impacts the healthcare system. There

could be a reduction in the patient's length of stay which could decrease the cost of stay to the

patient and the healthcare system. Improving code cart education could prevent the delay in

medication administration and other events, which could lead to decreased stay in the intensive

care units and the hospital as a whole. Given the minimal expenditures, this project could easily

be built upon and utilized in other departments or during the healthcare system orientation

provided solely for new graduate nurses.

Very few drawbacks exist for the healthcare system when considering this. Since there

are several hospitals within the organization, it is essential that the intervention be modified to

ensure accuracy across entities. The time taken to modify and implement across the entire

healthcare system could be considered a drawback of continuing this project.

This project has long-term system impacts. Code blue events will continue to occur

throughout the healthcare system and new graduate nurses will continue to be employed at the

organization. It is essential to determine an appropriate tactic for educating new nurses and

ensuring they are prepared with the skills and knowledge to care for patients. With the low cost

of continuing this project, it is feasible for it to be completed system wide. This intervention

could be utilized healthcare system wide given that all healthcare departments utilize the same

equipment and code carts. All units at the organization hire new graduate nurses and have a need

for improving education.

Sustainability

Potential sustainability of the project is reinforced by several aspects experienced during

the initial creation and implementation of this DNP project. The low project cost and the current

educational intervention created during this project make it feasible for the organization to

continue this project. While the cost of the project remains low, a designated person or group

would need to be designated to continue with implementing the intervention. Given the number

of new graduates that start regularly at the organization, it may be challenging to identify who would serve as this resource.

This project was originally designed to be used in the inpatient setting. However, it could be used during nursing school curriculums. Many aspects of the project, such as abbojects or suction setup, do not vary by hospital and would allow nursing students to have some base knowledge before entering the workforce. This would allow students to learn in an environment that they feel comfortable and gain exposure to emergency equipment prior to be placed in a situation that requires immediate intervention. The project's educational intervention could also be modified as needed to further benefit students. With the low cost associated with this project, it would not be a financial burden to any nursing school wishing to improve education for students.

Dissemination Plan

The plan is to present this project for two groups in the format of a poster. It will be presented at the East Carolina University College of Nursing on July 2022. It will also be presented at the facility to the leadership involved with the code blue teams and the units that participated in the project.

Section VI. Conclusion

Limitations and Facilitators

The time allowed for data collection was a significant barrier to this study. This quality improvement project was conducted over a three-month period and included a small sample size of thirty participants. Another challenge to this study is the timing of implementation. Identifying times when nurses are not busy during their daily routine or a time that is free of interruptions from alarms and call bells posed a barrier to this study. The lack of research related to the subject of education regarding crash cart and code blue events poses another limitation. There are very few studies found in the literature to compare to. Lastly, identifying new graduate nurses to participate in the study was a barrier as there was no formal way to identify new graduates from experienced nurses.

This project was successful due to multiple facilitators. Several faculty members from the College of Nursing at East Carolina University have impacted this project. The academic advisors for the project and have been present from project design through completion of the project. The project site champion has helped in identifying the needs for the project, project design, and implementation.

Recommendations for Others

Improvements can be made in the future for this project. Identifying appropriate times for implementation would impact this project in the future. While implementation occurred on day and night shifts, identifying the appropriate time for educational sessions was not always ideal for participants. Participants were occasionally pulled from educational sessions to attend to patient care needs or other issues that arose which could have impacted their participation in the project. Increasing the sample size is important if this project was to be continued.

Lastly, determining a way to identify new graduate nurses in the future is important. This could occur through printed rosters to ensure that only new graduates at the organization are participating in the study. Having access to the employee roster would also allow individuals conducting the educational interventions to identity the shifts with the greatest number of new graduates. This would allow the researcher to enroll more participants at one time and ensure that all new graduates participate in the study.

Recommendations for Further Study

Continuing this study would provide further data on the effectiveness of the intervention. It should also be continued as there is no formal code blue education in most nursing school curriculums and many nurses are not adequately prepared for these emergency situations during school or hospital orientation. Continuing this project is important is it is applicable to all nurses across the healthcare system. All nurses, regardless of their patient population, have the potential to engage in an emergency situation. Understanding the basics of how to activate a code blue event or use emergency supplies, such as abbojects, is essential for all nurses working in the healthcare system to prevent poor patient outcomes.

