Winter 12-17-2021

Implementation of an Acute Care for the Elderly (ACE) Unit in a Community Hospital

Kimberly A. Colonnelli
University of San Francisco, kacolonnelli@usfca.edu

Follow this and additional works at: https://repository.usfca.edu/dnp

Part of the Nursing Commons

Implementation of an Acute Care for the Elderly (ACE) Unit in a Community Hospital

Kimberly A. Colonnelli, DNP(c) MA, BSN, RN, NE-BC

University of San Francisco

School of Nursing and Health Professionals

DNP Committee Chair: Dr. Mary Lynne Knighten

DNP Committee Member: Dr. Cathy Coleman

November 14, 2021

Table of Contents

Implementation of an Acute Care for the Elderly (ACE) Unit in a Community Hospital

Section I: Abstract

Background: "Baby boomers" (born between 1946 and 1964) represent 15% of the total population of the United States (Population Reference Bureau, 2019), but 50% of its total healthcare expenses (Mattison, 2021). Growth of this population will have a corresponding rise in demand on healthcare resources. Replication of a geriatric inpatient care model (Palmer et al., 1994) was introduced in a large geographically and ethnically diverse integrated care delivery system.

Problem: The demographic for this small community hospital located in Northern California has a larger percentage of patients over the age of 65 compared to other facilities within this delivery system. On the 24-bed intervention unit, an overall fall rate of 2.17 per 1000 patient days was present compared to a national fall rate of 3-5 falls per 1000 patient days (AHRQ, 2019). Baseline 30-day readmission rate for this unit of four patients per month and length of stay (LOS) of 3.9 days. Patients on this unit had a discharge diagnosis of delirium of 18% compared to a national range of 3-16% (Inouye et al., 2007).

Methods: Review of literature revealed a geriatric model of care improved outcomes (Counsell et al., 2015; Fox et al., 2013: Palmer et al.,1994). A cost avoidance analysis was conducted as well as the development and definition of inclusion/exclusion criteria and a microsystem assessment.

Interventions: An ACE pilot unit was implemented in this community hospital with key interventions formation of an ACE Steering Committee, physical modifications to the unit and daily multi-disciplinary rounds that incorporated a patient-centered approach to optimize patient and organizational outcomes.

Results: Outcome data were collected on 51 patients admitted to the ACE unit between April 26, 2021, and August 31, 2021. One fall without injury was recorded for the unit and no 30-day readmissions to the ACE unit. Length of stay was reduced by two days and no significant changes in the number of patients discharged with a delirium diagnosis occurred.

Conclusions: The ACE unit in one community hospital improved outcomes with reduced falls, lengths of stay, and readmissions. Hospital administrators and nursing leaders need to consider expanding the inclusion criteria and introduce ACE unit implementation with concurrent evaluation.

Keywords: Acute Care for the Elderly, geriatric, outcomes, falls, length of stay, delirium

Implementation of an Acute Care for the Elderly (ACE) Unit in a Community Hospital

Section II: Introduction

Acute Care for the Elderly (ACE) is a mode of specialized care first implemented in the early 1990s (Palmer et al., 1994). The original randomized clinical trials (RCTs) revealed a benefit to applying four basic principles to the care of older patients: (a) modified physical environment, (b) multidisciplinary care team, (c) daily medical review, and (d) early discharge planning (Palmer et al., 1994).

Background

The foundations of care for the elderly in the United States go back centuries (Achenbaum & Carr, 2014). Family members, neighbors, and local churches offered support based upon genuine concern and cultural expectations. Those who arrived from Europe rarely survived to "old" age; therefore, the demand for senior care was manageable (Achenbaum & Carr, 2014). In the year 1900, life expectancy at birth was 47 years for men and 49 years for women (Hoyt, 2021). Thanks to advances in medicine and healthier lifestyles, today's Americans are living much longer, which has led to exponential growth in healthcare services to meet the increased demands and complexity of care for patients over the age of 65. The elderly population will increase substantially over the coming decades due to steadily growing longevity (Haseltine, 2018), with those over the age of 85 representing the fastest-growing segment (Lee et al., 2013).

Problem Description

Admitted patients over 65 years are at higher risk for hospital-associated complications (Fox et al., 2013). The unfamiliar environment puts hospitalized patients at a higher risk for falling, as well as delirium (Collier, 2012; Dykes et al., 2010) and hospitalizations pose a future risk to patients when their functional independence is not restored before discharge (Palmer et

al., 1994). Absent mitigating factors, associated medical costs will only rise, negatively impacting the health and quality of life for elderly patients and further burdening the healthcare system.

Decline among seniors is not always caused by disease or injury, but by the physical and mental changes that come with age, making for greater susceptibility to stress (Creditor, 1993). The physiologic changes in elderly patients are often defined as "geriatric syndrome," where the patient is less likely to adapt to the hospital environment, leading to increased healthcare utilization and functional decline (Lee et al., 2013). Consequently, it is crucial to minimize additional risk and adverse events during hospitalization.

Aging inhibits physiological function by decreasing muscle strength and sensory awareness, weaking skin tissue, and destabilizing vasomotor function (Creditor, 1993). Hospitalized elderly patients typically rest in bed for many hours at a time, putting them at risk for accelerated bone loss, sensory deprivation, and immobility (Creditor, 1993). Functional decline can occur as soon as the second day of a hospital stay (Hirsch et al., 1990). Hospital-induced delirium is the most common complication of hospitalization for elderly patients (Tomlinson et al., 2016). Falls are a high risk for elderly patients and up to one-third of falls that occur across settings can be prevented (Agency for Healthcare Research & Quality, 2019).

Setting

The setting for the ACE unit was a medical-surgical unit located on the 4th floor within a community hospital in Northern California. The hospital is part of a larger, not-for-profit healthcare organization. The 4th floor has a capacity of 24 beds, eight of which were designated as an ACE unit using rooms 401 (capacity for 3 patients), 402 (private room), 403 (private room), 405 (private room), and 406 (capacity for 2 patients) (see 4th Floor Layout, Appendix A).

Patients were admitted to the ACE unit based upon admission criteria. The ACE unit's staffing ratio was one registered nurse (RN) to four patients and the plan was to dedicate one Patient Care Technician (PCT) solely for the ACE unit. The multidisciplinary team consisted of a geriatrician, hospitalist, pharmacist, social worker, patient care coordinator (PCC), geriatric clinical nurse specialist (CNS), PCT, and the bedside RN assigned to the patient.

Specific Aim

This project aimed to decrease harm for elderly patients while maintaining their functional status by implementing an organized approach to acute care. The proposed outcome measurements were a 10% reduction in falls and a 5% reduction in hospital-acquired delirium compared to baseline, during the 120-day pilot period. Prior to implementation of the ACE unit the team added readmissions and length of stay to the data collection The key driver was the possibility of participating in a research study with an academic medical center and needing to have consistency with outcomes measured. Added to the project but not part of the original prospectus was reducing length of stay (LOS) by .5 days and reducing re-admission rates by two per month.

Although research has demonstrated the benefits of a modified approach to the ACE model, where implementing some, but not all of the elements has shown improvement (Fox et al., 2013), this DNP student received support for a dedicated ACE unit utilizing the four main principles: (a) physical environment, (b) patient-centered care, (c) medical review, and (d) appropriate preparation for discharge. The plan was to implement all four components.

<div align="center">

Available Knowledge

</div>

The average life expectancy one century ago was fewer than 50 years, but with improved medical care, nutrition, and targeted injury prevention, it has risen substantially (Lynn, 2013).

This lengthened longevity has increased the number of elderly hospitalized patients. However, hospitalization hinders functional status, often in nonreversible ways (Creditor, 1993.

The hospital where this project was implemented was located in a community with an average age of 44.2 years (R. Malabed, Senior Data Analyst, personal communication, November 24, 2020). The community has had a higher-than-average growth rate for citizens 65 or older—3.23%. The hospital's percentage of patients over 65 was 24%—approximately 9% higher than the average in the region for this organization (R. Malabed, personal communication, November 24, 2020).

The typical workflow for a medical admission was to assign a patient to an open bed, generally on the 4th floor medical/surgical unit. Although the RNs assigned to the 4th floor (where the ACE unit is located) were trained in the care of geriatric patients, there was no organized approach to their care. Patients were assigned to the ACE unit from the Emergency Department (E.D.) using inclusion and exclusion criteria (see Appendix B). The hospitalist service provides in-patient coverage for hospitalized patients and most of the hospitalists have had geriatric training. Planning for a specialized unit for elderly care allowed a board-certified geriatrician to integrate into the team and participate as both a member of the ACE Steering Committee and in the multidisciplinary team sessions.

PICOT Question

Development of a PICOT (population, intervention, comparison, outcome, and timeframe; Melnyk & Fineout-Overholt, 2019) facilitated a comprehensive search, review of the literature and evaluation of evidence using the Johns Hopkins Nursing Research Evidence Appraisal Tool (Dang & Dearholt, 2018). The PICO(T) question: In patients over the age of 75 (P), how does hospitalization in a unit designed to care for the elderly (I), compared to

hospitalization in the general population (C), affect patient falls and hospital-onset delirium (O) within 60 days (T). The original pilot period for the ACE unit was 60 days, but this was expanded to 120 days to allow for optimal data collection. Prior to implementation of the ACE unit, the staff geriatrician, DNP student, and geriatric CNS agreed that LOS and 120-day readmissions data would be collected.

Search Methodology

The literature search included the PubMed database accessed through the University of San Francisco's Gleeson Library. The search was limited to professional journals and articles using keywords "ACE" and "Acute Care for the Elderly," "geriatric," "falls," AND "delirium," and using Boolean operators to combine and exclude key words. The search was initially limited to articles written between 2010 and 2020, which yielded 164 papers. However, further investigation determined that the ACE model was initiated in 1990; therefore, the search was expanded to 1989 – 2020, resulting in 210 articles. Publications that addressed delirium or falls in a post-acute or home setting, care of the elderly in the ED or with COVID, trauma, and orthopedic related care were excluded, decreasing the number to 116. The articles chosen for inclusion in the literature review were those where an ACE or geriatric unit had been implemented and outcomes measured, strategies to avoid hospital induced delirium or falls, and articles that included the genesis of the concept of the ACE model, resulting in 15 relevant studies. Additionally, an appointment was made with the university librarian to ensure a comprehensive search.

Integrated Review of Literature

A total of 15 articles were selected for the literature review. Exclusion criteria included studies focused on care of the elderly in critical care, falls or dementia at home, and articles

focused on reducing LOS or readmissions, although it was agreed to include LOS and readmissions in the data collection. One study was eliminated because, although well designed, no findings were published.

Of the 14 articles reviewed, two were level I randomized clinical trials (Landefeld et al., 1995; Yoo et al., 2013), one was a level I randomized controlled trial (Counsell et al., 2015), two were level I systematic reviews (Fox et al., 2013; Palmer et al., 1994), one was a level I prospective matched cohort study (Hung et al., 2013), one was a level II quasi-randomized controlled trial (Wald et al., 2011), one was a level II controlled clinical trial (Inouye et al., 1999), one was a level II observational study (Pérez-Zepeda et al., 2011), one was a level III non-concurrent prospective study (Abdalla et al., 2017): one was a level III secondary review of data (Barnes et al., 2012), one was Level IV clinical practice guidelines (Palmer, 2018), one was an expert opinion (Labella et al., 2011), and one was a level V integrated literature review (Steele, 2010), (see the Table of Evidence, Appendix C).

The literature review revealed several themes that served to guide this DNP student in development of the ACE unit project. The first theme was the benefit of an elder care model. An organized approach to the care of the elderly had a positive benefit for patients. These were studies comparing ACE or geriatric outcomes to "usual care" patient outcomes. Clinical practice guidelines and recommendations for geriatric care were included in this section as they also demonstrated the benefits of key interventions for elderly patients. Alternatives to the ACE model as a theme were of interest to guide this DNP student in evaluating interventions other than ACE. Included under this section was an article that studied patient outcomes if only one of the ACE interventions could be implemented. Since falls and delirium were identified as problems for this DNP project, articles specific to interventions implemented to prevent falls and

hospital acquired delirium were grouped as a theme. Finally, one article was included under the theme of sustainability of the ACE model. Palmer re-evaluated his work from the early 1990's and determined that the interventions and approach recommended then was still applicable. (Palmer, 2018).

Benefit of an Elder Care Model

Credit is given to Palmer et al. (1994) for developing the ACE model of care at University Hospitals of Cleveland (UHC). This seminal work described the rationale for an ACE model of care delivery and ACE unit to reduce the functional decline of elderly patients admitted to an Acute Care Setting (ACS). The ACE unit was implemented in 15 beds within a medical unit at UHC in 1990, where 655 patients were enrolled in a randomized clinical trial (RCT) to determine the success of a model described as "pre-habilitative." The ACE unit model comprises four main components: (a) appropriate physical environment, (b) medical care review, (c) interdisciplinary team rounds, and (d) early discharge planning. The primary RN has the responsibility of assessing patient function, risk of falls, and cognitive deficits. Palmer (1994) described the ACE model interventions as "low tech" and stated that interventions should be offered to all acutely-ill elderly patients. The strength of evidence is level I-A. The worth to practice is strong, as this model is still being used in hospitals worldwide to improve care for the elderly patient in an ACS.

Landefeld et al. (1995) published the study's findings mentioned in the 1994 Palmer article. This RCT determined if the benefits of admission to the ACE unit outweighed the benefits of any single component in the ACE model. A total of 327 patients were admitted to the ACE unit and 324 patients were admitted for usual care. The ACE unit's key elements included a prepared physical environment, patient-centered care, early discharge planning, and medical care

review. Research assistants interviewed patients and family members to measure functional status upon admission. The results revealed that 21% of the patients admitted to the ACE unit improved their performance of basic activities of daily living (ADLs), compared to 13% of patients admitted to usual care (P=0.009). Changes in ability to perform ADLs from admission to discharge were measured. The patients admitted to the ACE unit improved in bathing and dressing (P=0.006 and P=0.02, respectively), but improvements in transferring from bed to chair and toilet were not statistically significant (P=0.2 and P=0.3, respectively). Fewer patients admitted to the ACE unit were discharged to long-term care (14%) compared to usual care patients [(22%), (P=0.01)]. The strength of the evidence is level I-A. After years of ongoing implementation, the ACE model has established a track record of strong worth to practice for improving clinical practice and care of elderly patients in an ACS.

Barnes et al. (2012) influenced development of the first ACE unit and published a secondary review of data from one of three initial RCTs comparing care on the ACE unit to patients receiving usual care. After initial implementation of the ACE unit at UHC, an RCT was conducted at each of the following hospitals: UHC, Akron City (community hospital), and again at UHC. The third RCT found no impact on patient function, as the study focused on cost and LOS. The cost was of less concern in the early 1990s, and subsequently, the article was published in abstract form only. Barnes et al. (2012) reviewed the third study's complete results and made the case for relevance in the present day due to concern for efficiency and cost containment and used a tool to convert reimbursement from 1994 rates to 2011 rates. Providers in ACSs have shifted to hospitalists, including those on an ACE unit; utilization of hospitalists effectively reduces LOS and cost. Additional geriatric training may be needed for providers working on an ACE unit. The authors hypothesized that the ACE model's interdisciplinary team approach and

the focus on functional status was more efficient for older patients. The primary outcomes were LOS and cost. The secondary outcomes included any change from admission to discharge in ADLs, physical therapy consults, orders for bed rest, use of restraints, and discharge planning documentation. The LOS for the ACE group was 6.7 days per patient, versus 7.3 days for the usual care group. There was no significant difference upon discharge in functional status between the ACE unit patients and usual care patients. There was no significant difference between the ACE unit and usual care patients in the other secondary outcomes. One major limitation concerned the gap between study completion and this publication, because the original study occurred more than 10 years before this article was written. Demographics changed, patients had aged, and acuity was higher, which made the ACE unit even more appropriate. The authors expressed that ACE components should be "usual care" for the elderly. They concluded that the original three studies, combined with studies over the years, have demonstrated that the ACE model of care benefits older adults (Barnes et al., 2012). The strength of this article is level III-A. Worth to clinical practice indicated that implementation of the ACE model improved functional outcomes for elderly hospitalized patients.

