

Spring 5-19-2017

Delirium: A CNL-Led Protocol to Clear Up the Confusion

Shanda N. Whittle

University of San Francisco, snwhittle@dons.usfca.edu

Follow this and additional works at: <https://repository.usfca.edu/capstone>

 Part of the [Critical Care Nursing Commons](#), and the [Psychiatric and Mental Health Nursing Commons](#)

Recommended Citation

Whittle, Shanda N., "Delirium: A CNL-Led Protocol to Clear Up the Confusion" (2017). *Master's Projects and Capstones*. 556.
<https://repository.usfca.edu/capstone/556>

This Project/Capstone is brought to you for free and open access by the Theses, Dissertations, Capstones and Projects at USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. It has been accepted for inclusion in Master's Projects and Capstones by an authorized administrator of USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. For more information, please contact repository@usfca.edu.

Delirium: A CNL-Led Protocol to Clear Up the Confusion

Shanda N. Whittle

University Of San Francisco

Internship: Clinical Nurse Leader

Dr. Lisa Gifford

May 1, 2017

Delirium: A CNL-Led Protocol to Clear Up the Confusion

Delirium is a state of acute confusion that has the potential to lead to poor outcomes. Due to its impacts on patients, families, and the healthcare system as a whole, there has been an increased call for hospital delirium protocols in recent years. In 2014, the American Geriatrics Society estimated that the financial cost of acute care related delirium in the United States was between \$38 billion and \$152 billion annually (Kennedy, et al., 2014). Outcomes related to delirium include an increased risk for functional decline, an increased risk for care complications, an increased length of stay and nursing home placement, an increased risk of death while inpatient, poor functional recovery, an increased risk for death up to two years following discharge, and a risk for prolonged delirium leading to poor long-term outcomes (Cole, et al., 2015). Because of these great risks and the financial burden to healthcare systems, the American College of Physicians (2016) was one of many entities calling for hospitals to have delirium protocols and regular screening of patients to aid in identifying delirium early.

Clinical Leadership Theme

This CNL project focuses on the CNL curriculum element of quality improvement and safety. The CNL role functions are lateral integrator, team leader, educator, clinician, and advocate. As the CNL-student in these functions, I will work with the interdisciplinary team to improve in the identification and treatment of delirium on a Neuro-Telemetry unit through education, leadership, and patient advocacy. The process will begin with the patient's admission to the Neuro-Telemetry unit, will end with their discharge from the Neuro-Telemetry unit, and the patient will be tracked for readmission following discharge. By working on this project, I expect an improvement in the identification and management of delirium.

Statement of the Problem

Delirium is a form of organ failure defined as an acute change in cognition, evidenced by altered consciousness and impaired attention that fluctuates over time, and is associated with increased morbidity, mortality, and health services utilization (Michaud et al., 2007). There have been growing calls, such as the one by the Society for Academic Emergency Medicine Geriatrics Task Force, to make delirium screening in the emergency department, a standard of care and a quality indicator for emergency care of geriatric patients (Han, Wilson, & Ely, 2010).

In the hospital and on the Neuro-Telemetry unit where this project took place, there was no formal protocol or guideline for assessing or managing delirium. This project was an evidence-based practice (EBP) CNL project focused on improving the practice of identifying patients at risk for developing delirium and patients with active signs and symptoms of delirium. The second part of this project was putting a set of environmental and clinical strategies in place to prevent and manage delirium.

The use of the acronym “PICOT”, which stands for P-Population, I-Intervention, C-Control, Comparison, or Current practice, O-Outcomes, and T-Time, is used to develop a relevant and well thought out question for an EBP project and is crucial in guiding the methodology and outcomes of the project (Aslam & Emmanuel, 2010). The PICOT question for this CNL project utilizes PIOT and was: In adults on a Neuro-Telemetry unit in a level I trauma center (P), how does a CNL-led delirium protocol utilizing the AWOL tool to identify patients at risk for developing delirium and the Short-CAM to identify patients exhibiting active signs and symptoms of delirium (I) impact the identification of delirium and outcomes of care (O) within a three-month period (T) (Douglas, et al., 2013 & Inouye, 2014)?

Project Overview

The hospital where this project took place has roughly 500 beds and is a Level I Trauma Center. It is also a Comprehensive Stroke Center with a Neuro ICU, and is part of an Advanced Neuroscience Network. The average patient age is 50 and above, ranging from patients who live independently to patients coming from assisted and long-term care facilities. The average length of stay is four to five days and the main diagnosis seen is stroke.

I began assessing the need for a delirium protocol in this hospital in 2015 after a patient event that involved delirium, and after finding there was no set guideline in place for nurses to identify or treat delirium. It was recommended by a leader within the hospital who was also one of my preceptors in the CNL program, that I implement the project on the Neuro-Telemetry unit. In 2016 I utilized tools from the Dartmouth Institute's Microsystem Academy to develop a Delirium Playbook, with step-by-step instructions on assessment of delirium and resources on preventing and managing delirium (Dartmouth Institute, 2015).

The goals of this project are to develop a CNL-led interdisciplinary protocol to identify, prevent and manage delirium, as well as raise awareness of and improve in the identification of delirium through the use of EBP tools as well as education and guidance by the CNL-student. The project went through four Plan-Do-Study-Act (PDSA) cycles. The final cycle included an EBP assessment tool that has been validated in identifying patients who are at risk for developing delirium. This assessment, the AWOL tool, is one that takes minutes to perform, and can be used by nurses to identify patients with early signs of delirium or who are at risk for developing delirium during their hospital stay (Douglas, et al., 2013). The CNL-student, in collaboration with the interdisciplinary team, developed a set of orders to implement when cases of delirium were identified by either a physician's assessment or with the Short-CAM

assessment tool, or if the patient was found to be at risk for developing delirium as identified with the AWOL tool. The CNL-student also developed easily accessible strategies and interventions for the interdisciplinary team to utilize in preventing and managing delirium.

