Summer 2023

Let Us Talk About It: Using a Communication Tool to Improve the Timeliness of Rapid Responses

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DNP Manuscript Defense Approval

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Date: * 07/16/2023

Choose your DNP program: *
- ○ Adult-Gerontology Acute Care Nurse Practitioner (Doctor of Nursing Practice)
- ○ Family Nurse Practitioner (Doctor of Nursing Practice)
- ◉ Post-Master's DNP (Doctor of Nursing Practice)

Manuscript Title: * Let Us Talk About It: Using a

Date of Manuscript Approval: * 07/16/2023

Student Signature	Electronically signed by LaJaynees Singleton on 07/16/2023 6:46:11 PM
Chair, DNP Manuscript Signature	Electronically signed by Lynnette Djonret-Hall on 07/16/2023 7:51:44 PM
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Let Us Talk About It: Using a Communication Tool to Improve the Timeliness of Rapid Responses

A DNP Project Submitted to the
Graduate Faculty
Of Jacksonville State University
In Partial Fulfillment of the
Requirements for the Degree of
Doctor of Nursing Practice

By

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Jacksonville, Alabama

August 4, 2023

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Abstract

Background: In healthcare emergencies, minutes matter. Code blue, code stroke, and rapid responses are processes put in place by hospitals to save lives and improve the outcome of deteriorating patients. At a local medical facility in Alabama, the process for calling codes and rapid responses created miscommunication and delays in the code team's arrival. An assessment revealed that a purchased clinical communication device (CCD) was underutilized.

Purpose: The purpose of the Doctor of Nursing Practice (DNP) project was to improve the communication of code blue, code stroke, and rapid responses by utilizing the CCD.

Methods: The quality improvement project consisted of educational sessions by the DNP student to staff on the medical-surgical unit on the efficient use of the CCD to improve communication during emergencies. Information was collected and analyzed from patient safety reports, chart reviews, and CCD reports to determine opportunities.

Results: A review of patient safety reports, Critical Care Committee meeting minutes, and the CCD communication logs revealed that using the CCD helped reduce communication errors. There was no statistical significance, but the project was clinically significant.

Conclusion: Implementing educational sessions on using CCD to call codes and rapid responses helped reduce the number of miscommunications during codes.

Keywords: Vocera ©, wireless communication, rapid response, code blue, code stroke, hands-free, technology, hospital operator, emergency response time

Acknowledgments

First, I would like to give honor to God for without Him, none of this would have been possible. I would like to express sincere thanks to my preceptor, Dr. Courtney Berry-Cannon, who dedicated many hours towards my success in this program. I would also like express my gratitude to the faculty and staff of Jacksonville State University for their support and encouragement. I give a special thank you to Dr. Lori McGrath who was always available and went above and beyond to ensure my success and to my chair, Dr. Lynette Djonret-Hall who provided much-needed guidance and encouragement during this program. Finally, I thank my husband for his love, patience, and support during this endeavor because without him this could have been a more stressful journey.

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Let Us Talk About It: Using a Communication Tool to Improve the Timeliness of Rapid Responses

Code blue, code stroke, and rapid responses are processes implemented by hospitals to save lives. Every minute matters in a healthcare emergency. Hospitals initiate code and rapid response teams to improve the outcomes of deteriorating patients (Lyons et al., 2018). According to the Institute for Healthcare Improvement (IHI, 2022), for every 100 occupied beds, a rapid response is called ten times per month. According to Clayton (2019), a code blue emergency requires prompt activation and mobilization of resources to help reduce the number of deaths in a medical emergency. There is an association between delayed activation of the Rapid Response (RR) team and the patient's survival through discharge (Padilla & Mayo, 2019). If a hospital has challenges communicating its codes, patients are at risk of delay in care. The ability of the staff to relay an emergency message and the reaction time of the code team are components of failure to rescue or the inability to prevent death after a medical complication (Burke et al., 2022). Communication failures threaten the quality of care and safety of hospitalized patients (Umberfield et al., 2019). According to a study completed in 2015 by the Joint Commission (2017), communication failures in the United States were accountable for 30 percent of all malpractice claims, resulting in 1,744 deaths and $1.7 billion in malpractice expenses over five years (Joint Commission, 2017). The DNP student aims to show utilization of the clinical communication device (CCD) can decrease the number of errors made during code communication and increase the time of the code team's arrival.

Background

Recognizing patients' decline in condition and activating the rapid response system are actions of attentive nursing staff and speak to the staff's competence and clinical judgment

(Clayton, 2019). The current process for calling codes at the medical facility involves the employee dialing a five-digit extension to notify the hospital operator of a code. The hospital operator then makes the overhead announcement of the code to alert all staff. As a result, not all staff members hear overhead emergency messages on time, causing a delay in the code team's response to assist the declining patient.

