Spring 4-14-2023

Early Progressive Mobility in the MICU: A QI Project

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NURS 6252 Scholarly Project 3

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April 21, 2022

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Abstract

Background: Immobility causes grave harm to ICU patients. There is not a body system that bedrest does not affect negatively. The MICU has an early mobility protocol; however, patients are often left in bed, PT/OT is underutilized, and nurses are unfamiliar with the current early mobility protocol.

Methods: The Plan Do Study Act quality improvement method was used for this project which ran from September 1 to November 30, 2022, and involved the MICU RN staff. This QI project evaluated the current early mobility protocol, assessed barriers, determined the nurse's perceptions, and offered recommendations for sustainability.

Intervention: The project leader employed pre/post surveys, educational videos, weekly audits, interdisciplinary rounds, huddles, nurse champions, and in-person conversations.

Results: The early mobility protocol was evaluated, and recommendations were made. Barriers identified to early mobility included time constraints, inadequate staffing, patient acuity, and lack of equipment. 43.02% of patients eligible to get out of bed were out of bed on weekly audit days. Nurses agreed that early mobility was beneficial to positive patient outcomes.

Conclusions: Knowledge about the early progressive mobility protocol, the identified barriers, and the nurses' attitudes were consistent with the published literature. The recommendations for sustaining early progressive mobility in ICUs are similar to the published literature, including periodic awareness campaigns, EMR enhancements, interdisciplinary rounding, and nurse champions.

Keywords: Early mobility protocol, early progressive mobility, quality improvement, and MICU.

Early Progressive Mobility: A MICU Quality Improvement Project

Introduction and Background

The intensive care unit (ICU) is a complicated environment, filled with distraught family members, life-sustaining equipment, and critically ill patients (Atkins & Kautz, 2014). Patients who would have died in the past are now being kept alive on advanced means of life support (Knoblauch et al., 2013). Patients in the ICU often experience periods of instability, where even the most basic activities are contraindicated (Knoblauch et al., 2013). Patients admitted to the ICU frequently require multiple interventions that result in bed rest and immobility; ICU patients encounter many difficulties, including an increased risk of death and severe cognitive and physical impairments (Creutzfeldt & Hough, 2015; Tipping et al., 2017). Despite the known adverse effects of immobility on critically ill patients, the ICU remains a complicated and challenging place to mobilize patients (Knoblauch et al., 2013).

Current ICU practices, such as continuous monitoring and aggressive sedation, have increased patient inactivity (Titsworth et al., 2012). Patients in the ICU often have multiple tubes and catheters through which life-sustaining medications are given to provide hemodynamic support and sedating medications; patients are continuously monitored, often display altered levels of consciousness, and have electrolyte imbalances and sleep disturbances, all of which contribute to limited mobility (Knoblauch et al., 2013). Decreased perfusion and increased risk of aspiration, contractures, pneumonia, and delirium can all result from immobility (Knoblauch et al., 2013). Unfortunately, enforced bed rest is a common practice in the ICU, and despite the known adverse effects of immobility, mobilizing ICU patients remains uncommon (Hashem et al., 2016). According to Knoblauch et al. (2013), a study on adult ICU patients demonstrated that mobilization (other than turning or range of motion) occurred less than 25% of the time.

The lack of mobility in ICU patients and its detrimental effects have been well documented (Titsworth et al., 2012). Critically ill patients are often on bed rest due to deep sedation, physiological instability, and complex care (Booth et al., 2016). Patients in the ICU are at an increased risk for immobility due to multiple factors with immediate and long-term adverse effects on the cognitive, integumentary, cardiovascular, respiratory, and musculoskeletal systems; other adverse effects of immobility include muscle breakdown, bone reabsorption, and cognitive impairments (Hester et al., 2017; Moyer et al., 2017). The complications of immobility are well documented and adversely affect patients' cost of care, length of stay (LOS), and quality of life (QOL) (Wyatt et al., 2019). Deconditioning in ICU patients occurs rapidly, within 24 hours of admission to the ICU, worsens with bed rest, and places patients at an increased risk of having poor outcomes (Booth et al., 2016; Wyatt et al., 2019). Critically ill immobile patients often experience a loss of muscle strength and mass of 3-11% daily for up to two years after discharge from the ICU (Mah et al., 2013; Wyatt et al., 2019). Loss of muscle strength and weakness can lead to sepsis and organ failure (Black et al., 2021).

The literature has recognized the benefits of increased mobility in ICU patients (Titsworth et al., 2012). Immobility in critically ill patients is not beneficial and may prolong their recovery; weakness and deconditioning have become common problems among critically ill patients, and the literature has challenged bedrest and immobility (Pandullo et al., 2015; Schweickert & Kress, 2011). According to Paton et al. (2018), there are few interventions in the ICU, except for early mobility, that show improved outcomes in survivors of critical illness. To maximize patient outcomes, ICU patients must be awake, active, and mobilized as much as possible (Pandullo et al., 2015). Current evidence supports early mobility in ICU patients to improve outcomes and decrease deconditioning (Hester et al., 2017).

Mobilizing ICU patients decreases the adverse effects of immobility (Black et al., 2021). Mobility is any physical activity with sufficient intensity to produce benefits, such as improved circulation, ventilation, alertness, and muscle strength (Paton et al., 2018). Early progressive mobility (EPM) is one of the most critical interventions to decrease the adverse effects of bed rest, including the manifestation of delirium (Bruce & Forry, 2018). Early mobility is an evidence-based intervention designed to improve patient outcomes and QOL (Kim et al., 2019). The benefits of EPM are reduced healthcare costs, restraint use, falls, and improvement in patient mentation (Knoblauch et al., 2013). Additional benefits of early mobility include decreased venous thromboembolism, pressure ulcers, and pneumonia; improved functional status at discharge, mortality, and reduced hospital admissions; and positive effects on pulmonary, muscular, and neurological status and psychological well-being (Wyatt et al., 2019). Early mobility programs are safe and feasible (Roberson et al., 2021).

Safe patient mobilization is accomplished along a progressive continuum based on patient readiness, including strategies to prevent complications, the ability to tolerate activity, and specific pathology (Vollman, 2013). Progressive mobility is a series of ambulatory protocols designed to mobilize critically ill patients early in their ICU stay, intending to return patients to their baseline status (Pandullo et al., 2015). Early mobility programs advance patients from in-bed exercises and range of motion to sitting on the side of the bed, standing, and then ambulation (Paton et al., 2018).

Problem Statement

Limited adoption of mobilization protocols in the ICU has occurred, and the number of patients mobilized in the ICU remains low, especially those patients receiving mechanical ventilation (MV) (Black et al., 2021; Wyatt et al., 2019). Less than 50% of all ICUs practice

early mobility, and only two-thirds of those ICUs have a formal early mobility protocol in place (Black et al., 2021). According to Kim et al. (2019), although healthcare workers perceive early mobility as necessary, most nurses rarely mobilize their patients. The gap between research and practice indicates the existence of multiple complicated barriers (Kim et al., 2019). Reported barriers to early mobility are lack of time, staff, and equipment; and concerns regarding patient and staff safety (Wyatt et al., 2019). Critical care nurses play a pivotal role in improving their patient's quality of care and their understanding of patients' healthcare conditions and needs (Kim et al., 2019).

Immobility is detrimental to ICU patients. Although there is a formal early mobility protocol at St. Thomas West Hospital (STWH), it is unknown how often the nurses use it. Patients are often left in bed, and on bed rest, physical and occupational therapy (OT) is underutilized, and nurses are unfamiliar with the current protocol.

Purpose

This study was a quality improvement (QI) project involving STWH's current early mobility protocol (EMP). This project aimed to find ways to improve the implementation and application of the current EMP at STWH. In addition, this QI project evaluated the protocol, assessed the barriers to patient mobility, determined the attitude of staff towards early mobility, and recommended changes to the current protocol.

Review of the Evidence

A review of the evidence was conducted to discover commonalities in research, identify gaps, identify a need for further study, and provide additional knowledge. A total of four articles are included in this review of evidence.

Quality Improvement Project

All four articles (Castro et al., 2015; Black et al., 2021; Booth et al., 2016; Falkenstein et al., 2020) are QI projects. According to Castro et al. (2015), their QI project aimed to change and assess the mindset of the ICU staff toward early mobility in patients receiving mechanical MV. The Plan-Do-Study-Act (PDSA) theory was used to guide the QI project in changing the mindset of the ICU staff toward mobilizing MV patients (Castro et al., 2015). Black et al. (2021) developed a QI project to determine whether a nurse-driven EMP could increase the mobilization of trauma patients. It was a retrospective-prospective study (Black et al., 2021). Booth et al. (2016) designed a QI project to compare trauma patient outcomes before and after implementing an EMP. A pre- and postintervention comparison design was used (Booth et al., 2016). The Six Sigma DMAIC model for QI was used to identify improvement opportunities and compare trauma patient outcomes before and after EPM implementation (Booth et al., 2016). The purpose of a project from Falkenstein et al. (2020) was to assess the impact of an EMP on patient outcomes in a trauma ICU. The QI project compared outcomes before and after implementing an EMP (Falkenstein et al. (2020).

