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Promoting Early Mobility of Patients in the Intensive Care Unit

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This is to certify that the doctoral study by

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Abstract

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MSN, Walden University, 2007

BSN, Florida International University, 1992

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Abstract

Deconditioning occurs in critically ill patients as early as 4 days after entering the intensive care unit (ICU) resulting in a loss of up to 25% peripheral muscle tone and 18% body weight by the time the patient is discharged. Early mobility (EM) has been shown to reduce complications such as neuromuscular weakness, muscle wasting, pneumonia, and the effects of prolonged periods of time on the ventilator. No formal education on EM had been provided to nurses at the clinical site. The purpose of this project was to develop an educational program on EM to promote early ambulation of critically ill ICU patients. The theory of knowledge to action was used to guide the development of the educational program. The practice-focused question addressed whether an educational program would improve nurses' perceptions of their knowledge of EM and if they would promote the use of EM among ICU patients. After a literature review to identify evidence-based practices and a protocol on EM, an educational program was developed that included a 25-item Likert-style pretest and posttest to measure percent agreement with perceptions of knowledge gained and likelihood of behavior change related to the practice of EM. Participants included 60 ICU nurses. Results demonstrated improvement in perceptions of knowledge of EM (from 74% before education to 88% after) and in likelihood of behavior change related to EM (from 69% before education to 91% after). Findings may be used to integrate EM into the ICU setting to reduce complications such as neuromuscular weakness, muscle wasting, and pneumonia. Results may also include improved patient outcomes, reduced length of stay, and increased quality of life for patients and their families, and thereby promote positive social change.

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Dedication

This project is dedicated in honor of all the health care professionals whose clinical practice is working in the critical care setting. Your willingness to provide quality patient care to our patients has been a reflection of your knowledge, skill, and commitment to every patient and family member you touch.

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First, I would like to take this opportunity to thank my family, friends, and colleagues for all their support, encouragement, and inspiration over the past three years. Your support, inspiration, and understanding have been far more than I deserve. Thank you for your patience during the days and nights of desertion because of my schoolwork, the vacations that were taken with my needing to complete assignments, and always having to have Wi-Fi access. You have all been incredible, and without each and every one of you I would not have made it.

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Section 1: Nature of the Project

Introduction

Deconditioning occurs in critically ill patients as early as four days after entering the intensive care unit (ICU) resulting in a potential loss of up to 25% peripheral muscle tone and 18% body weight by the time the patient is discharged (Zomorodi, Topley, & McAnaw, 2012). Zomorodi, Topley, & McAnaw found understanding and promoting early mobility can prevent many of the risks that patients face while they undergo treatment in the ICU. Early mobility for ICU patients can reduce the complications that often result in long-term muscle deterioration (Denehy, Lanphere, & Needham, 2017). Increased mobility of ventilated patients remains a challenge for nursing, but providing nurses with new insights into ICU-induced muscle wasting and the underlying residual impairments of physical function will increase the likelihood of patients' early mobility (Poulsen, 2012). Dammeyer, Dickinson, Packard, Baldwin, & Ricklemann (2013) claimed the role of a critical care nurse requires attention to many facets of patient care, especially in environments that pose continuous challenges such as mobilization of critically ill patients. Critical care nurses who fail to address the need for ICU patient mobility find that their patients are at higher risk for morbidity and mortality (Dammeyer et al., 2013). Prolonged bedrest can cause poor quality of life from muscle weakness, deconditioning, and decrease in circulation, and the patient can suffer from pulmonary emboli (Zomorodi, Topley, & McAnaw, 2012). If patients do not properly attend to early mobility, the negative implications can manifest almost immediately (Castro, Turcinovic, Platz, & Law, 2015).

Early mobility is considered an advanced physical therapy to restore musculoskeletal strength and function including practices such as passive range of motion, active range of motion, bed mobility, sitting balance, standing, standing transfer, and gait reeducation (Hodgson, Berney, Harrold, Saxena, & Bellomo, 2013). Zomorodi et al. (2012) explored how early mobility has been linked to decreasing morbidity and mortality demonstrating that inactivity has a profound adverse effect on the brain, skin, skeletal muscle, pulmonary system, and cardiovascular system.

Although turning the patient every two hours is considered the standard of care (Dammeyer et al., 2013) in the ICU setting, a greater degree of mobility may be warranted to prevent the risk that immobility places on the patient (Taito, Shime, Ota, & Yasuda, 2016). In the current project, there was a need for a comprehensive evidence-based educational plan for ICU nurses. I searched the literature for the evidence-based practice guidelines for mobility in the ICU setting and presented this information to a group of administrative and medical staff for review. I then developed an education program for teaching the ICU nurses. This project of staff education was designed to promote mobility for patients in ICU and reduce complications during ICU stays. Early mobility also gives patients a way to strengthen muscle tone and cognition and improve their outcomes. Pashikanti & Von Ah (2012) addressed the functional decline and deconditioning loss of muscle mass in the first two days of hospitalization and felt rapid deterioration can present great complications for patients even after leaving the hospital. Approximately 60% of critically ill patients at discharge may have long-term

complications that inhibit functional recovery (Zomorodi et al., 2012). Attention to early mobility may benefit patients in the short and long term of their path to recovery.

Mobilizing and walking patients is a basic nursing action that is emphasized in nursing school and practiced in the clinical setting. Although mobilization is taught in nursing schools, there are more complex procedures and technology which can change a nurse's approach to patient care practices. Ambulating patients is of vital importance to care (Drolet et al., 2013). The implementation of an early mobility program in the ICU has been supported in the literature, specifically pertaining to risk (Adler & Malone, 2012), method (Hodgson et al., 2013), and outcomes (Pashikanti & Von Ah, 2012). Adler and Malone (2012) revealed that mobilizing patients in the intensive care environment is not without risk as catheters and supportive equipment can become dislodged and cause injury to patients. Additionally, the authors indicated that frequent insertions and reinsertion of catheters increase infection risk and cause unwanted stress and pain for patients and families already stressed by the medical acuity of the intensive care unit.

The inconsistency in patient care stems from a lack in knowledge and skill. Drolet et al. (2013) reported that nurses and patient care assistants can be trained and educated on the use of gait belts and other modalities to successfully ambulate their patients. Improving knowledge of EM and the equipment needed for EM is crucial for the health care professionals caring for the critically ill intubated patients. Moreover, Drolet et al. reported that a comprehensive educational plan may increase nurses' knowledge, comfort, and willingness to develop guidelines to improve standards of care.

This doctoral project provided useful and valid information to support the clinical practice change for the bedside critical care nurse. Transforming the framework and concept of care delivery can change the knowledge deficit of the health care team and result in positive social change as complications are reduced. Section 1 includes the problem statement, purpose statement, and nature and significance of the doctoral project.

Problem Statement

The most pressing problem facing local nursing practice is the disconnection between education and training on early mobility and implemented practices once the nursing student is out in the field. In the ICU, patients rely on nurses to initiate their health care activities, including positioning, sitting, standing, and ambulation. The practice problem involved the complexities of working in the ICU as well as system barriers such as recognizing the nurse's lack of knowledge on early mobility in the ICU. Overcoming this barrier required a functional mobility protocol, training, education, and involvement of the stakeholders. Bassett, Vollman, Brandwene, and Murray (2012) noted that the barriers of knowledge deficit, inadequate sedation practices, and ICU culture limit nurses' interactions with patients. Bassett et al. further indicated that patients may need to be immobilized or limited in movement due to the critical state of their illness; however, activities of daily living (ADLs) should be incorporated into patient care, including sedation planning with passive to active range of motion.