This project could be implemented in other areas throughout the hospital. This study was conducted on cardiology units, but replicating this study on other units to compare the results could be done. Replicating this project during hospital orientation could also be done. The organization has a week dedicated to orientation for new graduate nurses from all across the healthcare system. While this project focuses solely on new graduate nurses on step-down units, it could be replicated in the emergency department, as well as, the intensive care units.

After completing this study, a few additional projects have been identified. Studying the effectiveness of the project when performed at the hospital wide orientation would be valuable

information. This would allow the intervention to be targeted at a larger population and eliminate some of the barriers to the current study. Determining the effectiveness of the intervention over a designated length of time would also be an interesting topic to study.

Final Thoughts

This project was needed due to the lack of education provided to new graduate nurses regarding crash carts and code blue events. This deficit in education exists in nursing school programs, as well as, at the organization the project was conducted at. With the number of new nurses entering the workforce, it is imperative to find a way to provide adequate education to properly prepare them to handle emergency events.

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Appendix A

Scale Example

Question 1:

1 ◯   2 ◯   3 ◯   4 ◯   5 ◯

Extremely   Somewhat   Neither   Somewhat   Extremely
uncomfortable   Uncomfortable   Comfortable   comfortable   Comfortable

                                          Or

                                          Uncomfortable

Appendix B

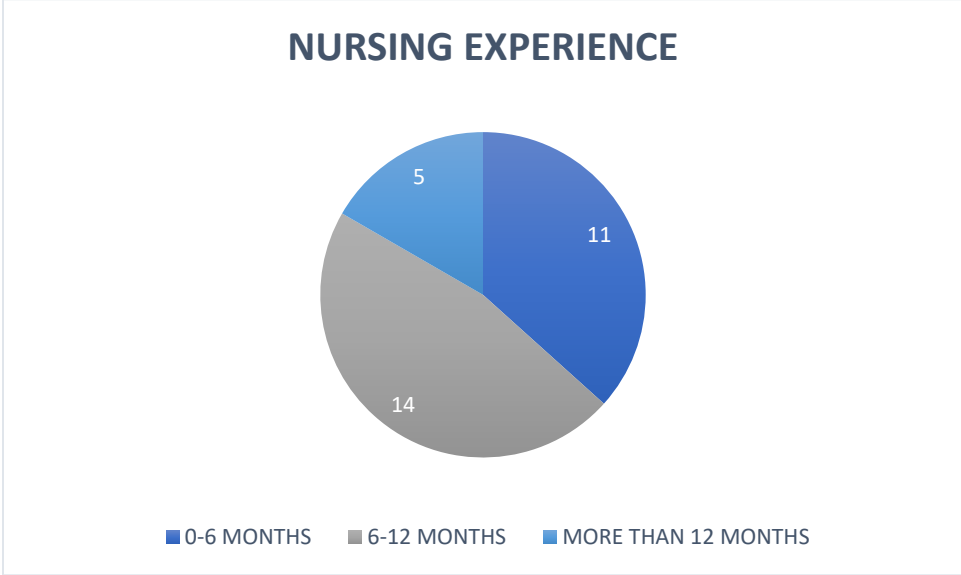**Project Timeline**

May-July 2021	August-September 2021	October-December 2021
- Project began - Project partner found - Site champion found - Received project support	- Literature search - IRB approval decision - Project design	- Finalizing project design - Tool development - Coordinating project implementation