Pérez-Zepeda et al. (2011) conducted an observational study rather than an RCT with matched control groups or blinded randomization. These authors studied 70 patients admitted to a 20-bed Geriatric Evaluation and Management Unit (GEM) at one hospital within the Mexican Institute of Social Security in Mexico City (IMSS). The other patients were admitted to either of two general medical wards at another hospital and totaled 140 patients. The GEM patients had lower combined frequencies of functional decline, delirium, and pressure ulcers than did the general medical patients—24.3% compared to 40%. The secondary outcome was defined as patients having any one of the metrics measured: functional decline, pressure ulcer, or delirium.

The outcome with the most frequency was functional decline, occurring in 17.1% of GEM patients, versus 32.1% of general medical patients. The study also revealed a reduced delirium frequency of 7.1% for GEM patients, compared to 15.7% for general medical patients. There was a reduction in pressure ulcers and death during hospitalization for the GEM patients. The strength of this article is level III-A. The worth to practice is strong, as the outcomes support modified care for elderly patients in an ACS.

Counsell et al. (2015) hypothesized that using the ACE model would improve functional outcomes in older hospitalized patients. An RCT was done in a community hospital setting. This study is one of the three initial studies described in Palmer's 1994 article. For three years, 767 patients were randomly assigned to the ACE unit and 764 were assigned to usual care. Nursing staff did not float between the ACE unit and the general medical unit; however, attending and resident physicians did provide care to both groups. The standard ACE inventions were described as patient-centered care, physical environment, early discharge planning, and medical review to minimize iatrogenic illness. Nursing care plans to promote independent function were implemented more often for the intervention group at 79% compared to the usual care group at 50%; $P = .001$). The decline of ADLs from baseline to discharge was less frequent for the intervention group than for the usual care group (30% vs. 35%; $P = 0.051$). Fewer intervention patients had a composite outcome of either ADL decline from baseline or nursing home placement upon discharge (34% vs. 40%; $P = 0.027$). There was no significant difference in LOS and costs. The authors mentioned improved patient and provider satisfaction; however, they did not report data on that metric. Resources used in the hospital and post discharge were similar for both the intervention group and the usual care group. On the intervention unit, bed rest orders were discontinued earlier, and activity was advanced sooner than for usual care patients. Physical

and occupational therapy intervened earlier and on more patients. The ACE model differs from previous interventions in elderly acute care by changing the physical environment, nurses' role, and multidisciplinary rounds. The conclusion was that multi-component interventions can improve care for the elderly and possibly prevent ADL decline, and an ACE unit in a community setting might be enhanced by integrating with the hospitalist program. The strength of this article is level I-A. Worth to practice supports the value of implementing the ACE model of care in an ACS to improve patient outcomes.

Wald et al. (2011) evaluated an ACE unit managed by the hospitalist service in a quasi-randomized, controlled trial, where 122 patients were randomized to the ACE service and 95 were randomized to usual care. The primary goal was to determine if abnormal functional status was recognized and documented by the physician. The secondary outcomes were changes in dementia and delirium. The hospitalist group had five members, one of whom was board certified in geriatric medicine. The other four had attended what was described as a mini fellowship in geriatrics. The ACE unit did not modify the rooms, such as with equipment, and the nursing staff did not have any specific geriatric education. Providers were able to better recognize abnormal functional status in ACE patients than in usual care (68.9% vs. 35.8%, $P < 0.0001$) and abnormal cognitive status in ACE patients than in usual care (55.7% vs. 40%, $P<0.02$). The conclusion was that an ACE unit managed by the hospitalist service might improve care without increasing the use of resources. They could not determine a significant impact on clinical outcomes, such as falls. The attending hospitalists and residents rotated throughout the year, making it impossible to prevent contamination of the control group. Another limitation was the study being conducted soon after implementation, which did not allow for documentation of improvements or additional training (Wald et al., 2011). The strength of evidence is level II-A. It

was a sufficient sample size with definitive conclusions. The worth to practice is using the hospitalist service to manage the ACE unit may provide consistency and can improve outcomes, even without the other components of the ACE model, establishing that this strategy adds significant value to clinical practice.

Yoo et al. (2013) conducted an RCT that determined if the care of elderly patients by an interdisciplinary team (ITD) improved patient outcomes compared to those admitted to a general medical ward. A total of 236 patients were randomly admitted to the ITD and 248 were randomly admitted for usual care. The team consisted of physicians, nurses, pharmacists, social workers, nutritionists, physical therapists, occupational therapists, and speech therapists. The outcomes included delirium and hospital LOS. There was no significant difference in hospital-induced delirium between the two groups. LOS was reduced by 0.7 days to 6.1 (P=0.008) for patients cared for by the ITD team compared to the usual care patients at 6.8 days (P=0.008). Despite no significant change in delirium, the authors suggested a limitation concern of the medical staff's education before the study, as they were reminded in an education session on the importance of delirium prevention prior to patient enrollment in the study. The authors also acknowledged a possible limitation in data collection because the study coordinator used a nonrandomized process to assign patients into one of the two groups. The strength of evidence is level I-B. The worth to practice is the value of including an intervention that established a multidisciplinary team in the organizational infrastructure.

Alternatives for Geriatric Care.

Fox et al. (2013) conducted a systemic descriptive review of 13 clinical trials, inclusive of 6,839 patients, to determine if the implementation of one or more of the ACE model components would improve patient outcomes. The ACE components were listed as medical

review, early rehabilitation, early discharge planning, prepared environment, and patient-centered care. The outcomes studied were falls, pressure ulcers, delirium, functional decline, LOS, discharge destination, cost, mortality, and readmissions. In other literature, the ACE model consisted of four components. However, Fox et al., (2013) described five and distinguished early rehabilitation as an intervention, rather than including it within patient-centered care. Falls and pressure ulcers were reported in two of the 13 studies; delirium was reported in three of 13 studies. Patients admitted to the geriatric unit had fewer falls than those admitted to usual care [Risk Ratio (RR) = 0.51, P = .02] and less occurrence of delirium (RR=0.73, P = .001). Functional decline from baseline to discharge was reported in 6 of the 13 studies and revealed that admission to the geriatric unit had a significant difference in risk of functional decline (RR – 0.87, P = .01). There may be a benefit to implementing some or all of the ACE model components and further research is suggested. The strength of evidence is level I-A. Implementing at least some of the components of the ACE model may benefit patients and prevent risk of injury during hospitalization.

Hung et al. (2013) studied a mobile ACE model with a prospective, matched cohort study conducted on 173 pairs of patients to determine improved outcomes from a mobile ACE (MACE) service versus a unit-based ACE model. While ACE units have demonstrated advantages for elderly patients, they have not been widely implemented, largely due to space. Patient flow was also cited as a factor, as busy, acute care hospitals with rapid admissions and discharges cannot easily hold beds in reserve pending an ACE admission. The components of the MACE service were similar to the unit-based ACE model consisting of an interdisciplinary team of geriatricians, social workers, and clinical nurse specialists focused on coordination of care. The variables included falls, pressure ulcers, and catheter-associated urinary tract infections.

Results indicated that patients admitted to the MACE services had fewer adverse events than did the usual care group (9.5% versus 17%, P = .02) and have a reduction in LOS by 0.8 days. The team associated with this study hired a nurse coordinator, which was an additional cost to the organization; however, the authors suggested that this additional role would work to continue to improve outcomes and reduce LOS, thus offsetting the cost. A mobile ACE program may improve outcomes for an elderly patient population and be an acceptable alternative when space is limited. The strength of evidence in this article is level I-A. The worth to clinical practice is strong, as it suggests a reasonable alternative for implementation of the ACE model.

Steele (2010) conducted an integrative literature review of the three most prevalent care models for elderly hospitalized patients: (a) ACE, (b) Hospitalized Elder Life Program (HELP), and (c) Nurses Improving Care for Health-system Elders (NICHE). Six studies regarding the ACE model of care were reviewed; however, the author cited the limitation that four of them were conducted at the same hospital. Although the cost has not been significantly higher in the ACE model than in usual care, it was stated in one of the articles that it may be more expensive to care for patients in the ACE unit. The author found no statistically significant difference in cost. The HELP program design centered on maintaining physical and cognitive function during hospitalization and on maximizing independence at discharge. Protocols designed to minimize functional decline can be implemented based upon patient assessment. A specific program to provide education to the nursing staff is the NICHE program. The education provides a series of interventions that can be applied to elderly patients. . The ACE model requires a physical unit or space, and this could be a barrier to implementation. The NICHE research was limited to two studies, and it was difficult to conclude that NICHE alone improves outcomes. The authors were transparent in their findings and insightful in their conclusions and stated that acute geriatric care

needs additional research. The strength of evidence is level V-A. Worth to practice is that a geriatric model of care improves outcomes for elderly hospitalized patients.

Labella et al. (2011) outlined 10 ways to improve care for the elderly in an ACS, referring to their interventions as evidence based. Of the 10 interventions, seven could apply to an ACE unit setting. The authors confirmed that hospital encounters for the elderly lead to delirium, increased risk for falls, and functional decline. Elderly patients require a multi-factorial approach. Early interventions, such as physical or occupational therapy, early discharge planning, and adequate nutrition are beneficial. Additional measures suggested were frequent re-orientation, maintaining patients' sleep and wake cycles, and strict medication control. The strength of evidence is level V-A. The worth to practice is that there are critical interventions appropriate for elderly hospitalized patients without requiring the ACE model.

Margitić et al. (1993) reviewed six clinical studies from a prospective, multi-center pooled analysis project called Hospital Outcomes Project for the Elderly (HOPE). Common data were gathered by combining RCTs and a retrospective meta-analysis from separate intervention trials and submitted to a central repository. This work took place close to the same time frame as the pioneering work of Palmer et al. (1994). The authors stated that studies on geriatric units' efficacy were inconsistent due to study differences, such as selection criteria for the study population, hospital setting, gender, and intervention strategies. HOPE research found successful methods to minimize the functional decline in the hospitalized elderly and determined how different types of care influence quality of life and health in the elderly. Not mentioned was the cost of any additional personnel to manage the project. The literature search revealed no follow-up studies on the HOPE project. The worth to practice is that elderly hospitalized adults may benefit from a standardized approach to care.

Patient Outcomes Related to ACE Model of Care.

Abdalla et al. (2017) conducted a non-concurrent, prospective study using medical record review to evaluate the association of admission to an ACE unit and reduced patient falls. Patients were admitted to an ACE unit, or a general medical unit based upon screening by ED physicians. The ACE unit opened in 1990 and included four main elements: (a) patient-centered care, (b) physical design, (c) medical care review, and (d) discharge planning. Registered Nurses assigned to the ACE unit received geriatric training. Review of medical records for 7,069 ACE unit patients over two years revealed a total of 149 reported falls. There was a 73% reduction in falls for patients on the ACE unit compared to those on the general medical unit; however, the authors could not determine which intervention was responsible for that outcome. Preventive measures were followed more strictly on the ACE unit, such as physical therapy intervention, assistive devices, and avoiding catheters. Of note, there was a significant increase in patient falls for those who received one or more doses of any psychotropic or hypnotic medication, compared to patients who did not receive any of those medications although it is not stated on which unit that was identified. The strength of evidence is level III-A. The worth to practice is strong, as it reveals that putting the ACE model elements into practice will prevent harm to patients.

Inouye et al. (1999) conducted a controlled clinical trial with 852 matched sets of patients to determine if intervention of a multi-component delirium prevention protocol reduced hospital-onset delirium compared to the patients who were admitted to usual care. Members of the research team included a geriatric CNS, geriatrician, physical therapist, and volunteers. The intervention group was assessed for cognitive impairment, sleep deprivation, immobility, visual impairment, hearing impairment, and dehydration. Interventions matched the risk factor, such as re-orientation for cognitive issues, nonpharmaceutical sleep protocol for sleep deprivation, and

ambulation with assistance for immobility issues. In the intervention group, 9.9% of the patients

developed delirium, compared to 15% in the usual care group. There was no significant

difference in severity or recurrence of delirium. A limitation mentioned was possible

contamination of the usual care group due to the rotation of the attending physicians between the

intervention group and the usual care group. The conclusion was that a multi-component

intervention may effectively prevent delirium in a hospital setting. The strength of evidence is

level II-A. The delirium prevention strategies are consistent with the patient centered concept of

the ACE model with a strong worth to practice.

Sustainability of ACE Model

Palmer et al. (2018) conducted a qualitative review of the original clinical trials

evaluating the benefit for patients admitted to the ACE model, as compared to usual care. The

article also detailed the components of the ACE model of care. Palmer reviewed the development

of the ACE unit and the first three studies: ACE unit at University Hospitals of Cleveland

(UHC), ACE unit at Akron City Hospital, and a second clinical trial at UHC. Both UHC and

Akron City hospital implemented the ACE unit using the basic principles around modifications

to the environment, such as lighting and flooring, an early focus on discharge, and medical

review. They also included a goal of providing patient-centered care, defined as providing

respectful care that is tailored to patient preference and need, and including cultural traditions

and including family members in discussions. Palmer's 2018 review of the three studies showed

that patients were significantly better in their performance of ADLs upon discharge. Barriers to

implementation of an ACE unit were resistance to funding, as the ACE unit was not a revenue

generating program; the misconception that an ACE unit is a complex model of care; and the

shortage of geriatricians in the U.S. Palmer has written 10 articles about acute care for the elderly

and helped develop the ACE model at UHC. They concluded that the ACE model is still relevant 25 years after its inception. The strength of evidence is level IV-B. The worth to practice is recognition of barriers to implementation of the ACE model of care and the sustainability of the concept and implementation of the ACE model to improve outcomes for elderly hospitalized patients

Summary/Synthesis of Evidence

The review of the literature revealed common goals, whereby the ACE unit would mitigate the onset of a hospital-associated illness, such as delirium or minimize a complication of hospitalization, such as loss of functional status. The multidisciplinary team approach was consistently patient-centered and improved patient outcomes (Abdalla et al., 2017; Hung et al., 2013). The interventions associated with the ACE model will most likely reduce incidence of functional decline and hospital-onset delirium (Barnes et al., 2012; Counsell et al., 2015; Inouye et al., 1999; Pérez-Zepeda et al., 2011; Wald et al., 2011**).**

Fox et al. (2013) reviewed 14 trials on the effectiveness of the ACE components and patient outcomes. Of the five components, patient-centered care was the only one mentioned in all of the 14 trials, with interventions such as early mobility and maintaining cognitive function resulting in improved patient outcomes. Inouye et al. (1999) also found that early mobility minimized the risk of hospital-onset delirium.

Yoo et al. (2013) found no improvement in hospital-onset delirium; however, Pérez-Zepeda et al. (2011) and Counsell et al. (2015) reported decreased onset of delirium and improved functional status.

The conclusion was that the evidence answered the PICOT question of whether or not the ACE model of care has an impact on hospital onset delirium and falls. The evidence was strong enough to support the recommended change to practice.

Rationale

Conceptual Framework

The conceptual framework used for this project is from the Institute for Healthcare Improvement (IHI) model developed by Associates in Process Improvement (API). The IHI defined the science of improvement as one that underscores innovation, rapid-cycle testing, and spread, which then generates learning about any changes (IHI, 2020). The science of improvement includes the coordination of systems thinking, recognition of variation, psychology of change, and theory of knowledge and then applying them to improve performance of the process (API, 2020).

Theoretical Framework

The theoretical framework used for this project was Lewin's change theory. Lewin suggested that there were three stages of change: unfreezing, change, and refreezing (Petiprin, 2020). Lewin described the behavior seen in this model as forces working opposite each other (Petiprin, 2020). Unfreezing or refusing to let go of an old way of doing things had to be addressed in the education regarding the ACE unit. The change was the introduction of the ACE model of care. The refreezing was making sure the ACE model of care was a standardized way of approaching patient care for the elderly on the ACE unit.