While the challenges to mobilizing critically ill patients are numerous and cause the nursing staff to avoid getting their patients out of bed, there is a need to identify methods for EM. Education to promote EM may be facilitated by establishing an

evidence-based protocol of EM. Factors to consider during the protocol development include the (a) safety of tubes and lines; (b) hemodynamic instability; (c) personnel and equipment resources; (d) sedation practices; (e) the patient's size; (f) the patient's pain and discomfort; and (g) the time, valuing, and priority of mobilization (Adler & Malone, 2012). Safety concerning the patient's ability to tolerate the movement hemodynamically may be the most significant factor (Vollman, 2010). To meet the inclusion criteria for early mobilization, a patient must be a male or female adult 18+ years of age admitted directly to the ICU and mechanically intubated (Fraser, Spiva, Forman, & Hallem, 2015). The goal of the ICU is the delivery of early, appropriate, and safe care. In another study concerning early mobility, Perme (2009) determined that nurses who want to use early mobility must have patients that meet the following conditions: (a) no hemodynamic instability or active resuscitation; (b) no agitation (Richmond Agitation Sedation Scale (RASS) ≥ +2 in the last 4 hours); (c) SpO2 > than 92% , RR 18-20; (d) no arrhythmias; and (e) no active seizures or contraindications for mobility (open abdomen, unstable spine, difficult airway, surgical procedures requiring paralytic therapy), no femoral vascular access, and systolic BP < 180 or HR < 100. Perme (2009) claimed if these conditions are present, patients do not make good candidates for early mobility and are excluded from EM care. Additional exclusion criteria by Perme's 2009 team included (a) requirement of vasopressor therapy; (b) $FlO^2 > 0.8$, PEEP >12cmH^2O, or respiratory status worsening; (c) use of paralytics; and (d) acute neurological event and brain drains. Despite the standard of care to turn and reposition a patient every two hours, this approach is not feasible for all patients (Krishnagopalan, Johnson, Low, & Kaufman,

2002). Turning patients in 2-hour intervals happens approximately 2.7% of the time (Krishnagopalan et al., 2002). Nurses are reluctant to get the patient up into a sitting position or out of bed for fear of the patient's condition worsening, unplanned loss of lines, or extubation. Padula, Hughes, and Baumhover (2009) found that 34% to 50% of hospitalized patients having walking difficulties from prolonged hospital stay and effects from bed rest and immobility experienced a decline in their status. There are many factors to consider when determining the best early mobility decisions in patients.

An additional problem existed in the form of training and education pertaining to mobility in the setting where this project took place. There was a need for education and training on early mobility (see Messer, Comer, & Forst, 2015). New nurses had a limited capacity in thinking through clinical decision-making and a deficiency in standard practice regarding early mobility. Krishnagopalan, et al., (2002) reported that prolonged patient bed rest in ICUs negatively impacts patient outcomes. Developing an educational program for early mobility may improve nurses' perception, value, competency, and ability to promote early mobility in the ICU. The key factor in any health care initiative is to provide a strong educational background and understanding of the components of the design, implementation, and evaluation of protocols set forth. Implementation of an early mobility educational program at a site where an early mobility protocol was implemented was intended to enhance collaboration among the multidisciplinary team, patients, and families to improve outcomes.

Purpose

The purpose of the educational project was to improve nursing knowledge, assessment, and understanding of early mobility. The project addressed a gap in practice of ICU nurses not understanding the new evidence and how early mobility can reduce muscle deconditioning and standardize the approach to mobility while integrating the education for the staff and patients. In this project, I implemented existing evidence of an early mobility protocol algorithm, assessment guidelines, inclusion and exclusion criteria, and staff training to incorporate the use of mobility equipment assisting patients to mobilize independently. The educational program was administered via PowerPoint presentation highlighting a pretest, steps for educational dissemination, and a posttest to evaluate the change in level of knowledge. This educational project was administered to all the nurses from a hospital in the Southeast United States. Participants were randomly assigned numerical identifiers for anonymity and were provided with a packet consisting of two different-colored papers representing the pretest (see Appendix D) and posttest. I collected the tests, analyzed and synthesized the results, and provided recommendations for nursing practice in a manner similar to Castro et al. (2015). The project objective was to improve patient outcomes.

Lipshutz and Gropper (2013) established three contrasting positions concerning the topic of early mobility: (a) adverse health outcomes, (b) increased length of stay, and (c) functional decline. They found early mobilization of the ICU patient is a strong intervention to decrease weakness and deconditioning due to the patient's critical illness. There is limited literature on early mobility that addresses elements in a program leading

to knowledge change on concepts and benefits of early mobility. Educating bedside nurses on early mobility within 72 hours of a hospital stage can decrease adverse outcomes (Drolet et al., 2013). Although education is essential for evidence-based practice changes, knowledge alone does not change or influence perceptions to practice (Soni et al., 2016). The current DNP was intended to facilitate collaboration among the team and overcome any barriers to practice. Nursing knowledge and perceptions were used to implement the guidelines and algorithm for this project. This program was designed to provide educators, program coordinators, hospital managers, and students with a workable and implementable model of education for incorporating an early mobility protocol into practice. Emphasis on this DNP project was in increasing education to the nursing staff on the importance of walking the mechanically ventilated patient. The educational needs of the learners supported the underlying professional gap identified before and after the course questionnaire. This process was intended to provide medical practitioners with a better understanding of the inconsistencies between bed rest and early mobility strategies. The establishment of this program may also increase nursing knowledge and improve satisfaction in care. The significance of the educational early mobility protocol was to promote the development of quality performance geared to enhance safety and reduce ventilator days for patients. This program may also provide the nursing staff with conceptual and practical tools that can be applied to their daily practice. The goal of this project was to provide data that could assist in developing the education program so nurses could perform their roles in alignment with the guidelines for mobilizing their patients earlier, which could decrease negative outcomes.

The project promoted a positive impact in nursing practice by introducing early mobility into practice. This practice change required the support from all stakeholders involved, and staff education based on attitudes and perceived barriers was imperative. The guiding practice-focused question for this project was the following: To what extent will the ICU nurse's knowledge on mobility increase after attending this structured evidence-based educational program?

Nature of this Doctoral Project

This doctoral project was conducted on a medical/cardiac intensive care unit in the Southeast United States. The literature review supported early mobility practices through a systematic review of current education practices, current in-field practices, and case studies on early mobility. The research was obtained from Cumulative Index of Nursing and Allied Health (CINAHL) Plus with Full-Text, MEDLINE, Cochrane Database of Systematic Reviews (CDSR), Ovid Medline, ProQuest, and PubMed. The impact of this knowledge gap for the health care team was evaluated within 4 weeks of the educational program. I first evaluated by observing, and then I collaborated with the staff during their daily care of patients. My observations enabled me to explore how the implementation of early mobility contributed to best practice in the ICU. In addition, I provided the same posttest to all the nursing staff with the addition of an extra question regarding changes in their practice and how they felt since the implementation of early mobility.

Significance to Practice

Survival rates are improving with advancement in medicine as well in ICUs; therefore, nursing needs to focus on improving patient outcomes (Pashikanti & Von Ah, 2012). Early mobility is one example of a treatment that can enhance or diminish a patient's outcome based on the approach (Drolet et al., 2013). Early mobility, although potentially controversial, can be developed through the application of evidence-based practice and assessment of guidelines (Lipshutz & Gropper, 2013). The controversy behind early mobility relates to potential adverse events. Mobilizing the patients in the ICU is not without risk. Unforeseen events include falls, cardiac events, extubations, or respiratory events (Adler & Malone, 2012). The benefits outweigh the risks.

Once the results of this project, and data collection, combined with the literature reviews are implemented, the impact of this educational program for the team reinforces the needs, staff commitment, and importance of the program. Use of a short anonymous questionnaire provided an understanding of the deficits in knowledge and gains in knowledge among participant nurses. Numerous stakeholders may benefit from a clearly defined, evidence-based practice to facilitate daily delivery of early mobility in the ICU. Collaboration among all clinical team champions in the ICU is crucial to promotion of early mobility (Drolet et al., 2013). Other stakeholders involved were physical therapy staff, occupational therapy staff, respiratory therapy staff, speech therapy staff, non-bedside stakeholders, and management. I invited these health care providers to the same educational sessions. Having enthusiastic champions who act as role models for the process is crucial to the success of change. This doctoral project may facilitate a sense of

empowerment and pride in the care of intubated patients while improving their functional status. Pashikanti and Von Ah (2012) noted that nurses play a primary role in implementing an early mobility standardized program addressing functional status.

