Rapid Assessment and Treatment of Delirium in the Home Health Setting: A Quality Improvement Project.

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Table of Contents

Abstract

The treatment of patients with delirium in an inpatient setting poses problems and even more significant challenges in the home health setting. Not only does delirium cause poor outcomes for patients, but it is also a financial burden to health insurance providers like Medicare. The project question for this Doctor of Nursing Practice (DNP) quality improvement project is: will implementing a delirium assessment tool in the home health setting help improve provider adherence to a tool and patient outcomes when compared to the current practice of identifying delirium without a specific assessment tool? This DNP project's direct population of interest were 12 home health nurses at the practice site. The intervention used in this DNP project was the confusion assessment method (CAM) tool, which is an assessment tool used to identify delirium. A quantitative approach for data collection was used. The most appropriate statistical analysis for this Quality Improvement (QI) project was the paired-sample t-test. The result was as follows, the (p) value is less than .05, concluding that there is a statistical significance between CAM tool use and identifying delirium.

Keywords: delirium management in home health, delirium treatment, delirium assessment, delirium assessment tools, delirium in-home setting, and delirium provider training.

Rapid Assessment and Treatment of Delirium in the Home Health Setting: A Quality Improvement Project.

Introduction

Delirium has no barriers; it can be seen in a multitude of healthcare settings including home health care. According to Mooyeon et al. (2018) the prevalence of delirium as a complication may be as high as 18-64% depending on the clinical setting. The treatment of patients with delirium in an inpatient setting poses problems and even greater challenges in the home health setting. Home health agencies receive payment from Medicare to improve patient health outcomes, including keeping patients out of the hospital. Delirium costs $152 billion per year for the health care industry (Mooyeon et al., 2018). Not only does delirium cause poor outcomes for patients, but it is also a financial burden to health insurance providers like Medicare. These services provide optimal rehabilitation at home and prevention of re-hospitalization and or decline in the patient's health. Projects that promote quality improvement have been created to decrease the number of hospitalizations, which in turn will produce better patient outcomes (Lohman et al., 2018). Home health agencies play a significant role in the delivery of healthcare in the home setting with the potential to identify and rapidly treat delirium without the need for hospitalization. Treating delirium at home would improve patient outcomes and would decrease the cost of care on health insurance source.

Background

Most patients suffering from delirium do not get diagnosed, hence they never get the treatment needed for the cause of delirium (Mooyeon et al., 2018). The use of evidence-based assessment tools of delirium by health care providers may be an important approach to helping patients with delirium. These tools may help nurses identify and report delirium to the patient's

physician and having standing orders for diagnostic exams that will help practitioners diagnose and treat delirium at the onset. An example of a tool used to help providers diagnose and treat delirium is the Confusion Assessment Method (CAM) which has a 94-100% sensitivity in identifying delirium when compared to a psychiatric evaluation (Mooyoen et al., 2018). According to Rippon (2016), it is important to create protocols specifically for delirium that will help clinicians communicate signs and symptoms of delirium to rapidly identify delirium. Delirium assessment tools may not always be used routinely in clinical settings (Rippon 2016).

Problem Identification

Patients with delirium in the home health setting require rapid assessment and identification of the cause of delirium to prevent hospitalization (Irani et al., 2020). Irani et al. (2020) suggested it is critical to assess all the needs of geriatric patients in the home health setting to find a way that nurses will be able to provide appropriate care for them. Lack of imparting patient information within health care teams leads to insufficient delirium identification and treatment (Rippon et al., 2016). Inadequate exchange of patient information, including changes of cognitive abilities, can lead to moments of failed assessment and treatment of delirium (Rippon et al., 2016). Although home health agencies have taken steps to reduce the number of their patients being hospitalized, 16% of their 60-day episodes end up in hospitalization (Lohman et al., 2018). Treatment of delirium quickly can reduce costs, poor outcomes, death, and longer hospital stays (Rippon et al., 2016). Creating a protocol with the possibility of implementing standing orders once delirium has been identified, such as a urine analysis (UA), complete blood cell count (CBC), and possibly a chest X-ray would allow the physician to start treating the underlying cause of delirium. Rippon et al. (2016) suggested that it is important to establish protocols that will help medical field personnel who perform patient

assessments to report their assessment findings to physicians who will be able to treat the underlying cause of delirium. The implementation of a rapid assessment tool at the practice site may improve patient outcomes and decrease hospitalizations for treatment of delirium. Patients may not need unnecessary hospitalizations for treatment of delirium when the cause could be potentially identified and treated in the home health setting.

Project Question

The project site currently does not have a delirium assessment tool in place. Using the PICOT format, the project question will seek to answer: will healthcare providers using the tool (P); compared with current practice (I); result in an increase in protocol adherence and identification of delirium (O); in a four week time period (T). The project question is: will implementing a delirium assessment tool in the home health setting help improve provider adherence of a tool and patient outcomes when compared to the current practice of identifying delirium without a specific assessment tool?

Significance

Delirium causes poor patient outcomes such as fall-related injuries, a decrease of function, dementia, increased hospitalization time, admission to health care institutions, and morbidity but can be prevented in 40% of known cases (Wu, et al., 2019). Delirium has been reported in the geriatric population with rates as high as 15% to 25% (Ramirez & Paul 2020). Delirium is prevalent in 33% of medical patients that are 70 years old or greater (Ramirez & Paul 2020). Delirium is present in 10% to 24% of patients in the emergency room (Ramirez & Paul 2020). Failure to diagnose delirium leads to death in 10% to 36% of patients, with a 70% increase in mortality within 6 months after the emergency room visit (Ramirez & Paul 2020). It is estimated that delirium costs Medicare $6.9 billion a year due to complications, cost paid to

medical institutions, and a decline in functionality (Ramirez & Paul 2020).

Search Terms

Searches on the following databases were performed: CINAHL, PubMed, EBSCOhost, and Medline. The following terms and combination of the terms were used: "delirium management in home health," "delirium treatment," "delirium assessment tools," "delirium assessment tools," "delirium in-home setting," and "delirium provider training." There was a return of 1,050 articles. Inclusion criteria included peer reviewed articles with dates (2015-2020), full-text availability, and English language, reducing the number of articles to 560. From the 560 articles, 20 were chosen based on the title containing: delirium assessment, delirium treatment, delirium evidence-based practices, delirium, and nursing assessment.