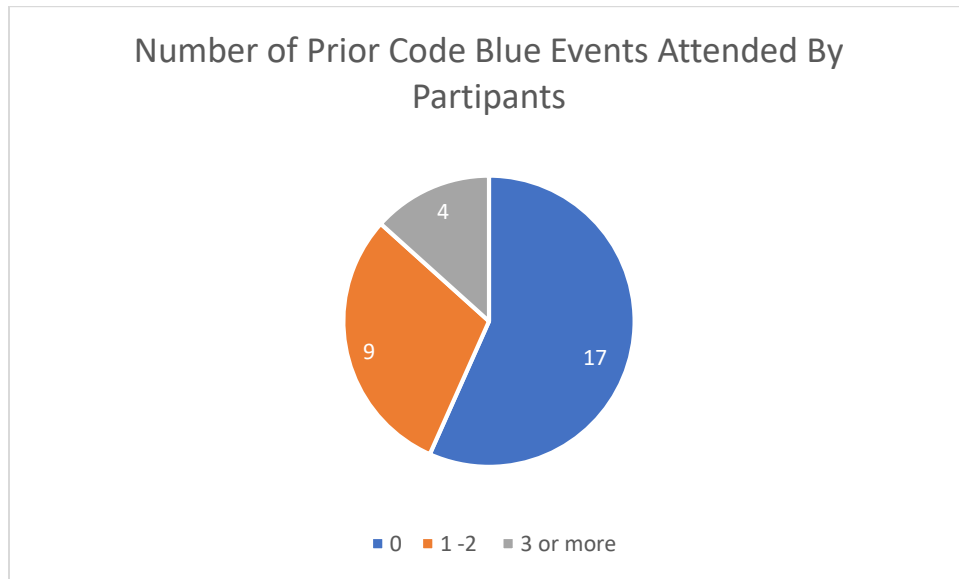| January-April 2022	May-August 2022
- Project implementation - Data collection - Data analysis	- Finalization of project - Finalization of findings - Presentation of project