Implications for Positive Social Change

The implications for positive social change include the potential for improved workplace culture related to improved perception of early mobility. Deconditioning can occur in critically ill, mechanically intubated patients as early as 4 days, resulting in a loss of up to 25% peripheral muscle tone and 18% body weight by the time a patient is discharged (Zomorodi et al., 2012). Pashikanti and Von Ah (2012) addressed the functional decline and deconditioning loss of muscle tone in the first two days of hospitalization. Such rapid deterioration can present greater complications. An educational program on early mobility in the critically ill can support the ICU patients walking during the first 72 hours (Drolet et al., 2013) once they progress to phase criteria. Daily awakening and reduction of sedation and narcotic use will be instituted as part of the protocol to support a sedation scale used; the RASS scale supports and measures the amount of sedation given to the patient (Ely, E. W., 2003). With the reduction of sedation, the goal of early mobility is to increase nursing efficiency and reduce risk of injury (Zomorodi et al., 2012).

Not providing proper education and training is a barrier. This barrier will be removed through evidence-based pathways from the educational program. This program supports positive social change by promoting improved patient outcomes and enhanced

partnership among team members. This educational plan was intended to improve the nurses' knowledge, comfort, and practice.

Summary

This section addressed the development of an education plan to teach nurses about the need for early mobility and to enhance their knowledge and understanding of early mobility. Consideration was given to patient outcomes while improving the confidence of the health care professional based on development of evidence-based practice. The next section provides the background of the project and the theories that informed the project.

Section 2: Background and Context

Introduction

The practical problem of immobility includes the complexities inherent in the ICU, especially when early mobility has been shown to produce positive outcomes. Identifying system barriers such as knowledge deficits in the staff, patient acuity, and poorly designed environments limiting the interactions with patients has proven to be critical for these high-risk patients (Hodgson, Berney, Harrold, Saxena, & Bellomo, 2013).These problems in practice were addressed through the following practice-focused question: To what extent will the ICU nurse's knowledge on mobility increase after attending this structured evidence-based educational program? The purpose of this project was to educate nursing staff on the evidence that long periods of bed rest cause multiple body systems to fail. Prolonged bed rest can cause reduced quality of life, muscle weakness, decrease in circulation, and blood clots that cause pulmonary emboli (Castro et al., 2015).

Despite evidence supporting early mobility in critical care, many ICU nurses are resistant to this practice because of fear of infringing on patient safety by pulling off lines and tubes (Hopkins & Spuhler, 2009). Although nursing staff recognize the benefits and importance of mobility, they remain task oriented and pride themselves on working in a highly specialized ICU and high-tech environment (Zomorodi et al., 2012). At times they tend to forget the importance of patient-family centered care and focus on the tasks at hand.

I collaborated with beside nurses as well as the multidisciplinary team, including physical therapy, occupational therapy, and respiratory therapy, to develop this program. Successful closure of the gap required a multidisciplinary team engaged in understanding the interventions addressing the health care problem of immobility. Section 2 includes concepts, models, and theories used in the project; relevance to nursing practice; local background and context; role of the DNP student; and role of the project team.

Concepts, Models, and Theories

The major concepts addressed in this project were the deconditioning of the patient with potential muscle atrophy, early mobility, and increasing knowledge among nursing staff. Hodgson et al. (2013) defined *early mobility* as an intervention to attenuate illness-associated muscle weakness in patients who are immobile for more than a few days. I used the knowledge-to-action framework in the project (see Field, Booth, IIott, & Gerrish, 2014) as shown in Appendix A. With advancements in technology and improvements in medications, studies have shown an increase in survival rates in ICUs (Schweickert, et al., 2009). The focus on improving patient outcomes and recovery involved increasing nurse's clinical competence and knowledge. To be successful, the ICU patients need to be assessed and started on an early mobility program when stable.

I explained to the nursing staff that the Richmond Agitation Scale (RASS) was being used to determine the degree of sedation for patients in the ICU. I also explained that by incorporating the associated RASS algorithm, the nursing staff would be able to promote patients' physical activity. The RASS scale (see Appendix B) assists nurses in determining when a patient is mentally and physically able to participate in his or her

care. Using this algorithm and the evaluation tool, nurses had the ability to understand the patient's progress and what phase of care could be utilized.

Translating evidence-based research into practice is successful when researchers anticipate causes of resistance and the feasibility of implementing change (White & Dudley-Brown, 2012). ICU nurses are resistant to the practice change of early mobility because of the perceived increased workload and the fear of patient safety issues (Drotlet et al., 2013). Recognizing that people resist change because of perceived limitations, I used knowledge translation theories to guide this doctoral project. Barriers to change are apparent when the nursing staff complains about the increase in responsibilities to changes in patient care. I used the knowledge-to-action framework (KTA) to depict how new knowledge promotes positive changes (Field et al., 2014). Field found KTA's framework involves several phases that outline activities needed for applying knowledge to practice. I used the KTA framework in this project by developing the evidence to improve outcomes and quality of care (see Field et al., 2014). This framework informed the project in terms of improving and promoting the nurse's knowledge. The KTA framework effected change focused on identifying the problem, assessing and delivering knowledge, and developing a plan to implement the change of early mobility. This educational program was intended to support nurses' change in action and increase their knowledge. This framework emphasized strong leadership qualities to produce change (White & Dudley-Brown, 2012). The multidisciplinary ICU team, including physicians, nurses, and therapists, acted as resources for administrative and clinical endorsement of early mobility. Support from the medical staff enabled the implementation of a mobility

order set including the algorithm of the RASS scale guiding nurses' assessment of mobility and supporting a change in behavior. Without adequate and cognitive components to learning, there can never be a change in feeling or thinking or a change in behavior (McEwen, & Wills, 2014).

Definition of Terms

Mobility Screening Algorithm (see Appendix C): An algorithm developed to transform phases of mobility. The guide will provide nurses with parameters to evaluate and determine the phase of the program to establish the patient mobility plan of care (see Perme & Chandrashekar, 2009).

Richmond Agitation Assessment Scale (RASS) (see Appendix B): The RASS is a tool used to identify agitation and sedation. The RASS scale supports accurate assessment of awareness in mechanically ventilated and spontaneously breathing patients and provides the nurse with the ability to assess and accurately wean sedation (Ely, Truman, Shintani, Thomason, et al. 2003).

Relevance to Nursing Practice

Literature has shown that patients who are on bed rest have more difficulty ambulating once they are permitted to be out of bed. Ambulating patients is of vital importance to their quality and productivity in care (Drolet et al., 2013). The implementation of an early mobility program in the ICU is emerging in the literature (Zomorodi et al., 2012). Ambulation of patients in the acute care setting through collaboration by a multidisciplinary team may increase the impact on the care of these patients. The Society of Critical Care Medicine (as cited in Parker, & Needham (2013)

recommended early mobility to prevent neuromuscular weakness and impairments in physical function during hospitalization.

In the current state of nursing practice in the area of ambulation, some strategies and standard practices are supported by the Quality of Nursing Leadership as the first force within the organization regarding the demands of the nursing staff for early mobility. The nursing staff demonstrates their commitment to the development and advancement of policies and procedures regarding the mobility program. The second force within the organization is the guidelines of the American Association of Critical-Care Nurses (AACN, 2015). These guidelines illustrate the gap in practice in the ICU. The scope in practice for the nursing care of acutely and critically ill patients of all ages encompasses the dynamic interaction of the patient and his or her family, the nurse, and the environment in which care is provided with a goal of ensuring optimal patient outcomes (AACN, 2015). Despite the evidence of the detrimental effects of bed rest and research supporting early mobility in the ICU, patients in clinical practice remain immobile, especially those who are mechanically ventilated.

