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## Evaluating Utilization of an Early Mobility Protocol in an Adult ICU in the Veterans Administration System

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DNP Final Project Report

Evaluating Utilization of an Early Mobility Protocol in an Adult ICU in the Veterans  
Administration System

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## Abstract

**Purpose:** To evaluate ICU staff's adherence to a new progressive mobility protocol as part of a quality improvement project in an adult medical-surgical intensive care unit (ICU).

**Background:** Bedrest can lead to complications for hospitalized patients and current literature supports that mobility within the ICU is safe and feasible for critically ill patients. Current evidence based literature identifies barriers to patient mobilization which can be addressed through implementation of a mobility protocol. Utilization of mobility protocols is one way to improve quality of care and prevent common bedrest complications in the critically ill patient population.

**Methods:** Retrospective medical record reviews were conducted pre (n=65) and post (n=54) implementation of the mobility protocol to provide descriptive data regarding staff adherence to the protocol and improvement in unit mobility practices. Activity orders, activity occurrences and type, as well as nurses' documentation of the protocol phase in admission and daily re-assessments were evaluated.

**Results:** Documentation of activity orders from providers was less than 70% (35 out of 54) after implementation of the protocol. Eighty-one percent (44 out of 54) of the medical records reviewed had mobility phase assessed and documented by nurses on the admission assessment. Shift re-assessment of the patients' mobility phase was low at 41% (22 out of 54) after implementation of the mobility protocol.

**Conclusion:** Improvement of utilization of the mobility protocol was seen over a six-month period with expanded mobility activities being documented by nursing staff. Additional refinement of the protocol will require more time and effort from key stakeholders and unit champions to improve staff adherence.

Keywords: mobility, protocol, ICU, evaluation

## **Introduction**

In recent years, early progressive mobility of patients in the intensive care unit (ICU) has become a common theme for research and quality improvement initiatives. Researchers have reported that early progressive mobility is safe and feasible for critically ill patients (Adler & Malone, 2012; Bailey et al., 2007; Bourdin et al., 2010; Clark, 2012; Kalisch & Dabney, 2013; Kress, 2009). The goal of early progressive mobility is to prevent complications of bedrest that are commonly experienced by ICU patients. Complications can include pressure ulcers and skin breakdown (Brower, 2009; Teasell & Dittmer, 1993; Winkelman, 2009) physical deconditioning (Brower, 2009; Winkelman, 2009), decreased perfusion (Brower, 2009; Winkelman, 2009), altered mood, anxiety (Winkelman, 2009), venous thromboembolism (Brower, 2009; Patel, Liberman, Gurka, Elpern, & Balk, 2005), as well as respiratory complications such as ventilator associated pneumonia and atelectasis (Brower, 2009; Patel et al., 2005; Teasell & Dittmer, 1993; Winkelman, 2009). This quality improvement project aims to improve early mobility practices within a VA Medical Center ICU through implementation of a mobility protocol, and evaluate compliance and outcomes six months post-implementation.

## **Background**

Early mobility initiatives have been found to improve functional outcomes for patients in the ICU (Adler & Malone, 2012; Bailey et al., 2007; Fraser, Spiva, Forman, & Hallen, 2015; Klein, Mulkey, Bena, & Albert, 2015). Klein et al. (2015) conducted a comparative study of 637 patients (260 pre-intervention and 377 post-intervention) after implementation of a progressive mobility protocol and found an increase in the number of patients who were able to weight bear, pivot to chair, or walk increased from 21.2% pre-implementation to 42.7% post-implementation in a neurologic ICU. The results of this study also demonstrated a decrease in hospital length of stay by 33%, a decrease in neurologic ICU

length of stay by 45%, and an increase in the number of patients discharged to home versus a care facility by 11.3%. Similar results of early mobility improving patient function for surgical ICU patients were found in a randomized controlled trial conducted by Schaller and colleagues (Schaller et al., 2016). In this study, patients in the treatment group (n=104) had an increased mobilization level compared to the control group (n=96;  $p<0.0001$ ), a decreased ICU length of stay ( $p=0.0054$ ) and improved functional mobility at hospital discharge ( $p=0.0002$ ) after treatment with goal-directed early mobility program. There was also an increase in the percentage of patients discharged to home versus care facilities for patients in the intervention group. Additional studies have also identified a decrease in the incidence or duration of delirium for ICU patients after the implementation of an early mobility initiative (Fraser et al., 2015; Needham & Korupolu, 2010; Schweickert et al., 2009). A treatment group with increased mobility was also associated with a decrease in falls, ventilator associated events, pressure ulcers, and catheter associated urinary tract infections when compared to a control group in study completed after implementation of a dedicated mobility team in a community hospital setting (Fraser et al., 2015). Early mobility programs have also been found to decrease time on mechanical ventilation for patients in the ICU (Balas et al., 2014; Dong, Yu, Sun, Fang, & Li, 2014; Schweickert et al., 2009). With this evidence, implementing a protocol that will increase early patient mobility is a priority to improve patient outcomes.

The complications of bedrest can have adverse impacts on a patient's recovery. In addition to the fiscal impact for healthcare institutions, critically ill patients often require longer lengths of stay and higher levels of care. A retrospective cohort analysis of 253 diverse U.S. hospitals in 2002 showed the mean cost of an ICU stay with mechanical ventilation was \$31,574 +/- \$41,570 with an average length of stay (LOS) of 14.4 days +/- 15.8 days (Dasta, McLaughlin, Mody, & Piech, 2005). For ICU patients without mechanical

ventilation, the cost was \$12,931 +/- \$20,569 with an average LOS 8.5 days +/- 10.5.