Appendix C

Nursing Degree Achieved

NURSING DEGREE ACHIEVED

7

23

ADN   BSN   MSN   DNP
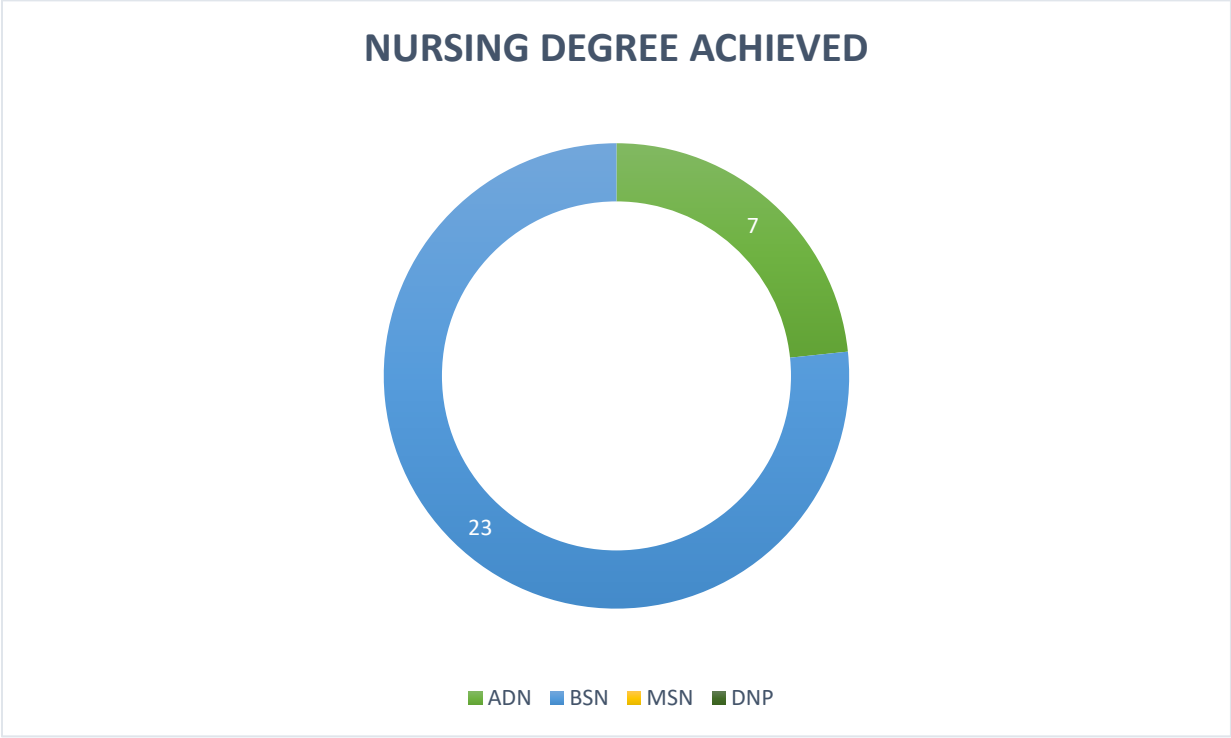
Appendix D

Nursing Experience

NURSING EXPERIENCE

5

11

14

■ 0-6 MONTHS   ■ 6-12 MONTHS   ■ MORE THAN 12 MONTHS

Appendix E

Number of Prior Code Blue Events Attended By Participants

Number of Prior Code Blue Events Attended By Partipants

4

9

17

0 1 - 2 3 or more

Appendix F

Comfort With Initiating Code Blue

COMFORT WITH INITIATING CODE BLUE EVENTS

Comfort Level	PRE	POST
Extremely Uncomfortable	10	0
Somewhat Uncomfortable	11	7
Neither Comfortable or Uncomfortable	4	4
Somewhat Comfortable	5	17
Extremely Comfortable	0	2

REPSONES (y-axis)

COMFORT LEVEL (x-axis)
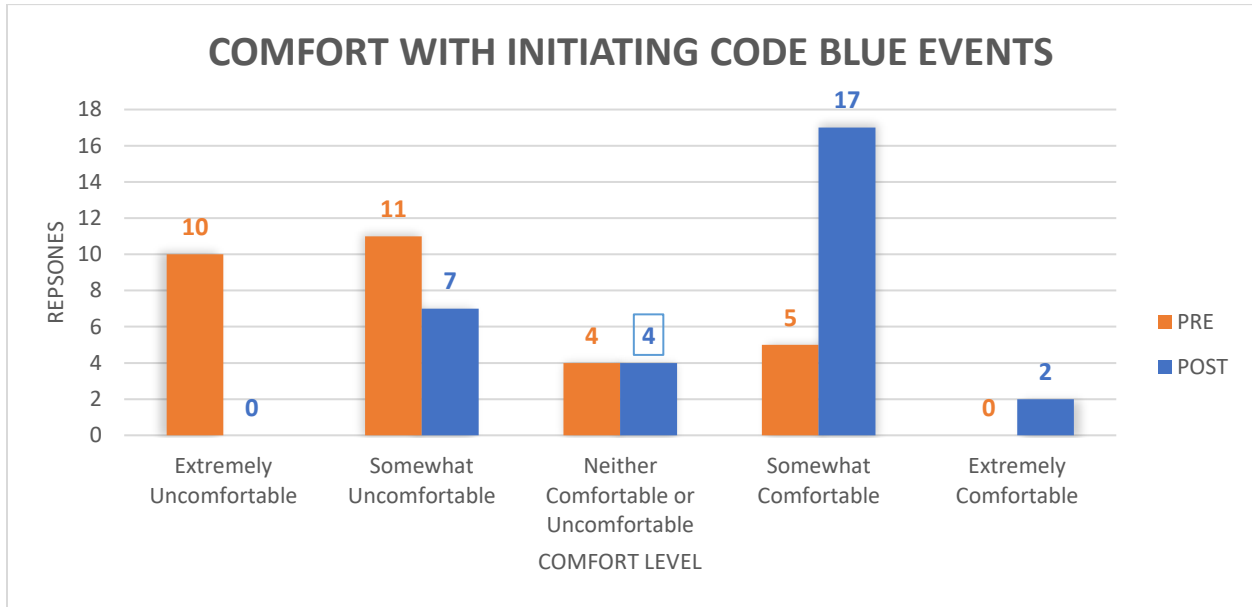
Appendix G

Code Cart Comfort

CODE CART CONTENTS

A bar chart titled "CODE CART CONTENTS" showing RESPONSES (y-axis, 0 to 25) by COMFORT LEVEL (x-axis), comparing PRE (orange) and POST (blue) responses:

