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Improving Medical-Surgical Nurses' Confidence in Initiating the Code Blue Process

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Abstract

Lack of confidence in responding to codes can decrease patient outcomes, for any delay in care reduces the chances of revival. As codes occur less frequently in medical-surgical units, nurses who work in this specialty are not as equipped to respond to codes like their ICU or ER colleagues. To address this concern, a code blue readiness training was implemented in six different medical-surgical units of an East Bay hospital. Pre and post surveys were utilized for data comparison on nurses' confidence in responding to various steps of a code. The results revealed an overall increase in confidence. For this reason, it is recommended that hospitals provide frequent code blue training for their medical-surgical units to maintain nurses' confidence and competence.

Key Words: Code blue readiness training, code blue team, rapid response team, medical-surgical nurse, ICU nurses, confidence, mock codes, simulations

Medical emergencies are often unpredictable and anxiety-inducing. To alleviate some of the stress that accompanies these events, healthcare organizations must develop proactive steps to ensure that nurses are equipped to make immediate and decisive actions. Responding efficiently to a code blue is a vital skill for any nurse or healthcare professional to possess, for any delay in decision-making can result in poor patient outcomes. Due to infrequent occurrences of code blues on medical-surgical units, many medical-surgical nurses are not as prepared to initiate the code blue process compared to their ICU or ER colleagues. For this reason, a quality improvement project was initiated at an East Bay hospital to address the following PICO question: How does providing a brief overview of code blue steps and hands-on practice impact medical-surgical nurses confidence in responding to code blues compared to no additional training?

Problem Description

The code blue readiness training was successfully implemented in another location of the same hospital organization the previous year. Following its successful implementation, the hospital requested the same quality improvement project after observing similar barriers to code blue responses on their medical-surgical units. The discussion with the hospital's nurse educator revealed several potential contributing factors: nurses' unfamiliarity with the equipment inside of the crash cart resulting in a delay in care as nurses were observed running to the medication room to obtain items, unfamiliarity with how to operate the Zoll defibrillator, and unfamiliarity with the proper course of action prior to the arrival of the rapid response team (RRT). All of these actions pose a patient safety concern, for any delay in care increases the risk for poor patient outcomes. As such, the education plan for this quality improvement project will focus on these particular areas of concern.

Review of Literature

A literature search was conducted in CINAHL Complete using the keywords: *code blue resuscitation, code blue training, code blue simulation, rapid response barriers, mock code simulation,* and *mock codes* and *medical-surgical nurses*. Research limitations were set for peer reviewed articles and/or academic journals for the years 2016-2021. The following studies address the question: Do code blue simulation training improve medical-surgical nurses' confidence in initiating the code blue process?

A successful code blue response requires immediate and decisive actions. A comparative cross-sectional study conducted by Azimirad et al. (2020) used case scenarios to assess Finnish and British nurses' ability to timely activate the code blue team. The study revealed that nurses were only able to promptly activate the code team in half of the scenarios (Azimirad et al., 2020). Possible factors that may have contributed to a delay in activation of the code team include failure to recognize critical signs of a deteriorating patient, inability to recognize the need to call, not following the code blue protocols of the hospital, or improperly prioritizing the code blue process (i.e. notifying the health care provider, consulting a colleague, or continuing to monitor the patient status) (Azimirad et al., 2020). Promptly calling the code team is a critical component of the code blue process, for any delay in care poses a great risk for poor patient outcomes.

Nevertheless, before resuscitation can begin, the care team attending to the cardiac arrest must first protect themselves by donning on personal protective equipment (PPE). This is just as important, for assessing, providing, and maintaining adequate airway and oxygenation through bag-valve masking and endotracheal intubation have been associated with COVID-19 aerosolization and exposure (Youssef et al., 2021). In a quality improvement project conducted by Youssef et al. (2021), protected code blue (PCB) in situ simulations were implemented at

MemorialCare-Long Beach Medical Centre located in Long Beach, California to identify areas for improvement and to minimize staff exposure. The PCB simulations were intended to improve efficiency and proper donning and doffing of PPE. The researchers initially noted a long donning process of 4-5 minutes during the simulations; however, with assistance from OR staff who regularly don and doff PPE, the code team was able to achieve a donning process of three minutes (Youssef et al., 2021). This demonstrates that efficient donning is attainable and should therefore be practiced to protect both the staff and patients.

Following the initiation of the code team, nurses must be able to competently perform resuscitation efforts while awaiting their arrival. A study conducted by Curran, Fleet, & Greene (2012, as cited in Reece et al., 2016) revealed that knowledge obtained from cardiopulmonary resuscitation training deteriorates as quickly as two weeks after completion of the course. As such, providing mock code training can refresh nurses' knowledge and sharpen their skills. In a descriptive study by Reece et al. (2016), researchers held two sets of mock code training (eight per set) in four medical-surgical units at a large southern U.S. hospital to evaluate nurses' competency and confidence (Reece et al., 2016). The first set of mock codes (pre-education) were conducted after the nurses participated in hands-on practice, while the second set of mock codes (post-education) were conducted after the nurses reviewed an information sheet only that included code blue steps following the American Heart Association BLS guidelines (Reece et al., 2016). The results of the post-education mock code percentage scores dropped, leading the researchers to believe that the nurses perform better after hands-on practice than after reviewing only written educational material (Reece et al., 2016). Additionally, the study reported 49.2% (n=29) who felt "confident" or "very confident" prior to the mock code and 77.9% (n=46) who felt "confident" or "very confident" following the mock code (Reece et al., 2016). The 28.7%

increase in confidence suggests that mock codes (hands-on or solely educational) are overall effective in improving nurses' confidence.