The exclusion criteria included abstracts, articles written by students, dissertations, articles written before 2015, and articles not in the English language. Articles that contained the following PICOT information were included: delirium assessment tool, delirium home health, delirium home health nurses. The selected articles focused on the PICOT question: will implementing a delirium assessment tool in the home health setting help improve provider adherence of a tool and patient outcomes compared to the current practice of identifying delirium without a specific assessment tool.

Review of the Study Methods

The type of studies found in the literature review focused on qualitative studies, quantitative studies, and peer-reviewed articles about the subject matter being investigated. Scholarship performed in this literature review is essential to the DNP project by examining the need for home health nurses to use a delirium assessment tool to identify and manage delirium in the home health setting rapidly. All scholarly research and discussion were based on the PICOT

question: Will implementing a delirium assessment tool in the home health setting help improve provider adherence of a tool and patient outcomes when compared to the current practice of identifying delirium without a specific assessment tool? The articles used in the literature review helped identify what is known about delirium, what is not known about delirium, what topics related to delirium are currently being investigated, and how well delirium has been researched.

Review Synthesis

The literature review identified the need for rapid assessment and treatment of delirium in home health patients. The current literature showed limited information on assessing delirium and delirium management in the home health setting. Delirium is described as a syndrome with a sudden onset that affects the geriatric population's ability to think and reason (Oh et al., 2017). Delirium can cause morbidity, yet it can be prevented (Oh et al., 2017). Over 2.6 million geriatric patients develop delirium a year with a cost greater than $164 billion to the health care system (Oh et al., 2017). Delirium affects functionality and health standards that reach far beyond the patient, their family, habitat, and health care organizations (Oh et al., 2017). Failure to recognize delirium by nurses and doctors was a high as 60% in 2015 and has not improved much over the last couple of years (Oh et al., 2017). Jorgensen et al. (2017) performed a study in which hospice patients at home were asked about their confusion. Nurses reported that 50% percent of the patients had delirium even though they never performed a proper delirium assessment (Jorgensen et al. 2017). The authors suggest that there needs to be an assessment tool for delirium to decrease the adverse effects of delirium on patients with morbid diseases and their families that provide care for them. Teale et al. (2018) suggested that delirium is being seen more often in home care settings due to the increasing number of patients with dementia. According to Hayhurst et al. (2016), preventing delirium is a priority in the clinical setting

because there is limited evidence that psychopharmacological interventions are helpful; the key to delirium treatment is treating and correcting the underlying cause of delirium in the patient.

Impact of the Problem

Nurses need to identify delirium in the early stages with preventative measures in place and measures to help treat delirium (Wu et al., 2019). Regular screenings by healthcare teams are necessary to properly diagnose delirium (Bush et al., 2017). Preventing delirium using nonpharmaceutical interventions is the most effective remedy and has become widely accepted, showing it is the most beneficial in delirium treatment (Oh et al., 2017).

Addressing the Problem with Current Evidence

Home health nurses are vital in the rapid assessment and treatment of home health patients and can improve patient outcomes and decrease morbidity by identifying delirium and initiating treatment for delirium's underlying cause. Bush et al. (2017) noted that identifying delirium can be augmented with the use of a delirium assessment tool that can be used by nurses. Solà-Miravete et al. (2018) concluded that nurses could use the nursing process to identify patients at risk to developing delirium. The nurses' use of a standardized delirium assessment tool is key in identifying patients at risk for delirium and preventing hospitalizations (Sola-Miravete et al., 2018). By using more variables in the nurse's assessment, the accuracy of identifying patients at risk for delirium can be increased to over 90% (Solà-Miravete et al., 2018).

A diagnosis of delirium depends on the initial assessment of the patient's mental state and looking for acute changes in mental status that can happen in a matter of hours (Oh et al., 2017). Nurses need to obtain the patient's medical history from a reliable source; failing to obtain an initial assessment of the patient's mental status is the number one cause for failing to diagnose

delirium (Oh et al. 2017).

Theme – Use of Standardized Assessment Tools and Education

Home health nurses can improve patient outcomes for delirium with the use of standardized assessment tools and education. One of the recurring themes found in the literature review is using a standardized assessment tool to identify delirium. The literature review presented information that will help identify a standardized assessment tool of delirium. By rapidly identifying and managing delirium in the home setting, patients will improve quality of life, mortality risk, and patient outcomes overall (Oh et al., 2017). The use of delirium assessment tools such as the Mini-Cog11 will assist nurses to be able to identify delirium rapidly (Oh et al., 2017). Identifying delirium is an essential step so that the provider can move forward to perform a neurological assessment and a physical assessment, looking for potential sources of delirium (Oh et al., 2017). A sudden illness can cause delirium; therefore, these patients will need an assessment of electrolyte levels, metabolic disorders, sepsis, or multiorgan systems failure at the onset of symptoms (Oh et al., 2017).

Theme-Use of Education Tools

Another recurring theme in the literature review was that nurses need to be educated on the use of delirium assessment tools.

Theme-Use of Early Interventions

The final recurring theme from the literature review was of early interventions to treat the patient delirium source would lead to positive patient outcomes. Several delirium assessment tools are currently being used that measure severity (Jones et al., 2019). It is difficult to compare these delirium tools since some were developed to assess delirium, diagnose delirium, and rate delirium severity. In contrast, some assessment tools were created for specific clinical sites and

medical personnel using the assessment tool to evaluate different behaviors (Jones et al., 2019).

Evidence Gaps and Controversies

The use of psychopharmaceuticals for the prevention of delirium is still vague (Marcantonio, 2017). More trials need to be conducted to determine the actual effects of antipsychotic medications on the management and prevention of delirium (Marcantonio 2017).

Antipsychotic medications have been used to treat delirium, with new studies failing to prove positive patient outcomes with the use of antipsychotic medications in the treatment of palliative patients (Bush et al., 2017). Even though haloperidol has been widely used for prophylaxis and treatment of delirium, two different studies (Hope-ICU and the REDUCE studies) have shown that the use of haloperidol had poor effectiveness in preventing delirium in the intensive care unit (ICU) (Cascella et al., 2019).