Another risk of bedrest is the development of hospital acquired pneumonia and prolonged ventilation for patients in an ICU setting. According to a retrospective study conducted in an insurance claims database, costs associated with the treatment of patients with infections of *Staphylococcus aureus* and *Pseudomonas aeruginosa* pneumonia, had longer hospital and ICU LOSs compared to those without a diagnosis of pneumonia (Kyaw et al., 2015). Kyaw et al. (2015) identified a higher rate of mechanical ventilation, mortality, and increased hospital costs by approximately 15% in the ICU population diagnosed with pneumonia. While literature quantifying costs and cost benefits associated with implementing a mobility program in the ICU are scarce (Knoblauch, Bettis, Lundy, & Meldrum, 2013), adverse outcomes and their associated costs can often be reduced through early mobility programs. These cost savings can be realized through faster healing times, a lack of additional costs for adverse hospital acquired events or conditions, and shorter length of stay in both the ICU and hospital (Corcoran et al., 2017; Fraser et al., 2015; Knoblauch et al., 2013; Lord, 2013).

Progressive mobility protocols are often implemented in ICU settings to combat potential side effects of bedrest, and to improve both quality of care and patient outcomes by decreasing ICU and hospital LOS (Dubb et al., 2016; Truong, 2009). The American Association of Critical-Care Nurses (AACN), the professional national organization representing critical care nurses, has released recommendations for the inclusion and implementation of an early progressive mobility protocol (American Association of Critical-Care Nurses, 2015).

A systematic review of mobility protocols conducted by Dubb and colleagues (2016) identified barriers and intervention strategies associated with early mobility of patients in the ICU. They identified four categories of barriers to mobility in the ICU: patient-related, structural, cultural, and process. Hemodynamic stability, medical devices, level of

consciousness and sedation were identified and categorized as patient-related barriers. Structural barriers included inadequate staff, lack of an organized program, and inadequate training. Cultural barriers included mobility not being a priority in the units, inadequate staff knowledge regarding the benefits, safety, and techniques of patient mobility, as well as low morale among staff. Process barriers were things such as lack of coordination between the care team members and issues with physician orders. The authors identified strategies to address these barriers to include increasing ICU staff, additional education for nursing staff, improving communication and coordination among the multidisciplinary team, mobility protocols, purchasing equipment, mobility champions, daily interprofessional rounds, and easier documentation for staff.

With initiation of these types of strategies to improve patient care and outcomes, evaluation for effectiveness is required in order to ensure the implementation process is successful.

### **Local Problem**

A lack of mobility in the ICU patient population recently came to the attention of clinical leaders in a 13 bed medical-surgical ICU in a small medical center located in the south eastern United States. A lack of activity orders was identified as one barrier to patient mobility within the unit, there were only few cases of documented patient activities other than “bedrest,” “turn every two hours,” and “range of motion” in the nursing flowsheets. Another barrier reported by nurses included waiting for physical therapy consults that were automatically generated based on answers to questions in the patients’ electronic admission assessment documents. A large number of physical therapy consults were being generated through the process, however, the facility only employs inpatient physical therapists to round in the 96 bed hospital facility. As a result, many of the consults were chart reviewed and dismissed without the nurses’ knowledge, leaving the nurse waiting to mobilize the patient

for a physical therapy consult visit that had been cancelled. There was no guideline or protocol being followed for early mobility intervention within the unit or hospital. And in a survey of staff, a lack of adequate staffing and equipment (especially medical recliners) was identified as common mobility barriers within the facility.

With the problem identified, a multidisciplinary mobility committee was formed, and charged with the task of developing an early progressive mobility protocol that could be implemented within the ICU and other acute care units in order to improve the mobility practices of staff in the care of their ICU patients, while also improving the patient outcomes.

### **Methods**

Approval for the project was obtained from the appropriate institutional review board. The implementation of the mobility protocol took place in a VA Medical center, and this evaluation of staff adherence to the mobility protocol and patient outcomes focused on the 13 bed ICU. A retrospective review of electronic medical records was conducted for adult patients (age 18-89) admitted to the ICU between November 1, 2015-November 30, 2015 (pre-implementation and development of the mobility committee), and November 1, 2016-November 30, 2016 (six months post-implementation). Based on historical census data, 65 charts were to be reviewed for each time period. Due to the demographic of the hospital, only adult patients were included for review. As the nature of the protocol was to be applicable to every patient in the ICU, all admitted patient medical records were included for review during the selected timeframes. Any patient over the age of 89 was excluded for patient confidentiality reasons, and patient gender was not collected as a data point for the same reason. No identifying staff information was collected during the review in order to maintain staff confidentiality.

Measures of adherence included the presence of activity orders, documentation of activity level or phase according to the protocol, and documented patient activities. To gain

further information regarding the ICU population during the two time periods APACHE II (Acute Physiology and Chronic Health) score within 24 hours of admission to ICU, ICU LOS, ventilator days, ventilator associated events, and pressure ulcer prevalence was also examined. Descriptive statistics were utilized to analyse the data collected during the review. Data was analysed using SPSS version 22.

### **Implementation Process**

After a comprehensive review of evidence based literature, the multidisciplinary mobility committee followed the AACN Roadmap for Implementing Change (aacn.org) to develop and implement an early progressive mobility protocol that could be applied throughout all patient care units in the hospital, to include the ICU. The protocol was designed to provide continuity of mobility care for patients as they transfer to units with different levels of care. The protocol was broken down into different phases of mobility, each with descriptive factors to assist staff in determining the appropriate phase for each patient. The protocol provided a list of appropriate progressive mobility activities that could be performed by patients in each phase of the mobility protocol (for protocol see **Figure 1.**). A kick-off event was held and the protocol implemented throughout the hospital in May 2016, with the ICU having been a pilot unit one month prior to hospital wide deployment. The development and implementation of an early mobility protocol and corresponding order set would provide a focal point for all multidisciplinary staff to facilitate the mobility plan of care and teamwork required to achieve the specific mobility goals for each patient.