A quasi-experimental pilot study conducted by Morton et al. (2019) also found that implementing high-fidelity simulations for medical-surgical nurses improved self-confidence. The researchers utilized the National League for Nursing (NLN 2005) Instrument to evaluate nurses' self-confidence in responding to codes on their unit (Morton et al., 2019). The results of the pretest revealed an average score of 32.2 (scored out of 40) which increased to 38.7 in the posttest (Morton et al., 2019). In addition to the significant improvements in self-confidence, the average time to defibrillation significantly decreased from 134.7 seconds in the pretest to 63.4 seconds in the posttest, achieving the hospital's goal of initiating defibrillation within three minutes (Morton et al., 2019).

A study that implemented a pit crew model in their mock codes also yielded similar results. Spitzer et al. (2019) developed ten to twelve clearly defined roles and responsibilities for the code team. The members who handled direct care were positioned in the inner circle (within one arm-length of the patient) and those tasked with charting, running, and supervising were in the outer circle (two arm-lengths) (Spitzer et al., 2019). To obtain resuscitation metrics during the mock codes, the researchers utilized defibrillator downloads, Information Warehouse (hospital database), and mock code reviews (Spitzer et al., 2019). The results of the defibrillator downloads showed improvement in compression rate from 133.5 pre-intervention to 127.9 post-intervention, and the average time to defibrillation went from 1.96 min pre-intervention to 1.69 post-intervention (Spitzer et al., 2019).

Rationale

Kurt Lewin's change model was used to structure and guide this quality improvement project. Lewin's model is composed of three stages known as unfreezing, change, and refreezing (Harris et al., 2018). In the initial stage of the change process, individuals of the organization must recognize the need for change (Harris et al., 2018). During this stage, pre-surveys were distributed to both critical care nurses and medical-surgical nurses. The pre-survey for critical care nurses contained questions that helped identify areas for improvement. The data was then presented to medical-surgical nurses in an effort to promote awareness and motivation to change. Once the medical-surgical nurses recognized the need for change and became "unfrozen," the training was implemented, and the change stage began. However, in order for change to occur, individuals must be presented with options that facilitate a change in attitude or behavior (Harris et al., 2018). The change is more likely to take effect if the culture or norm supports the intervention (Harris et al., 2018). To foster a positive learning environment, nurses were informed that the trainings were intended to instill confidence in responding to code blues and were therefore, not to grade or judge their competency skills. In the final stage, the new attitude or behavior is successfully integrated into the organization (Harris et al., 2018). Nevertheless, to remain in the refreezing stage, the medical-surgical nurses must continuously combat the existing norms that support the status quo. To prevent the nurses from returning to old practices, it is recommended to provide routine training following the conclusion of the quality improvement project.

Project Aim

The specific aim of this quality improvement project is to increase medical-surgical nurses' confidence and competence in responding to codes. To gather data for comparison, a pre-survey was distributed among six medical-surgical units to assess nurses current knowledge and

confidence in initiating the code blue process. The intervention was conducted over the course of twelve weeks where nurses engaged in a brief educational session as well as hands on practice using a Zoll defibrillator and CPR manikin. Following each training, post-surveys were provided to the nurses who attended the sessions. The results of the post-intervention surveys were used to evaluate any potential changes in nurses self-reported confidence and competence.

Methods

Context

A strengths, weaknesses, opportunities, and threats (SWOT) analysis tool was used to assess these four aspects of the hospital. An analysis of the hospital revealed several strengths. Some of these strengths include high commitment, support, and organization from the nurse educators as well as various hospital personnel to implement the training and to improve patient outcomes. This allowed for a quick roll out of the training. Additionally, the hospital possesses modern medical equipment that supports the intervention and also allows the staff to provide quality patient care. Some weaknesses include nurses' time constraints which resulted in an elimination of the mock simulation portion of the training as well as limited equipment to conduct the training. For instance, a few of the sessions were cut half an hour or an hour early as the hospital needed the crash cart, Zoll defibrillator, and CPR manikin to orient new hires. Opportunities include expansion of the training to other units. Following several weeks of the training, the progressive care unit and endoscopy unit requested the code blue training for their nurses. Observed threats include challenges with getting some staff to participate in the hands-on portion of the training and reluctance to attend the training. Nevertheless, these threats likely resulted from time constraints due to the pandemic and inadequate staffing. Refer to appendix A for the SWOT analysis.

Intervention

The previous group that implemented this project included a mock scenario and simulation. However, due to nurses' time constraints, this portion of the project was eliminated. Nevertheless, educational reviews and opportunities to practice hands-on skills were still provided. The code blue training was conducted over the course of four weeks on six different medical-surgical units within the facility. Each unit received six training sessions with three for day shift and three for night shift. Each shift had two student nurse educators who provided training to two units over the course of four hours, dedicating two hours per unit. A Gantt chart was developed to plan, coordinate, and schedule the quality improvement project. Refer to appendix B for further details.

During each session, the nurses were informed that the objective of the training was to increase confidence in responding to codes. It was made clear that no one would be graded or judged on their knowledge or competency skills. This was discussed at the start of each session to establish a supportive learning environment and to generate engagement and motivation from the nurses.