The specific aim statement for this project is *we aim to increase the use of the Short-CAM assessment to identify patients with active signs or symptoms of delirium, the AWOL tool to identify patients at risk for developing delirium, and a set of EBP interventions and strategies to prevent and treat delirium by April 21, 2017.* Our goals with this aim are to:

1. Improve nursing knowledge on how to identify, prevent, and manage active cases of delirium
2. Discharge the patient found to be at risk for developing delirium per the AWOL tool by the date set by Medicare's Geometric Mean Length of Stay without an episode of delirium occurring
3. Prevent readmission within 30 days in patients found to have had active delirium

This specific aim statement relates to the global aim statement by breaking down how the global aim of improving in the identification and treatment of delirium will occur.

Rationale

The preparation for this project started with a 5 P microsystem assessment of the Neuro-Telemetry unit. Significant data that guided this project was found through this assessment. The purpose of this unit is to deliver care to patients with acute neurological and other medical illnesses. The mean patient population of this unit are patient's age 50 or above with a diagnosis of some type of cerebral vascular accident or CVA. The types of Professionals found on this unit are internal medicine physicians, neurologists, nurse practitioners, nurses, nursing aids, case managers, speech therapists, physical therapists, and occupational therapists. Education levels

range from high school graduate to doctorate level. The unit processes found through this assessment focused primarily on care of the patient who had been admitted after suffering a CVA.

The significant thing found during this assessment was that there were no assessment tools in place for nurses to assess for delirium and there were no staff education modules in place to educate nursing and other staff on delirium. Through interviews with preceptors and unit leaders, my microsystem assessment found a pattern of unidentified delirium and no mechanisms in place to track delirium cases. This is significant in a certified stroke center, on a unit whose main diagnosis is CVA because delirium is a commonly found syndrome in the days following a CVA (McManus, et al., 2009).

The idea for this project originated in 2015 after the education director of this hospital, who was also the preceptor to the CNL-student at the time, presented the problem of the lack of nursing knowledge and hospital education regarding delirium. In these initial stages of the project, it was also found that there was no clinical or financial data collected on delirium cases. This finding was a small barrier in the development of a cost analysis of delirium on the unit. For this reason, a cost analysis was done utilizing costs associated with delirium from EBP journal articles.

The cost of this project includes an hour of training for approximately 20 nurses and 20 nurse's aides at an estimated cost of \$1260.00 and supplies which include printing fees for patient/family inpatient and discharge education at an estimated \$300 per month for 150 patients or \$3,600 annually. If this project of a CNL-led delirium protocol were to be implemented permanently, there would be an additional cost for the CNL, which would be roughly \$75,000 annually, but would also have a cost savings, because the CNL would be able to work on

multiple projects throughout the year. The first year cost of this project with the CNL would be roughly \$79,860 and the annual ongoing cost of the delirium protocol would be \$78,600.

This may initially appear to be a high cost to pay for an assessment that can be done by any healthcare professional on the unit aside from the nurse's aides. However, when one looks at the skills and training of the CNL, they will see that this nursing professional is one that provides leadership at the bedside, is a point of care mentor to staff and guardian of patient safety, and one who fosters horizontal leadership through lateral integration of care (Reid & Dennison, 2011). Another point of significance to support the CNL's importance in this position is that the CNL-student for this project has joined the Hospital Elder Life Program or HELP University. This resource, offered through the HELP network and its partner CEDARTREE, which is the Center of Excellence for Delirium in Aging: Research, Training, and Educational Enhancement, makes this CNL-student the nurse expert on delirium in her hospital (Hospital Elder Life Program, 2017).

Methodology

The change theory utilized for this project was Lewin's change theory. This theory is appropriate for this project because it focuses on balancing the forces that can effect a change, by changing old behaviors and moving to support the desired change (Kaminski, 2011). At the start of this project, the CNL-student met with unit staff in small groups to deliver EBP education on delirium, the Short-CAM assessment, a newly developed delirium carepath, and the objectives of the project. The delirium education and carepath were developed from the Agency for Healthcare Research and Quality (AHRQ) national guidelines on delirium (AHRQ, 2012), The American Geriatrics Society (Campanelli, 2012), and delirium practice expectations of the American Association of Critical-Care Nurses (2016).

In the first PDSA cycle, nurses were asked to assess all newly admitted patients above the age of 65 using the Short-CAM assessment, and if the assessment indicated the patient had signs and symptoms of delirium, to implement the delirium carepath. The prediction was that staff would do the Short-CAM assessment and implement the delirium carepath as indicated. However, it was found that the Short-CAM assessment was not done consistently and the documentation on and use of the delirium carepath was not always completed and found to not be meaningful in the care of patients. The CNL-student met with nursing staff on each shift and unit leaders to discuss results and identified the busy microsystem and the break in workflow caused by the Short-CAM assessment and delirium carepath because they were on paper, whereas all other documentation was done in the Electronic Health Record (EHR), as being the barriers for nurses. Through collaboration with nursing staff and unit leaders, a new plan was developed.

In the second PDSA cycle, the CNL-student would take part in the daily interdisciplinary team morning huddle, also known as Tempo, to identify patients above the age of 65 predicted to be on the unit for more than two days or who may be exhibiting behaviors associated with delirium. Following Tempo, the CNL-student would round on these patients and assess for any new or abrupt changes in baseline behavior that may indicate the presence of delirium. If the patient was found to have these changes, the CNL-student would meet with the patient's nurse and coach them in doing the Short-CAM assessment and starting documentation on the delirium carepath as indicated.