Key stakeholders from all patient areas included doctors, nurse practitioners, physician assistants, staff nurses, nursing assistants, physical therapists, clinical nurse experts, unit managers, and respiratory therapy who were critical to the team due to the possibility of mobilizing patients on mechanical ventilation in the ICU. The mobility committee developed a survey that was given to all key stakeholder groups to determine the

group's knowledge regarding the importance of early mobility for patients, and staff's readiness for an early progressive mobility initiative within the hospital units. Based on the survey results, informational sessions were developed and disseminated at the unit level regarding the importance of mobility based on evidence based guidelines and the current protocol to improve mobility for patients while admitted to the hospital.

An evaluation of needed equipment for mobility assistance was performed and resulted in additional gait belts and walkers, as well as purchasing additional patient recliners to ensure that a recliner could be found in every patient room to prevent staff from spending time searching for chairs, or patients being confined to the bed until a patient chair became available from another room. The new protocol was circulated through the units on multiple occasions to gain feedback and suggested revisions before finalization. After a thorough review evidence based practice (EBP) mobility guidelines and the staff surveys, communication was identified as a barrier that the mobility protocol would need to address for successful implementation (Balas et al., 2013; Barber et al., 2014). To address this potential barrier, the order set was updated to include an order for the progressive mobility protocol, as well as to allow for the nurses to add the order into their nursing flow sheet. Based on research, whiteboards were also obtained and placed in each patient room as a means to improve communication and patient satisfaction (Sehgal, Green, Vidyarthi, Blegen, & Wachter, 2010; Singh et al., 2011; Tan, Evans, Braddock, & Shieh, 2013). The whiteboards serve as a visual reminder to staff and patients of the importance of mobility, as well as a communication tool among patients and staff members of all disciplines. See

**Figure 2.**

Unit champions were available as a resource to staff and worked to ensure understanding and expectations of the new mobility protocol by staff on the units. Due to the

complex nature of ICU patients in relation to mobility, this unit was chosen to evaluate use of the nurse driven early mobility protocol.

This quality improvement project was implemented to evaluate staff's adherence to a new mobility protocol. The project describes mobility practices within the ICU prior to the mobility protocol implementation and six months after implementation. The information gained from this project will be used to inform future steps to address adherence of the mobility protocol in the intensive care unit.

### **Results**

Data from 65 medical records (MR) were reviewed during November, 2015 prior to the implementation of the mobility protocol. Fifty-four medical records were reviewed during November, 2016, six months after the implementation of the mobility protocol. Patients were not followed longitudinally. See **Table 1**. From the 65 MR reviewed from the pre-implementation time period, 20 (31%) did not have activity orders. Of the 45 MRs with activity orders, one order was for "turn every two hours", and four MRs had activity orders for "bedrest". Sixty-five percent of the MRs reviewed had one or more types of activity documented. Twenty-two percent of these MRs had two or more types of activity, and only one MR had three types of activity documented by staff. The total number of documented occurrences of activity for patients in the pre-implementation group was 352 during a total of 269 ICU days.

Of the 54 MRs reviewed from the post-implementation time period, 35% did not have activity orders while admitted to the ICU. Of the 35 MRs with activity orders, 31% of the activity orders were for the new mobility protocol, while 66% of MRs had some other form of activity order. Eleven percent of the MRs with other activity orders were written as "bedrest". As part of the new protocol, the nurses were required to document the activity level or protocol phase both on patient admission and then every shift. This documentation

included the patients' mobility status prior to admission, and their mobility progress throughout their hospitalization. Of the 54 post-implementation MRs, 81% had mobility phase documented on admission. Reasons given by nursing staff for not documenting the mobility phase on admission included altered mental status in five records, patient sedated/intubated in two records, and 3 MRs did not have a reasons for lack of mobility phase documentation. The mobility phase was documented every shift in 41% of the MRs. See **Figure 3**. The total number of documented occurrences of activity for patients in the post-implementation group was 165 during a total of 220 ICU days.

A surveillance study was conducted and reported 3 instances of stage II hospital acquired pressure ulcers in patients in the ICU during the pre-implementation time period. A similar surveillance study was conducted during the post-implementation time period and reported only two occurrences of hospital acquired pressure ulcers in patients in the ICU. According to hospital quality improvement data, there were no episodes of ventilator associated events reported in ICU patients during the pre or post implementation time periods.

Additional data from the project during the pre-implementation review, 10 MRs with activity orders, had no form of mobility documented by staff other than turning every two hours or bedrest. Similarly, nine MRs from post implementation had activity orders, but no documented activities. The ICU average LOS for this project was 3.2 days for pre-implementation and 3.4 days for post-implementation review, suggesting several days for these patients where mobility was not documented as being addressed. In contrast to these findings, eight MRs without activity orders from the pre-implementation group had documented activities other than turning, and 10 MRs from the post-implementation group had activities documented in the absence of activity orders on the MR. For the pre-implementation patients with bedrest orders, four had "out of bed to chair" documented in

their nursing flowsheets, and one patient with a “bedrest” order had “ambulation/out of bed to chair” documented for the post-implementation group. Mobility was added to the ICU multidisciplinary rounds checklist prior to protocol kick-off. If mobility was addressed in the morning rounds, it is possible the providers inadvertently did not update the patient’s activity order for that day.

### **Discussion**

The results of this project provide illustration that changing nursing practice in acute care healthcare settings does not occur quickly. While pre and post implementation groups were similar in characteristics (age, APACHE II scores, ICU LOS, and ventilator days), staff adherence to the new protocol did not reach desirable levels of 80% at six months post intervention as discussed by members of the mobility committee prior to implementation of the protocol. However, these results were similar to a study conducted by Dickinson and Tschannen (2013) who found only 71% mobility protocol compliance on initial evaluation that improved with time as change efforts continued. Initial mobility phase assessment and documentation improved after implementation due to inclusion in the patient’s admission paperwork. Automatic physical therapy consults were eliminated, and therefore stopped the delay in nursing staff having to wait for a physical therapy consult before implementation of the mobility protocol. Physical therapy consults are now requested on an “as needed” basis based on the clinical judgement and collaboration of nursing, physician and advanced practice providers. However, adherence to documentation every shift by nursing staff was lower than anticipated. There was no improvement seen regarding the activity order documentation in the medical records by providers. These types of behavioural changes that are required of nursing and medical staff for new protocol implementation may take longer to become part of the care culture within the ICU.

