2-18-2022

Delirium Screening to Prevent Falls in the Long-term Care Setting

Jonathan David White, BSN, RN
University of Tennessee, Knoxville, jwhit205@vols.utk.edu

Samereh Abdoli, PHD, RN
University of Tennessee, Knoxville, sabdoli@utk.edu

Delirium Screening to Prevent Falls in the Long-term Care Setting

Jonathan White, BSN, RN

University of Tennessee – Knoxville, School of Nursing

DNP Scholarly Project Proposal

November 16, 2021

Table of Contents

List of Tables

List of Figures

List of Appendices

Abstract

Background

Nearly 30 million people fall in the United States (U.S.) every year with 20% resulting in serious injury. These incidents disproportionately occur in the elderly population. Of the 1.6 million people living in long-term care (LTC) settings in the U.S., between 50-75% experience a fall annually with many experiencing multiple falls. This population is 2 times as likely to experience such an event – and due to increased age, they are least likely to recover. Delirium, a main contributing factor to fall, has been found to go undetected in as many as 66% of individuals in the clinical setting.

Method

A randomized sample group (M = 22) was observed over an 8-week period (T-1) in which weekly delirium screening was performed using the Simple Query for Easy Evaluation of Consciousness (SQeeC) in a LTC facility. Fall data was recorded and compared to results obtained over the previous 8-week period (T-2) in which quarterly delirium screening with the Confusion Assessment Method (CAM) was performed using an independent sample t-test to determine the impact of weekly screening on fall rates.

Results

During T-1, there were 12 falls. Of these, 1 was a delirium-related fall. In T-2, there were 16 falls with 4 being delirium-related. The mean fall/week in T-1 was 1.5 compared to 2.0 in T-2. There was not a statistically significant difference in falls ($p=0.475$) when using the SQeeC.

Conclusion

Though not statistically significant, there was an apparent clinical difference evidenced by a decrease in the number of falls, falls per week, and delirium-related falls. This may be

attributable to increased awareness and vigilance throughout the time of the project. Further work is needed to make a determination.

Delirium Screening to Prevent Falls in the Long-term Care Setting

Background

According to the Centers for Disease Control and Prevention (CDC), there is an unprecedented increase in the proportion of older adults in the U.S. Longer life spans and aging baby boomers are projected to double the American population aged 65 years and older (hereafter referred to as elderly) over the next 25 years. By 2030, the CDC estimates that the elderly population will account for nearly 20% of the U.S. population (CDC, 2013). For healthcare providers, these numbers demand serious examination.

The elderly individual experiences changes in spatial perception leading to a decrease in awareness of their surroundings (Pilz et al., 2020). The same person also undergoes a steady decline in bone mass, joint flexibility, muscle tone, and strength (Boros & Freemont, 2017). In addition to the physiological changes experienced by the elderly, there is also cognitive changes that are associated with the aging process. Approximately 47 million people are impacted by dementia around the globe with age being the main risk factor for the development and progression of the disease process (Ponjoan et al., 2019).

Another area of concern for the elderly is the prevalence of delirium. Delirium is defined as a mental disorder that presents with an acute onset and manifests with alterations in level of consciousness, attentiveness, orientation, memory, thought, perception, and behavior (Thom et al., 2019). The elderly population deal with issues like depression, elder abuse, malnutrition, polypharmacy, and sensory impairment which are risk factors that may cause delirium (Kalish et al., 2014). Delirium can last for hours to even weeks causing cognitive impairment, confusion, attention deficits, alterations to the sleep-wake cycle, and significant changes in motor

functioning (Popp et al., 2015). All of these factors make a fall much more likely and difficult to predict – including in the LTC setting.

Delirium is hard to detect in the elderly population, however, with nearly 60% of positive cases having been misdiagnosed by a treating physician prior to detection (Oh et al., 2017). The difficulties in detecting delirium are made even more difficult in the presence of dementia as dementia often masks the symptoms associated with delirium. Where there is a diagnosis of dementia in the long-term care setting, there is up to 70% prevalence of delirium that is superimposed on their dementia (Morandi et al., 2017). According to a 2016 survey, 47.8% of LTC residents had a diagnosis of Alzheimer's disease or some other form of dementia (CDC, 2019d).   This underscores the difficulties of detecting delirium in the LTC setting where a large portion of the population is at risk for masking the signs and symptoms of delirium. These factors combine to pose a significant threat to the elderly because each of them is associated with both the risk and occurrence of falls.

Epidemiology

Every year, 1 in 4 people fall in the U.S. (CDC, 2019a). This fails to capture the total number of falls that occur annually due to the many that go unreported. It is estimated that 1/3 of the elderly population experience a fall, but even this number is probably higher due to those that do go unreported. This equates to nearly 30 million falls per year in the U.S. (CDC, 2019b). According to the CDC (2019c), 1 out of every 5 falls results in a serious injury which is defined as a broken bone or head injury. Over 800,000 elderly individuals are hospitalized annually as a result of an injury from a fall. According to the CDC, 95% of all hip fractures among the elderly are the result of a fall (CDC, 2019a). Even more concerning is the recent surge

in fall-related deaths. In the U.S., the prevalence of such episodes rose 31% from 2007 to 2016 among the elderly (Burns & Kakara, 2018).

While it may seem likely to some that these figures would decrease in a controlled healthcare setting, fall rates in long-term care (LTC) settings are higher. Nearly 1.6 million people are living in LTC facilities in the U.S. The prevalence of falls in LTC facilities is twice that of those living independently in the community with between 50-75% of LTC residents falling annually; and in most cases, those who fall do so multiple times during the year (CDC, 2012).

There are several contributing factors that increase the risk and prevalence of falls in the LTC, many of which have been previously listed. Decreased functional and cognitive abilities abound in the LTC population. Gaugler et al. (2014) reported that nearly two-thirds of all U.S. nursing home residents have some form of dementia. Once in the LTC, these individuals are confronted with new environments that in many cases exacerbate symptoms of anxiety and frustration. Simonetti et al., (2020) explore the effects of isolation that have resulted from the COVID-19 pandemic. This has augmented the adverse symptoms among those with dementia in the LTC setting further masking cases of delirium.

Costs

As falls increase in the elderly population, so too do the costs associated with them. Several studies have been done to assess the financial ramifications of elderly falls. One such study performed in the U.S. in 2015 concluded that the cost of falls among the U.S. senior population totaled nearly $50 billion with Medicare paying out approximately $28.9 billion, Medicaid paying out $8.7 billion, and private and other payers paying out $12.0 billion. These costs were up from 2013 expenses of approximately $38 billion (Florence, et al., 2018). These

national figures are astronomical and rising, but they fail to capture the total expense on an individual level. A 2015 publication by the National Council on Aging estimated that a fall-related hospitalization would cost approximately $35,000 (National Council on Aging, 2015). Much of this expense is covered by the individual's insurance provider, but not all of it. With so much of the elderly population living at or below the poverty line, they are ill-prepared to handle the costs associated with the treatment of a fall. The financial burden increases the likelihood of recurrent falls due to the inability to pay for treatments that would provide stability. This cascading effect results in an even further financial burden on insurance companies and taxpayers that pay to fund services like Medicare and Medicaid in the U.S. The domino effect is far-reaching.

It is also important that we look beyond mere financial burdens when considering the cost of falls. The physical and mental trauma that is associated with every elderly fall carries an equally weighty cost. These costs have detrimental impacts on the health and well-being of the one who experiences a fall. Recent research shows that falls make up the leading cause of injury and death in the elderly population (CDC, 2019b). 300,000 falls result in hip or femur fractures every year in the U.S. alone. Falls are also the leading cause of traumatic brain injuries (CDC, 2017). These injuries cause life-altering scenarios for the individual and many do not recover. The number of deaths from falls more than doubled in individuals 75 years of age and older from 2000 to 2016 from 52 per 100,000 falls in 2000 to 122 per 100,000 in 2016. According to the National Vital Statistics System, 25,189 deaths were a result of a fall in 2016 ("JAMA Research", 2019).

As we narrow our focus on the LTC setting, it is apparent that the costs are equally as high in the LTC as they are outside. There are approximately 1.5 falls per bed-year in the LTC.

Of those falls, 10 - 25% result in hospital admission or fracture on the national level each year (Vu et al., 2004). At the LTC setting in which this project was implemented (hereafter called project site), there were 540 falls in 2020. The average census for the year was 250. Of the falls, 45 required hospitalization for fall-related injury or fracture. This data aligns with the national numbers with slight variation. There were higher falls per bed-year (2.2), but a lower percentage resulting in hospital admission or fracture (8.3%).

Outcomes

Due to the seriousness of falls in the elderly, a greater focus must be placed on prevention of the fall itself. One such area that needs further exploration is the screening and treatment of delirium in the prevention of falls. Although there is a limited number of studies regarding delirium and fall prevention, a recent study seems to suggest that delirium screening and prevention may have a significant impact on the reduction of falls (Ferguson et al., 2018). This project was focused on the relationship between falls and delirium among the elderly.