Education

Educating ICU staff members on the eligibility for early mobility, progressive mobility activities, and sedation practices improved the attitude of the staff toward mobilizing patients on MV (Castro et al., 2015). Educating the staff involved lectures, online education, just-in-time education, and discussion during unit meetings aided in decreasing staff bias toward the early mobility of ICU patients (Castro et al., 2015). Repetitive training and education of ICU staff were beneficial in removing barriers to implementing an EMP (Castro et al., 2015). According to Black et al. (2021), two physical therapists (PT) conducted a 30-minute in-service for all trauma ICU nurses. The PTs created a PowerPoint presentation, videos, and handouts (Black et al.,

2021). The trauma ICU nurses were educated on interpreting the protocol, performing mobility exercises, and documenting on data recording sheets (Black et al., 2021). Nurses were taught how to properly mobilize patients, use equipment, and get patients out of bed (Black et al., 2021). In an article from Booth et al. (2016), interventions while implementing an EMP included formal education and training of neurotrauma ICU nurses. Daily reinforcement of the EMP occurred during rounds and morning huddles between PT and the neurotrauma ICU charge nurse to determine appropriate patient mobilization (Booth et al., 2016). A physical therapist educated the nursing staff on determining mobility levels and documenting findings in the electronic medical record (Booth et al., 2016). According to Falkenstein et al. (2020), a formal education program consisting of educational videos, interactive classrooms, and online modules was developed for trauma ICU nurses to optimize learning. Nursing provided staff with a two-hour interactive classroom seminar on concepts of early mobility, contraindications to early mobility, early mobility interventions, determination of early mobility levels, equipment use, patient and staff safety, and documentation (Falkenstein et al., 2020). Further videos demonstrated how to perform a range of motion exercises (Falkenstein et al., 2020). Pre- and post-education testing determined the comprehension of the education provided (Falkenstein et al., 2020).

Interdisciplinary Teams

All four articles (Castro et al., 2015; Black et al., 2021; Booth et al., 2016; Falkenstein et al., 2020) discussed the use of interdisciplinary teams to address education, staff concerns, and protocol implementation. According to Castro et al. (2015), a Collaborative Care Council consisting of nursing, physician assistants, physicians, and ancillary staff, designed survey questions that addressed nurses' perceptions regarding early mobility in patients receiving MV. The Care Council adopted an EMP and the eligibility criteria (Castro et al., 2015). Successful

implementation of EMPs was determined by collaboration within a team of nurses, physicians, and PTs (Black et al., 2020). Therefore, a multidisciplinary team was formed to determine the best methods for mobilizing patients and which patients could be mobilized (Black et al., 2020). In a study by Booth et al. (2016), a multidisciplinary team consisting of respiratory therapy (RT), PT, nurses, pharmacists, physicians, and clinical nurse specialists was formed. According to Falkenstein et al. (2020), a multidisciplinary early mobility committee was formed that consisted of a trauma nurse, RT, PT, OT, a trauma surgeon, a pharmacist, and a clinical nurse specialist (Falkenstein et al., 2020). The team met to develop an EMP for patients in a trauma ICU (Falkenstein et al., 2020). The meetings focused on patient eligibility criteria, program implementation, equipment needs, staff education, early mobility levels, daily mobility goals, and the development of a formal educational program (Falkenstein et al., 2020).

Outcomes

In a study by Castro et al. (2015), the ICU staff agreed that most patients receiving MV could get out of bed safely. In addition, the ICU staff agreed that early mobility in patients receiving MV decreased LOS and the incidence of skin breakdown, deep vein thrombosis, and ventilator-associated pneumonia (Castro et al., 2015). Black et al. (2021) stated that early mobility in trauma patients was safe and feasible. Patients were mobilized more frequently than before the protocol was started (Black et al., 2021). No adverse events were reported; however, no change was reported in reducing patient LOS or ventilator days (Black et al., 2021). Early progressive mobility for the trauma ICU patient was safe and was implemented using existing staff, but there was no statistically significant reduction in the hospital or ICU LOS, ventilator days, respiratory failure, pneumonia, or mortality (Booth et al., 2016). There was, however, a statistically significant reduction in venous thromboembolism formation (Booth et al., 2016). In

a study by Falkenstein et al. (2020), early mobility was safe and feasible, and PT/OT consultations were initiated sooner. However, there were no statistically significant improvements in LOS, MV days, time to out-of-bed activities, walking, and discharge disposition (Falkenstein et al., 2020).

Theoretical Framework

Since a theory can be a helpful guide in applying current knowledge the theoretical framework of the Plan Do Study Act (PDSA) cycle was chosen as the QI framework for this scholarly project (Deming Institute, 2022). The PDSA cycle is a framework for documenting and testing change and determining whether a change leads to improvement (Institute for Healthcare Improvement, 2022). In addition, the PDSA cycle is used in QI projects to gain valuable knowledge and information to continually improve a process, service, or product (Deming Institute, 2022). During the PDSA cycle, a plan is developed to test change (Plan), the plan is carried out (Do), the plan is analyzed and studied (Study), and finally, modifications, if any, are made for the next PDSA cycle (Act) (Institute for Healthcare Improvement, 2022). During a quality improvement (QI) project, researchers will test several changes and go through multiple PDSA cycles as the team continues to learn (Institute for Healthcare Improvement, 2022). For this QI project, the PDSA model was used to reintroduce staff to the current mobility protocol, assess barriers to the use of the protocol, educate staff on the adverse effects of immobility, and change the mindset and practice of the MICU RN staff in mobilizing patients. In addition, a survey was given to the MICU RNs at the beginning and end of the project to determine any change.

Following the four phases of the PDSA guides the research team into breaking down the steps, evaluating the outcome, improving the results, and testing again (Agency for Healthcare

Research and Quality, 2020). When using the PDSA cycle, the first step is to plan a test, including a plan for data collection (Institute for Healthcare Improvement, 2022). The plan phase involves identifying a goal, formulating a theory, and implementing the plan (Deming Institute, 2022). This is followed by the do phase, where the plan is implemented (Deming Institute, 2022). Next is the study phase, where outcomes are monitored for signs of progress and success, or areas for improvement are identified (Deming Institute, 2022). The act phase is the final step (Deming Institute, 2022). During the act phase, the entire process is analyzed; this is done to adjust the goal and change or reformulate another plan (Deming Institute, 2022). These four steps can be repeated multiple times as part of a continuous cycle of learning and improvement (Deming Institute, 2022).

The PDSA was a good fit for this scholarly project because it reflected how decisions were made and processes were improved in real time. Most people go through the PDSA cycle when making changes in their lives (Agency for Healthcare Research and Quality, 2020). Testing a QI using the PDSA cycle ultimately makes change easier to implement and leads to greater sustainability (National Institute for Children's Health Quality, 2022). In addition, testing aids in the belief that a change will result in improvement (National Institute for Children's Health Quality, 2022). Ideas developed using the PDSA cycle have a record of increasing success (National Institute for Children's Health Quality, 2022).

Project Design

Design

This QI project was granted exemption verification via the Institutional Review Board at Belmont University. Nurses who participated in focus groups, referred to as pizza breaks, gave verbal consent to be interviewed, and names were not used. Nurses participating in surveys were

kept anonymous using a unique identifier. The medical intensive care unit (MICU) nurses were informed that participation was voluntary and that they were not required to participate in any portion of the QI project. This project aimed to find ways to improve the current early mobility protocol at STWH. At the time of the scholarly project, patients in the MICU were not adequately mobilized, patients were often kept in bed and on bed rest, PT/OT was underutilized, and nurses were unfamiliar with the current mobility protocol.

Setting

This QI project occurred in the MICU at STWH, a 540-bed acute care, non-teaching hospital in Nashville, Tennessee. The MICU, a 28-bed ICU, is dedicated to critically ill patients and employed 85 nurses at the time of the project. In addition, several board-certified pulmonary and anesthesia physicians and nurse practitioners oversee patients in the MICU. This high-acuity adult ICU treats many socioeconomic and racially diverse patients. Common diagnoses are pneumonia, COVID-19, respiratory failure, renal failure, myocardial infarction, shock, heart failure, COPD exacerbation, and DKA. In addition, the MICU is equipped to care for patients requiring intubation, central lines, arterial lines, vasopressors, mechanical ventilation, inotropes, and transvenous pacing. When fully staffed, there is a 1:1 or 1:2 nurse-to-patient ratio with multidisciplinary rounds attended by nursing, respiratory therapists, nurse practitioners, pharmacy, and medical staff (the MICU team) Monday through Friday. This QI project was a single-center study.

Subjects

The entire MICU RN staff at STWH was included in this QI project, which included 85 RNs. The only exclusion criteria were those nurses who did not work in the MICU and staff members in the MICU not associated with the nursing department.

Interventions

The project ran for three months, from September 1, 2022, to November 30, 2022. This QI project was designed to reintroduce, reeducate, and highlight an existing EMP. The themes "Move To Improve" and "Bedrest Is Bad" were incorporated. Specific interventions included a mobility screening tool, attending meetings (huddles and unit council meetings), participating in rounds, conducting pizza breaks with nurses, distributing educational videos, and asking nurses to participate in surveys. Laminated copies of the early mobility protocol were placed in every patient room, at the nurse's stations, and strategically placed around the ICU (e.g., bathrooms, breakrooms, hallways, and at the pneumatic tube stations). In addition, nurses were asked to write their patients' current activity level on the whiteboards in every room.