The model for improvement includes the Plan-Do-Check-Act process and asks the following questions: *What are we trying to accomplish? How will we know that a change is an improvement? What change can we make that will result in improvement?* (API, 2020).

The *Plan* was to design and implement an ACE unit and the purpose was to improve patient outcomes, specifically to minimize loss of functional status and avoid hospital-onset injury or illness, such as falls or delirium. It was incumbent upon the DNP student, in partnership with the staff geriatrician and Patient Care Services (PCS) leaders, and based on evidence, to determine if this was a viable project. The DNP student met with both nursing and medical staff to determine their level of engagement and support. Acknowledging that the facility had an older-than-average population supported the concept of an ACE project.

The next step in the improvement process was *Do*. Components of this step included education for bedside staff and ancillary healthcare providers, which included defining the inclusion/exclusion criteria. Some physical modifications to the rooms were made during this phase.

During the next phase, *Check*, meetings were held with both the ACE Steering Committee and the ACE RN champions to determine successes and challenges and assist with development of strategies that could be implemented to overcome barriers.

The final step, *Act*, included modification of the plan. No changes were made during the 120-day pilot period. It was agreed upon by the staff geriatrician, geriatric CNS, and DNP student that any changes would await data evaluation following the pilot period and then the cycle would begin again with Plan, Do, Check, and Act.

Section III: Methods

Context

The American Association of Colleges of Nursing (AACN) developed the DNP essentials and cited them as being foundational competencies at the heart of an advanced nursing practice role (AACN, 2006). Specific to the ACE unit were Essential I: scientific underpinnings for

practice. Understanding nursing theory, in this case as it relates to the care of a target population, provides the foundation for advanced nursing practice, and prepares the DNP to specifically assess the delivery of healthcare and improve patient outcomes using evidence-based concepts (AACN, 2006). This organization uses Jean Watson's theory of caring science. Watson's theory supports nurses caring for patients while also promoting health and preventing illness (Watson, 2009). The ACE model of care is aligned with Watson's theory by focusing on maintaining functional status of elderly patients while working to avoid any hospital acquired negative outcomes.

Additional DNP essentials critical to planning for this project were Essential II: organizational and system leadership and Essential III: clinical scholarship and analytical methods for evidence-based practice. Following Essential II, this DNP student evaluated research available regarding ACE units and collaborated with the team on implementation of the ACE unit. Using DNP Essential III, this DNP student applied critical thinking and analytical methods in approaching an issue that healthcare organizations will continue to face—providing safe care to the hospitalized elderly. In addition, DNP Essential III supported ensuring that the project had taken both quality of care and patient safety into account.

It is critical that a DNP nurse leader translate knowledge into practice and focus on the needs of a specific patient population. Armed with the knowledge that this community was one with an older-than-average population, implementation of an ACE unit was a suitable project for this community hospital. Also considered was the concept of beneficence for elderly hospitalized patients. One broad definition of beneficence is charity and promoting good and kindness (Munyaradzi, 2012). In medical ethics, the term takes on a more defined meaning, requiring physicians to prevent harm and provide positive benefits to their patients (Munyaradzi, 2012).

Although the ACE unit is not an issue of medical ethics, the model of care proposed was intended to help patients and reduce harm.

This facility typically admitted medical patients to the 4th floor and surgical patients to the 5th floor. The staff on the 4th floor, where the ACE unit was located, as well as the hospitalist staff, were familiar with associated complexities in the care of older patients and supported the addition of an ACE unit.

This project's key stakeholders included the regional Chief Nurse Executive for the organization (see Appendix D for Statement of Support), the senior leadership team, and physician leaders for the facility where the ACE unit was implemented. The team acknowledged the high percentage of patients over 65 in this facility and the need to care for them in a different manner.

Interventions

The project was the implementation of an ACE unit consisting of several interventions: physical modifications, level of function assessment upon admission and at discharge, daily multi-disciplinary team rounds, and focus on early discharge. The project was proposed by this DNP student based on the knowledge that the age of the population in this community hospital was higher than average and the patients could benefit from a specialized and structured approach. The comprehensive literature search supported this proposal. Informal discussions with Patient Care Services and medical staff leaders revealed support for an ACE unit. Although literature supports a mobile ACE unit (Hung, et al., 2013), this hospital had the physical space for a designated ACE unit, inclusive of a patient room that had been converted to a break room that could be further converted into a multi-purpose room for patient activities promoting

functional and mental ability. Initial meetings were held with frontline staff on the unit and stakeholder support was solicited.

This project was introduced prior to the onset of the COVID-19 pandemic in the United States. Meetings regarding the ACE unit were suspended until September of 2020. The ACE Steering Committee was comprised of nursing leadership; physician leadership (including geriatrics and hospital-based services); and representatives from key departments, such as social work, patient care coordinator, physical therapy, pharmacy, pastoral care, and others. The ACE Champions consisted of staff RNs who were interested in acute care of the elderly and worked on one of two medical/surgical floors.

Education for the multi-disciplinary team included geriatric syndrome, history of the ACE unit, and the rationale behind proposed interventions (see Appendix E). Examples of interventions proposed included physical plant modification which allows for safety but also takes into consideration wall color changes and modified flooring, early ambulation, and multi-disciplinary rounding. Geriatric patients often see colors and patterns differently as they age (Warner, 2018), early ambulation can assist with minimizing functional decline (Palmer et al., 1994), and multi-disciplinary rounding ensures the entire team is following the same plan of care (Yoo et al., 2013). The education component also included a PowerPoint presentation given to the medical staff (see Appendix F). Team members included bedside staff, ancillary healthcare providers, medical staff, and chaplaincy. Additional staff included in the education plan, were house supervisors and ED staff.

Collectively, the ACE Steering Committee, with input from the staff geriatrician, agreed to open the ACE unit on April 26, 2021, with data being collected for the following 120 days.

Patients in the ED needing admission to the hospital were evaluated by a hospitalist and admitted using inclusion and exclusion criteria. Inclusion criteria (see Appendix B):

- Age 75 years or older:

- History of mild cognitive impairment

- Dementia (without active behavioral disturbance)

- Ambulatory

- Medical diagnosis

. Once the admitting order was written, the house supervisor was notified for bed location. This process worked well during the pilot phase of the ACE unit.

Patients and/or family members were consulted for permission before admittance to the ACE unit. Notes were entered into medical records by the hospitalist regarding patient admissions to the ACE unit. A "geriatric consult" was ordered in the Electronic Health Record (EHR), which helped to identify ACE patients during hospitalization and post admission for data collection.

Environment preparation for elderly patients, such as handrails in the hallways, visually contrasting floor coverings, enhanced lighting, and minimal clutter is mentioned in several of the studies found in the literature review (Fox et al., 2013; Landefeld et al., 1995; Palmer et al., 1994). Flooring and some lighting were replaced in the ACE unit for this project. Although handrails for the hallways were requested, that project was not approved by regional facility services due to other capital expenditure priorities. Adapted from Palmer (2018) -was a comprehensive checklist (see Appendix G) regarding guidelines on physical space.

Due to the resurgence of COVID-19, visitors were limited during most of the pilot period for the ACE unit. Ideally, family members would have participated in some aspect of the

patient's care such as assisting with ambulation and activities in the multi-purpose room. However, patients relied exclusively on nursing and support staff to assist in getting them up to use the multi-purpose room. The chaplaincy program began offering a music therapy program and the hospital was in the final stages of implementing a canine therapy program.

Upon admission, part of the RN patient assessment is performing the confusion assessment method (CAM) and completing a fall risk assessment using the Schmid fall risk tool. In addition, level of function is assessed by the clinician, noted as CLOF, and patient stated level of function noted as PLOF.

Multidisciplinary team rounds took place Monday through Friday, with some team members utilizing Microsoft Teams in place of in-person attendance. Attendance by team members at rounds was strong and the team became more engaged as they became more familiar with the process. Attendance continued to be a barrier for nursing staff due to the time of rounds and lack of coverage for their other patients.

The staffing initially proposed was an RN to patient ratio of one RN to four patients and one PCT for the unit. The RN staffing was consistent throughout the 120-day pilot period; however, the PCT for this unit was not consistently provided due to challenges in getting the positions approved and hired, turnover of PCT staff and multiple leaves of absence for that group of employees.

Gap Analysis

A gap analysis was completed in March 2020 and reviewed again in the fall of 2020 (see Appendix H). The purpose was to compare expected performance to exemplary implementation of this project. The current state was compared to the ideal state for the stated aims. Identified gaps included lack of senior leadership and physician knowledge about the ACE model;

however, that was addressed in the education that took place in spring of 2021, prior to implementation of the project. Another gap was lack of specific education available to staff. Numerous sessions were offered by the geriatric CNS for both nursing and allied health personnel. Finally, there was an identified gap of too little space for all patients who might qualify for admission to the ACE unit. This was addressed by increasing the minimum age to 75 years.

Gantt Chart

The goal of this project was the successful implementation of an ACE unit. A Gantt chart was completed to track significant milestones for the project (see Appendix I). All projects need support and a budget to get started—both were sought and received. Identification of space for the ACE unit was a key milestone due to the inherent delays in any type of construction or purchasing done within a hospital or hospital system. Concurrent with physical plant modifications were meetings with front-line nursing and medical staff. The project was delayed due to COVID-19; however, that was factored into the Gantt chart, therefore the proposed implementation of the ACE unit in quarter 2 of 2021 was still correct. A post implementation survey tool at the conclusion of the pilot period measured structure and process (see Appendix J) and the data results for the pilot period were available.

Work Breakdown Structure

A Work Breakdown Structure (WBS) tool was created to divide the project into manageable components (see Appendix K). The utilization of the WBS complements a Gantt chart in organizing a project. The WBS for this project was divided into level one, the project goal to design and implement an ACE unit and level two, the process improvement method using

the Plan-Do-Check-Act model (API, 2020). Under each of those components are the specific elements of that objective.

Plan. The first objective was to plan the project. This included obtaining approval from both the Area Manager for the DNP student and the regional Chief Nurse Executive. Meeting with the facilities staff regarding space are included under the plan. Nursing leadership worked with the facilities department to identify physical plant issues, as the building is 50+ years old and has a problematic infrastructure. Various repairs within the walls of the facility, to address sewer pipes and other issues, occur frequently and must be done in collaboration with delivering patient care.

When this hospital was expecting its first COVID-19 patients, leadership decided to place them, and future COVID patients, on the 4th floor, in the same rooms that had been identified for the ACE unit. This decision was based on the need to manage COVID-19 patients in negative pressure rooms. Once the Centers for Disease Control and Prevention (CDC) changed those guidelines, there was already an established process on the 4th floor rooms regarding the management of COVID-19 and it was decided to leave that workflow in place. There was a reduction in the number of COVID-19 patients following administration of the vaccine. In May 2021 California had the lowest average of cases per capita of any state (CBS, 2021). By June 2021 California had the least restrictive measures thus far, related to requiring personal protective equipment (PPE) in public, and large public venues were re-opening (CBS, 2021). Hospital leadership made the decision to move forward with the ACE unit in the space identified.

The Area Finance Officer (AFO) was contacted after the space was identified and a budget was established (see Appendix L). The budget was reviewed with the nurse manager for the 4th floor and then presented to the work team.

Do. Patient management in the ACE unit was assigned to the hospitalist service and that is still the process. A hospitalist physician champion was identified for the ACE unit, and they were instrumental in discussion, data review, and decision making. The hospitalist team was engaged in the workflow and success of the ACE unit. In addition, the facility had a geriatrician join the medical staff in 2020 and, eventually, the planning team. The project team met prior to the pandemic and the Gantt chart was reviewed at that time. Following the onset of the pandemic, ACE-related meetings were suspended to allow the team to focus on caring for COVID-19 patients. Once the meetings for the ACE unit were resumed, the Gantt chart was reviewed again to confirm no significant changes.

Check. Data were reviewed during the pilot period; however, other than reporting the total census, the details of the data were not initially shared with the team as it took some time to fine tune the exact data points to be collected with the data analyst and ensure appropriate interpretation. Informal feedback was collected during the pilot period during rounds as well as scheduled meetings.

Act. Due to the resurgence of COVID-19 and a census increase of approximately 20%, weekly meetings, as originally planned, were inconsistent.

According to IHI leaders and others, most improvement projects fail for lack of structure and planning, so the development and refinement of tools such as a Gantt chart and WBS plan clearly support success in complex change management initiatives (Mitchell, 2013).

Responsibility/Communication Plan

The DNP student submitting this project for approval was the CNE/COO at the facility where the project was implemented. The PCS leadership team engaged with this project consisted of the Director of Adult Services, Nurse Manager for Medical/Surgical Services, and

four Associate Nurse Managers (ANM) for Medical/Surgical Services. The team also included a geriatric Clinical Nurse Specialist (CNS) who was instrumental as a subject matter expert/consultant to the project.

The communication plan consisted of both written and electronic correspondence. On the unit, updates regarding the ACE project plan were shared during a huddle message at the start of each shift. The project was also discussed at staff meetings on all nursing units and the ANM meetings. A project update was given to the managers, directors, and hospitalist staff at their monthly meeting 60 and 30 days before execution. The hospital intranet featured information about the ACE unit project, and it was presented to the hospital's medical executive committee upon project approval and prior to implementation. The data were shared with the ACE Steering Committee and ACE RN champions September of 2021. Going forward, the plan is to present results of the 120-day pilot period to the Medical Executive Committee, facility leadership, and regional organizational leadership.

The nurses initially engaged in establishing the ACE unit were fully involved in the care of COVID-19 patients during most of 2020 pandemic. Time was spent in August 2020 re-engaging and reviewing the ACE unit concept with the front-line staff. Additional education was provided after project approval and before implementation. In addition, the geriatrician on the ACE team provided consistent messaging and education to the hospitalist group. Despite education coming from a variety of sources for both nursing and medical staff, the concepts of the ACE model and associated interventions are relatively easy to enable the team to apply interventions in a similar fashion. Moving forward, it would be of value to include the ACE unit in the competency checklist for new hires RNs and PCTs.

SWOT Analysis

An analysis of strengths, weaknesses, opportunities, and threats informed the intervention feasibility for this patient population (see Appendix M).

Strengths. This project's considerable strength lies in this project's DNP student having previous experience implementing a successful ACE hospital unit (Krall et al., 2012) and the addition of a staff geriatrician knowledgeable in the ACE model of care. Another visible and requisite strength was the enthusiastic support of both local and regional leadership. Available space and a geriatric CNS on staff were additional strengths.

Weaknesses. One of the weaknesses identified was a sense of complacency. The excessive turnover of senior leadership at this facility within the past 10 years has fostered attitudes of disregard and disinterest among some senior staff nurses. As newer nurses are hired, nursing leaders are able to slowly improve the culture. Another factor was the constant "churn" of nurses moving to other departments and/or other facilities. The manager for the 4th floor also had responsibility for the 5th floor; a possible concern was one person having a large span of control and not being able to depend upon reliable leadership oversight for the ACE unit, however, that concern proved to be unfounded. There will always be a strong influence by the union that represents nursing and that continues to impact the daily operations and culture at this facility. The role of the DNP was to ensure that proposed projects, such as the ACE unit, were supported by research, to use an evidence-based approach, and to communicate regularly with consistent messages.

Opportunities. The hospital has had significant leadership turnover during the past decade. This leadership inconsistency meant that locally, there was no one to engage and support the team with ideas for improvement. Very few initiatives were implemented locally unless they

were regionally directed. The ACE unit was an evidence-based project that none of the other facilities within this organization in northern California had implemented; thus, this setting is positioned to serve as a beta site from which to spread the model to other facilities. Another possible opportunity was the improvement of patient and family satisfaction. During the project's implementation phase, the patients on the ACE unit and the patients on the general 4th floor were surveyed as part of the patient experience program, but there was no means to distinguish between the two groups. However, anecdotal feedback from patients and family members to the RNs and unit leadership revealed satisfaction with the ACE unit as an option for their care.