Purpose

The purpose of this project was to examine if frequent delirium screening would reduce the number of falls in elderly residents in a LTC facility.

Approach

The effectiveness of delirium screening on fall reduction was determined through weekly delirium screening over an 8-week period. Data from this period was then compared to data obtained from the previous 8 weeks before the weekly screening tool was used. Quarterly delirium screenings were done during the comparative time period.

The 8-week time period was selected randomly. The weekly delirium screening tool was selected based on high specificity, high sensitivity, and ease of use. The screening tool in use

before the project was the Confusion Assessment Method (CAM). It has been shown to have sensitivity rates from 46% to 100% (Wei, et al., 2008). A 2015 study comparing screening tools found the CAM to have a sensitivity of 27% with a specificity of 96% (Lin et al.). In that same study, Lin et al. found a much simpler screening tool – the Simple Question for Easy Evaluation of Consciousness (SQeeC) demonstrated a sensitivity of 83% and a specificity of 81% (2015). For this project, the SQeeC was used every week for 8 weeks and then compared to results obtained while using the CAM.

A closer look at both tools reveals a major difference in the ease of administration. The CAM consists of four components that require additional sources of information to complete. Lin, et al., (2015) estimate that the CAM takes 5 minutes to complete compared to only 30 seconds for the SQeeC, which can easily be completed by the direct-care nurse at the bedside. The differences in sensitivity and specificity as well as the complexities of administering the tests made the SQeeC an ideal screening tool for the purposes of this project.

Framework

The guiding framework for this project was the EBPI Model. The change theory behind the project was Lewin's Change Theory. The EBPI Model was appropriate for this project because it merges the world of evidence-based practice (EBP) and quality improvement (QI) to achieve the best practice with the best method of delivery (Bernadette Mazurek Melnyk & Fineout-Overholt, 2019, p. 294). The Plan-do-study-act (PDSA) approach was used to guide the initial phase of implementation with the results set to be reviewed with shareholders, and appropriate adjustments will be made until a suitable level of change is achieved.

Lewin's Change Theory was the underpinning for the project. This theory consists of 3 stages commonly referred to as unfreezing, changing, and refreezing (Schein, 1996). These

stages led the project committee and shareholders through the PDSA cycle as the evidence is

weighed in the attempt to improve the quality of care and results obtained related to fall

reduction/prevention in response to delirium screening. The unfreezing phase consisted of

confronting administration and staff's willingness to change the norms of delirium screening

within the facility. Before initiating the project, all delirium screening was performed by

Minimum Data Set (MDS) nursing staff. The project challenged the norm in two ways: 1) MDS

nurses do not perform direct care; and 2) the CAM is performed on each resident quarterly. The

SQeeC was implemented by the nurse providing daily care who had a much keener awareness of

each resident's baseline behavior and for the purposes of the project, it was performed weekly.

The second phase of Lewin's Change Theory is the changing phase in which the SQeeC

was implemented. The final phase, referred to as the refreezing phase involved the collection and

dissemination of data to shareholders. These principles governed the project with the outcomes

being determined by the data.

PICOT Question

The PICOT question will guide the gathering of evidence which will then translate into

practice. The population of interest for this project is elderly people in the LTC setting. For the

purpose of this project, the term "elderly," incorporates a target population from 65 years of age

or older. The intervention I will be exploring is weekly delirium screening using the SQeeC

screening tool. The control for the project will be the falls over an 8-week sample among

residents screened by the CAM on a quarterly basis. The outcome I am targeting is fall rates. The

time frame will be an 8-week period in which the project takes place. My formal PICOT

question for the project is, "Among elderly residents in the LTC setting, how does weekly

delirium screening compared to quarterly psychosocial screening affect fall rates over an 8-week period?"

Literature Search Strategy

A search of the literature was conducted across CINAHL, Cochrane Library, and PubMed to answer the PICOT question of this project. The keywords and search format used, including Boolean connectors, were ("long-term care" OR "long term care" OR "nursing home" OR "residential care") AND ("aging" OR "ageing" OR "elderly" OR "older adults" OR "seniors" OR "geriatrics") AND (falls AND ("rate*" OR "inciden*" OR "occur*" OR "percent*" OR "statistic*" OR "prevention") AND (delirium AND ("screen*" OR "monitor*" OR "test*" OR "detect*" OR "assessment*") AND ("last 10 years"[PDat] AND aged[MeSH]). The search was limited to research articles from peer-reviewed journals in English that were published from 2010 to the present. This search yielded 226 articles on CINAHL, 100 articles on Cochrane Library, and 33 articles on PubMed.

Statistical information was obtained from 7 state and government websites. The abstracts were reviewed for relevant information of the 359 total articles and 29 duplicates were excluded. 311 articles were excluded for lack of congruence in either the population (n=233), intervention (n=45), or outcome of the study (n=33). The remaining 19 articles were selected for full-text review of eligibility. 13 articles were excluded for failure to address the PICOT question. The search process is further depicted in the PRISMA Flow Diagram (Figure 1).

Figure 1 - PRISMA 2009 Flow Diagram

Records identified through database searching of CINAHL (n=226), Cochrane Library (n=100), PubMed (n=33)
(N = 359)

Additional records identified through other sources
(n = 7)

Records after duplicates removed
(n = 330)

Records screened
(n = 330)

Records excluded
(n = 311)

Full-text articles assessed for eligibility
(n = 19)

Full-text articles excluded, with reasons
(n =13 due to failure to address PICOT question)

Studies included in qualitative synthesis
(n = 1)

Studies included in quantitative synthesis (meta-analysis)
(n = 5)

Identification

Screening

Eligibility

Included

Critical Appraisal of Literature

Articles were appraised using the Johns Hopkins Nursing Evidence-Based Practice

(JHNEBP) Research Evidence Appraisal Tool (see Appendix A) after determining that they were

relevant to the PICOT question of the project (Dang & Dearholt, 2017). Each article was graded

on both the level and quality of evidence. The level of evidence found consisted of one Level I,

four Level III, and one Level V source. The quality of the evidence consisted of four "A's" and

two "B's". The data were synthesized, and an overall assessment was made on the strength of the

evidence (see Tables A, B, and C as well as Appendix F).

Table A - *Synthesis Table Outcomes*

Outcome	Author #1	Author #2	Author #3	Author #4	Author #5	Author #6
Delirium Screening	✓	☐	☐	✓	✓	☐
Quarterly Screening	☐	✓	☐	☐	✓	☐
Fall Rates	↓c	☐	☐	☐	☐	☐
Other Items of Interest						
Sample Size	286 residents 216 staff	33 residents	7 studies	100 patients	14 homes 215 residents	10 staff members
Level of Evidence	III	V	III	III	I	III
Quality of Evidence	B	B	A	A	A	A
Information relevant to PICOT Question	Increased awareness led to earlier detection of delirium and fewer falls	Functional status remains stable in those with diagnoses of dementia	The study showed the lack of awareness of delirium by caregivers and the benefit of education (which would lead to effective screening at the bedside)	The study compared the SQeeC delirium screening tool with the CAM which is administered quarterly in the host LTC facility.	Falls were not addressed d/t inconsistencies between facilities as to what constituted a fall	Qualitative study showing the consistent lack of awareness of delirium in the LTC setting by staff members

Legend: ✓ = performed/addressed; ✗ = not performed/addressed; ↓ = decreased;; c = clinical significance
SQeeC = Simple Query for Easy Evaluation of Consciousness; CAM = Confusion Assessment Method

Table B - *Table of Recommendations for Practice Change in Delirium Screening in the Long-Term Care Setting to Prevent Falls*

Recommendation	References in Support of Recommendation	Rationale	Level of Evidence	Quality Rating
1. Use of the SQeeC screening tool will increase awareness of delirium and decrease falls.	Lin et al., (2015)	The SQeeC is simple to use which will make it time effective and less foreboding to busy nursing staff; sensitivity and specificity are on par with the more complex CAM screening tool.	III	A
2. Staff education regarding delirium will enable proper screening and lead to decreased falls.	Siddiqi et al., (2010)	Educating staff members about delirium in the LTC setting led to a clinically significant decrease in falls.	III	B
	Gerstenecker et al., (2014)	Functional status remains intact in patients with dementia; acute changes are attributable to other causes (i.e. delirium)	V	B
	Bull et al., (2016)	Caregiver education regarding delirium makes screening possible which leads to better outcomes.	III	A
	Siddiqi et al., (2016)	Increased staff awareness of delirium will result in a more appropriate response by the healthcare team.	I	A
	Buettel et al., (2017)	There is a general lack of awareness of delirium on the part of bedside care providers.	III	A
3. Weekly delirium screening using the SQeeC tool will promote early detection and treatment of delirium leading to a decrease in falls.	Lin et al., (2015)	Frequent screening will lead to early detection of delirium.	III	A
	Siddiqi et al., (2010)	Early detection of delirium leads to quicker, more appropriate treatment decreasing falls.	III	B

Legend: SQeeC = Simple Query for Easy Evaluation of Consciousness; CAM = Confusion Assessment Method

