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Implementation of an Early Progressive Mobility Program in the Intensive Care Units

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This is to certify that the doctoral study by

Rene Rodriguez

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Abstract

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MSN, Walden University, 2014

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Project Submitted in Partial Fulfillment

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Abstract

In the United States, adult ICU patient care consumes $90 billion annually, or 1% of the gross national product. In the ICU, about 40% of the patients are mechanically ventilated resulting in an 11% greater length of stay (LOS) that requires 35% more resources. And, an estimated 60% of these patients are adversely impacted for as long as five years following discharge. Patient immobility while ventilated contributes to poor quality and financial outcomes. The Institute of Healthcare Improvement (IHI) reports on average early patient mobility (EPM) reduces a 4.5-day LOS by as much as 1.3 days; and reduces the risk for complications such as ventilator associated pneumonia, thromboembolisms, and pressure ulcers. The purpose of this evidence-based practice (EBP) quality improvement project was to evaluate an EPM program based to improve interdisciplinary collaboration and care coordination. The introduction, development, and evaluation of this project were guided by the Iowa Model and the Awakening and Breathing Coordination, Delirium Monitoring/Management, and Early Exercise/Mobility (ABCDE) bundle. The EPM program was implemented in a 20-bed ICU in a 400-bed hospital as the Mobilization Criteria / Algorithm for Critical Care Patients (MCACCP). Retrospective data was collected for six months from the electronic health record and evaluated with a web-based analytics tool. The project resulted in a 1.2-day decrease in ICU LOS and a 6.7% reduction in ventilator days. The average daily census decreased from 16.2 in 2015 to 14.7 through 2016. EBP research supports the benefit of early mobility of ICU patients to reduce complications, ventilator days, LOS, and the overall cost for care. This project demonstrates standardizing clinical practice based on EBP guidelines and protocols translates into improved teamwork, patient outcomes, and organization metrics.

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Table of Contents

List of Figures

Section 1: Nature of the Project

Introduction

Government and regulatory entities expect patient improvement practices and initiatives. The focus on patient outcomes begins at admission for all patients and requires collaboration among multiple health care disciplines to plan and implement initiatives for improved outcomes. In addition to outcomes, quality improvement projects can be used to manage the expectations and experiences of the patients through the delivery of effective and efficient patient care practices (Stanowski, Simpson, & White, 2015). The study site, Medical Center Hospital (MCH), struggled to implement early progressive mobility for ventilated adult patients in the intensive care setting. MCH wished to improve patient outcomes through collaboration in an interprofessional health care team that included nurses, nursing assistants, physicians, physical therapists, and respiratory therapists. The purpose of the initiative was to decrease the length of patient stays because of the increased risks for adverse effects in critically ill patients who stay longer at the hospital.

The mobilization of patients in an intensive care unit (ICU) is correlated with improved mental and functional outcomes (Ecklund & Bloss, 2015). A lack of mobility during hospitalization has been associated with increased LOS, mechanical ventilation days, and need for rehabilitation. It is imperative to initiate mobilization of critically ill patients at the earliest time possible to improve patient safety. The purpose of this study was to discuss the importance of early progressive mobility in critically ill, ventilated

adult patients and how implementation of a mobility program has decreased LOS and ventilator days in the ICUs.

Prolonged bed rest is the primary cause of disabilities after a hospitalization discharge (Engel, Tatebe, Alonzo, Mustille, & Rivera, 2013). The overarching goal of this study was to reduce the LOS and decrease ventilator days for ICU patients at MCH. The best patient outcomes depend on the care initiated and provided by health care personnel at the admission stage of any hospitalization. Decreased physical and mental functions can result from prolonged critical care (Hopkins, Miller, Rodriguez, Spuhler, & Thomsen, 2012). These debilitations can affect the patient for months, even years after the hospital discharge. Methods to decrease these debilitations have been addressed through early progressive mobility of adult ventilated patients in the ICUs. The early mobility of critical care patients is a difficult process to implement as a nurse-driven program, but the challenges have been overcome through appropriate population assessment, evaluation, planning, and interdisciplinary collaborations with a focus on improved patient outcomes. Successful changes in practice through evidence-based programs are possible through interprofessional collaboration to ensure better patient care (Green & Johnson, 2015).

Project Facility

MCH is a Trauma Level 2, 402-bed, community-based hospital that served 17 surrounding counties in the Southcentral United States. The organization had two ICUs where early progressive mobility program had been implemented. Each ICU was open for admission for all privileged physicians, and it included adult patients 17 years of age

or older. A supportive organization is necessary for implementing new, EBP's aimed to improve patient outcomes (Anderson-Carpenter, Watson-Thompson, Jones, & Chaney, 2014). As a community-based health system, MCH strives to be the premier health care provider for the population it serves.

Extended ICU stays and time on a mechanical ventilator increases risks for health complications that can result in serious illnesses and death (Ronnebaumt et al., 2012). The adverse events caused by immobility can also lead to the need for long-term, even lifelong, rehabilitation (Ronnebaumt et al., 2012). Early progressive mobilization of mechanically ventilated adult patients must be planned at admission. The critical care team predicted that early mobilization of the population selected would decrease LOS in the ICUs and have a corresponding decrease in the need for prolonged mechanical ventilation.