The nurses were given a handout of the lesson plan (created by cohort 28) to follow along as each step was discussed. The review consisted of Basic Life Support steps such as establishing unresponsiveness, calling the number for the code team, calling for someone to bring the crash cart with the AED and PPE cart, initiating compressions and breaths, donning PPE, and providing a thorough SBAR to the oncoming code team. Refer to Appendix C for further details of the lesson plan and appendix D for the handout made by cohort 28.

The nurses were provided with the opportunity to apply the AED pads, to operate the Zoll defibrillator, and to practice giving compressions and breaths on the CPR manikin with live

feedback. Each training was adjusted according to the needs and learning styles of the nurses. For instance, some nurses eagerly jumped at the opportunity to operate the equipment and to practice compressions. When this occurred, demonstrations were only given when the nurses performed an activity incorrectly. However, when nurses declined to participate in one or all of the hands-on activities, one of the students explained the activity while the other demonstrated how to properly operate the equipment and how to perform the step.

Study of the intervention

The study of the intervention was conducted using the Plan-Do-Study-Act (PDSA) cycle as well as pre and post surveys. The PDSA cycle was used to guide and revise the intervention. In the "plan" stage, meetings were conducted with the nurse educator of the facility to coordinate the implementation of the training. During this process, the student nurse educators organized meetings to develop promotional flyers that included a schedule for the training in each unit. Emails were also exchanged between the students, hospital's nurse educator, and IT member to develop QR codes for the pre and post surveys where data can be gathered for the project. The promotional and pre-survey flyers were then posted in each unit's break room and staff restroom. Charge nurses were also directly informed about the training and were handed flyers to show and announce during the huddle. The nurse educator also emailed the charge nurses in the medical-surgical units and intensive care units to encourage the nurses to answer the pre-surveys and to attend the scheduled training. In the "do" stage, the training was implemented over the course of four weeks on six different medical-surgical units. During the "study" stage, the student nurse educators held post-training discussions to evaluate the participation and engagement of the nurses. The evaluations were used to make any necessary revisions to the teaching plan or the method in which the training was delivered. The data from the pre and post surveys were also

analyzed during this stage to determine the effectiveness of the training. In the "act" stage, the student nurse educators present the findings to the hospital's nurse educator to determine whether the project will be expanded to other units. Refer to appendix E for the promotional flyer and appendix F for the PDSA cycle.

Pre and post surveys were utilized to evaluate the success of the training. The pre and post surveys contained the same questions and were formatted in a Likert scale. Since perception is complex and can be difficult to measure in a binary yes or no answer, the Likert scale was used. This allowed participants to rate their perception of self-confidence in five categories: strongly disagree, disagree, neutral, agree, and strongly agree. The data collected was then compared and assessed for any changes or improvements in confidence. Refer to appendix G and H for the pre and post survey responses for the medical-surgical nurses and appendix I for the pre-survey response for the RRT.

Measures

The list of measures were collected through pre and post surveys. For instance, the pre-survey for medical-surgical nurses assessed the nurses' self-confidence in recognizing and calling a code blue, performing high quality chest compressions, delivering ventilations via a bag valve mask, and monitoring vital signs and heart rhythms during a code. The same set of questionnaires were given in the post survey to evaluate for any improvements or changes in confidence post training. The pre-survey for the RRT consisted of statements such as, "I witness high quality chest compressions being performed" and "The bag valve mask is placed correctly." Refer to appendix G, H, and I for a thorough description of each measure that was assessed for both medical-surgical nurses and the RRT.

Results

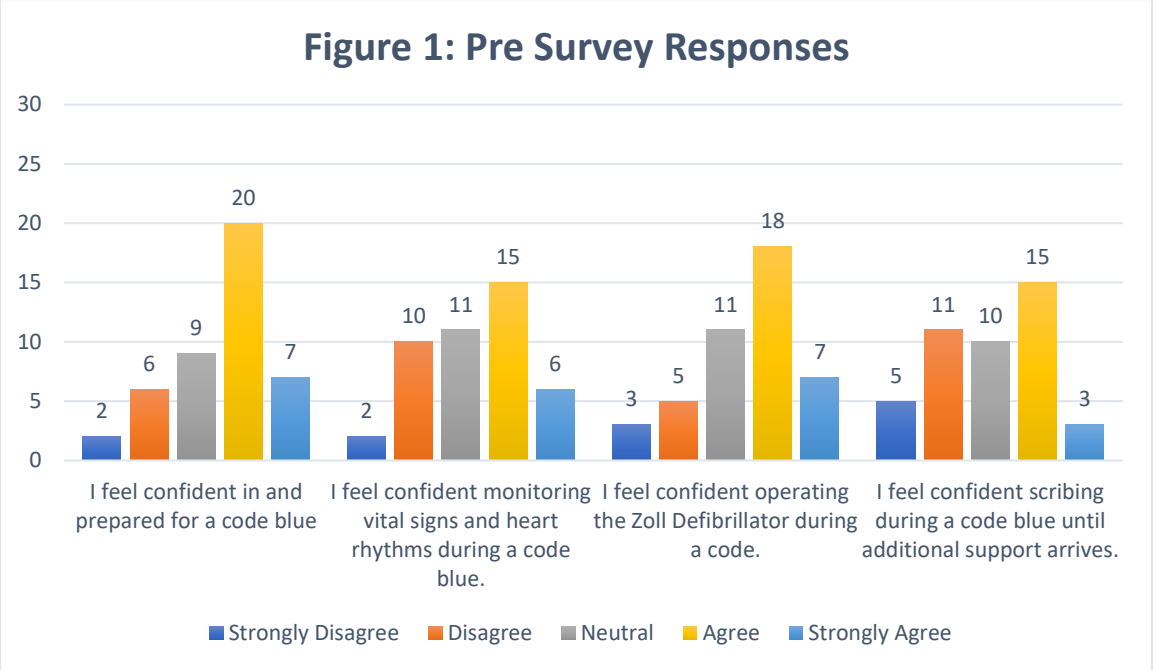
Over the course of four weeks, 108 nurses and 15 CNAs participated in the training. However, only one RRT nurse and 44 medical-surgical nurses responded to the pre-training survey and only 62 nurses or CNAs responded to the post-training survey.