The nursing staff was introduced to the QI project in the week leading up to September 1. Emails were sent to nurses, and the project leader attended unit-specific meetings explaining the project. For this project, unit-specific meetings include huddles, rounds, and unit council meetings. Huddles are quick pre-change of shift meetings held twice daily that last approximately two to three minutes. Fall prevention, charting errors, CAUTIs, and CLABSIs are discussed. During rounds, the nurse presents the patient to the MICU team, the plan of care for the day is discussed, and orders are placed into the computer. Unit council sometimes called shared governance, is a nurse-driven team that meets monthly and discusses issues concerning the unit, professional development, quality improvement, practice standards, and process

improvement. Information gathered is then distributed to management and the entire staff on the unit. The project leader attended 16-day shift and 11-night shift huddles throughout the project timeline; and 16 rounds where mobility was discussed on patients appropriate to mobilize. Finally, the project leader attended two unit council meetings where the project was explained in detail, and questions were answered.

During September, awareness month, activities focused on raising the RNs' awareness of the EMP protocol. Beginning September 1, reinforcement of the EMP occurred during the morning and night shift huddles. Before rounds, the nursing staff was asked to complete a mobility screening tool for each patient (See Appendix 2). The screening tool determined which patients were ready to mobilize, the patient's activity level, and fostered RNs' familiarity with the EMP. Furthermore, the screening tool triggered nurses to think about and discuss mobility during rounds. The mobility screening tool consisted of five questions. Nurses were encouraged to write their patient's mobility status on the whiteboards located in patient rooms. Educational flyers were distributed to the nursing staff detailing the adverse effects of immobility or stating, "Bedrest Is Bad" or "Move To Improve." Copies of the EMP were often distributed or emailed to staff. Nurses were asked questions about mobility and bedrest and given candy bars for correct answers. Examples of questions asked were, "What are some negative effects of immobility," "What are ways to decrease dementia in ICU patients," and "Does PT need to see a patient before they can get out of bed?' During September, the project leader participated in one unit council meeting, four-day shift huddles, two-night shift huddles, and five rounds.

October focused on interventions. The project leader continued to attend huddles and rounds. Educational flyers stating, "Bedrest Is Bad," Move To Improve," or the early mobility protocol were distributed to the RN staff in the same manner as in September, and candy was

given to nurses who had patients out of bed or correctly answered questions to short spontaneous "quizzes" regarding immobility. A survey was distributed to determine nurses' thoughts, perceptions, concerns, and particular barriers to mobility. The survey consisted of 18 questions. Nurses were asked to create a unique identifier before starting the quiz. The quiz contained eight yes/no questions, one Likert-style question concerning a nurse's comfort level in getting ventilated patients out of bed, six free text questions, and three true/false questions. Examples of questions asked were "Are you familiar with the early mobility protocol at St. Thomas West," "Are most patients in the MICU able to get out of bed," and "Do you have enough equipment to get your patients out of bed?" Questions were designed to discover the gap in the nurses' knowledge; therefore, education could be more targeted. Two educational videos were emailed to the RN staff. The videos highlighted the adverse outcomes of immobility, appropriate patient selection for mobilization, the EMP protocol, PT/OT consults, and positive effects associated with early mobility. The videos were short, approximately three to four minutes. The videos were filmed in the Instructional Design department at Belmont University and distributed to the MICU RN staff via email. Weekly audits to check which eligible patients were out of bed began in October and continued until the last week of December. Nurses were reassured that this was not a disciplinary audit but a strategy to educate nurses and the project leader on which patients could be mobilized and barriers to accomplishment. Audits were done on each patient to determine if appropriate patients were out of bed, the mobility level of the patients, and patient acuity. The project leader met with the head of the PT/OT department to learn how PT/OT could be more involved in the MICU, the expectations PT/OT had from nursing, to understand how PT/OT utilized the mobility protocol, and to invite PT/OT to multidisciplinary rounds. Five nurse champions were chosen and asked to encourage other nurses to apply the early mobility

protocol and assist the project leader with tasks. The project leader attended eight rounds, four-day shift huddles, and three-night huddles during October.

November was a month of maintenance. The project leader attended four rounds, three-day shift huddles, and three-night shift huddles. Weekly audits continued. The educational fliers and copies of the early mobility protocol continued to be distributed in the same manner as in the previous two months. Nurses were quizzed on mobility and the early mobility protocol, and candy was given for correct answers. The educational videos from October were again emailed to the RN staff. Pizza breaks with the nurses were conducted during November. During pizza break sessions, nurses were asked three short answer questions about early mobility. Nurses were asked, “How can we make early mobility easier for you, “Have you seen early mobility work in a patient,” and “How is early mobility hard?” (See Appendix 4). Answers were transcribed onto a paper answer sheet. Pizza breaks were conducted in the break room while nurses were on lunch breaks. Nurses were encouraged to talk and answer questions as openly as possible. A total of two pizza breaks occurred on each shift. Gift cards to local stores were distributed to nurses who had their patients out of bed. A post-project survey was distributed to determine if thoughts, concerns, attitudes, and barriers to early mobility had changed since the initiation of the QI project in September. The post-project survey was the same survey sent to the nurses in October, except for the final question asking how, if any, the nurses' thoughts regarding early mobility had changed since the beginning of the project.

Study of Interventions

The PDSA was used in this scholarly project to guide the planning, implementation, evaluation, and interventions to identify barriers, find ways to improve the current mobility

protocol, and change the practice and mindset of the MICU nurses in mobilizing patients (Castro et al., 2015). Interventions to reduce barriers to early mobility included interdisciplinary collaboration, education, and attempts at cultural changes (Castro et al., 2015). The "Plan" identified an opportunity for improvement in the current mobility protocol, identified barriers, and discovered nurses' thoughts and perceptions regarding early mobility (Castro et al., 2015). The "Do" tested the interventions performed during the "Plan" (Castro et al., 2015). The "Study" reviewed the results of the data, while the "Act" was implementing the reinterventions; this is similar to Castro et al. (2015).

The following are two examples of how the PDSA cycle was used during this scholarly project:

PDSA Cycle I

Plan

In the *planning* phase of the PDSA cycle, a specific plan was developed to begin a QI project. The original plan focused on education and reintroduction to the early mobility protocol. Although the early mobility protocol at STWH is discussed during orientation, nurses are not familiar with the protocol. Furthermore, since there are few protocol reminders, the protocol is often forgotten. The research leader placed copies of the early mobility protocol throughout the MICU and emailed a copy to the nurses. The research leader attended unit-specific meetings where the protocol and mobility were discussed; this included three rounds, three-night shift huddles, three-day shift huddles a month, and four monthly unit council meetings. A survey was distributed to uncover gaps in the nurse's knowledge regarding the protocol and identify barriers. From the knowledge gaps noted from the survey results, educational videos were developed that

aided in closing the gap. A total of three focus group sessions were conducted. Whiteboards in every patient room were used to communicate the patient's mobility level among staff. The nursing staff completed a daily mobility screening tool to aid the nurse in determining which patients could mobilize and the mobility level of the patients. A post-project survey was distributed to determine if there had been a change in barriers or nurses' thoughts and perceptions about the early mobility protocol.

Do

During the next phase, *do,* the study was implemented. The project was introduced to the staff the week before the project officially started. The project leader attended unit-specific meetings the week before the start date and continued throughout the project duration. The project began on September 1, 2022. Surveys and educational videos were distributed, and focus groups were conducted. All emails to the RN MICU staff were sent via the primary stakeholder.

Study

For the next phase, *study,* the primary investigator analyzed the project's status. The primary investigator noticed that the mobility screening sheets were not consistently completed. Although a good response occurred during the first two days, the response rate quickly tapered off. Rounds were conducted Monday through Friday, and the nurses completed a rounding tool to guide them in presenting their patients during rounds.

Act

During the final phase, *act*, the primary investigator tried to find ways to get the nurses to complete the daily mobility sheets. Since rounds were Monday to Friday, and nurses were already completing a different rounding tool flowsheet, the primary investigator combined the

two flowsheets and asked the nurses to complete the combined flowsheet Monday through Friday as opposed to daily. This adjustment substantially increased the response to the mobility screening tool.

PDSA Cycle II

Plan

The primary investigator continued attendance at unit-specific meetings; this included three rounds, three-night shift huddles, three-day shift huddles a month, and four monthly unit council meetings.

Do

Beginning August 26, 2022, the primary investigator attended unit-specific meetings.

Study

The primary investigator realized that the MICU nurses were more engaged when the primary investigator was present during rounds, and nurses participated in mobilizing their patients more. Attending and participating in unit-specific meetings was a way to get information to more nurses. Huddles were before every shift, and all nurses were required to attend. Rounds were every weekday, and the team discussed every patient. Unit council meetings were monthly, and the information discussed during these meetings was then distributed to the nurses.

Act

Therefore, the primary investigator increased his presence in the MICU during the scholarly project. The primary investigator attended as many unit-specific meetings as possible.