The prediction was that through this leadership and coaching by the CNL-student, the Short-CAM assessments would be done and documentation on the delirium carepaths would be started and followed for the duration of the patient's hospitalization. The results of this process

showed that the Short-CAM assessments were consistently done with the CNL-student leadership and coaching. However, documentation on the delirium carepath was not consistently done each shift. A physician validated the signs and symptoms of delirium found in one Short-CAM assessment with a formal diagnosis of delirium. One nurse came to the CNL-student to report about a patient she had identified that she felt needed to have a Short-CAM assessment done. The CNL-student and nurse worked together to assess the patient with the Short-CAM and found the patient was exhibiting signs and symptoms of delirium. They then implemented the delirium carepath.

The CNL-student found that nursing staff and the interdisciplinary team were eager to get information on how to prevent and treat delirium, but again found the busy microsystem and the break in workflow that paper documentation caused as being a barrier. The CNL-student collaborated with nursing staff and leaders on each shift, and a new plan was developed.

In the third PDSA cycle, the prior practice of the CNL-student attending Tempo, rounding on patients, and coaching nurses in doing the Short-CAM continued. The delirium carepath was eliminated and the CNL-student developed an *Environmental and Clinical Practice Strategies for Preventing Delirium* card for staff to refer to (Appendix A). This card included all of the information from the delirium carepath but did not require the staff to document on it. A copy of the card was put into the Delirium Playbook, more copies were made readily available to staff at the nurse's station and the CNL-student communicated to staff about the presence and location of the cards.

During this cycle the CNL-student collaborated with the pharmacy director to find out about how to get a medication review done on patients identified to have signs and symptoms of delirium per the Short-CAM and found there was no formal system in place for pharmacy to do

this. Recommendations from the pharmacist was for nurses to perform this review by looking up the patient's medications and comparing them to a list of medications in the pharmacy system, within the EHR, that cause delirium. This was found to be a barrier for nurses in identifying delirium causing medications.

The CNL-student collaborated with the interdisciplinary team and it was decided that for each patient that showed signs and symptoms of delirium on the Short-CAM assessment, the following steps would be taken by the CNL-student:

1. Contact the patients attending physician, notify them of the Short-CAM results and request orders for a speech therapist evaluation for cognition and interventions to assist with orientation.
2. Enter a request for a dietary evaluation in the EHR with the notation "Nursing is monitoring signs and symptoms of delirium. Please assess current nutrition and hydration needs".
3. Enter a nursing communication in the EHR for nursing staff with the notation "Nursing is monitoring signs and symptoms of delirium. The physician has been notified. Please refer to Delirium Playbook for specific interventions and strategies on managing delirium".

The prediction was that by taking away the barrier of the paper documentation of the carepath and instead entering these requests and reminders into the EHR, nursing staff and the entire interdisciplinary team would have an increased awareness of the presence of delirium risk and symptoms and direct more attention to the treatment and management of them. The results of this cycle found that the Short-CAM assessment was consistently done with the CNL-student coaching, three patients were found to have signs and symptoms of delirium per the Short-CAM

assessment and two of these patients received a diagnosis of delirium by a psychiatrist on the unit. Of these three patients, the two that had the formal delirium diagnosis had an extended length of stay. Of these two patients, one was transferred to another unit for a higher level of care and the other was discharged and readmitted three days later. We could not confirm that the outcomes of these two patients were related to delirium, but it is possible it was a contributing factor. Given this improvement in identifying patients with delirium and the outcomes associated with their inpatient stay, it was thought that if we could identify patients who posed a higher risk of developing delirium prior to its development, we could implement strategies to prevent it. With this in mind, a fourth PDSA cycle was done.

In the fourth PDSA cycle the CNL-student did an EBP search of the literature and found a study on the development of the AWOL tool. (See Appendix B for AWOL tool). In this study by Douglas, et al. (2013), the authors found four screening questions that would take less than two minutes to ask, and were independently associated with the development of delirium. These included:

1. A - Age: is the patient 80 years old or older? (Yes = 1 point)
2. W - World: can the patient spell the word "world" backwards? (No = 1 point)
3. O - Orientation: Is the patient fully oriented to place? (No = 1 point)
4. L - Moderate or severe illness severity (yes = 1 point)

Scoring of 0-1 = low risk, 2-3 = moderate risk, and 4 = high risk

During this cycle, in addition to the steps from the third PDSA cycle, the CNL-student performed the AWOL assessment on all new admissions age 80 or above and if the score was 3 or 4, a communication was entered into the EHR with the notation "Patient was found to be at risk for developing delirium per nursing assessment using AWOL tool. Please refer to Delirium

Playbook for specific interventions and strategies on preventing delirium”. The prediction was that by identifying patients who were at high risk for developing delirium, and by implementing early strategies to prevent it, we would have an increase in awareness of the risk and have a higher chance of preventing the occurrence of delirium.

In the first two weeks of utilizing the AWOL tool, forty-six patients were assessed using the tool. Twenty of these forty-six patients had a score of 3 or 4 and the communication was entered into their EHR. Of these twenty patients, two had changes in their mentation and the CNL-student coached the nurse in doing the Short-CAM. Of these two, both showed signs and symptoms of delirium on the Short-CAM, one later got a formal delirium diagnosis by the neurologist, the other had documentation by the physician noting “confusion”, and both had the protocols outlined in the third PDSA cycle implemented. The results of this cycle showed an improvement in the early identification of delirium-risk and the prevention and management of delirium by the interdisciplinary team.

Following this cycle, the decision was made to continue this plan of action. The data being collected for patients that showed signs or symptoms of delirium per the Short-CAM were:

1. The Geometric Mean Length of Stay or GMLOS, which is the Medicare guideline for the national mean length of stay based on the patient’s diagnostic related group (DRG) in comparison to the patient’s actual length of stay (Centers for Medicare & Medicaid Services, 2016).
2. Readmission within 30 days.
3. Cases of actual delirium validated by a physician.

