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Decreasing Risk of Delirium with Early Progressive Mobility

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University of San Francisco

Internship: Clinical Nurse Leadership

N-653

Professor Karin Blais, MSN, RN, CNL

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### Abstract

The goal to consistently mobilize the mechanically ventilated patient to decrease the risk or progression of delirium is the primary focus of my project. This project took place in two, 12-bed critical care units. One is a cardiovascular, medical, surgical intensive care unit and the other is a neurotrauma critical care unit. The methods for implementation included writing the management of pain, agitation, and delirium policy based upon the guidelines from the Society of Critical Care Medicine that include the ABCDE bundle. As part of this bundle, the early progressive mobility policy was revised so that a physician order is not required to mobilize a patient and the confusion assessment method for ICU to assess for delirium was implemented. There have been multiple PDSA cycles performed to evaluate the process, address barriers, educate, and make needed changes.

Retrospective data has shown an improvement that when a patient meets criteria to mobilize, mobility is occurring more consistently. There are minimal changes in our delirium rate. Fifty per cent of our mechanically ventilated patients have one or more episodes of delirium while in our unit.

Adding support to the team, consistent multidisciplinary rounds with improved Intensivist participation, has helped to reduce some of the barriers identified of time and fear, which will help us reach our goal to mobilize our patients 95 percent of the time when criteria is met. We will continue to work to reach this goal by the end of the first quarter of 2016.

## Decreasing Risk of Delirium with Early Progressive Mobility

### **Clinical Leadership Theme**

This project focuses on improving outcomes for the critically ill patient by decreasing the risk and progression of delirium through early mobilization. The curriculum element is Clinical Outcomes Manager. The role function of the CNL is clinician and outcomes manager. I will be focusing on the patient population of the mechanically ventilated patient in the Intensive Care Unit (ICU). The CNL clinician role will coordinate and evaluate care based upon best practice for a specific patient population. The outcomes manager will use collected data to address barriers, achieve sustainability, and revise patient care as needed. Evidence-based practice will be applied to utilize an assessment tool for early recognition of delirium and to utilize an early progressive mobility protocol. The bedside RN will mobilize the patient when criteria are met and ensure that progressive mobility continues to occur to decrease the risk of delirium or progression of delirium and weakness.

### **Statement of the Problem**

There is evidence that shows that mechanically ventilated patients are at risk for developing delirium and muscle weakness. These adverse conditions can be the result of the treatment that the health care provider is implementing to save the patient's life. This ICU-acquired condition of weakness and iatrogenic delirium can influence not only the patient's ability to survive but are associated with poor long-term outcomes related to functionality and cognitive ability. According to the article by Balas et al. (2014) implementing the ABCDE bundle into practice by the critical care nurse can provide the needed strategies to promote an environment free of delirium, improved pain control, and emotional safety for the mechanically ventilated patient (p. 35). The ABCDE bundle is an acronym for **A**wakening, **B**reathing trial

Coordination, Delirium assessment, and Early mobilization. The individual components of the ABCDE bundle are evidence-based strategies to minimize sedative exposure, decrease the number of ventilator-dependent days, and manage ICU delirium and weakness. In 2011, Morandi, Brummel, and Ely conclude, focusing on these components of the bundle had been shown to provide better care for the patient and improve outcomes (p. 44). Before my project, there was not a bundle in place to provide care to the critically ill mechanically ventilated patient. This often left the bedside RN on their own to try to figure out the best approach to the care of the patients regarding recognition of delirium and mobilization of the patient. Lack of a standardized approach meant inconsistency in nursing practice. This put the patient at risk and the bedside RN.

Evidence shows that in addition to the ABC portion of the bundle the one intervention of early progressive mobility can decrease the risk or the progression of delirium and muscle weakness in critical care. Of every mechanically ventilated patient, 50 percent have at least one episode or more of delirium after being on a ventilator for more than 12 hours while in my ICU. Of the patients that meet criteria for progressive mobility, only 50 percent are being progressed to their assessed mobility level consistently. Research shows that one episode of delirium while in ICU can increase the cost significantly compared to those patients that do not develop delirium as well as increase morbidity and contribute to poor long-term cognitive function (Milbrant et al. 2004). Delirium contributes to a higher rate of mortality, longer lengths of stay, increased readmission rates, and cognitive impairment that continues long after hospitalization. My ICU did not assess patients for delirium before the start of my project. Nursing, physicians, nor management even knew the occurrence rate before the implementation of the confusion assessment method-ICU (CAM-ICU). The ICU-CAM is a powerful tool to detect delirium early

and provide support of why mobilization early in our mechanically ventilated patients is crucial in order to improve outcomes.

### **Project Overview**

The goal of this project is to implement progressive mobility early and consistently in the mechanically ventilated patient with the intention to decrease the risk or progression of delirium. The feedback form identified that the one step of the ABCDE bundle that was a missed opportunity for my unit was progressive mobility (**Please see Appendix A, Feedback Form**). The primary goal is to initiate and progress mobility 90 percent of the time when criteria are met and to assess and recognize delirium 100 percent of the time. Secondary goals will be to identify and decrease barriers to mobilizing patients, improve communication, evaluate perceptions of the team, and increase family participation. As a result of the above work, a final goal will be to decrease the occurrence rate of delirium by 10 percent, which should result in a decrease in length of stay in the ICU, decrease ventilation days for the patient, and improve long-term outcomes in cognition and muscle strength. These improvements have significant implications for the patient, their loved ones, and to the organization.

The specific Aim Statement for this project is to assess the activity level of every mechanically ventilated patient and mobilize when criteria are met 90 percent of the time. To progress mobility to the next level when the patient tolerates a level for greater than 60 minutes, and to assess and recognize delirium early. (**Please see Appendix B, Progressive Mobility Reference**). During multidisciplinary rounds, the team will review the level of mobility to ensure that the assessed level for the individual patient is following the progressive mobility protocol, mobility is actively taking place, and barriers are identified and addressed. This will

promote effective communication with the team to ensure that each member is involved in the decision-making process and able to provide input for the overall goal for the patient.