In FY22, more than 75 RRs and 5 code blues were called in this healthcare system (Department of Veterans Affairs, 2022a). Approximately 25% of the codes called were processed incorrectly, which caused a delay in the code team or rapid response team's arrival (Department of Veterans Affairs, 2022a). The facility for this project is located across 50 acres, including 16 buildings. The hospital system consists of two main campuses that are approximately 40 miles apart and an additional seven community-based outpatient clinics in two states. The current overhead page process requires staff to dial a five-digit extension to reach the hospital operator, who will call a code or rapid response. Each campus location dials a unique five-digit extension number. If the hospital operator forgets to ask the caller which campus the code occurred on, the announcement may be broadcast to the wrong campus. Additionally, the code team members may not hear the overhead page once it is broadcasted due to the outdated intercom system in the facility. Using the CCD to call codes will eliminate the need for the operator and alert the team members instantly.

Using the CCD will reduce the time it takes for the message to broadcast to all locations of the facility, reducing the time it takes the team to arrive (Carreon, 2019). Losing one life that could be related to a communication system is one life too many.

The CCD is a small electronic badge worn on a lanyard or lapel. The CCD is used for hands-free direct communication between staff. The facility implemented using CCD, removing the need to dial a five-digit extension to notify the hospital operator of codes and rapid responses. With the implementation of CCD, employees touched a button and spoke verbal commands into the device, bypassing the facility operator and reducing the time it takes staff to notify the code team. All code team members had access to a CCD and received the notification immediately. A facility occurrence log review showed the inpatient medical-surgical staff made many calls before the implementation of the project, and zero of these calls were made for rapid responses.

Needs Analysis

The 22-bed medical-surgical unit in the southeastern United States, serves and cares for patients ages 19 and older. The diagnoses include Chronic Obstructive Pulmonary Disease, Congestive Heart Failure, COVID-19, Hypertension, Diabetes Mellitus Type II, and various other diseases. The staff turnover rate in this unit is high and often contributes to staffing challenges (Department of Veterans Affairs, 2022d). When an emergency occurs, such as a rapid response, the staff must alert someone to call the operator for an overhead page. This process removes valuable time staff could use to assist the deteriorating patient. Two of the four code blues that occurred in FY22 happened in this medical-surgical unit (Department of Veterans Affairs, 2022a).

Current State

When the hospital operator announces the overhead page, the information can be broadcasted incorrectly or to the wrong campus. In addition, some staff may not hear the overhead pages due to old buildings with old speaker equipment. Contractors continually work on upgrades to the overhead speaker system. In FY22, 83 rapid responses and four code blues were called at this facility (Department of Veterans Affairs, 2022a). In FY23 Quarter one, 28 rapid responses and two code blues were called, and six were miscommunication errors. There were no code strokes called (Department of Veterans Affairs, 2023a).

Desired State

In March 2021, the organizational leadership department invested in the CCD. Currently, the devices are only used for intradepartmental communication. However, many hospitals use the device to notify staff of codes (West et al., 2019). The staff will use CCDs to broadcast codes to help the code team arrive on time and reduce the number of code errors reported to Patient Safety related to broadcasting. In addition to the CCD broadcasting to the code team, it will also alert the hospital operator, decreasing the time it takes the code team to arrive on the scene.

Problem Statement

The Joint Commission (2017) identified a national patient safety goal of improving the effectiveness of staff communication. The Joint Commission also issued a new *Sentinel Event* alert that gave healthcare facilities seven recommendations to improve communication failures (Joint Commission, 2017). Effective July 2023, the National Patient Safety Goals (NPSG) for the hospital program will also include enhancing communication among caregivers regarding timely critical care results (Joint Commission, 2023).

The problem at this facility is a delay in patient care at times related to miscommunication of rapid responses (RR) and code blues during broadcasts of codes. A hospital employee or family member can call for a rapid response when they notice a decline in a patient's condition and need someone to come quickly to assess the patient. The current process of calling codes via the overhead speaker system has limitations. Many employees do not hear the announcements; therefore, some team members may not respond promptly to codes and rapid responses. In the calendar year 2022, of 96 total codes and rapid responses, the facility reported approximately 28 errors related to the miscommunication of hospital emergencies announced via the overhead speaker system (Department of Veterans Affairs, 2022b).

According to The Joint Commission (2017), a 2015 report on sentinel event alerts states communication failures resulted in 1,744 deaths in 30% of malpractice claims. Some studies have shown that communication devices enhance overall communication and reach staff members quickly (Fang et al., 2018). To reduce the number of communication failures at this facility, the staff will use the CCD.

The population, intervention, comparison, outcome, and time (PICOT) for this project are as follows: For staff on the inpatient medical-surgical unit (P), will educational sessions and the use of Vocera © communication device (I) compared to dialing a five-digit telephone extension for the facility operator (C), improve the rapid response and code blue response time to emergency events as evidenced by fewer miscommunications (O) within two months (T)?