Problem Statement

Early progressive mobility can decrease the length of stay in the ICU and also decrease the need for mechanical ventilators compared to patients who were not mobilized (Harris & Shahid, 2014). Due to a high census and increasing LOS among ICU patients, MCH has experienced increased critical care diversions and an increased LOS for patients in the emergency room. New initiatives in critical care are needed to decrease adverse events that include mechanically ventilated days and length of hospitalization days in the ICU (Dafoe, Chapman, Edwards, & Stiller, 2015). At MCU, the team leaders anticipated challenges and barriers for the implementation of an early mobility program in the ICUs, which included changes in culture and practice between all disciplines.

Therefore, it was important to communicate the necessity of improving patient care and outcomes for critically ill patients with all health care team members who are directly and indirectly involved with the program.

Purpose Statement

An early mobility program has been effective and was practiced only in the post-ICU admission phases of hospitalizations at MCH for many years. In this study, I focused on the early progressive mobility of mechanically ventilated adult patients ages 17 years and older who were admitted into the intensive care setting. The health needs of older adults, along with an increase in populace, placed the aging population at an increased risk of requiring ventilation (Ronnebaum et al., 2012). The need for the implementation of this program was confirmed by an initial health needs assessment and evaluation of the affected population conducted by the critical care committee members. A health needs assessment aids the researcher in identifying current health risk awareness among the target population (Tregoning, 2014). This approach provides methods for improving the targeted population's outcomes. Identifying gaps in patient care can also be an outcome of a needs assessment that can lead to improved health care provider workflow and patient outcomes.

Program Objectives

The key objectives for this project included an investigation into whether implementing an early mobility program for critically ill, ventilated patients decreased mechanical ventilation days in the ICU and decreased the patient's LOS. Intangible goals included an improvement in patient outcomes through implementing interventions that

are associated with a higher quality overall physical functionality and neurological function. Initial LOS and mechanical ventilator days for the ICUs were compared through monthly data abstraction. More than half of the ICU population requires mechanical ventilator support, and this population can be weaned off of mechanical ventilators with effective evidence-based practices (Ronnebaum et al., 2012). To meet these goals, I assessed and evaluated data for LOS and mechanical ventilator days for adult patients in the ICU. I gained access to the ICU LOS data through monthly reports that were available to all department directors at MCH.

Practice Question

As an introduction to new patient care methods, the practice question was as follows: Does the implementation of an early progressive mobility program for adult ventilated patients affect the ICU LOS and decrease the need for mechanical ventilator days?

Significance and Relevance to Practice

Prolonged bed rest can lead to an increase in the LOS among adult patients in ICUs by 11% (Engel et al., 2013). The added LOS affects patient lives long after their hospitalization discharge. Mobility in the ICUs has consisted only of repositioning in bed at two-hour increments and assisting the patient to a chair at his or her bedside. Early mobility is essential in managing critically ill patients who are already at risk for lifelong undesirable effects caused by immobility. The Institute of Healthcare Improvement (IHI) found that early exercise and progressive mobility aided in decreasing patient LOS and improving the lives of those discharged from the ICUs (as cited in Campbell, Fisher,

Anderson, Kreppel, 2015). The IHI's study findings (as cited in Campbell et al., 2015) have been implemented in the critical care areas at MCH where minimal to no mobility processes transpired in the past. Early mobility of critically ill, ventilated patients through physical activity promotes faster healing and prevents complications that can increase a patient's LOS and risk of comorbidities (Ecklund & Bloss, 2015).

Significance of the Project

Researchers have supported early progressive mobility in ICUs for improved patient physical and mental function after an ICU stay. A nurse- and physical-therapy-driven mobility program for MCH can help to decrease long-term adverse effects, such as physical and mental disabilities (Drolet et al., 2013). Early progressive mobility can decrease negative health complications, which can increase length of hospital stays and complications in the ICUs. Early progressive mobility of mechanically ventilated adult patients in the ICUs included collaborative efforts from nurses, nursing assistants, physicians, and respiratory and physical therapists. To improve patient outcomes in the critical care setting, early mobilization initiatives must be implemented. These innovative practices allowed for the timely and efficient application of interventions to be implemented earlier in the patient's admission. Early mobility has been a practice, per the physician orders, on post-transfer cases from the ICUs. Early progressive mobility begins on admission to the ICUs to allow critically ill patients to maintain or recover their physical and mental functionality, decrease length of patient stay, and minimize the risks associated with longer hospitalizations.

Reduction of Gaps

Implementation of an early progressive mobility program in the ICU can lead to reductions in LOS and ventilator days, as well as improvement in physical and mental health outcomes for the critically ill populations. Government entity agencies have mandated hospitals to decrease lengths of stay and to become more cost efficient, leaving health care organizations to incorporate best practices to improve patient outcomes (Szubski et al., 2014). Employing EBP in patient care can lead to reductions in patients' LOS and mechanical ventilation days. Tailoring best patient care practices in the critical care setting at MCH can improve patient care and outcomes. Hospitals that incorporate cost effective, best practices can help the communities that they serve. Gaps in research and best practices generate mortality, morbidity, and increased health care costs (Leahy et al., 2014). Reducing the gaps in practice entails implementing researched practices within MCH. Frontline staff must buy-in to the new programs to improve patient outcomes. Communicating why this change was necessary, as shown through the ramifications of tailored best practices, assisted in reducing the gaps in research and clinical practice at MCH.