The project leader attended 16-day shift and 11-night shift huddles, 16 rounds, and two unit council meetings to motivate nurses to get their patients out of bed.

Measures

The project leader developed a survey to address nurse's concerns about, beliefs about, and mobilizing patients using a strategy similar to Castro et al. (2015). The survey was emailed to the nurses at the beginning of the scholarly project and then again at the end to determine if there was a change in the mindset of the nurses.

The pizza breaks were a suggestion of the faculty advisor. They were developed to invite nurses to talk openly and honestly about barriers to early mobility, how the early mobility protocol could be made easier, and how they had seen early mobility benefit patients. These questions were strategically used to trigger nurses to think about early mobility and how the protocol could work better. Originally planned to be coffee breaks, the idea changed to pizza breaks at the suggestion of a stakeholder.

The video content was developed from the survey responses. From the first survey and one-on-one conversations with the nurses, the primary investigator determined that nurses were unfamiliar with the detrimental effects of immobility and the early mobility protocol itself. Therefore, two videos were recorded. The first video discussed the adverse effects of immobility, and the second video reviewed the early mobility protocol. The educational videos were designed to assist nurses in understanding the adverse effects of immobility and the early mobility protocol, similar to the strategy employed by Castro et al. (2015).

Analysis

Data gathered from the mobility screening sheets, weekly audits, and pizza groups were all placed into an Excel spreadsheet. The project leader applied descriptive statistics to the quantitative data (yes/no questions and demographic information). The qualitative data yielded commonalities and themes when the project leader analyzed it. The weekly audit sheets were continued through the end of December.

Ethical Considerations

The project leader did not collect any identifying information from staff or patients. All survey responses, weekly audits, pizza break responses, and information gathered from the mobility screening tool were anonymous. All data was kept on a password-protected personal laptop computer, and only the project leader had access to the password. Paper forms of data were shredded. Emails and survey responses were deleted. This scholarly project did not involve direct contact with patients. The project leader had no conflict of interest. The project leader would like to thank the MICU staff for their cooperation and patience during this scholarly project.

Results

Descriptive statistics were used in this scholarly project. A total of 85 nurses were eligible to participate. All eligible participants were RNs in the MICU. The project took place from September 1st – November 30th, 2022. Weekly audits were completed from October 20th-December 30th, 2022. In addition, daily mobility screens were completed Monday-Friday throughout the scholarly project.

Survey

Seventeen nurses responded to the initial survey. A sample of the survey is included in Appendix 1. The survey comprised questions like yes/no, knowledge, true/false, practice, and opinion. Table 1 displays answers given to yes/no and knowledge questions. The survey included a Likert scale item regarding RNs' comfort level with getting ventilated patients out of bed with five choices ranging from extremely uncomfortable to extremely comfortable. Most nurses answered that they were somewhat comfortable (29.41%, $n = 4$) or extremely comfortable (29.41%, $n = 4$). See Figure 1. The survey included five open-ended questions. When asked why it was difficult to coordinate getting patients out of bed, answers included "lack of staff," "lack of equipment," "lack of techs," "nurses are often tripled," "feeling uncomfortable with mobility," and "time-consuming." Barriers to getting patients out of bed included "lack of time and staff," "high acuity of the patient population," and "lack of equipment." When asked how management could provide more support, nurses stated, "round during the day," "hire more staff," "have more lifts available," and "utilize the nursing techs more." Barriers identified by the MICU staff at STWH are consistent with the literature.

Twenty-three nurses responded to the post-project survey. When asked, "How have your thoughts, concerns, feelings, and attitudes regarding early progressive mobility changed since this project started?" answers given included "none," "more aware of mobility now," "making more effort to get patients out of bed," "more aware of the benefits of early mobility," and "I have grown to love it." When asked why it was hard to coordinate getting patients out of bed, the only change noted was "a lack of training and safe patient handling." Changes indicated in barriers to getting patients out of bed included "lack of knowledge regarding equipment putting myself and the patient at risk for injury," "patients' need to sleep at night," "patient weakness," and "patient refusal." As for how management could be more supportive, answers included

"assisting staff in turning and getting patients out of bed," "offering classes on mobility and yearly education," and "incorporating a mobility team."

Daily Mobility Screening

A total of 590 daily screening tool sheets were completed during this scholarly project out of a possible 1,680. Figure 2 displays the number of screening tools completed each week throughout the scholarly project. A copy of the daily mobility screening tool is included in Appendix 2. All questions were yes/no questions except for one recent mobility-level question. Figure 3-9 displays bar graphs of the selected answers to the mobility screening tool. Only 74 patients had bedrest orders. Out of the 74 bedrest orders, nurses thought that nine of them could be discontinued. There were 225 PT/OT consults**.** The whiteboards were updated 73.05% (*n* = 431, N = 590) of the time. See Figures 3-9.

Weekly Audits

There were a total of 11 weekly audits. A copy of the weekly audits is included in Appendix 3**.** A total of 33.72% of patients (*n* = 87, N = 258) audited were too unstable to participate in early mobility. Forty-three patients (16.67%) were intubated, 37 patients (14.34%) were on at least one vasopressor, 34 patients (13.18%) had signs of cardiac ischemia within the last 24 hours, and nine patients (3.49%) had been started on an anti-arrhythmic in the previous 24 hours. Only 36.82% of eligible patients were out of bed when the audit was completed (*n* = 95). However, 43.02% of patients eligible to get out of bed had been out of bed at least once on the audit day (*n* = 117). Figure 10 displays the progression of patients out of bed throughout the scholarly project time frame.

Pizza Breaks

A total of 51, approximately half of the nursing staff, participated in pizza breaks. Table 1 represents the demographic data of the MICU nurses. A copy of the pizza breaks question can be found in Appendix 4**.** Common responses to "How can early mobility be made easier for you?" were "more staff," "more techs," "more equipment," and "having frequent reminders." Most nurses agreed that early mobility was beneficial to patient outcomes. Common answers to "What makes early mobility hard?" included the "need for more staffing," "patients refusing to get up," "high patient acuity," "obese patients," and "not enough equipment."

Discussion

The nurse-driven early mobility protocol at STWH provided nurses with a clear guideline of which ICU patients could be mobilized, allowing them to mobilize patients more frequently than before the QI project. This is consistent with findings from Black et al. (2020). In addition, no reported adverse events occurred related to mobility during this QI project, confirming the protocol's safety for MICU patients, which is also consistent with Black et al. (2020).

The survey showed that the MICU staff had positive attitudes toward early mobility. The RNs agreed that most patients in the MICU could get out of bed and were not too sick to mobilize. Educating the MICU staff on eligibility for the early mobility protocol, the benefits of early mobility, the adverse effects of bed rest, and the progression of patients along the mobility continuum improved the staff's attitude toward mobilizing critically ill patients. The benefit of educating staff is similar to Castro et al.'s (2015) findings. In addition, education that includes online education, lectures, just-in-time education, and discussion during unit briefs contributed to decreasing staff bias surrounding the early mobility of MICU patients, consistent with Castro et al. (2015). Finally, the multidisciplinary collaboration between physicians, nurses, RT, PT, and

OT during this QI project developed staff confidence and comfort levels consistent with Falkenstein et al.'s findings (2020).

A daily mobilization goal for patients should be in place. The recommendations for setting daily mobilization goals and collaboration between nurses, physicians, NPs, and PT/OT are apparent in the literature (Falkenstein et al., 2020; Castro et al., 2015). Throughout this scholarly project, setting daily patient mobility goals assisted patients in reaching their highest mobility level. The goals were communicated through the daily mobility screen, rounds, and huddles with a greater emphasis on mobility in rounds, which was consistent with Booth et al. (2016). Both PT/OT attended rounds and discussed patient care, which was also consistent with Booth et al. (2016). The value of a collaborative multidisciplinary approach of several disciplines from the MICU team improved outcomes and reduced costs, and facilitated successful early mobility protocols (Klein et al., 2015; Black et al., 2020).

It is vital to devote more time to educating RNs regarding mobility's importance, immobility's adverse effects, and the EMP (Black et al., 2020). This scholarly project incorporated educational videos and handouts, which were strategies also reported by Black et al. (2020). Copies of the EMP were frequently handed out to the nurses during this QI project. Educational videos went over the EMP in detail. Re-introducing RNs to the EMP was emphasized so that all MICU nurses knew how to read and apply the EMP.

The literature is strong in its support of mobility teams to mitigate many of the adverse effects of immobility (Azuh et al., 2016; Black et al., 2020; Booth et al., 2016; Castro et al., 2015; & McWilliams et al., 2018). Of particular interest were the findings that an ICU mobility team was a cost-effective staffing model with strong positive patient outcomes that influenced

hospital reimbursement rates (Azuh et al., 2016). The project leader recommended initiating a mobility team as a sustainability effort at the conclusion of the QI project.

Daily reinforcement of the progressive mobility protocol during rounds and huddles occurred and included reinforcement from the charge nurse and the MICU management team, which was like a strategy employed by Booth et al. (2016). Between PDSA cycle I and cycle II, the project leader combined the mobility screening tool with the rounding tool to foster efficiency and a higher likelihood of completion.