Threats. The hospital where the ACE unit is located is part of a larger integrated delivery organization. Many decision makers are separated from the hospitals, both geographically and intellectually. As mentioned, numerous initiatives are routinely rolled out from both the regional and national offices, often simultaneously. It is a critical balancing act to ensure projects get prioritized, monitored, and funded appropriately. The possibility of another COVID-19 surge was identified as a threat when the SWOT analysis was conducted. This threat became a reality, and the plan was to admit COVID-positive patients to beds away from the ACE unit; however, due to the rise in census, it was not possible.

An unanticipated threat that was not included in the original SWOT analysis was adequate staffing levels. The organization implemented new software for managing Human Resources at the end of 2020; this system had a number of problems both on the user end with not enough education, and on the software end, with the tool not being effective as designed. In the early part of 2021, several staff retired or relocated to other positions. Both of those issues, coupled with the complex and cumbersome process of approving and posting requisitions led to extended delays in hiring replacement RN staff. Further, the PCT positions that were mutually

agreed upon with regional leadership were not initially posted and once posted, they were difficult to fill.

Budget

The estimated cost for this project was $25,180 for furniture and $2,600 for staff training and materials (see Appendix L). Patient chairs and bedside tables were purchased, as well as the items for the activity room. Purchase of draperies and lamps were postponed for future consideration. A tactile area was in the original budget for consideration. One example of this concept is the Snoezelen product (https://www.snoezelen.info). It provides various tactile and sensory stimulations for older patients to minimize functional decline, isolation, and boredom (Snoezelen, 2020). The tactile area was postponed due to cost. Another item that was initially recommended but has been put on hold due to other construction priorities is installing windows in the doors to the patient rooms. Also included in the budget was a one-time labor cost for staff training and incidentals, such as copier paper. In-kind donations were limited due to COVID but may be considered in the future. The organization limited on-site nursing students during most of 2021; however, their participation was eventually resumed in clinical rotations, and they could play a role as adjuncts to facility personnel in staffing and caring for ACE unit patients.

Return on Investment (ROI)

A review of the proposed outcomes was analyzed with the Area Finance Officer (AFO). Although readmissions and LOS were not included in the PICOT question, the literature supported a reduction in LOS and readmissions with the implementation of an ACE unit (Barnes, et al., 2012 & Palmer et al., 1994).

The daily cost for a medical admission was $2,260. The LOS was 3.9 for a patient over the age of 75 with a medical diagnosis. In analyzing the baseline for LOS, it was determined that

a reduction of 0.5 patient days would result in cost avoidance of $1,130 per patient, or $271,200 pro-rated from May through December (see Appendix N).

The average number of readmissions for patients over the age of 75 was 4 per month with an associated cost of $11,300 per readmission. If the ACE unit could reduce that by 2 per month, that would represent a cost avoidance of $22,600 or $180,800 pro-rated from May through December. The actual cost avoidance based upon a reduction in LOS of 2 days equaling $18,080 occurred for the pilot period. Although there were no readmissions to the ACE unit, there were 10 readmissions of patients who had been on the ACE unit. This averaged 2.5 readmissions per month during the pilot, which is 1.5 readmissions less than baseline, for a cost avoidance of $28,250 per month of the pilot. (see Appendix N).

Study of the Interventions

The interventions were selected due to the comprehensive literature review that supported the ACE unit concept in improving patient outcomes. The facility had the physical space for a "unit," rather than the need to use a mobile ACE approach (Hung et al., 2013). Utilizing eight contiguous beds meant that the nursing and management staff could see the ACE as a unit, as well as a patient-centric model of care. The approach chosen for assessing the impact of the interventions was analyzing the data collected regarding falls, delirium, LOS, and readmissions. It also included soliciting staff feedback. For example, informal feedback during the pilot period revealed that the bedside RNs had challenges attending multidisciplinary rounds both due to the time of day as well as ensuring coverage for their patients while attending rounds. There were also concerns about lack of staff and the difficulty the bedside RNs had implementing the components of the ACE model without the support of a PCT. Despite the numerous education

sessions offered, there was the perception by some staff members that there was not enough education prior to the start of the pilot period about the ACE unit.

Defining the inclusion/exclusion criteria for admissions to the ACE unit was critical, including age and no requirement for telemetry monitoring. During the pilot phase the team realized that the ACE unit volume was lower than expected and that was partly due to excluding patients requiring telemetry monitoring. Another possible factor was the minimum age of 75 years. In discussion with both the members of the ACE Steering Committee and the bedside RNs, it was agreed to continue excluding telemetry patients, but to consider lowering the minimum age to 70 years. The nursing leadership team felt compelled to respect the requests of the bedside nurses until other issues were resolved, such as the impact on the census due to 4th wave of COVID-19.

As mentioned in the Gap analysis (see appendix H), a possible risk was demand for the ACE unit exceeding capacity. One intervention of the ACE unit was putting patients in the same geographic area where COVID-19 patients had been just a few short months prior to April 2021. It was the high number of patients needing telemetry monitoring and a possible fourth wave of COVID-19 that threatened capacity limitations, not ACE patient volume. There were rooms on the opposite side of the floor, adjacent to the ACE unit. However, the nursing staff felt more comfortable having their patients closer together and at times, an ACE unit patient would be next door to a COVID-19 patient. Donning and doffing appropriate protective equipment and the risk of cross-contamination supported the conclusion to avoid mixing COVID-19 patient and ACE patient assignments, despite their close proximity.

The use of a multipurpose room was cited in the literature as an intervention in the ACE model (Fox et al., 2013). Having somewhere for patients to visit encourages mobility and allows

them to test cognitive skills, thus minimizing functional decline and delirium (Inouye et al., 1999). The RN staff were not as involved in early ambulation and the multipurpose room was underutilized due to staffing, lack of volunteers to participate with patients, and time constraints.

Palmer et al. (1994) highlighted the extended role for the RN on an ACE unit—one that allows the RN to modify diet and activity for patients based upon certain criteria. That was not an intervention during this pilot period but remains a focus of future consideration.

Outcome Measures

The objective of this evidence-based practice was to improve outcomes for patients over the age of 75 when admitted to an acute care facility. The ACE model is a function-focused approach to hospital care designed to address concerns and outcomes related to the care of the elderly (Wald et al., 2011). The measures chosen for this project were in collaboration among the staff geriatrician and the geriatric CNS, the DNP student, and the comprehensive review of the literature.

The plan for data collection was discussed and reviewed with a staff data analyst. They used a small set of data from the end of April 2021 and validated it against what was gathered from manual a chart review by the CNS. The instrument used was a program within Tableau created by the data analyst for this project. Tableau is a visual data analytics program that simplifies raw data and aims to make it easier to understand (Tableau, 2021). The contextual elements that contributed to the success of the project included the elements of IHI: Plan, Do, Check, Act. In addition, the DNP Essentials, supported the elements of communication, education, and evaluation of the ACE unit project.

Falls. The fall rate on 4 Med/Surg at this community hospital was 1.13 falls per 1000 patient days in 2020. In early 2021, that number had increased to 2.17 falls per 1000 patient days. The team at this hospital perceived falls to be an opportunity for improvement.

In general, fall rate patterns have not kept pace with the decline of other hospital-acquired conditions (France et al., 2017). The AHRQ estimated that between 700,000 and 1 million hospitalized patients fall each year, or 3-5 per 1,000 bed days (AHRQ, 2019). The hospitalization cost for a fall with injury is approximately $35,000 (Johns Hopkins, 2015).

The CDC stated that falls have been the leading cause of fatal and non-fatal injuries among patients over the age of 65, with a resulting cost to the U.S. healthcare system of $38 billion annually (CDC, 2017). Fewer than half of the patients who fall have discussed fall prevention with a health care provider and only a third of the elderly patients are screened for fall risk (Bhasin et al., 2018).

A successful strategy for minimizing falls is to incorporate the patient in the fall reduction strategy and if that is not possible, engage the family (T. Christiansen et al., 2020). Patients have better outcomes and better care experiences when they feel confident enough to manage their own health (T. Christiansen et al., 2020). Focusing on the patient's independence and maintaining their functional status on the ACE unit supports patient healing.

A component of a fall-reduction strategy is the epidemiology of patient falls. The three categories for patient falls are biological factors, such as muscle weakness, vision changes or arthritis; behavioral factors, such as inactivity, alcohol use, or risky behaviors; and environmental risk factors, such as clutter, low lighting, and lack of grab bars (Yoshida, 2007). A component of the ACE model of care is changing the physical environment by installing grab bars or handrails

and appropriate lighting. Fall reduction within the ACE unit was a measurable outcome for this project.

Delirium. Delirium is an acute, transient, usually reversible, fluctuating disturbance in attention, cognition, and consciousness level (Merck, 2019). It develops over a short period and can be linked to almost any disorder or medication (Wass et al., 2008). The prevalence of delirium in the community is 1–2%; however, it increases to between 14% and 24% in an acute care hospital setting (Fong et al., 2009). At this facility, 25.8% of patients from 4th floor med/surg were discharged with a delirium diagnosis. Among elderly patients, two-thirds of all cases of delirium occur in patients with underlying dementia. There are several potentially modifiable risk factors for elderly patients in developing delirium: sensory impairment, immobilization, medications, infection, and environment (Fong et al., 2009). Treatment and supportive measures generally correct the cause. The multidisciplinary team approach, as part of the ACE unit, included a focus on risk factors, such as medications and infection to avoid hospital-onset delirium. This information supported the inclusion of functional status in the outcomes measured.

Length of stay. Length of stay can be a mark of effective hospital management (Baek et al., 2018). The average length of stay for an acute care hospitalization is 4.5 days and the associated cost is $10,400 (Weiss, 2014). Reducing hospital length of stay reduces the risk of hospital acquired injury which improves patient outcomes (Stanton & Rutherford, 2006). It was anticipated that there would be a reduction in LOS as a natural consequence following implementation of the ACE unit in addition to reducing readmissions. Both of those outcome measures were added after the DNP student's prospectus was approved.

Team satisfaction. A post-project survey was developed to evaluate how prepared the team felt, if they had the resources to determine what could have been done differently, and any lessons learned (see Appendix J). The survey design was a collaborative effort among the project geriatrician, CNS, DNP student, and unit manager.

CQI Method and/or Data Collection Instruments

Patients admitted to the ACE unit were tracked by bed number. Patient confidentiality was protected and any identifying data (name, medical record number, or birth date) were eliminated. Data were collected from the incident reporting system, Medical Information Data Analysis System (MIDAS), for patient falls. Delirium was tracked using the CAM scoring system and patients admitted to the ACE unit were compared to the baseline established in the database as well as patients not admitted to the ACE unit but admitted to 4th floor med/surg. Total census, readmissions, and LOS were pulled from the EHR and reported using Tableau software.

Analysis

This project's independent variable was admission to the ACE unit versus admission to a general medical unit, also called "usual care." The dependent variables were patient falls and hospital-induced delirium. The null hypothesis was the absence of relationship between being admitted to the ACE unit and improved patient outcomes. The alternative hypothesis stated that admission to the ACE unit would impact fall or delirium outcomes for patients. Chi-square tests the relationship between two categorical or nominal variables and is used to determine whether the value for one variable was different from the other variable's value (Franke et al., 2011). A simple data table was used (see Appendix O).

The data used were the two groups of patients: ACE unit patients and usual care patients, and the outcomes of falls and delirium. Chi-square was used to determine if being on the ACE unit was related to a fall or a delirium diagnosis. The Chi-Square was $X^2 =1.78$, $p =.18$, which was significant at greater than .05 and demonstrates the presence of an association between the variables.

Pearson's correlation demonstrated whether two variables correlate or relate to each other (see Appendix P). Patients were identified by a geriatric consult that allowed them to be included in the data set. Any patient fall was reported using the MIDAS system. Delirium diagnoses were tracked via the EHR. The data were obtained from a Tableau report and analyzed using Excel.

A positive variance from admission clinical assessed level of function (CLOF) to discharge CLOF was an indicator of improved function. Among the patients admitted to the ACE unit, the CLOF variance and the number of falls had a mildly positive correlation, $r(3) =.24$, $p =.7$. For the same group of patients, the number of falls and a discharge diagnosis of delirium had a strong negative correlation, $r(3) = -.79$, $p =.11$. Finally, for the same group of patients, the CLOF variance and the patients with a discharge diagnosis of delirium had a mildly negative relationship, $r(3) = -.082$, $p =.9$.

The average LOS was reduced from four days for the baseline/usual care group to 2 days for the ACE unit patients. There were no readmissions to the ACE unit during the pilot period, however there were 10 patients identified who had been admitted to the ACE unit during the pilot period and were readmitted to the hospital but not meeting ACE unit criteria, and not admitted with a delirium diagnosis. Further analysis on the readmitted patients is required.

In addition to data collection, the Plan-Do-Check-Act method determined if this project successfully changed how care was delivered to this elderly population (see Appendix Q).

Plan: Recognize the opportunity for change in care delivery, including creating a business plan, meeting with both hospital and medical staff, and developing a budget.

Do: Implement the test of change, including developing and reviewing the inclusion criteria with staff, education of house supervisors, ED staff, unit nursing staff, ancillary clinicians, and medical staff.

Check: Meet with the team, evaluate the data, and determine if the space initially identified is sufficient for the demand.

Act: Execute based upon lessons learned and begin small testing cycles again, improving throughout the scope of the project. Communicate changes to the staff and ensure that changes are documented, which requires continuous monitoring (American Society for Quality, 2020).

A 10-question survey was administered to all staff who had worked on the ACE unit following the pilot period (see Appendix J). Respondents included 14 RNs, five social workers, one physician, one PCC, and one physical therapist. To protect confidentiality, the number of disciplines that answered each of the questions was not determined.

The following questions received the strongest positive responses:

- I knew what the goals for the ACE unit were.

    - 9% (2) strongly agree

    - 45.5% (10) agree

- I knew what was expected of me in my role on the ACE unit.

    - 9% (2) strongly agree

    - 41% (9) agree

- I feel there has been an adequate amount of communication about the ACE unit.

    - 9% (2) strongly agree

- 35% (8) agree

The following questions received the strongest negative responses:

- I feel we had the resources we need to care for ACE patients.

  - 18% (4) disagree

  - 50% (11) strongly disagree

- I felt we had the support we needed to attend and contribute to ACE rounds in an effective manner.

  - 36% (8) disagree

  - 63% (8) strongly disagree

Ethical Considerations

Moral and ethical considerations permeate almost every healthcare interaction (C. Christiansen & Lou 2001). The American Nurses Association (ANA, 2015) code of ethics contains 9 provisions with interpretive statements for each provision (ANA, 2015). Provision 1 states nurses will respect the worth of every patient, including the elderly (ANA, 2015). The Code of Ethics goes on to say in 1.3 that nurses will treat patients with dignity regardless of the contributing factors to their current health condition. Elderly patients often have many co-morbidities that may be attributed to earlier lifestyle choices such as pulmonary issues related to smoking and deserve to be treated with dignity regardless. Provision 3 advocates for and protects the rights of every patient and goes into more detail in section 3.4 regarding the RNs responsibility to adhere to hospital policies, investigate errors or near misses and support their colleagues in doing the same (ANA, 2015). The RNs working on the ACE unit need to model this expectation by following policies about assessment of functional status and fall risk assessment on each admission and participating in a root cause analysis if a fall occurs to assist

with working to prevent future falls. Provision 7 states that nurses can advance the profession "through research and scholarly inquiry." (ANA, 2015). The Code of Ethics goes on to say that knowledge occurs through clinical innovation and interprofessional collaboration (ANA, 2015). The ACE unit project illustrated this provision as this project was based on scholarly inquiry. Evidence-based practices use data to determine the effectiveness of an intervention (Gupta, 2003).

The University of San Francisco's (USF, 2020a) values include care of the whole person, known in Latin as "cura personalis." USF also specifically references Jesuit values when it mentions acting against the things that degrade human dignity and amplifying the voices of the underserved, disadvantaged, and poor (USF, 2020b). Included in the ANA definition of professional nursing is the protection and advocacy in caring for patients and family members (Epstein & Turner, 2015). The ACE model provides age-appropriate care and advocacy to the elderly—among the most fragile and vulnerable populations, who are often unable to speak for themselves.