Closing the gap between evidence-based practice and clinical practice requires a structured process. One way to promote clinical and quality improvement is to use the translating research into practice model. This model is critical to the engagement of the staff and to evaluate the practice gap within the health care setting. According to Curtis, Fry, Shaban, and Considine (2017), employing this model and the four E's (i.e., engage, educate, execute and evaluate) of early mobility intervention should encourage the nursing staff to embrace this project. Taito et al. (2016) noted that "active mobilization

beyond sitting is not commonly practiced and that it varies among countries" (p. 6). Clearly there are benefits to early mobility practices.

Early mobility is safe, and the evidence supports improved patient outcomes, decreased mechanical ventilation, and improved patient function. Providing a structured quality improvement project was intended to close the gap in practice and change the culture in ICUs. Accomplishing this culture change of early mobility must be supported by the stakeholders and advocated by leadership to sustain this change (see Hashem, Nellit, & Needham, 2016).

Local Background and Context

The mission and vision of the Southeast hospital is to serve patients by providing exceptional care and education no matter their ability to pay. The institution encompasses a patient population and staff mixture of various cultures, demographics, and socioeconomic status. The facility is credentialed by the Joint Commission and the American College of Surgeons for trauma. The mission of this facility is to return patients to preadmission states with fewer readmissions, decrease musculoskeletal deconditioning, and decrease health care costs.

Although the nurses are highly trained, there are inconsistencies in the care of intubated patient due to multiple invasive lines and catheters. Despite the efforts in patient care, some patients experience complications from the lack of mobility, according to the ICU managers. Although gaining knowledge and hands-on clinical practice is essential, there are several important aspects to consider when meeting the needs of a diverse population of ventilated patients. Providing instruction on transfer methods may

eliminate or minimize the fear of extubation and line dislodgement. Providing a roadmap of safety criteria should increase the acceptance of early mobility among nurses. This practice change requires observation and educational sessions to ensure the program's implementation.

The purpose of this doctoral project was to educate nurses on early mobility and to observe the nurses daily to promote a decrease in patient complications in the ICU. The educational program was delivered in a PowerPoint presentation and included a pretest and a posttest to evaluate what was learned. This educational project was administered to all of the nurses from this Southeast hospital. Nurses were provided with a packet consisting of different-colored papers representing the pretest and posttest with a unique identification sequence to maintain anonymity. The purpose of the program was to promote a culture of early mobility consistent with the education needed. Practice change is successful when all participants focus on promoting and facilitating the change Pashikanti & Von Ah 2012). Therefore, the involvement of the entire nursing staff was encouraged, and standardization of content ensured reliability when teaching patients independence. These nurses were able to assist in mobilizing and ambulating their patients. After the educational program was complete, the nurses reported the importance of early mobility to improve health outcomes and promote quality care.

Role of the DNP Student

My role was to develop an educational program to assess nurses' current knowledge level and to assess their knowledge after the education program. As an experienced clinical specialist in the ICU, I promoted an environment in which staff

shared the vision for early mobility. Personal experiences fostered an appreciation for the stressors associated with early mobility. The motivation for this doctoral project included witnessing the lack of mobility of ICU patients and the reduced ability to extubate these patients. Although risks exist when patients are unstable, supporting the implementation of early mobility for stable patients may decrease their ventilator days, reduce their length of stay, and minimize risk and harm to the patient (Needham, Korupolu, Zanni, Pradhan, Colantuoni, et al., 2010).

My role as a clinical specialist in the ICU provided me the opportunity to serve as a patient advocate and educator for establishing a safe program for early mobility. Barriers to early mobility needed to be explored prior to the standardization of this educational program into practice. I adapted the activities to address stakeholders' needs and concerns in this practice-focused project.

I intended to enhance leadership ability and improve patient outcomes in the ICU. Due to my personal and professional relationship with the staff, I was received positively. Having this relationship enabled me to develop, implement, and evaluate the program. Given the possibility of researcher bias, I set boundaries to ensure proper development of the educational program.

Summary

The nursing staff was instrumental in advocating for and implementing the practice of early mobility. This change in culture and clinical care required the nursing staff to be aware of and educated on the process change. This doctoral project required a comprehensive literature search to incorporate appropriate models and theories and the

phases of mobility into the educational program to close the gap in practice. Published outcomes and literature reviews can assist in the implementation and evaluation of the early mobility project on a broader scale. Once this program becomes sustainable, it may impact positive social change with improvements in knowledge and care of the patient.

Section 3: Collection and Analysis of Evidence

Introduction

The problem occurring with early mobility in the ICU is receiving substantial attention in the clinical and systematic literature today. The literature related to early mobility of the critically ill patient addressed functional outcomes and patient safety. Evidence showed that critically ill patients in the ICU who are not mobilized at an early phase during hospitalization experience persistent weakness, muscle atrophy, decreased quality of life, and alterations in neuropsychological function (Castro et al., 2015). Patients discharged from the ICU experienced an 18% reduction in total body weight, a 4% to 5% decrease in muscle strength, and an inability to walk for longer than 6 minutes (Castro et al., 2015). Furthermore, only 49% of discharged patients returned to work 1 year after ICU discharge. In the current project, I designed an education program for nursing staff regarding the importance of early mobility to promote improved function of their patients. Early mobility programs result in fewer ventilator days, decreased incidence of ventilator acquired pneumonia (VAP), fewer skin injuries, reduced ICU and hospital length of stay, decreased duration of delirium, and improved physical functioning before and after discharge from the hospital (Bassett et al., 2012). Despite the evidence linking patient outcome to ICU routine practice, early mobility programs are used in only 27% of ICUs; 21% started without a protocol, and 52% incorporated the program into their daily care of the patient (Vollman & Bassett 2014). Evidence-based practices take many years to implement due to the need to change the culture of the staff. Studies have shown those who survived critical illness have impaired ability to ambulate

and persistent weakness, decreasing their quality of life and increasing their health care cost. The Centers for Disease Control and Prevention (CDC, 2013) released a report regarding ventilator-associated events and ventilator-associated conditions. The CDC recognized the short-term preventable complications associated with mechanical ventilation. The Agency for Healthcare Research and Quality (2017) discussed their program for mechanically ventilated patients and early mobility guide moving beyond VAP and improving outcomes. In Section 3, I focus on the gap in practice, changing the gap in practice through education, clarifying the purpose, and key aspects to this project.

Practice-Focused Question

Early mobility issues existed in a local setting. Previous studies demonstrated that the earlier health care workers can mobilize patients, the less risk for negative patient outcomes (Castro et al., 2015). Despite the evidence, nurses are inconsistent with their practice, resulting in inconsistent treatment plans for patients, which generates gaps in practice. I attempted to minimize the barriers by developing an evidence-based educational program. Implementing education can alleviate feelings of discomfort with the process and provide instructions on transfer methods to minimize risks of extubation, line dislodgement, and physiological disruption. I also focused on the turnover of the critical care nurses and the hiring of graduate nurses to the ICU. This project included nursing champions to support and implement better practices while generating educational insight on early mobility. The nurses and patients required education on early mobility so that standard protocols of care could become common and accepted practice. The nurses previously received one-on-one training from physical therapy on the

equipment and transfers, from the respiratory therapist on incorporating the care of the ventilator, and from other staff on the use of new equipment to assist with ambulation. All nursing staff (including champions) were provided a PowerPoint and a designated area to review the ambulatory equipment to understand the different methods of use. This education program was intended to empower the nurses to initiate earlier mobility by increasing their knowledge and comfort for engaging with and practicing early mobility (see Lee et al., 2018).