The QI project designated nurse mobility champions, which was consistent with the recommendations from Bruce and Forry (2018). According to Bruce and Forry (2018), integrating a nursing mobility champion in the ICU was a creative and effective way to obtain early mobility in ICU patients consistently. For this scholarly project, the project leader identified five nurse champions. Two nurses were picked from each shift, with the addition of one prn nurse so that more people were associated with the project in the MICU at any given time. The scholarly leader asked the MICU leadership team members, the MICU NPs, and other MICU nurses for recommendations for nurse champions before the project leader asked the candidates if they would be interested. The nurse champions helped distribute the daily mobility screening tool, encouraged nurses to get patients out of bed, assisted in getting patients out of bed, and collected daily screening tools. Although the project leader did not notice a difference in the number of patients getting out of bed nor in the nurses' attitudes with the addition of the nurse champions, it is possible that this particular ICU needed a cultural shift, as recommended by Bruce & Forry (2018). Team members must understand the protocol, have a leader that defines responsibilities, and appreciate why it is important (Bruce & Forry, 2018). A recommendation for the specific ICU was creating a cultural shift through a strong awareness

and educational campaign, marketing the benefits of early mobility, and relaying expectations to staff (Bruce & Forry, 2018). The initiation of nurse mobility champions in the QI project was an incremental step in creating a culture shift since mobility nurse champions helped overcome barriers to mobility, reinforced the evidence relating to the benefits of early mobility, and assisted with patient mobilization, which was like the findings of Bruce & Forry (2018).

The project leader noticed an increase in patients out of bed and out-of-bed activities when he was in the ICU. His presence reminded nurses to get patients out of bed. The presence of management, a provider, or a charge nurse focusing on early mobility motivated nurses to get patients out of bed. In addition, giving candy and other prizes motivated nurses to get patients out of bed and participate in this QI project.

The findings and recommendations for this QI project were consistent with the literature. Because the MICU at STWH was similar to many other ICSs, interventions that worked in other ICUs can be applied in the MICU at STWH and have a higher probability of improving patient outcomes and the sustainability of the current EMP.

Conclusion

Mobilizing critically ill patients is not new, but it is safe and effective (Black et al., 2020). However, the high acuity of critically ill patients has led to a general hesitancy to mobilize these patients (Black et al., 2020). Current ICU practices, such as continuous monitoring and aggressive sedation, have increased patient inactivity (Titsworth et al., 2012). The lack of mobility in ICU patients and its detrimental effects have been well documented (Titsworth et al., 2012). The literature has recognized the benefits of increased mobility in ICU patients (Titsworth et al., 2012). For EPM to be sustainable, the barriers of lack of nursing staff,

lack of therapy staff, time constraints, and absence of equipment must be lowered or removed (Bruce & Forry, 2018). Successfully achieving early mobility requires interprofessional team members to collaborate and engage in the daily task of mobility interventions (Bruce & Forry, 2018). Patients should have a daily mobility goal, and nurses and PTs should partner in coordinating patient mobility (Castro et al., 2015). Education and training of staff members are needed to remove barriers to early mobility (Castro et al., 2015). This scholarly project adds to previous research that early mobility of ICU patients is a critical nursing intervention that needs to be consistently applied to patients who do not have contraindications to mobility (Klein et al., 2015).

The MICU at STWH played an essential role in implementing this QI project. Collaboration among the MICU staff members made it possible to take on crucial issues regarding the early mobilization of critically ill patients, as Castro et al. (2015) concluded. Frequent education and training of the MICU RN staff may help remove barriers to early mobility (Castro et al., 2015). An effort to sustain the gains of this specific QI project regarding early mobility in the ICUs at STWH are needed.

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Table 1

Answers to Yes/No and Knowledge Pre-Intervention Survey Questions

	Results	
	%	*n*
Are most patients in the MICU able to get out of bed?		
Yes	70.59%	12
No	29.41%	5
Is it safe for most patients in the MICU to be mobilized even when they are intubated?		
Yes	70.59%	12
No	29.41%	5
Is it difficult to coordinate getting a patient out of bed?		
Yes	76.47%	13
No	23.53%	4
Is the following statement true or false? Early mobility may decrease hospital and ICU length of stay and reduce the incidence of pneumonia, blood clots, and pressure ulcers.		
TRUE	100.00%	17
FALSE	0.00%	0
Are you familiar with St. Thomas' mobility protocol?		
Yes	88.24%	15
No	11.76%	2
Would it be helpful if PT/OT were more available in the MICU?		
Yes	94.12%	16
No	5.88%	1
Is the following statement true or false? PT/OT must get patients out of bed before nursing staff is allowed.		
TRUE	5.88%	1
FALSE	94.12%	16
Is the following statement true or false? When hospitals utilize mobility technicians, i.e., individuals hired to supplement the nursing staff with patient mobility and ambulation, patients may have		

improved outcomes.

TRUE	100.00%	17
FALSE	0.00%	0

Do you perform range of motion on your patients every shift?

Yes	88.24%	15
No	11.76%	2

Do you have enough equipment to get your patients out of bed?

Yes	41.18%	7
No	58.82%	10

Is PT/OT presence encouraged in the MICU?

Yes	88.24%	15
No	11.76%	2

Table 2

Demographics of MICU RNs July – December 2022

Baseline Characteristics	*n*	%
Gender		
Female	69	81.18
Male	15	17.65
Unknown	1	1.18
Age in Years		
20-24	12	14.12
25-34	44	51.76
35-44	20	23.53
45-54	4	4.71
55-64	3	3.53
65+	1	1.18
Unknown	1	1.18
Generation		
Baby Boomers	4	4.71
Gen X	11	12.94
Gen Y	52	61.18
Gen Z	17	20.00
Unknown	1	1.18
Employment Status		
Full Time	49	57.65
Part-Time	13	15.29
PRN Status	20	23.53
Managers	3	3.53
Length of Employment		
< 3 mo.	3	3.53
3-5 mo.	6	7.06
6-8 mo.	3	3.53
9 mo.-1 yr.	7	8.24
1-4 yr.	33	38.82
5-9 yr.	22	25.88
10-14 yr.	6	7.06
15-19 yr.	2	2.35
20-24 yr.	2	2.35
25-29 yr.	1	1.18