Communication has been cited as a common barrier to mobility of patients, and the mobility committee wanted to make sure that was a barrier addressed with the protocol (Balas et al., 2013; Barber et al., 2014). Whiteboards have demonstrated effectiveness as communication tools within hospital facilities. Communication among physicians and ancillary staff, teamwork, and patient's awareness of goals has improved as a result of utilization of whiteboards (large dry erase boards posted in each patient's room). Whiteboards have also been effective for improving patient satisfaction (Sehgal et al., 2010; Singh et al., 2011; Tan et al., 2013). Based on such findings, healthcare facilities have utilized mobility whiteboards to improve communication among staff and patients with the implementation of their mobility protocols (Bradley, Dionne, VanNortwick, & Waugaman, n.d.; Manalo, Prestemon, Topley, & Zacharias, n.d.). Thus mobility whiteboards representing the new mobility protocol were also placed in each patient room as a tool to improve communication between the patients and multidisciplinary healthcare team for this improvement project. While whiteboard use was not addressed in this evaluation, effectiveness and use should be included in future evaluations.

The VAs mobility protocol is not fully integrated into practice at this time as evidenced by this project. However, there have been similar projects that have successfully initiated mobility programs. The University of North Carolina (UNC) Medical Center implemented an early mobility protocol in their surgical ICU and acute care setting with their "Let's Move It!" program. Success of the protocol was demonstrated through a decrease in DVTs, ventilator associated pneumonias, patient ventilator days, and increased patient activity (Manalo et al., n.d.). Duke Raleigh Hospital in Raleigh, North Carolina also had success with the implementation of a patient screening tool and mobility protocol based on defined and ordered activity levels. Using this tool, the authors reported average ventilator utilization decreased from 4.6 to 3.7 days in the medical-surgical ICU, while mobility in

ventilated patients increased from no mechanically ventilated patients mobilizing to 100% of mechanically ventilated patients performing some type of mobility according to protocol (Geyer, Leblanc, & Sibbach, n.d.). WakeMed Cary Hospital also found similar results to UNC Medical Center and Duke Raleigh Hospital after implementation of a mobility protocol with a reduction of ventilator days by 35%, and a decrease of ICU LOS by 1.38 days (Ritchie et al., n.d.). On the other hand, some projects have been implemented without seeing the desired or expected change in the quality metrics (Bassett, Vollman, Brandwene, & Murray, 2012; Booth et al., 2016; Clark, 2012; Zomorodi, 2012). Booth and colleagues (2016) performed an evaluation after implementation of a progressive mobility protocol in a trauma ICU. Outcomes measured included: 1) hospital and ICU stays; 2) ventilator days; 3) falls; 4) respiratory failure; 5) pneumonia; and 6) venous thromboembolism. The only significant difference in patient outcomes in this study was a decreased incidence of venous thromboembolism between the pre-intervention and the post-intervention cohort. One interesting similarity regarding Booth and colleagues (2016) and the VAs data was the observation that patients with activity orders only had “bedrest” documented by nursing staff on the medical record flowsheet. This may be related two of the commonly perceived barriers to patient mobility, lack of time and lack of staffing (Balas et al., 2013; Barber et al., 2014; S. Dafoe, Stiller, K., Chapman, M., 2015; Jolley, 2014; Zanni, 2010). Studies have demonstrated how an increase in staffing, or development of a dedicated mobility team can increase patient functional status and improve patient outcomes (Corcoran et al., 2017; Fraser et al., 2015; Knoblauch et al., 2013; Priest et al., 2016). Unfortunately, due to funding, this option may not be immediately obtainable for all facilities. This leads to close study of the initiatives that have successfully implemented mobility in the ICU population and how they identified barriers and overcame challenges with implementation.

Common challenges identified in similar early mobility quality improvement projects include lack of equipment (Conoway, Lee, & Wynn-Miller, 2016; S. Dafoe, Chapman, Edwards, & Stiller, 2015; Geyer et al., n.d.), workload and staffing shortages (Conoway et al., 2016; S. Dafoe et al., 2015; Geyer et al., n.d.; Manalo et al., n.d.; Messer, Comer, & Forst, 2015), fear, knowledge deficit, and staff resistance (Bradley et al., n.d.; Conoway et al., 2016; Geyer et al., n.d.). It was reported in these projects that re-education, consistent communication, shared responsibility and an increase in interdisciplinary collaboration as methods to overcome the barriers and achieve success in improving patient care and outcomes. These strategies align with the findings in a “how-to” guide for quality improvement in the ICU (Curtis et al., 2006). According to Curtis et al. (2006), teamwork and reinforcement from key leaders, stakeholders, and unit champions is a necessity in order for the quality improvement changes to become permanent practice within the ICU. Collected data points must be meaningful and regularly reported to those involved in the project in order to increase knowledge, understanding, and drive for improvement.

While no change in patient outcomes was evident in this evaluation of the quality improvement project for mobility, results from other improvement projects that have implemented mobility protocols in ICUs implies that with continued change efforts and as increased adherence to the protocol develops over time, improvements in patient outcomes may also be seen in later evaluations. Based on the data from this evaluation, goals and outcome measures will be identified and clearly articulated to all stakeholders. For example, within one year of implementation, 100% of ICU patient MRs will contain an activity order placed by the provider. The same 100% goal should be set for staff nurses to include the patients’ current mobility phase in the documentation on their shift assessment within one year of revised implementation of the mobility protocol.

## **Implications for Practice**

Based on the AACNs Roadmap for Implementing Change, key stakeholders will need to report this evaluation data to ICU staff for them to be more knowledgeable about mobility in the ICU. Additional efforts to further improve staff adherence to the protocol are necessary. Change leaders and unit champions will need to identify knowledge gaps and identify outcome goals, as well as compliance checks to ensure that all components of the mobility protocol are being addressed. Quality indicators will need to be monitored by clinical nurse experts in order to ensure patient safety and quality of care indicators are being maintained or improved with the implementation of the mobility protocol when goals are reached. Leadership should prepare to celebrate successful implementation of the protocol.