Patient and family centered care is deliberately planned and implemented by the team (Knighten & Quaye, 2020). The care team works with the patient and family to ensure that needs and healthcare goals are met, as well as patient preferences (Knighten & Quaye, 2020). The ACE model is a patient and family-centered approach, where providers and clinical staff communicate with the patient and family members and prioritize services and treatment ordered for the patient (Palmer, 2018).

The DNP student for this project acquired the Institute for Healthcare Improvement (IHI) Basic Certificate in Quality and Safety (see Appendix R) and completed the Collaborative Institutional Training Initiative (CITI) Level I Behavioral Intervention (see Appendix S). Ethical

issues were covered in both courses. This was a non-research, evidence-based quality improvement project. Data were de-identified during collection and review. A Statement of Determination was submitted to and approved by the University of San Francisco DNP program (see Appendix T). The available knowledge for this project demonstrated that the ACE unit will be effective. Space constraints could pose an ethical dilemma by not providing the ACE model of care for all patients meeting criteria. If that occurs, the team will carefully examine how the ACE unit can be more inclusive, or how ACE strategies can be deployed as a mobile service.

Section IV: Results

The initial steps of the intervention included locating the space for the project, developing inclusion and exclusion criteria, educating the team, and following the Plan, Do, Check, Act process. No changes were made to the interventions during the 120-day pilot period.

The process measures for this project included early ambulation to avoid hospital onset of delirium and maintain functional status. Music therapy was introduced in August. Patient focused care is considered a process measure. Patient input and feedback was considered in all parts of the plan of care. The observed association among the interventions of a modified physical environment, partnered with multidisciplinary rounding and a patient focused approach, and the outcomes demonstrated that the ACE model of care prevents harm and may improve function.

The unintended staffing shortage meant that nurses were often without coverage for a lunch break or during multidisciplinary rounds and, as previously mentioned, did not have consistent help of a PCT on the unit. This hindered making early mobilization and movement to the multipurpose room a priority however that lone could not be tied to any functional decline. Both were approaches intended to minimize hospital onset of delirium and reduce falls.

Section V. Discussion

This project aimed to decrease harm to elderly patients and maintain functional status by implementing the ACE unit and ACE model of care. A key finding from the data analysis was the strong negative correlation between falls and a discharge diagnosis of delirium, indicating that the ACE unit, with intentional care planning designed to minimize harm, was relevant to the aim of the project. The mildly positive correlation between the Clinical assessed Level of Function (CLOF) variance and falls also demonstrated relevance. The mildly negative relationship between the clinician assessed level of function (CLOF) variance and a delirium diagnosis showed that there was not a strong relationship between the CLOF variance from admission to discharge, and a diagnosis of delirium.

The lack of readmissions to the ACE unit and the reduction in LOS showed further relevance. The organized approach to the care of the elderly, including early focus on discharge planning and attempting to return patients to their baseline location, are in line with the aim of the ACE unit. However, the cost of readmission to the hospital, not just the ACE unit, was the factor in the ROI included in this project and bears further analysis and discussion.

The strength of the project was the application of the evidence-based research to a demographic that matched the results shown in the literature review. The project also benefitted from a geriatrician who was highly involved in daily rounds and readily available to bedside staff and physicians.

Lewin described human behavior as being based on past observational experience (Wirth, 2004). The first step in Lewin's model is unfreezing (Wirth, 2004) which for this project required the staff to modify their approaches to developing care plans for patients on the ACE unit, as well as participate in multidisciplinary rounds. It required better time management as well,

specifically from the nursing staff. Lewin described "survival anxiety" as the act of clinging to past patterns or habits (Wirth, 2004). The team proceeded to the changing-what-needed-to-be-changed step, but this did not happen smoothly. The final step was cementing the new changes. The complexity of managing the increase in census and COVID patients posed challenges for the staff who were suffering from related fatigue.

New possibilities included the ongoing refining of admission criteria. One consideration included reducing the minimum age to 70. Fine tuning and spreading the ACE model to other facilities will be more feasible once the workload and census at other facilities has decreased.

An opportunity discussed with Hospitalist leadership was the addition of an advanced practice RN as part of the team. One editorial article was reviewed suggesting that having a geriatric nurse practitioner on the team contributed to the success of an ACE unit (Bellizzi, 2018), however further analysis would need to be done.

Summary

The goal of this evidence-based DNP project was to improve outcomes for hospitalized elderly patients through the implementation of an ACE unit. The ACE unit opened at the end of April 2021. The original prospectus for this project addressed the possible interference of the pandemic; indeed, at the end of March 2021, COVID-19 positive cases and hospitalizations were on the rise (Mitropoulos, 2021). That was the beginning of what became the fourth wave of the pandemic.

Although this hospital did not see a significant increase in COVID patients during the ACE pilot, they were impacted by a 20% increase in census due to transfers from facilities that were more heavily impacted with COVID-19 patients and delayed care. It is estimated that one in 10 adults delayed medical care in the early part of 2021 (McKeon, 2021), and sought

treatment for a variety of illnesses further into the year. The staffing challenges cannot be minimized as the RNs and support staff that frequently worked overtime shifts and without adequate breaks or lunch relief, were hampered from fully embracing the concept of an ACE unit.

Regular meetings with the ACE RN champions were crucial to this project. Despite the staffing challenges, the ACE RN champion group remained committed to improving the care of elderly hospitalized patients. A key lesson was related to communication, as the post-project survey revealed that some staff did not feel fully informed of the goals for the ACE unit. The ACE RN champions determined that the evening and night shift staff did not feel adequately informed on the ACE project. An improved communication strategy will be developed to address this issue.

Interpretation

The interventions were selected due to the comprehensive literature review that supported the success of an ACE unit concept. There was an association between the intervention of multidisciplinary rounds and the outcome of reduced falls and onset of delirium. Daily review of each patient by the team led to the appropriate review of medical interventions and increased awareness of patients at risk for delirium. There was also a focus of early mobilization assisted by physical therapy, which correlated to decreased falls. In review of the fall that occurred on the ACE unit, the availability of a handrail in the hall may have prevented the patient fall.

As mentioned in the literature review, modifications to the physical hospital environment may reduce stress among the elderly that can contribute to iatrogenic issues. This facility modified the flooring and the wall colors. The facility had the physical space to allow for the

creation of a "unit" rather than a mobile ACE approach. Utilizing eight contiguous beds enabled the nursing and management staff to see the ACE as a unit and a concept of care.

Palmer et al. (1994) highlighted the extended role for the RN on an ACE unit—one that allows the RN to modify diet and activity for patients based upon certain criteria. Staffing challenges prevented this group from pursuing a nurse-driven protocol; however, that remains a goal.

Lynn (2013) spoke to helping our hospitalized elderly live safely and confidently, which includes minimizing risk during hospitalization. A multidisciplinary team that reviews patients daily as part of the ACE unit and following agreed-upon care plans and individual goals developed with patient and family is a strategy aligned with this goal. Focus on early discharge is an intervention mentioned in several articles included in the literature review (Fox et al., 2013, Landefeld et al., 1995; Palmer, 2018). The PCC, as part of the multidisciplinary team, focused on returning patients to their baseline in terms of location, although that was not specifically an outcome measure for this DNP project. The intention was to return patients to home and avoid a skilled nursing facility or something similar. The results from the ACE pilot study correlated to similar findings in other publications.

As mentioned above, high census and insufficient staffing burdened the nurses. Ideally, the ACE unit would have solely focused on elderly patients who had met inclusion criteria, but instead nurses often cared for ACE unit patients and COVID-positive patients. The confluence of these two populations hindered the nursing staff from adequately focusing on the goals of the ACE unit. This was not an anticipated factor for this project.

A DNP in a project such as this one assists with such things as business case, a Gantt chart, and SWOT analysis. Though one can influence change, controlling change is much more

complicated and requires the ongoing and careful use of leadership tools and DNP essentials. The number of patients during the initial 90-day pilot period was small; therefore, the data analysis was done for a 120-day period. Changing the minimum inclusion age to 70 should net more robust data with a larger sample size following patient outcome evaluations, while continuing to manage costs through readmission avoidance and LOS reduction. The current findings supported both the conceptual and theoretical framework that structuring care to the hospitalized elderly will reduce harm and improve patient outcomes and were consistent with the outcomes reported in the literature review (Barnes, et al., 2012, Fox et al., 2013, & Pérez-Zepeda et al., 2011). It is prudent to expect positive outcomes as the program and patient population grows.

With refinement, this concept can be useful to other interested facilities, as it is not proprietary and can be easily modified. It is suggested that more focus go to the role of the professional RN in the daily planning of care with ACE unit patients and ensuring standard work with a stable staffing model

Limitations

Factors that may have limited the internal validity included the low number of patients with the pilot period having 51 patients. It was predicted that the eight ACE unit beds would be full; however, excluding telemetry patients and raising the age hindered that goal. There were no identified risks or barriers to the implementation of the project.

The onset of a fourth wave of COVID-19 impacted this hospital differently than hospitals within the region-wide organization. The vaccine percentage for the county in which the hospital is located was as high as 90% for eligible recipients by June 2021 (County of Marin, 2021), making it the highest vaccinated county in California (Hwang, 2021). The resulting available

beds were all eventually filled by COVID-19 patients from other facilities more highly impacted, thus limiting the room for ACE patients in the ACE unit. A further limitation was that ACE unit nurses were not exclusively focused on ACE unit patients. The mix of COVID-19 patients with ACE patients also brought about the potential risk for cross contamination.

An aspect of the change that was dependent on both local and regional characteristics was the staffing challenge. In March of 2021, this facility had the second highest vacancy rate of the 21 hospitals in the organization's northern California region. Time to correct the staffing deficit was underestimated by the leadership team. Travel RNs and benefitted RN new hires did not begin on-boarding until July of 2021. Despite the PCT positions being approved in the business case almost two years ago, the requisitions needed to go through the approval process in the fall of 2020. They were rejected; the business case and requisitions were re-submitted, as well as the issue escalated within the organization.

Another factor in the SWOT analysis, but underestimated in the extent of its impact, was the age of the facility. The hospital was built in the early 1970s and in the past 10 years has suffered from deferred maintenance, putting it in desperate need of both infrastructure upgrades and cosmetic improvements. There are primarily semi-private rooms and no identified storage space. Larger rooms on the units are used for storage of supplies, ventilators, and dialysis equipment. There are also limited conference rooms, which have been converted to offices during the pandemic, and no classrooms. The increase in census caused the multipurpose room to be repurposed for mandatory education due to lack of other suitable space that allowed for physical distancing. The unintended message sent to the staff was that the ACE unit concept was disposable and could come and go, depending on other variables.

Conclusions

The literature supports optimizing care processes to improve both patient experiences and provider satisfaction by introducing the ACE model of care in an acute hospital setting. The critical review and appraisal of the literature described herein supports implementing a standardized approach to the assessment and care of elderly patients in an ACS, using some or all of the same components recommended by experienced authors. Working with the hospitalist service and a geriatrician offered an appropriate clinician/provider model for the ACE unit.

Implications for practice are strong, with further refinement of the model by continued partnership with the staff geriatrician and appropriate staffing support for the unit. The PICOT question in the Statement of Determination listed the patient age as 65 (see Appendix T). However, upon consultation with the staff geriatrician and analysis of demographic information regarding the percentage of patients over the age of 65 for this hospital service area, the decision was made to increase the age to 75 for admission to the ACE unit so the demand for beds is not likely to be exceeded. As stated previously, the census anticipated was not realized and the age limit for inclusion will be lowered to 70. Another implementation for practice is the partnership that developed with the members of multidisciplinary team, geriatrician, and PCS leadership.

A well-planned, multifaceted, and evidence-based project is ready for implementation utilizing systems thinking, interprofessional collaboration, and patient-centered care. The ACE model is the right solution to pilot test for the elderly population at this acute care facility, which has bed capacity, senior leader and physician support, and experienced, enthusiastic nurse program planners and clinical specialists. Lessons

learned will be tracked and opportunities for replication across regional sites recommended as the ACE unit project aims are achieved to maximize quality outcomes and to minimize the functional decline of elderly patients in an ACS. With careful and responsive project management, this DNP-led improvement initiative is expected to enhance both patient and organizational outcomes.

Section VI: Funding

The implementation of the ACE unit was supported by both local and regional leadership and, in turn, the minor physical plant modifications, furniture, and education were supported by the local facility budget. Although the organization did not influence the design of the unit, the implementation of the project was a strong team effort. The reporting of data was done by a regional data analyst who also assisted with some interpretation of the data.

Section VII: References

American Association for Colleges of Nursing. (2006). *The essentials of doctoral education for advanced nursing practice*. American Association of Colleges of Nursing. https://www.aacnnursing.org/Portals/42/Publications/DNPEssentials.pdf

Abdalla, A., Adhaduk, M., Haddad, R., Alnimer, Y., Rios-Bedoya, C., & Bachuwa, G. (2017). Does acute care for the elderly (ACE) unit decrease the incidence of falls? *Geriatric Nursing, 39*, 292-295. https://doi.org/10.1016/j.gerinurse.2017.10.011

Achenbaum, W. A., & Carr, L. C. (2014). *A brief history of aging services in the United States.* American Society on Aging. https://www.jstor.org/stable/26556036

Agency for Healthcare Research and Quality. (2019, September 7). *Falls*. https://psnet.ahrq.gov/primer/falls

American Nurses Association. (2015). *Code of ethics with interpretive statements*. http://www.nursingworld.org/MainMenuCategories/ EthicsStandards/CodeofEthicsforNurses/Code-of-Ethics-For-Nurses.html

American Society for Quality. (2020). *What is the PDCA cycle?* https://asq.org/quality-resources/pdca-cycle

Associates in Process Improvement. (2020). *Model for Improvement.* Apiweb.org

Baek, H., Cho, M., Kim, S., Hwang, H., Song, M., & Yoo, S. (2018). Analysis of length of hospital stay using electronic health records: A statistical and data mining approach. *PloS one*, *13*(4), e0195901. https://doi.org/10.1371/journal.pone.0195901

Barnes, D., Palmer, R., Kresevic, D., Fortinsky, R., Kowal, J., Chren, M., & Landefeld, C. S. (2012). Acute care for elders units produced shorter hospital stays at lower cost while

maintaining patients' functional status. *Health Affairs, 31*(6), 1227-1236.

https://www.healthaffairs.org/doi/10.1377/hlthaff.2012.0142

Bellizzi, L. (2018). Acute care for the elderly (ACE) unit makes all the difference at Methodist

Hospital. *Population Health Matters*, *31*(2). https://jdc.jefferson.edu/hpn/vol31/iss2/12/

Bhasin, S., Gill, T., Reuben, D., Latham, N., Gurwitz, J., Dykes, P., McMahon, S., Storer, T.

Duncan, P., Ganz, D., Basaria, S., Miller, M., Travison, T., Greene, E., Dziura, J.,

Esserman, D., Allore, H., Carnie, M., Fagan, M., Hanson, C., & Peduzzi, P. (2018).

Strategies to Reduce Injuries and Develop Confidence in Elders (STRIDE): A cluster-

randomized pragmatic trial of a multifactorial fall injury prevention strategy: Design and

methods. *The Journals of Gerontology. Series A, Biological Sciences and Medical

Sciences*, *73*(8), 1053-1061. https://doi.org/10.1093/gerona/glx190

CBS News. (2021). COVID reopening: California timeline of a deadly pandemic.

https://sanfrancisco.cbslocal.com/2021/06/15/covid-reopening-california-timeline-

deadly-pandemic/

Centers for Disease Control and Prevention. (2017). *Preventing falls: A guide to implementing

an effective community based fall prevention program*. https://www.cdc.gov/

homeandrecreationalsafety/pdf/falls/fallpreventionguide-2015-a.pdf

Christiansen, T. Lipsitz, S., Scanlan, M., Yu, S., Lindros, M., Leung, W., Adelman, J., Bates, D.