Project Aims

The aim of this DNP project is to implement a rapid assessment and treatment delirium tool for patients in the home health setting. Delirium can present itself in the clinical setting, with rates varying from 18-64% (Mooyeon et al., 2018). In addition, this DNP project aims to have identified at least 90% of patients with delirium using the delirium assessment tool. Rapid assessment of delirium will reduce the financial burden that delirium poses on the health care industry, including home health. Delirium is estimated to cost the health care industry $152 billion annually (Mooyeon et al., 2018). The implementation of this quality improvement project will help reduce hospitalizations and produce positive patient outcomes (Lohman et al., 2018).

Project Objectives

In the timeframe of this DNP Project, the host site will:

1. Implement the use of a standardized delirium assessment tool at the DNP project site for rapid identification and treatment of delirium. Evaluation of delirium assessment tool use will be conducted through chart review of the nurses' notes. The goal is to have at least 90% of nurses in compliance with the use of the delirium assessment tool.
2. During weekly case conference meetings, nurses and staff will be provided with training on using the delirium assessment tool before the DNP project is implemented. The goal is to have at least 90% or more nurses and staff in attendance for training sessions of the delirium assessment tool.
3. Conduct chart review five weeks after implementing the DNP project to determine if nurses were able to identify delirium using the delirium assessment tool providing for rapid treatment and prevention of hospitalization. The goal is to have identified at least 90% of patients with delirium using the delirium assessment tool.

Theoretical Framework

The DNP project will utilize Lewin's change model, which has three major tenants (Appendix A). Lewin's change model dates to 1947 and uses a three-step process to create change; unfreeze, change, and refreeze (Erakovich & Anderson, 2013). Change within an organization depends on its needs and its patterns of operations (Erakovich & Anderson, 2013). External values can affect an organization, creating changes to produce meaningful outcomes (Erakovich & Anderson, 2013). Very often, changes within an organization are driven by the dissatisfaction of stake holders such as society, markets, and the government (Erakovich & Anderson, 2013). Even though organizations may have common goals within their structure, those goals may not be enough to make an organization function effectively (Erakovich &

Anderson, 2013). Creating change within an organization will require a theory of change (Erakovich & Anderson, 2013).

Historical Development of the Theory

The basic understanding of change in human beings is derived from Kurt Lewin's work in 1947 (Cummings et al., 2016). Kurt Lewin is the father of change management (Cummings et al., 2016). Kurt Lewin created the change model that implements a three-step process of unfreezing, change, and refreeze, which may also be known as the changing as three steps (CATS) (Cummings et al., 2016). Change management studies closely follow Lewin's fundamental approach to change (Cummings et al., 2016). Some scholars believe that once reduced, all the theories associated with change will follow Lewin's model of change (Cummings et al., 2016). Before 1980 CATS by Lewin was not very well known, but by the end of the decade, it had become the basis of change management (Cummings et al., 2016).

Application to DNP Project

The Lewin change model is used in diverse nursing fields. There is a need in the health care industry to makes changes to its organizational procedures to help produce good patient outcomes. El-Shafy et al. (2018) applied the Lewin's change model to a pediatric freestanding trauma center with a quality improvement project that reduced their nonsurgical admission rates and reduction of length of stay in the hospital. Lewin's change model will help implement a quality improvement project in the home health setting to rapidly identify patients with delirium using a standardized assessment tool. El-Shafy et al. (2018) used the American College of Surgeons Committee on Trauma (ACS COT) standards to which all physicians were held accountable, which standardized their approach and need for hospitalization of trauma patients (El-Shafy et al., 2018). The DNP quality improvement project will use a standardized delirium

assessment tool for all nurses to improve the rapid identification and treatment of delirium in the home health setting, reducing hospitalizations, and improving patient outcomes.

Major tenets of the theory-Unfreezing

The organization must go through the unfreezing process, which is the most difficult to do due to learning a new process with interruption of the norm (El-Shafy et al., 2018). Once unfrozen, a person that can lead the change and move the organization into the second phase of Lewin's change model (El-Shafy et al., 2018). Lewin's change model will be used at the home health agency to help unfreeze the current assessment and management of patients with delirium.

Major tenets of the theory-Change

In the second phase of Lewin's change model, the leader of change must provide motivation and help move the organization towards change (El-Shafy et al., 2018). Once the organization has been encouraged with the change process, there needs to be a catalyst to help keep the changes (El-Shafy et al., 2018). The change at the home health agency will be the implementation of a standardized delirium assessment tool.

Major tenets of the theory-Refreezing

The last phase of Lewin's change model is the refreezing or making the changes solid (El-Shafy et al., 2018). Positive reinforcement will help sustain the organizations members' changes from going back to the old ways (El-Shafy et al., 2018). The refreezing will be done by reinforcing the change through auditing nursing notes for use of the standardized delirium assessment tool.

Setting

The project site for implementation of the DNP project will be a home health agency located in McAllen, Texas. The home health agency provides services to the counties of

Cameron, Hidalgo, and Starr. The home health agency nurses do about 60 to 120 home visits on a weekly basis, depending on the patient census of the home health agency which may vary from 60-100 patients per month. Home health patients reside in a variety of residential home settings such as homes, apartments, and assisted living facilities (Blackburn et al., 2016). There are some geriatric patients that do not have an option and must reside in nursing homes, but more geriatric patients would rather get home health services within their homes (Blackburn et al., 2016). Home health nurses play a crucial role in the health of adult patients in the home health setting, delivering continuity of health care (Irani et al., 2020). The home health agency uses the Axxess (2020) electronic health records. The home health agency has three owners who work at the home health agency and are also registered nurses.

Population of Interest

The direct population of interest for this DNP project will be the 12 home health nurses at the practice site. All the home health nurses have direct patient care and will take part in the DNP project. The home health nurses are a combination of full time, part time, and contract employees with long term contract. The home health nurses are a combination of licensed vocational nurses and registered nurses who assess and treat the home health patients on a regular basis. The home health nurses are all licensed in the state of Texas through the Texas Board of Nursing as well as having a current Basic Life Support certification from the American Heart Association. All disciplines of therapy will be excluded as they will not be involved in assessing or reporting signs and symptoms of delirium. Home health nurses help deliver holistic medical care to the adult patient population in the home health setting (Irani et al., 2020). Office staff will be excluded from the project as they will not have any direct patient care.