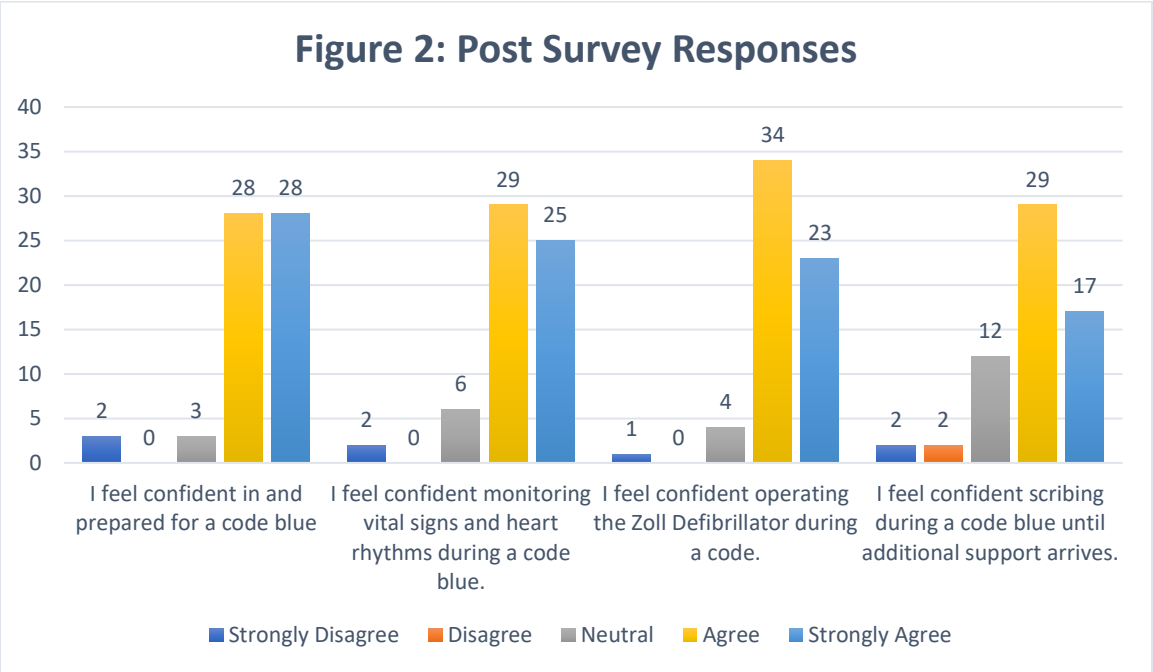
The pre-survey was distributed approximately a week and a half prior to the implementation of the code blue readiness training. Despite emailing reminders to the RRT to fill out the pre-training survey, only one member responded. Of the six survey statements, the only statement that the RRT member strongly disagreed with was, "SBAR handoff is communicated efficiently." The remaining statements regarding prompt and effective compressions, ventilations, and use of equipment were marked with either neutral or agree. Refer to appendix I for the results of each statement that was assessed.

The pre-training survey for the medical-surgical nurses yielded 44 responses. For the statement, "I feel confident in and prepared for a code blue," two or 4.5% strongly disagreed, six or 13.6% disagreed, and nine or 20.5% were neutral. The remaining 27 or 61.4% either agreed or strongly agreed. Although the majority felt confident responding to a code prior to the training, the post-training survey revealed that three out of 62 or 4.8% strongly disagreed and three or 4.8% felt neutral. This indicates that there were some improvements in confidence after the implementation of the training since no one marked "disagree" post-training. Those who felt neutral also decreased from nine to three after the training. Refer to appendix G for the results of each statement that was assessed.

Additionally, the results of the post-survey revealed an increase in confidence with monitoring vital signs and heart rhythms, operating the Zoll defibrillator, and scribing during a code blue. See Figure 1 and 2 below for a comparison. Although the number of pre and

post-survey responses varied, the post-survey results indicate an overall improvement in nurses' confidence when responding to various steps of the code blue process.





Discussion

The training was overall well received with 67.7% stating that they would be interested in participating in additional code blue readiness training. Over half of the nurses actively participated in the training; however, some only listened and did not engage in conversation or did not participate in the hands-on portion of the training. Some key findings that were noted throughout the sessions were nurses' unfamiliarity with how to operate the equipment. For instance, some only opened one side of the bag valve masks (BVM) or did not open either side of the BVM. Many also stated that they were unaware that the Zoll AED pads provided live feedback during compressions and were also unaware that the pads should have one placed on the front and one placed on the back (not both in the front). Nevertheless, the purpose of the training was to address these gaps. It appears to have been successful as other units such as endoscopy and the progressive care units have requested our training for their nurses. Additionally, it has also been taught during orientation for the new graduate nurses that were hired.