W., & Dykes, P. C. (2020). Patient activation related to fall prevention: A multisite study.

The Joint Commission Journal on Quality and Patient Safety, *46*(3), 129–135f.

https://doi.org/10.1016/j.jcjq.2019.11.010

Christiansen, C., & Lou, J. (2001). Ethical considerations related to evidence-based practice. *The American Journal of Occupational Therapy.*, *55*(3), 345-349. https://doi.org/10.5014/ajot.55.3.345

Collier, R. (2012). Delirium hits hard. *Canadian Medical Association Journal, 184*(1), 23-24. https://doi.org/10.1503/cmaj.109-4069

Counsell, S., Holder, C., Liebenauer, L., Palmer, R., Fortinsky, R., Kresevic, D., Quinn, L., Allen, K., Covinsky, K., & Landefeld, C. S. (2015). Effects of a multicomponent intervention on functional outcomes and process of care in hospitalized older patients: A randomized controlled trial of acute care for elders (ACE) in a community hospital. *Journal of American Geriatric Society, 48*, 1572-1581. https://doi.org/10.1111/j.1532-5415.2000.tb03866.x

County of Marin. (2021). *Marin reaches 90% of eligible vaccine recipients*. https://www.marincounty.org/main/county-press-releases/press-releases/2021/hhs-covid-90percentvaccinated-062221

Creditor, M. (1993). Hazards of hospitalization of the elderly. *Annals of Internal Medicine, 118*. 219-223. https://doi.org/10.7326/0003-4819-118-3-199302010-00011

Dang, D., & Dearholt, S. (2018). *John Hopkins nursing evidence-based practice: Model and guidelines* (3rd ed.). Sigma Theta Tau International Honor Society of Nursing.

Dykes, P., Carroll, D., Hurley, A., Lipsitz, S., Benoit, A., Chang, F., Meltzer, S., Tsurikova, R., Zuyov, L., & Middleton, B. (2010). Fall prevention in acute care hospitals: A randomized trial. *The Journal of the American Medical Association, 304*(17), 1912-1918. https://doi:10.1001/jama.2010.1567

Epstein, B., & Turner, M. (2015). The nursing code of ethics: Its value, its history. *OJIN: The Online Journal of Issues in Nursing, 20*(2), Manuscript 4. https://doi:10.3912/OJIN.Vol20No02Man04

Fong, T., Tulebaev, S., & Inouye, S. (2009). Delirium in elderly adults: Diagnosis, prevention and treatment. *Nature Reviews Neurology, 5*(4), 210-220. https://doi.org/10.1038/nrneurol.2009.24

Fox, M., Sidani, S., Persaud, M., Tregunno, D., Maimets, I., Brooks, D., & O'Brien, K. (2013). Acute care for elders components of acute geriatric unit care: Systematic descriptive review. *Journal of American Geriatric Society, 61*, 939-946. https://doi.org/10.1111/jgs.12282

France, D., Stayton, J., Moore, S., Domenico, H., Matthews, J., Steaban, R. L., & Choma, N. (2017). A multicomponent fall prevention strategy reduces falls at an academic medical center. *The Joint Commission Journal on Quality and Patient Safety, 43*(9), 460-470. http://dx.doi.org/10.1016/j.jcjq.2017.04.006

Franke, T., Ho, T., & Christie, C. (2011). The chi-square test: often used and more often misinterpreted. *American Journal of Evaluation. 33*(3), 448-458. https://doi.org/10.1177%2F1098214011426594

Gupta, M. (2003). A critical appraisal of evidence-based medicine: Some ethical considerations. *Journal of Evaluation in Clinical Practice*, *9*(2), 111-121. https://doi.org/10.1046/j.1365-2753.2003.00382.x

Haseltine, W. (2018, November 19). Why our world is aging. *Forbes.* https://www.forbes.com/sites/ williamhaseltine/2018/11/19/why-our-world-is-aging/#c123d7e20dbd

Hirsch, C., Sommers, L., Olsen, A., Mullen, L., & Winograd, C. (1990). The natural history of

 functional morbidity in hospitalized older patients. *Journal of the American Geriatrics*

 Society, *38*(12), 1296–1303. https://doi.org/10.1111/j.1532-5415.1990.tb03451.x

Hoyt, J. (2021, August 9). *1900-2000: Changes in life expectancy in the United States*.

 Seniorliving.org. https://www.seniorliving.org/history/1900-2000-changes-life-

 expectancy-united-states/

Hung, W., Ross, J., Farber, J., & Siu, A. (2013). Evaluation of the mobile acute care of the

 elderly (MACE) service. *Journal of American Medical Association, 173*(11), 990-996.

 https://doi: 10.1001/jamainternmed.2013.478

Hwang, K. (2021). Marin is the most vaccinated county in California, but cases are surging in

 one community. Here's why. *San Francisco Chronicle*. https://www.sfchronicle.com/

 health/article/Marin-is-the-most-vaccinated-county-in-16359145.php

Inouye, S., Bogardus, S., Charpentier, P. Leo-Summers, L., Acampora, D., Holford, T., &

 Cooney, L. (1999). A multicomponent intervention to prevent delirium in hospitalized

 older patients. *The New England Journal of Medicine, 340*(9), 669-676.

 http://nrs.harvard.edu/urn-3:HUL.InstRepos:13956243

Inouye S., Zhang Y., Jones R., Kiely D., Yang F., Marcantonio E. (2007). Risk factors for

 delirium at discharge: Development and validation of a predictive model. *Arch Intern*

 Med, 167(13):1406–1413. doi:10.1001/archinte.167.13.1406

Institute for Healthcare Improvement. (2020). *Science of improvement.*

 http://www.ihi.org/about/Pages/ScienceofImprovement.aspx

Johns Hopkins newsletter. (2015, April 22). *Falls cost U.S. hospitals $34 billion in direct medical costs*. https://www.johnshopkinssolutions.com/article/falls-cost-u-s-hospitals-30-billion-in-direct-medical-costs/

Knighten, M. L., & Quaye, B. (2020). Person and family centered leadership. in L. G. Rubino, S. J. Esparza, & Y. S. Reid Chassiakos (Eds.), *New Leadership for Today's Health Care Professional: Concepts and Cases* (2nd ed., pp. 209-238). Jones & Bartlett.

Krall, E., Close, J., Parker, J., Sudak, M., Lampert, S., & Colonnelli, K. (2012). Innovation pilot study: Acute care for elderly unit—promoting patient-centric care. *HERD, 5*(3), 90-96. https://doi.org/10.1177/193758671200500309

Labella, A., Merel, S., Phelan, E. (2011). Ten ways to improve the care of the elderly patient in the hospital. *Journal of Hospital Medicine, 6*(6), 351-357. https://doi.org/10.1002/jhm.900

Landefeld, C. S., Palmer, R., Kresevic, D., Fortinsky, R., & Kowal, J. (1995). A randomized trial of care in a hospital medical unit especially designed to improve the functional outcomes of acutely ill older patients. *The New England Journal of Medicine, 332*(20), 1338-1344. https://doi: 10.1056/NEJM199505183322006

Lee, E., Gibbs, N., Fahey, L., & Whiffen, T. (2013). Making hospitals safe for older adults: Updating quality metrics by understanding hospital-acquired delirium and its link to falls. *The Permanente Journal, 17*(4), 32-26. https://dx.doi.org/10.7812%2FTPP%2F13-065

Lynn, J. (2013). Reliable and sustainable comprehensive care for frail elderly people. *Journal of American Medical Association, 310*(18), 1935-1936. https://doi.org/10.1001/jama.2013.281923

Margitić, S., Inouye, S., Thomas, J., Cassel, C., Regenstreif, D., & Kowal, J. (1993). Hospital outcomes project for the elderly (HOPE): Rationale and design for a prospective pooled analysis. *Journal of the American Geriatrics Society, 41*, 258-267. doi:10.1111/j.1532-5415.1993.tb06703.x.

Mattison, M. (2021). Hospital management of older adults. UpToDate. Retrieved November 3, 2021, from https://www.uptodate.com/contents/hospital-management-of-older-adults

McKeon, J. (2021). *1 in 10 adults delayed care in spring 2021 due to COVID-19 concerns*. Patientengagement.com. https://patientengagementhit.com/news/1-in-10-adults-delayed-care-in-spring-2021-due-to-covid-19-concerns

Melnyk, B., Fineout-Overholt, E. (2019). *Evidence-based practice in nursing and healthcare: a guide to best practice.* (4th ed.). Wolters Kluwer.

Merck. (2019). *Merckmanuals.com*. https://www.merckmanuals.com/professional/neurologic-disorders/delirium-and-dementia/delirium

Mitchell, G. (2013). Selecting the best theory to implement planned change. *Nursing Management, 20*(1), 32-27. https://doi.10.7748/nm2013.04.20.1.32.e1013

Mitropoulos, A. (2021). *Why a 4th COVID-19 wave may look different than previous surges*. ABC News. https://abcnews.go.com/Health/4th-covid-19-wave-previous-surges/story?id=76655910

Munyaradzi, M. (2012). Critical reflections on the principle of beneficence in biomedicine. *The Pan African Medical Journal, 11*(29). https://www.panafrican-med-journal.com/content/article/11/29/full

Palmer, R. (2018) The acute care for elders unit model of care. *Geriatrics, 3*(3), 59. https://doi.org/10.3390/geriatrics3030059

Palmer, R., Landefeld, S., Kresevic, D., & Kowal, J. (1994). A medical unit for the acute care of the elderly. *Journal of the American Geriatrics Society, 42*, 545-552. https://doi.org/10.1111/j.1532-5415.1994.tb04978.x

Pérez-Zepeda, M. U., Gutiérez-Robledo, L. M., Sánchez-Garcia, S., Juárez-Cedillo, T., Gonzalez, J. J., Franco-Marina, F., & García-Peña, C. (2011). Comparison of a geriatric unit with a general ward in Mexican elders. *Archives of Gerontology and Geriatrics, 54*(3), e370-e375. https://doi.org/10.1016/j.archger.2011.05.028

Petiprin. A. (2020). Lewin's Change Theory. *Nursing Theory*. https://nursing-theory.org/theories-and-models/lewin-change-theory.php

Population Reference Bureau. (2019). *Fact sheet: Aging in the United States*. https://www.prb.org/aging-unitedstates-fact-sheet/

Snoezelen. (2020). *Multi-sensory environments*. https://www.snoezelen.info/history/

Stanton, M., and Rutherford, M. (2006, June). The high concentration of U.S. healthcare expenditures. *Research in Action*, issue 19. https://archive.ahrq.gov/research/findings/factsheets/costs/expriach/expendria.pdf (2006, June). The high concentration of U.S. healthcare expenditures. AHRQ.

Steele, J. (2010). Current evidence regarding models of acute care for hospitalized geriatric patients. *Geriatric Nursing, 31*(5). https://doi:10.1016/j.gerinurse.2010.03.003

Tableau. (2021). *What is tableau?* Retrieved October 10, 2021. https://www.tableau.com/why-tableau/what-is-tableau

Tomlinson, E. J., Phillips, N. M., Mohebbi, M., & Hutchinson, A. M. (2016). Risk factors for incident delirium in an acute general medical setting: a retrospective case-control study. *Journal of Clinical Nursing*, *26*(5-6), 658–667. https://doi.org/10.1111/jocn.13529

University of San Francisco. (2020a). *Vision, mission, and values statement.*

> https://www.usfca.edu/about-usf/who-we-are/our-values

University of San Francisco. (2020b). *Who we are: Jesuit Catholic*.

> https://www.usfca.edu/about-usf/who-we-are/jesuit-catholic

Wald, H., Glasheen, J., Guerrasio, J., Youngwerth, J., & Cumbler, E. (2011). Evaluation of a

> hospitalist-run acute care for the elderly service. *Journal of Hospital Medicine, 6*(6), 313-

> 312. https://doi:10.1002/jhm.906

Warner, C. (2018). *The importance of color and pattern in senior living design*.

> https://www.warnerdesignassociates.com/color-pattern-senior-living-design/

Wass, S., Webster, P. J., & Nair, B. R. (2008). Delirium in the elderly: A review. *Oman Medical

> Journal, 23*(3), 150-157. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3282320/

Watson, J. (2009). Caring science and human caring theory: Transforming personal and professional

> practices of nursing and health care. *Journal of Health and Human Services Administration*,

> *31*(4), 466–482. http://www.jstor.org/stable/25790743

Weiss, A. and Elixhauser, A. (2014). Overview of hospital stays in the United States. AHRQ.

> https://www.hcup-us.ahrq.gov/reports/statbriefs/sb180-Hospitalizations-United-States-

> 2012.pdf

Wirth, R. (2004). *Lewin/Schein's change theory*.

> http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.486.5728&rep=rep1&type=pdf

Yoshida, S. (2007). *A global report on falls prevention. WHO conference*.

> http://www.who.int/ageing/publications/Falls_prevention7March.pdf

Yoo, J., Kim, S., Seol, H., Kim, S., Yang, J., Ryu, W., Min, T., Choi, J., Kwon, M., &

> Nakagawa, S. (2013). Effects of an internal medicine floor interdisciplinary team on

hospital and clinical outcomes of seniors with acute medial illnesses. *Geriatric*

Gerontology International, 13, 942-948. https://doi10.1111/ggi.12035

Section VIII: Appendices

Appendix A

4th Floor Layout
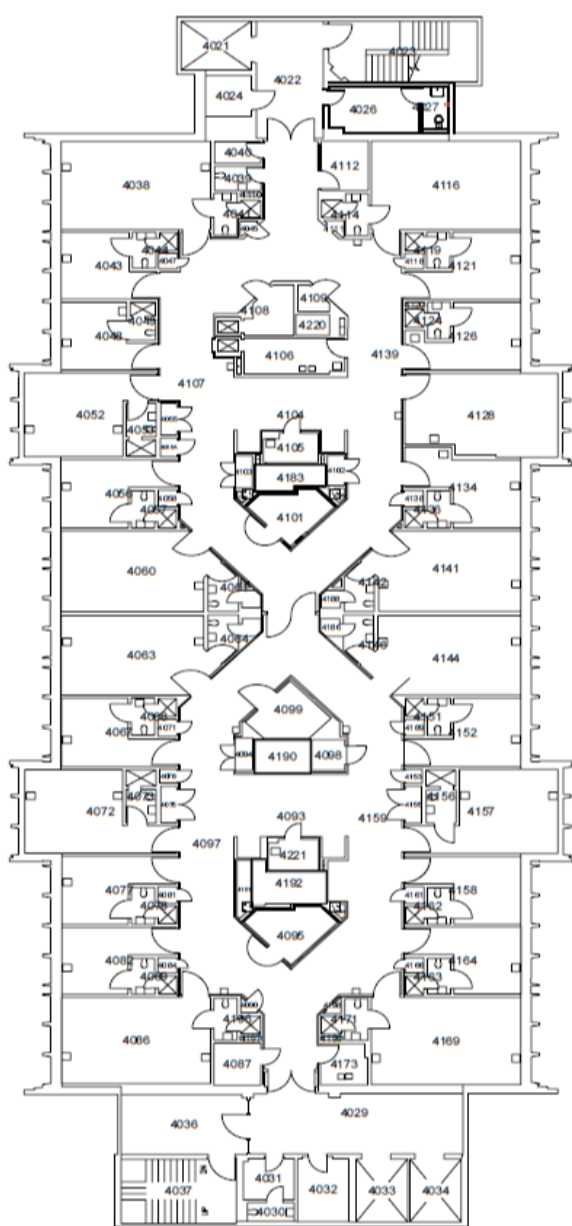
Source: Hospital Facilities Department, Kaiser San Rafael Hospital

Appendix B

Inclusion and Exclusion Criteria

Inclusion	Exclusion

• Age 75 years or older*
 	
 • History of mild cognitive impairment
 	
 • Dementia (without active behavioral disturbance)
 	
 • Ambulatory
 	
 • Medical patients
   • Pneumonia
   • UTI
   • Anemia
   • Dehydration
   • COPD
   • Infection)
	• Alcohol Abuse
	
	 • elderly patient with no rehabilitation potential
	
	 • **1:1 sitter (no active psychiatric behavior, ETOH, suicidal, and combative)
	
	 • *Actively delirious (disruptive behavior)
	
	 • *Severe dementia (with behavioral disturbance, non-redirectable)
	
	 • Isolation
	
	 • comfort care
	
	 • placement issues
	
	 • long-term care
	
	 • stroke
	
	 • telemetry
	
	 • surgical patients

Note:

*Due to the large number of patients over the age of 65 in the service area of this hospital, the minimum age was changed by the geriatrician to 75

*case by case basis following review of medical record by geriatrician.