Table C - *Strength of Recommendations for Practice Change in Delirium Screening in the Long-Term Care Setting to Prevent Falls*

Recommendation	Strength of Evidence for Recommendation	References in Support of Recommendation
1. It is recommended that the SQeeC screening tool be used to increase awareness of delirium in the LTC setting.	Based on the JHNEBP level of evidence and quality ratings, a strong grade of evidence was found to support practice change (Dang & Dearholt, 2017).	Lin et al., (2015)
2. It is recommended that staff education be provided regarding delirium to enable proper screening and lead to decreased falls.	Based on the JHNEBP level of evidence and quality ratings, a strong grade of evidence was found to support practice change (Dang & Dearholt, 2017).	Siddiqi et al., (2010) Gerstenecker et al., (2014) Bull et al., (2016) Siddiqi et al., (2016) Buettel et al., (2017)
3. It is recommended that delirium screening be performed weekly using the SQeeC tool to promote early detection and treatment of delirium which will result in a decrease in falls.	Based on the JHNEBP level of evidence and quality ratings, a strong grade of evidence was found to support practice change (Dang & Dearholt, 2017).	Lin et al., (2015) Siddiqi et al., (2010)

Summary of Evidence

A careful, systemic review of the literature strongly supports the need for delirium screening in LTC facilities (Lin et al., 2015). Evidence shows that delirium often goes undetected in the LTC setting – especially in situations where dementia is present. In cases where diagnosed, however, there have been decreases in adverse events (Siddiqi et al., 2010). While the amount of research specifically targeting fall reduction is limited, there appears to be a strong correlation to delirium and decreased levels of functioning. It is within reason to infer that early detection and treatment of delirium could reduce the frequency of falls in the LTC setting.

The literature shows a general lack of caregivers' awareness as to the presence of delirium in the LTC setting (Buettel et al., 2017). This may be attributable to similarities of symptoms between delirium and dementia, which is a common diagnosis in the elderly population. Siddiqi et al. (2016) showed that increased delirium awareness in the LTC decreased hospitalizations by 11.2% over a 6-month window.

Setting

The DNP project was conducted at a LTC facility located in Danville, Virginia, hereafter referred to as the project site. The project site has a maximum capacity of 312-beds with an average patient census of 185 during the project. Before the COVID-19 pandemic, the census average was 285. Within the facility, there are nine units varying in size and scope of care. Short-term rehabilitation occurs on two units and the remaining seven units are designated for LTC of the geriatric population. The project took place on one of the LTC units with an average of 22 residents throughout the screening.

The organizational structure is illustrated in Figure 2 below. Approval to perform the DNP project was obtained from the Director of Nursing and Medical Director (see Appendix B).

Figure 2 - *Organizational Structure*
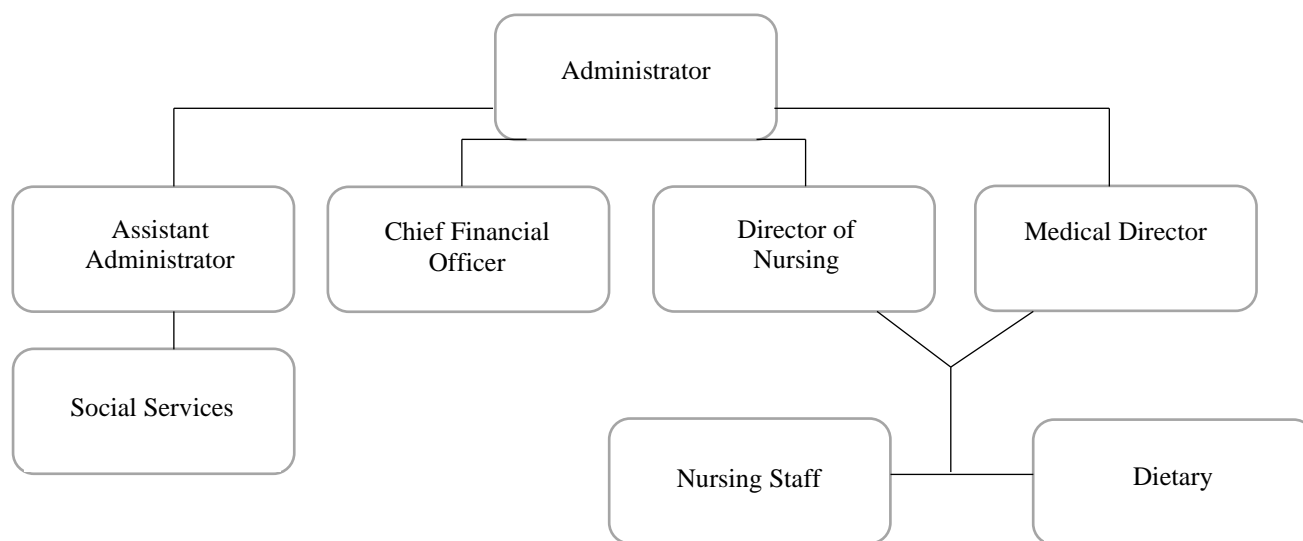
Target Population

The target population participating in the project were residents ranging in age from 65 to 98 years of age (M=80). The project took place on a residential care unit with an average census of 22 throughout the project. The residents had a wide array of diagnoses affecting functional ability in a variety of ways. A large portion of the sample group suffered from alterations in mental status secondary to some form of dementia (77%). Many within the population had experienced fall-related injuries with hip and femur fractures being common causes of admission (34%). Several also suffered from neurological disorders such as Parkinson's Disease and neuropathy that inhibited motor skills (41%).

Barriers and Facilitators

The project site is in Southside Virginia with a well-established reputation for delivering high-quality, compassionate care. A major reason for this is continuity within the organization.

Administrative personnel have filled their roles for years allowing the organization to function with a unified purpose. This strength has also at times led to a less-than-open environment to change. However, during the implementation of the project, the long-established administrative continuity was strained as the facility administrator resigned. This uncertainty, combined with the COVID-19 pandemic created a shift in employee morale leaving the new administration with the challenge of leadership in unstable times. Barriers and facilitators to the successful implementation of the project are discussed in Tables D and E. The internal and external weaknesses are examined in a Strength, Weaknesses, Opportunities, and Threats (SWOT) Analysis in Figure 3.

_____

Table D - *Barriers for Implementation*

Category	Stakeholder	Description of Barrier	Barrier Mitigation
Knowledge and Skills	Resident / Family Members	Resident and family members may be unaware of the effects of delirium	Provide education to residents and family members about delirium
	Nursing Staff	Nursing staff may lack the ability to identify acute onset of delirium (1)	Provide education to staff about signs and symptoms of delirium
Beliefs	Resident / Family Members	Resident and family members may not believe that delirium could impact them	Provide education to residents and family members about delirium
	Nursing Staff	Nursing staff may not believe that their residents who are confused at baseline could be suffering from delirium (2)	Provide education to staff about s/s of delirium
Attitudes	Resident / Family Members	Resident and family members may feel reluctant to participate in the study	Obtain consent to be a part of delirium screening study
	Nursing Staff	Nursing staff may feel overwhelmed and resistant to any new responsibility	Assess for resistance to change and encourage "buy-in"
	Director of Nursing	The Director of Nursing may not see the value in supporting implementation of the project	Hold a meeting to discuss the cost-benefit analysis of preventing falls through early detection of delirium to encourage support
Organizational Influences	Quality Assurance Director	The Quality Assurance Director may not want to be bothered with another project in addition to other responsibilities	Hold a meeting to discuss the goal of decreasing the frequency of falls through early detection of delirium to encourage support

1. Bull, M. J., Boaz, L., & Jermé, M. (2016). Educating Family Caregivers for Older Adults About Delirium: A Systematic Review. Worldviews on Evidence-Based Nursing, 13(3), 232–240. https://doi.org/10.1111/wvn.12154;

2. Buettel, A., Cleary, M., & Bramble, M. (2017). Delirium in a residential care facility: An exploratory study of staff knowledge. *Australasian Journal on Ageing*, *36*(3), 228–233. https://doi.org/10.1111/ajag.12452

Table E - *Facilitators for Implementation*

Category	Stakeholder	Description of Barrier	Barrier Mitigation
Knowledge and Skills	Resident / Family Members	Resident and family members may be aware of the effects of delirium	Assess resident and family knowledge of s/s of delirium
	Nursing Staff	Nursing staff may have the ability to identify acute onset of delirium	Assess nursing staff knowledge of signs and symptoms of delirium
Beliefs	Resident / Family Members	Resident and family members may believe that delirium could impact them	Reaffirm the importance of delirium screening
	Nursing Staff	Nursing staff may believe that confused residents can still suffer from acute onset of delirium	Assess nursing staff beliefs regarding delirium in the elderly population and reaffirm the need for vigilant awareness of signs of new-onset
Attitudes	Resident / Family Members	Resident and family members may be excited to participate in the study	Assess attitude and encourage positivity throughout the study
	Nursing Staff	Nursing staff may be excited and energized at the opportunity to positively affect change in their residents	Assess nursing staff attitudes and encourage positivity regarding delirium screening to prevent falls
	Director of Nursing	The Director of Nursing may be "all-in" seeing the value of delirium screening in hopes of reducing falls	Hold meeting to discuss the cost-benefit analysis of preventing falls through early detection of delirium to encourage and maintain support
Organizational Influences	Quality Assurance Director	The Quality Assurance Director may see the value of delirium screening as a way to reduce falls	Hold a meeting to discuss the goal of decreasing the frequency of falls through early detection of delirium to encourage and maintain support