Implications for Social Change in Practice

Best practices are derived from environments where planned processes are studied and strategically implemented. A mobility program has been beneficial for MCH patients and the organization in terms of improved health outcomes for patients and better reimbursement opportunities. Evidence-based practices that result in mobilization of critically ill patients will decrease ventilator days, which decreases further respiratory or

multiorgan complications, decreasing lengths of stay (AACNPEARL, 2014). MCH strives to provide the best patient care to the 17 communities it serves in a rural setting. The need for extended mechanical ventilation time also demands more resources and increased health care costs (Ronnebaum et al., 2012). With improved an MCH early progressive mobility program in the ICU, these resources can then be reallocated for improvements and resources needed in other areas throughout the organization.

Definitions of Terms

Early Progressive Mobility Program: Mobilization of adult ventilated patients in the ICUs is now a change in practice that has proven to decrease physical and mental disabilities posthospitalization discharge (Reames, Price, King, & Dickinson, 2015).

Evidence-based research: Nursing care through improved practices, opposed to doing the repeated care, based on research that can be tailored to fit the processes and operations of MCH with the ultimate goal to improve patient outcomes (Price & Williams, 2015).

Comprehensive Unit Based Safety Program: A program derived by Johns Hopkins to improve patient outcomes through patient safety initiatives ("Johns Hopkins," 2008).

Length of stay (LOS): The rate of hospitalization stay due to illness that is factored by diagnosis, patient treatments, and overall health care environment (Cho, Park, Jeon, Chang, & Hong, 2014).

Mechanical ventilator days: Amount of days requiring mechanical ventilation for respiratory assistance (Ming-Shian et al., 2013).

Pay for performance: A means of financial reimbursement implemented by the Centers for Medicare and Medicaid for patient experience measures (Stanowski et al., 2015).

Rehabilitation: The length of time needed for rehabilitation after an ICU discharge.

Ventilator-associated pneumonia (VAP): An airway infection that could have developed from mechanical ventilation after 24 to 48 hours (Liao, Tsai, & Chou, 2015). Prolonged ventilator days can result in hospital-acquired infections, such as ventilator-associated pneumonia.

Assumptions and Limitations

My project was limited due to the staffing needs of the ICUs, in addition to patient and family participation. Budget constraints must also be considered as a limitation for early mobility in night shift and weekend days critical care teams. Collaborative efforts must include education and communication on the benefits of early mobility among all disciplines (Harris & Shahid, 2014). As in previous MCH ICU improvement initiatives, some physicians have refused to implement or follow new practices because they were not included in the planning phases. Participating physicians who had been involved in previous programs at other organizations may have been biased and immediately determined that an early mobility program would be unsuccessful. These biases were addressed through communication and education of best practices conducted in studies in organizations comparable to MCH. The critical care team anticipated that early progressive mobility in the ICUs could affect mechanical

ventilator days and LOS in the ICUs. Assumptions about decreasing the LOS were made based on previous studies at other facilities with similar practices. Best practices were tailored to fit the needed interventions at MCH. The team leaders assumed that most ICU staff was prepared for change due to the ongoing patient care improvements through the joint program with Johns Hopkins early mobility program. Guidelines from the American Association of Critical Care Nurses (AACN) Awakening and Breathing Coordination, Delirium Monitoring and Management, and Early Mobility (ABCDE) bundle for preventing adverse effects in the ICU through early mobilization were also included.

Summary

The complexity of caring for critically ill adult patients continues to be a challenge. The AACN (2012) implemented the ABCDE bundle to improve critical care nursing and critically ill patient outcomes that involves all disciplines in the critical care setting. The MCH critical care team implemented all pieces of the bundle with the exception of mobility. This lack of implementation was due to a lack of standardization and buy-in from physicians and all other disciplines involved in the care of critically ill patients. Standardization has been achieved through a multidisciplinary-driven protocol that was created by a committee with the inclusion of all disciplines involved. Some pieces of the protocols were accessed from the AACN ABCDE bundle guidelines by the critical care team at MCH.

In Section 2, I will present the literature review for this study.

Section 2: Background and Context

General Literature

Expectations for technology-improved health care continue to increase for hospitals nationwide. These expectations require critical care team involvement. Nurse-driven protocols at MCH have been successful and have advanced patient outcomes. However, there is now a need to improve the health outcomes of critically ill patients by implementing an early progressive mobility program in mechanically ventilated adult patients in the ICUs. The early progressive mobilization of mechanically ventilated adult patients in the ICUs can lead to decreased LOS. Impairments caused by a critical care stay adversely affect up to 60% of patients for up to 5 years after discharge (Reames et al., 2015).

I conducted a literature search using the following databases: Cumulative Index to Nursing and Allied Health Literature (CINAHL), Ovid Nursing Journals Full Text, Medline with Full Text, EBSCO, and Cochrane Database of Systematic Reviews. Key words included *early progressive mobility, early mobility, early mobilization,* and *early mobility of ventilated patients*. I used articles published from 2010 through 2016 that included information on early progressive mobility in ventilated adult patients.