Figure 1

The Comfort Level of Nurses Getting Patients Out of Bed

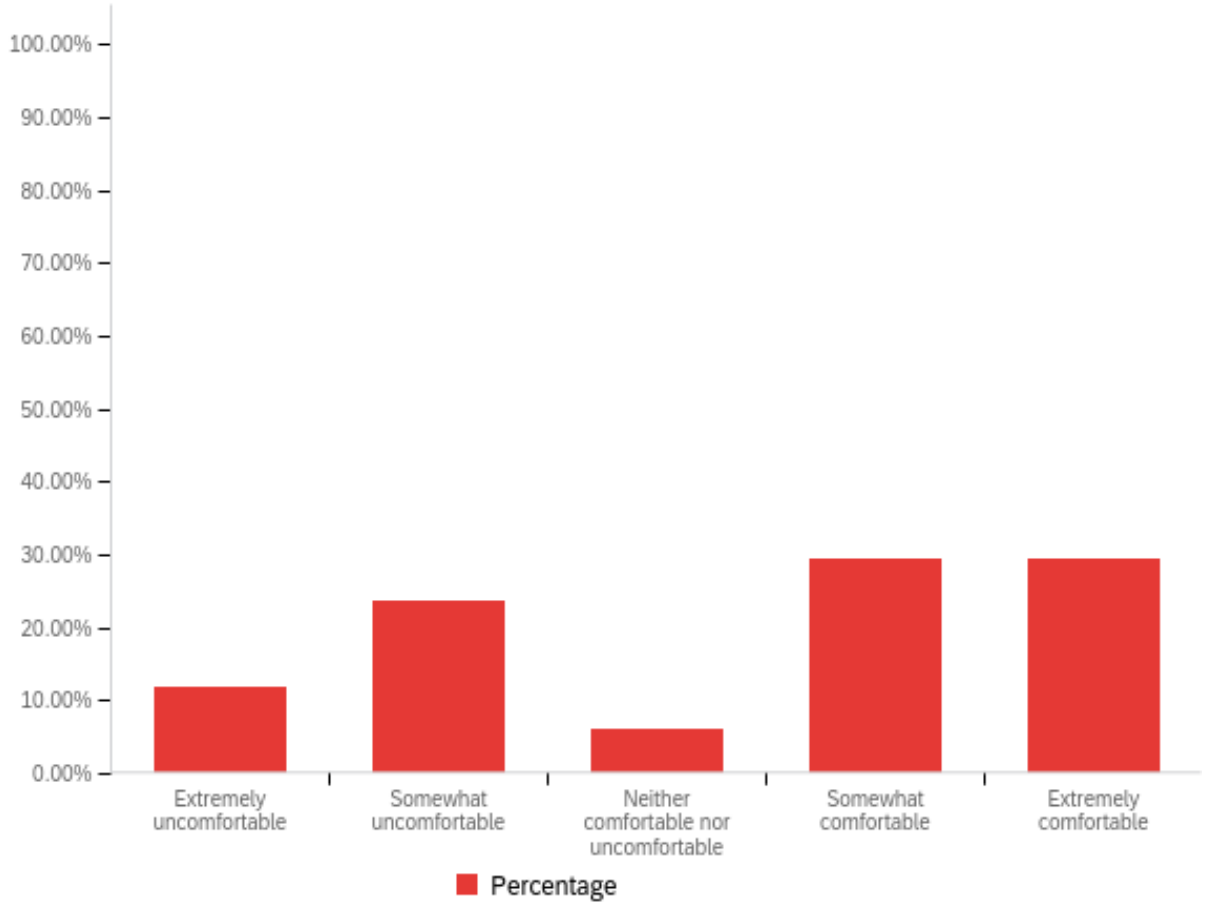


Figure 2

Screening Tools Completed per Week

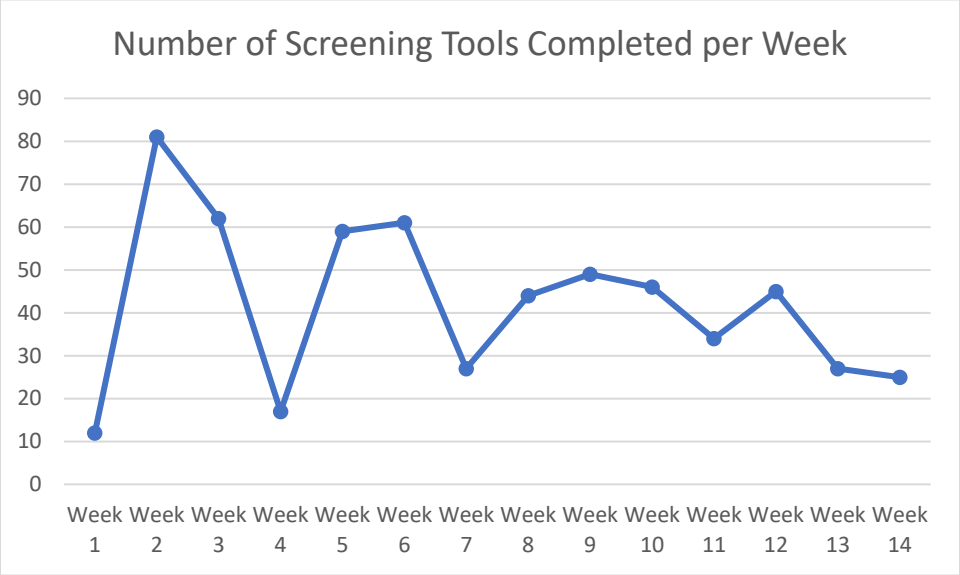


Figure 3

Bedrest Orders on ICU Patients

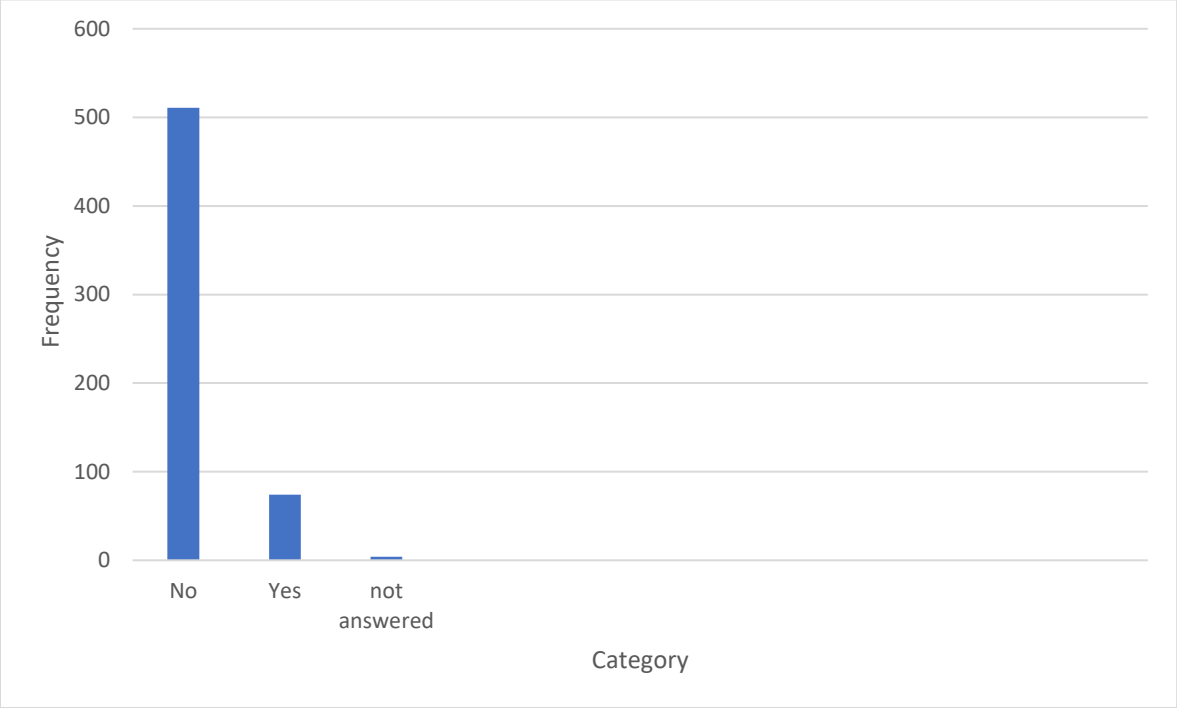
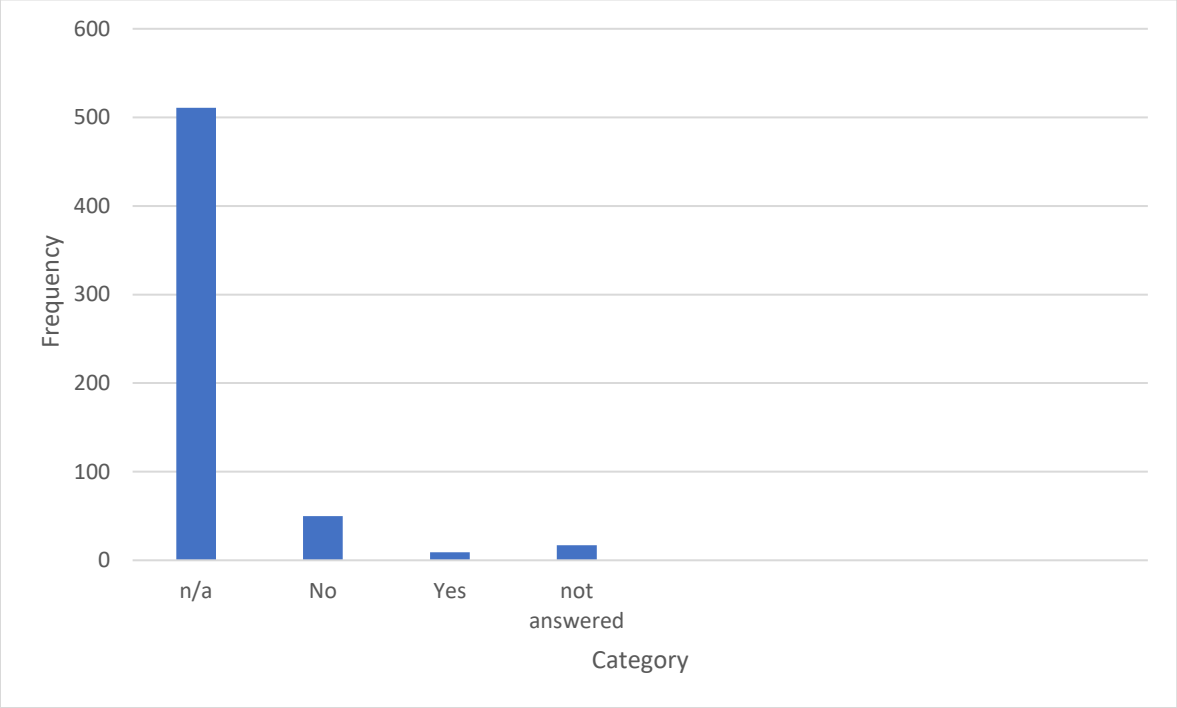


Figure 4

How Often Nursing Thought Bedrest Orders Could Be Ended



n/a = not applicable; the patient does not have orders for bedrest; therefore, bedrest orders cannot be ended