Data Source/Literature Review

The aim of the literature review was to identify existing studies on delirium identification, predisposing factors, screening, etiology, guidelines, treatment, and outcomes in the adult population. CINAHL Complete, Medline, and PsychINFO were used to find publications between 2007 to present using the keywords “Delirium”, “AWOL”, “Short-CAM”, “AWOL + Delirium”, and “Short-CAM + Delirium”. This search identified 24,978 articles when the keyword “delirium” was entered alone, including 4,429 in CINAHL Complete, 13,826 in Medline, and 6723 in PsychINFO. When the scope of the search was narrowed using the other keywords, the search identified 717 articles, including 371 in CINAHL Complete, 10 in Medline, and 336 in PsychINFO. The articles from the second search were analyzed and articles from the reference lists of these articles were analyzed and included if they were found to be appropriate.

From this review of the literature, twelve articles, including seven case-controlled studies and five systematic reviews as defined by the Oxford classification for levels of evidence (2017) were utilized. The literature found supported the importance of a delirium protocol in assuring the safety of patients, the quality of their care, and in the outcomes that can result from cases of delirium. Michaud, et al. (2007) identifies delirium as a syndrome that is highly prevalent in the acute care setting, that when under recognized and not treated appropriately, can result in higher rates of morbidity, mortality, and health service utilization. They point out that screening improves delirium detection and is highly recommended. They add that the initial step in improving delirium management and outcomes is the development and implementation of an EBP guideline. These findings were confirmed in a study by Kennedy, et al. (2014).

One of the initial places that delirium will be found is on the patient's entrance to the emergency room. However, if there are no formal assessments in place to identify delirium, it will oftentimes go unrecognized and untreated (Han, et al., 2013). This finding was confirmed in a systematic review by Han, Wilson, & Ely (2010) where it was found that 57% to 83% of delirium cases on arrival to the emergency department are missed because of the lack of routine EBP screening. Tools from the Hospital Elder Life Program, such as the Short-CAM, have been found to be effective in identifying delirium and reducing its incidence, duration, and severity, leading to a decrease in poor quality and financial outcomes (Strijbos, Steunenbergh, Mast, Inouye, & Schuurmans, 2013). This was evidenced in a study by McManus, et al. (2009) where the Short-CAM was found to have high validity in identifying delirium in patient's post-stroke, which makes up most of the population for this project. However, while the Short-CAM is valid and reliable in the population of the project, so too is the AWOL tool, which has been found to be a quicker and reliable alternative to other delirium screening tools for acute care adult patients (Douglas, et al., 2013). A five-year study done by Alvarez-Perez & Paiva (2017) introduces the differing types of strokes, and their insults to cerebral function, along with other risk factors, which confirms the need of a delirium protocol in my hospital and especially, on the Neuro-Telemetry unit where most of our post-stroke patients are admitted.

A systematic review done by Leslie & Inouye (2011) found that tools and resources from the Hospital Elder Life Program saved hospitals roughly \$831 per intervention patient and roughly \$6.9 million annually in six acute care hospital units. Also of significance was their finding that patients who experienced delirium had a 62% increased risk of mortality within one year of discharge.

Two articles were found on nursing recognition of delirium. The first article was a systematic review that linked delirium under recognition by nurses as being related to the lack of education nurses receive on delirium (Hussein, Hirst, & Salyers, 2014). The authors associate this knowledge deficit with the lack of delirium education in nursing programs, but point out that this can easily be rectified with a brief training program delivered by a psychiatrist and/or expert nurse. The second article was a case-controlled study that showed that patients with delirium placed an increased burden and workload on nurses, requiring more resources and manpower; physicians emphasizing the need for further nursing education for nurses on delirium; how enthusiastic and knowledgeable leaders are able to impact and influence quality care and positive outcomes in these patients; and most importantly, how behavior and context impact group behavior and adherence to the guideline (Steeg, Langelaan, Ijkema, Nugus, & Wagner, 2014). This finding relates closely with Lewin's Change Theory for this project.

Timeline

This project initially began in 2015. However, the end-project for the CNL immersion began the week of January 23, 2017. From January 23 to February 3, 2017, time was spent delivering education to the unit staff and introducing the project. From February 6 to February 17, 2017, the first PDSA cycle was done. The second PDSA cycle was done between February 20 to February 27, 2017 and the third PDSA cycle was done between February 28 to March 6, 2017. The fourth PDSA cycle began on March 7, 2017 and ended on April 26, 2017. (See Appendix C for Gantt Chart).

Expected Results

One of the things that came to mind as I directed this project was my experience as a new graduate nurse in the long-term care setting fifteen years ago. I recalled several times when we

sent older adult patients to the emergency room for aggressive and combative behavior we were unable to control. I remember thinking that these patients must have a psychiatric illness, much like the nurses I'm training and educating today may think. This past experience and insight of mine gives me a significant advantage in not only understanding what is going on with the patient who is experiencing delirium, but to also understand how overwhelming these particular patients can cause the nurse to feel when they don't understand what is going on or how to help the patient. With this experience and insight, along with the EBP resources gathered and implemented through the literature review, and the improvements we have begun to see through the PDSA cycles and new introduction of the AWOL tool assessment, the relevance of the CNL-led delirium protocol is proving to be relevant. This has proven to be true on several occasions when either a physician or psychiatrist validated the findings of the nurse's delirium assessment and when one of the psychiatrists that frequents the unit, praised the CNL-student's work in educating nurses and leading the new protocol.