Several nurses have requested advertisements of the training via email as those who work in the float pool may not always work in a med-surg unit where the announcements of the training were given during huddles. A few stated that had they been aware of the training sooner, they would have informed their friends/coworkers to join. This is worthy to note for those who wish to implement this quality improvement project in the future as utilizing promotional flyers and informing charge nurses to announce the training during huddles may not be as effective or reliable. Additionally, only 62 out of the 108 nurses and 15 CNAs who participated in the training completed the post-intervention surveys. For this reason, it is recommended that future implementations utilize a different method to gather data for the post-surveys. Instead of utilizing QR codes as some nurses may not carry their cell phones with them to the training, it may be

best to print out the surveys so that the nurses can easily complete them before leaving the session. This would also eliminate any potential technological mishaps such as poor Wi-Fi connection.

Conclusion

Code blues can be frightening for any nurse to experience, and each second following a code is critical as the chance of revival decreases with time. Consequently, any hesitance or lack of confidence can cause a delay in care. To ensure that nurses remain prepared in responding to codes, hospitals must invest in frequent code blue training. Evidence shows that providing training whether it be hands-on or solely educational is overall effective in improving nurses' confidence. This quality improvement project sought to increase nurses' confidence in initiating the code blue process prior to the arrival of the rapid response team. The results indicate that the project aim was met.

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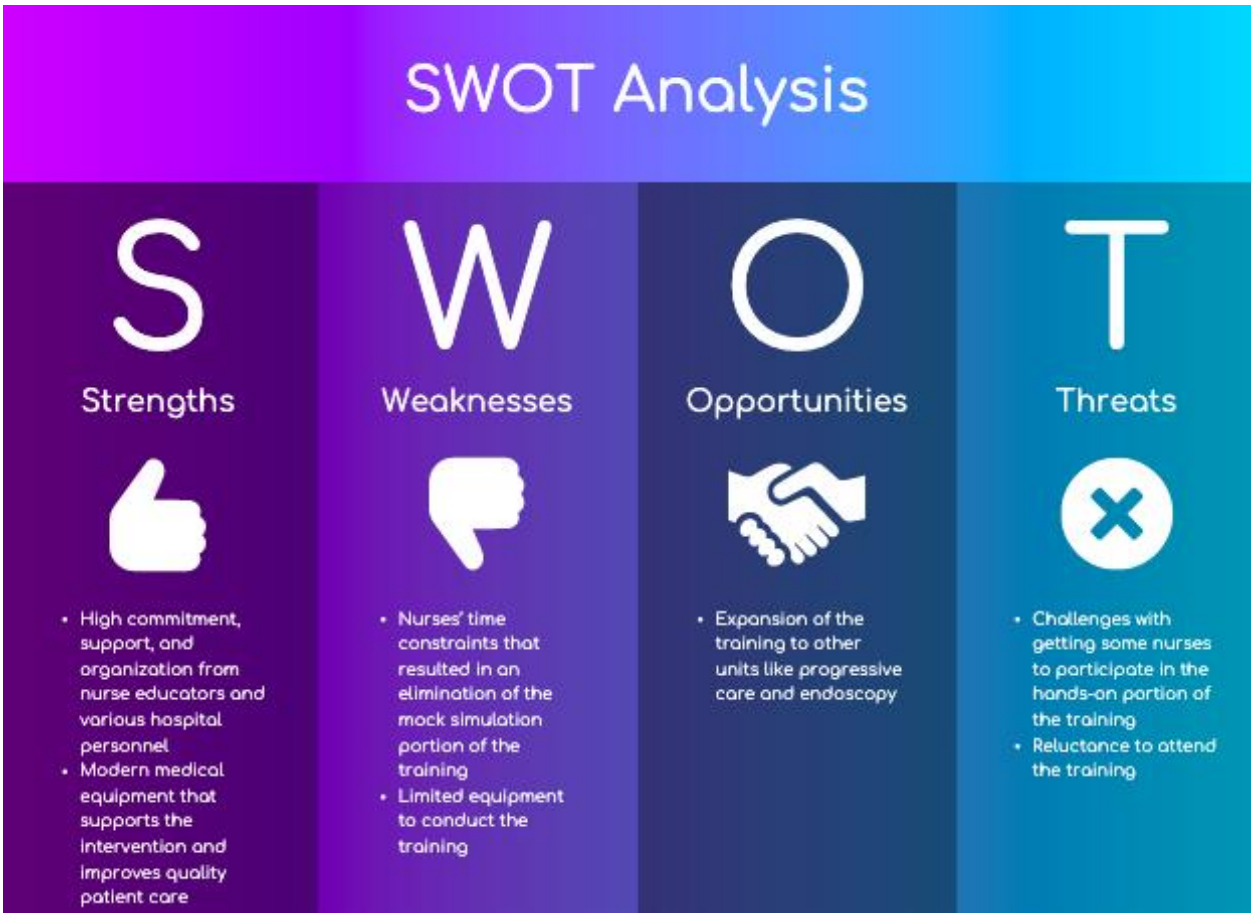
Appendix A