Figure 5

How often PT/OT Was Consulted

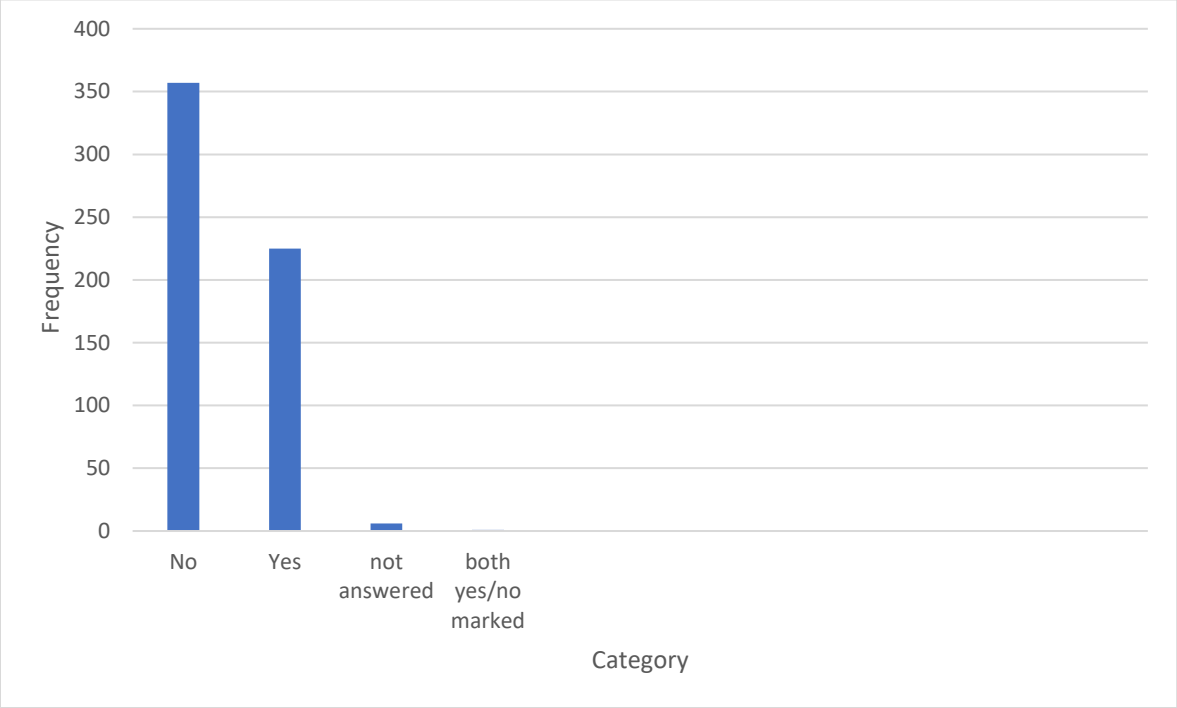
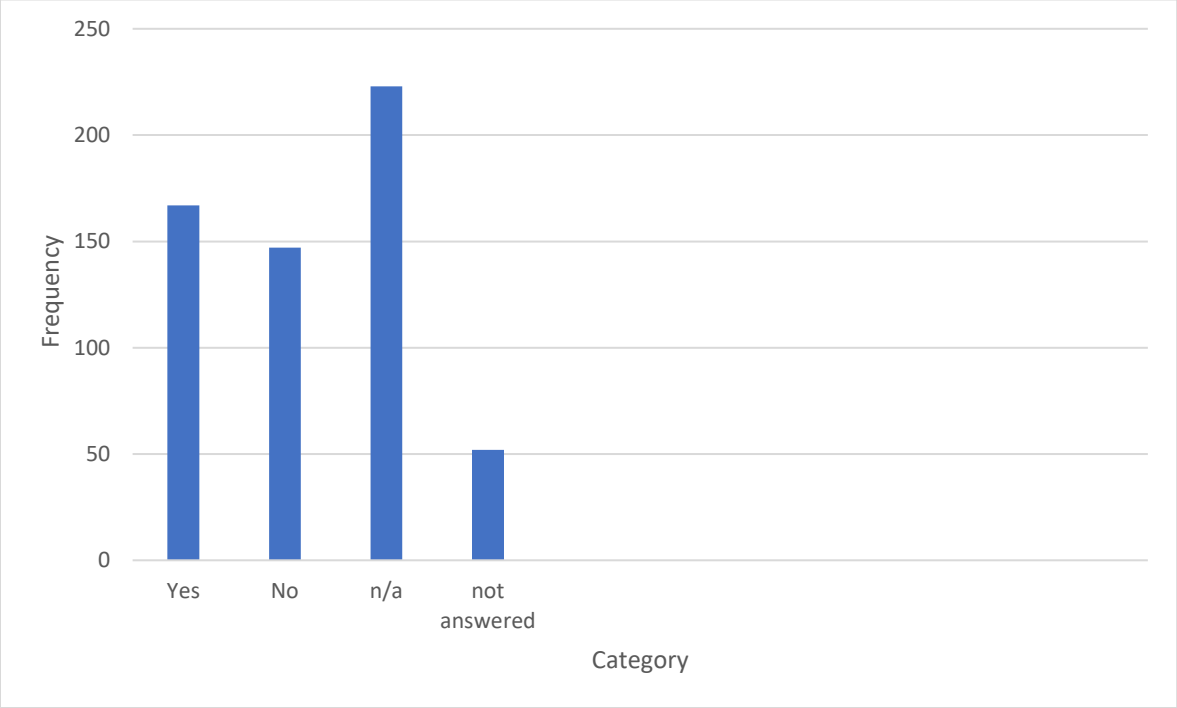


Figure 6

If Nursing Thought PT/OT Should Be Consulted



n/a = not applicable, patients either did not meet criteria for PT/OT consults or PT/OT was already consulted