The indirect population of interest for this DNP project will be the geriatric population

within the census of the practice site. This is an indirect population as the population's medical conditions vary, but many patients have the following comorbidities: diabetes mellitus type II, cardiovascular disease, osteoarthritis, metabolic disorders, neurological disorders, psychiatric, and musculoskeletal disorders. About 50% of the patient population live in rural underserved communities. The home health population for varies in age from 60 to 88 years of age. The chart audits that will be excluded in this DNP project will be those that the patient is less than 65 years of age and or indicates that the patient did not receive care from the home health agency through the duration of the DNP project. Patients getting home health care through Medicare benefits, suffer from chronic conditions (85%), have functional limitations (32%), live by themselves (37%), and 31% live in poverty (Irani et al., 2020). The home health agency's census varies from 60 to 100 patients. Home health nurses in the United States provide most of the care for patients older than 65 years in the home setting who require complicated medical care (Irani et al., 2020).

Stakeholders

The three owners of the home health agency are registered nurses and are the stakeholders. Home health agencies get funded by their patient's Medicare coverage which is based on physician certified needs with the delivery of intermittent skilled nursing care in the home setting (Blackburn et al., 2016). It is in the best interest of the home health agency to keep their patients in the home setting and out of the hospital. Home health patients have more emergency room visits and stays in the hospital when compared to nursing home patients (Blackburn et al., 2016). The annual cost to Medicare in 2014 for home health services was $17.7 Billion (Grabowski 2017). The assistant director of nurses (ADON) is one of the three owners and will be the main contact for the project leader. The ADON will provide the DNP student access to the home health agency office, access to the EHR, schedules, and the nurses

case conference meeting. The other two registered nurse home health owners oversee administrative duties. The home health agency did not require an affiliation agreement for the implementation of the quality improvement project. Permission for implementation of the quality improvement project at the practice sight was given by the three owners of the home health agency (Appendix B).

Interventions

A meeting for all nursing staff will take place on week 1 with training on how to use the confusion assessment method (CAM) tool (Appendix C). The training will last one hour followed by an hour to allow for questions and answers that the nursing staff may have. The project lead will be available to answer any questions on the use of the form to assure that the participants understand how to use the CAM tool. Weeks 2, 3, and 4 will consist of nursing staff implementing the use of the CAM tool during their home visits with all home health patients. Week 5 will focus on the project leader conducting chart audits to identify the number of times the CAM tool was used with a positive identification of delirium in the patient population using the CAM daily audit tool. Week 5 will also be used to analyze data collected from chart audits.

Table 1 presents the planned activities for each week.

Project Timeline Table 1	
Week 1	• **Provide training home health staff on CAM tool.**
Week 2	• **Implementation of CAM tool by staff.**
Week 3	• **Implementation of CAM tool continues by staff.**

Week 4	• **Implementation of CAM tool continues by staff.**
Week 5	• **Project leader will conduct chart audits and analyze data.**

Tools

The tools used in this DNP project include the CAM tool, educational handouts, and a chart audit tool. The CAM tool is an assessment tool used to identify delirium. The educational tools will include handouts of the CAM tool and a PowerPoint presentation on using the CAM tool. Finally, a chart audit tool handout will be used to identify if the staff used the CAM tool in the electronic health records.

Confusion Assessment Tool

The CAM was developed Dr. Sharon Inouye to help non psychiatric clinicians identify delirium in patients (Oh et al., 2017). The CAM will help identify patients that may have the following four identifiable symptoms of delirium: acute onset and fluctuating course of symptoms, inattention, impaired level of consciousness, and disturbance of cognition (Oh et al., 2017). The CAM has a sensitivity of 94-100%, specificity of 90-95%, and interrater reliability $\kappa = 0.92$ (Oh et al., 2017). The project leader has registered and obtained permission from the author to use the CAM tool (Appendix D).

Educational Materials

Educational materials that will be used to educate and train the staff nurses on the use of

the CAM tool will include hard copies of the CAM tool (Appendix C), chart audit tool (Appendix E), and a power point presentation of the training (Appendix F). The power point presentation will be developed by the project leader and will include information based on evidence-based practices and include an introduction to the signs, symptoms, types of delirium, and causes of delirium. The power point will also include instructions for the nursing staff on how to properly use the CAM tool and the chart auding tool to track visits and assess each patient. The project leader will be available to answer any questions after the training. The educational tools will be validated, reviewed, and permission will be obtained as well from the owners of Divine Health care.

Chart Audit Tool

The project lead will develop a chart audit tool which will be used to collect data and track patients that are positive for delirium at the practice site. In addition, the tool will be used by nursing staff to track visits and assess each patient. The patient identification number will be used on each form to assure confidentiality. The audit tool will also include a question asking the nurse if they assessed the patient using the CAM tool. At any point in time, if the nurse assesses a patient with positive results for the CAM tool, the nurse will notify the patient's physicians to initiate rapid treatment of delirium.

Study of Interventions/Data Collection

The data will be collected by the project lead with the use of a chart audit tool which will identify if the CAM tool was used by the nursing staff during the patient home visits and if the patient was positive for delirium. The home health agency also uses an EHR, which can run reports to see if there is an ICD 10 code for delirium used in the patients' chart during the four-week implementation of the CAM tool. The EHR can also run reports for key words such as

delirium in the patients' chart. According to the literature personal data cannot be used to identify a participant or patient record and must not be given out without their prior knowledge and consent (Doody and Noonan, 2016). The project lead will use a data codebook to maintain the confidentiality of participants and patient records; numbers will be assigned to identify nursing staff and only patient identification numbers will be used to protect personal information. The staff nurse and patient identification numbers will be in a secured file for security purpose in a locked filing cabinet with access only to the project lead.

Ethics/Human Subjects Protection

This QI project will comply with Health Insurance Portability and Accountability Act (HIPAA). The project lead will protect the privacy and anonymity of all participants' information in the patient charts. This QI project poses only minimal risk to the participants. harm to its participants. There is no institutional review board (IRB) approval needed by the practice site as this is a QI project and no research is being done. The QI project received approval from the three owners of Divine Health care. The Institutional Review Board (IRB) determination forms were completed and submitted to the TUN project team for review to ensure this project meets the criteria for a QI project. There will be no compensation for the participants of this QI project. This is a QI project and participation of nursing staff is mandatory. The QI project will include a review of all patient charts. Ethical issues deal with policy, procedures, and rules that govern the behavior of humans (Doody and Noonan, 2016). A project lead has a responsibility to keep participants and patients safe, respect the rights of all individuals throughout a project (Doody and Noonan, 2016).