Aims and Objectives

The purpose of this project is to reduce errors related to the broadcasting of codes and improve the response times of teams to codes using CCDs in an acute care setting. The objectives to be achieved by the end of this project were to

- use educational sessions to improve staff's knowledge of the use of CCDs to call codes and rapid responses
- use the Teach Back method to confirm the staff's understanding of how to call codes using CCDs
- expedite the code team's arrival on the scene to a code or rapid response and
- have more codes and rapid responses called using the CCD.

Review of Literature

Selected databases for this review included the Cumulated Index to Nursing and Allied Health Literature (CINAHL), Cochrane, Google Scholar, PubMed, and Science Direct. The DNP student explored the databases using a combination of the following keyword combinations: "Vocera," "wireless communication," "rapid response," "code blue," "hands-free," "technology," "code stroke," "hospital operator," and "emergency response time." The search using keywords technology with rapid response yielded the most results, with 850 references located. The DNP student refined the results to 87 using the limiters of publication within the last five years, research articles, medicine, and nursing. The DNP student excluded most documents based on their title. The writer selected 13 papers from the above inquiries for review and synthesized the findings here.

The articles and studies focused on the following areas: timeliness of communication, training, weaknesses, organizational change, and improved workflow.

Timeliness of Communication

A common theme of this literature review was the improved speed of communication, which corresponds with the goal of this project and answers the PICOT question. The timeliness of communicating codes and rapid responses is a top priority. Hands-free communication devices improved team members' access and overall communication (Fang et al., 2018). Cooney et al. (2018) and Fang et al. (2018) also determined the device provides a direct line of communication from the caller to the rapid response or code team without the operator's assistance, reducing the possibility of miscommunication. The use of mobile technology decreased the amount of time to deliver healthcare and helped to manage patients more quickly (Goncalves-Bradley et al., 2020, Webb et al., 2016, Fang et al., 2018). Fang et al. (2018) and hands-free communication devices are much faster than other technologies (Richardson & Ash, 2010). Fang et al. (2018) concluded the greatest strength of mobile technology was that physicians could reach each other directly without going through the operator or nursing unit.

Training

Training is of utmost importance when incorporating hands-free communication devices into the workflow (Richardson & Ash, 2010). Missen et al. (2018) and Richardson and Ash (2010) agreed education and training on the communication device were necessary to increase staff awareness of the benefits of the device. Hands-on training is vital for staff to communicate effectively using hands-free communication devices and should be completed as close to go-live as possible (Olsen et al., 2019; Richardson & Ash, 2010). Olsen et al. (2019) affirmed the importance of clear leadership in addition to continuing education and training to improve the rapid response and code blue processes. Regularly engaging staff in an interdisciplinary simulation will reinforce the education of responding to critical situations (Shifrin et al., 2018; Olsen et al., 2019). Shifrin et al. (2018) also stated staff members must provide relevant information to obtain the best outcomes. Consistent staff training with clear instructions is necessary for the successful use of mobile technology in healthcare settings (Olsen et al., 2019).

Limitations

Fang et al. (2018), Richardson and Ash (2010), and West et al. (2019) identified voice recognition errors with the hands-free communication device, which caused frustration for staff. Speech recognition is a weakness, but Fang et al. (2018) remedied the issues with voice and speech recognition by managing everyday work and technical support which involved educating staff on the proper location of the device when giving commands (Fang et al., 2018; West et al., 2019). West et al. (2019) concluded that despite speech recognition errors, the CCD drastically lowered response times and the number of overhead pages by the facility operator. Webb et al. (2016) and West et al. (2019) indicated staff included in the study were aware their response time was being recorded, and this may have been a limitation that caused the staff to respond quickly.

The CCD is not ideal for all nursing units. Friend et al. (2017) stated staff who used the CCD in the operating room suite perceived the noise from using the device as an issue as it can distract the surgeon performing a procedure. Increased noise levels and privacy concerns (Fang et al., 2018; Friend et al., 2017). Friend et al. (2017) suggested headsets could be a remedy for reducing noise levels in operating room suites.

Fang et al. (2018) and Richardson and Ash (2010) stated privacy could be an issue when communicating with others in any open location. The CCD emitted conversations like a walkie-talkie, and staff reported the devices interrupted the care they provided to their patients when a CCD call came through (Richardson & Ash, 2010). Friend et al. (2017) stated when staff members are in open spaces such as a cafeteria, privacy could be an issue if their communication devices are not in "do not disturb mode." Future research on the topic of quality outcomes using CCD is needed (Richardson & Ash, 2010; Webb et al., 2016; West et al., 2019).