### **Rationale**

During a Joint Commission Survey, my organization received an opportunity for improvement (OFI) regarding the practice surrounding sedation of the mechanically ventilated patient. The OFI prompted evidence-based research and evaluation of best practices in recognized critical care units on caring for the mechanically ventilated patient. It was from this research that I identified we were missing a structured way in which to care for our mechanically ventilated patients. The Institute for Healthcare Improvement (2005) defines, "a bundle as a structured way of improving the processes of care and patient outcomes." Bundles are sets of evidence-based practices that when performed together and consistently have been shown to improve patient outcomes ([www.IHI.org](http://www.IHI.org)). Not having a structured approach meant our patients were over-sedated, which did not allow them an opportunity to breathe spontaneously prolonging the days they remained on the ventilator. Progressive mobility was inconsistent and a validated assessment tool to identify delirium was not available. Not assessing for delirium meant that we didn't know if we were higher or lower than the national average rate of delirium. Sixty-five percent of ICU patients have delirium that goes undetected when a validated assessment tool is not utilized (AACN, 2011).

Girard, Pandharipande and Wesley Ely (2008) explain that the disturbance of consciousness and cognition has been referred to as ICU psychosis and is often overlooked as being a normal event in the clinical course of a critical illness. Delirium not only contributes to higher rates of mortality and cognitive impairment that continue long after hospitalization, but it also contributes to struggles for individuals to return to a normal state that isn't blemished with

psychological pain (Girard, Pandharipande & Wesley Ely, p. 2, 2008). Progressive mobility is an effective and proven intervention to decrease risk and progression of delirium when completed consistently to the appropriate level of hemodynamic safety.

The barriers faced with mobilizing our patients early and consistently are multifaceted. Challenges with an unstable Intensivist group and inconsistent multidisciplinary rounds often left the patient in this microsystem with marginal medical management, leaving them to an increased risk of developing delirium and inconsistency in recognition and appropriate interventions to decrease the progression. Leadership changes in ancillary support departments often left new respiratory and physical therapist providing support without adequate education and knowledge of the progressive mobility protocol. A struggle to have the physical support from the CNA or the lift team left the bedside nurse overwhelmed and afraid to proceed safely.

Monitoring for delirium and mobilizing the mechanically ventilated patient requires new knowledge and skills for the entire team. The 5 P's that focus on purpose, patients, professionals, processes, and patterns provide the framework to assess, develop, and implement a successful project (Nelson, Batalden, & Godfrey 2007).

Critical care is an expensive part of healthcare expenses. The cost of one day in a critical care unit at my not for profit organization is \$9,500. Cost increases with complications such as ventilator-associated pneumonia and delirium (**Please see Appendix C, Cost Analysis**). According to the American Hospital Association (2014) the cost of delirium is \$2,500 higher per hospital admission that is an increased cost to Medicare of \$6.9 billion per year (AHA, 2014). Not only is overall cost higher when a patient develops delirium, but the patient is also at increased risk for poor long-term outcomes due to decreased cognitive function (Bales et al., 2014). Managing the critical care patient in times of challenge and change is crucial to assist in



maintaining patient safety. The use of a validated assessment tool for delirium and a progressive mobility protocol ensure improvement in processes and care for a high-risk patient population.

### **Methodology**

To meet the objective of decreasing delirium with consistent early mobility several cycles of the PDSA cycle have been utilized (**Please see Appendix D, PDSA Cycle**). The pain, agitation, and delirium policy was created to provide a structured and systematic approach to caring for the mechanically ventilated patient, with implementation of the ABCDE bundle. The goal to improve the care of our mechanically ventilated patients through decreased sedation, spontaneous breathing trials, early mobilization, and assessing for delirium required extensive staff education and clear expectations for the entire team. Ongoing evaluation, education, monitoring, and addressing barriers are essential for sustainability to a new process. Using a diagram to record the collection of data can be helpful in creating a visual analysis of breakdowns in the process (**Please see Appendix E, Fishbone Diagram**).

Having a systematic process to guide the team to achieve consistency and establish an expected practice is crucial. The ABCDE bundle is an effective and beneficial tool. We validated that the initial part of the bundle, the ABC portion was understood and effectively implemented. Therefore, the process developed for this project is a six-step approach based upon the D & E portion of the bundle, delirium assessment, and early mobilization. The first three steps are to assess for level of mobility, followed by assessing for delirium, then performing mobility to level assessed, and advance to next level if tolerated for 60 minutes or more. The last three steps are to address mobility and CAM-ICU status, and address barriers to mobility in multidisciplinary rounds with the team. The multidisciplinary team includes the Intensivist, Clinical Pharmacist, Physical Therapist, Respiratory Therapist, bedside RN, Charge RN, Dietician, Case Manager,

and the Clinical Nurse Manager. By ensuring that mobilization is occurring in every patient that meets criteria, we believe we can decrease our rate of delirium.

Providing education to the team when appropriate, and receiving feedback for improvement of the process is discussed to promote an expected and standard practice. This multidisciplinary team allows for debriefing regarding issues, challenges, and fears regarding mobilization of a patient. It also provides extra hands on support if necessary.

The change theory, which has guided my project, is from Kotter's eight-step model of change. There are three specific phases in the eight steps, which consist of creating a change of culture, engaging staff, and, implementing, and sustaining change (Neumeier, 2013).

A change of culture begins with a sense of urgency, which is the first step in Kotter's change theory. A previous patient returned to speak to staff about his experiences in our ICU, which stimulated a sense of urgency. His torment while in our ICU with hallucinations and nightmares continue to be with him long after his physical recovery. The patient story gave the staff insight and the desire to change their practice for the care of the mechanically ventilated patient. Keeping a sense of urgency with this project has been vital to keep the momentum in the right direction.