As discussed in the intensive care unit quality improvement “how-to” guide by Curtis and colleagues (2006), performing audits and providing continuous feedback regarding performance is key to successful quality improvement initiatives.

## **Limitations**

This project had limitations, including a retrospective design with a small sample size. The results of this quality improvement project are considered “local” and unique to the described organizational unit and therefore are not generalizable, however this evidence based quality improvement project can be applied to equitable patients whose conditions meet similar protocol criteria.

## **Conclusion**

This project identifies change and evaluation processes for a quality improvement project involving a new progressive mobility protocol within the ICU at a VA Medical Center. The evaluation findings suggest that adherence to a new mobility protocol has not reached optimal levels among nursing staff. There was some improvement in the number of activity occurrences identified in the post implementation process medical record reviews.

One success of the protocol implementation was the increase in documentation of the type of mobility activities. This information should be used by the mobility committee and staff to address deficiencies, set new goals and continue process evaluation of the mobility protocol, in order to ultimately have a positive impact on patient mobility leading to improved patient outcomes.

## References

- Adler, J., & Malone, D. (2012). Early Mobilization in the Intensive Care Unit: A Systematic Review. *Cardiopulmonary Physical Therapy Journal*, 23(1), 5-13.
- American Association of Critical-Care Nurses. (2015). AACN PEARL: Implementing the ABCDE Bundle at the Bedside. Retrieved from [www.hqinstitute.org/sites/main/files/file.../ar\\_2\\_bundle\\_teaching\\_presentation.ppt](http://www.hqinstitute.org/sites/main/files/file.../ar_2_bundle_teaching_presentation.ppt)
- Bailey, P., Thomsen, G. E., Spuhler, V. J., Blair, R., Jewkes, J., Bezdjian, L., . . . Hopkins, R. O. (2007). Early activity is feasible and safe in respiratory failure patients. *Critical Care Medicine*, 35(1), 139-145. doi:10.1097/01.CCM.0000251130.69568.87
- Balas, M., Burke, W., Gannon, D., Cohen, M., Colburn, L., Bevil, C., . . . Vasilevskis, E. (2013). Implementing the ABCDE bundle into everyday care: Opportunities, challenges and lessons learned for implementing the ICU pain, agitation, and delirium (PAD) guidelines. *Critical Care Medicine*, 41(9 0 1), S116-S127. doi:10.1097/CCM.0b013e3182a17064
- Balas, M., Vasilevaskis, E., Olsen, K., Schmid, K., Shostrom, V., Cohen, M., . . . Burke, W. (2014). Effectiveness and safety of the awakening and breathing coordination, delirium monitoring/management, and early exercise/mobility bundle. *Critical Care Medicine*, 42(5), 1024-1036. doi:10.1097/CCM.0000000000000129
- Barber, E. A., Everard, T., Holland, A. E., Tipping, C., Bradley, S. J., & Hodgson, C. L. (2014). Barriers and facilitators to early mobilisation in Intensive Care: A qualitative study. *Aust Crit Care*. doi:10.1016/j.aucc.2014.11.001
- Bassett, R. D., Vollman, K. M., Brandwene, L., & Murray, T. (2012). Integrating a multidisciplinary mobility programme into intensive care practice (IMMPTP): A multicentre collaborative. *Intensive and Critical Care Nursing*, 28, 88-97. doi:10.1016/j.iccn.2011.12.001

- Booth, K., Rivet, J., Flici, R., Harvey, E., Hamill, M., Hundley, D., . . . Collier, B. (2016). Progressive mobility protocol reduces venous thromboembolism rate in trauma intensive care patients: A quality improvement project. *Journal of Trauma Nursing*, 23(5), 284-289. doi:10.1097/JTN.0000000000000234
- Bourdin, G., Barbier, J., Burle, J., Durante, G., Passant, S., Vincent, B., . . . Guerin, C. (2010). The feasibility of early physical activity in intensive care unit patients: A prospective observational one-center study. *Respiratory Care*, 55(4), 400-407.
- Bradley, L., Dionne, H., VanNortwick, C., & Waugaman, S. (Producer). (n.d.). Keep the beat, move your feet: Early & progressive mobility for cardiac surgery patients. Retrieved from [www.aacn.org/wd/csi/docs/FinalProjects/EarlyProgressiveMobilityinCardSurgPat-RexHealthcare-Raleigh-Presentation.pdf](http://www.aacn.org/wd/csi/docs/FinalProjects/EarlyProgressiveMobilityinCardSurgPat-RexHealthcare-Raleigh-Presentation.pdf)
- Brower, R. G. (2009). Consequences of bed rest. *Critical Care Medicine*, 37[Suppl], S422-S428. doi:10.1097/CCM.0b013e3181bGe30a
- Clark, D. E., Lowman, J. D., Griffen, R. L., Matthews, H. M., Reiff, D. A. (2012). Effectiveness of an early mobilization protocol in a trauma and burns intensive care unit: A retrospective cohort study. *Physical Therapy*, 93, 186-196. doi:10.2522/ptj.20110417
- Conoway, N., Lee, J., & Wynn-Miller, P. (Producer). (2016). Move more vent less: Early mobility of our ventilated patients. *CSI Academy*.
- Corcoran, J. R., Herbsman, J. M., Bushnik, T., Van Lew, S., Stolfi, A., Parkin, K., . . . Flanagan, S. R. (2017). Early rehabilitation in the medical and surgical intensive care units for patients with and without mechanical ventilation: An interprofessional performance improvement project. *Physical Medicine and Rehabilitation*, 9, 113-119. doi:10.1016/j.pmrj.2016.06.015