Improved Workflow

Research suggested using the CCDs to improve workflow. Carreon (2019) and Richardson and Ash (2010) stated the communication devices allowed employees to have short real-time conversations, improving the staff's clinical workflow. Fang et al. (2018), Webb et al. (2016), and West et al. (2019) agreed that communication devices positively impacted the staff's duties. Physicians had fewer interruptions when using the communication device, allowing more time for patient care (Fang et al., 2018; Webb et al., 2016). The benefits of using the CCD included the ability to receive instant feedback and closed-loop communication and reduce the number of inquiries about a topic (West et al., 2019). Carreon (2019) added that communication devices positively affected nursing staff workflow by reducing the time spent reporting to the nurses' station for telephone calls and walking the unit to locate staff. In addition, Joslin et al. (2016) reported using CCDs dramatically reduced the response times of police and public safety officers at the hospital. Multiple authors agree that CCDs improve the perception of communication and workflow (Carreon, 2019; Fang et al., 2018; Joslin, 2016; Richardson and Ash, 2010; and Webb et al., 2016).

Organizational Change

Richardson and Ash (2010) used a grounded theory approach to determine the effects of communication devices on healthcare systems. The authors identified five themes which included communication access, control, training, organizational change, and infrastructure of the environment (Richardson & Ash, 2010). Communication devices could help achieve organizational goals (Richardson & Ash, 2010) and increase communication efficiency could improve patient care (Webb et al., 2016).

In summary, timely communication is essential in the clinical setting, especially when patients are experiencing distress. Staff education on the use of advanced technologies improves response time to patient emergencies. The use of hands-free clinical communication devices can also improve workflow by facilitating staff communication. However, not all patient care settings are ideal for the use of hands-free communication devices and may become a distraction or result in a breach of patient privacy. Ultimately, improved clinical communication helps achieve organizational goals.

Theoretical Framework

Lewin's Change Theory was the theoretical framework used to guide the DNP student project. Kurt Lewin's three-step model of planned change was developed in 1951 (Lewin, 1951), and the three phases of Lewin's theory are *unfreezing, changing, and refreezing* (Hussain et al., 2018). (See Appendix A). The Lewin change model describes how an employee's readiness to change relates to their satisfaction, which is connected to their commitment to change (Memon et al., 2021). The identified practice gap for this project was an unreliable emergency paging system in the hospital which can result in slow response times to patient emergencies. Lewin's Change Theory guided a change in practice that involved using a new process for notifying staff of patient emergencies.

Hospitals use a rapid response team (RRT) to assess deteriorating patients (Lyons et al., 2018). The RRT usually precedes a code blue. Code blue is a hospital emergency that alerts the code team of a patient's cardiac arrest (Monangi et al., 2018). If the hospital uses an operator broadcast system, rapid response and code teams may take extra time to arrive on the scene because some people did not hear the page when it was called.

Lewin's Change Theory is easy to follow for amending procedures. In the *unfreezing stage*, the DNP student identified the project's current state to the staff and called attention to the problems incurred when using the overhead paging system to call rapid responses and codes. The DNP student alerted the staff of the impending changes and explained the desired state and how it would benefit the patients. The DNP student rounded on the unit often to remind staff members about the upcoming educational sessions for training.

During the *changing stage*, the DNP student included the staff in the transition phase. The team learned new processes and the rationale for these changes. The new approach used the

CCD tool to call rapid responses and codes. Using the CCD would allow the user to bypass the facility operator and immediately reach the code staff wearing the CCD badges and thereby reducing the code team response time. The DNP student provided 5-10 minutes of educational sessions twice daily for two weeks to include all staff on the unit. The DNP student also continued to make rounds and reiterate the training to staff throughout the implementation of this project.

The final stage of Lewin's change model is *refreezing*. In this stage, the DNP student reiterated the new process, and the staff began using the CCD to call codes. (Hussain et al., 2018). The DNP student and team identified and implemented methods to provide sustainability. Methods included giving information on the CCD as part of staff meetings and unit orientation topics. The DNP student shared the results of the interventions with the staff. Unfavorable results warrant the DNP student to begin the process again using different interventions or modifying the process.

Lewin's change theory has been used in similar settings for implementing change processes. Shirley (2013) indicated Lewin's model is necessary to guide institutions when implementing change. Lewin's model was cited as favorable in settings such as hospitals. Strengths of Lewin's model include being easy to use, easy to understand, and practical to implement (Shirley, 2013).

Methodology

The DNP student implemented this quality improvement project to educate staff on using the CCD to broadcast rapid responses and codes to decrease code team response time. This project is a quality improvement study. The DNP student used the Plan, Do, Study, Act (PDSA) method for this project. The PDSA emphasizes the process improvements that improve outcomes

(Moran et al., 2020). Quality Improvement projects that focus on education may use the PDSA method. Quality improvement projects use the Plan-Do-Study-Act (PDSA) conceptual model in healthcare as a process improvement method. PDSA can also be used for small-scale testing before implementing in a broader area (Knudsen et al., 2019).