1. Lin, H.-S., Eeles, E., Pandy, S., Pinsker, D., Brasch, C., & Yerkovich, S. (2015). Screening in delirium: A pilot study of two screening tools, the Simple Query for Easy Evaluation of Consciousness and Simple Question in Delirium. Australasian Journal on Ageing, 34(4), 259–264. https://doi.org/10.1111/ajag.12216

Figure 3 – *Organizational Needs Assessment - SWOT Analysis*

INTERNAL FACTORS	
STRENGTHS (+)	**WEAKNESSES (-)**
• Strong, reputable organization • Goals are resident oriented with focus on quality care • Administration supportive of quality improvement initiatives • Facility with seasoned nursing staff (RNs, LPNs, and CNAs)	• 55 falls over 60-day span (9/1/20 – 10/31/20) • 4/55 falls led to hospitalization and subsequent discharge from the facility (they were each readmitted after being discharged from hospital) leading to a loss of revenue for services that could have been rendered in-house • Staffing shortage d/t COVID Pandemic • Resident / Staff morale low d/t prolonged isolation • Census down (190/312 beds filled) • Administrative pressure increased d/t financial strain

EXTERNAL FACTORS	
OPPORTUNITIES (+)	**THREATS (-)**
• Early detection of delirium is believed to have a positive impact on fall rate reduction • Delirium screening can be done quickly at the bedside using the Simple Question for Easy Evaluation of Consciousness (SQeeC) tool • Frequent delirium screening will increase likelihood of early detection of delirium thereby decreasing risk for falls • Decreasing falls will decrease staff workload while improving resident results	• The facility administrator stepped down from his role as of 11/2020 • Uncertainty among shareholders combined with pressures r/t COVID • Lack of buy-in from new administrator

ANALYSIS SUMMARY
The SQeeC is a tool that should aid in the early detection of delirium achieving a decrease in falls. The facility is primed for such results as over the last 60 days, falls are occurring at nearly 1 fall/day. Though the facility is in the midst of an administrative "changing of the guard," the mission of the organization remains true – quality and compassionate care for every resident. Use of the SQeeC is potentially a move that will ease the stress financially on the organization, physically on the resident, and emotionally on the staff levels.

Stakeholders & Project Team

The DNP project combined the work of multiple shareholders to answer the following PICOT question – among elderly residents in the LTC setting, how will weekly delirium screening in comparison to quarterly psychosocial screening affect fall rates over an 8-week period?

Nursing staff at the project site worked under the direction of the Director of Nursing and the Medical Director in collaboration with the DNP student to perform weekly delirium screenings on a selected unit for the duration of the project. A list of stakeholders and responsibilities may be found in Table F. A project committee consisting of a project chair, the DNP student, and a community member governed the implementation, evaluation, and dissemination of results. The results will be shared with administration at the end of the project in hopes of affecting positive change and improving quality markers for the project site.

Table F - *Stakeholders, Responsibilities & Affiliated Agency*

Name/Title	Responsibilities	Agency
DNP Student	Project leader / data collection and publication of results	University of Tennessee / LTC Project Site
Director of Nursing	Supervision and oversight	LTC Project Site
Quality Assurance Director	Provide pertinent fall rate data	LTC Project Site
Community Member	Feedback to student and faculty regarding project implementation	LTC Project Site
Nursing Staff	Patient assessment / delirium screening	LTC Project Site
Providers	Diagnosis and treatment of patients	LTC Project Site
Patient(s) / Family Member(s)	Participation in screening	Patients of LTC Project Site
Statistician	Statistical analysis of data	University of Tennessee

Implementation

The guiding framework utilized throughout the project was the EBPI Model. The EBPI Model was selected for this project because it merges the world of evidence-based practice (EBP) and quality improvement (QI) to achieve the best practice with the best method of delivery (Bernadette Mazurek Melnyk & Fineout-Overholt, 2019, p. 294). The Plan-do-study-act (PDSA) approach was used to guide the initial phase of implementation with the results being reviewed with shareholders every four weeks. Suggestions were considered during the meetings regarding the most effective ways to utilize the SQeeC and resulting fall-related data. Directional meetings were held with administration discussing the objectives of the project. Delirium awareness education was discussed in the initial meeting with administration as well as with direct-care-staff to increase awareness of delirium (Appendix D) and introduce the Simple Question for Easy Evaluation of Consciousness [SQeeC] (Lin et al., 2015). A handout was used (Appendix E) to discuss the SQeeC. During the educational meeting with direct-care staff, the plan for weekly screening using the SQeeC was outlined. The PDSA worksheet can be found in Appendix C. An outlined approach to the project can be found in Table G along with an accompanying Gannt Chart (Figure 4) displaying the projected timeline for completion.

Administration of the SQeeC was handled by charge nurses on the unit. It consisted of asking two simple questions:

1) If you could go anywhere you've never been before, where would it be?

2) How would you make the journey?

These questions assessed the cognitive patterns of the individual without requiring a large amount of time or stress on the patient or caregiver. The SQeeC was performed at the bedside and the number of falls each week were recorded for eight weeks. Fall data was then compared

with retrospective data from the 8 weeks before implementing the SQeeC in which delirium screening was done using the CAM.

When using the SQeeC, an illogical response was considered positive and indicative of delirium (i.e. "I would go to Europe riding a horse."). Conversely, a logical response was recorded as negative. Each patient's response was recorded in the electronic health record (EHR) as either positive or negative. In situations where delirium was detected with the SQeeC, facility protocols were initiated to address the acute need for care. These protocols included notification of attending physician, monitoring for physiological causes, referring to in-house psychiatric services, and the placement of the individual in a high-visible area for monitoring – all in an effort to prevent a fall from occurring. At the completion of the project, the data was compiled and reviewed to determine if weekly screening with the SQeeC made a clinical and/or statistical difference in resident outcomes.

Table G - *Project Implementation Timeline Using EBPI Model*

Essential Steps	Responsible Stakeholder(s)	Projected Time Frame
Step 1: Describe the Practice Problem • Prevalence of falls in LTC patients • Undetected episodes of delirium causing falls	DNP Student	Month 1
Step 2: Formulate Focused Clinical Question • Develop a PICOT question	DNP Student	Month 1
Step 3: Search for Evidence • Determine keywords related to PICOT question (i.e. long-term care, nursing home, residential care, aging, elderly, older adults, seniors, geriatrics, falls, delirium screening) • Perform search using keywords and Boolean connectors to obtain data pertaining to PICOT question	DNP Student	Months 1-3
Step 4: Appraise and Synthesize Evidence • Review evidence using JHNEBP Research Evidence Appraisal Tool • Identify level of evidence • Synthesize evidence determining overall strength of evidence	DNP Student	Month 4

Step 5: Development of Aim Statement	DNP Student	
• Secure support of senior management		Month 1
• Develop Aim Statement		Month 4
⇒ By December 31, 2021, elderly residents of the LTC project site in Danville, VA will experience a 10% reduction in falls when compared to the previous year after the implementation of weekly delirium screening.		
• Identify facilitators and barriers as well as strategies to mitigate each during the project		Month 6
Step 6: Plan-Do-Study-Act Cycles	DNP Student, Director of Nursing, Quality Assurance Director, Members of Project Team	
• Select Community Member for project committee		Month 6
• Defend project proposal		Month 15
• Assess staff members knowledge of s/s of delirium in the elderly resident and provide necessary education		Month 15
• Provide education to staff and shareholders of Simple Question for Easy Evaluation of Consciousness (SQeeC) that will be used to screen for delirium weekly.		Month 15
• Conduct meetings with shareholders regarding project implementation		Months 15-17
• Implement weekly screening using the SQeeC for 8 weeks.		Months 15-17
• Analyze data regarding fall rates during the period of the study.		Months 17-20
• Disseminate outcomes to shareholders and staff members.		Month 22
Step 7: Dissemination of Best Practices	DNP Student	
• Final Defense of Project		Month 23
• Organizational Presentation of Findings		Month 24