- Curtis, J. R., Cook, D. J., Wall, R. J., Angus, D. C., Bion, J., Kacmarek, R., . . . Puntillo, K. (2006). Intensive care unit quality improvement: A "how-to" guide for the interdisciplinary team. *Critical Care Medicine, 34*(1), 211-218.  
doi:10.1097/01.CCM.0000190617.76104.AC
- Dafoe, S., Chapman, M., Edwards, S., & Stiller, K. (2015). Overcoming barriers to the mobilisation of patients in an intensive care unit. *Anaesthesia and Intensive Care Journal, 43*(6), 719-727.
- Dafoe, S., Stiller, K., Chapman, M. (2015). Staff perceptions of the barriers to mobilizing ICU patients. *The Internet Journal of Allied Health Sciences and Practice, 13*(2), 1-13.
- Dasta, J. F., McLaughlin, T. P., Mody, S. H., & Piech, C. T. (2005). Daily cost of an intensive care unit day: the contribution of mechanical ventilation. *Critical Care Medicine, 33*(6), 1266-1271.
- Dong, Z.-h., Yu, B.-x., Sun, Y.-b., Fang, W., & Li, L. (2014). Effects of early rehabilitation therapy on patients with mechanical ventilation. *World Journal of Emergency Medicine, 5*(1), 48-52.
- Dubb, R., Nydahl, P., Hermes, C., Schwabbauer, N., Toonstra, A., Parker, A. M., . . . Needham, D. M. (2016). Barriers and strategies for early mobilization of patients in intensive care units. *Annals of the American Thoracic Society, 13*(5), 724-730.  
doi:10.1513/AnnalsATS.201509-586CME
- Fraser, D., Spiva, L., Forman, W., & Hallen, C. (2015). Original research: Implementation of an early mobility program in an ICU. *American Journal of Nursing, 115*(12), 49-58.
- Geyer, K., Leblanc, J., & Sibbach, C. (Producer). (n.d.). Duke Raleigh Hospital: Early progressive mobility in the medical-surgical ICU. Retrieved from

www.aacn.org/wd/csi/docs/FinalProjects/EarlyProgressiveMobilityinICU-  
DukeRaleighHosp-Raleigh-Presentation.pdf

- Jolley, S. E., Regan-Baggs, J., Dickson, R. P., Hough, C. L. (2014). Medical intensive care unit clinician attitudes and perceived barriers towards early mobilization of critically ill patients: a cross-sectional survey study. *BMC Anesthesiology*, *14*(84), 1-9.  
doi:10.1186/1471-2252-14-84
- Kalisch, B. J., & Dabney, B. W. (2013). Safety of mobilizing hospitalized adults: Review of the literature. *Journal of Nursing Care Quality*, *28*(2), 162-168.  
doi:10.1097/NCQ.0b013e31827c10d5
- Klein, K., Mulkey, M., Bena, J. E., & Albert, N. M. (2015). Clinical and psychological effects of early mobilization in patients treated in a neurologic ICU: A comparative study. *Critical Care Medicine*, *43*, 865-873. doi:10.1097/CCM.0000000000000787
- Knoblauch, D. J., Bettis, M. A., Lundy, F., & Meldrum, C. (2013). Financial implications of starting a mobility protocol in a surgical intensive care unit. *Critical Care Nurse Quarterly*, *36*(1), 120-126. doi:10.1097/CNQ.0b013e3182753725
- Kress, J. P. (2009). Clinical trials of early mobilization of critically ill patients. *Critical Care Medicine*, *37*(10), S442-S447. doi:10.1097/CCM.0b013e3181b6f9c0
- Kyaw, M. H., Kern, D. M., Zhou, S., Tunceli, O., Jafri, H. S., & Falloon, J. (2015). Healthcare utilization and cost associated with *S. aureus* and *P. aeruginosa* pneumonia in the intensive care unit: a retrospective observational cohort study in a US claims database. *BMC Health Services Research*, *15*(241). doi:10.1186/s12913-015-0917-x
- Lord, R. K., Mayhew, C. R., Korupolu, R., Manthey, E. C., Friedman, M. A., Palmer, J. B., Needham, D. M. (2013). ICU early physical rehabilitation programs: Financial

modeling of cost savings. *Critical Care Medicine*, 41(3), 717-724.

doi:10.1097/CCM.0b013e312711de2

Manalo, M., Prestemon, H., Topley, D., & Zacharias, J. (Producer). (n.d.). Let's move it!

Early mobility protocol implementation in a surgical ICU and acute care setting.

Retrieved from [www.aacn.org/wd.csi.docs/FinalProjects/EarlyMobility-](http://www.aacn.org/wd.csi.docs/FinalProjects/EarlyMobility-)

[INCHealthcare-Raleigh-Presentation.pdf](http://www.aacn.org/wd.csi.docs/FinalProjects/EarlyMobility-INCHealthcare-Raleigh-Presentation.pdf)

Messer, A., Comer, L., & Forst, S. (2015). Implementation of a progressive mobilization program in a medical-surgical intensive care unit. *Critical Care Nurse*, 35(5), 28-42.

doi:10.4037/ccn2015469

Needham, D. M., & Korupolu, R. (2010). Rehabilitation quality improvement in an intensive care unit setting: implementation of a quality improvement model. *Topics in Stroke Rehabilitation*, 17(4), 271-281. doi:10.1310/tsr1704-271

doi:10.1310/tsr1704-271

Patel, G. P., Liberman, J., Gurka, D., Elpern, E., & Balk, R. A. (2005). Complications of critical illness: Rationale for prophylactic strategies. *Clinical Pulmonary Medicine*,

12(4), 258-268. doi:10.1097/01.cpm.0000171502.70787.f2

Priest, K. C., Lobingier, H., McCully, N., Lombard, J., Hansen, M., Uchiyama, M., & Hagg, D. S. (2016). Expanding continuous quality improvement capacity in the medical

intensive care unit: Prehealth volunteers as a solution. *Quality Management in*

*Healthcare*, 25(2), 79-84. doi:10.1097/QMH.0000000000000090

Ritchie, A., Henderson, K., Bell, L., Hawkins, L., Fralin-Mosier, T., & Falk, M. (Producer).