Barriers to mobility must be identified, evaluated, and addressed on an ongoing basis to ensure that the process is effective and not interfering with the expectations of care. A survey of the nursing team was developed to identify resistance and barriers to mobility. Ongoing education for support staff is required to ensure that the entire team is knowledgeable with the process. Identifying and addressing barriers is key to engaging the staff and ensuring sustainability for change, which are the last 2 phases of Kotter's eight-step model of change (Neumeier, 2013). Providing information on the data collection not only established what was

occurring in nursing practice it also helped to tell the story of the need for improvement. Showing retrospective data that was collected from April 2015 through 2015 to establish the rate of delirium and how often we were mobilizing our patients was powerful in this story and motivated the team to make improvements.

The promotion of a culture of continuous improvement will show effectiveness through nursing surveys, audits, and improved outcomes measured by decreased length of stay, and decreased ventilator days, and sustainability of the process. Decreasing our delirium rate and increasing our mobilization of patients that meet criteria will show if the project is effective. The strengths, weaknesses, opportunities, and threats to this project are identified and addressed to move through the change process (**Please see Appendix F, SWOT analysis**).

#### **Data Source/Literature Review**

The literature supports a change in practice for the mechanically ventilated patient. Feedback forms from early in the project have provided meaningful information for improvements in care and is supported by the evidence. The feedback has identified challenges, barriers, and obstacles to the mobilization of the mechanically ventilated patient and the incidence of delirium in the project ICU. According to Cavallazzi, Saad, and Marik (2012) “the incidence of delirium in the ICU ranges from 45% to 87%” (p.1). Incidence is found to be higher in mechanically ventilated patients. The ICU of this project falls within these ranges.

My PICO search statement was **P**atients in critical care that are mechanically ventilated with an **I**ntervention of early mobilization, **C**ompared to those patients that do not mobilize early and **O**utcome improvements for decreased risk of delirium. This statement was extremely helpful to keep my project on track and focused.

The incidence rate provides the evidence that delirium is a problem within the microsystem of the critical care environment. Choi (2013) describes the serious complications that result from delirium, the high incidence and prevalence rate in critical care units and that it is frequently not recognized early or completely missed. Not recognizing delirium leads to poor outcomes and increased cost. The author goes on to indicate that early detection is critical to the use of a validated tool so that underlying causes and risk of developing delirium is identified early (p. 2).

The authors of the study by Balas et al., (2014) conducted an eighteen-month, prospective, cohort, study for mechanically ventilated patients, examining the association between the ABCDE bundle and decreased ventilator days. They examined the prevalence of delirium related to early mobilization. Their study concluded that patients that were mobilized spent less time on the ventilator than those that were not mobilized (p. 46).

In the article by Brummel et al. (2013) the authors review the evidence-based screening tools for delirium that are available for the critical care environment. They point out the need to change the culture in the ICU that believes delirium is part of the critical care experience. Delirium is proven to be a dangerous syndrome that leads to poor outcomes for the patient. These outcomes are modifiable if the correct and appropriate interventions are implemented early (p. 10).

Schweickert et al. (2009) assessed the efficacy of interrupting sedation and implementing mobilization in the mechanically ventilated patient. Those patients who were mobilized early in the illness resulted in better long-term outcomes.

Vollman (2010) identifies the risks associated with bed rest and immobility in critically ill patients, specific changes required in culture, and the challenges and barriers.

Critical care nurses have had the belief system that when a patient is mechanically ventilated rest is crucial. The means that they obtain this historically is through excessive sedation and bed rest. Vollman (2010) identifies the risks with this practice.

All of the literature researched for this project supported the reliability of the CAM-ICU assessment tool and that early mobilization in the mechanically ventilated patient improved outcomes. One challenge that I did not find in the literature is any of the barriers to mobilization, which this project will attempt to identify.

### **Timeline**

The first phase of this project started with extensive research of evidence and best practices in caring for the mechanically ventilated patient. This resulted in rewriting a policy that incorporated the ABCDE bundle and extensive education to the team that cared for the mechanically ventilated patient. There were multiple phases of the PDSA cycles to evaluate and modify the process making modifications to the practice of mobilization and changes to the policy making it possible to mobilize a patient without a physician order. A collection of data is ongoing to validate the necessity of the project and to ensure movement in the right direction. Continued education and team input and the development of a daily goals worksheet to assist the bedside RN meet the challenges and overcome fears has proven to be an effective and useful tool.

The daily operational timeline struggles with stable Intensivist coverage, therefore we have made it the goal to be consistent in multidisciplinary rounds initiated by the charge RN. The charge RN initiates rounds at the same time everyday regardless if we have physician participation or not. The daily goals worksheet is utilized during rounds to ensure that all the components of the PAD policy are addressed along with the CAM-ICU evaluation and the

progressive mobility level (**Please see Appendix G, Process Mapping**). The nursing staff was surveyed to identify barriers and challenges to mobilize the mechanically ventilated patient consistently (**See Appendix H, Nursing Survey Results**). Identifying barriers and belief systems that hinder the process and providing hands-on support can provide solutions to a challenging practice change.

Implementing a successful progressive mobility program requires an investment in the staff, equipment, and time. It will be an ongoing project as opportunities for sustainability and improvement are identified. The goal to identify barriers and obstacles for the team that hinders mobility as per the progressive mobility reference, policy, and procedure will be vital. A challenge of this project will be to provide adequate physical support and to educate in a timely and effective manner to new team members in the critical care units. Addressing the culture and the belief system that critical care nurses are entrenched in with beliefs that keeping critically ill patients quiet and at rest is best, will need to be discussed and addressed in daily rounds to change the culture. Evidence and stories to support the benefits of mobility and thereby reduce delirium will benefit the staff and keep the momentum moving in the desired direction.

Sustainability is a test in any change process and according to Harris, Roussel, and Thomas (2014) “the most important undertaking for developing meaningful and sustainable clinical immersion projects is just simply to listen” (p. 168). Although listening is crucial, the CNL must be able to identify needed changes and themes in the process that are barriers.

Seeking feedback is an important role to obtain the desired goals.