My expected results as we continue to follow the implemented change and make changes as found necessary, is that we will continue to see an improvement in the identification of signs and symptoms of delirium as well as the prevention of delirium in patients found to be at risk of developing delirium per the AWOL tool assessment. This type of nurse driven protocol to prevent and manage delirium is something that will improve patient safety, add quality to practice outcomes, and add support and resources to the bedside nurse (Hartjes & Gallen, 2014).

Nursing Relevance

The Institute of Medicine (1999) made a national warning call to our national healthcare system leaders over a decade ago. In that call, they stressed the crises in our current system caused by medical errors and a failure of planned actions to prevent patient harm. The

preventable and manageable syndrome of delirium is one such adverse outcome that nurses can take the lead in preventing through planned actions and protocols that assure the patient's safe passage through our healthcare system. The American Association of Colleges of Nursing (2013) and nursing leaders answered this call with the Clinical Nurse Leader role. One such competency of this role that they developed is that the CNL will *interpret patterns and trends in quantitative and qualitative data to evaluate outcomes of care within a microsystem and compare to other recognized benchmarks or outcomes*. This project is an example of this, and one answer to the call of making the patient's healthcare system journey safer as well as more fiscally sound.

Summary Report

The aim of this evidence-based practice project was to increase the use of the Short-CAM assessment to identify patients with active signs or symptoms of delirium, the AWOL tool to identify patients at risk for developing delirium, and to utilize a set of EBP interventions and strategies to prevent and treat delirium by April 21, 2017. This project was extended to April 26, 2017 and took place in a level I trauma center on a Neuro-Telemetry unit. The mean patient population was 50 and above and the primary diagnosis treated was some type of cerebral vascular accident. Once the AWOL tool was added in the fourth PDSA cycle, the project focused on assessing all patients with the tool who were age 80 or above. We also continued to assess any patient who had an abrupt change in behavior or mentation with the Short-CAM, and entered the communication into the EHR based on the results of the Short-CAM or AWOL tool.

The methods used to implement this project were one-on-one and group huddles with unit nurses and members of the interdisciplinary team. Coaching and role-modeling methods were also used at the bedside. These methods were conducive in promoting group efficacy in

regards to the care of patients with or at risk for developing delirium, leading to successful implementation of the project.

The hospital in which this project was done had no formal delirium protocol or nursing education on delirium in place and no data collected that could be related to delirium. Growing research on delirium is showing the need for comprehensive delirium education for nurses and a validated tool and interventions on identifying and treating delirium in the acute care setting (Hussein, Hirst, & Salyers, 2014). This, along with the deficit in baseline data was evidence of the need for this project.

This project utilized the Short-CAM tool from Hospital Elder Life Program. Dr. Sharon Inouye, who is the director at the Aging Brain Center in the Institute for Aging Research, and professor of medicine at Harvard Medical School, developed this tool (Inouye, S.K., 2014). Prior to utilizing the Short-CAM, permission was obtained from Dr. Inouye's research assistant at the Aging Brain Center. This tool is not included in the appendix because of copyright laws. This project also utilized the AWOL tool. Dr. Vanja Douglas, who is a neurohospitalist and expert in delirium care at UCSF Medical Center, along with colleagues, developed this tool (Douglas, et al., 2013). Permission from Dr. Douglas was obtained for utilization of this tool. All other education tools that were developed for this project came from evidence-based practice data.

Once the AWOL tool was implemented, ninety-eight patients were assessed using the tool between March 7, 2017 to April 26, 2017. Ninety-six of these patients were above the age of 80 and two additional patients between the ages of 65-80 were assessed using the tool based on information obtained during the Tempo huddle that identified the patient as being at imminent risk for developing delirium. Fifty of the patients scored as moderate to high risk for developing

delirium per the AWOL tool and the intervention was entered into their EHR. Four of these fifty patients, all above the age of 80, developed signs and symptoms of delirium per the Short-CAM during their hospitalization and the intervention was entered into their EHR. One of these patients received a diagnosis of delirium superimposed on dementia by the neurologist and had an extended length of stay past the calculated GMLOS. The second patient received the notation of “confusion” by the physician and had an extended length of stay past the calculated GMLOS. The third patient had no notation of delirium by a physician and was discharged within the calculated GMLOS to hospice. The final patient received a diagnosis of delirium by the psychiatrist and had an extended length of stay past the calculated GMLOS.

The outcomes data collected during the fourth PDSA cycle validates the need for a delirium protocol on this unit and in this hospital. While there was no baseline data on delirium to compare our outcomes to, the number of patients who were found to be at high risk for developing delirium during their inpatient stay, and the number of patients who were found to be exhibiting signs and symptoms of delirium per the Short-CAM and who later had a diagnosis of delirium with an extended length of stay supports the need of a CNL-led delirium protocol in this hospital. In 2005 the cost of delirium in one patient ranged from \$16,303 to \$64,421 (Leslie & Inouye, 2011). Using these cost predictions, which are most likely much higher today, the additional cost of care for the fifty patients found to be at risk for developing delirium using the AWOL tool in this project could have cost roughly \$815,150 to \$3,221,050 if they had all developed delirium. While we cannot directly correlate our use of environmental and clinical strategies to prevent delirium to the forty-six of these fifty patients who did not develop delirium in this quality improvement project, the financial and safety burdens delirium imposes within this

microsystem cannot be ignored. They must be addressed proactively to reduce the threats they present.

Sustainability of this project will be difficult because the CNL-student will no longer be on the unit to lead the change in practice. Because of the levels of organizational review of new policies and procedures within this healthcare organization, there was not sufficient time during this project to pursue implementation of a formal policy and protocol, though one was developed and reviewed with the unit leadership. It is the plan of the CNL-student to use the evidence found in the outcomes of this project to continue the work as a CNL of raising awareness of delirium and working with the interdisciplinary teams and leadership of this hospital to implement a formal delirium protocol in the future. The development and implementation of a formal delirium protocol is one that supports the needs of nurses providing care, the safety of patients receiving care, and the financial outcomes of the hospital, which all relate to competencies of the CNL in facilitating practice change based on the best available evidence in quality, safety, and fiscally responsible outcomes (AACN, 2013).

