

**Addressing Communication Challenges Related to Nursing Unit Design**

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**Abstract**

When nurses transition from a centralized nursing unit to a decentralized nursing unit, significant workflow changes can occur. A literature review identified four significant themes related to the transition to a decentralized unit. These themes are challenges with collaboration and teamwork, decreased nurse work efficiency, improvement to patient outcomes, and the importance of nurses' role in departmental design. Additionally, literature related to the efficacy of electronic communication systems for bedside nursing staff was reviewed. The aim of this scholarly project is to propose a quality improvement intervention to increase nurse usage of clinical phones in an intermediate care unit (IMCU) to help with communication challenges caused by the transition to a decentralized nursing unit. By improving communication through use of the phones, nurses will be able to deliver care more efficiently and enhance communication with other members of the multidisciplinary care team. This quality improvement project falls within the scope of the Clinical Nurse Leader, and has the potential to improve job satisfaction for nurses, as well as provide a safer care environment for patients.

*Keywords:* decentralized, centralized, design, efficiency, nurse, communication, collaboration

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## CHAPTER 1

### INTRODUCTION AND PRELIMINARY LITERATURE REVIEW

In healthcare, processing and adapting to change is constant. Although incorporating small change within a healthcare environment does not greatly impact staff workflows, implementing significant change affects how members of the interdisciplinary team perform their various roles and complete tasks while providing patient care. For this scholarly project, the transition from a centralized nursing station (CNS) model to a decentralized nursing station (DNS) model is analyzed. Definitions for “centralized nursing station” and “decentralized nursing station” are noted in the Appendix. Additionally, an intervention to help promote nurse usage of existing technological systems in the selected microsystem is proposed to address communication challenges specific to a decentralized nursing unit.

#### **Background on Microsystem**

This scholarly project focuses on the transition from CNS to a DNS-hybrid model for an intermediate care unit (IMCU) in a 378-bed, Level II trauma hospital in the Pacific Northwest. The previous IMCU had a centralized nursing desk area, which included a telemetry monitoring technician station. The IMCU moved into a new building with three separate workstations for staff and smaller workstations in the hallways outside of patient rooms. There is a separate desk for the telemetry monitoring technician. The new IMCU is not purely decentralized since there are two nursing stations at either end of the unit in addition to workstations in the hallways outside of patient rooms. The previous IMCU has a 13-patient capacity, and the new IMCU has a 16-patient capacity. The move to the new unit occurred in February 2024.

#### ***Purpose***

The purpose of the IMCU in this facility is to provide care for patients who fall on the less acute end of the critical care spectrum; the IMCU functions to provide care for patients who are too acute for

the general medical floors but who do not require enough resources to warrant admission to the facility's intensive care unit (ICU) (Waydhas et al., 2018). IMCUs are often referred to as "step-down" units in the literature (Waydhas et al., 2018, p. 34). This IMCU is open 24 hours per day and operates 365 days per year.

### ***Patients***

In the IMCU, patients are monitored closely by nursing staff and receive higher levels of nursing care than can be provided on a general medical floor. Patients who have the potential for rapid decompensation or who are moderately unstable receive care in this unit. In 2022, 1,547 unique patients received care in the IMCU (J. Caulley, personal communication, October 12, 2023). Prior to the move to the new building, the department was often busy, with an average daily census of 12.33 patients (J. Caulley, personal communication, October 12, 2023). When patients no longer meet IMCU admission requirements, they are either sent to a unit or facility that provides a lower level of care, or occasionally, discharge home. However, if a patient continues to decompensate and requires a higher level of care, they are transferred to the facility's ICU for closer monitoring.

### ***Professionals***

In this unit, all nurses work 12-hour shifts. There are approximately 21 full-time nurses and 6 part-time nurses, as well as travel nurses and float pool nurses, who work in this unit. On each shift, there are seven or eight nurses, one certified nursing assistant (CNA), and one monitor technician scheduled (S. Bowdin, personal communication, September 19, 2023). Physicians and specialists work within the IMCU, although are not exclusive to this unit. Due to the high acuity of patient care, the nursing work done in this department can occasionally be morally distressing; nurse leaders report that nurses work well together to support each other and their patients, and staff report that their peers do a good job of anticipating their needs (S. Bowdin, personal communication, September 19, 2023).

Nurses in this IMCU are assigned to either two or three patients; staff-to-patient ratios are dependent on patient acuity as outlined in the department's operational manual.

### ***Patterns***

This unit has done tremendous work to reduce the number of nosocomial infections, or hospital-acquired infections (HAIs). The IMCU has not had a central line-associated bloodstream infection (CLABSI) for over a year and has not had a catheter-associated urinary tract infection (CAUTI) since 2022 (S. Bowdin, personal communication, September 19, 2023). In addition to monitoring CLABSI and CAUTI rates, data on patient fall occurrences, hospital-acquired pressure ulcer occurrences, hospital-acquired *Clostridioides difficile* occurrences, and contributing factors to hospital delirium are tracked (E. Briggs, personal communication, October 5, 2023). Metrics regarding departmental performance, including budgetary data, employee engagement survey results, annual performance improvement initiatives, and patient experience survey results, are tracked and used to guide departmental leadership decisions (E. Briggs, personal communication, October 5, 2023).

### ***Processes***

Prior to the COVID-19 pandemic, a formal huddle was done at the start of each shift in this IMCU. However, since the pandemic, the department has stopped doing a formal huddle at shift changes. In healthcare, a huddle is comprised of members of the multidisciplinary team, including nurses and nursing assistants, and is a meeting where information is shared about the state of the department or leadership can communicate with staff about any practice changes or distribute information from nursing leadership. A huddle generally includes "discussions about managing daily patient demands and workflow, addresses patients' special needs and preferences, and improves the provision of preventative services" (Aase et al., 2021, p. 2). Because there is no formal huddle to attend at the beginning of a shift in the IMCU, oncoming nurses find the nurses who they will be receiving report from. Care is assumed by the oncoming nurse, and the shift begins. Instead of a formal huddle,

there is a “Huddle Board” in one of the staff areas where departmental management can post information for the nursing staff. Throughout the shift, the charge nurse rounds on all the nurses to check on patient condition, identify any needs, and ensure that nurses can go on breaks appropriately.

To communicate with each other and with providers, the nursing staff utilize a service called symplr, which is colloquially called DocHalo. DocHalo is a messaging service that is used to communicate with members of the multidisciplinary team. The goal of incorporating this messaging system is to provide “fast, efficient role-based communication to improve patient care” (symplr, 2023). The DocHalo service is available on hospital computers, through a downloaded application on a personal smartphone, or on one of the hospital-provided phones, colloquially called Zebra Phones. Zebra Phones allow nurses to communicate with each other while being mobile, as well as help streamline existing workflows and reducing workarounds by nursing staff, ultimately improving patient safety (Zebra, 2023). In addition to hosting DocHalo, the Zebra Phones can be used for making calls, scanning medications during administration, documenting patient care activities, and taking photographs. The Zebra Phones also have the potential to be connected to the call light system, called Navicare, and patient alerts can be sent directly to the Zebra Phones.