The timeline for this project is complete however the ongoing work of sustainability continues and will be ongoing. Shifting back and forth between the PDSA cycle and the SDSA cycle will be required for ongoing improvements to the process.

As the CNL, I have assumed accountability for the mechanically ventilated patient to ensure the best possible outcomes. The assimilation of information to the team and evaluation of needs is ongoing. The final challenge will be to transition the feedback form to the charge RN's to increase accountability and sustainability in my absence (**Please see Appendix I, Project Outline**).

### **Expected Results**

As ongoing education and support continue for the team, it would be expected that the challenges and barriers to progressively mobilizing a mechanically ventilated patient would decrease. The survey provided insight into what the challenges and barriers are to completing progressive mobility consistently, and will allow a further evaluation of the microsystem. As nursing staff become more familiar and comfortable with the CAM-ICU, it would be expected that increased consistency would occur, and benefit of the tool would be appreciated and realized which will also ensure sustainability. My personal goal will be to change the culture and the mindset of the critical care nurse regarding mobilization of the mechanically ventilated patient. To tell stories that demonstrate, we provide improved outcomes for the patient by mobilizing them rather than keeping them in bed. Nursing staff is often fearful to move their mechanically ventilated patient, as they believe that they may inflict harm or that it may cause more work for them if something does go wrong. In reality, more harm is inflicted when we do not move the patient. Not only physically, but emotionally as we put them at risk to develop delirium leaving long term emotional effects as well as many mobility issues.

I would expect to see a continued decrease in our rate of delirium. I would also hope to see that patients are being advanced to the next level of mobility when they meet criteria, and they tolerate the current assessed level for 60 minutes or more. There is a hesitancy to advance to

the next level, and it is often delayed until the patient is extubated. This would increase the rate and consistency of patients being mobilized that meet criteria.

### **Nursing Relevance**

Obtaining buy-in from all the stakeholders to realize the benefits that will result in improved outcomes for the patient is perhaps the greatest opportunity and relevance to this project (**Please see Appendix J, Stakeholder Analysis**). The CAM-ICU will become part of the routine for the nurse just like their other assessments. Mobilization and assessing for delirium should not be physician driven and dependent upon an order but rather should be part of daily care in the critical care environment. Nurses, respiratory therapist, and physical therapist must drive the progressive mobility protocol. Successful implementation will be dependent on effective training of highly skilled individuals, effective communication between the team, and effective leadership that can meet the needs of a changing environment. Ensuring adequate resources to overcome the barrier of time and fear is essential. Time is a barrier identified in the article by Guenther et al., (2010) which discusses that “delirium monitoring is often dismissed as being too time-consuming” (p. 144). The critical care nurse is the communication link for the team, and they must be the driver of the process. The CNL can serve as a partner with the team and mentor leadership to sustain the change required.

Understanding the long-term consequences and effects of delirium to the patient and their loved ones is a key contribution to this project. To minimize or eliminate this devastating effect would provide significant meaning that nurses have the ability to fill.

The CNL is well suited to provide guidance and support as well as critical insights, and training for the process to flow smoothly, consistently, and efficiently. The CNL must ensure



that certain factors that create barriers are addressed promptly. Some of these barriers may be a lack of available resources when needed, resistance from the team, poor communication, and simply not enough time to complete the task of assessing for delirium and mobilizing the patient.

### **Conclusion**

The project to mobilize mechanically ventilated patients that meet criteria consistently to decrease delirium has been much more of a challenge than anticipated. Mobilizing a patient seems like it should be a relatively simple process. However, it is complex to implement on a consistent basis, in a mechanically ventilated patient. The bedside RN often is left feeling overwhelmed and defeated, as this requires an entire team to accomplish the task.

This project took place in two, 12-bed intensive care units with similar patient populations. One unit has a subspecialty of cardiac and the other neurological and trauma. We are a community hospital that is a level two-trauma center. We are a designated STEMI receiving site, Joint Commission Stroke Certified and have an open-heart program. We are located in Northern California.

The baseline data for our rate of delirium is greater than 50 percent in our mechanically ventilated patients. Stories of previous patients suffering the long-term effects of delirium indicated the significant need for this project. We are a Planetree organization that focuses on patient-centered care. Improving care for our sickest patients is a natural fit for the organization mission statement of "Improving the quality of life through patient-centered care" (Enloe.org, 2012).

We relied upon the American Association of Critical Care Nurses Practice Alert for Delirium Assessment and Management (AACN, 2011), and the ICU Delirium and Cognitive

Impairment Study Group through Vanderbilt University Medical Center ([www.icudelirium.org](http://www.icudelirium.org), 2013), as our resources and champions in the changing our practice.

The first diagram on Appendix K demonstrates the inconsistent practice with the intervention of progressive mobility. It was disappointing that we were not able to show a more significant trend in improvement however from the second graph on Appendix K I believe that some conclusions are appropriate (**See Appendix K, Results of Data Collection**). Nurses are hesitant to progress their patient to the next level of mobility even when criteria met to progress is shown. Fear of hemodynamic instability, unintended extubation of the patient, and lack of help, and support are the primary reasons. The latest data is showing that recently our patients have a higher severity of illness which is not allowing them to progress to their level of mobility however we are mobilizing more patients, which is the good news. We have less CAM-ICU positive assessments that are indicative that nurses are implementing the ABC portion of the bundle more consistently which their documentation and communication in multidisciplinary rounds would support.

The next step will be the newly added F portion of the bundle, which is family. Involving family and overcoming the barriers that they present will assist the RN to accomplish the daunting task of mobility.

Implementing change in a process is easy sustaining it is where the hard work begins. Sustainability has been the challenge of my entire project. The project of mobilizing the mechanically ventilated patient began when I started this program. It is a complex problem that requires hard work, enthusiasm, and day-by-day evaluation of what works, what doesn't work, and having the necessary support to do the hard work. The entire team must buy in to the process and provide support when required. As our Intensivist program stabilizes and engagement

improves with this group I expect to see more support provided to the bedside RN in order to achieve the desired goals.