Staff members were recruited by visiting them in various unit locations, including the employee break room and the nurses' station, and asking them to participate. There were no weaknesses identified in this methodology. The DNP student used the Plan-Do-Study-Act (PDSA) method in conjunction with Lewin's three-step change theory for the continuous process improvement of this CCD project. The PDSA cycle was also used in McDermott's (2022) process improvement DNP project that related to implementing a communication tool to improve handoff among nursing assistants. Potolsky (2020) used the PDSA cycle as a process improvement tool in the DNP project to implement artificial intelligence-initiated rapid responses to reduce in-hospital cardiac arrest.

The first phase is the *planning* phase. In this step, the DNP student completed the needs assessment and met with stakeholders. The second phase is the *implementation* phase. In this phase, the DNP student implemented the plan to educate staff on using the CCD to perform emergency broadcasts. The employees performed a teach-back demonstration to validate their task competency (Yen & Leasure, 2019). In the second phase, the staff began using the CCD to broadcast rapid responses, code blues, and code strokes. The third phase is the *study* phase. In this phase, the DNP student studied the results of the new process. Unfavorable results allowed the repeat of the cycle with different strategies. The final phase is the *act* phase. In this phase, the DNP student implemented methods for sustainability by updating the standard operating procedure (SOP), educating all staff using a train-the-trainer process, and including all areas of the facility in this new process for calling rapid responses and codes.

Setting

The setting for this project was a 20-bed medical-surgical unit at a Veterans Affairs (VA) hospital located in Alabama. This unit is part of a hospital system that is comprised of two main campuses 40 miles apart and seven outpatient clinics in two states. The facility is located on over 50 acres of land and has 16 buildings; ten were constructed in 1940. This unit has 15 registered nurses, eight (8) licensed practical nurses, and nine (9) nursing assistants.

Population

The medical-surgical unit chosen for this project has 32 staff members: full-time registered nurses, licensed practical nurses, and nursing assistants. The staff includes males and females. The average age range of patients is 60-69, and the top three diagnoses were congestive heart failure, COVID pneumonia, and chronic obstructive pulmonary disease. The average length of stay was 4.89 days.

Inclusion and Exclusion Criteria

This project included all full-time direct-care staff in the medical-surgical unit, including registered nurses, licensed practical nurses, and nursing assistants ages 19 and over. Also, ED and ICU full-time direct care staff who floated to the medical-surgical unit were included in this project. Environmental services staff, physicians, and nurse practitioners were excluded from the project.

Ethical Considerations

People ages 18 and under, pregnant women, prisoners, mentally disabled, and intellectually disabled persons were not participants in this project. On August 13, 2022, the

DNP student completed the Collaborative Institutional Training Institute (CITI) program. (See Appendix B). On September 30, 2022, the Medical Center Director signed a letter of support and approval for this project. (See Appendix C). The Institutional Review Board (IRB) for the Protection of Human Subjects in Research approved this project on October 22, 2022. (See Appendix D). Participants were informed that if they opted in and decided not to complete the project, there would be no repercussions and that all data related to the project would be confidential. Participants signed consents between February 9 – 18, 2023. (See Appendix E).

Recruitment

Participants for this study were enrolled from the inpatient medical-surgical unit and included registered nurses, licensed practical nurses, and nursing assistants who consented voluntarily. Since this is a 24/7 operating unit, weekend and night staff were included.

Consent

Consent was obtained from study participants before implementation. Each participant was provided with a copy of the consent. Staff members were informed that their unit was the site for this DNP project's pilot unit and that participation was voluntary. Participants were informed that any identifiable information would be kept confidential. A copy of the consent is in Appendix E.

Design

This project type was a quality improvement project. The project design was influenced by the PDSA process and Lewin’s Change Theory. The first step of the project implementation process consisted of performing a needs assessment and meeting with the stakeholders about the challenges of the current process and this corresponds to Lewin’s unfreezing stage and the planning phase of the PDSA. The second step of the project implementation process consisted of educating the staff on how to use the CCDs to call codes and rapid responses and begin using the CCDs which correspond to Lewin's changing stage and the PDSA do phase. The third step of the implementation process consisted of reviewing the results of the study which corresponds to the study phase of PDSA. The final step of the project implementation was planning for sustainability by incorporating this process into the facility SOP which corresponds to Lewin's refreezing stage and the PDSA act phase.

Data Review Process

Data for this study was obtained from a review of reported patient safety events and CCD weekly reports. Only patient safety events related to codes and rapid responses were included in the data. The list of CCD calls for codes and rapid responses was compared to the list of patient safety events. During the eight-week data collection process, there was one rapid response using the CCD.

Risks and Benefits

There were minimal risks involved in this project. One risk would be possible device failure which could delay care. One benefit of the project was that staff gained education on the expanded use of the CCD for calling codes. Additional benefits are quicker communication of patient safety events and thus, faster response times to critical situations.