Despite these features, the IMCU charge nurse is currently the only team member to carry a Zebra Phone. In the previous IMCU, the nursing staff accessed DocHalo through the computers or through the application on their personal devices. Because of the small, centralized layout of the previous IMCU, staff did not need phones to contact each other while providing patient care. Staff tended to be around the centralized desk area, and nurses needing help could look there to find assistance.

### **Problem Identification**

Despite proven benefits to patients, the transition to a DNS model from a CNS model has shown to create communication and isolation challenges for nursing staff. To ensure a successful transition to

the new unit, nurse buy-in regarding department-wide Zebra Phone use is required. Not only will embracing these technologies enhance nurse-to-nurse communication, but it will also allow the nurses to communicate more effectively with other departments that have high use of the system, such as laboratory and imaging. Obtaining nurse buy-in and increasing optimization of the Zebra Phones may help reduce communication challenges specific to a decentralized unit.

### **Significance of Transition to Decentralized Nursing Model**

Healthcare workers have the potential to experience significant workplace stressors, including but not limited to “poor staffing ratios, lack of communication between physicians and nurses, and lack of organizational leadership within working environment for nurses” (Shah et al., 2021, p. 2). These stressors have been associated with high levels of nurse burnout and may be a contributing factor to increased nursing turnover and poor staff retention (Shah et al., 2021). A systematic review regarding the economic impact of nurse turnover reported that the highest expenses associated with nurse turnover are the orientation and training stages of hiring (Bae, 2022). The exact financial impact of high nurse turnover varies across the country due to wage differences in different states, length of orientation depending on specialty, and prior experience of the nurse. Research focused on the cost of new-graduate and new-hire experienced nurses identified that in a hypothetical scenario in which a hospital implementing a nurse-burnout program had lower expenses associated with turnover and improved staff retention when compared to a “status quo” hospital without any interventions addressing nurse burnout (Muir et al., 2022, p. 351). Researchers report that the hypothetical hospital without any programs addressing nurse burnout would spend about \$16,000 on nurse-burnout associated expenses per nurse, per employed year (Muir et al., 2022). Muir et al. (2022) state that if a hospital can reduce their nurse burnout rate by 50%, the organization can save approximately \$5,000 per nurse, per employed year. If these findings are replicated on a larger scale, a healthcare organization can anticipate significant cost savings.

In addition to the costs associated with maintaining employment of an adequate number of staff, new nurses may have lower initial productivity when compared to a more experienced nurse, further decreasing the unit's total productivity (Bae, 2022, p. 393). For example, a new nurse working on a unit may not be as efficient because they may not be familiar with the location of supplies or established workflows and policies. Additionally, a new graduate nurse may be initially slower than an experienced nurse as they become familiar with their new role and associated responsibilities. With upwards of 30% of hospital nurses reporting burnout, actions to support nurses during periods of significant, department-wide change, such as the transition to a decentralized unit from a centralized unit, should be prioritized (Raj et al., 2022). Ensuring that effective communication systems are in place and utilized effectively will help nurses perform their jobs more effectively, which contributes to overall job satisfaction.

#### **Aim of Professional Project**

Research shows that despite benefits to the patient experience, there are significant isolation and communication difficulties for nursing staff working with a decentralized unit. Isolation can lead to poor connectedness and decreased teamwork between nurses (Miles et al., 2021). The purpose of this scholarly project is to improve nurse buy-in to the existing Zebra Phone system, and ensure that there is support when integrating this technology into their existing bedside practice. Because nurse buy-in may take a long time, resources will be made available for when the nurses begin to utilize the Zebra Phone services.

## CHAPTER 2

### LITERATURE REVIEW

Chapter Two of this scholarly project contains a review of relevant literature on the effect of centralized nursing stations (CNS) and decentralized nursing stations (DNS) on healthcare professionals and the impact of technological communication systems for bedside nurses, as well as a detailed explanation of the selected theoretical framework. Sections within this literature review are search strategy, theoretical framework, search results, synthesis of the literature, and a summary of findings.

#### **Search Strategy**

The research for this scholarly project was conducted through Montana State University's online library database. The general search feature was primarily used to locate relevant literature. Web of Science was also searched with assistance from one of the university's research librarians. During database searches, keywords included "decentralized," "centralized," "design," "efficiency," "nurse," "communication," and "collaboration." While locating research specific to the economic impact of high nurse turnover, keywords included "economic," "turnover," and "nurse." When researching the impact of technology on bedside nursing practice, keywords included "nurse," "technology," "phone," and "communication." "Layout" was an ineffective keyword; use of this term resulted in specific arrangement of patient rooms instead of overall unit layout. Lindsey Fay, MSArch and Kevin Real, PhD both provided significant contributions to this specific body of literature, and their personal publications were individually searched to determine if they had any other relevant studies with different key words. No grey literature was referenced during the research.

Studies conducted before 2018 were not included. Nurses were the required population, and the researched needed to be specific to inpatient nursing. Data was excluded if the research was conducted before 2018 or if the studied population was a profession other than nurses, such as other members of the multidisciplinary care team. Research that took place in other care settings, such as

emergency departments, were excluded because of significant workflow differences. After exclusion criteria were applied, twelve studies remained.

### **Theoretical Framework**

The Three Step Model of Change informs the intervention proposed by this scholarly project. Kurt Lewin initially developed this theory, but it has been expanded upon by other theorists, including Kotter, Lippitt, and Rogers (Barrow et al., 2023). Lewin's theory includes three essential steps for creating long-lasting change: unfreezing, moving, and refreezing (Burnes, 2020; Lewin, 1947). The theory notes that the individuals instigating the change should consider the permanency of the change and the idealized outcome state. The proposed change might be an improvement from the existing state and ensuring that the change provides long-term benefits is critical. In his initial publication about the Three Step Model of Change, Lewin acknowledged that change can be challenging, especially if the change disrupts a practice that has been accepted as the norm for a long period of time. A "force field" analysis should be conducted prior to initiating change to help identify any potential barriers to successful implementation (Barrow et al., 2023; Lewin, 1947).

Change is inevitable in the healthcare domain due to multiple factors including, but not limited to, new evidence-based research for best practice, the financial status of healthcare organizations, shifting political climates, and changing needs of patient populations. Research suggests that approximately two thirds of improvement projects in healthcare fail, and identified reasons include "poor planning, unmotivated staff, deficient communication, [and] excessively frequent changes" (Barrow et al., 2023, p. 1). Applying a change theory, such as Lewin's Three Step Model of Change, can help healthcare leaders ensure that long-term permanence of change in a healthcare setting is considered, and can reinforce the idea that many changes do not happen quickly.