(n.d.). WakeMed Cary Hospital "Get up and move" early progressive mobility.

Retrieved from [www.aacn.org/wd/csi/docs/FinalProjects/EarlyMobility-](http://www.aacn.org/wd/csi/docs/FinalProjects/EarlyMobility-)

[WakeMedCary-Raleigh-Presentation](http://www.aacn.org/wd/csi/docs/FinalProjects/EarlyMobility-WakeMedCary-Raleigh-Presentation)

- Schaller, S. J., Anstey, M., Blobner, M., Edrich, T., Grabitz, S. D., Gradwohl-Matis, I., . . . Eikermann, M. (2016). Early, goal-directed mobilisation in the surgical intensive care unit: A randomised controlled trial. *Lancet*, *388*, 1377-1388.
- Schweickert, W. D., Pohlman, M. C., Pohlman, A. S., Nigos, C., Pawlik, A. J., Esbrook, C. L., . . . Kress, J. P. (2009). Early physical and occupational therapy in mechanically ventilated, critically ill patients: A randomised controlled trial. *Lancet*, *373*(9678), 1874-1882. doi:10.1016/S0140-6736(09)60658-9
- Sehgal, N. L., Green, A., Vidyarthi, A. R., Blegen, M. A., & Wachter, R. M. (2010). Patient Whiteboards as a Communication Tool in the Hospital Setting: A Survey of Practices and Recommendations. *Journal of Hospital Medicine*, *5*(4), 234-239. doi:10.1002/jhm.638
- Singh, S., Fletcher, K. E., Pandl, G. J., Schapira, M. M., Nattinger, A. B., Biblo, L. A., & Whittle, J. (2011). It's the Writing on the Wall: Whiteboards Improve Inpatient Satisfaction with Provider Communication. *American Journal of Medical Quality*, *26*(2), 127-131. doi:10.1177/1062860610376088
- Tan, M., Evans, K. H., Braddock, C. H., & Shieh, L. (2013). Patient Whiteboards to Improve Patient-Centred Care in the Hospital. *Post Graduate Medical Journal*, *89*, 604-609.
- Teasell, R., & Dittmer, D. K. (1993). Complications of immobilization and bed rest: Part 2: Other complications. *Canadian Family Physician*, *39*, 1440-1446.
- Truong, A. D., Fan, E., Brower, R. G., Needham, D. M. (2009). Bench-to-bedside review: Mobilizing patients in the intensive care unit - from pathophysiology to clinical trials. *Critical Care*, *13*(216). doi:10.1186/cc7885
- Winkelman, C. (2009). Bed Rest in Health and Critical Illness: A Body Systems Approach. *AACN Advanced Critical Care*, *20*(3), 254-266.

Zanni, J. M., Korupolu, R., Fan, E., Pradhan, P., Janjua, K., Palmer, J. B., Brower, R. G.,

Needham, D. M. (2010). Rehabilitation therapy and outcomes in acute respiratory failure: An observational pilot project. *Journal of Critical Care*, 25, 254-262.

doi:10.1016/j.jcrc.2009.10.010

Zomorodi, M., Topley, D., McAnaw, M. . (2012). Developing a mobility protocol for early

mobilization of patients in a surgical/trauma ICU. *Critical Care Research and*

*Practice*, 1-10. doi:10.1155/2012/964547

Table 1: Sample Descriptives (Total n=119)

<b>Variable</b>	<b><u>Pre-implementation</u></b> <b>(n=65)</b> <b>Mean(SD)</b>	<b><u>Post-implementation</u></b> <b>(n=54)</b> <b>Mean(SD)</b>	<b><i>P</i>-Value</b> <b>CI= 95%</b>
Age/years	66 ±13.2	69±9.7	0.238
Apache II Score	13±8.0	14±7.4	0.344
Approximate Mortality Interpretation Score	19%±18.2	21%±16.2	0.561
ICU Length of Stay/days	4.2±5.2	4.1±6.5	0.952
Ventilator Days	0.97(3.6); 24	1.4±6.1	0.599
Number of Activity Occurrences	5.4±12.7	3.1±4.0	0.192

## PROGRESSIVE MOBILITY PROTOCOL

The Progressive Mobility Protocol was designed in effort to encourage and promote mobility and reduce the chance of a fall on the unit and reduce the possibility of further injury affecting the discharge timeline.

\*Progression & regression through protocol will be nurse driven with guidance from physical therapy as needed.

Family should NOT assist with the tasks below unless they have been properly trained by staff.

### Color Indicator      Mobility Level

 <b>RED LIGHT</b>  Date: _____  OOB to chair 1 2 3 4	<p><b>RED – Phase 1</b> – Pts are critically ill or baseline function may include: bed bound, wheelchair bound, minimal ambulation, assistance for mobility.</p> <p>Current status: Staff assistance of 2 or use of mechanical lift to get out of bed.</p> <ul style="list-style-type: none"> <li>• Turn q2hrs</li> <li>• ROM 3x/day</li> <li>• Bed in chair position at least 20 minutes 3x/day</li> <li>• Dangle at side of bed</li> <li>• Transfer/lift to chair</li> <li>• MD to enter PT consult as needed (patient must be able to open eyes to voice, squeeze hand on command)</li> <li>• Progress to next level as tolerated</li> </ul>
 <b>YELLOW LIGHT</b>  Date: _____  OOB to chair 1 2 3 4  Ambulate (room) 1 2 3 4	<p><b>YELLOW – Phase 2</b> - Baseline function may include: household ambulator, transfers independently but uses wheelchair (power or manual) for mobility.</p> <p>Current status: Staff assistance to get out of bed, walk, transfer to chair/commode.</p> <ul style="list-style-type: none"> <li>• Active transfer/ambulate for toileting</li> <li>• Sit in chair for all meals</li> <li>• Ambulate as tolerated</li> <li>• Progress to next level as tolerated</li> <li>• MD to enter PT consult as needed (patient requires more assist than his/her baseline)</li> <li>• Progress to next level as tolerated</li> </ul>
 <b>GREEN LIGHT</b>  Date: _____ OOB to chair 1 2 3 4 Ambulate (hall) 1 2 3 4	<p><b>GREEN – Phase 3</b> – Baseline function may include: community ambulator with or without assistive device.</p> <p>Current status: Staff may need to assist with lines or set-up for patient to mobilize.</p> <ul style="list-style-type: none"> <li>• Active transfer to chair at least 20 min 3 times/day</li> <li>• Sit in chair for all meals</li> <li>• Ambulate in hallway at least twice daily</li> <li>• Ambulate in room (toileting, ADLs)</li> <li>• MD to enter PT consult as needed (patient needs assistive device assessment)</li> </ul>