Comfort Level	PRE	POST
Extremely Uncomfortable	9	0
Somewhat Uncomfortable	11	4
Neither Comfortable or Uncomfortable	4	4
Somewhat Comfortable	6	20
Extremely Comfortable	0	2
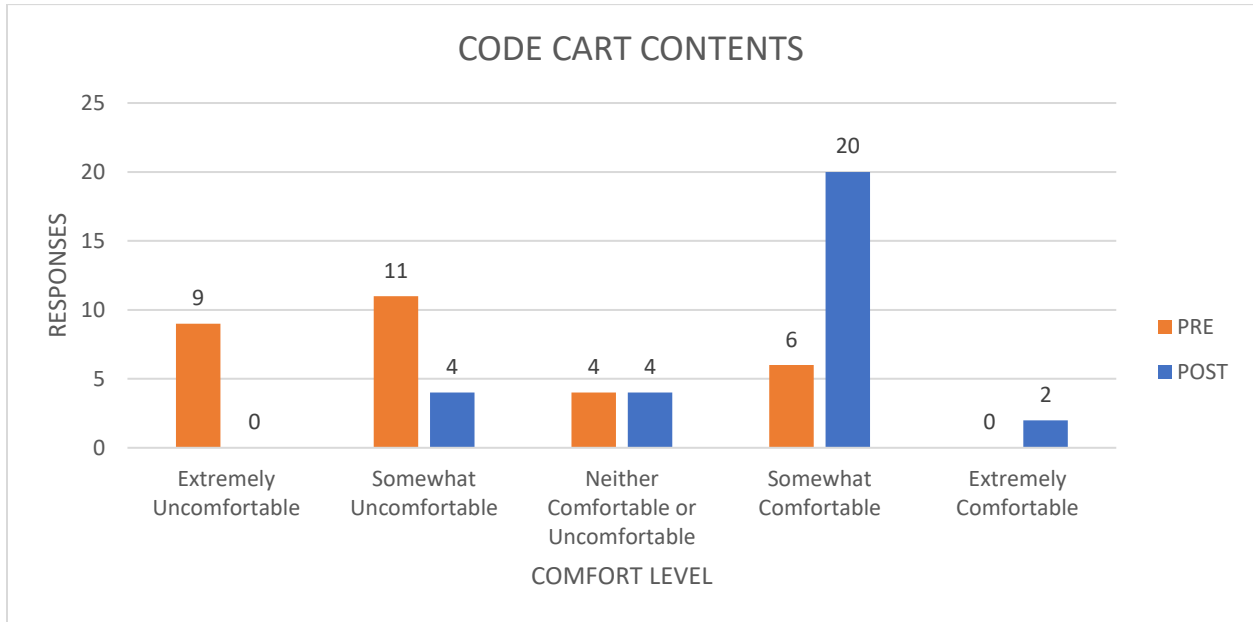
Appendix H