The Three Step Model of Change is an appropriate theory to apply to this specific scholarly project. Helping nursing staff adapt to new communication techniques in a new physical unit is a

significant change. Leaders should consider the three stages of this change theory, and help nurses learn to utilize new communication strategies and successfully incorporate them into existing departmental workflows before the refreezing stage. In the refreezing stage, the use of Zebra Phones as the primary means of communication in the department may become the standard; it is important to ensure that this system is accepted and used by nursing staff before enforcing its use. This theory also considers long-term change. The IMCU will be permanently transitioning into a decentralized unit, and any proposed changes to enhance nursing communication or increase Zebra Phone usage should be sustainable after initial implementation.

### **Search Results**

Relevant literature shows that although patients benefit more from the use of decentralized nursing models, nurses tend to struggle more with this specific design (Fay et al., 2019, 2020; Miles et al., 2021). Miles et al. indicate that three specific themes were present in a related literature review: “benefits for patients and families... challenges related to the ward design... [and] feelings of isolation” (Miles et al., 2021, p. 27). For this scholarly project, a more thorough literature review was completed, and additional, more specific themes emerged from the literature. These themes are challenges with collaboration and teamwork among nursing staff, decreased nurse work efficiency, significant improvement to patient outcomes, and the importance of involving nurses in unit design decisions. Literature regarding the efficacy of various communication systems for bedside nursing practices was reviewed. Lastly, gaps in existing literature were identified.

### ***Challenges with Collaboration and Teamwork Among Nursing Staff***

The most prevalent theme identified in the literature review was nursing staff reporting challenges with communication after a transition from a CNS model to a DNS model. Communication, collaborative work, and effective teamwork are crucial elements to effective healthcare delivery, and barriers in these processes may negatively impact care delivery (Real et al., 2018). An exploratory

qualitative study conducted by Miles et al. (2021) reported that decentralized nursing stations are used to increase the amount of time that nurses spend providing patient care, reduce distractions and noise within a hospital unit, decrease walking distance, improve access to workstations, and lower infection rates. By working more independently in decentralized workstations, socializing with coworkers decreases; socialization in the nursing workplace is “the foundation of teamwork and collaboration, which builds trust and offers direction, mentoring, feedback, and learning” (Miles et al., 2021, p. 26). In addition, nurses working in decentralized workstations lacked awareness of their coworkers’ needs and workloads. This research notes that “being in close proximity to one another allows for co-ordination and co-operation,” both of which are “hallmarks of a high-functioning, positive team environment” (Miles et al., 2021, p. 26). These findings were corroborated by nurses surveyed by Fay et al. (2020). Nurses included in this study reported feelings of isolation and noted that centralized units were more conducive to peer connection.

Additionally, another systematic literature review by Fay et al. (2019) identified similar feelings among nurses in decentralized units. When nurses worked in closer proximity to each other, such as in a department that utilizes a centralized nursing model, “nurses are more likely to help one another and turn to each other for information and assessment of patients” (Fay et al., 2019). If peer visibility is limited, nurses may not have as many opportunities to collaborate and help each other with patient assignments. Therefore, the evidence supports the presence of increased challenges related to decreased collaboration and teamwork among nurses working in decentralized units, as well as impeded informal mentoring processes that normally occur in centralized nursing units.

### ***Decreased Nurse Work Efficiency***

Fay et al. (2020) performed a qualitative study with focus groups to assess a multidisciplinary care team’s impression of efficiency after a move to a unit with a decentralized design. Participants reported that significant efficiency problems in a decentralized unit “included walking, access to supplies

and equipment, proximity to staff, and overall unit configuration and size” (Fay et al., 2020, p. 341). In a unit that utilizes a DNS model, nurses may be assigned to workstations that are further away from supply areas or specific equipment, and as a result, must walk further to gather what they need, which ultimately decreases overall work efficiency.

Like the data collected by Fay et al. (2020), researchers in a Jordanian ICU identified that decentralized nursing units can require nurses to walk further during their shift (Obeidat et al., 2022). Nurses wore pedometers throughout their shifts to determine distance walked while providing care in a centralized unit and in a decentralized unit. This study “revealed a decrease in the average walking distance and steps taken by nurses in ICU 1, where the nursing station is centrally located and patients rooms are arranged around the station” (Obeidat et al., 2022, p.9). In agreement, qualitative data from Miles et al. (2021) also indicated that nurses reported walking more during shifts in a decentralized unit. Further walking distances increases physical demand on nurses and contributes to staff fatigue, which may ultimately lead to burnout.

Decreased visibility in a nursing unit may also impact efficiency of nursing staff. Xuan et al. (2020) suggest that improving visibility within a department leads to improved communication between staff members. This study reviewed the impact of having physical walls between various parts of the unit (nursing station and doctors’ offices). Researchers noted that an “isolated layout might impede visibility between team members and have a negative effect on the level of communication and teamwork” (Xuan et al., 2020, p. 214). Findings from this study are applicable to unit design; nursing units that are more open can improve nursing communication, resulting in improved job efficiency (Xuan et al., 2020). Reduced visibility impedes communication processes, resulting in lower efficiency.

### ***Significant Improvement to Patient Outcomes***

Although data suggests that nurses tend to prefer a centralized nursing model, patients tend to benefit when receiving care in a decentralized nursing unit (Fay et al., 2019; Miles et al., 2021; Real et

al., 2018). A systematic review conducted by Fay et al. (2019) focused on patient outcomes and fall rates after a unit transitioned to a decentralized model, and found strong evidence that the use of a decentralized model could lead to better patient outcomes. Nurses in decentralized units tend to work in closer proximity to their patients, respond more efficiently to patient needs, intervene more quickly in an emergency, monitor patients more closely, and spend more time in rooms providing patient care (Fay et al., 2019; Miles et al., 2021). For example, a nurse working in a decentralized workstation closer to the patient room can intervene more quickly if they see a high fall-risk patient attempting to get out of bed without assistance. By actively working to reduce the occurrence of patient injury in a hospital setting, the nurse is promoting more positive patient outcomes and contributing to a safer environment in the DNS model.

Similarly, Fay et al. (2019) reviewed six studies regarding the patient experience after a transition to a decentralized model, and reported that all of the studies showed a positive association of patient experience after moving to a decentralized unit. Prior research showed that improved response times to call lights improved patient satisfaction scores (Miles et al., 2021). Research suggests that an increased staff presence reassures family members, contributes to family members' satisfaction, improves communication, as well as helps to "remove a perceived physical barrier between staff and the public" (Miles et al., 2021, p. 29). Additionally, in a decentralized model, patient rooms tend to be larger; research suggests that "patients preferred the decentralized units because of larger single-occupancy rooms, greater privacy/confidentiality, and overall satisfaction with design" (Real et al., 2018). Contrary to nurses' preference for a centralized model, patient outcomes and satisfaction both improve with the decentralized model.