SWOT Analysis



Appendix B

Gantt Chart

Code Blue Readiness Training for Medical-Surgical Nurses

Task	Start	End	Project Timeline from August 31st to December 13th													
			Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15
Project Plan																	
Introduction & Discussion of QI Project	31-Aug	31-Aug															
Meet with Nurse Educator	8-Sep	8-Sep															
Review & Edit Previous Pre & Post Surveys	10-Sep	10-Sep															
Development of Promotional Flyers	12-Sep	12-Sep															
Development of Lesson Plan	12-Sep	12-Sep															
Email IT to Set Up QR Code for Pre & Post Survey Data Collection	12-Sep	12-Sep															
Discussion & Development of Training Schedule	16-Sep	16-Sep															
Post Flyers & Pre-surveys/ Inform Charge Nurses of Training Schedule	16-Sep	16-Sep															
Preparing & Practicing with Equipment (i.e. Zoll AED, crashcart) for Training	21-Sep	21-Sep															
Analysis of Pre-survey Data	24-Sep	24-Sep															
Final edits to lesson plan	26-Sep	26-Sep															
Project Implementation																	
Implementation of Code Blue Training & Post-surveys	28-Sep	8-Oct															
Group Check-in & Re-evaluation of Training Delivery	8-Oct	8-Oct															
Implementation of Code Blue Training with New Approach	12-Oct	19-Oct															
Project Evaluation																	
Analysis of Post-survey Data	21-Oct	25-Oct															
Evaluation & Comparison of Pre & Post-survey Data	26-Oct	30-Oct															
Work on QI Paper	31-Oct	11-Nov															
Post-training Group Discussion	12-Nov	12-Nov															
Work on QI Paper	13-Nov	3-Dec															
Prepare for QI Presentation	4-Dec	12-Dec															
Group Poster Presentation	13-Dec	13-Dec															

Appendix C

Code Blue Lesson Plan

Code Blue Readiness Lesson Plan

- Zoll is code ready
- Monitor depth and chest recoil of compressions
- Remind that rapid response team # is *66
- Bring crash cart along with PPE cart with labels
- Don complete PPE once another nurse is able to take over compressions, have every additional staff member who enters the room don PPE
- Zoll used during simulation is slightly different from the one in the units. Educate staff that Zoll in the units have basic AED functions.
- Have staff look at the cart and familiarize with the different supplies in there
- Tell staff that patient's beds have CPR pedal which lowers HOB and deflates mattress, *back board still needed*

Introduction

- We are nursing students from USF, and we are here to provide a quick review on code blue readiness and to hopefully help increase your confidence through education and exposure to the equipment
- In this brief education session, you will be able to look through the crash cart and familiarize yourself with the equipment that will be used in your unit during a code blue
- We will go over the teaching points on the flyer; main actions
- We are not here to grade or judge your competency skills. Our goal is to provide you with a review regarding the steps of a code and through this, we hope that it helps increase your confidence and readiness if and when a code occurs

Role of the primary nurse:

- Assess and establish unresponsiveness
- Call *66 for the code blue team
- Call for someone to bring the crash cart and PPE cart
    - Can be done while flattening the bed with the CPR pedal
- Begin chest compressions
    - 30:2 compressions-to-breaths ratio; at least 2 inches (2-2.5in) in depth for adults; rate of 100-120 compressions per minute. Confirm proper hand placement, avoid excessive ventilation, assess for rise and fall of chest to ensure adequate oxygenation
- Once the crash cart and PPE cart arrives, instruct the oncoming nurse to place the backboard under the patient and switch places with the nurse to don on PPE (the oncoming nurse should already be donned in PPE)
- Obtain the Zoll AED/defibrillator and turn it on
    - Teach how to operate / **Zoll used during simulation is slightly different from the one in the units. Educate staff that Zoll in the units have basic AED functions
- Place the pads following the picture/instructions

    - Pads location: one in the front (left side of the chest, between nipples) with CPR monitor midline of chest, and one in the back (left side, below scapula)
    - Remember modifications for pad placement on: individuals who are overweight, pregnant or have large breast tissue
- Assess the AED rhythm, if the AED determines a need for a shock, SHOUT ALL CLEAR before defibrillating
    - Defibrillator:
        - Turn on
        - Analyze
        - Shock as needed (ensure all is cleared when indicated)
        - Follow commands from Zoll defibrillator
        - Monitor quality of compressions (Zoll and in person)
- Another nurse should properly attach the Bag-Valve-Mask (BVM) and turn the oxygen on to 15L
- Ensure the mask has proper, tight-seal fitting.
- Provide Ventilation
    - Two breaths for 10 seconds after 30 compressions
    - Avoid excessive ventilation, assess for rise and fall of chest to ensure adequate oxygenation
- After 2 minutes of chest compressions and ventilation, check for a pulse
- Switch with another team member after 5 cycles or every 2 minutes of compressions and ventilation **OR** when you're tired
    - Should be done while breaths are being provided to avoid disruptions of greater than 10 seconds

When RRT or code team has arrived:

- The primary nurse must provide a thorough SBAR report to the Rapid Response Team
- Divide tasks (roles should have already been established, if not divide tasks/and take on roles that you are comfortable with performing, KNOW your limitations)
    - Continue compressions and breaths; switch as needed
    - If all of the steps above were NOT completed yet prior to the RRT arrival, then proceed with the proper steps wherever you left off:
        - Have someone bring crash cart
        - Attach Bag-Valve-Mask (BVM) to oxygen
        - Place backboard and attach Zoll pads
        - Operate defibrillator
        - Monitor quality of CPR (as assessed by Zoll)

Appendix D

Handout of Teaching Points

Hospital Name & USF PRESENTS

CODE BLUE! DO YOU KNOW WHAT TO DO?