The purpose of the literature review is to contribute information regarding the development of an educational program. The reason for this focus is to enhance critical care nurses' understanding of the elements of the program, refine the nurses' knowledge, and improve their skills in practice. Increased mobility of the ventilated patient remains a challenge for nursing because of concerns with patient safety and adverse events including but not limited to dislodgement of vascular lines (Hodgson et al., 2013). Nurses must become aware of how long periods of bed rest cause multiple body systems to fail. The ICU patient's functional status when immobilized for 1 week can cause as much as 20% decrease in muscle strength and 20% additional loss each additional week (Perme & Chandrashekar, 2009). Prolonged bed rest can cause poor quality of life, muscle weakness, decrease in circulation, and blood clots that cause pulmonary emboli (Castro et al., 2015). Health care organizations have been challenged to foster an environment conducive to evidence-based care. Providing the evidence nurses need to change their practice was essential. Providing education to improve the quality of care and to increase nurses' knowledge of this process may enhance patients' outcomes.

Addressing the practice problem involved developing an educational program to support nurses' change in action while increasing their knowledge. This educational project was administered to all nurses in a packet consisting of different-colored papers containing the pretest and posttest with randomized numbers to maintain anonymity. In addition to the educational packet, I introduced nurses to the equipment used to assist with ambulation. All barriers were addressed by the multidisciplinary team of nurses to provide better health care to patients. Education of the staff and collaboration among team members is critical to the success. The guiding practice-focused question for this project was the following: To what extent will the ICU nurses' knowledge of mobility increase after attending this structured evidence-based educational program?

Source of Evidence

Strong sources of evidence from a comprehensive literature review were required to understand the importance of and factors influencing early mobility. I cited randomized, nonrandomized, and systematic reviews of literature to provide the evidence needed to understand the harm of bedrest of the mechanically ventilated patient in the ICU. I also used data collected during this project and published outcomes from previous studies to address the practice-focused question. This doctoral project was intended to address the gap in practice by using sources of evidence to promote early mobility in the ICU. I used literature review obtained from the Cumulative Index of Nursing and Allied Health (CINAHL) Plus with Full-Text, MEDLINE, Cochrane Database of Systematic Reviews (CDSR), Ovid Medline, ProQuest, and PubMed. These sources of evidence

enabled me to answer the practice-focused question. I also used the evidence from the literature review to inform the project development.

Published Outcomes and Research

There is a vast evidence base of published studies on early mobility. The articles addressed complications and strategies used to prevent negative outcomes. The key search terms be used for this systematic review included *critically ill*, *intensive care unit (ICU)*, *early ambulation*, *ventilated patients*, *ventilated patients in the ICU*, *early mobilization*, *early mobilization of the ventilated patient*, *mobility protocol*, *mobility of the critical care patients*, *progressive mobility*, *barriers to mobility*, *adverse effects of bed rest*, *neuromuscular weakness*, *length of stay*, *physical therapy*, and *rehabilitation*. I searched literature published with the past 5 years addressing early mobility and found many studies published more than 5 years ago. The articles addressed complications and strategies used to prevent negative outcomes. All sources were peer reviewed, published in professional journals, and written by experts in the field.

Evidence Generated for the Doctoral Project

The purpose of this project was to create an education program and to measure the growth of bedside nurses' knowledge though a pretest, educational presentation about early mobility, and a posttest. I served as the lead in this project to collect pretest responses, deliver the educational material, and collect posttest responses. To understand the baseline for current nurse practice, I consulted the electronic medical record (EMR) as the means of establishing nursing-generated documentation of the early mobility

process under headings of daily care and early mobility. Health care providers are required to document every 4 hours under these two headings.

The process for long-term evaluation included internal systems to monitor outcomes for early mobility. The clinical managers determined whether nurses were documenting appropriately. The EMR was used to determine whether the practice of early mobility occurred as well as the frequency of the intervention. If early mobility was not performed during the shift despite the patient's level of acuity, respiratory support, and intravascular devices, nurses were questioned by the clinical manager on shift. If early mobility was not documented, I assumed that the practice was not offered to the patient or initiated during the shift.

Participants

Participants were nurses ages 23 to 60 with at least 2 years of experience in the field of nursing. A daily assessment was done to determine the phase of mobilization for patients (see Appendix E).

Procedures

My project occurred in four steps. First, I obtained a clear understanding of the current practices of early mobility and daily care. The knowledge gained from reading the EMR informed the ways in which I moved through the remainder of the educational project. Second, I administered a Likert scale pretest (see Appendix D) that allowed nurses to self-report their knowledge, perceptions, and behaviors concerning early mobility. Each nurse was issued a unique identification number to protect her or his identity. Following the nurse's completion of the pretest, I collected responses and coded

the pages using a unique, randomly generated 7-digit identification number. The personal identification details (e.g., name, age, tenure) of nurses could never be linked to the pretest or posttest response by each nurse. Third, I administered an educational presentation on the topic of daily care and early mobility. This educational presentation consisted of a PowerPoint and a demonstration of the physical therapy equipment used to assist with ambulation. Fourth, within 4 weeks of the educational program, I asked the nurses to complete a post-test (see Appendix D) to measure changes in their knowledge, perceptions, and behavior concerning early mobility and daily care. The posttest included an additional section on changes in their practice and how they felt since the implementation of early mobility. The posttest had the same unique and randomly generated 7-digit identification number enabling me to match the pretest and posttest responses. I compared the results to assess the changes among the nurses.

Providing the educational program and introduction to ambulatory equipment was intended to empower the nurses to initiate earlier mobility by increasing their knowledge and comfort with practicing early mobility (see Lee et al., 2018). The implementation of this educational program enhanced the nurses' understanding of early mobility and the benefits to functional status.

Protections

Health care providers have the legal and ethical obligation to do no harm. Therefore, the Walden institutional review board (IRB) and the local site IRB needed to issue an approval for this doctoral project prior to implementation, which was received

(12-06-18-0036117). I took the appropriate steps to protect the nurses in this educational program. Anonymity was maintained in this doctoral project to protect the nurses.

Analysis and Synthesis

To ensure a rigorous analysis of the changes in nurses' knowledge, perception, and behavior regarding early mobility, I adopted a mobility protocol based on the RASS scale protocol currently implemented by the hospital. I taught the nursing staff the existing RASS scale protocol in tandem with the benefits of early mobility and daily care. In addition, early mobility was added to the ICU standard orders and to the daily rounding tool during multidisciplinary rounds. Records pertaining to participant data were collected via Microsoft Excel, which was used to create a spreadsheet for recording and organizing nurse's pre-education responses and post education responses. The pretest and posttest were collected anonymously via unique randomly generated identification codes and entered manually into a Microsoft Excel spreadsheet to compare the staff's knowledge, perceptions, and behaviors before and after the education.

After completing the literature review, I organized the articles into a literature summary table to ensure they met the required reading. Many of the articles focused on implementation and prevention as well as strategies to improve patient outcomes. There were many levels of evidence that were reviewed. The presence of an evidence-based activity protocol provided clear guidelines and assessment for nurses to facilitate this new patient intervention in the practice setting (see King, 2012). I identified the evidence based on the Johns Hopkins Nursing Evidence-Based Practice (see Dearholt & Dang,

2012). All methods met industry-standard metrics of validity as noted by each study, and standardized measure were more efficient and easier to use.

Summary

The problem with early mobility in the ICU received substantial attention in the clinical and systematic literature. The literature related to early mobility of the critically ill patient emphasized functional outcomes and patient safety. In Section 3, I described the gap in practice and clarified the approaches taken in this project. I worked collaboratively with the ICU staff to address the importance of early mobility for the critically ill patient. Ongoing education and training of staff were intended to decrease barriers to the implementation of this program. Understanding the effects of early mobility of patients on mechanical ventilation may improve patient outcomes such as decreased length of stay, functional decline, and muscle weakness. Integrating this educational program may empower staff to ensure practice changes and mobilize their patients.

Section 4: Findings and Recommendations

Introduction

There are many challenges that medical practitioners face concerning early mobility. Early mobility can help prevent neuromuscular deconditioning of the critically ill patients especially when patients are immobile for more than a few days. Extended immobility may result in neuromuscular weakness regardless of physical therapy and nursing care (Castro et al., 2015).