Using Abbojects
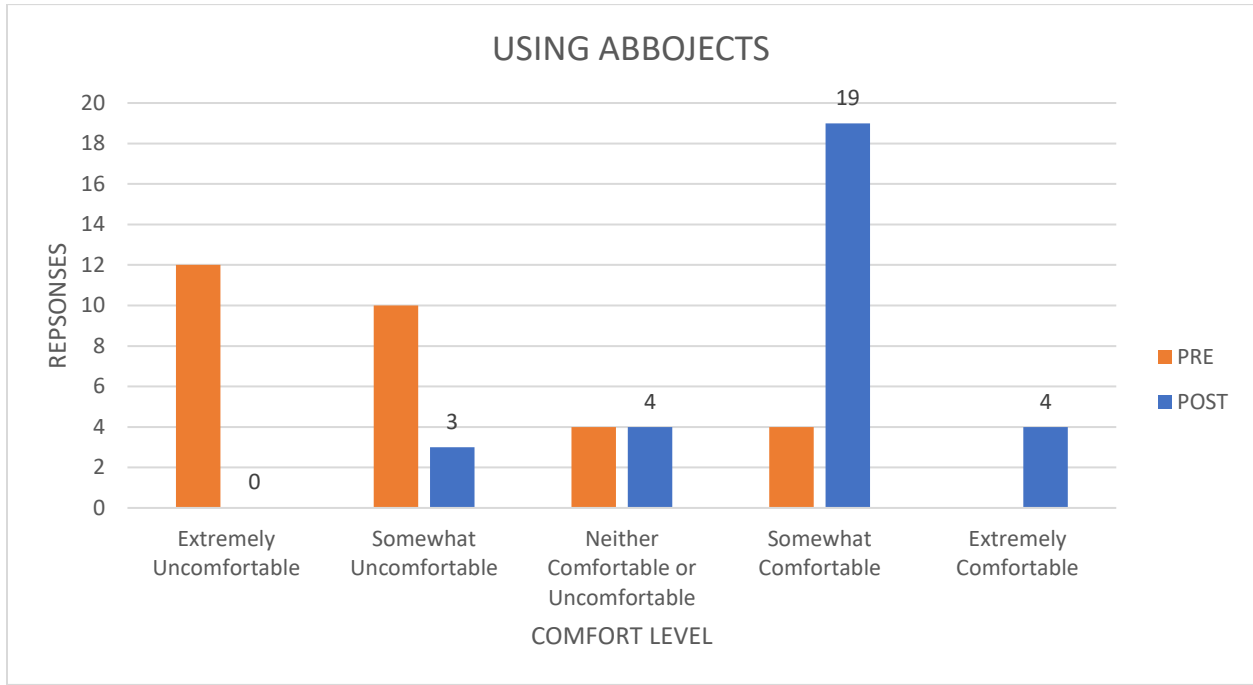
Appendix I

Suction Setup
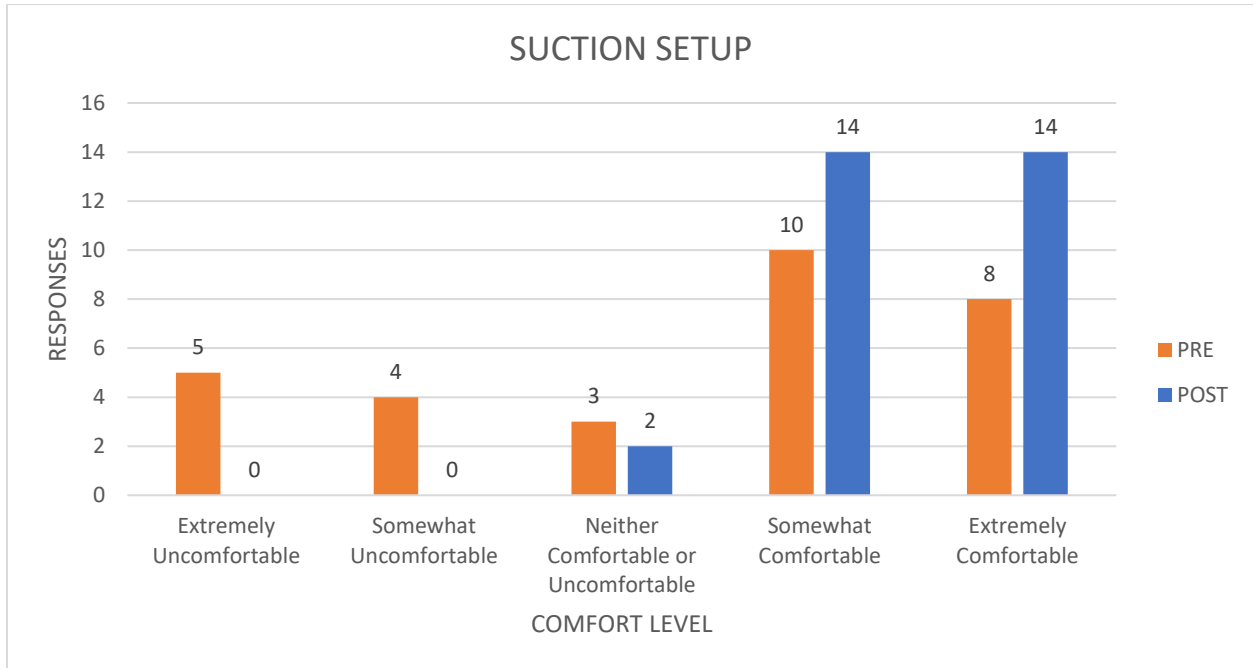
Appendix J

Project Expense Budget

Itemization	Total Cost
Travel expenses	$300
Abboject (for demonstration)	$13.80
Cost associated with planning and conducting study over 2 years [1]	$15,000 ($625/monthly)
Total expenses	**$15, 313.80**

[1] Estimated projected cost for completion by registered nurse employed by healthcare system. Calculation based on 500 hours needed for DNP project multiplied by average nurse hourly rate of $30.