The MCH critical team is concerned about patient trends in decreased activity in the ICUs. These concerns have led to the implementation of early mobilization of mechanically ventilated adult patients. Negative side effects about decreased patient activity in ICUs include delirium, extended days on mechanical ventilator, muscular weakness, and increased pressure ulcer rates (AACNPEARL, 2014). Use of early

mobility practices must be implemented with caution. Patients who have physiological instability should not be eligible for early mobilization, and the stability of each patient should be assessed on a shift-to-shift basis. Mobilization of patients in the ICUs improves the functional outcomes for the critically ill. Nursing staff determine the need for early mobilization of the critically ill in the ICUs (Drolet et al., 2013). Nurse-led patient care improvements in the ICUs for MCH have resulted in many positive accomplishments through multidisciplinary collaboration efforts that have been applied in the early mobilization program.

Early Mobilization of Critically Ill Patients

Scholars have supported early mobilization for patients in ICUs, which has been initiated through organizations, such as the AACN and IHI. These organizations have provided guides for implementing an early mobility program of mechanically ventilated adult patients in the ICUs at MCH. The guidelines include the AACN ABCDE bundle that breaks away from over sedation and prolonged mechanical ventilation for patients in the ICUs (AACNPEARL, 2014). MCH emphasizes mobilizing patients at the earliest possible time of the patient's admission for improved outcomes. Improved physical function through early mobility and reduced length of stay can result in effective practices of mobilizing patients in the ICUs during the first 48 hours of admission and thereafter (Dafoe et al., 2015). Communication of patient benefits to all disciplines is essential for engagement and buy-in of new practices, such as early mobilization in a critical setting. Campbell et al. (2015) showed that continuous improvements were made throughout the program and concluded that enhancements were needed to attempt an

early mobilization program in the facility. Experiences shared from Campbell et al.' study served as a guide in recognizing the need for champions and daily recognition of all team member efforts through multidisciplinary rounding. Early progressive mobility with effective communication, planning, and interdisciplinary teamwork aids in improving the patient's physical functionality near preadmission status for self-care (Ecklund & Bloss, 2015). The aim of the MCH critical care team is to care for the patient with continuous education of self-care measures after discharge. Increased efforts for self-care management are also the goal of the MCH critical care team with early mobilization of mechanically ventilated adult patients in an ICU setting.

Framework

The Iowa Model of evidence-based research (EBP) served as a guideline for this study. I used the Iowa model of EBP to identify a problem-focused trigger that led to the questioning of nursing practices at MCH (Doody & Doody, 2011). The problem-focused trigger was the lack of mobility in adult mechanically ventilated patients in the ICUs at MCH. Nursing staff and the organization have highlighted the need to improve patient physiologic functional outcomes. The Iowa model for EBP was used to identify the need for improvements in nursing practice at the MCH critical care departments. An interdisciplinary team in the ICUs agreed that implementing the Iowa model of EBP would be the best fit for the organization's ultimate goal and culture change.

Summary

Best practices derived through scholarly research are tools for clinical decision-making processes that can be modified for an organization (Peterson et al., 2014). I

searched for best practices in the literature to apply as a reference for the implementation of a change in practice at MCH. Staff at MCH involved in the early mobilization of patients in the ICUs also applied the practices and experiences from existing literature. Research at a doctorate level serves as a tool for referencing appropriate research with the added recognition of different levels of evidence as rated by the AACN (Peterson et al., 2014). Evidence-based practice continues to expand and has become the expectation in nursing practice for improved patient care and higher quality outcomes.

In Section 3, I present the collection and analysis of the evidence.

Section 3: Collection and Analysis of Evidence

Project Design/Methods

Inclusion of key stakeholders for the implementation of new practices is important. Standardization of methods to improve patient care and outcomes through early progressive mobility of mechanically ventilated adult patients in the ICUs is also necessary through protocols and communication tools. MCH was a 402-bed, Trauma Level 2, community-based hospital that had many services available to a growing community. The hospital had two 20-bed ICUs that were open for admission from intensivists, cardiologists, pulmonologists, neurologists, trauma physicians, and a variety of surgeons. Each ICU had up-to-date technology with a nurse-to-patient ratio that ranged from 1:1, 1:2, and 1:3, similar to many ICUs mentioned in literature. As with the onsets of any new practice, rules and guidelines must exist for all of the disciplines involved. Based on the review of literature, I applied a retrospective, data collection research design, and I found a correlation between a shorter length of stay and total mechanical ventilation days. The critical care team at MCH targeted a 6-month period that began in December of 2015 for the study of early mobility in the ICUs**.** The population consisted of adolescents, adult, and older mechanically ventilated adult patients in the ICUs. Planning for early mobilization of patients in the ICUs through early mobility protocols was based on the patient's hemodynamic stability.

The project design for an early progressive mobility program of mechanically ventilated adult patients in the ICUs included inclusion criteria for patients. The MCH critical care team identified a need for the mobility of mechanically ventilated adult

patients in the ICU due to the increasing survival rates of patients in the ICUs (Ronnebaum et al., 2012). The implementation of increased mobility of mechanically ventilated adult patients in the ICU may lead to increased neurological and functional recovery with improved outcomes after discharge from the ICUs at MCH.