Figure 4 - *Gannt Chart Displaying Projected Timeline for Project Completion*
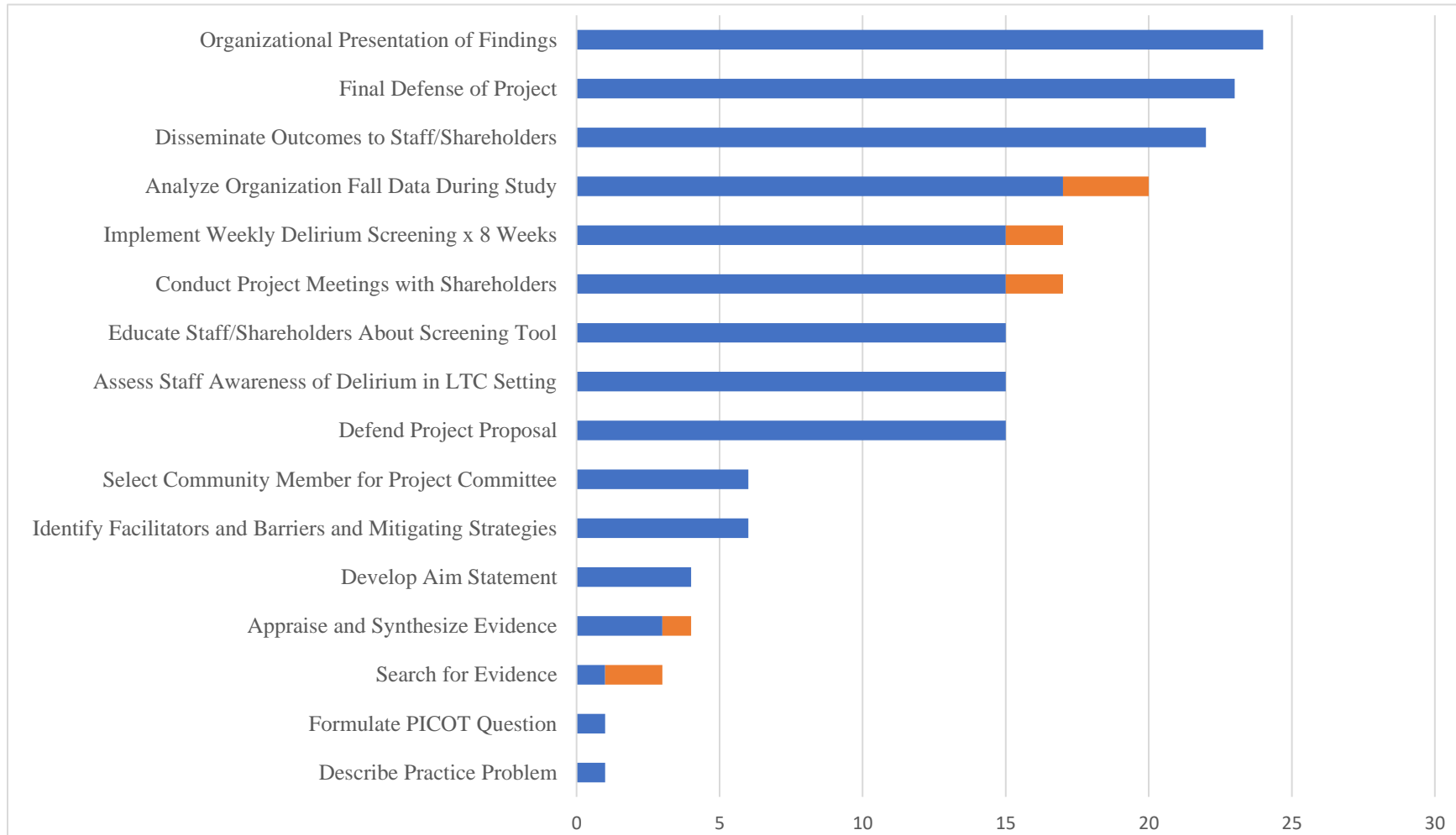
Key: Months displayed numerically with January 2020 starting at 1 and December 2020 being 12; January 2021 continues at 13.

Blue = Month in which task completed; **Orange** = Month(s) in which task is completed if over multiple months with blue denoting time work began.

Outcome Measures

The number of residents screened varied slightly throughout the project due to fluctuations in census due to admissions, transfers, discharges, and deaths. The average unit census was 22 with a total of 176 screenings being completed using the SQeeC throughout the project. During that time, there were only 2 positive screenings (1.1%). In these cases, the attending physician was notified along with psychiatric services. The residents were placed in highly visible areas for increased monitoring. At the end of the 8-week period, there had been 12 falls on the unit with 1 fall determined to be delirium-related. These results were then compared to the 8-weeks prior to using the SQeeC on the same nursing unit. During that time, 27 residents were screened once using the CAM to screen for delirium. A total of 4 screenings were positive (14.8%) with 16 falls occurring during the review period. All 4 falls were confirmed to be delirium-related.

Data Collection and Security

Statistical analysis of the data using the latest version of the SPSS 27. Quantitative data was collected throughout the project using the data analysis tool (Appendix G) for analysis. Qualitative data was also obtained from staff members participating in the project. IRB waiver was obtained as a result of no personal identifiers being included in the information obtained for the purposes of the DNP project.

Results

DNP project results were analyzed by comparing the time period in which the SQeeC is performed (T-1) with an equal time period in which only the CAM was used (T-2) using an independent sample t-test. A total of 176 screenings (22/wk) were performed using the SQeeC over the 8 week review period. In contrast, 27 screenings were performed in the comparative

review period using the CAM. In T-1, there were 12 falls which was a decrease of 25% from T-2. There were 2 positive screenings and 1 delirium-related fall. During T-2, there were 16 falls, 4 positive screenings, and 4 delirium-related falls. Average falls per week decreased from 2.0 in T-2 to 1.5 in T-1.

Throughout the administration of the screening tool, floor staff noted the ease of use of the SQeeC. At the culmination of the project, there was a noted hint of surprise from those who took part with one charge nurse stating,

> "At the onset of this exercise, I truly thought I would get no response from my patients. So, imagine my surprise on the first week when most of them not only answered the question, but had very definite places they would go and knew how they would get there. This was a real eye-opener as to cognitive reasoning and memory."

A second nurse involved in the administration of the screening noted the ease in which the tool was implemented, saying,

> "I think the assessment could be easily performed during the routine med pass."

Though there was not a statistically significant difference in falls ($p=0.475$) when using the SQeeC, there was an apparent clinical difference evidenced by a decrease in the number of falls, falls per week, and delirium-related falls. This may be attributable to the increased awareness and vigilance on the part of staff throughout the time of the project. Further work is needed to make a determination.

Significance and Implications

Falls in the elderly presents a problem that creates long-term impacts on quality of life. The physical, emotional, and financial costs of only one fall can cause a debilitating condition.

Unfortunately, the elderly population experiences more than just isolated fall occurrences. The purpose of this project was to explore the link between early detection of delirium and the reduction of falls in this population in hopes of increasing physical and emotional outcomes in the elderly while reducing the negative impacts associated with falls. There is much work left to be done in the area of delirium screening and fall prevention and the data obtained throughout the project supports the importance for further work to continue.

Conclusion

The brevity of the project and limited number of participants were limiting factors with the project. Therefore, the conclusions made must be considered in lieu of these issues. The data fails to make allowance for new admissions to the resident care unit, new problems they might present with, and how these may impact the prevalence of delirium and falls. Another limitation noticed throughout the project was a reliance upon the willingness of the individual to participate. There were issues that staff reported while administering the SQeeC that could call into question the sensitivity and specificity of the test in detecting delirium. However, throughout the project, behavioral patterns coincided with responses given to the SQeeC increasing confidence in screening results.

With respect to the impact of frequent delirium screening on falls – an effective treatment cannot be defined in a vacuum or simply by statistical numbers. That which makes an impact is a significant treatment (Page, 2014). Though the data failed to show a statistically significant change in falls (p=0.475), there was a clinically significant decrease in total falls, falls per week, delirium-associated falls, and the self-reported increase in patient awareness by nursing staff. The prevention of even one fall spares patient, provider, and family member from the traumatic costs associated with such an event. The positive outcomes revealed in this project are all things

that lead to better outcomes clinically and merit further exploration. As such, it would seem that

weekly delirium screening with a tool like the SQeeC would be beneficial for both patient and

provider.

References

Alzheimer's Disease Questions and Answers. (2019). Texas.Gov.

    https://dshs.texas.gov/alzheimers/qanda.shtm

Bernadette Mazurek Melnyk, & Fineout-Overholt, E. (2019). *Evidence-based practice in nursing*

    & healthcare: a guide to best practice (p. 17). Wolters Kluwer.