### ***Importance of Nurses' Role in Departmental Design***

The design of a healthcare department directly impacts workflows and processes performed by nursing staff. Ensuring that nurses are an active part of decision-making during the design stage in a

new patient care area is essential, especially when significant transitions are being considered, such as the transition from a centralized model to a decentralized model (Raj et al., 2022). If a workflow doesn't work well for clinical staff, a workaround will develop, and the proposed workflow will not be integrated into practice. Considering how various aspects of nurse wellness, including "social, emotional, physical, intellectual, spiritual, psychological, occupational, and environmental" wellness, impact the care team is critical; if the staff feel supported, the quality of care improves (Raj et al., 2022, p. 234). Research suggests the presence of a correlation between "nurse stress, burn-out, and human factors with patient safety and other adverse outcomes" (Raj et al., 2022, p. 235). Improving nurse satisfaction and reducing burnout levels may lead to improved retention rates, which benefits the overall financial health of the organization. Real et al. (2018) emphasizes the importance of evaluation from both patients and nurses regarding experience in various types of nursing units so that intentional decisions can be made in the future. Therefore, while research might support the decentralized model to improve the patient experience, engaging nurses in this transition and getting buy-in is essential to long-term success and nurse retention.

### ***Efficacy of Communication Systems for Bedside Nursing Practice***

Since its creation in the 1970s, the mobile phone has been embraced wholeheartedly, with approximately 85% of Americans owning one (Baharaeen et al., 2022, p. 38). With exponentially increasing abilities and the capacity to work with existing electronic healthcare documentation systems, mobile phones have increased efficacy of bedside care for nursing staff. Although there is a significant amount of literature regarding physician's use of smartphones in clinical practice, there is not as much research on how smartphones are integrated into nursing workflows.

A qualitative study by Burkoski et al. (2019) focused on the perception of smartphone use in a clinical setting by nursing staff. Participants indicated that smartphones improved time management and efficiency when responding to patient call bells; the alerts went directly to the nurse's smartphone,

eliminating the need to return to the nursing station to see which patient was calling (Burkoski et al., 2019, p. 33). Nurses “emphasized that having a smartphone was essential because of the magnitude of the physical space of the hospital,” (Burkoski et al., 2019, p. 33). Nurses could also be reached immediately via the smartphones, which could save ancillary staff time if attempting to report critical lab values or a change in patient condition. Nurses reported that because the different types of alerts made different sounds on the smartphone, they could better prioritize their tasks; for example, if a patient bed alarm sounded, the nurse could prioritize responding to that alarm, potentially intervening before the patient fell (Burkoski et al., 2019, p. 34). Lastly, Burkoski et al. (2019) noted that because the patient was able to directly connect with their primary nurse when calling for assistance, the nurse-patient relationship was enhanced (Burkoski et al., 2019, p. 34).

A report from a hospital system in southern California found that the implementation of a smartphone system for nursing staff helped with several existing communication problems. Prior to the intervention, nurses struggled with care coordination, frequent interruptions, impaired communication of critical information regarding patient condition, and delays with discharges (Goedert, 2018). The new smartphone system that was implemented “supports unified communication with talk, text and alert functionality, along with secure messaging a bar scanner on the phone, an app for taking wound care photos and sending the photos to the electronic health record” (Goedert, 2018). The new service was picked up quickly by newer, younger nursing staff, as well as the wound care clinicians (Goedert, 2018). Although this quality improvement project requires continued development, such as improving the network connection and collecting information from patient infusion pumps, the project was overall a success.

Despite the many benefits of utilizing smartphones in clinical care settings, there are several significant barriers to successful implementation that must be addressed. First, network connectivity problems impacted the quality of phone calls (Burkoski et al., 2019, p. 36; Goedert, 2018). Second,

some nurses reported feeling stressed by the number of notifications that they received on their smartphones, which has the potential to lead to alarm fatigue (Burkoski et al., 2019, p. 36). Third, there can be initial pushback to practice changes; researchers suggest trying “not to give too much information at once and get some quick wins to find adoption” (Goedert, 2018). Fourth, when the smartphones were initially introduced, patients and family members thought that the nurses were using their personal devices when they were supposed to be providing care, which impacted the quality of the nurse-patient relationship (Burkoski et al., 2019, p. 36). However, this negative impression was eliminated after nurses informed the patient about the smartphone system utilized in the facility.

### ***Gaps in Literature***

A significant gap in the literature regarding this topic is a lack of a consistent definition for “centralized” and “decentralized.” Most of the researchers defined these concepts in the context of their individual studies; however, there is no operational definition for these terms. This made research and the selection of search terms challenging, and could have resulted in a more limited pool of articles to review and include in this scholarly project. Hybrid unit layouts are also present in the literature; these units can have elements of both centralized and decentralized layouts. Additionally, many of the studies referenced for this scholarly project noted small sample sizes, which could potentially limit the generalizability of the results.

### **Summary**

Improving nurse satisfaction and decreasing burnout directly impacts the organization’s financial health and patient outcomes. Ensuring that staff are supported in the transition to a decentralized nursing unit and are provided with adequate communication-enhancing technologies will be helpful in reducing job-related frustration. To successfully utilize the Zebra Phone technology, buy-in from nursing staff is essential. From a review of the literature and identification of recurring themes, it is concluded that a scholarly project to address communication challenges in a decentralized nursing

unit would provide significant benefit and aid in the transition from a centralized nursing unit. The purpose of this scholarly project is to improve nurse buy-in into the Zebra Phone service, which will ultimately allow them to share and receive information regarding patient need and condition more efficiently, ultimately resulting in more effective work processes and improved patient outcomes.

## CHAPTER 3

### QUALITY IMPROVEMENT METHODS

The aim of this professional project is to develop a sustainable intervention which helps nursing staff in the IMCU incorporate the Zebra Phone system into their existing clinical workflows. By increasing optimization of the Zebra Phone system, nurses can overcome challenges, specifically communication challenges, that arise from transitioning from a centralized unit to a decentralized unit. As indicated in Chapter 2 of this scholarly project, communication challenges in a decentralized unit are a significant concern for both staff and patients. Printed resource materials will be developed for late adopters of the Zebra Phones considering anticipated resistance for nurse buy-in as a long-term outcome. These resource materials will be made available to nurses after participation in one of the mandatory informative sessions. The proposed intervention has four specific components: a pre-intervention assessment, an informative session for staff, printed resource material for staff, and a post-intervention assessment.