The five factors of sustainability are crucial in my project to move from the PDSA cycle to the SDSA cycle to ensure the process as standard nursing care. Modification to the project is ongoing as we learn and understand more regarding mobilization of the critically ill patient. Champions in the unit are critical as they encourage, assist, and motivate their peers to perform mobility with their patients. The organization mission statement is foundational and is key when educating staff regarding progressive mobility. Improving the quality of life through patient-centered care is why we are mobilizing our patients early and strive to do this consistently.

We are currently in the last two factors of sustainability, perceived benefits and support from stakeholders. These two factors are influenced by culture and belief systems, which are difficult to overcome. Providing a story of success and failures through the data collected in this project will assist in overcoming the barriers. This is where the role of the CNL is valuable and necessary.

The role function of the CNL is clinician and outcomes manager. The CNL clinician role will coordinate and evaluate care based upon best practice for a specific patient population. The outcomes manager will use collected data to address barriers, achieve sustainability, and revise patient care as needed.

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Appendix A

**Feedback Form**

**Pain Agitation Delirium (PAD) Feedback Form**

Nurse: \_\_\_\_\_ Date of Documentation reviewed: \_\_\_\_\_

Patient MRN: \_\_\_\_\_ Patient Room No.: \_\_\_\_\_

Reviewer: \_\_\_\_\_

**Richmond Agitation Sedation Scale (RASS)**

- RASS intervention not documented Q4 Hours (15 min leeway) with physical assessment
- RASS Target documentation does not match RASS target order
- RASS intervention documentation not completed prior to sedation administration/titration
- Sedation infusion not decreased for RASS deeper than target RASS

**Spontaneous Awakening Trial (SAT)**

- SAT not completed despite passing safety screen Q shift
- Sedation infusions titrated inappropriately
  - Ventilator FiO2 <50 & PEEP <10 but sedation infusion not turned off
  - Ventilator FiO2 <50 & PEEP <10 sedation not restarted at ½ prior rate or minimum eMAR initiation dose at end of SAT
  - Ventilator FiO2 ≥50 or PEEP ≥ 10 but sedation infusion not reduced by ½ or minimum eMAR initiation dose
  - IVSS titrations not completed per eMAR order
- Analgesic infusions not stopped or decreased by ½ and no documentation of active pain

**CAM-ICU**

- Not completed Q shift
- Completed when RASS -4 or -5 (pt too sedated to assess)
- Feature 1: Alternating Course or Fluctuating Mental Status inappropriately assessed as negative
- Assessment completed incorrectly: \_\_\_\_\_
  - CAM positive**
  - CAM negative**
  - Pain Intervention**

- Pre and Post pain assessment not completed for each titration of narcotic infusion

**Mobilization**

- Mobility level \_\_\_\_\_
- Criteria met to advance \_\_\_\_\_
- Progressive mobility occurred at appropriate level \_\_\_\_\_

Appendix B

Progressive Mobility Level Progression

Critical Care Progressive Mobility Reference	
<p><b>Goal of Early Mobilization:</b>                      Promote mechanical ventilator weaning process                      Reduce ICU and Hospital LOS                      Prevent physical deconditioning                      Prevent Ventilator-Associated Pneumonia                      Prevent Pressure Ulcers                      Maintain/achieve preadmission activity level                      Enhance Patient physical and psychological well being</p>	<p><b>Monitor for Physical Therapy/Occupational Therapy Evaluation:</b>                      • OT consult on admission, then weekly follow-up evaluation                      • PT consult when patient is able to cooperate with activity of levels 3 - 4</p>
Document all activity on Table and in the Meditech Activity Assessment	
Advance mobility using progressive Algorithm Level as Patient Tolerates. Reassess Q12 Hrs	
<p style="text-align: center;"><i>Progression to next mobility level is initiated when the patient tolerates a level for greater than 60 minutes, except when any of the below exclusion criteria is present:</i></p>	
<ul style="list-style-type: none"> <li>• Lobar collapse or atelectasis, excessive secretions</li> <li>• Hemodynamic instability ↓ SaO<sub>2</sub> ± BP ± HR (Δ 20% from baseline)</li> <li>• FiO<sub>2</sub> &gt; 50% with Peep &gt; 10</li> <li>• SaO<sub>2</sub> &lt; 90% at rest or &lt; 88% with activity</li> <li>• Progressively deteriorating neurological status</li> <li>• Severe orthopaedic problems</li> <li>• Advancement to be with full team support</li> </ul>	<p style="text-align: center;"><b>Hemodynamic Tolerance</b>                      5-10 Minute equilibration time required with each position change to determine hemodynamic stability</p>
<p><b>Level ONE - Modified Mobility Process</b>                      Criteria: Admission to Critical Care Unit</p> <ul style="list-style-type: none"> <li>• Reposition and Turn every 2 Hrs</li> <li>• Active or Passive Range of Motion X3 Daily</li> <li>• Splints and/or boots for contracture prevention</li> <li>• HOB ≥ 30 degrees (unless contraindicated)</li> <li>• If tolerated initiate/continue continuous lateral rotation therapy (CLRT) goal of 18 hrs/day</li> </ul>	
<p><b>Level TWO (Include Level ONE Interventions)</b></p> <ul style="list-style-type: none"> <li>• Head of Bed at 45° to 65° if hemodynamically stable</li> <li>• Place legs in dependent position</li> <li>• Bed to Chair Position / Out of Bed to Chair with assistive device (X2 Daily for ≤ 1 hr)</li> <li>• In Chair position &lt; 1 hr</li> </ul>	
<p style="text-align: center;">If Pt has large abdomen try a lesser HOB angle when in sitting position</p>	
<p><b>Level THREE (Include Level ONE &amp; Level TWO Interventions)</b></p> <ul style="list-style-type: none"> <li>• Dangle at edge of Bed</li> <li>• Advance to Standing Position</li> <li>• Initiate Pivot/Stand to bedside chair at least X2 Daily</li> <li>• In Chair position goal ≥ 1 Hr</li> </ul>	
<p><b>Level FOUR (Include Level TWO &amp; Level THREE Interventions)</b></p> <ul style="list-style-type: none"> <li>• Encourage Active Range of Motion</li> <li>• Stand to bedside Chair X3 Daily, Goal ≥ 1 Hr in Chair</li> <li>• Ambulate in hallway X3 Daily</li> </ul>	