Figure 7

Patients Daily Mobility Levels

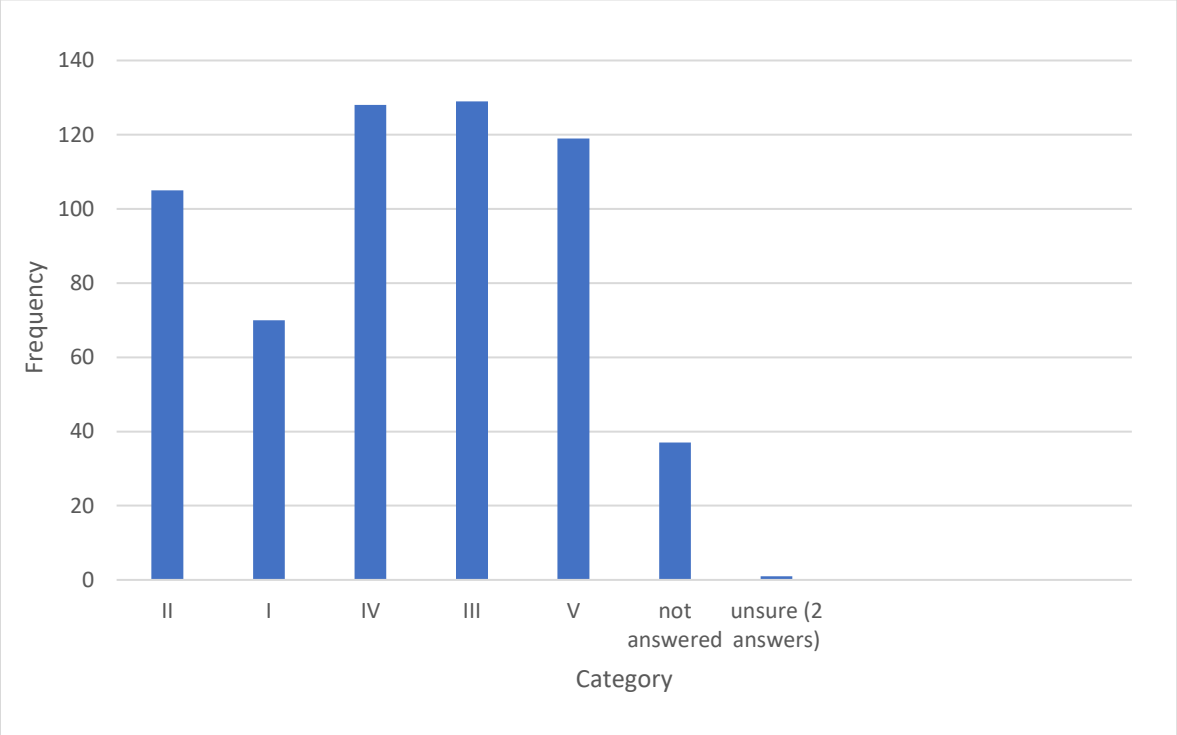


Figure 8

If Patients Could Be Progressed To The Next Mobility Level

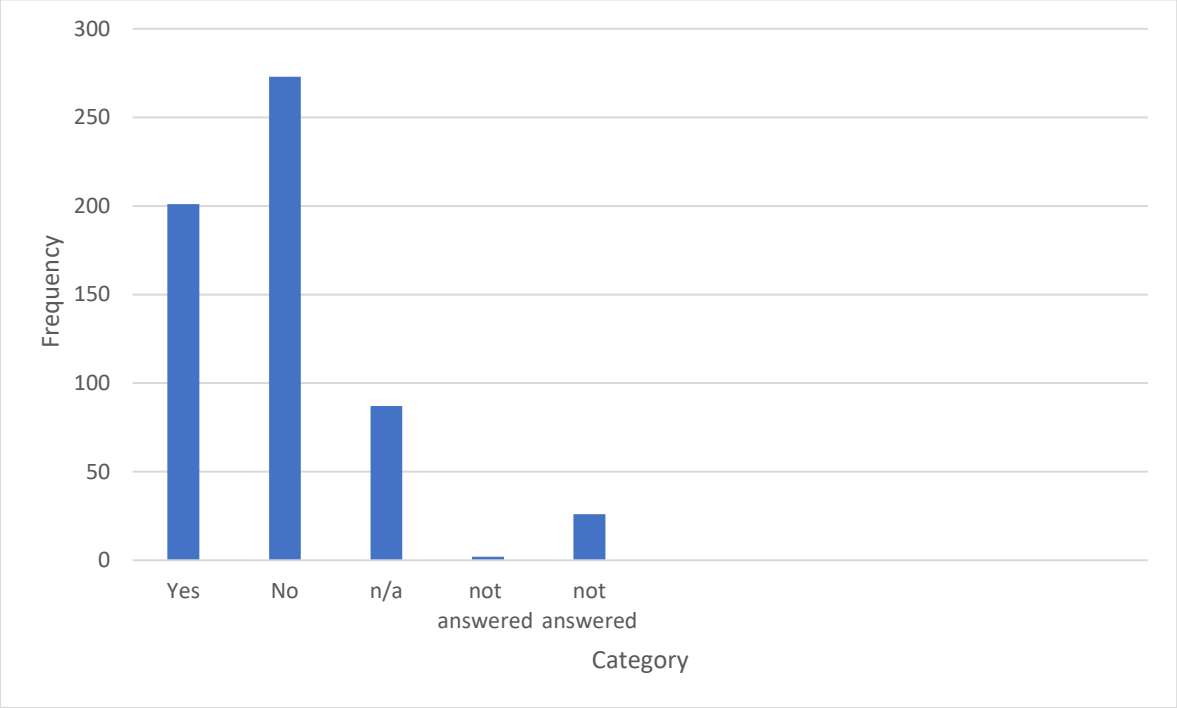


Figure 9

How Often White Boards Were Updated

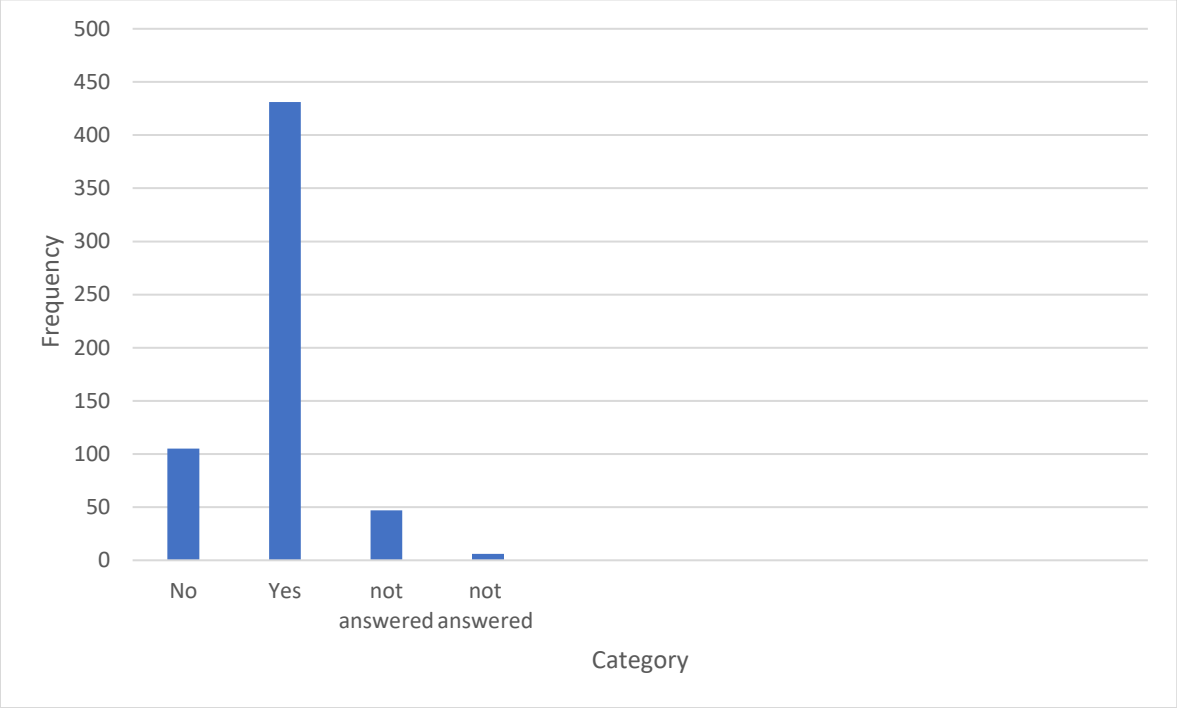
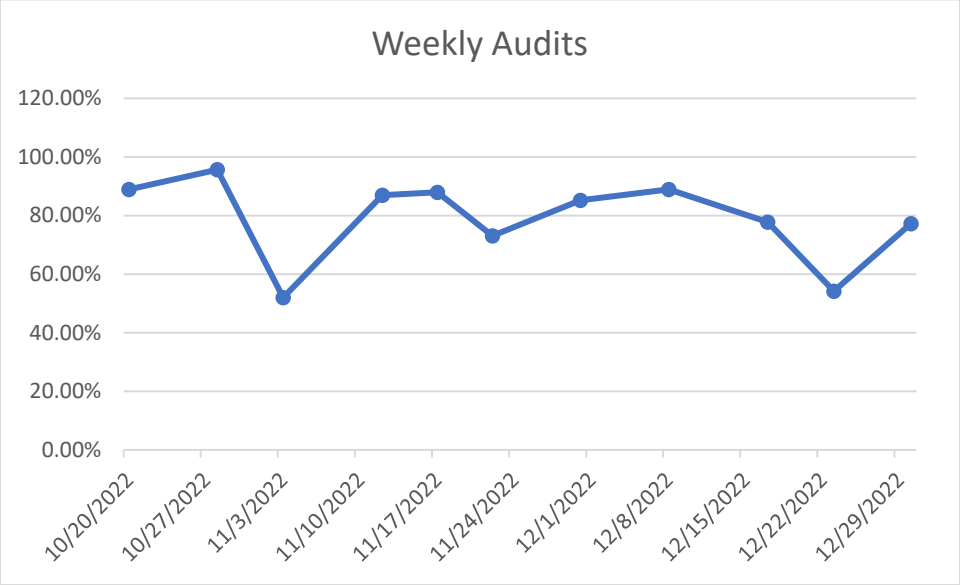


Figure 10

Progression of patients out of bed



Appendix 1

Survey Questions

The following survey questions concern the early mobility protocol and how to improve it. Please answer the following questions to the best of your abilities. All responses will be kept anonymous.

Please create a unique identifier by typing in the first three letters of your middle name and the last four digits of your cell phone number in the space provided.

1. Are you familiar with St. Thomas' mobility protocol?
2. Are most patients in the MICU able to get out of bed?
3. Is it safe for most patients in the MICU to be mobilized even when they are intubated?
4. What is your comfort level regarding getting stable ventilated patients out of the bed?
5. How soon after admission to the ICU should early progressive mobility begin?
6. Do you perform range of motion on your patients every shift?
7. Do you have enough equipment to get your patients out of bed?
8. Is it difficult to coordinate getting a patient out of bed?
9. Why is it hard to coordinate getting patients out of bed, and what obstacles have you encountered?
10. Is the following statement true or false? Early mobility may decrease hospital and ICU length of stay and reduce the incidence of pneumonia, blood clots, and pressure ulcers.
11. What barriers have you encountered in getting patients out of bed?
12. Would it be helpful if PT/OT were more available in the MICU?
13. Why would it be more helpful to have PT/OT available?
14. Is the following statement true or false? PT/OT must get patients out of bed before nursing staff is allowed.
15. Is the following statement true or false? When hospitals utilize mobility technicians, i.e., individuals hired to supplement the nursing staff with patient mobility and ambulation, patients may have improved outcomes.
16. Is PT/OT presence encouraged in the MICU?
17. Please share your thoughts, concerns, feelings, and attitudes regarding early progressive mobility.
18. In what ways could leadership provide support, education, and encouragement to assist nurses in doing early progressive mobility?

Appendix 2

Daily Mobility Screening Tool

1. Does this patient have bedrest orders? Yes_____ No_____ If so, can the bedrest orders be ended? Yes____ No_____

2. Has PT/OT been consulted? Yes_____ No_____ If not, is this patient appropriate to be seen by PT/OT? Yes____ No ____ (Patients must be able to follow commands and participate in therapy sessions before PT/OT sees them. In addition, PT/OT will not see the following patients: those on two or more pressors, FIO2 greater than 60%, PEEP >/=10, and pressure support >/= 20.)

3. According to the Early Progressive Mobility Chart, at what level of mobility is your patient? Level I____ Level II____ Level III____ Level IV____ Level V____

4. Can your patient progress to the next level of mobility? Yes____ No____

5. Have you updated your patient's level of mobility on the whiteboard? Yes____ No____

Appendix 3

Weekly Audits

Mobility level _____ Stable/Unstable

PT/OT consult_____ Bedrest orders Y/N

Intubated_____ Pressors_____

FIO2/O2_____ Cardiac ischemia Y/N

Antiarrhythmic in 24hrs Y/N

Following commands_____

Patient able to get OOB Y/N

Is patient getting OOB_____

Can the patient be progressed to the next mobility level Y/N

Has the patient been OOB_____

Appendix 4

Pizza Break Group Prompts

1. How can early mobility be made easier for you?

2. Have you seen a patient get better from getting out of bed?

3. What makes early mobility hard?