Measures/ Plan for Analysis

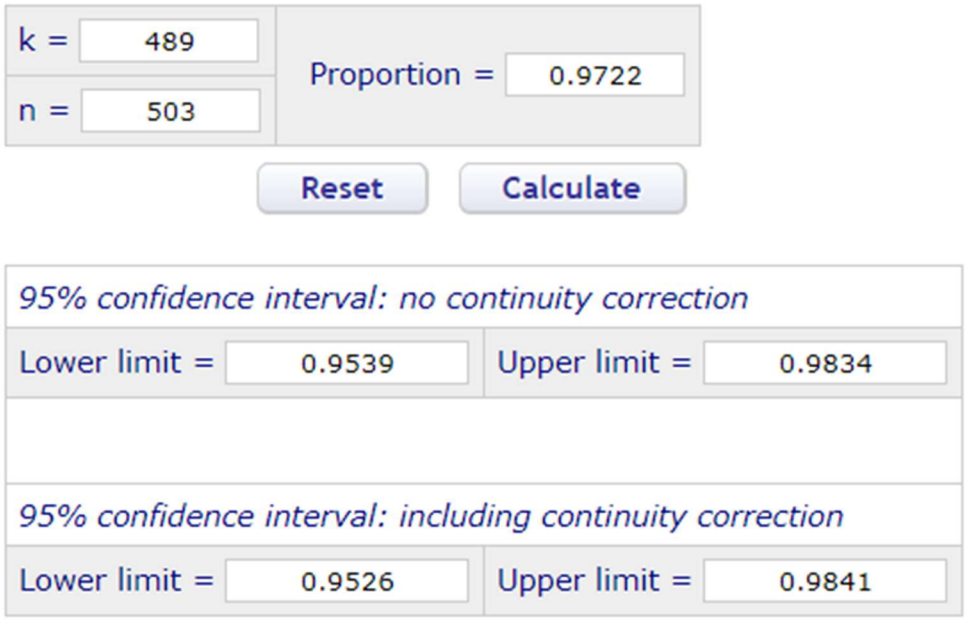
The QI project will implement an assessment tool for early identification of delirium. A quantitative approach for data collection will be used. The most appropriate statistical analysis for this QI project would be the paired-sample t-test. The paired-sample t-test can be utilized when there is only one group of persons and you are collecting data at two points in time, before the intervention and after the intervention (Pallant, 2013). The statistical package for the social sciences version 27 (SPSS) software will be used to analyze the data for the QI project. The QI project aim is to determine if the participants were compliant in using the CAM tool and if the use of the tool will help to identify patient with delirium in the home health setting. The continuous variable would be the home health patient at two time periods, one without the intervention and then with the intervention. A statistician will be used to assist in the analysis of the data obtained from the QI project.

Analysis of Results

The project data was analyzed using the confidence interval of proportion and the paired-sample t-test with SPSS version 27. The confidence interval of proportion was used to determine the percentage of nurses that were compliant with the use of the delirium assessment tool, the goal was 90%. The confidence interval of proportion was used to determine the percentage of nurses in attendance for the training sessions of the delirium assessment tool, the goal was 90%. The confidence interval of proportion was used to determine the percentage of patients identified with delirium using the delirium assessment tool, the goal was 90%. The paired-sample t-test was performed demonstrating that there is a statistical significance in identifying delirium using the delirium assessment tool.

Delirium assessment tool use

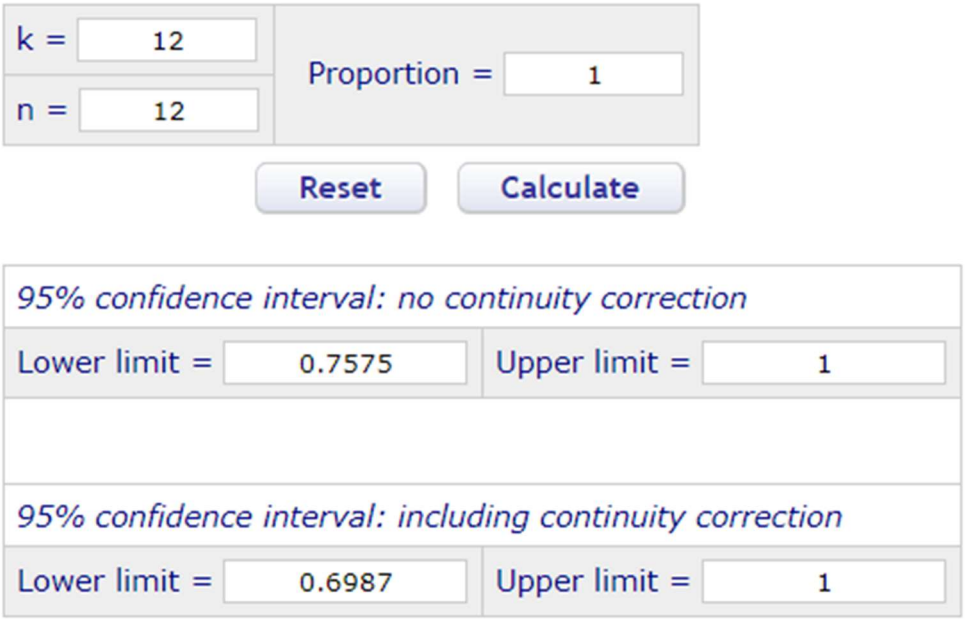
The confidence interval of proportion was used to determine the percentage of nurses that were compliant with the use of the delirium assessment tool. A sample size can provide enough data to carry out a ratio test to create a 95% interval of confidence to determine if the percentage is a significant difference from 90% (Fleiss et al. 2013). Nurses were categorized as 1 for adherence of use of delirium assessment tool and 0 for those who did not adhere to the use of the delirium assessment tool. The nurses did a total of 503 patient home visits and out of those home visits the nurses used the assessment tool 489 times. The lower limit is 95% and the upper limit is 98%. This leads to the conclusion with 95% confidence that 90% of the nurses adhered to the use of the delirium assessment tool.