Thank you for participating in our mini mock code. Please refer to the teaching points down below to review what we have practiced today.

Call a code

- Establish unresponsiveness, check for pulse, push code button, and shout for help

Begin CPR

- Lower the bed using CPR release then start compressions ASAP
- Ensure compressions are 2-2.5 inches deep
- 30 compressions:2 breaths ratio, at 100-120 compressions/min
- Switch compressors at 2 mins if needed

Bring fully stocked crash cart & place backboard

- Bring crash cart to room
- Place backboard under patient

Attach Zoll One-Step pads

- Place One-Step pads (one in center of chest and one on the back)
- Place CPR sensor on lower third of sternum

Operate the Zoll Defibrillator & monitor quality of CPR

- (1) Turn on to defib (2) Analyze (3) Shock (as needed)
- Monitor compressions on Zoll (ideally all Purple)
- Follow commands on Zoll and verbalize "all clear" when shock administered

Ventilate with Bag-Valve-Mask

- Decompress the bag
- Attach tubing to O2 valve on the wall (Christmas Tree)
- Turn up O2 valve to 15L
- Place face mask over patient airway ensuring seal
- Administer two breaths per 30 compressions
- Remove BVM & O2 source from patient when "All Clear" announced

Perform SBAR handoff to the code team

- Patient Handoff
  - Patient admitting diagnosis and pertinent health history
  - Time of last shock?
  - Last medications given
  - What has been done so far?
  - How did you find the patient/ what events led up to code?
  - Rhythm prior to code?
  - Important Labs: Potassium, Magnesium, Glucose

Hospital Name

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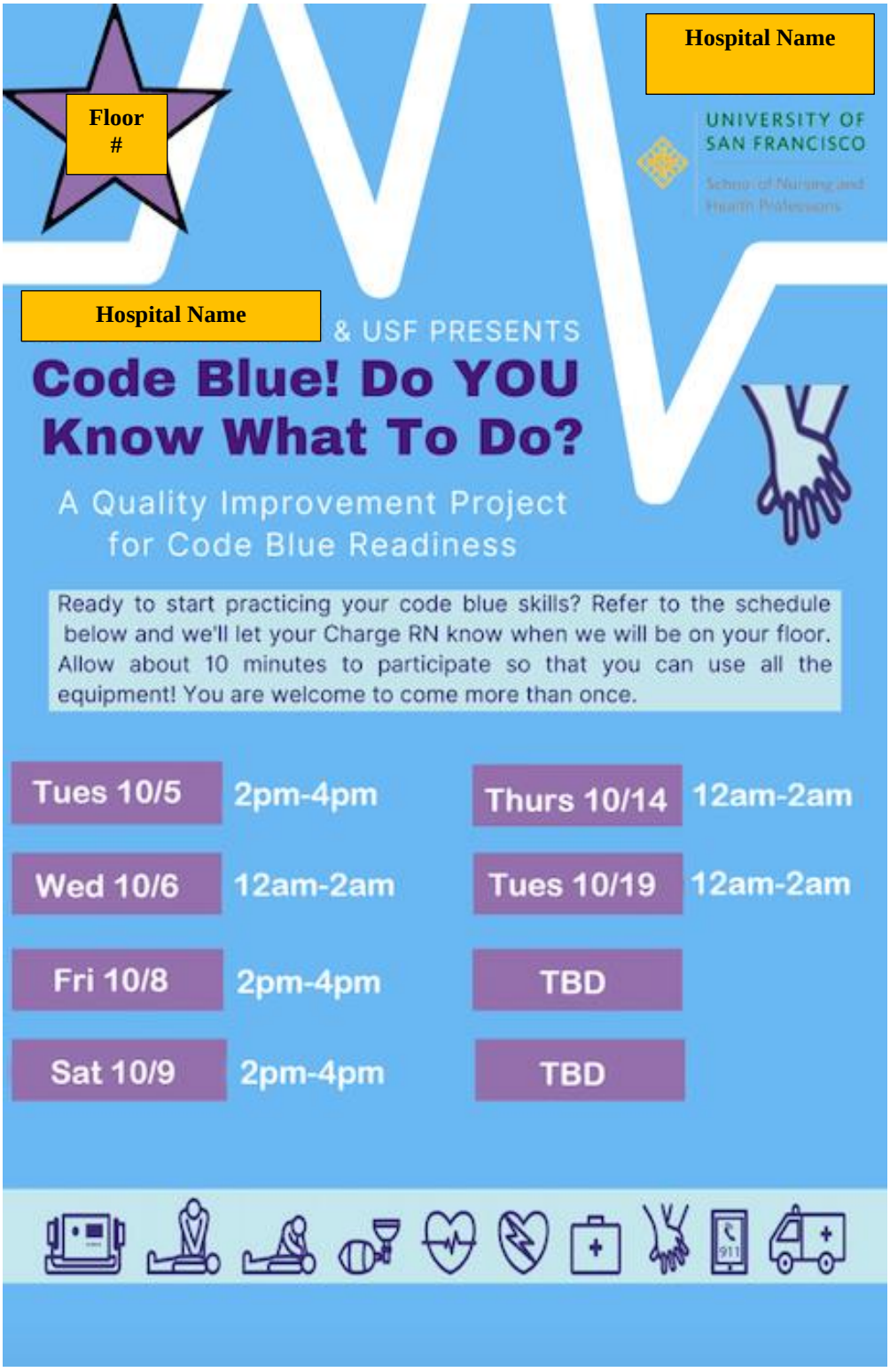
Appendix E