Appendix C

Evaluation of Evidence Table

Purpose of article or review	Design/ Method	Sample/ Setting	Conceptual framework	Major variables studied (and their definitions)	Measurement of variables	Data analysis	Findings	Level of evidence (Critical Appraisal Score)/Worth to practice/Strengths and weaknesses/Feasibility/ conclusion(s)/Recommendation(s)
Abdalla, A., Adhaduk, M., Haddad, R., Alnimer, Y., Rios-Bedoya, C., Bachuwa, G. (2017). Does acute care for the elderly (ACE) unit decrease the incidence of falls? *Geriatric Nursing*. *39*, 292-295. https://doi.org/10.1016/j.gerinurse.2017.10.011								
To determine if an Acute Care for the Elderly (ACE) unit decreases the incidence of patient falls compared to general medical ward.	Design: Non-concurrent prospective study. Method: Patients 65 and over admitted to the institution's ACE unit or general medical unit. Starting date for study: 7/1/13, as it was opening date for institution's ACE. All patients admitted to ACE or GMS units during study period were included.	7069 admissions in an Academic medical center from July 2013 through August 2015	None stated.	IV: admission to the ACE unit DV: falls	Medical record review as well as adverse event reporting system	Fisher's test for categorical variables, t-test to determine association between zero-inflated Poisson (ZIP) model was used to examine the relationship between admission to the ACE unit and patient fall. Stata statistical software package was used for the analyses.	149 falls reported during the study period for an incidence rate (IR) of 5.2 falls/1000 patient days, 95% confidence interval (CI) 4.4/1000 patient days – 6.1/1000 patient days. Final adjusted ZIP model estimated a 73% reduction in incidence of falls for patients on the ACE unit compared to non-ACE unit patients (IRR 0.23, 95% CI 0.13, 0.54, $P=<0.001$	**Level III-A** **Worth to practice:** Implementing ACE model components may reduce patient falls **Strengths:** Large sample size, called out risk factors for increase falls in females **Limitation:** Effect of psychotropics and hypnotics on the incidence of patient falls was measured; however, no examination of name or dose of medication, so no action could be taken. **Conclusion:** Article supports ACE model by use of addressing elder specific needs such as environment, multidisciplinary teams. Physical therapy, assistive devices, daily review of medication. **Feasibility:** Feasibility of these interventions in the project is possible **Recommendation:** To use falls as a DV for this DNP study

Purpose of Article or Review	Design/ Method	Sample/ Setting	Conceptual framework	Major variables studied (and their definitions)	Measurement of variables	Data analysis	Findings	Level of evidence (Critical Appraisal Score)/Worth to practice/Strengths and weaknesses/Feasibility/ conclusion(s)/Recommendation(s)
Barnes, D., Palmer, R., Kresevic, D., Fortinsky, R., Kowal, J., Chren, M., Landefeld, C. S. (2012). Acute care for elders units produced shorter hospital stays at lower cost while maintaining patients' functional status. *Health Affairs*. *31*(6), 1227–1236. https://doi:10.1377/hlthaff.2012.0142								
To review 3rd of three RCTs done in 1990s when concept of an ACE unit was originally developed.	Design: Secondary Review of RCT Method: Secondary data analysis	Authors reviewed patients admitted between 1993 and 1997; 858 to randomized group and 774 to usual-care control group.	None stated.	IV: admission to ACE unit DV: length of stay (LOS) and cost Change in Activities of Daily Living (ADLs) from admission to discharge Mobility Discharge planning	Medical record review.	Cost data were determined using Cost Management information System and also an inflation calculator to obtain conversion rates for each year of study to equal 2011 costs T-tests were conducted for continuous variables and chi-square tests for categorical variables.	LOS was reduced for intervention group compared to usual care group (6.7 days/per patient vs 7.3 days per patient respectively). No significant differences reported between ACE group and usual care group for patient function or discharge location. ACE group improved ADL 23% s usual care at 25%, improved mobility by 28% vs 30% usual care	**Level III-A** **Worth to practice:** Implementing ACE model components may improve patient outcomes. **Strengths:** Access to data from original ACE studies, highlights contradictory findings of physical therapy and discharge planning lacking in ACE patients **Limitations:** Fidelity of intervention declined over time due to leadership changes; physical renovations occurred for usual care group and implementation of some ACE protocols; no significantly findings between two units. **Feasibility**: Feasibility of implementing these interventions is strong **Conclusion:** These findings, combined with studies performed over past 20 yrs consistent with ACE unit admissions reducing LOS, lowering cost, and improving outcomes for elderly patients. **Recommendation:** Incorporate evidence into practice.
Counsell, S., Holder, C., Liebenauer, L., Palmer, R., Fortinsky, R., Kresevic, D., Quinn, L., Allen, K., Covinsky, K., Landefeld, C. S. (2015). Effects of a multicomponent intervention on functional outcomes and process of care in hospitalized older patients: A randomized controlled trial of acute care for elders (ACE) in a community hospital. *Journal of American Geriatric Society 48*, 1572-1581. https://doi.org/10.1111/j.1532-5415.2000.tb03866.x								
To test hypothesis that a multi-component intervention will improve functional outcomes and process of care in hospitalized older patients.	Design: RCT Method: Patients 70 or older were admitted to a medicine or family practice service. Patients were randomly assigned to either the intervention unit or the usual care unit.	1531 patients admitted to a private, community teaching hospital between 1994 and 1997.	None stated.	IV: ACE model or components of model used for care DV: change in ADL from baseline to discharge. ADLs defined as bathing, dressing, toileting, transferring from bed to chair and eating.	Reviewed medical records using Charlson comorbidity scores and Acute Physiologic and Chronic Health Evaluation (APACHE) score upon admission. Data on ADL collected data at discharge and follow-up.	Authors evaluated differences between intervention group and usual care groups. Chart review using Generalized Estimating Equation (GEE) analysis	ADL decline was less frequent with intervention group at 34% compared to 40% for usual care group (P=.027); Nursing care plans to promote function were more often initiated in intervention group at 79% vs. 50% for usual care group (P=.001)	**Level I-A** **Worth to practice:** The multi-component interventions of the ACE model of care may improve patient outcomes **Strength:** Large sample size, evaluated multi-component interventions, included patient and provider satisfaction **Limitation:** Assignments not blinded to data collectors so potential for bias **Conclusion:** A multi-component intervention can improve process of care and patient satisfaction, while improving functional outcomes for patients, without increasing hospital length of stay or cost. **Feasibility**: Feasibility of interventions is strong **Recommendation:** Recommend implementing into practice

Purpose of Article or Review	Design/ Method	Sample/ Setting	Conceptual framework	Major variables studied (and their definitions)	Measurement of variables	Data analysis	Findings	Level of evidence (Critical Appraisal Score)/Worth to practice/Strengths and weaknesses/Feasibility/ conclusion(s)/Recommendation(s)
Fox, M., Sidani, S., Persaud, M., Tregunno, D., Maimets, I., Brooks, D., O'Brien, K. (2013). Acute care for elders components of acute geriatric unit care: Systematic descriptive review. *Journal of American Geriatric Society*. *61*, 939–946. https://doi.org/10.1111/jgs.12282								
To determine outcome of implementing ACE model components as part of care on an acute geriatric unit.	Design: Systemic descriptive review of trials. Method: Meta-analysis	Sample size was 13 randomized controlled and quasi-experimental trials.	None stated.	IV: ACE Model/Components use DV: • Falls • pressure ulcers • delirium • functional decline • length of hospital stay • discharge destination	Two reviewers extracted information on ACE components and entered it into a data extraction from.	Meta-analysis performed with review manager software	Geriatric unit had fewer falls (Risk Ratio= 0.51), less delirium (Risk Ratio =0.73) and less functional decline at discharge from baseline (Risk Ratio =0.87) than usual care unit.	**Level I-A** **Worth to practice:** When all components of ACE model are not possible, one component is of benefit to the patient. **Strength:** Large sample size **Limitation:** Limited information regarding study methods in articles chosen which restricted author's ability to determine possible bias. **Conclusion:** Specific ACE interventions of medical review, early rehabilitation and patient-centered care will benefit elderly patients if entire ACE model cannot be implemented. **Feasibility:** Feasibility for implementation is strong **Recommendation:** recommend implementing into practice
Hung, W. W., Ross, J. S., Farber, J., & Siu, A. L. (2013). Evaluation of the mobile acute care of the elderly (MACE) service. *JAMA*, *173*(11), 990–996. https://doi.org/10.1001/jamainternmed.2013.478								
To determine if admission to a mobile ACE service was associated with improved outcomes for elderly patients	Design: Prospective matched cohort study Method: They established a matching cohort drawing from patients admitted to the inpatient medical services using a prospective matching algorithm	173 matched pairs of patients in an urban tertiary hospital from November 2008 through August 2011	None stated	IV: admission to the MACE service DV: • Falls, • Pressure ulcers • Catheter-associated urinary tract infections • Length of stay	Baseline information was collected upon admission; medical records were reviewed by an investigator assigned to the project.	McNemar's test, Stuart-Maxwell and paired *t* tests using Stata software	Incidence of an adverse events was lower in the MACE group than the usual care group: 9.5% for MACE an 17% for usual care (*P* = .02).	**Level I-A** **Worth to practice:** Strong alternative to a unit-based ACE program **Strength:** Consistency with ACE unit components **Limitation:** Potential bias in that some of the patients admitted to the MACE service were cared for by a primary care geriatrician, investigator was not blinded to group assignment. **Conclusion:** A mobile ACE program could have benefits in a hospital where space is not available for a dedicated unit. **Feasibility:** Feasibility for implementation is highly possible. **Recommendation:** Recommend implementing into practice if dedicated space is not available.

Purpose of article or review	Design/ Method	Sample/ Setting	Conceptual framework	Major variables studied (and their definitions)	Measurement of variables	Data analysis	Findings	Level of evidence (Critical Appraisal Score)/Worth to practice/Strengths and weaknesses/Feasibility/ conclusion(s)/Recommendation(s)
Inouye, S., Bogardus, S., Charpentier, P., Leo-summers, L., Acampora, D., Holford, T., Cooney, L. (1999). A multicomponent intervention to prevent delirium in hospitalized older patients. *New England Journal of Medicine. 340*(9), 669-676. https://doi: 10.1056/NEJM199903043400901.								
To determine if standardized protocols for managing delirium risk factors reduced incidence of delirium in hospitalized elders.	Design: Controlled clinical trial Method: Non-randomized assignment of patients to either the intervention unit or usual care	852 patients Admitted to the general medicine service at an academic medical center	None Stated	IV: patient received intervention strategy called "Elder Life Program" DV: hospital onset delirium	Patients and family members were interviewed upon admission and ADLs and hearing were assessed.	Paired *t*-test and McNemar's test	The rate of incidence of delirium was lower in intervention group 9.9% vs usual care group at 15% (P=0.02). Total number of days of delirium was slower in the intervention group at 105 days vs usual care group at 161 days (P=0.02).	**Level II-A** **Worth to practice:** Strong article supporting intervention of multicomponent intervention to prevent delirium consistent with ACE model. **Strength:** Large sample size, **Limitation:** authors were not able to randomly assign patients into one of two groups potentially contaminating intervention group **Conclusion:** Multicomponent interventions are appropriate **Feasibility:** Strong feasibility for implementation of interventions **Recommendation:** Incorporate into practice
Labella, A., Merel, S., Phelan, E. (2011). Ten ways to improve the care of the elderly patient in the hospital. *Journal of Hospital Medicine. 6*(6), 351-357. https://doi.org/10.1002/jhm.900								
The authors review ten evidence based "pearls" for hospitalists, who are typically medical providers for elders in an acute care setting.	Design: Expert Opinion Method: Qualitative analysis	N/A	None stated	Variables reviewed were 1) a multifactorial approach to care, 2) screening for geriatric syndromes, 3) functional decline, 4) delirium, 5) treatment of patients who have already been diagnosed with dementia, 6) hospital acquired injuries or illness, 7) pain management 8) medication management, 9) discharge planning, 10) preferences for treatment	Literature review	Each of Ten ways identified by authors	The ten "pearls" as stated by authors, are consistent with guidelines for care found in other quantitative research articles.	**Level V-A** **Worth to practice:** support of various components that comprise ACE model. **Strengths:** speaks to importance of minimizing functional decline, delirium and falls which closely aligns with ACE model, strong references used **Limitations:** it is not a scientific study and there is no data to support recommendations **Conclusion:** Implementation of suggested practices are congruent with ACE model **Feasibility:** feasible for implementation **Recommendation:** Incorporate interventions into practice

Purpose of article or review	Design/ Method	Sample/ Setting	Conceptual framework	Major variables studied (and their definitions)	Measurement of variables	Data analysis	Findings	Level of evidence (Critical Appraisal Score)/Worth to practice/Strengths and weaknesses/Feasibility/ conclusion(s)/Recommendation(s)
Landefeld, C. S., Palmer, R., Kreseic, D., Fortinsky, R., Kowal, J. (1995). A randomized trial of care in a hospital medical unit especially designed to improve the functional outcomes of acutely ill older patients. *The New England Journal of Medicine. 332*(20), 1338-1344. https://doi: 10.1056/NEJM199505183322006								
To determine if admission to an intervention unit would result in improved outcomes for elderly patients	Design: RCT Method: Randomized control groups	651 patients in an Academic medical center	None stated	IV: admission to ACE unit DV: performance of ADLs from admission to discharge; ADLs defined as bathing, dressing, transferring, toileting, and eating.	Patients and family members were interviewed by two research assistants regarding functional status and clinical data were obtained from patient medical records.	Wilcoxon rank sum test for continuous variables and chi-square test for categorical variables.	Upon discharge, 21% of intervention group were better able to manage ADLs, compared to 13% in usual care group. (P=0.009).	**Level I-A** **Worth to practice:** this article is considered a landmark for evolution of ACE unit. It continues to be cited as a strong reference for this work. This article supports concept of an ACE unit. **Strength:** large sample size, follow up on original study design for ACE **Limitation:** interviewers were not blinded to patient group assignment **Conclusion:** strong article that is foundation for use of ACE model **Feasibility:** interventions stated have strong feasibility for this project **Recommendation:** Interventions should be incorporated into practice
Palmer, R. (2018). The acute care for elders unit model of care. *Geriatrics, 3*(59). https://doi.org/10.3390/geriatrics3030059								
Review of three clinical trials that were done following implementation of ACE model in early 1990's and to describe ACE model's effectiveness.	Design: Clinical Practice Guidelines Method: Qualitative analysis	Three hospital settings: one academic hospital, one community hospital, and a 2nd study at initial academic hospital.	None stated.	IV: admission to ACE unit DV: performance of ADLs from admission to discharge; ADLs defined as bathing, dressing, transferring toileting and eating.	Study I: Research assistants interviewed patients and family members; clinical data collected from medical record review Study II: not indicated in article Study III: not indicated in article	Not stated.	Study I: upon discharge, patients in intervention group had improvement in ADLs compared to control group and were less likely to transition to post-acute facility rather than home. Study II: no difference seen in ADLs from intervention group to usual care group. Study III: no effect on ADLs between intervention group and usual care group. Findings from prior studies consistent with greater efficiency in patient care, lower cost, minimized functional decline and reduced length of stay with ACE model.	**Level IV-A** **Worth to practice:** this article goes into detail around four components of ACE model which can be used as a guide for implementation of a similar unit. **Strength:** Detail around components of ACE model and how they are to be implemented **Limitation:** specific data not reported **Conclusion:** Significant increase in elderly population since origin of ACE model supports need for an approach such as ACE model. **Feasibility:** interventions stated are feasible for this project **Recommendation:** Clinical practice guidelines that should be incorporated into care