Population and Sampling

The population chosen was determined per the needs assessment conducted by the critical care team leaders prior to the planning phase of an early progressive mobility program in the ICUs. The admission population in the ICUs included adolescents, adults, and older adults. In this study, I excluded pregnant women and inmates. Mechanically ventilated adult patients are a vulnerable population that necessitated intervention for improvements toward their outcomes. The vulnerability of adult mechanically ventilated adults required early management of adverse effects through best practice interventions to improve their outcomes and decrease their mortality rates (Hamdan-Mansour, Farhan, Othman, & Yacoub, 2010). As an observational study, opt-out consents were approved through the MCH ethics committee due to the exclusion of patient identifiers.

Data Collection

The critical care team leaders collected data for mechanically ventilated adult patients mobilized in the ICUs during a period of an electronic medical record (EMR) transition. Data were collected in collaboration with the informatics team and performance improvement personnel. All of the nursing, respiratory, and physical therapy information documented had been assessed for compliance. There was a trend of

decreased ICU LOS and ventilator days as expected by the MCH critical care team, deeming the early mobility program a success.

Instrument

The Institute of Medicine suggested a standardized method of data abstraction for optimal accuracy in data collection (Li et al., 2015). Data were available to all MCH staff that aim to seek improvements, justify purchasing of equipment, or need additional resources. Lengths of stay and mechanical ventilator day data were requested from both the performance improvement team and the organization's clinical analytics department at MCH. A data collection tool that was available to the performance improvement department, known as MedMined and Horizon Business Insight (HBI), helped to ensure standardized data collection for accurate results. HBI is a tool that is attached to the EMR system, and it allows MCH to manage patient clinical integration with risk management tools for sustaining and improving quality and safety (A. Snider, personal communication, February 19, 2016). MedMined is an infection prevention tool used by the infection prevention team and performance improvement to identify VAP events in the ICUs (P. Burton, personal communication, April 12, 2016). Team leaders at MCH assessed every patient on a mechanical ventilator on lab values and critical care team documentation on a daily basis.

MCH recently made a purchase of early mobility equipment from a reputable company. The company representative assisted in showing a justification for future purchase of mobility equipment by assisting in the measurement of the lengths of stay and mechanical ventilator days. Checking for accuracy is a necessary step in data

collection, which is a process in the information abstracted. It is imperative that the data abstraction processes are precise for continued patient improvement initiatives in the critical care setting.

Data Analysis

The data abstracted were analyzed and evaluated for comparison of the pre and postresults. The information from post-ICU LOS, as well as mechanical ventilator days, was deemed successful due to improvements identified from the data collected. LOS data for all of 2015 and for the first 6 months of 2016 were collected. According to the data, there was a decrease in the LOS for the ICUs and overall hospitalization stay. Data abstraction for mechanical ventilator days was defined as the days a patient had a vent charge in the ICUs and, therefore a percentage of the patient's LOS, because they were not on a mechanical ventilator throughout their entire ICU stay. Statistical data abstraction conducted by the MCH informatics and performance team in the most precise manner ensures accuracy and the highest quality of data analysis.

Project Evaluation Plan

A project evaluation plan consisted of the need for effective communication amongst all disciplines involved. Providing the best benefits through a successful project is the result of effective evaluation planning of the project (Dickerson, Green, & Blass, 2014).

Summary

An implementation of best practices requires collaborative efforts between all disciplines to make a positive effect in outcomes for all stakeholders in an ICU

environment. These collaborative efforts must also include all of the stakeholders who are directly involved, as well as provide the means necessary for reliable and validated data abstraction in the project evaluation. Developing the answers to the questions derived during the implementation of best practices can promote change in patient care to improve outcomes (Clark, Lowman, Griffin, Mathews, & Reiff, 2013).

In Section 4, I present the results of the study.

Section 4: Findings and Recommendations

Introduction

The implementation of a patient outcome improvement process consists of continuous evaluation and examination of practices for successful results. An evaluation method must include a collaborative approach from disciplines directly and indirectly involved in the project. Collaborative efforts of the ICU team at MCH include an alliance from the informatics and performance improvement team that assisted with a positive end result of reduced lengths of stay as well as reduced number of mechanical ventilation needs for adult critically ill patients. There was a need for interprofessional collaboration for improving patient outcomes; a true collaborative effort from all members in the ICUs is essential for a successful program (AACN, 2016). The assistance from individuals needed to collect the necessary data was acknowledged during all evaluation periods of the project.

Discussion

The goal for reducing LOS in the ICUs at MCH has been an accomplishment, regardless of the transition of one EMR to another. A new EMR system is necessary for a continuous workflow amid all patient caregivers on an inpatient and outpatient basis. The transition of a new EMR system at MCH will also assist with the continued efforts of strengthening early mobility practices. Furthermore, as anticipated by the MCH critical care teams, collective efforts from multiple disciplines led to positive results in the predicted areas of focus. The involvement of different disciplines helped to foster ideas from many team members who served as resources for implementing patient

improvement practices (Green & Johnson, 2015). The long term, nontangible and nonmeasurable effects of an early progressive mobility program for mechanically ventilated adult patients are unknown; yet, they will affect the patients involved and the organization's goal to achieve better patient care. Staff have voiced that the right tools, equipment, and resources are vital to perform the appropriate tasks to improve patient outcomes in a critical care setting.