Staff Training attendance

The confidence interval of proportion was used to determine the percentage of nurses in attendance for the training sessions of the delirium assessment tool. Twelve staff nurses were

invited to the CAM tool use training with twelve nurses attending the training. Nurses were categorized as 1 for staff training attendance and 0 for those who did not attend the training. The lower limit is 75% and the upper limit is 100%. This leads to the conclusion with 95% confidence that more than 90% of the nurses attended the delirium assessment tool training.



Patients identified with delirium

The confidence interval of proportion was used to determine the percentage of patients identified with delirium using the delirium assessment tool. There were total of three patients out of three that were identified to have delirium using the CAM tool. Patients were categorized as 1 for having delirium and 0 for not having delirium. The lower limit is 43% and the upper limit is 100%. This leads to the conclusion with 95% confidence that more than 90% of the nurses identified delirium using the assessment tool.

k =	3	Proportion =	1
n =	3		

Reset Calculate

95% confidence interval: no continuity correction			
Lower limit =	0.4385	Upper limit =	1
95% confidence interval: including continuity correction			
Lower limit =	0.31	Upper limit =	1

The paired-sample t-test was performed demonstrating that there is a statistical significance in identifying delirium using the delirium assessment tool.

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	CAM tool used - Delirium present	.964	.186	.008	.948	.981	116.302	502	.000

The (p) value is less than .05, concluding that there is a statistical significance between CAM tool use and identifying delirium. The mean difference between the two scores is .964 with a 95% confidence interval from .948 to .981.

Discussion

The data analyses have indicated that implementation of the CAM assessment tool resulted in the identification of delirium. Thus, implementing the CAM assessment tool led to the identification of delirium with rapid treatment in the home health setting. The first objective of

the DNP QI project was to ensure that at least 90% of the nurses complied with using the delirium assessment tool. This percentage indicates that a sufficient number of nurses would gain knowledge in the use of the CAM tool and adhere to the use of the CAM tool. This first objective was met for the DNP QI project. Because of the fluctuating symptoms of delirium, nurses are essential in identifying and reporting the relevant symptoms to physicians (Poikajärvi et al., 2017). Recognizing the symptoms of delirium is imperative as it leads to the early detection and management of delirium (Poikajärvi et al., 2017).

The second objective of the DNP QI project was to have at least 90% or more of the nurses attend the training sessions. Of twelve of the nurses that were invited to attend the training, twelve attended the training sessions. This second objective was met as 100% of the nurses attended the training sessions for the DNP QI project. To recognize delirium, nurses require training on using an assessment instrument (Poikajärvi et al., 2017).

The third objective of the DNP QI project was to identify at least 90% of patients with delirium using the delirium assessment tool. Three patients were found to have delirium, and all three were found to have delirium using the assessment tool. This third objective was met as 100% of the patients with delirium were found to have delirium using the assessment tool. The paired sample t-test concluded a statistical significance between the assessment tool use and identifying delirium. The paired sample t-test indicated the confidence level of the findings to be 95%; thus, the findings are statistically significant. The DNP QI project findings support the implementation and use of the CAM assessment tool to help identify delirium in home health patients. The DNP QI project findings are also in line with existing literature that suggests using the CAM assessment tool for the identification of delirium. The CAM assessment tool is the delirium assessment tool that is most widely used globally and has been used in over 4500

published studies (Oh et al., 2017). The CAM assessment tool measures four essential features of delirium, and it has interrater reliability of ($\kappa = 0.92$), specificity of (90%-95%), and sensitivity of (94%-100%).

Significance

The DNP QI project is very significant to the nursing profession. Implementing the CAM assessment tool helps identify delirium patients, get them rapid treatment, and prevent hospitalizations. The CAM assessment tool aids nurses in their role of assessing, identifying, and reporting abnormal patient finding expeditiously to decrease unwanted outcomes and increase positive patient outcomes. Clinical abnormal findings such as delirium are severe for patients, their families, and nurses (Poikajärvi et al., 2017). Delirium causes humans to suffer, decreases the quality of life, increases hospitalization rates, increases institutionalization rates, augments mortality, and increases care costs (Poikajärvi et al., 2017).

The DNP QI project encourages nurse leaders to contribute to healthcare by developing and implementing QI projects that help promote health in their local communities at the state and federal levels. Nurses can reduce healthcare problems by using evidence-based solutions, proposing health care policy, designing health care policy, and encouraging other nurses to do the same (Salmond & Echevarria, 2017). Nurses need to assert themselves as critical contributors to health care reform, patient safety, quality of care, patient-centered care, accessibility, and affordable health care (Salmond & Echevarria, 2017). For nurses to deliver the latter outcomes, all nurses, including administrative and staff nurses, need to understand that nursing needs to evolve, deliver the expected quality of care, be proactive, and get involved in the evolution of nursing with a passion (Salmond & Echevarria, 2017). The changes that nurses will make requires heightened skillsets on population care, and patient wellness, with a modernized

approach to patient-centered care, coordination of care, analytical data, and quality improvement (Salmond & Echevarria, 2017).

Limitations

There were several limitations to the DNP quality improvement project. The first limitation has to do with the project design implementation of four weeks. The short period limits the time of training the nurses did before implementing the CAM tool. The CAM tool has been demonstrated to be sensitive and specific; reliability depends on the training and experience that the nurses have in using the tool (Jorgensen et al., 2017). The second limitation has to do with the data recruitment limitation of a sample size of twelve nurses; three did not see any patients during the time frame of the DNP project. Samples that are too small might present a risk for bias, weakening the conclusion compared to a larger population sample (Fiest et al., 2020). The third limitation involves a short time frame for data collection. The nurses have a limited amount of time to spend with patients in the home setting and completing their documentation. The CAM tool assessment added time to their visits and added needed time to complete their documentation. Completing the assessment tool depends on the availability and timing of the nurses; thus, some data may be missed and present as a threat to the study (Fiest et al., 2020). Completing the assessment tool documentation becomes a burden to nurses and may present additional limitations to the study (Fiest et al., 2020).

Dissemination and Sustainability

The dissemination of this DNP project is going to ensure exponential sharing of evidence-based practice knowledge. Implementing an evidence-based practice model in health care organizations is a formidable challenge and must reach target populations (Pierce 2011). It is necessary to build a framework to share evidence-based practices among different institutions

(Pierce 2011). Dissemination of evidence-based practices requires the help of nursing leaders, administration, and a communication process (Pierce 2011). Dissemination of this DNP project will be done using several platforms.