Boros, K., & Freemont, T. (2017). Physiology of ageing of the musculoskeletal system. *Best*

    Practice & Research Clinical Rheumatology, *31*(2), 203–217.

    https://doi.org/10.1016/j.berh.2017.09.003

Brice JH, Travers D, Cowden CS, Young MD, Sanhueza A, & Dunston Y. (2008) Health literacy

    among Spanish-speaking patients in the emergency department. *Journal of the National*

    Medical Association,100(11):1326–32

Bull, M. J., Boaz, L., & Jermé, M. (2016). Educating family caregivers for older adults about

    delirium: a systematic review. Worldviews on Evidence-Based Nursing, 13(3), 232–240.

    https://doi.org/10.1111/wvn.12154

Buettel, A., Cleary, M., & Bramble, M. (2017). Delirium in a residential care facility: An

    exploratory study of staff knowledge. *Australasian Journal on Ageing*, *36*(3), 228–233.

    https://doi.org/10.1111/ajag.12452

Burns, E., & Kakara, R. (2018). Deaths from falls among persons aged ≥65 years — United

    States, 2007–2016. *MMWR. Morbidity and Mortality Weekly Report*, *67*(18), 509–514.

    https://doi.org/10.15585/mmwr.mm6718a1

CDC. (2012). *Falls in Nursing Homes*.

    https://www.in.gov/isdh/files/CDC_Falls_in_Nursing_Homes.pdf

CDC. (2013). *The State of Aging and Health in America 2013*

https://www.cdc.gov/aging/pdf/State-Aging-Health-in-America-2013.pdf

CDC. (2019a). *Important Facts about Falls*.

https://www.cdc.gov/homeandrecreationalsafety/falls/adultfalls.html

CDC. (2019b). *Falls Reported by State | Home and Recreational Safety | CDC Injury Center*.

https://www.cdc.gov/homeandrecreationalsafety/falls/fallcost/falls-by-state.html

CDC. (2019c). *Keep on Your Feet*. Centers for Disease Control and Prevention.

https://www.cdc.gov/injury/features/older-adult-falls/index.html

CDC. (2019d). *FastStats - Alzheimers Disease*. https://www.cdc.gov/nchs/fastats/alzheimers.htm

Cho YI, Lee SY, Arozullah AM, & Crittenden KS. (2008). Effects of health literacy on health

status and health service utilization amongst the elderly. *Social Science & Medicine,*

66(8):1809–16

Cubanski, J., Koma, W. C. F., Damico, A. C. F., & Neuman, T. C. F. (2018). How many seniors

live in poverty? Retrieved from https://www.kff.org/medicare/issue-brief/how-many-

seniors-live-in-poverty/

Dang, D., & Dearholt, S. L. (2017). *Johns Hopkins Nursing Evidence-Based Practice Third*

Edition (pp. 43–57). Indianapolis Sigma Theta Tau International

De, J., & Wand, A. P. F. (2015). Delirium screening: A systematic review of delirium screening

Tools in Hospitalized Patients. *The Gerontologist*, *55*(6), 1079–1099.

https://doi.org/10.1093/geront/gnv100

Ferguson, A., Uldall, K., Dunn, J., Blackmore, C. C., & Williams, B. (2018). Effectiveness of a

multifaceted delirium screening, prevention, and treatment initiative on the rate of

delirium falls in the acute care setting. Retrieved from

https://www.ncbi.nlm.nih.gov/pubmed/29035906

Florence, C. S., Bergen, G., Atherly, A., Burns, E., Stevens, J., & Drake, C. (2018). Medical

costs of fatal and nonfatal falls in older adults. *Journal of the American Geriatrics*

Society, *66*(4), 693–698. https://doi.org/10.1111/jgs.15304

Gerstenecker, A., Mast, B. T., Shah, S., & Meeks, S. (2014). Tracking the cognition of nursing

home residents. *Clinical Gerontologist*, *37*(3), 286–297.

https://doi.org/10.1080/07317115.2014.885921

Gray-Miceli, D. (2015). Post-fall emotional responses, functional limitations and action plans to

manage falls among older adults with recurrent falls. *The Gerontologist*, *55*(Suppl_2),

644–644. doi: 10.1093/geront/gnv341.14

Health Literacy | Official web site of the U.S. Health Resources & Services Administration.

(2017). hrsa.gov.https://www.hrsa.gov/about/organization/bureaus/ohe/health-

literacy/index.html

Howard DH, Gazmararian J, & Parker RM. (2005). The impact of low health literacy on the

medical costs of Medicare managed care enrollees. *The American Journal of Medicine,*

118(4):371–77

JAMA research: elderly deaths from falls increase. (2019). Retrieved November 18, 2019, from

https://www.aafp.org/news/health-of-the-public/20190612elderlyfalls.html

Kalish, V. B., Gillham, J. E., & Unwin, B. K. (2014). Delirium in older persons: evaluation and

management. Retrieved from https://www.aafp.org/afp/2014/0801/p150.html

Kutner M, Greenburg E, Jin Y, Paulsen C. The health literacy of America's adults: results from

the 2003 national assessment of adult literacy. U.S. Department of Education.

Washington, D.C: National Center for Education Statistics. 2006 Sep 6 [cited 2019 Dec

3]; NCES 2006-483. Available from:

http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2006483

Leslie, Marcantonio, Zhang, Leo-Summers, & Inouye. (2008). One-year health care costs

associated with delirium in the elderly population. *Archives of Internal

Medicine,168*(1):27–32

Lin, H.-S., Eeles, E., Pandy, S., Pinsker, D., Brasch, C., & Yerkovich, S. (2015). Screening in

delirium: A pilot study of two screening tools, the simple query for easy evaluation of

consciousness and simple question in delirium. *Australasian Journal on Ageing*, *34*(4),

259–264. https://doi.org/10.1111/ajag.12216

Morandi, A., Davis, D., Bellelli, G., Arora, R. C., Caplan, G. A., Kamholz, B., Kolanowski, A.,

Fick, D. M., Kreisel, S., MacLullich, A., Meagher, D., Neufeld, K., Pandharipande, P. P.,

Richardson, S., Slooter, A. J. C., Taylor, J. P., Thomas, C., Tieges, Z., Teodorczuk, A., &

Voyer, P. (2017). The Diagnosis of Delirium Superimposed on Dementia: An Emerging

Challenge. *Journal of the American Medical Directors Association*, *18*(1), 12–18.

https://doi.org/10.1016/j.jamda.2016.07.014

National Council on Aging. (2015) Issue brief: funding for elder falls prevention. Retrieved

November 5, 2019, from https://www.ncoa.org/wp-content/uploads/Falls-Funding-Issue-

Brief-8-15.pdf

Office of Disease Prevention and Health Promotion. (2019). Health literacy.

https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-

health/interventions-resources/health-literacy

Oh, E. S., Fong, T. G., Hshieh, T. T., & Inouye, S. K. (2017). Delirium in Older Persons. *JAMA*, *318*(12), 1161. https://doi.org/10.1001/jama.2017.12067

Page, P. (2014). Beyond statistical significance: clinical interpretation of rehabilitation research literature. International Journal of Sports Physical Therapy, 9(5), 726–736. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4197528/

Pilz, K., Aijala, J., & Manassi, M. (2020). Selective age-related changes in orientation perception. *Journal of Vision*, *20*(13). https://doi.org/10.1167/jov.20.13.13

Ponjoan, A., Garre-Olmo, J., Blanch, J., Fages, E., Alves-Cabratosa, L., Martí-Lluch, R., Comas-Cufí, M., Parramon, D., Garcia-Gil, M., & Ramos, R. (2019). Epidemiology of dementia: prevalence and incidence estimates using validated electronic health records from primary care. Clinical Epidemiology, 11, 217–228. https://doi.org/10.2147/CLEP.S186590

Popp, J., Kukreja, D., & Günther, U. (2015). Delirium in the elderly: Current problems with increasing geriatric age. Indian Journal of Medical Research, 142(6), 655. https://doi.org/10.4103/0971-5916.174546

Schein, E. (1996). Kurt Lewin's change Theory in the Field and in the Classroom: Notes Toward a Model of Managed Learning. *Systems Practice*, *9*(1), 27–47. http://syscoi.com/model.report/www.machon-adler.co.il/readers/reader16.pdf

Shaw SJ, Huebner C, Armin J, Orzech K, Vivian J. (2009). The role of culture in health literacy and chronic disease screening and management. *Journal of Immigrant and Minority Health, 11(*6):460–67. doi: 10.1007/s10903-008-9135-5

Siddiqi, N, Cheater, F., Collinson, M., Farrin, A., Forster, A., George, D., Godfrey, M., Graham, E., Harrison, J., Heaven, A., Heudtlass, P., Hulme, C., Meads, D., North, C., Sturrock, A.,

& Young, J. (2016). The PiTSTOP study: a feasibility cluster randomized trial of delirium prevention in care homes for older people. *Age and Ageing*, *45*(5), 651–660. https://doi.org/10.1093/ageing/afw091

Siddiqi, N., Young, J., House, A. O., Featherstone, I., Hopton, A., Martin, C., Edwards, J., Krishnan, R., Peacock, R., & Holt, R. (2010). Stop delirium! A complex intervention to prevent delirium in care homes: a mixed-methods feasibility study. *Age and Ageing*, *40*(1), 90–98. https://doi.org/10.1093/ageing/afq126

Simonetti, A., Pais, C., Jones, M., Cipriani, M. C., Janiri, D., Monti, L., Landi, F., Bernabei, R., Liperoti, R., & Sani, G. (2020). Neuropsychiatric symptoms in elderly with dementia during COVID-19 pandemic: definition, treatment, and future directions. Frontiers in Psychiatry, 11. https://doi.org/10.3389/fpsyt.2020.579842