The mobilization protocol implemented included adolescent, adult, and older adult patients who were assessed by nurses and then mobilized as per criteria met (see Appendix A for the protocol). Criteria were based on stable hemodynamic status with a mean arterial pressure (MAP) of 65 or greater and heart rate (HR) between 50 and 110 beats per minute. Medications included in the criteria were dopamine equal or less than 5 micrograms (mcg's) and norepinephrine equal to or less than 3mcg's per minute. A respiratory rate (RR) equal to or less than 30 per minute and estimated arterial oxygen saturation (SPO2) of greater than or equal to 92% were also an included. Acceptable levels of fraction of inspired oxygen (FiO2) included less than or equal to 60% or a positive end-expiratory pressure (PEEP) of less than or equal to 10 cm H2O. Neurological status required that the patient not be combative, agitated, or sedated, and the patient must be able to follow commands to meet early mobility requirements. The criteria and patients were reviewed and assessed by nursing, physical therapy, and respiratory therapy to determine early mobilization of any patient in the ICUs. Any questionable status with borderline criteria was resolved with clarification of orders by contacting the intensivist on service. If the patient did not meet the criteria as per the

algorithm/protocol, then daily or shift-to-shift evaluation from the team was necessary to ensure that the patient received more vigilant monitoring to initiate early mobility protocol.

Implications

Implementation of an early progressive mobility program in the adult ICUs requires monitoring and evaluation of daily tasks, as well as processes. The implementation of such a program included involvement of physical therapy, respiratory therapy, and nursing, as well as assistance from personnel in the informatics and performance improvement departments. During the implementation phase, some limitations existed and affected the nurses' abilities to mobilize patients in the ICUs.

Throughout the implementation of the program, many factors impeded the workflow and progress of the project. Staff turnover in the ICUs at MCH affected the potential for a greater decrease in LOS and ventilator day measures. A part of the solution for addressing staff turnover was to standardize education for the implementation of the early mobility program through a series of "back to basics" courses. A total of 50 nurses were hired during 2016 that were interviewed through a peer panel process that aimed to improve retention, which is proven to aid with quality improvement initiatives (Hauck, Quinn Griffin, & Fitzpatrick, 2011). Veteran and experienced nurses of the ICUs trained new members of the critical care team; yet, some of the newly hired nurses expressed feeling of being rushed through their orientation process for staffing needs. Additional training sessions on a monthly basis were held to remind staff of the need for consistency in the evaluation of early mobility practices of all critically ill patients.

It is imperative to have the correct tools, equipment, and resources during times that create high expectations for a community-based organization from regulatory entities. Mobility carts purchased at the end of the year in 2015 are tools can assist with facilitating the program in the ICUs. After obtaining the right tools, equipment, and resources, a retrospective data collection method was introduced to obtain the correlation between shorter length of stay and a percentage of total patient days in the ICUs. Figure 1 shows the *v*entilator days as a percentage of total intensive care unit days.

Figure 1. Ventilator days as a percentage of total intensive care unit days.

A meaningful decrease in ventilator days as a percent of total ICU days, as demonstrated in Figure 1, can be attributed to the implementation of early mobilization. Ventilator days were determined as a percentage of total calendar days for patients in the ICUs, as they each did not have mechanical ventilation needs during their entire ICU stay. This improvement cannot be solely due to the implementation of an early progressive mobility for adult mechanically ventilated patients. A decrease in the total average daily census was also seen for January through June 2016, which affected the percentage of ventilator days as percent of total days. An average daily census of 16.2 in 2015 decreased to 14.7 during the first 6 months of 2016. Figure 2 shows the critical and total hospital LOS for mechanically ventilated adult patients.

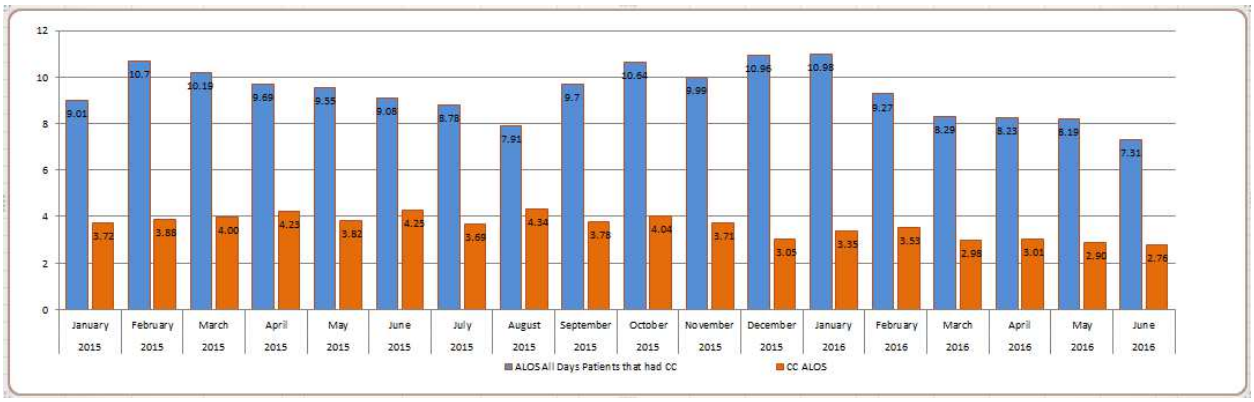

Figure 2. Critical and total hospital LOS for mechanically ventilated adult patients.