References

- Agency for Healthcare Research and Quality. (2012). *Delirium. In: Evidence-based geriatric nursing protocols for best practice*. Retrieved from <https://www.guideline.gov/summaries/summary/43920/delirium-in-evidencebased-geriatric-nursing-protocols-for-best-practice>
- Alvarez-Perez, F.J. & Paiva, F. (2017). Prevalence and risk factors for delirium in acute stroke patients. A retrospective 5-years clinical series. *Journal of stroke and cerebrovascular diseases*. 26(3), 567-573. doi: <http://dx.doi.org/10.1016/j.jstrokecerebrovasdis.2016.11.120>
- American Association of Colleges of Nursing. (2013). *Competencies and curricular expectations for clinical nurse leader education and practice*. Retrieved from <http://www.aacn.nche.edu/cnl/CNL-Competencies-October-2013.pdf>
- American College of Physicians. (2016). *Spotting delirium. Quick screening tools may help hospitalists identify more patients at risk*. Retrieved from <http://www.acphospitalist.org/archives/2016/03/delirium-screening.htm>
- American Association of Critical Care Nurses (2016). Assessment and management of delirium across the life span. (2016). *Critical Care Nurse*, 36(5), e14-e19. doi.org/10.4037/ccn2016242
- Aslam, S. & Emmanuel, P. (2010). Formulating a researchable question: A critical step for facilitating good clinical research. *Indian Journal of Sexually Transmitted Diseases and AIDS*, 31(1), 47-50. doi:10.4103/0253-7184.69003

- Campanelli, C.M. (2012). American geriatrics society updated beers criteria for potentially inappropriate medication use in older adults. *Journal of the American Geriatrics Society*, 60(4), 616-631. doi:10.1111/j.1532-5415.2012.03923.x.
- Centers for Medicare & Medicaid Services. (2016). *Details for title: FY 2016 Final Rule, Correction Notice and Consolidated Appropriations Act of 2016 Tables*. Retrieved from <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/FY2016-IPPS-Final-Rule-Home-Page-Items/FY2016-IPPS-Final-Rule-Tables.html>
- Cole, M.G., Bailey, R., Bonnycastle, M., McCusker, J., Fung, S., Ciampi, A., Belzile, E., & Bai, C. (2015). Partial and No Recovery from Delirium in Older Hospitalized Adults: Frequency and Baseline Risk Factors, 63(11), 2340-2348. doi: 10.1111/jgs.13791
- The Dartmouth Institute for Health Policy & Clinical Practice. (2015). *Microsystem Playbook*. Retrieved from <http://clinicalmicrosystem.org/playbook-2/>
- Douglas, V.C., Hessler, C.S., Dhaliwal, G., Betjemann, J.P., Fukuda, K.A., Alameddine, L.R., Lucatorto, R., Johnston, S.C., & Jospheon, S.A. (2013). The AWOL tool: derivation and validation of a delirium prediction rule. *Journal of Hospital Medicine*, 8(9), 493-499. doi: 10.1002/jhm.2062
- Han, J.H., Wilson, A., & Ely, E.W. (2010). Delirium in the older emergency department patient – a quiet epidemic. *Emergency Medicine Clinics of North America*, 28(3), 611-631. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3708798/>

Han, J.H., Wilson, A., Vasilevskis, E.E., Sintani, A., Schnelle, J.F., Dittus, R.S., Graves, A.J., Storrow, A.B., Shuster, J., & Ely, E.W. (2013). Diagnosing delirium in older emergency department patients: validity and reliability of the delirium triage screen and the brief confusion assessment method. *Annals of Emergency Medicine*, 62(5), 457-465.

doi:10.1016/j.annemergmed.2013.05.003

Hartjes & Gallen (2014). Improving patient outcomes with an emergency department delirium screening protocol. *Annals of Nursing and Practice*, 1(1): 1005.

Hospital Elder Life Program. (2017). *CEDARTREE*. Retrieved from

<http://www.hospitalelderlifeprogram.org/cedartree/>

Hussein, M.E., Hirst, S., & Salyers, V. (2014). Factors that contribute to under recognition of delirium by registered nurses in acute care settings: a scoping review of the literature to explain the phenomenon. *Journal of Clinical Nursing*, (7-8), 906. doi:10.1111/jocn.12693

Institute of Medicine. (1999). *To err is human: Building a safer health system*. Retrieved from

<http://www.nationalacademies.org/hmd/~/media/Files/Report%20Files/1999/To-Err-is-Human/To%20Err%20is%20Human%201999%20%20report%20brief.pdf>

Inouye, S.K. (2014). *The short confusion assessment method (Short-CAM): Training manual and coding guide*. Boston: Hospital Elder Life Program. Retrieved from

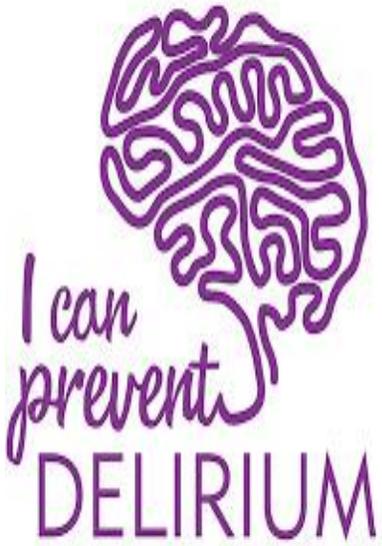
http://www.hospitalelderlifeprogram.org/uploads/disclaimers/Short_CAM_Training_Manual_8-29-14.pdf