## Appendix C

**Cost Analysis****Change Cost:**

Meeting time for collaboration and input from Nursing staff. Process Improvement Committee 7 meetings x 2 hours for 5 RN's.	\$ 3,500
Research and rewriting of policy Presentation of new policy and procedure to multiple Physician groups and Committees x 100 hours	\$ 5,000
Education: 4 hours for 68 RNs. Instructor time for 6 classes x2 \$ 2,400	\$ 13,600
Development of Education 40 hours	\$ 2,000

*Total expenditures for implementation of ABCDE bundle* \$ 26,500

**Benefits:**

Decrease length of stay by 1 day for 50 patients \$475,000

1-year savings

It would improve outcomes for 50 patients decreasing their mortality rate, 30-day readmission, and improve long-term cognitive function.

**Net Benefit in First Year:** \$448,000

Appendix D

PDSA Cycle

**Cycle #1**  
 -Project initiated with critical care workgroup to assess care for mechanically ventilated patients  
 -Evidence-based research completed  
 -New policy implemented on pain, agitation, delirium



**Cycle #2**  
 -Project needs identified by critical care workgroup, CAM-ICU assessment tool implemented  
 -Education planned for multidisciplinary team  
 -Education completed  
 -1:1 education with nursing staff in unit  
 -On going evaluation and needs assessment  
 -Audits to identify needs



**Cycle #3**  
 -Project evaluation of process by critical care workgroup  
 -Identified challenges regarding physical therapy and respiratory therapy  
 -Education plan developed  
 -Audits to identify



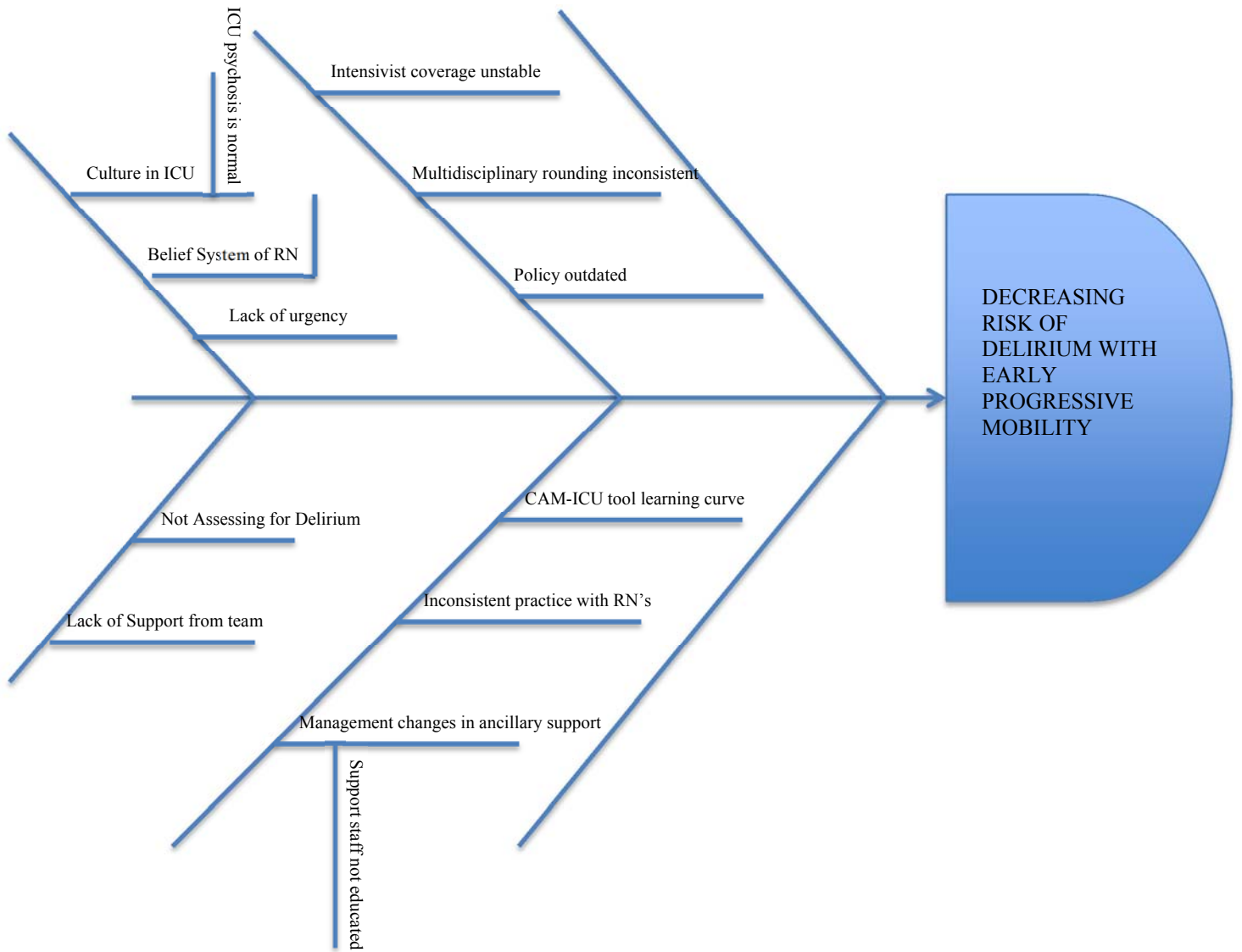
**Cycle#4**  
 -Increased support to bedside nurse to improve mobilization  
 -Daily Goals Worksheet to assist with needs assessment  
 -Multidisciplinary team review and support  
 -Identify barriers to mobility  
 -Education  
 -Audits to identify needs