The first platform will be done via an online DNP repository. The second platform will be done through a local nurse organization called Valley Advanced Practice Nurse Association at their annual conference. The third platform will be done through presentations for quality improvement nurses at home health agencies in this DNP leader's community. The last platform that will be used is social media which has a much larger audience.

Evidence-based practice models must be realistic and sustainable (Pierce 2011). The DNP project will remain sustainable in the home health setting as it does not require additional staffing, financing and only requires training nurses on using the CAM tool. The home health care agency intends to diminish home health care costs by reducing adverse outcomes associated with delirium. Delirium costs Medicare $6.9 billion a year due to complications, the cost paid to medical institutions, and a decline in functionality (Ramirez & Paul 2020). This QIP will remain sustainable through regular training on the use of the CAM tool. Interdisciplinary teamwork using the CAM tool will allow the home health care organization to achieve good patient outcomes in their organization. Sustainability is achievable because the implementation of the CAM tool is attainable with no cost and can be implemented within a short period. Continued implementation of the QIP is realistic as there is an urgency to address poor outcomes associated with delirium. Rapidly identifying and managing delirium in the home setting will improve quality of life, mortality risk, and patient outcomes overall (Oh et al., 2017).

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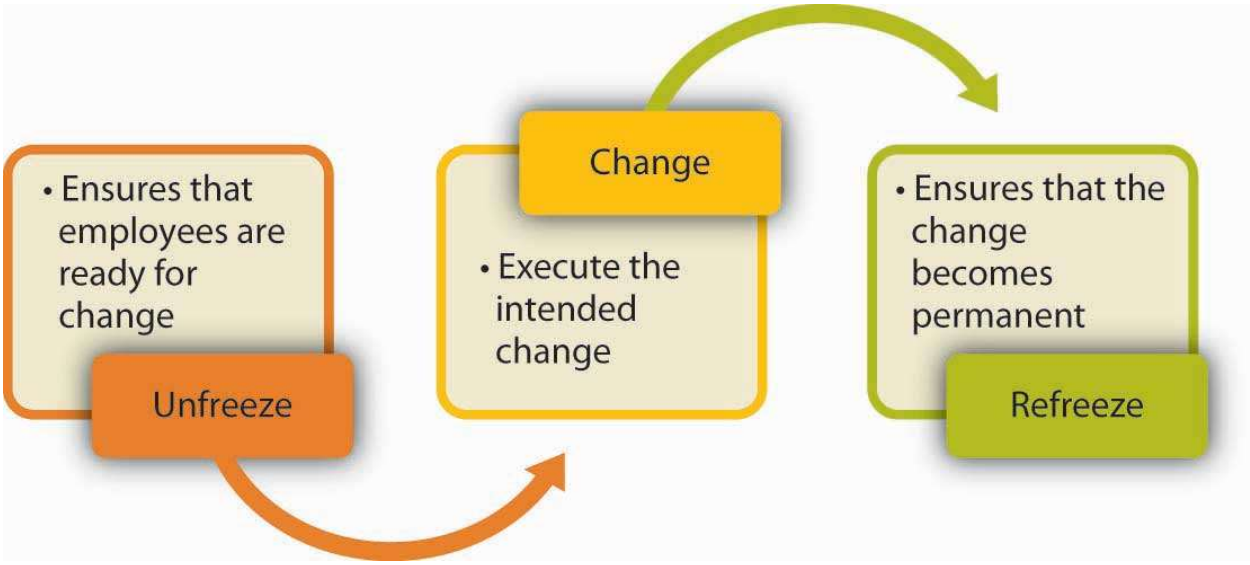
Appendix A


• Ensures that employees are ready for change
Unfreeze
Change
• Execute the intended change
• Ensures that the change becomes permanent
Refreeze

Appendix B

See attached PDF file with letter of approval.

Gerardo Castillo DNP student

Touro University Nevada

Date: June 29, 2020

To: Jaime Solis BSN, RN, Administrator

Divine Health Care

4309 N. 10th St. Ste. C

McAllen, Texas

78504

Dear Mr. Solis,

The purpose of writing this letter is to request approval for using Divine Health Care as a clinical DNP project site. I will be implementing a quality improvement project that will help identify delirium in the home health patient census. I will have no direct patient contact and the goal of the quality improvement project is to improve patient outcomes. The estimated time frame for the DNP project is about one year. If you find this acceptable, please approve my request by signing this letter and email it to me. Thanks for considering my request.

Yours sincerely,

Gerardo Castillo, DNP student

I HEREBY APPROVE OF THE ABOVE REQUEST

Signature

Date: June 29, 2020

Appendix C

Confusion Assessment Method (CAM) tool

(Adapted from Inouye et al., 1990)

Patient's Name: Date:

Instructions: Assess the following factors.

Acute Onset

1. Is there evidence of an acute change in mental status from the patient's baseline?

YES NO UNCERTAIN NOT APPLICABLE

Inattention

(The questions listed under this topic are repeated for each topic where applicable.)

2A. Did the patient have difficulty focusing attention (for example, being easily distractible or having difficulty

keeping track of what was being said)?

Not present at any time during interview

Present at some time during interview, but in mild form

Present at some time during interview, in marked form

Uncertain

2B. (If present or abnormal) Did this behavior fluctuate during the interview (that is, tend to come and go or

increase and decrease in severity)?

YES NO UNCERTAIN NOT APPLICABLE

2C. (If present or abnormal) Please describe this behavior.

Disorganized Thinking

3. Was the patient's thinking disorganized or incoherent, such as rambling or irrelevant conversation, unclear

or illogical flow of ideas, or unpredictable, switching from subject to subject?

YES NO UNCERTAIN NOT APPLICABLE

Altered Level of Consciousness

4. Overall, how would you rate this patient's level of consciousness?

Alert (normal)

Vigilant (hyperalert, overly sensitive to environmental stimuli, startled very easily)

Lethargic (drowsy, easily aroused)

Stupor (difficult to arouse)

Coma (unarousable)

Uncertain

2

Disorientation

5. Was the patient disoriented at any time during the interview, such as thinking that he or she was somewhere

other than the hospital, using the wrong bed, or misjudging the time of day?

YES NO UNCERTAIN NOT APPLICABLE

Memory Impairment

6. Did the patient demonstrate any memory problems during the interview, such as inability to remember

events in the hospital or difficulty remembering instructions?