Thom, R. P., Levy-Carrick, N. C., Bui, M., & Silbersweig, D. (2019). Delirium. *American Journal of Psychiatry*, *176*(10), 785–793. https://doi.org/10.1176/appi.ajp.2018.18070893

Voyer, P., Richard, S., Doucet, L., Danjou, C., & Carmichael, P.-H. (2008). Detection of delirium by nurses among long-term care residents with dementia. *BMC Nursing*, *7*, 4. https://doi.org/10.1186/1472-6955-7-4

Vu, M. Q., Weintraub, N., & Rubenstein, L. Z. (2004). Falls in the nursing home: are they preventable? Journal of the American Medical Directors Association, 5(6), 401–406. https://doi.org/10.1097/01.jam.0000144553.45330.ad

Wei, L. A., Fearing, M. A., Sternberg, E. J., & Inouye, S. K. (2008). The Confusion Assessment Method: A Systematic Review of Current Usage. *Journal of the American Geriatrics Society*, *56*(5), 823–830. https://doi.org/10.1111/j.1532-5415.2008.01674.x

Wolf MS, Gazmararian JA, & Baker DW. (2005) Health literacy and functional health status among older adults. *Archives of Internal Medicine, 165*(17):1946–52. doi: 10.1001/archinte.165.17.1946

Appendix A: Johns Hopkins Nursing Evidence-Based Practice Research Evidence Appraisal Tool

Evidence Level and Quality: _____

Article Title:	Number:
Author(s):	Publication Date:

Journal:

Setting:	Sample (Composition & size):

Does this evidence address my EBP question?	☐Yes	☐No Do not proceed with appraisal of this evidence

Level of Evidence (Study Design)

A. Is this a report of a single research study? ***If No, go to B.***		☐Yes	☐No
1. Was there manipulation of an independent variable?		☐Yes	☐No
2. Was there a control group?		☐Yes	☐No
3. Were study participants randomly assigned to the intervention and control groups? ⟶		☐Yes	☐No
If Yes to all three, this is a Randomized Controlled Trial (RCT) or Experimental Study	☐ LEVEL I		
If Yes to #1 and #2 and No to #3, OR Yes to #1 and No to #2 and #3, this is Quasi ⟶ Experimental (some degree of investigator control, some manipulation of an independent variable, lacks random assignment to groups, may have a control group)	☐ LEVEL II		
If No to #1, #2, and #3, this is Non-Experimental (no manipulation of independent variable, can be descriptive, comparative, or correlational, often uses secondary ⟶ data) **or Qualitative** (exploratory in nature such as interviews or focus groups, a starting point for studies for which little research currently exists, has small sample sizes, may use results to design empirical studies)	☐ LEVEL III		
NEXT, COMPLETE THE BOTTOM SECTION ON THE FOLLOWING PAGE, "STUDY FINDINGS THAT HELP YOU ANSWER THE EBP QUESTION"			

B. Is this a summary of multiple research studies? *If No, go to Non-Research Evidence Appraisal Form.*		☐Yes	☐No
1. Does it employ a comprehensive search strategy and rigorous appraisal method (**Systematic Review)?** *If No, use Non-Research Evidence Appraisal Tool; if Yes:*		☐Yes	☐No
a. Does it combine and analyze results from the studies to generate a new statistic (effect size)? (**Systematic review with meta-analysis**)		☐Yes	☐No
b. Does it analyze and synthesize concepts from qualitative studies? (**Systematic review with meta-synthesis**)		☐Yes	☐No
If Yes to either a or b, go to #2B below.			
2. For Systematic Reviews and Systematic Reviews with meta-analysis or meta-synthesis: a. Are all studies included RCTs?	⟶ ☐ LEVEL I		
b. Are the studies a combination of RCTs and quasi-experimental or quasi-experimental only?	⟶ ☐ LEVEL II		
c. Are the studies a combination of RCTs, quasi-experimental and non-experimental or non-experimental only?	⟶ ☐ LEVEL III		
d. Are any or all of the included studies qualitative?	⟶ ☐ LEVEL III		
COMPLETE THE NEXT SECTION, *"STUDY FINDINGS THAT HELP YOU ANSWER THE EBP QUESTION"*			

STUDY FINDINGS THAT HELP YOU ANSWER THE EBP QUESTION:

NOW COMPLETE THE FOLLOWING PAGE, "QUALITY APPRAISAL OF RESEARCH STUDIES", AND ASSIGN A QUALITY SCORE TO YOUR ARTICLE

Quality Appraisal of Research Studies

• Does the researcher identify what is known and not known about the problem and how the study will address any gaps in knowledge?	☐Yes	☐No	
• Was the purpose of the study clearly presented?	☐Yes	☐No	
• Was the literature review current (most sources within last 5 years or classic)?	☐Yes	☐No	
• Was sample size sufficient based on study design and rationale?	☐Yes	☐No	
• If there is a control group:			
o Were the characteristics and/or demographics similar in both the control and intervention groups?	☐Yes	☐No	☐NA
o If multiple settings were used, were the settings similar?	☐Yes	☐No	☐NA
o Were all groups equally treated except for the intervention group(s)?	☐Yes	☐No	☐NA
• Are data collection methods described clearly?	☐Yes	☐No	
• Were the instruments reliable (Cronbach's α [alpha] $\geq$ 0.70)?	☐Yes	☐No	☐NA
• Was instrument validity discussed?	☐Yes	☐No	☐NA
• If surveys/questionnaires were used, was the response rate $\geq$ 25%?	☐Yes	☐No	☐NA
• Were the results presented clearly?	☐Yes	☐No	
• If tables were presented, was the narrative consistent with the table content?	☐Yes	☐No	☐NA
• Were study limitations identified and addressed?	☐Yes	☐No	
• Were conclusions based on results?	☐Yes	☐No	

Quality Appraisal of Systematic Review with or without Meta-Analysis or Meta-Synthesis

• Was the purpose of the systematic review clearly stated?	☐Yes	☐No
• Were reports comprehensive, with reproducible search strategy?	☐Yes	☐No
o Key search terms stated	☐Yes	☐No
o Multiple databases searched and identified	☐Yes	☐No
o Inclusion and exclusion criteria stated	☐Yes	☐No
• Was there a flow diagram showing the number of studies eliminated at each level of review?	☐Yes	☐No
• Were details of included studies presented (design, sample, methods, results, outcomes, strengths and limitations)?	☐Yes	☐No
• Were methods for appraising the strength of evidence (level and quality) described?	☐Yes	☐No
• Were conclusions based on results?	☐Yes	☐No
o Results were interpreted	☐Yes	☐No
o Conclusions flowed logically from the interpretation and systematic review question	☐Yes	☐No
• Did the systematic review include both a section addressing limitations and how they were addressed?	☐Yes	☐No

QUALITY RATING BASED ON QUALITY APPRAISAL

A <u>**High quality:**</u> consistent, generalizable results; sufficient sample size for the study design; adequate control; definitive conclusions; consistent recommendations based on comprehensive literature review that includes thorough reference to scientific evidence

B <u>**Good quality:**</u> reasonably consistent results; sufficient sample size for the study design; some control, and fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence

C <u>**Low quality or major flaws:**</u> little evidence with inconsistent results; insufficient sample size for the study design; conclusions cannot be drawn

Appendix B – *Facility Approval Letter*

July 9, 2020

Jonathan David White
68 l Laniers Mill RD
Danville, VA 24540

Dear Jonathan David White,

I have reviewed your request to perform your DNP project at Roman Eagle Rehabilitation and Healthcare Center. Included in your request is the review of current and previous patient records, interview of patient care staff, and utilization of data for the educational purposes of the DNP project.
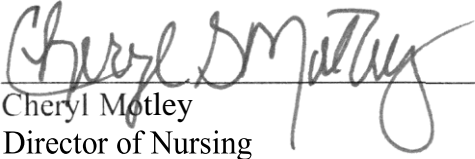
I fee1 that this project will be beneficial to Roman Eagle Rehabilitation and Healthcare Center. You have my permission to use internal data, interact with employees, and consult with various departments within the facility to perform your project.

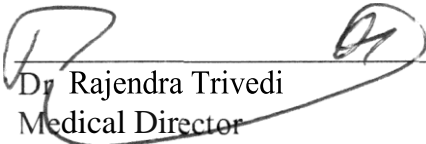**The following stipulations should be observed:**

- All project work shall be done on personal time;
- The company name shall not be disclosed in the project;
- Results shall be shared with appropriate staff members.
-

If you have any questions regarding this letter of approval, please call me at (434)836-9510.

Respectfully,

Cheryl Motley
Director of Nursing

Dr Rajendra Trivedi
Medical Director

Appendix C - **PDSA Worksheet (short version)**

1: Define your aim, the overall goal you wish to achieve. 2. Plan the first (or next) test of change toward achieving the aim. 3. Do the test; 4. record and study the results. 5. Act to modify the plan for your next test.

Aim: By December 31, 2021, elderly residents at the designated project site in Danville, VA will experience a 10% reduction in falls when compared to the previous year after the implementation of weekly delirium screening.