#### **Design of Quality Improvement Initiative**

The proposed quality improvement project has a clinical focus, and will require elements of education for nursing staff during the initial implementation phase. The microsystem for this quality improvement project is the IMCU at the facility; the IMCU microsystem is discussed thoroughly in Chapter 1. Specifically, the population focused on is the nursing staff in this 16-bed unit. In this case, the main stakeholders are the nursing staff and the department manager. However, after the quality improvement project is implemented in this microsystem, there will ideally be a trickle-down effect, which will ultimately create a safer care environment for patients. By ensuring effective communication channels with the increased utilization of the Zebra Phone system, staff can expect fewer delays in patient care, improved communication between members of the interdisciplinary care team, and

efficient interventions by nursing staff (Burkoski et al., 2019, p. 33-35). Together, these elements will ultimately promote increased safety within the microsystem for patients.

### **Planning of Project Intervention**

For this quality improvement project to be successful, it is important to have nurse leader investment in the program. The IMCU manager expressed concern that the nurses in the unit will be resistant to the new requirement to carry a Zebra Phone and obtaining nurse buy-in will be challenging because the nurses were not required to carry the phones in the previous, centralized unit. Asking the IMCU nurses to integrate the phones into bedside care is a significant workflow change, and nurses may not see the benefit because they had previously been able to communicate effectively with other members of the care team without the phones. Because the previous IMCU had a centralized design and peers were centrally located, the nursing staff did not rely on the Zebra Phone system for communication. However, in the new IMCU, the nursing manager anticipates that the nursing staff will need to rely on the Zebra Phones to communicate with each other because the unit now utilizes a decentralized unit design. When planning this quality improvement project and anticipating staff needs, working closely with the unit's management is critical. Additionally, representation from the facility's IT department will be essential for creating the printed resource material, providing support during the informative sessions, and to anticipate and troubleshoot any concerns identified during the post-intervention assessment period.

During the microsystem assessment of the IMCU in Chapter 1, the need for increasing utilization of the Zebra Phone service was identified to address anticipated communication challenges during the transition from a centralized unit to a decentralized unit. Through the literature review completed for this scholarly project, one of the recurring themes noted was communication challenges among nursing staff. Nurses tend to feel isolated when working in a decentralized unit, and report decreased teamwork and collaboration because of lack of peer visibility (Miles et al., 2021, p. 26). By having IMCU

nursing staff utilize the existing Zebra Phone system in the new, decentralized unit, some of the communication challenges are mitigated.

Staff resistance is anticipated during the implementation phase of this quality improvement project. With any workflow change in the healthcare realm, some degree of hesitancy from staff is expected. However, to help with the adjustment to the workflow, the informative session will highlight the benefits of utilizing the Zebra Phone technology. Hopefully, by providing rationale for the workflow change, more nurses will feel encouraged to incorporate the phones into their practice. The printed resource material will provide support for nurses requiring on-the-job assistance with the new system. Transparency in the outcome data regarding benefits and issues with the Zebra Phone technology can motivate nurses to make the proposed change. By collecting and reviewing pre-implementation and post-implementation assessment data, nurse leaders can address specific concerns that nurses may have with the Zebra Phone system. Lastly, the cost of the proposed intervention may strain the departmental budget; an approximate cost analysis for this quality improvement project is in Table 1.

Chapter 2 of this scholarly project reviews Lewin's Three Step Model of Change, which helps inform the proposed intervention. This model has three stages: unfreezing, moving, and refreezing (Burnes, 2020; Lewin, 1947). The intervention takes place in the moving stage of this model, where practices that have previously been accepted as the norm are altered, and a new practice is proposed. The post-intervention assessment surveys take place during the refreezing stage, which is when the newly proposed practice is being accepted as the norm. This framework considers long-term change, which is significant for this intervention, because transition to the new, decentralized unit is a permanent change.

### **Proposed Implementation Procedures**

This quality improvement project has four components: the pre-intervention assessment, the informative session for nursing staff, the distribution of printed resource materials, and the post-

intervention assessment. A visual representation of the quality improvement project workflow is noted in Figure 3. The first step, the pre-intervention assessment, was developed with the goal of obtaining baseline usage and satisfaction level of the Zebra Phone system. This assessment will articulate barriers and areas for improvement which will help guide the information session. It is important to establish a baseline so that nursing leaders can determine if the intervention is effective or demonstrates noticeable changes in the nurses' bedside practice. Nursing leaders will distribute the short surveys and review the data to determine how often the phones are being used, and to review any specific concerns that nurses have about the technology. The pre-intervention assessment tool is in Figure 1. The tool will be printed and distributed at the beginning of a staff meeting to ensure maximum staff participation.

The second step is an in-person information session for nursing staff. During this one-hour session, nursing leaders will go over the various features of the Zebra Phones, how to log in and effectively use the phones, and explain the rationale for why nurses in the IMCU will be expected to use the Zebra Phones for communication. A brief overview of the efficacy of the phones in clinical work will be incorporated into the informative session to help obtain nurse buy-in to the Zebra Phone program. Nurses can practice using the various functions and will be told where to check out the phones at the beginning of each shift. Nursing leaders and IT staff can also answer questions from staff at this time. Attendance is mandatory and nursing staff will be financially compensated for their time. Paying nurses for mandatory education time is the most expensive component of this quality improvement project. Additional incurred costs are expected to be minimal since the Zebra Phones and associated services have already been paid for by the organization. An initial budget for this quality improvement project is in Table 1.

The third step of the quality improvement project will be to develop printed resource material with the help of the facility's IT department. Simple, step-by-step instructions for logging into the Zebra

Phones will be provided, along with screen grabs of each step. The printed materials will review the various functions of the Zebra Phones, and will give clear instructions on how to use the different functions. The binder of printed resource materials will be updated periodically for the first six months after project implementation. After the initial six months, information regarding the use of any new functionalities will be distributed via email and discussed during regularly scheduled staff meetings. The purpose of the printed resource material is to provide nurses with resources when they are using the phones during their shift and to encourage autonomy and comfort utilizing functions on the device. Also, nurses who are late adopters of the Zebra Phone service may require additional resources if they do not integrate the phones into their practice immediately after attending the informative session.

The final step in this quality improvement project is for nursing leaders to distribute the post-intervention surveys (Figure 2). Like the pre-intervention assessment, the post-intervention assessment determines the usage of the Zebra Phones and various functions, as well as overall satisfaction and general comments about the system. By comparing the pre-intervention data and the post-intervention data, the nursing leaders can determine if phone usage is increasing or if any changes to the intervention are required. The post-intervention assessment will be distributed at a mandatory staff meeting to ensure maximum staff participation.