The implementation of an early progressive mobility program for mechanically ventilated adult patients in the ICUs had a positive effect on critical and total hospital LOS, as demonstrated in Figure 2. Average length of stay for patients transferred to other departments at MCH was available to our team and was included in the study for comparable data. The LOS was measured by the total calendar days that each patient remained in the ICU. The implementation of early mobilization can be considered as an effective method for improving patient outcomes and must also be recognized for decreasing the LOS in a patient's most critical state and the overall length of hospitalization stay.

Strengths

Achievements cannot be presumed to be the cause of one individual or one team in a health care environment. Project strengths include the collaboration of all disciplines involved in the care of the patient in an ICU setting. Leaders must embrace the need for a healthy work environment, authentically live it, and engage others in its achievements as a team (AACN, 2016).

Limitations

Despite the need for additional resources due to turnover rates and a lack of nursing assistants, teamwork between all team members resulted in a successful project outcome that continues to evolve and remain a focus for patient improvement outcomes. Critical care team members have acknowledged the benefits and positive effects that an early mobility program can have on critically ill patients as survival rates continue to increase (Ronnebaum et al., 2012). Ongoing and future data collection for the early mobility program will include all patients in the ICUs in the continued effort to improve quality outcomes at the patient's most critical state during a hospital admission. The number of patients mobilized was not collected and could have been useful in comparison to the overall patients in the ICUs. New and ongoing studies are now available that can be of use to the organization to compare equipment and resources needed, as well as costs associated with early mobilization of patients in the ICUs (Harris & Shagid, 2014).

In Section 5, I present the dissemination plan.

Section 5: Dissemination Plan

The plan to present and disseminate the problem of early mobilization for adult mechanically ventilated patients in the ICUs will consist of a podium presentation during a quarterly Quality and Safety Committee meeting at MCH. The committee includes an audience of the executive team, nursing directors, and supervisors throughout the organization. The findings will also be presented at the MCH annual Permian Basin Symposium that includes all disciplines of the health system. Each represents the inpatient and outpatient departments that affect early mobility practices and outcomes. Dissemination of the problem through the needs assessment conducted, as well as the positive results in the findings, is crucial with all disciplines at MCH. The collaborative efforts of all disciplines will be the focus of the presentation, as it has been the reason for a successful project, and will be emphasized in the continued efforts for improving patient outcomes in a community-based organization seeking to provide high quality patient care with quality patient outcomes.

Analysis of Self as Scholar, Practitioner, and Developer

With the advancements in health care, a greater emphasis on the patient experience and outcome-dependent method of hospital reimbursement, scholars and doctorate-prepared nurses can help to ensure the highest quality of patient care through best practices (Lathrop & Hodnicki, 2014). In analyzing myself as a scholar, I must acknowledge the challenges in the nursing profession and be able to implement new and best practices derived from evidenced-based research. It is also of high importance that the doctorate-prepared practitioner identifies opportunities for improvement in patient

care and the nursing workflow processes. A doctorate-prepared practitioner must consider current issues and achievements to further expand patient care while keeping in mind the demands of health care. As a developer and a doctorate prepared nurse, I am expected to recognize the opportunities for best practices, evaluate methods, and tailor patient care processes derived from multiple studies that have been implemented from similar population needs.

Summary

Recognition of patient outcome improvement efforts as extended survival rates and reimbursement needs continue to rise in the intensive care areas is imperative for to meet health care expectations. These efforts cannot be achieved without the interprofessional efforts from all disciplines directly and indirectly involved with patient care and data collection in the ICUs. Consistent evaluation and communication amongst all members of the team was necessary to achieve a successful early progressive mobility program for mechanically ventilated adult patients in the ICUs. Despite the challenges of required resources that included nursing assistants and physical therapy assistants, a reduced number in the LOS and ventilator days as a percent of total ICU days was achieved. These are intangible outcomes that can affect the quality of life after an intensive care stay for the sickest patients in the facility.

Conclusion

Physical limitations due to an extended critical care admission can lead to lifelong effects. As a result, early mobilization is now being implemented throughout many ICUs to prevent adverse events and comorbidities that require added resources and health care

costs. Early mobilization has proven to be a cost-effective method to improve physical and mental function outcomes, as well as to prevent delirium when addressing the adverse effects of a hospital stay (Parry, 2016).