**Cycle#5**  
 -Project needs evaluated to obtain consistency with mobilization and progression when criteria is met  
 -Completion of survey to identify barriers and needs  
 -Education plan to be repeated on Progressive Mobility and use of equipment available  
 -Audits to identify needs and to sustain process

Appendix E

**Fishbone Diagram**



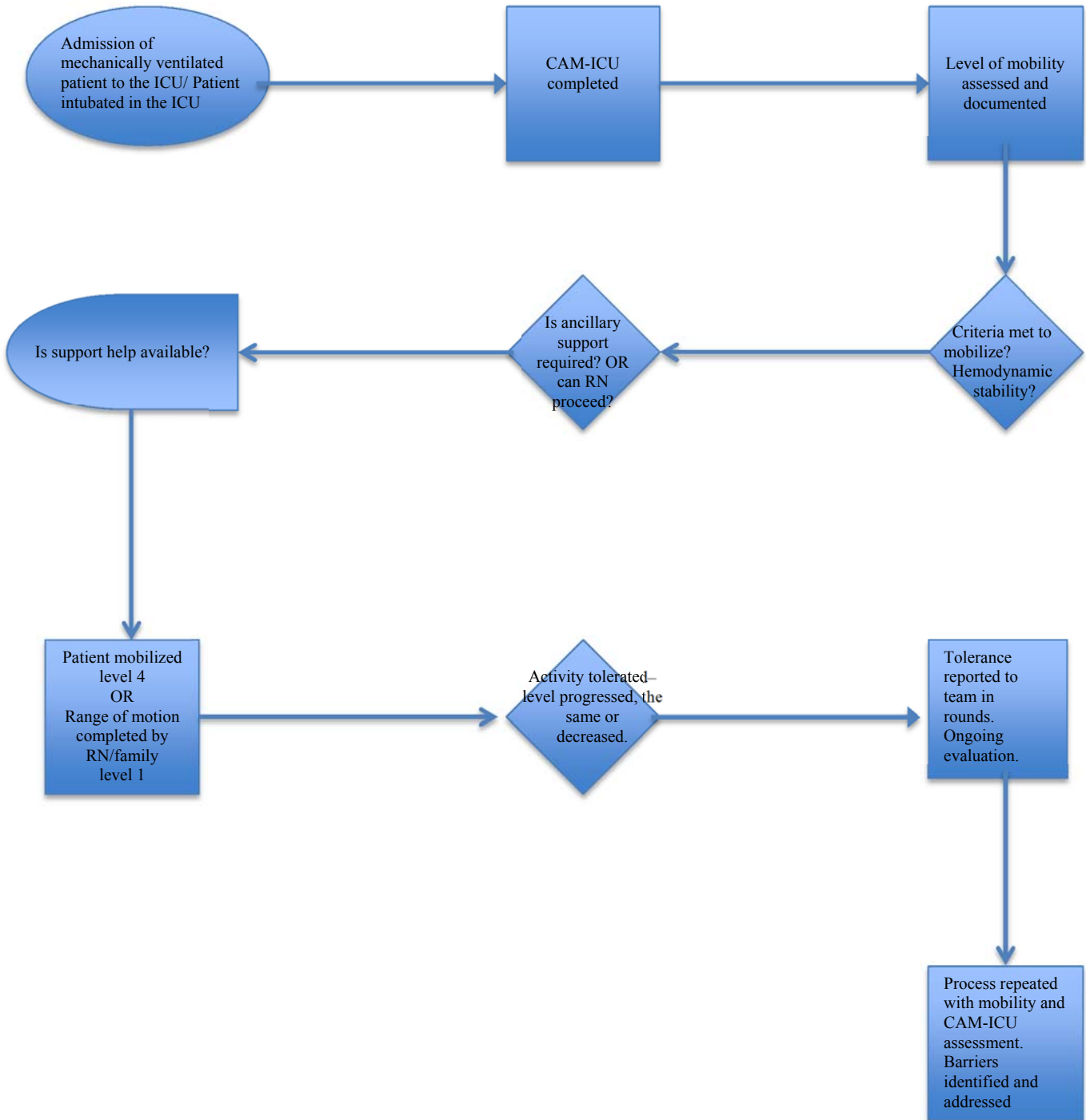
Appendix F

**SWOT Analysis**

<p><b>STRENGTH</b></p> <ul style="list-style-type: none"> <li>Consistent completion of CAM-ICU</li> <li>Early detection of delirium</li> <li>Assessment for mobility consistent</li> <li>Physician order not required to mobilize patient</li> <li>Progressive mobility protocol</li> </ul>	<p><b>WEAKNESS</b></p> <ul style="list-style-type: none"> <li>Interventions not consistently implemented</li> <li>Expectations not clear</li> <li>Support from ancillary staff not consistently available</li> <li>Fear and uncertainty among the staff</li> <li>Equipment not readily available</li> </ul>
<p><b>OPPORTUNITY</b></p> <ul style="list-style-type: none"> <li>ABCDE bundle utilization</li> <li>Education of ancillary support staff</li> <li>Involvement with Quality</li> <li>Family involvement and support</li> <li>Data collection and benchmarking</li> </ul>	<p><b>THREAT</b></p> <ul style="list-style-type: none"> <li>Unstable intensivist program</li> <li>Lack of leadership in ancillary dept.</li> <li>Family disengagement / interference</li> <li>Stakeholders not buying into process</li> </ul>