As a precursor to the required usage, nurse leaders should ensure that all nurses can attend an informative session. There will be sessions offered at varying times to accommodate both day and night shift nurse attendance. After the informative sessions, nurses will use the Zebra Phones during their regularly scheduled shifts until the next staff meeting; staff meetings are scheduled quarterly. By using the Zebra Phones regularly during this period, nurses will have the opportunity to incorporate the phones into their existing practice and can express any initial concerns to department management or the IT department staff. Initial system changes can be addressed to troubleshoot any system problems before post-intervention assessment data is collected. Post-intervention assessments (Figure 2) will be

distributed in the next quarterly staff meeting to promote maximum participation. Nurse leaders will review the compiled data from the post-intervention assessment tool to determine effectiveness of intervention and if there are any unmet learning needs. A visual representation for the implementation of this quality improvement project is in Figure 3.

### **Evaluation Tool and Outcome Measures**

Prior to the informative session and the distribution of the resource materials, nurse leaders will distribute surveys to nurses in the IMCU to gather pre-intervention Zebra Phone use and to better understand the specific barriers preventing nurses from adopting the phones into their practice. The pre-intervention assessment (Figure 1) is in the form of a Likert scale, which is “a type of scale to measure attitudes, involving the summation of scores on a set of items that respondents rate for their degree of agreement or disagreement” (Polit & Beck, 2022, p. 389). Additionally, the surveys contain a free-response section where staff can write out specific feedback about Zebra Phone use. With this type of assessment tool, both qualitative and quantitative data will be captured. A correlation between the intervention and phone use can be determined because each of the assessed elements in the Likert scale are scored positively; higher scores indicate higher phone usage. When filtering data for findings, selected usage will be converted to numerical standing to relay data efficiently. Frequency of phone use will be measured with a five-point Likert scale, which ranges from 1 (never) to 5 (regularly). Increased frequency of use is indicated by a higher total score.

Nursing leaders will provide the post-intervention assessment (Figure 2) during the next staff meeting following the informative session to determine the usage rate of the Zebra Phones, if any additional education is required, and assess any continued concerns that the staff may have about the system. Like the pre-intervention assessment, the post-intervention assessment will consist of the same Likert scale and a free-response section. It is expected that the post-intervention assessment surveys will demonstrate any significant shift between phone usage and overall satisfaction scores.

After the initial implementation, continuing to revisit the project to ensure that it is sustainable and continues to serve the needs of the nurses in the IMCU is essential. After the post-intervention assessments are conducted and reviewed, nursing leaders may decide to provide additional education or augment the information session to be more effective for nursing staff. Additionally, as more functions become available on the Zebra Phones via new applications, additional informative sessions and updated resource materials will be provided for staff to reflect any new capabilities of the phones.

Depending on the findings from the post-intervention assessment surveys, nurse leaders may choose to perform Plan-Do-Study-Act (PDSA) cycles to test incremental changes to an existing process to elicit positive change. Plan-Do-Study-Act cycles are an element of the Model for Improvement, informed by work by W. Edward Deming and his System of Profound Knowledge Theory, which is “used by organizations such as the Institute for Healthcare Improvement and the Agency for Healthcare Research and Quality” (Ogrinc et al., 2022, p. 16-17). Utilizing continued PDSA processes will ensure continued quality improvement even after the implementation of the proposed intervention.

The implementation of the four-step intervention will help nurses in the IMCU learn about and become accustomed to the Zebra Phone system, which ultimately will help with anticipated communication challenges caused by the transition to the decentralized nursing unit. Subsequent PDSA cycles will help further the overall efficacy and usage of the system. By anticipating initial hesitancy from nursing staff, ongoing support from nursing leaders and making changes as needed allows the program to adapt to changing needs of the staff. The phones have the potential to greatly improve communication between members of the interdisciplinary care team; increased communication between caregivers can positively impact the quality of care provided to patients.

## CHAPTER 4

### SUMMARY

As noted in the literature review, the transition from a centralized nursing unit to a decentralized nursing unit has the potential to improve patient care. However, despite benefits to the patient experience, utilization of a decentralized nursing unit can greatly impede nursing workflows and existing communication methods for departmental staff. Optimization of existing technological communication systems can help nurses overcome communication challenges that arise during a transition to a decentralized nursing unit. This chapter will summarize the proposed quality improvement intervention, discuss findings from the literature review, identify implications and practice recommendations, and provide closing considerations about how the proposal addressed clinical nurse leader (CNL) competencies.

#### **Quality Improvement Project Summary**

The intent of this quality improvement project was to develop an educational intervention to help increase nurse utilization of the Zebra Phone system. The ideal outcome was decreased communication challenges for nursing staff presented by the transition to a decentralized nursing unit. Additionally, the proposed intervention ensured that there were resources in place so that nursing staff felt supported while incorporating the Zebra Phones into their bedside practice. Data was collected before and after the proposed intervention to assess effectiveness and determine if additional work was needed to ensure that the Zebra Phone service met the needs of the bedside staff.

Promoting interventions that support effective communication methods among nursing staff is essential to a high-functioning nursing unit. Within nursing, workplace stressors are common; if left unsupported, high stress in the workplace has been associated with increased levels of nurse burnout (Shah et al., 2021, p. 2). Research suggests that nurses who experience burnout can develop “significant stress, anxiety, and physical effects related to their work,” which can ultimately cause the nurses to

leave the profession entirely (Shah et al., 2021, p. 8). With approximately 30% of hospital nurses reporting some degree of nurse burnout, ensuring that supportive actions are taken is critical to ensuring adequate staffing levels (Raj et al., 2022). Increased nurse turnover has the potential to significantly impact the financial health of the organization. The hiring and training phases tend to be the most expensive for healthcare institutions; high turnover can ultimately cause financial stress for an organization (Bae, 2022). Additionally, even if a healthcare institution can attract adequate numbers of nursing staff, initial nurse productivity may be lower as the staff learn the responsibilities of their role and become familiar with processes in their new department (Bae, 2022).

In addition to improving nurse satisfaction, effective communication between members of the multidisciplinary care team can impact patient outcomes and overall hospital experience. Qualitative data from Miles et al. (2021) indicates that nurses working in decentralized units tend to spend more time in patient rooms, resulting in improved communication with patients and family members. Also, if a nursing unit does not have effective communication systems in place, delays can occur when contacting providers; this can have detrimental effects on patient outcomes if the delivery of time-sensitive care is hindered.

Impeded communication is a common stressor for nurses; by addressing this specific root cause, the institution may be able to promote nurse retention and patient outcomes. Focusing resources on measures to support enhanced nursing communication systems has the potential to lower nurse burnout and improve overall job satisfaction. Effective communication systems not only reduce stress for nursing staff, but can also benefit patients when care is delivered in an efficient manner.