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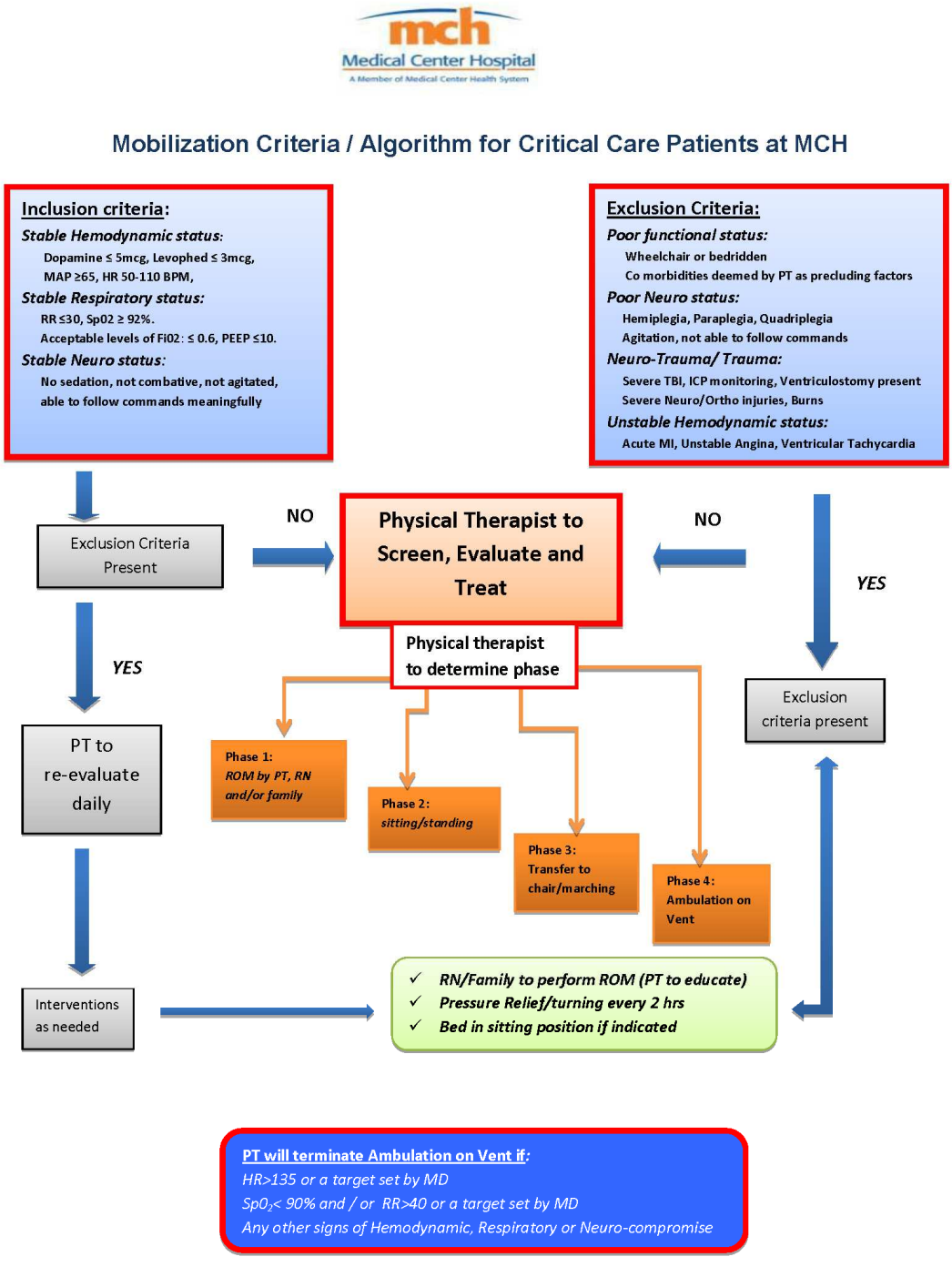
Appendix A: Mobilization Criteria/Algorithm for Critical Care Patients



Appendix B: Institutional Review Board Approval

Medical Center Health System
Your One Source for Health
Medical Staff Office
PO BOX 7239
ODESSA, TX 79760-7239
432 640-1116

Institutional Review Board
For the Protection of Human Subjects
FWA# **00006363**
IORG0003369

IRB Approval Notification

July 19, 2017

Rene M. Rodriquez
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MCH IRB Study #182 – **Principal Investigator** (PI): Rene M. Rodriquez,

Title of Study: "Early Progressive Mobility of Adult Mechanically Ventilpated ICU Patients"

Co-Investigator or Primary Research Coordinator – Kimberly L. Leftwich
Initial approval date: 07/19/16
Risk Level: Minimum
# of Participants Approved: aprx. > 100 charts
Frequency of Continuing Review Reports: Annual Review (or as dictated)

I. **STUDY TYPE:** *EXPEDITED*

X Chart Review / Data Collection __ Device / Drug __ Observation __ Registry Study

HDE ___ Yes ___ No Other _____

II. **DOCUMENTS RECEIVED AND REVIEWED:**

MCHS IRB Application X Protocol X Sponsor Informed Consents ___ CITI's & CV's X

IRB Continuing Review Form: ___ IRB Study Closure Form ___ Other: Expedited / Protocol ___

III. **IRB ACTION**

Congratulations! Your study has been approved as an expedited chart review.

a) _X_ Your Study request was approved effective 07/19/16

b) Your next Continuing Review / report will be due: 07/19/17

c) A Closure Request will need to be submitted upon completion of your research along with a one paragraph summary of findings

Research records include all Institutional Review Board submissions and responses and must be maintained by the principal investigator in accordance with federal regulation 21 CFR 312.60 and the MCH IRB-1000 Policy for no less than three (3) years.

d) Please include your Study # 182 on all communication with our office

Please retain this letter with your research records. Research records include all Institutional Review Board submissions and responses and must be kept in the principal investigator's file for a minimum of three (3) years after completion of the study.

Sincerely,

JaeDeen Walden / IRB Coordinator
Medical Center Hospital
Institutional Review Board

cc: IRB Study # 182 File
Satish Mocherla, MD / IRB Chair
Arun Mathews, CMO / IRB Administrator