Compensation

There was no monetary compensation for participation. Staff were offered healthy snacks at the end of the project as a thank-you for their participation.

Timeline

The stakeholders held the first meeting in October 2022. Staff education and data collection began on February 9, 2023. Project data collection ended on April 6, 2023. See

Appendix F for the timeline. Data was analyzed on April 7, 2023, and presented to stakeholders on April 13, 2023.

Budget and Resources

There were minimal costs associated with the project. The price for snacks during training was $35.00. The cost for reproducing consent forms was $20.00. (See Appendix G).

Evaluation Plan

This DNP evaluation plan aimed to determine if the outcomes and objectives were met. The teach-back method was used to determine participants' understanding of using the CCD to call codes. Patient safety events were reviewed to determine if the number of reported events related to codes called was reduced post-implementation compared to pre-implementation. CCD usage reports were examined to determine how often the device was used to call codes.

Statistical Considerations

The Principal Investigator (PI) used descriptive analysis to compare the number of broadcast errors from pre-implementation data to implementation data. Results indicated no statistical significance in reducing errors when calling codes using the CCD. However, only one patient safety incident occurred on the medical-surgical floor during the project implementation. The result was clinically significant as the code called using CCD was error-free, and the team arrived without delay. There was no patient safety report of miscommunication during the code called using the CCD.

Data Maintenance and Security

The PI scanned all paper consents into the computer in an Adobe file. PI recorded data onto an Excel spreadsheet with a password-protected laptop. The paper consents were stored in a locked file cabinet in a locked office for security purposes. The paper documents will be shredded six months after the project is completed.

Results

Demographics

Demographics for this study included 32 staff comprised of registered nurses, licensed practical nurses, and nursing assistants on the medical-surgical unit. All disciplines voluntarily participated in this study. As shown in Table 1, of the three roles, the registered nurses comprised most staff at 40% (n=13). The unit's largest age group of staff was between the ages of 40-49 and 60-69 at 31% (n=10). Most staff on the medical-surgical unit had 0-5 years of experience at the facility, 31% (n=10).

Table 1

Frequency and Percentage for the Demographic Data Categories

Data Categories	n	%
Gender		
Male	1	3
Female	31	97
Role		
Nursing Assistant	12	38
Licensed Practical Nurse	7	22
Registered Nurse	13	40
Age		
19-29	1	3
30-39	4	13
40-49	10	31
50-59	5	16
60-69	10	31
70-79	2	6
Years worked at facility		
0-5	10	31
6-10	2	6
11-15	10	31
16-20	4	13
21-25	4	13
26-30	0	0

31-35	0	0
36+	2	6

Results of Types of Codes Called

The codes included during this project implementation were rapid response, code stroke, and code blue. Only one rapid response was called on the medical-surgical unit during implantation. No code stroke has been called at this facility.

Discussion

The project intended to address the number of errors when a code blue, code stroke, and rapid responses were called using the facility operation to page the announcement overhead. The main finding of this study was that all code announcements made by the facility operation included some miscommunication. The one rapid response called using the CCD had no miscommunication error reported. These results are consistent with the data reported by Fang et al. (2018) and Fang et al. (2018), in which communication improved. Though the number of codes called was minimal during the study timeframe, the project's overall goal was met as the code team arrived at the unit on time, as evidenced by no reported miscommunication during the broadcast.

Implications for Clinical Practice

The project's aim was met, as evidenced by the staff's increased use of CCDs to call codes and rapid responses. The code team arrived at the scene without delay, and there were no reports of miscommunication with using CCDs. The CCD standard operating procedure (SOP) will be updated to include calling codes and rapid responses at this facility. All new staff will be educated in the process. The CCD has shown improvement in communication among healthcare teams (West et al., 2019).

Implications for Healthcare Policy

This DNP project supported policy direction for using the CCD to reduce the number of miscommunication errors and to expedite the arrival of the code and rapid response team during a medical emergency. The CCDs can be used to meet Joint Commission standards related to improved effectiveness of communication as it relates to timely communication of critical lab results. Staff in the medical-surgical unit will receive critical lab results via the CCD which will allow staff to act as quickly as possible. Using the CCD for calling codes, rapid responses, and receiving alerts for critical lab values will become a part of the facility's CCD SOP. The SOP will be located on the facility's share point site for staff's easy accessibility.

Implications for Quality

This project contributed to nursing practice by increasing the staff's knowledge and use of CCD during codes. Using CCDs improved the timeliness of the code team's arrival at the medical-surgical unit. Webb et al. (2016) study results indicated physician interruptions were decreased when using CCDs. The reduction of interruptions allows medical staff to concentrate on their work for better quality outcomes.