Problems such as neuromuscular weakness that accompany immobility may be a part of the complexities inherent in the ICU; however, when early mobility has been initiated, outcomes have improved (Pashikanti & Von Ah, 2012). Identifying system barriers such as staff knowledge deficits, patient acuity, and poorly designed environments limiting the interactions with patients has proven to be critical for improving patient outcomes (Jolley, et al., 2014). Lack of staff education and training on early mobility in the setting where this project took place contributed to higher risk for poor patient outcomes. There was a need for education and training on early mobility (see Messer et al., 2015). Developing an educational program for early mobility may improve nurses' perception, value, competency, and ability to promote early mobility in the ICU. The key factor in any health care initiative is to provide a strong educational background and understanding of the components of the design, implementation, and evaluation of protocols (see Messer et al., 2015). Implementation of an early mobility educational program at a site where an early mobility protocol was implemented was intended to enhance collaboration among the multidisciplinary team, patients, and families to

improve outcomes. The project was conducted to answer the following practice-focused question: To what extent will the ICU nurse's knowledge on mobility increase after attending this structured evidence-based educational program?

The purpose of this educational project was to improve nurses' knowledge, assessment, and understanding of early mobility. The project addressed the gap in practice that ICU nurses were not introduced to the new evidence and were not trained on strategies to reduce muscle deconditioning through early mobility. Also, there was a lack of a standardized approach to early mobility for patients. The primary sources of evidence supporting this project were obtained from Cumulative Index of Nursing and Allied Health (CINAHL) Plus with Full-Text, MEDLINE, Cochrane Database of Systematic Reviews (CDSR), Ovid Medline, ProQuest, and PubMed. The impact of this knowledge gap for the health care team was evaluated within 4 weeks of administering the educational program. In addition, the literature review was conducted to support the staff education. The process required the development of the pretest and posttest questions, and the administration of the pretest and posttest to the nursing staff. Comparison of pretest and posttest scores was intended to measure changes in participants' practice and attitude since the implementation of early mobility. To ensure a rigorous and thorough analysis of this mobility program, I reviewed the findings of this educational program and determined whether the gap in practice had been reduced. The following section provides the findings and implications of this project.

Findings and Implications

The project objective was to develop an educational program for early mobility. This project was designed to include program development, published protocols, training on mobility equipment, and documentation to support the program. The assessment process was developed to measure the following categories: knowledge, perception, and behavior in accordance with the IRB (12-06-18-0036117) requirements for a staff education for both the facility and the university. The implementation of the program evaluation was completed by the stakeholders and team members. The questionnaires were developed to evaluate the evidence-based program and demonstrate the new knowledge gained. The findings varied in two ways. First, participants indicated through self-reporting that there were significant improvements in the areas of proper training on how to safely mobilize a patient. Although I saw significant increases in knowledge, there were mixed results pertaining to the self-reported understanding of which physical therapy to apply. The following section presents the data collection procedures and results.

Data Collection

Sixty nurses took part in the education program ($N = 60$). Initially, eighty nurses were educated on early mobility but only 60 nurses completed both the pretest and posttest. As a result, 60 nurses' responses were included in the data analysis. The posttest was offered approximately four weeks after education and implementation of the program. The pretest and posttest questions were used to assess the knowledge gained by the bedside nurses. Overall knowledge gain that indicated nurses understood the need for

EM showed improvement in perceptions of knowledge of EM from 74% before education to 88% post. Table 1 displays responses to two general knowledge questions relating to best practices for early mobility and functional ability. The knowledge of early mobility improved for the participants. Prior to education, only 50% of participants felt they were properly trained to safely mobilize their patients. After education, the knowledge and perception of safety improved to 85%. Prior to education, 63.3% of participants felt they understood which patients were appropriate for physical therapy even if they were mechanically ventilated, and after education their knowledge improved to 92%.

Table 1

Data Collection, Comparison of Knowledge

Questionnaire item	Pretest	Posttest	%
I have had proper training on how to safely mobilize my patient	Strongly agree: 50%	Strongly agree: 85.0%	Improved
I understand which patients are appropriate for physical therapy	Strongly agree: 63.3%	Strongly agree: 92%	Improved

Table 2 shows that two of the questions related to nurses' perception of workload and equipment and their feelings before and after education. After the educational sessions, results indicated improvement on both items with 45% of the nursing staff reporting mobilization of their patients did not place an additional work burden on them.

Regarding feeling comfortable with mobility equipment, 52% did not agree with a lack of comfort before education. After completing education, 85% of participants reported that they did not agree with a lack of comfort. This change indicated that nursing staff felt more comfortable with the mobility equipment after education.

Table 2

Data Collection, Comparison of Perception

Questionnaire	Pretest	Posttest	%
Mobilizing patients put more work on the nursing staff	Agree: 50%	Agree: 40%	Improved
I do not feel comfortable using different equipment when mobilizing my patient	Strongly disagree: 52%	Strongly disagree: 85%	Improved

Overall improvement in likelihood of behavior change to promote EM could be seen in the results from 69% pre-education to 91% post. Lastly, Table 3 shows marginal changes concerning the patient's functionality as discussed among the health care team. Concerning the last item, there was a slight increase from 55% to 63% in the belief that patients should be mobilized once daily unless contradicted. More participant responses after education demonstrated beliefs that patients should be ambulated at least once a day. Responses on the mobility questions after education showed improved knowledge levels compared to the pretest.

Table 3

Data Collection, Comparison of Behavior

Questionnaire	Pretest	Posttest	%
My patients' functionality is discussed among the healthcare team	Agree 52.9%	Agree 51.25%	Decreased
My patients are mobilized at least once daily, unless contraindicated	Strongly agree or Agree: 55%	Strongly agree or Agree: 63%	Increased

An unexpected limitation in this project was participant attrition. There are 100 nurses on the medical ICU unit, and only 80 nurses participated in the educational sessions. Out of the 80 nurses who attended the educational program, only 60 participated in the pretest and posttest. Although participants were informed of the confidentiality of their pretest and posttest responses, not all nurses felt comfortable answering the questions.

Implications from the study include significantly increased understandings of not only training on early mobility but also on selection of equipment and level of comfort. Nurses' increased confidence translates to greater confidence in practice, which can result in better care for patients in early mobility opportunities. A second implication was the slight decrease in the consideration of patient functionality as discussed by the health care team, which indicated that there was more work to be done pertaining to continuity of care and communication across the team. This finding may provide practitioners and

trainers with a better understanding of cross-care issues that may arise from communication deficiencies.

Clinical experts were present to guide and mentor the staff and channel their practice toward positive outcomes. The implications for positive social change include improved workplace culture. This positive change in culture improved the nurse's perception of early mobility. With this change came the need to promote the new knowledge obtained and reinforce the education and implementation on a daily basis. The process, protocols, and algorithm could take up to a year to implement with daily reminders. This positive change in culture will take time and may decrease the gap in practice as the nurses continue to improve patient outcomes.

Recommendations

This doctoral project is meant to improve the nurse's understanding of early mobility and observe the nurses daily and ensure there will be a decrease in complications in the ICU. Significant issues facing early mobility decisions are an uncertainty about equipment and protocols, and a lack of training. The results from this study indicate positive outcomes stemming from attention to these two areas and shed light on additional underlying communication problems that may still exist. Recommendations for practitioners stemming from the results are as follows:

Increased Early Mobility Education

This project indicated that when nurses are properly trained on not only the benefits of early mobility but also the options that are available, they report greater knowledge on EM care for patients. An additional component that results from greater

knowledge for nurses is a greater sense of confidence about the approach, which can also translate into better care. Hospitals should be aware of these positive outcomes stemming from training and establish quarterly early mobility education seminars that can allow nurses to stay updated on the new trends in early mobility.

Understand the Implications of a Lack of Communication

This project also revealed an unexpected finding in terms of communication across health care team members pertaining to EM. Although the decrease for the measurement of *My patients' functionality is discussed among the healthcare team* was marginal, this finding could indicate opportunities for improvement throughout the different levels of patience care, including doctors, nurses, and patients staying abreast of the ongoing health concerns and progress on a patient-by-patient basis. Administration may consider including a communication-based training program to standardize care approach across health care teams.