### **Discussion**

During the initial research on this topic, anticipated findings included impeded communication processes and associated qualitative data from nursing staff. Although most of the literature related to the transition from a centralized nursing unit to a decentralized nursing unit reported qualitative

findings, such as nurse satisfaction levels and feelings of isolation, as noted in Miles et al. (2021), relevant quantitative data was also identified. Interestingly, a systematic literature review from Fay et al. (2019) identified various studies that had found quantitative data surrounding the transition to a decentralized unit. This quantitative data included number of steps walked per 12-hour shift, amount of time spent with patients, and patient outcomes in decentralized and centralized nursing units (Fay et al., 2019). Learning about how a transition to a decentralized unit through analysis of quantitative data was a good learning experience.

Findings related to impeded teamwork and communication challenges were anticipated during the research for this scholarly project. These were common themes throughout the literature review; both themes also presented themselves in discussions with the manager of the IMCU. In a profession that relies so heavily on efficient communication, nursing staff inevitably face challenges when put into an environment that put more physical space between staff members.

Application of Lewin's Three Step Model of Change supported the proposed intervention. The Three Step Model of Change identifies three individual steps that occur sequentially when change is happening: unfreezing, moving, and refreezing (Burnes, 2020). Regarding the use of Zebra Phones, the IMCU staff were in the "moving" stage during project implementation; they had transitioned to the new, decentralized unit, and were learning about new workflows and expectations for communication methods. The staff had already progressed past the "unfreezing stage" when the expectation was set that they were to use the Zebra Phones in their clinical practice (Burnes, 2020). Applying Lewin's Three Step Model of Change helped guide the nursing leadership as they implemented the proposed intervention and to better understand the linear progression of the change.

One of the most significant challenges identified through this scholarly project was the expense of providing education to the nurses in the IMCU regarding the Zebra Phone system. The financial impact of providing a mandatory education course should not be disregarded because stakeholders

could have been less inclined to utilize the proposed intervention due to the associated cost. If there was significant resistance regarding the expense of the hour-long informative session, nursing leadership in the IMCU could have incorporated the education into an existing mandatory meeting. For example, the informative session could have been presented during a quarterly, mandatory staff meeting, when the pre-intervention assessment tools were handed out. Additionally, further education and problem-solving could have been done at the nursing leadership level to gain buy-in for the intervention.

Similar to the financial implications, the implementation of the proposed intervention could have caused frustration among staff. Since the staff had not been previously required to utilize the Zebra Phones, they may have felt that incorporating the phones into workflows was not essential to completing their jobs. Mandating Zebra Phones could have been seen as additional stressor to staff, who had already gone through significant workflow changes in the transition to the new, decentralized unit. Ideally, these frustrations and concerns could have been addressed during the informative session; nursing leaders and IT staff could have highlighted the benefits that the Zebra Phones bring to bedside practice, and showed how the phones enhanced communication in the new unit. By understanding the rationale for the mandatory phone use, nursing staff may have felt more inclined to utilize the phones.

Despite communication and financial challenges and embracing significant change, implementing the proposed intervention ultimately benefited nurses, and trickled down to patient outcomes. Utilizing portable phones to enhance communication helped communication processes when there was increased physical distance between staff. Stressing the benefits of the Zebra Phone system while ensuring that nurses knew how to use the devices efficiently helped them to maximize their phone use.

### **Implications and Recommendations**

The implication of requiring the nursing staff to utilize the Zebra Phones in bedside practice was that the nurses became stakeholders in the communication systems used by the healthcare organization. By using the phones regularly in their practice, the nurses became familiar with which functionalities enhance their workflows, and which functionalities didn't work as intended. After regular use, the nursing staff provided feedback to the organization and insisted on having a voice in future decisions regarding clinical communication systems. If the organization decides to invest in new communication systems in the future, the nursing staff may wish to provide input. By having nursing staff help with any decisions regarding future clinical communication systems, the organization may help develop a sense of ownership by the nursing staff, as well as invest in communication systems that better fit the need of nursing staff.

The IMCU has already made the transition to the new, decentralized unit. Nursing staff are expected to utilize the Zebra Phone system in bedside practice as a result. In an ideal state, the proposed intervention would have been implemented prior to the transition to the decentralized unit. By already being familiar with the new communication expectations in the decentralized unit, nurses could more easily use the Zebra Phones in the decentralized unit, instead of feeling like they were expected to use a new system that they hadn't used before. Providing a formal education session prior to the move regarding the use of the Zebra Phones and their many functionalities would have been an opportunity to better prepare the nurses for this significant transition. However, implementing the proposed intervention late may still have benefitted the nursing staff, even though the move had already occurred.

The use of the pre-intervention assessment tool and post-intervention assessment tool helped nursing leaders determine if additional interventions were required to help the nursing staff incorporate the Zebra Phones into their practice. Having resources available for reference helped nurses feel supported when learning how to use the Zebra Phones. As indicated in the literature review, the

transition to a decentralized nursing unit has the potential to be challenging for staff. Providing support for new communication expectations eased the transition to the new unit, as well as encouraged the staff to use the Zebra Phones.

### **Conclusion**

Implementation of this scholarly project fell within the scope of the Clinical Nurse Leader (CNL). Clinical Nurse Leaders have a “focus on quality improvement, interprofessional communication, evidence-based practice, and care coordination at the point of care” (Harris et al., 2022, p. 2). The American Association of Colleges of Nursing (AACN) has developed guiding assumptions surrounding the CNL role; one of these assumptions is that “communication technology will facilitate the continuity and comprehensiveness of care” (Harris et al., 2022, p. 2). This scholarly project benefitted the patient at the point of care, as well as helped with multidisciplinary communication among the healthcare team. The transition to a decentralized unit caused challenges for nursing staff, and ensuring sufficient support during this period of significant change greatly enhanced the satisfaction and communication strategies used by nursing staff.