Implications for Education

Using the teach-back method when educating the staff was successful. Staff members were occasionally reminded that CCD was available for calling codes. Re-education will be given to staff regularly to promote the use of CCD for calling codes. Education will be incorporated into new employee orientation and semi-annual skills fairs. Richardson and Ash (2010) concluded staff must be trained and retrained on new technologies to reinforce the effective use of the product.

Limitations

A limitation of this project was the implementation was confined to one unit. The facility's average number of codes called over the past two years was approximately 75. Because only one unit within the facility was included in this project, the generalization of the findings is limited. A second limitation was the short observation period of only eight weeks. This study did not show an impact of CCD on patient care related to the length of stay or mortality. A third limitation was the inability to generalize the results, as only one rapid response was called during the implementation of the project code.

Dissemination

The DNP student presented the project findings to the facility's stakeholders and inpatient medical-surgical staff via PowerPoint presentation and paper. The project was also presented at Jacksonville State University's Annual Virtual Dissemination Day on July 13, 2023, as a poster presentation. The DNP manuscript was submitted to the Jacksonville State University Digital Commons Repository.

Sustainability

Senior leadership at the facility has agreed that using CCD to call codes and rapid responses will become standard work throughout the healthcare system; therefore, the probability of sustainability is high. The CCD SOP will be updated for inclusion of notification of code blues and rapid responses. This project will be submitted for publication in several journals to reach others who may need to use hands-free communication devices.

Plans for Future Scholarship

Future students can further this project by including the CCD for other codes used in the facility. Pre- and post-surveys could be used in a longer study time frame for further statistical analysis. The study could also focus on the device's disadvantages, such as the impact of speech recognition failure during attempts to call codes and rapid responses.

Conclusion

The project involved educating and training staff in the medical-surgical unit regarding using the CCD to call codes and rapid responses. The overarching aim was to decrease the number of errors when codes and rapid responses are called. The significant finding of this project was that the number of miscommunication errors occurring when calling codes using the CCD was lower than the number of miscommunication errors occurring when calling codes using the overhead paging system.

The results of this project showed a total of one call for rapid response assistance on the medical-surgical unit during the eight-week study period. The primary outcome showed no statistically significant improvement in reducing miscommunication errors using the CCD. Still, clinical significance exists as the rapid response called using the CCD was without error, and the code team arrived quickly.

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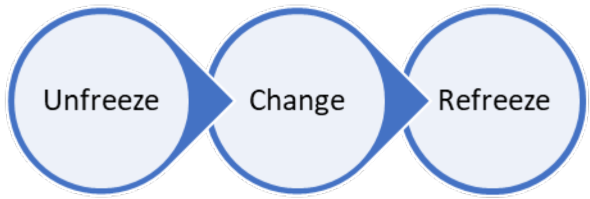
Appendix A

Theoretical Model

Kurt Lewin Change Model



Appendix B

Citi Training

CITI PROGRAM

Completion Date 13-Aug-2022
Expiration Date 12-Aug-2025
Record ID 50568849

This is to certify that:

LaJaynees Singleton

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Social and Behavioral Responsible Conduct of Research
(Curriculum Group)
Social and Behavioral Responsible Conduct of Research
(Course Learner Group)
1 - RCR
(Stage)

Under requirements set by:

Jacksonville State University

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w2a46a2e7-74a1-43ef-939a-46f834d787d5-50568849

Appendix C

Letter of Support

[redacted]

Memorandum

Date: September 30, 2022

From: [redacted]

Subj: Support of DNP Project

To: Jacksonville State University DNP Graduate Program

Dear Sir or Madam,

This letter confirms my wholehearted support for Jacksonville State University graduate nursing student, Ms. LaJaynees Singleton. Ms. Singleton has received our approval to focus on "Let us talk about it: Using a communication tool to improve the timeliness of rapid responses" over the coming year.

We are excited to support her as she works toward improving patient care delivery in our facility.

Please let me know if I can assist in any way.

Sincerely,

[redacted]

Appendix D

IRB Approval Letter

JSU | INSTITUTIONAL REVIEW BOARD
JACKSONVILLE STATE UNIVERSITY

Institutional Review Board for the Protection of Human Subjects in Research
249 Angle Hall
700 Pelham Road North
Jacksonville, AL 36265-1602

October 22, 2022

LaJaynees Singleton
700 Pelham Rd North
Jacksonville, AL 36265

Dear LaJaynees:

Your project "Let us talk about it: Using a communication tool to improve the timeliness of rapid responses" 10222022 has been granted exemption by the JSU Institutional Review Board for the Protection of Human Subjects in Research (IRB). If your research deviates from that listed in the protocol, please notify me immediately. Oneyear from the date of this approval letter, please send me a progress report of your research project.

Best wishes for a successful research project.