YES NO UNCERTAIN NOT APPLICABLE

Perceptual Disturbances

7. Did the patient have any evidence of perceptual disturbances, such as hallucinations, illusions, or

misinterpretations (for example, thinking something was moving when it was not)?

YES NO UNCERTAIN NOT APPLICABLE

Psychomotor Agitation

8A. At any time during the interview, did the patient have an unusually increased level of motor activity, such as

restlessness, picking at bedclothes, tapping fingers, or making frequent, sudden changes in position?

YES NO UNCERTAIN NOT APPLICABLE

Psychomotor Retardation

8B. At any time during the interview, did the patient have an unusually decreased level of motor activity, such as

sluggishness, staring into space, staying in one position for a long time, or moving very slowly?

YES NO UNCERTAIN NOT APPLICABLE

Altered Sleep-Wake Cycle

9. Did the patient have evidence of disturbance of the sleep-wake cycle, such as excessive daytime sleepiness

with insomnia at night?

YES NO UNCERTAIN NOT APPLICABLE

Scoring:

For a diagnosis of delirium by CAM, the patient must display:

1. Presence of acute onset and fluctuating discourse

AND

2. Inattention

AND EITHER

3. Disorganized thinking

OR

4. Altered level of consciousness

Confusion Assessment Method (CAM) Diagnostic Algorithm

Feature 1: Acute Onset and Fluctuating Course

This feature is usually obtained from a family member or nurse and is shown by positive responses to the following questions: Is there evidence of an acute change in mental status from the patient's baseline? Did the (abnormal) behavior fluctuate during the day; that is, did it tend to come and go, or increase and decrease in severity?

Feature 2: Inattention

This feature is shown by a positive response to the following question: Did the patient have difficulty focusing attention; for example, being easily distractible, or having difficulty keeping

track of what was being said?

Feature 3: Disorganized Thinking

This feature is shown by a positive response to the following question: Was the patient's thinking disorganized or incoherent, such as rambling or irrelevant conversation, unclear or illogical flow of ideas, or unpredictable switching from subject to subject?

Feature 4: Altered Level of Consciousness

This feature is shown by any answer other than "alert" to the following question: Overall, how would you rate this patient's level of consciousness? (alert [normal], vigilant [hyperalert], lethargic [drowsy, easily aroused], stupor [difficult to arouse], or coma [unarousable])

Appendix D

See attached PDF file with letter of approval.

AGS | THE AMERICAN GERIATRICS SOCIETY
Geriatrics Health Professionals.
Leading change. Improving care for older adults.

40 FULTON STREET, 18TH FLOOR
NEW YORK, NEW YORK 10038
212.308.1414 TEL 212.832.8646 FAX
www.americangeriatrics.org

January 20, 2021

Dear Mr. Castillo,

Thank you for requesting permission to utilize the Confusion Assessment Method-Long (CAM-long) from the AGS CoCare®: HELP program (formerly The Hospital Elder Life Program). Your request is to utilize the CAM-long for a Quality Improvement Project as part of your Doctor of Nursing Practice project at Touro University Nevada. The purpose of the quality improvement project is to utilize the CAM-long to help nurses in a home-health setting identify delirium in older adult patients in order to get faster treatment and prevent hospitalizations and/or complications. The study will be conducted at Divine Health Care in McAllen, Texas.

Permission is granted for the above provided that:

1. Permission to use: CAM-long is limited to this quality improvement project. Rights do not apply to revised editions and is limited to this individual project for data collection purposes only during the time period of March 2021 to July 2021. The CAM-long can be printed for purposes of this project only and cannot be altered or revised. Materials cannot be distributed for any other use.

2. Proper citation must be given to the American Geriatrics Society (AGS) CoCare®: HELP program, including full acknowledgment of the source:
   Acknowledgement: "Confusion Assessment Method. Copyright 2003, Hospital Elder Life Program, LLC. Not to be reproduced without permission."
   Disclaimer: "No responsibility is assumed by the AGS or the Hospital Elder Life Program, LLC for any injury and/or damage to persons or property arising out of the application of any of the content at help.agscocare.org."
   "Permission granted by the American Geriatrics Society, 2021."

3. Upon completion, study results to be shared with AGS CoCare®: HELP via email to dsandos@americangeriatrics.org.

For more information visit AGS CoCare®: HELP online at help.agscocare.org.

There is **no fee** for this request. If you have any questions please feel free to contact me at 212-308-1414 or dsandos@americangeriatrics.org.

Thank you,

Deena Sandos

Deena Sandos
Manager, Special Projects
American Geriatrics Society

Appendix E

Chart Audit Tool

Completed by……. Date……..

Patient ID #	**Assessed using CAM tool. Yes/No/NA**	**If no, please explain why**	**If NA, please explain why**	**CAM positive YES/NO**

Appendix F

See attached PDF file with power point presentation.

Confusion Assessment Method (CAM) Tool

1

What is the CAM tool?

- It is an assessment tools used to detect delirium quickly and accurately.

2

What is delirium?

- Delirium is a acute change in the brain that causes mental confusion and emotional disruption. It makes it difficult to think, remember, sleep, pay attention, and more. You might experience delirium during alcohol withdrawal, after surgery, or with dementia.

3

What can cause delirium?

- Alcohol or illegal drug toxicity, overdose or withdrawal.
- Overwhelming reaction to infections such as pneumonia, sepsis and urinary tract infections.
- Changes in the environment.
- Dehydration.
- Medications, such as those with anticholinergic effects (including antihistamines), psychoactive drugs and opioids.
- Hormonal issues (such as hyperthyroidism or hypothyroidism).
- Hospitalization or surgery.
- Kidney or liver injury or failure.
- Lack of oxygen to your tissues.
- Lack of sleep.
- Pain.

4

What are the parts of the CAM tool?

- Acute Onset
- Inattention
- Disorganized Thinking
- Disorientation
- Memory Impairment
- Perceptual Disturbances
- Psychomotor Agitation
- Psychomotor Retardation
- Altered Sleep-Wake Cycle

5

How do we score the CAM tool?

- For a diagnosis of delirium by CAM, the patient must display:
- 1. Presence of acute onset and fluctuating discourse
- AND
- 2. Inattention
- AND EITHER
- 3. Disorganized thinking
- OR
- 4. Altered level of consciousness

6