Appendix G

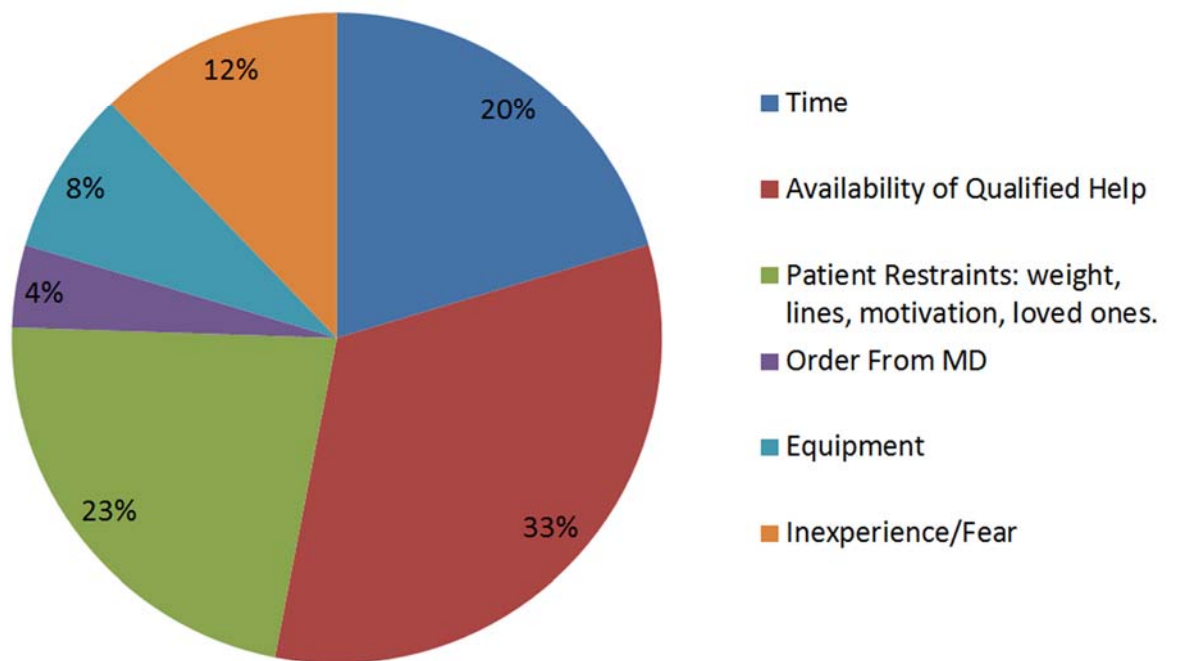
Process Mapping



Appendix H

Nursing Survey Results

**Survey Results of Nursing Barriers to Mobility**



## Appendix I

**PROJECT OUTLINE****PROJECT OUTLINE 2013 – 2015****Winter 2013**

Assessment of the critical care microsystem for the mechanically ventilated patient

Research of Evidence and best practice

Policy, procedure, and protocol rewrite for pain, agitation, and delirium (PAD)

Organizational approval process for new policy (PAD)

CPOE build with Informatics in collaboration with Intensivist for new PAD order set

Education for staff – mandatory four-hour class for nursing

Physical Therapy education for progressive mobility

Respiratory Therapy education for spontaneous breathing trials

ABCDE Bundle

Implementation of ABCDE bundle

CAM-ICU implementation for mechanically ventilated patients

**2014**

PDSA cycles to evaluate new process from the PAD policy

Audit and Feedback form completed on every patient mechanically ventilated

Evaluation and assessment of challenges, opportunities, and nursing input

Six-month period of no change in the policy and protocol to evaluate effectiveness

Modifications made to the policy, procedure, and protocol based on team evaluation and input

**January 2015 – August 2015**

Collection of data from 12/2014 – 6/2015 to determine incidence of delirium in the critical care unit

**August 2015 – December 2015**

August 2015 – Conducted a 2nd mandatory education class for all critical care nurses. Class content was reviewed and reinforcement of the PAD policy. Focus on CAM-ICU

Ongoing 1:1 education with staff on the CAM-ICU assessment

Feedback form/audit completed on every mechanically ventilated patient

**Daily**

Round daily on all mechanically ventilated patients to assess, evaluate and assist with mobility

Ensure that the Daily Goals Worksheet is utilized to assist in identifying barriers and challenges.

Address CAM-ICU status

Educate to ensure that the mobility level is progressed when criteria is met

Evaluate support needs



## Appendix J

**Stakeholder Analysis**

<b>Stakeholder</b>	<b>Benefits</b>
ICU bedside RN	<ul style="list-style-type: none"> <li>• Tool to assess for delirium</li> <li>• Decreased moral distress</li> <li>• Improved satisfaction</li> <li>• Improved outcomes for patient</li> </ul>
Ancillary Staff Respiratory Therapy Physical Therapy	<ul style="list-style-type: none"> <li>• Increased collaboration</li> <li>• Coordination of care in the ICU</li> <li>• Improved communication</li> </ul>
Critical Care Nursing Leadership Team	<ul style="list-style-type: none"> <li>• Improved communication with the team</li> <li>• Nursing driven protocol to improve patient outcomes</li> <li>• Nursing staff will know what is expected</li> <li>• Consistency in practice among nursing staff</li> <li>• Improved safety</li> <li>• Improved patient satisfaction</li> <li>• Improved nursing satisfaction</li> </ul>
Intensivist	<ul style="list-style-type: none"> <li>• Coordination of care for the critically ill patient</li> <li>• Promote safe and efficient care of the mechanically ventilated patient</li> <li>• Decreased unnecessary phone calls due to protocols for nursing staff</li> <li>• Improved patient outcomes</li> </ul>
Patient	<ul style="list-style-type: none"> <li>• Improved safety and emotional support</li> <li>• Decreased days on ventilator</li> <li>• Improved long term outcomes</li> </ul>
Patient's loved ones	<ul style="list-style-type: none"> <li>• Improved communication</li> <li>• Improved understanding of process and critical care experience</li> <li>• Improved communication with team</li> </ul>
Administration/Finance	<ul style="list-style-type: none"> <li>• Decreased cost due to decreased length of stay</li> <li>• Decreased cost due to decreased 30 day readmission rates</li> <li>• Improved throughput</li> <li>• Increased patient satisfaction</li> </ul>

Appendix K

Results of Data Collection