Sincerely,

Lynn Garner
Associate Human Protections Administrator, Institutional Review Board

Phone: 256-782-8144 • Fax: 256-782-8146 • www.jsu.edu • An Equal Opportunity | Affirmative Action Employer

Appendix E

Consent

Informational Summary of Study

Let us talk about it: Using a communication tool to improve the timeliness of rapid responses

You are invited to be in a study using Vocera to call rapid responses and codes. This study will last 2 months. You were selected as a possible participant because the inpatient medical-surgical unit reported issues with calling codes. The purpose of this study is to determine if using Vocera to call rapid responses, code blues, and code strokes will alert the code team to the scene more quickly than dialing a five-digit telephone extension to communicate with the facility Operator. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

Principal Investigator:
This study is being conducted by: LaJaynees Singleton, College of Health Professions and Wellness, Jacksonville State University.

Procedures:
If you agree to be in this study, we will ask you to do the following things:
Participate in the educational session on how to call a code using Vocera and use the Vocera device to call any rapid responses or codes that occur on this inpatient medical-surgical unit (M3A). There is no risk to participants. The benefit of this study is quicker response of the code team.

Confidentiality:
The records of this study will be kept private. In any sort of report, we might publish, we will not include any information that will make it possible to identify a subject. Research records will be stored securely and only researchers will have access to the records.

Voluntary Nature of the Study:
Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the hospital. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships. You may withdraw from the study at any time without penalty.

Contacts and Questions:
The DNP Student conducting this study is: LaJaynees Singleton. You may ask any questions you have now. If you have questions later, you are encouraged to contact her at Lsingleton@stu.jsu.edu. The advisor's name is Dr. Lynette Djonret-Hall. Her email address is ldjonrethall@jsu.edu.

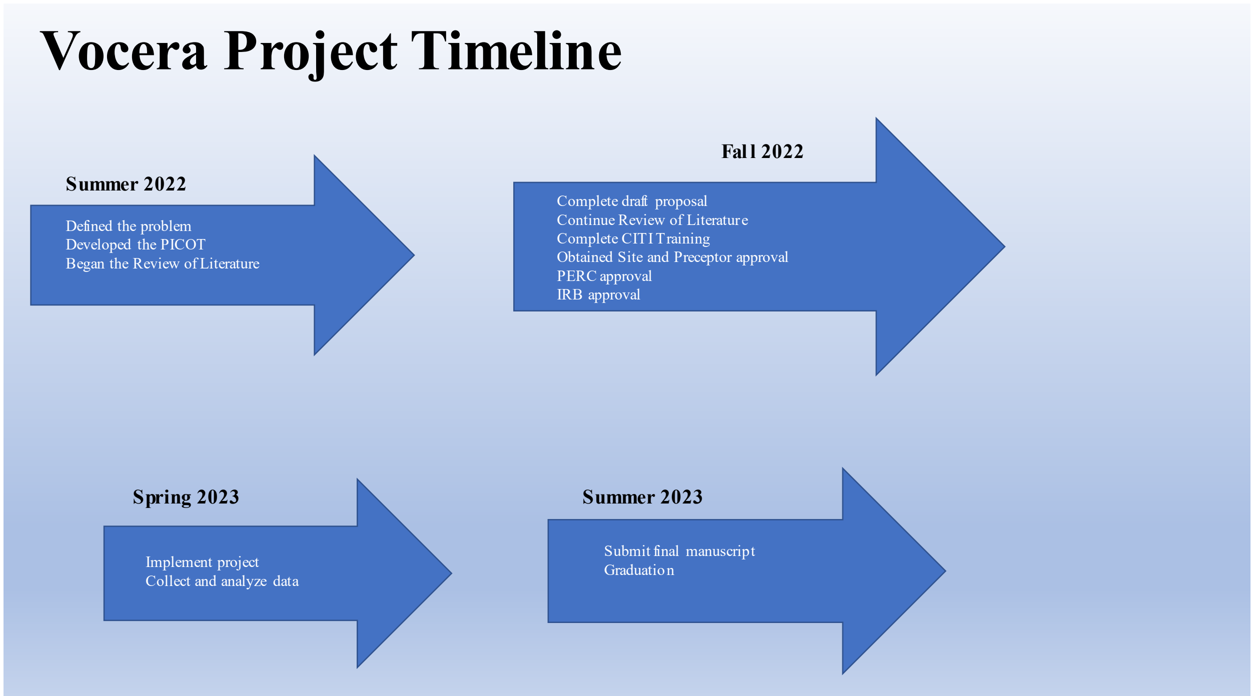
If you have any questions or concerns regarding this study and would like to talk to someone other than the Principal Investigator, **you are encouraged to contact** the Jacksonville State University **Institutional Review Board** at irb@jsu.edu.

You will be given a copy of this information to keep for your records.

Signature: ______________________________

Appendix F

Project Timeline



Appendix G

Budget

Item	Budget	Actual Cost
Printed Materials	$50	$20
Snacks	$30	$35
Total	$80	$55