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**Table 1***Approximate Cost Analysis*

<b>Requirement for Project Implementation</b>	<b>Anticipated Cost</b>
Zebra Phones, charging stations, batteries for IMCU staff (were purchased by facility several years ago, have had minimal use in current IMCU with current workflows)	\$0.00
Distribution of Pre-Intervention Assessment Tool and Post-Intervention Assessment Tool (tools will be printed and distributed/collected by department management team)	~\$8.00 for one ream of paper (<i>TRU REDTM 8.5" x 11" Copy Paper</i>, 2024)
Creation of printed resource material regarding Zebra Phone use (will be left at charge desk in IMCU for six months after project implementation)	~\$8.00 for one three-ring binder ( <i>Staples 1" 3-Ring View Binder, 2024</i> )
Cost of 1-hour informative session for all nursing staff in IMCU <ul style="list-style-type: none"> <li>• 27 nurses currently employed by department</li> <li>• \$62.75: Average hourly wage (13 pay steps added and divided by 13) ("Agreement by and between Oregon Nurses Association and Asante Rogue Regional Medical Center," 2023)</li> </ul>	\$1,694.25
<b>ESTIMATED COST OF IMPLEMENTATION</b>	<b>~\$1,710.25</b>

**Figure 1**

*Pre-Intervention Assessment Tool*

Please indicate the frequency of which you perform the following actions:

	<b>Never (1)</b>	<b>Rarely (2)</b>	<b>Occasionally (3)</b>	<b>Frequently (4)</b>	<b>Regularly (5)</b>
Carrying a Zebra Phone for a 12-hour shift					
Using Zebra Phones to make phone calls					
Using DocHalo messaging service on Zebra Phones					
Using medication scanning program on Zebra Phones					

How satisfied are you with the Zebra Phone system in the IMCU? (Circle one response)

*Very dissatisfied      Dissatisfied      Neutral      Satisfied      Very satisfied*

Any other feedback regarding the use of Zebra Phones in the IMCU?

**Figure 2**

*Post-Intervention Assessment Tool*

Please indicate the frequency of which you perform the following actions:

	<b>Never (1)</b>	<b>Rarely (2)</b>	<b>Occasionally (3)</b>	<b>Frequently (4)</b>	<b>Regularly (5)</b>
Carrying a Zebra Phone for a 12-hour shift					
Using Zebra Phones to make phone calls					
Using DocHalo messaging service on Zebra Phones					
Using medication scanning program on Zebra Phones					

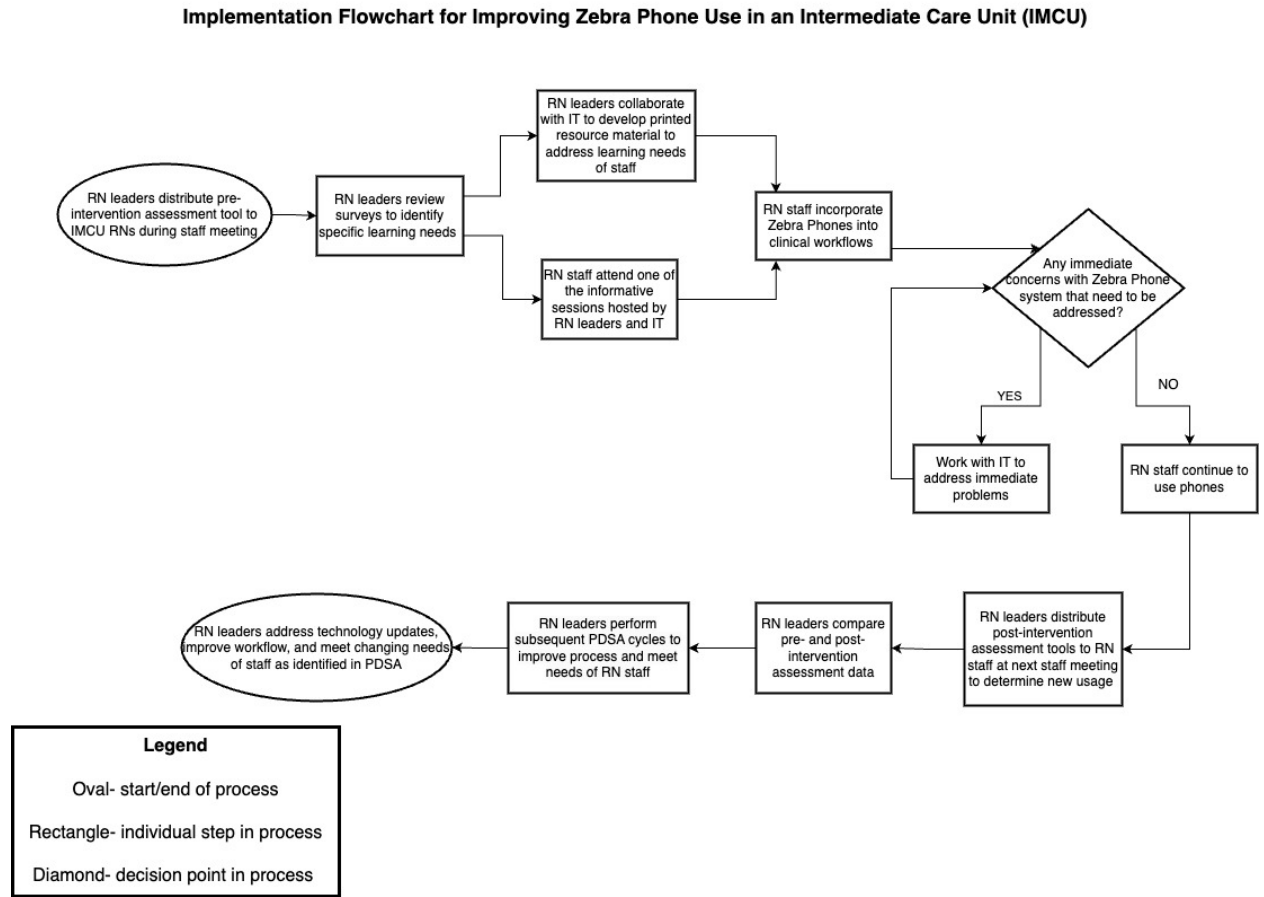
How satisfied are you with the Zebra Phone system in the IMCU after participating in the informative session and reviewing the printed resource materials? (Circle one response)

*Very dissatisfied      Dissatisfied      Neutral      Satisfied      Very satisfied*

Any other feedback regarding the use of Zebra Phones in the IMCU?

**Figure 3**

*Anticipated Workflow for Project Implementation*



## Appendix

### Definitions of Key Terms

- Burnout- feelings of decreased job satisfaction that leads to nurses leaving bedside nursing roles or even the profession entirely; symptoms include excessive fatigue, apathy, decreased compassion (both within the workplace and in person life), and feeling stuck in a job that had previously brought personal and professional satisfaction (Barnes, 2022)
- Centralized nursing stations (CNS)- unit design model with one primary nursing station, generally in a central area of the nursing unit with enough workstations for all nurses in the unit to work, as well as other members of the interdisciplinary team; usually “includes space for charting, documentation, mentoring, formal meetings, and private spaces for informal interactions or breaks” (Fay et al., 2019, p. 45)
- Decentralized nursing stations (DNS)- unit design model that includes at least two nursing stations placed throughout a nursing unit that tend to be smaller than a single, centralized nursing station; may include “recessed alcoves outside patient rooms, subnurse stations, pod clusters, multihub design, mobile stations (carts on wheels), neighborhoods, or charting substations” (Fay et al., 2019)