Strengths and Limitations of the Project

The staff may have a better understanding on how to identify patients who can benefit from early mobility. Changing practice to support evidence-based practice will be an essential component to the implementation. Nurses will implement the evidence-based practice while developing their knowledge and skills through educational training.

The program was limited to one facility and one ICU. The mobility education was provided to 60 critical care nurses only. It is possible that the intensivist group and trauma surgeons have different views regarding mobility, sedation, and ventilator management. These differences may affect how the nurses provide care and measure

outcomes. Once the patient is transferred to a medical-surgical unit, the mobility intervention may not be continued as frequently as in the ICU, which may lead to increased length of stay.

Future directions for research may include a pretest and posttest application of a communication based standard operating procedure concerning early mobility. Future research and training could address the educational program using different mobility equipment to educate nurses via simulation. The basic equipment could serve as a review of ergonomics and the use of nonnotarized equipment. Additionally, slide boards, slide sheets, and gait belts could be used in a hands-on training during education sessions. The specialty equipment could focus on the motorized equipment and documentation review of the new documentation screens for mobility assessment and equipment used in the EMR. Furthermore, a more structured process might include sessions on full body ceiling lifts and air-assisted transfer devices. Assessment of each patient's mobility capabilities and the proper equipment needed may be covered as well as education and communication strategies with patients regarding their needs of mobility (Lee et al., 2018).

Providing a structured quality improvement project is crucial to closing the gap in practice and changing the culture in the ICU. Accomplishing this culture change of early mobility was supported by the stakeholders and advocated by leadership to sustain this change (Hashem et al., 2016). Closing this gap and changing clinical practice required this structured educational program and the development of guidelines and protocols for the staff.

Summary

This project is in its infancy in the development and implementation of early mobility guidelines. These guidelines may be a precursor to assist the nursing staff in providing a better means of assessment of early mobility to improve the outcomes of patients. Incorporating this educational plan may improve nurses' knowledge, comfort, and changes in practice. Published outcomes and literature reviews may assist in the implementation and evaluation of the early mobility project on a broader scale. After 4 weeks of education and implementation of this project, results showed an increase in staff's perception of feeling properly trained to safely mobilize their patients. This program may impact positive social change with improvements in knowledge of nurses and care of patients. This project requires annual revisions and further education to sustain the culture change.

Section 5: Dissemination Plan

Introduction

Dissemination of this educational program to the nursing staff is the way to communicate the information and improve outcomes for patients. The dissemination process will include a poster presentation at the critical care skills fair. This DNP project was intended to empower nurses to realize the impact they have on improving their patient's outcomes. This education program will translate evidence into practice by creating a culture to foster change. I plan to disseminate this project, including the protocol and algorithm, to enhance the knowledge regarding early mobility. I created this dissemination plan starting with the stakeholders and mobility team as well as the nurses. The expectation of this project is to close the gap in knowledge by using the guidelines and protocols to guide the nursing staff. The education program will need to be sustained through annual education including online training and poster presentation at the annual skills fair. Once the education is disseminated throughout the ICUs, this project may be disseminated throughout the broader health care system.

Analysis of Self

This project has enhanced me as a scholar and project developer. I have developed the ability to strengthen my colleagues' knowledge by designing protocols to improve patient outcomes. The AACN (2006) defined a DNP-prepared nurse as one who is challenged by rapidly changing practices and dynamic work environments. As a DNP-prepared nurse, I will be able to develop policies and procedures with confidence by focusing on clinical practice with knowledge to positively impact patients, families, and

staff. The project development process has allowed me to gain confidence in translating theory into evidence-based practice. As a DNP-prepared nurse, I will apply my experience to problem solving within my health care delivery system and will promote improvements in health care.

Summary

In the ICU, patients rely on nurses to initiate their health care activities, including positioning, sitting, standing, and ambulation. The practice problem includes the complexities inherent in the ICU as well as system barriers such as nurses' lack of knowledge on early mobility in the ICU. The development of an educational program to strengthen nurse's knowledge may improve patient outcomes. Coaching is critical to changing behavior (Lee et al., 2018).

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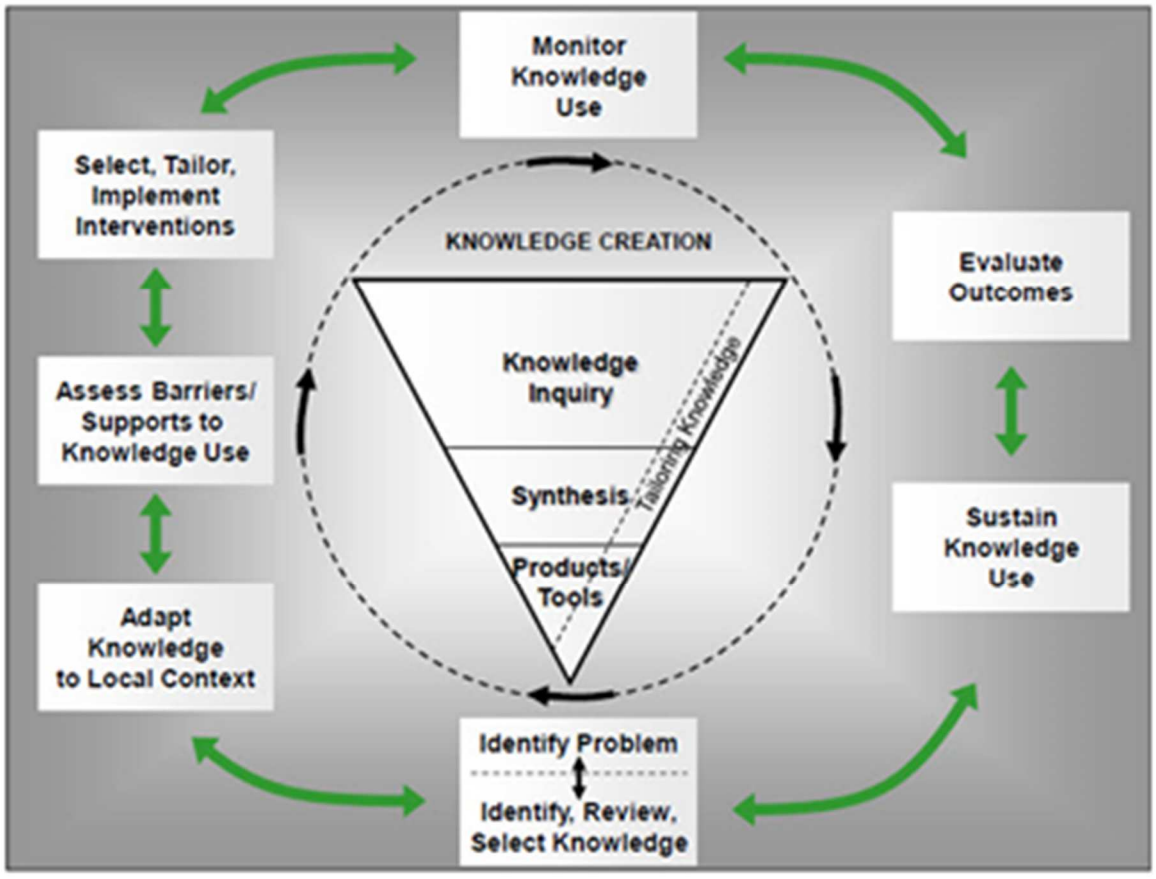
Appendix A: Knowledge to Action Framework



From Graham I, Logan J, Harrison M, Strauss S, Tetroe J, Caswell W, Robinson N: Lost in knowledge translation: time for a map? The Journal of Continuing Education in the Health Professions 2006, 26, p. 19. Reprinted with permission from John Wiley and Sons.