Plan

Describe your first (or next) test of change:

Residents will be screened weekly for delirium using the Simple Question for Easy Evaluation of Consciousness (SQeeC).

Who is responsible:
The DNP Student

When is it to be done:
Weekly x 8 weeks

Where is it to be done:
In the long-term care facility

List the tasks needed to set up this test:

The SQeeC consists of 2 simple questions that determine the level of cognitive functioning at any particular time. These questions are:

1. "Name a place you would like to visit that you have never been before;" and, **2.** "How would you make the journey?"

Who:
The charge nurses will ask each resident these questions and record their responses in the EHR.

When:
Questions will be asked weekly, between the hours of 10 am and 2 pm to allow each resident enough time to adequately awake.

Where:
Questions will take place at the bedside.

Predict what will happen when the test is performed: List measures for assessing the predictions:

I predict that there will be the presence of delirium among some of the residents. Research has shown that this is difficult to detect in this population which predisposes those who are suffering from acute delirium to higher than normal risk for falls. As such, I hypothesize that the detection of delirium will decrease the number of falls.

Incident reports related to falls will be analyzed and compared to the same time period of the previous year to determine if delirium screening leads to a significant change in falls.

Institute for Healthcare Improvement

Do

Describe what actually happened when you ran the test:

Study

Describe the measured results and how they compared to the predictions:

Act

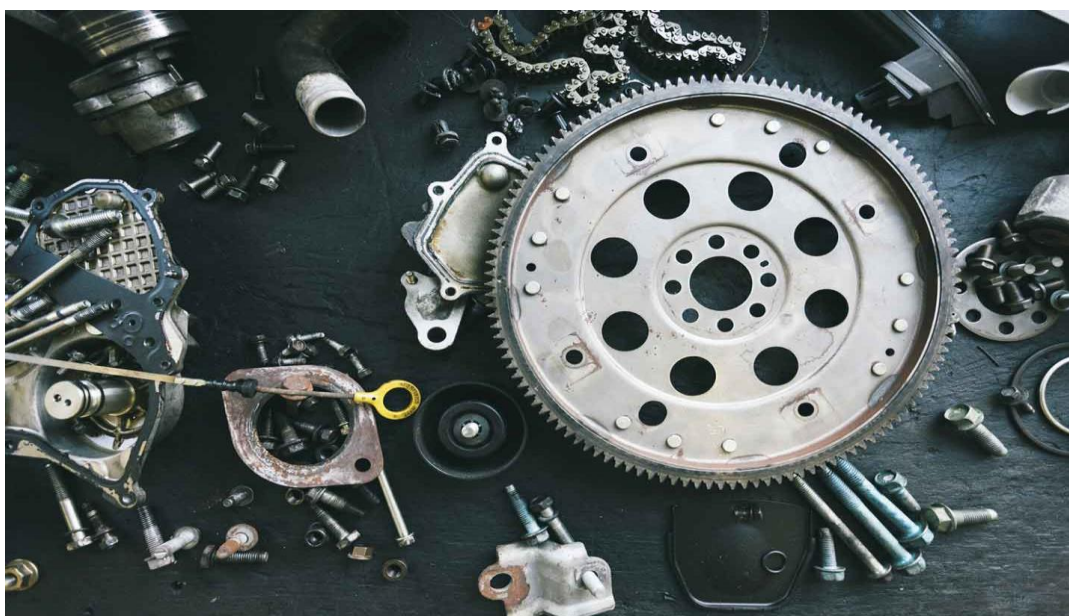**Describe what modifications to the plan you'll make for the next cycle, based on what you learned:**

Appendix D

Delirium Awareness

In the Healthcare Setting

Detection is Key

- Acute delirium often goes undetected – especially in the elderly population. Studies show up to 75% of cases go undiagnosed [1].

- Like a motor torn down to its parts, the brain of a patient with acute delirium does not work properly. There may be a sudden onset of *confusion*, *inattention*, *disturbances in perception*, and/or *illogical speech* [2].

- Among the elderly, this is difficult to diagnose due to the presence of dementia which has similar presenting symptoms.

- Delirium places patients at an increased risk for falls [2], but it can be treated and is reversible making early detection extremely important.

References

[1] Buettel, A., Cleary, M., & Bramble, M. (2017). Delirium in a residential care facility: An exploratory study of staff knowledge. *Australasian Journal on Ageing*, *36*(3), 228–233. https://doi.org/10.1111/ajag.12452

[2] Bull, M. J., Boaz, L., & Jermé, M. (2016). Educating Family Caregivers for Older Adults About Delirium: A Systematic Review. *Worldviews on Evidence-Based Nursing*, *13*(3), 232–240. https://doi.org/10.1111/wvn.12154

Appendix E

Delirium Screening

With the Simple Query for Easy Evaluation of Consciousness (SQeeC)

The SQeeC is a screening tool that can be utilized at the bedside in *simple* conversation. The tool assesses the current level of consciousness through two probing statements/questions.

1. "Name a place you would like to go that you have never been to before."
2. "How would you make the journey?"

The SQeeC tests the intactness of an individual's conscious reasoning [1]. Though simple, studies have shown the SQeeC to be highly effective in determining the presence of delirium. And best of all – it only takes 20 – 30 seconds to perform within the confines of a simple conversation!

- A person is determined to have delirium if they cannot logically connect a place with a reasonable mode of transportation (e.g. "I would go to England in a car.").

- A person is determined not to have delirium if they pick a logical method of transportation to go to their desired location (e.g. "I would fly to Australia.").

Reference

[1] Lin, H.-S., Eeles, E., Pandy, S., Pinsker, D., Brasch, C., & Yerkovich, S. (2015). Screening in delirium: A pilot study of two screening tools, the Simple Query for Easy Evaluation of Consciousness and Simple Question in Delirium. *Australasian Journal on Ageing*, *34*(4), 259–264. https://doi.org/10.1111/ajag.12216

Appendix F: Johns Hopkins Nursing Evidence-Based Practice Synthesis Process and Recommendations Tool

PICOT Question:

Category (Level Type)	Total Number of Sources/ Level	Overall Quality Rating	Synthesis of Findings Evidence That Answers the PICOT Question
Level I ▪ Experimental study ▪ Randomized controlled trial (RCT) ▪ Systematic review of RCTs with or without meta-analysis ▪ Explanatory mixed method design that includes only a Level I quaNtitative study			
Level II ▪ Quasi-experimental studies ▪ Systematic review of a combination of RCTs and quasi-experimental studies, or quasi-experimental studies only, with or without meta-analysis ▪ Explanatory mixed method design that includes only a Level II quaNtitative study			
Level III ▪ Nonexperimental study ▪ Systematic review of a combination of RCTs, quasi-experimental and nonexperimental studies, or nonexperimental studies only, with or without meta-analysis ▪ QuaLitative study or meta- synthesis ▪ Exploratory, convergent, or multiphasic mixed-methods studies ▪ Explanatory mixed method design that includes only a level III QuaNtitative study			

Category (Level Type)	Total Number of Sources/ Level	Overall Quality Rating	Synthesis of Findings Evidence That Answers the EBP Question
Level IV ▪ Opinions of respected authorities and/or reports of nationally recognized expert committees or consensus panels based on scientific evidence			
Based on your synthesis, which of the following four pathways to translation represents the overall strength of the evidence?			
Level V ▪ Evidence obtained from literature or integrative reviews, quality improvement, program evaluation, financial evaluation, or case reports ▪ Opinion of nationally recognized expert(s) based on experiential evidence			

Institute for Healthcare Improvement

Recommendations based on evidence synthesis and selected translation pathway

Consider the following as you examine *fit:*

Are the recommendations:
 	
   ▪ Compatible with the unit/departmental/organizational cultural values or norms?
 	
   ▪ Consistent with unit/departmental/organizational assumptions, structures, attitudes, beliefs, and/or practices?
 	
   ▪ Consistent with the unit/departmental/organizational priorities?

Consider the following questions as you examine *feasibility:*

▪ Can we do what they did in our work environment?
   ▪ Are the following supports available?
        ▪ Resources
        ▪ Funding
        ▪ Approval from administration and clinical leaders
        ▪ Stakeholder support
   ▪ Is it likely that the recommendations can be implemented within the unit/department/ organization?

- Strong, compelling evidence, consistent results: Solid indication for a practice change is indicated.

- Good and consistent evidence: Consider pilot of change or further investigation.

- ❑ Good but conflicting evidence: No indication for practice change; consider further investigation for new evidence or develop a research study.

- ❑ Little or no evidence: No indication for practice change; consider further investigation for new evidence, develop a research study, or discontinue project.

If you selected either the first option or the second option, continue. If not, *STOP*—translation is not indicated.

Appendix G - Data Analysis Tool

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
SQeeC Screenings Completed								
Positive Screenings								
(By gender)								
-Male								
-Female								
(By race)								
-White								
-African American								
-Native American								
-Asian								
-Other								
(By age)								
-≤ 60								
-61-70								
-71-80								
-81-90								
-≥ 91								
Total Falls								
Total Falls (Comparative Time Period)								
% Change**								