- Kaminski, J. (Winter, 2011). Theory applied to informatics – Lewin’s Change Theory. CJNI: Canadian Journal of Nursing Informatics, 6 (1). Retrieved from http://cjni.net/Journal_original/Winter2011/cjni.net-_Theory_applied_to_informatics_%96_Lewin%92s_Change_Theory___CJNI_Journal_.pdf
- Kennedy, M., Enander, R.A., Tadiri, S.P., Wolfe, R.E., Shapiro, N.I., & Marcantonio, E.R. (2014). Delirium risk prediction, healthcare use and mortality of elderly adults in the emergency department. *Journal of the American Geriatrics Association*, 62(3), 462-469. doi:10.1111/jgs.12692
- Leslie, D.L. & Inouye, S.K. (2011). The importance of delirium: economic and societal costs. *Journal of the American geriatrics Society*, 59(Suppl 2): S241-S243. doi:10.1111/j.1532-5415.2011.03671.x
- McManus, J., Pathansali, R., Hassan, H. Ouldred, E., Cooper, D., Stewart, R., Macdonald, A., & Jackson, S. (2009). The evaluation of delirium post-stroke. *International Journal of Geriatric Psychiatry*, 24(11), 1251-1256. doi:10.1002/gps.2254
- Michaud, L., Bula, C., Berney, A., Camus, V., Voellinger, R., Stiefel, F., Burnand, B., & the Delirium Guidelines Development Group. (2007). Delirium: Guidelines for general hospitals. *Journal of Psychosomatic Research*, 62, 371-383. doi:10.1016/j.jpsychores.2006.10.004
- Oxford Center for Evidence Based Medicine. (2017). *Oxford Centre for Evidence-Based Medicine 2011 Levels of Evidence*. Retrieved from <http://www.cebm.net/wp-content/uploads/2014/06/CEBM-Levels-of-Evidence-2.1.pdf>

- Reid, K.B. & Dennison, P. (2011). The clinical nurse leader (CNL): point-of-care safety clinician. *OJIN: The Online Journal of Issues in Nursing* Vol. 16, No. 3, Manuscript 4.
doi: 10.3912/OJIN.Vol16No03Man04
- Steeg, L.V.D., Langelaan, M., Ijkema, R., Nugus, P., & Wagner, C. (2014). Improving delirium care for hospitalized older patients. A qualitative study identifying barriers to guideline adherence. *Journal of Evaluation in Clinical Practice*, 20(2014), 813-819.
doi:10.1111/jep.12229
- Strijbos, M.J., Steunenberg, B., Mast, R.C.V., Inouye, S.K., & Schuurmans, M.J. (2013). Design and methods of the Hospital Elder Life Program (HELP), a multicomponent targeted intervention to prevent delirium in hospitalized older patients: efficacy and cost-effectiveness in Dutch health care. *BMC Geriatrics*, doi:10.1186/1471-2318-13-78

Appendix A

Environmental and Clinical Practice Strategies for Preventing Delirium

	<p>Environmental and Clinical Practice Strategies for Preventing Delirium</p> <ol style="list-style-type: none"> 1. Provide lighting that is appropriate to time of day 2. Promote a quiet environment, relaxation, and sufficient sleep as able 3. Provide a clock and calendar that patient can see and reorient as needed 4. Speak in a clear voice without shouting 5. Encourage family and caregiver involvement, and use of familiar objects from home as able 6. Minimize room changes and maintain consistency as able
<p><i>In transpersonal caring and healing, we will need to sustain the existence of a community of healers which is committed to the domain of art, beauty, and soul care to accompany and transform the usual ways of doing medicine.</i></p> <p>Dr. Jean Watson</p> <p>From: <i>Postmodern Nursing and Beyond</i></p> 	<ol style="list-style-type: none"> 7. Encourage and assist with eating and drinking as indicated to ensure adequate nutrition and intake 8. Ensure that if the patient usually wears a hearing or visual aid, that they are assisted in using them 9. Monitor bowel function to avoid constipation 10. Encourage and assist with ADL's and promote independence as indicated by PT as able 11. Assess and manage discomfort or pain as indicated 12. Assess and improve oxygen delivery and blood pressure as indicated 13. Encourage meaningful, stimulating conversations and activities as able 14. Minimize invasive procedures and equipment (i.e. tubes, lines, foley catheters, etc.) as able 15. Minimize use of psychoactive medications as able 16. Encourage and assist with mobilization as indicated by PT as able

Appendix B**AWOL TOOL****AWOL DELIRIUM RISK ASSESSMENT TOOL**

NAME: _____

DATE: _____

1. Is the patient older than age 80?

{YES/NO} Yes = 1 point

2. Can the patient spell the word "WORLD" backwards?

{YES/NO} No = 1 point

3. Is the patient fully oriented to city, state, county, hospital, and floor?

{YES/NO} No = 1 point

4. Is the patient moderately ill, severely ill, or moribund?

{YES/NO} Yes = 1 point

Final Score: 0-1 = low risk, 2-3 = moderate risk, 4 = high risk

Print Name: _____ Signature: _____

Based on: Douglas, V.C., Hessler, C.S., Dhaliwal, G., Betjemann, J.P., Fukuda, K.A., Alameddine, L.R., Lucartorto, R., Johnston, S.C., Josephson, S.A. (2013). The AWOL tool: Derivation and validation of a delirium prediction rule. *Journal of Hospital Medicine*, 8(9), 493-499. doi:10.1002/jhm.2062