3/21/16

Figure 1: Progressive Mobility Protocol

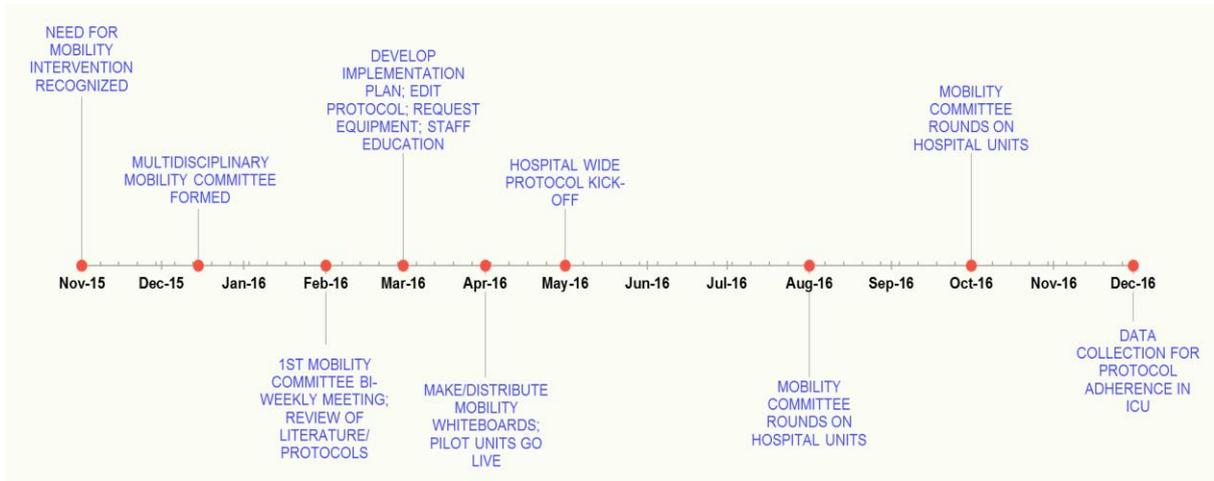


Figure 2: Mobility Protocol Implementation Timeline

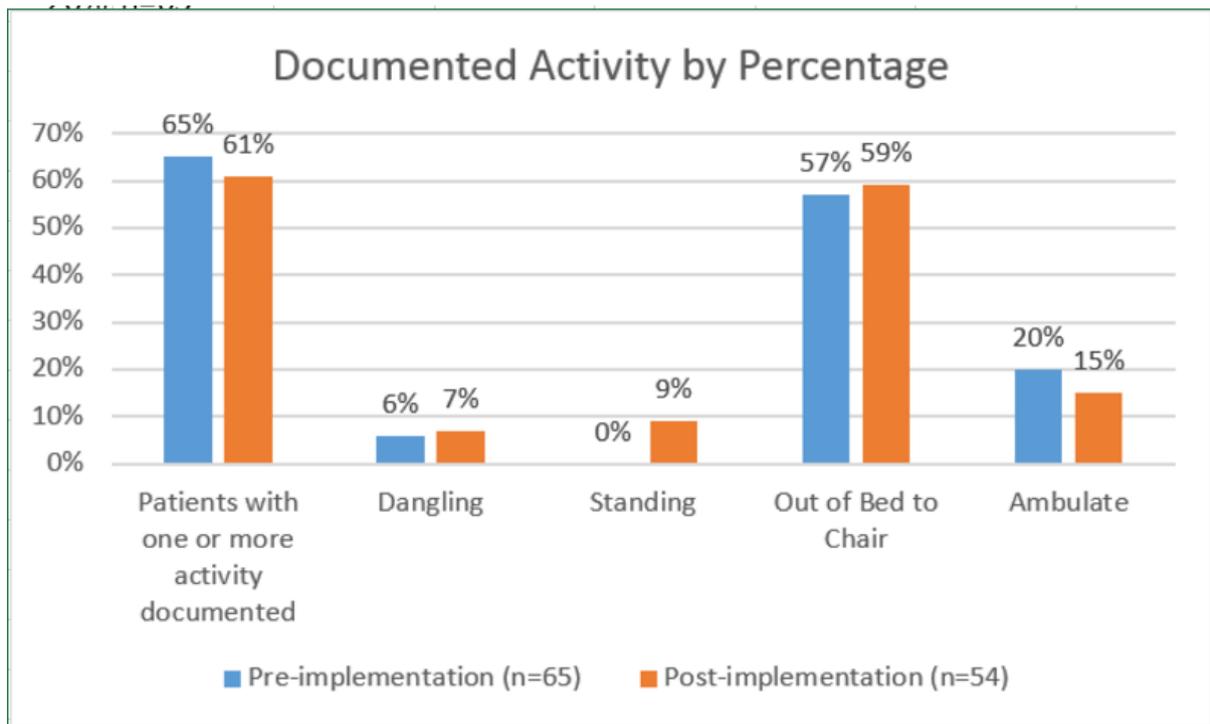


Figure 3: Documented Activities by Type