Example of a Promotional Flyer for the Units



Appendix F

PDSA Cycle

Appendix G

Pre-survey for Medical-Surgical Nurses

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Responses
I feel confident in and prepared for a code blue. Count Row %	2 4.5%	6 13.6%	9 20.5%	20 45.5%	7 15.9%	44
I feel confident recognizing and calling a code blue. Count Row %	0 0.0%	0 0.0%	4 9.1%	22 50.0%	18 40.9%	44

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Responses
I feel confident providing and assessing high quality chest compressions (100-120 compressions/min; at least 2 inches deep; lower sternum position) during a code blue. Count Row %	0 0.0%	2 4.5%	9 20.5%	23 52.3%	10 22.7%	44
I feel confident administering ventilations with a bag valve mask attached to 15L O2. Count Row %	1 2.3%	6 13.6%	10 22.7%	14 31.8%	13 29.5%	44
I feel confident bringing the crash cart and applying the backboard under the patient during a code. Count Row %	0 0.0%	0 0.0%	2 4.5%	25 56.8%	17 38.6%	44
I feel confident monitoring vital signs and heart rhythms during a code blue. Count Row %	2 4.5%	10 22.7%	11 25.0%	15 34.1%	6 13.6%	44

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Responses
I feel confident operating the Zoll Defibrillator during a code (applying chest pads, turning on AED mode, following announced steps, administering shock as advised). Count Row %	3 6.8%	5 11.4%	11 25.0%	18 40.9%	7 15.9%	44
I feel confident in providing SBAR handoff to the code team (including admission diagnosis, relevant lab values, and events leading up to code). Count Row %	2 4.5%	3 6.8%	6 13.6%	25 56.8%	8 18.2%	44
I feel confident scribing during a code blue until additional support arrives. Count Row %	5 11.4%	11 25.0%	10 22.7%	15 34.1%	3 6.8%	44
Participating in simulated crisis scenarios and team debriefing is beneficial to maintaining my code blue readiness. Count Row %	0 0.0%	0 0.0%	6 13.6%	16 36.4%	22 50.0%	44
Totals Total Responses						44

Appendix H

Post-survey for Medical-Surgical Nurses

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Responses
I feel confident in and prepared for a code blue. Count Row %	3 4.8%	0 0.0%	3 4.8%	28 45.2%	28 45.2%	62
I feel confident recognizing and calling a code blue. Count Row %	4 6.5%	0 0.0%	0 0.0%	21 33.9%	37 59.7%	62
I feel confident providing and assessing high quality chest compressions (100-120 compressions/min; at least 2 inches deep; lower sternum position) during a code blue. Count Row %	2 3.2%	0 0.0%	2 3.2%	29 46.8%	29 46.8%	62
I feel confident administering ventilations with a bag valve mask attached to 15L O2. Count Row %	1 1.6%	0 0.0%	3 4.8%	27 43.5%	31 50.0%	62
I feel confident bringing the crash cart and applying the backboard under the patient during a code. Count Row %	1 1.6%	0 0.0%	1 1.6%	23 37.1%	37 59.7%	62

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Responses
I feel confident monitoring vital signs and heart rhythms during a code blue. Count Row %	2 3.2%	0 0.0%	6 9.7%	29 46.8%	25 40.3%	62
I feel confident operating the Zoll Defibrillator during a code (applying chest pads, turning on AED mode, following announced steps, administering shock as advised). Count Row %	1 1.6%	0 0.0%	4 6.5%	34 54.8%	23 37.1%	62
I feel confident in providing SBAR handoff to the code team (including admission diagnosis, relevant lab values, down time before compressions were initiated, and events leading up to code). Count Row %	1 1.6%	0 0.0%	3 4.8%	36 58.1%	22 35.5%	62
I feel confident scribing during a code blue until additional support arrives. Count Row %	2 3.2%	2 3.2%	12 19.4%	29 46.8%	17 27.4%	62

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Responses
Participating in simulated crisis scenarios and team debriefing is beneficial to maintaining my code blue readiness. Count Row %	1 1.6%	0 0.0%	2 3.2%	30 48.4%	29 46.8%	62
Totals Total Responses						62

Appendix I

Pre-survey for Rapid Response Team

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Responses
I witness high quality chest compressions being performed. Count Row %	0 0.0%	0 0.0%	0 0.0%	1 100.0%	0 0.0%	1
The bag valve mask is placed correctly. Count Row %	0 0.0%	0 0.0%	1 100.0%	0 0.0%	0 0.0%	1
The crash cart is in the room, and the backboard and defibrillator pads are placed correctly. Count Row %	0 0.0%	0 0.0%	0 0.0%	1 100.0%	0 0.0%	1
The Zoll Defibrillator is on and EKG rhythm is on display. Count Row %	0 0.0%	0 0.0%	0 0.0%	1 100.0%	0 0.0%	1
SBAR handoff is communicated efficiently. Count Row %	1 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1
There is effective closed-loop communication amongst floor nurses and code team. Count Row %	0 0.0%	0 0.0%	1 100.0%	0 0.0%	0 0.0%	1
Totals Total Responses						1