Appendix C
GANTT CHART

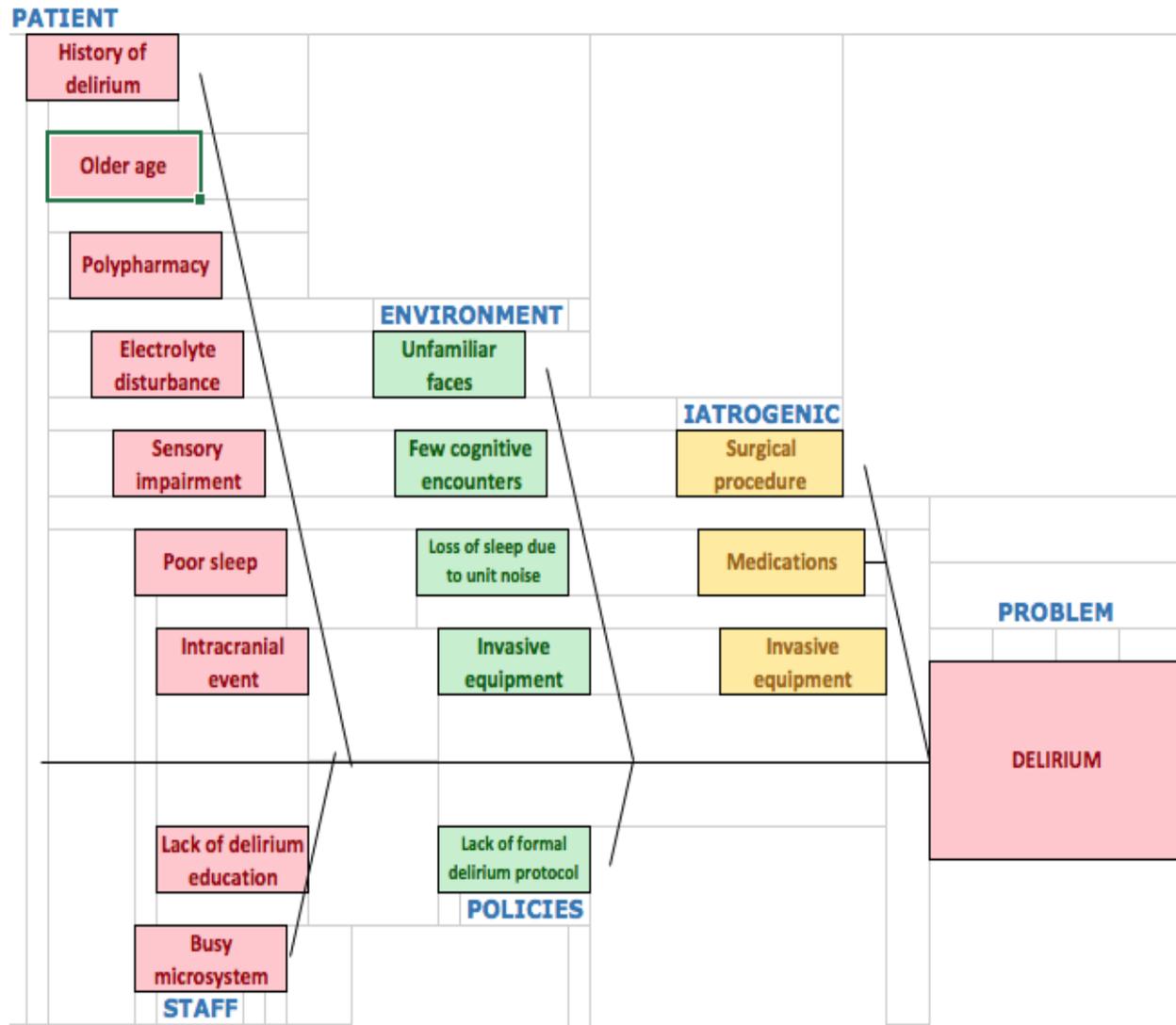
GANTT CHART 2015-2017							
	2015	2016	1/23-2/3/17	2/6-2/17/17	2/20-2/27/17	2/28-3/6/17	3/7-3/26
Delirium Education Development							
Delirium Playbook Development							
CNL Project Education							
PDSA Cycle #1							
PDSA Cycle #2							
PDSA Cycle #3							
PDSA Cycle #4							

Appendix D

STAKEHOLDER ANALYSIS

<p>DEFENDERS: KEEP SATISFIED</p> <p>PATIENTS (High power and high influence)</p>	<p>LATENTS: CONSISTENT AND CONTINUOUS COACHING</p> <p>NURSES (High power and low interest)</p>
<p>APATHETICS: MONITOR AND SUPPORT</p> <p>PROJECT TEAM (Low power and low interest)</p>	<p>PROMOTERS: COMMUNICATE OFTEN AND KEEP INFORMED</p> <p>UNIT LEADERS (Low power and high interest)</p>

Appendix E Root Cause Analysis



Appendix F
SWOT Analysis

<p>Strengths</p> <ul style="list-style-type: none"> ➤ Early detection and identification of delirium ➤ Short-CAM and AWOL tool assessments consistently done with CNL-student coaching ➤ Delirium protocol to promote patient safety initiated 	<p>Weaknesses</p> <ul style="list-style-type: none"> ➤ Protocol and interventions not consistently implemented when CNL-student is not present ➤ Delirium care and interventions not a formal part of hospital or unit policies or protocols ➤ No formal hospital or unit staff education on delirium
<p>Opportunities</p> <ul style="list-style-type: none"> ➤ Delirium protocol introduction and utilization ➤ Delirium education for unit staff ➤ Improvement in patient safety and quality of care ➤ Increased awareness for hospital and unit leaders on the importance of delirium 	<p>Threats</p> <ul style="list-style-type: none"> ➤ Busy and chaotic microsystem ➤ Lack of CNL leadership on delirium at all times ➤ Stakeholder buy-in on importance of delirium protocol