Appendix B: The RASS Scale

Richmond Agitation Sedation Scale (RASS) *

Score Term Description

+4 Combative Overtly combative, violent, immediate danger to staff
+3 Very agitated Pulls or removes tube(s) or catheter(s); aggressive
+2 Agitated Frequent non-purposeful movement, fights ventilator
+1 Restless Anxious but movements not aggressive vigorous

0 Alert and calm

-1 Drowsy Not fully alert, but has sustained awakening (eye-opening/eye contact) to voice (>10sec)
-2 Light sedation Briefly awakens with eye contact to voice (<10 seconds)
-3 Moderate sedation Movement or eye opening to voice (but no eye contact)
-4 Deep sedation No response to voice, but movement or eye opening to physical stimulation
-5 Unarousable No response to voice or physical stimulation

Appendix C: Mobility Screening Algorithm

ICU EARLY MOBILITY GUIDE				
PHASE	I	2	3	4
LOC	Unconscious / Ventilated	Conscious / Ventilated	Conscious / Ventilated	Conscious / Vent / Non-vented
Team ROM	Mobility Team (M.T.) PROM TID	O.T, P.T, M.T. P/AA/A ROM TID	O.T, P.T, M.T. P/AA/A/Resistive ROM TID	O.T, P.T, M.T. Active/Resistive ROM TID
RASS	RASS: -5 TO +2	RASS: -2 TO +2	RASS: -1 TO +2	RASS: 0 TO +2
A M	UE x 10 LE x 10	O.T. M.T.	O.T. M.T.	O.T. M.T.
P	UE x 10	P.T.	P.T.	P.T.
M Evening	LE x 10 M.T.	M.T. M.T.	M.T. M.T.	M.T. M.T.
TURN	M.T: Q 2 Turning	M.T: Q 2 Turning	M.T: Patient assists Q 2 Turning	M.T: Patient assists Q 2 Turning
SITTING POSITION IN BED B= Breakfast L = Lunch D = Dinner	20 minutes TID meal times Time: B_ L_ D_	40 minutes or less TID meal times Time: B_ L_ D_ P.T. / O.T Sit at the edge of bed	60 minutes TID meal times Time: B_ L_ D_ P.T. / O.T. / M.T: Sit at edge of bed min/mod A (Work up to 10 minutes)	90 minutes or less TID meal times Time: B_ L_ D_ M.T: Sit at edge of bed (supervision)
		M.T: Out of bed to chair via mechanical lift 2 hours daily OOB to chair P.T. / O.T. or RN if safe	M.T. / P.T: Out of bed to chair 2 hours daily mechanical lift or stand pivot P.T. / O.T: Stand / Sara + weight shifting	M.T./P.T./O.T: Out of bed to chair 2 hours daily mechanical lift or stand pivot P.T. / O.T: Marching in place / Progressive Gait
		ST: Communication Board ST, O.T: Oral facial hygiene RT, ST: Passy Muir valve	M.T: Oral facial hygiene ST: Communication Board O.T: Upper body dressing supine ST, RT: Passy Muir valve	M.T: Oral facial hygiene O.T: UE dressing EOB O.T: Lower body dressing O.T,M.T: ADL's in bathroom ST: Swallow

Appendix D: Survey for Early Mobility of the ICU Intubated Patient

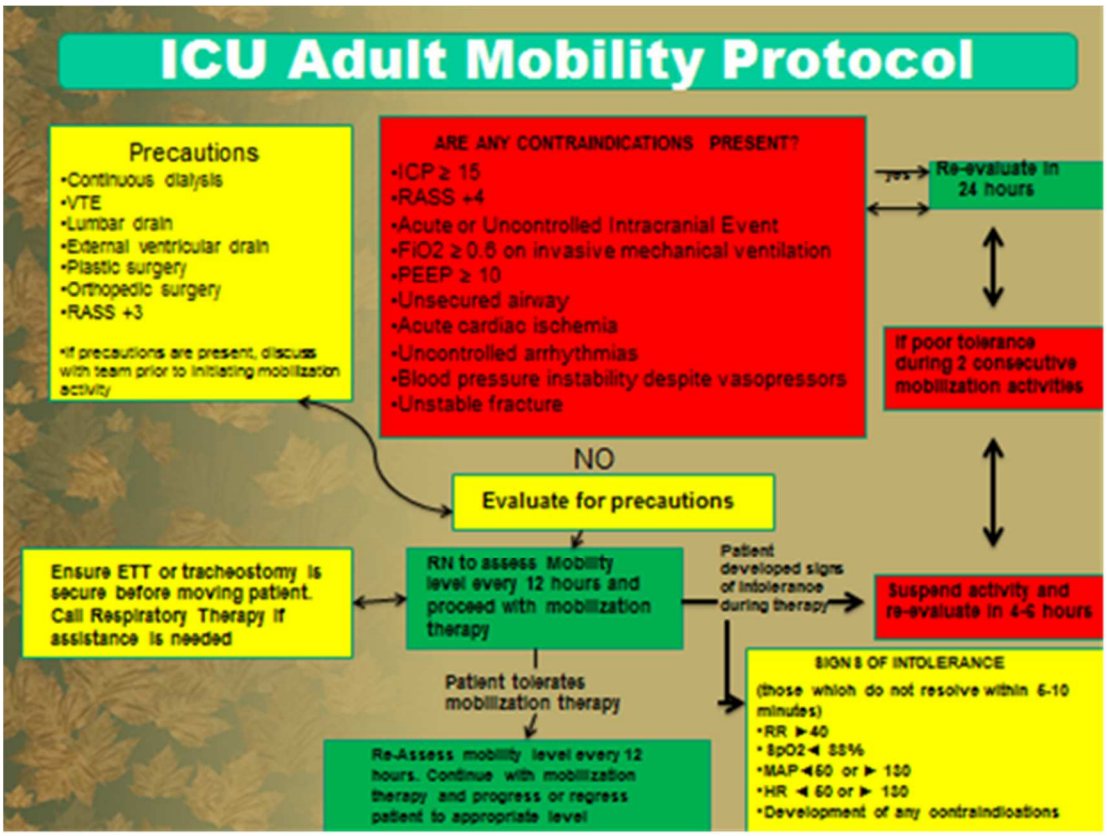
Pre-Test/Post- Test

- **Options to response**: 1 strongly agree; 2 agree; 3 neutral; 4 disagree; 5 strongly disagree

Categories	Item #	Response	Response 1-5
Knowledge	1	I have had proper training on how to safely mobilize my patient	
	2	I understand which patients are appropriate for physical therapy to mobilize	
	3	I understand which patients are appropriate for occupational therapy	
	4	I will educate my patients on exercise: range of motion or increase their physical activity while in the ICU, unless contraindication	
Perception	1	My patient is too sick to be mobilized	
	2	Increasing mobility of my patients will cause harm to them: loss of tubes, extubation, etc.	
	3	Physical therapy and occupational therapy should be the primary care provider when mobilizing my patient	
	4	Mobilizing the patients will put more work on the nursing staff	
	5	Mobilizing the patients will put more work on the physical therapist & occupational therapist	
	6	Patients who are mobilized at least three times a day will have better outcomes	
	7	I am not sure when it is safe to mobilize my patient	
	8	I do not feel comfortable using different equipment when mobilizing my patient	
	9	I do not feel we have the proper equipment to mobilize our intubated patients	
	10	My patients are not able to get OOB three times a day	
Behaviors	1	We do not have the proper equipment to mobilize our patients	
	2	My patients functionality is discussed among the healthcare team (physicians, nursing, physical therapy/occ. therapy)	
	3	We have enough staff to assist with ambulation of the	

		patients	
	4	Most of the patients have contraindications to be mobilized	
	5	I can mobilize my patients at least once daily, unless contraindicated	
	6	Leadership is supportive of early mobility	
	7	Without proper equipment and providing my patients with early mobility I am at increased risk of injury	
	8	In order to mobilize my patient, I will need an order	
	9	My patients family will be willing to help with early ambulation of the patient	
	10	I document the functional status of my patient during my shift daily	
	11	I am too busy to ambulation my patient	

Appendix E: Daily Assessment



Appendix F: Letter of Permission to Use Knowledge-to-Action Framework

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