Purpose of article or review	Design/ Method	Sample/ Setting	Conceptual framework	Major variables studied (and their definitions)	Measurement of variables	Data analysis	Findings	Level of evidence (Critical Appraisal Score)/Worth to practice/Strengths and weaknesses/Feasibility/ conclusion(s)/Recommendation(s)
Palmer, R., Landefeld, C., Kresevic, D., Kowal, J. (1994). A medical unit for the acute care of the elderly. *Journal of the American Geriatrics Society, 42*(5), 545–552. https://doi.org/10.1111/j.1532-5415.1994.tb04978.x								
To describe ACE unit interventions and their impact on outcomes for patients over age of 70 and outline design and plan for implementation of an ACE unit.	Design: Systematic Review Methods: Meta-analysis	6 acute geriatric units, 1 descriptive study, 1 at 2 hospital locations, 2 RCTs and 1 controlled study; total of 655 patients	None noted.	IV: Implementation of one or more ACE unit principles: • physical environment, • patient-centered care, • multidisciplinary team rounds, • medication, • home planning. DV: • Length of stay • Discharge destination • Functional status • Mobility • Mood/• ADLs	Authors reviewed work done in other quantitative articles	Not Stated	Study I = patients had shorted length of stay (LOS) and fewer nursing home admissions Study II: patients had shorter LOS Study III: patients had better functional and mobility scores Study IV: patients had improvement in ADLs, longer LOS Study V: patients depressed upon admission had improved mood, no difference in ADL, LOS or discharge destination Study VI: patients with higher acuity had improved function and trend toward shorter LOS	**Level I – A** **Worth to practice**: Supports implementation of an ACE unit. **Strength:** 6 studies with different interventions **Limitation:** Sample size of preliminary studies not indicated **Conclusion:** This review was written by subject matter experts in area of geriatric medicine when ACE model was a new concept and is still an appropriate intervention for hospitalized elderly patients. **Feasibility:** Strong feasibility for use in this project **Recommendation:** Interventions stated should be incorporates into practice
Pérez-Zepeda, M. U., Gutiérez-Robledo, L. M., Sánchez-Garcia, S., Juárez-Cedillo, T., Gonzalez, J. J., Franco-Marina, F., García-Peña, C. (2011). Comparison of a geriatric unit with a general ward in Mexican elders. *Archives of Gerontology and Geriatrics, 54*(3), e370–e375. https://doi.org/10.1016/j.archger.2011.05.028								
To determine effectiveness of a Geriatric Evaluation and Management (GEM) unit in prevention and/or treatment of functional decline, falls, and pressure ulcers, in elderly hospitalized patients.	Design: Observational Study Method: Prospectively followed patients over 60 who were admitted to either the GEM (geriatric) unit or the medical ward at the same hospital, or admitted to a medical ward at another hospital	70 patients admitted to GEM unit and 140 patients admitted to general medicine ward over a two year period from 2007 - 2009	None stated	IV: admission to geriatric ward DV: dichotomous composite variable if any of following occurred: • functional decline • pressure ulcers • hospital acquired delirium • falls • death	Functional status assessed with Barthel Index and Lawton ADL scale Mood assessed with geriatric depression scale QOL measured with visual analogue scale of EuroQol/daily assessments/ chart review post dischg	Conditional logistic regression models using STATA statistical software version 10	No falls recorded. Primary outcome: 40% gen med unit patients had secondary outcomes compared to 24.3% of GEM patients. Secondary outcome of any variable: GEM pts had lower functional decline (17.1%) compared to gen med pts (32.1%) (adj OR=0.23, CI 95% 0.08-0.65). Pressure ulcers GEM pts less frequent (5.7%) compared to gen med pts at 8.6% (adj OR=0.22, CI 95% 0.02-2.16) Delirium occurred more frequently in gen med unit (15.7%) compared to GEM pts (7.1%) (adj OR=0.37, CI 95% 0.11-1.27)	**Level III-A** **Worth to practice:** support of a unit designed for care of elderly. **Strength:** strong reference list, modeled their approach after an established study **Limitations:** Not an RCT, smaller sample size, brief mention of actual interventions such as rehabilitation, nutrition, reduction in polypharmacy and state that "may" because of study results. **Conclusion:** strong article that identifies need for creating strategies to care for hospitalized elderly **Feasibility:** strong feasibility for use in this project **Recommendation:** interventions should be incorporated into practice

Purpose of article or review	Design/ Method	Sample/ Setting	Conceptual framework	Major variables studied (and their definitions)	Measurement of variables	Data analysis	Findings	Level of evidence (Critical Appraisal Score)/Worth to practice/Strengths and weaknesses/Feasibility/ conclusion(s)/Recommendation(s)
Steele, J. (2010). Current evidence regarding models of acute care for hospitalized geriatric patients. *Geriatric Nursing. 31*(5), 331-347. https://doi.org/10.1016/j.gerinurse.2010.03.003								
To determine which of the three models reviewed is most effective at improving clinical geriatric outcomes in different settings	**Design:** Integrative lit. review **Method:** Four search engines: Cumulative Index to Nursing and Allied Health Literature (CINAHL), Medline, PubMed, and Google Scholar. Search terms: ACE model, ACE units, ACE unit, acute care for elders, ACE program, HELP program, hospitalized elder life program, HELP AND elder, HELP AND geriatric, NICHE, nurses improving health system elders, NICHE program, NICHE geriatric, and NICHE elder.	Reviewed 13 total studies; 5 on Hospitalize d Elder Life (HELP) program, 2 on Nurses Improving Care for Health-System Elders (NICHE) program and 6 on ACE model.	None stated.	ACE: physical environment, patient centered care, medical review and discharge planning. HELP: maintain physical and cognitive function during hospitalization NICHE: Functional status, overall well-being and ADLs	Literature review of three models outlined	Author used Sackett's method to evaluate the evidence	Four of six articles reviewed took place where ACE was developed. ACE model is well-defined with positive outcomes. HELP program improves some clinical outcomes. NICHE was limited to two studies and research suggests this model improves geriatric nursing knowledge and use of evidence-based practice	**Level V-A** **Worth to practice:** Support of care designed for geriatric patients which includes ACE model. **Strength**: Organized review revealing initial research on all three programs may be effective at improving patient outcomes **Limitation:** Limited ACE references **Conclusion:** The author makes a strong case for a geriatric model of care and supports hospitals choosing which of models included in article are appropriate for implementation. **Feasibility:** Using three models is not feasible for this project **Recommendation:** Implementation of one model of care for geriatric patients

Purpose of Article or Review	Design/ Method	Sample/ Setting	Conceptual framework	Major variables studied (and their definitions)	Measurement of variables	Data analysis	Findings	Level of evidence (Critical Appraisal Score)/Worth to practice/Strengths and weaknesses/Feasibility/ conclusion(s)/Recommendation(s)
Wald, H., Glasheen, J., Guerrasio, J., Youngwerth, J., Cumbler, E. (2011). Evaluation of a hospitalist-run acute care for the elderly service. *Journal of Hospital Medicine*. 6(6), 313-2.								
To evaluate a hospitalist-run ACE unit	Design: Quasi-randomized controlled study Method: Patients 70 years or older were randomly assigned to either the Hospitalist-ACE service or usual care on a general medicine service.	122 Hospitalist-ACE patients compared to 95 usual care patients over a 6-month period of time.	None stated.	**IV:** ACE unit run by hospitalists **DV:** Funct status, falls, and discharge location Primary outcome recog of abnormal funct status. Secondary outcomes were recog of abnormal cognitive status, including dementia, depression, delirium, and evidence of treatment plan for any of these. Falls, use of sleep aids, restraint use, LOS	Retrospective chart abstraction done by professional research assistant Recognition of abnormal funct status determined from chart review and consisted of physician's detection of abnormal funct status and evid of a corresp treatment plan	T tests were used for continuous variables such as LoS, Fisher's exact test was used for restraint use, chi-square tests were used for categorical variables.	Hospitalist-ACE patients had greater recog of abnormal funct status (68.9% vs. 35.8%, $P < 0.0001$), and abnormal cognitive status (55.7% vs 40%, $P= 0.02$). Fall rate not significantly different between two groups (4.8 falls/1,000 patient days Hospitalist-ACE group vs 6.7 falls/1,000 patient days usual care group, 95% CI – 9.6-15.3). Hospitalist=ACE patients equally discharged to home as usual care patients (68.6% vs 67.4%, P=0.84). No differences in use of physical restraints or sleep aids for Hospitalist-ACE vs usual care.	**Level II-A** **Worth to practice:** Information is useful for any potential ACE unit using a hospitalist service **Strength:** Evaluation of a common practice **Limitations:** Lower acuity of patients included in study could have led to lack of significant differences in clinical outcomes. Nurses were not using geriatric specific protocols for care. **Conclusion:** A Hospitalist-ACE service may improve care processes without significantly increasing resource consumption. Future studies are recommended. **Feasibility:** Feasibility is strong for use in this project **Recommendations:** Incorporate into practice
Yoo, J. W., Kim, S., Seol, H., Kim, S. J., Yang, J. M., Ryu, W. S., Min, T. J., Choi, J. B., Kwon, M. and Nakagawa, S. (2013). Interdisciplinary floor team for hospitalized seniors. *Geriatric Gerontology International*. 13, 942-948. https://doi.org/10.1111/ggi.12035								
To determine if admission to a medical unit consisting of an interdisciplinary team (ITD) with geriatric protocols, improves outcomes for hospitalized elderly	**Design:** RCT **Method:** Patients 65+ included by admission to medical floor or telemetry, community-dwelling pre-hosp admits. **Excl criteria:** hospice, admits to ICU and to non-teaching medicine floor.	236 patients admitted to ITD and 248 patients admitted to usual care team at an academic med center, January of 2010 to April of 2010.	None stated	IV: admission to ITD DV: • probability of delirium • LOS	Physicians documented delirium using CAM and researchers reviewed daily progress notes to see if delirium occurred. Hospital length of stay and readmission was captured through admin review.	t-tests to compare continuous data multivariate logistic regression of delirium	No significant difference in mean probabilities of delirium between ITD group and usual care team unit 23 vs. 21, CI 95% 1.34 (0.73-1.96) LOS for ITD 6.1 days with CI 4.2-8.7; and usual care team 6.8 days with CI 4.7-9.3, $P = 0.008$.	**Level I-B** **Worth to practice:** Although LOS is not intended to be a variable for this DNP student project, a reduction of .7 is noteworthy and could be an unintended consequence of ACE unit. **Strength:** Large sample size, studied delirium **Limitations:** Only two variables; could have been stronger with more patients and more outcomes studied. Usual care group reminded about recognizing delirium possibly minimizing difference between groups. **Conclusion:** Large database suggests that more information could have been obtained from both groups of patients. **Feasibility:** Feasible for this DNP project **Recommendation:** Incorporate into practice

Appendix D

Statement of Support

KAISER PERMANENTE.

PATIENT CARE SERVICES

NORTHERN CALIFORNIA
1950 FRANKLIN STREET, OAKLAND, CA 94612

July 1, 2020

The University of San Francisco SONHP
2130 Fulton Street
San Francisco, CA. 94117-1080

To Whom It May Concern:

This letter is to offer my express support for Kim Colonnelli, RN, BSN, MA, NE-BC as she moves forward with her proposed scholarly evidence-based change of practice and quality improvement project in partial fulfillment of her Doctor of Nursing Practice degree through the University of San Francisco's Executive Leadership DNP Program.

Kim's proposed project is intended to improve outcomes for elderly patients admitted to an Acute Care for the Elderly (ACE) unit in an acute care setting at Kaiser Permanente San Rafael Medical Center. The purpose she has outlined is to determine if the implementation of an ACE unit is a cost-effective model to help reduce the incidence of functional decline in elderly patients. I have reviewed her PICOT question and conceptual framework, which posits that in patients over the age of 65 (P), how does hospitalization in a unit designed specifically to care for the elderly (I), compared to hospitalization in the general population (C), affect patient falls and hospital onset delirium (O) over a 60-day timeframe (T). I believe her proposed approach and plan is well aligned to quality care priorities for this vulnerable patient population. In addition, there is an opportunity to positively impact clinical outcomes and consider the potential spread of identified evidence-based best practices at Kaiser Permanente San Rafael, as well as other care settings across the system and beyond.

This letter also serves to verify that Kaiser Permanente and The KP Scholars Academy have an existing and valid contract for clinical projects conducted in support of student academic programs and progression in partnership the University of San Francisco School of Nursing and Health Professions. In addition, Kaiser Permanente offers all DNP students a Quality Exemption Process that complements the USF Institutional Review Board (IRB) requirements to support and guide successful implementation and evaluation of Kim's project.

If there are questions or requirements I can assist with, please do not hesitate to contact me directly.

Sincerely,

Ann Williamson

Ann Williamson, PhD, RN, NEA-BC
Regional Chief Nurse Executive and VP of Clinical Integration
Regional Patient Care Services, Northern California
Kaiser Permanente Hospitals/Health Plan
1950 Franklin Street
Oakland, CA. 94612
(510)987-4502

Appendix E

Educational Outline for ACE Project

1. History of ACE model of care

2. Data for local facility patients over 75

    a. Overall population over 75

    b. Falls

    c. Delirium

    d. Length of stay

3. Review evidence-based problem

4. Review admission criteria

5. Review interdisciplinary team responsibilities

    a. Patient-centered care (patient values and individual preference)

    b. Admission assessment (focus on baseline cognitive and functional status)

    c. Early focus on discharge

    d. Ambulation

    e. Daily rounding with multidisciplinary team (focus on identifying geriatric syndromes)

    f. Focus on ensuring a geriatric friendly environment

6. Review PDCA

7. Data collection (chart review and patient outcomes)

Appendix F

Medical Staff Presentation

Acute Care for the Elderly (ACE)

Wynnelena C. Canio, MD, AGSF, CMD

Geriatrician (IM)and Psychiatrist

GEM

PERMANENTE MEDICINE®
The Permanente Medical Group
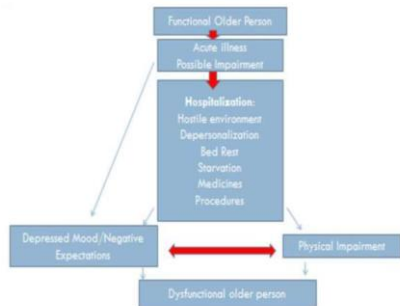
Background

• Aging tsunami resulted in a lot of older adults with multiple chronic conditions

• Older adults accounts for 36% of hospital admissions and 44% of hospital discharges

• A hospitalization is a significant event in the health care journey of an older adult
  • Possible complications: delirium, falls, pressure ulcers, urinary and bowel dysfunction, malnutrition
  • Hospital associated disability (HAD)

GEM

PERMANENTE MEDICINE®
The Permanente Medical Group

GEM

PERMANENTE MEDICINE®
The Permanente Medical Group

Background

• Despite proper treatment for the reason for hospital admission, older adults are discharged with new disability
  • 1/3 hospitalized older adults experienced a decline from baseline function at hospital discharge
  • 20% developed a new disability in the year following hospital discharge

patient suffering and added costs of care
→new model of acute care

GEM

PERMANENTE MEDICINE®
The Permanente Medical Group

Acute Care for Elders (ACE)

- Precursor of ACE
  - Geriatric Evaluation and Management (GEM) Unit – VA Medical Centers
    - Patients were transferred from acute care units followed by stabilization of the acute illness to the GEM Unit to receive prolonged rehabilitative post-acute care
    - Interdisciplinary team (IDT): geriatrician, social worker, nurse, unit director, pharmacist, nutritionist, optometrist, rehab therapists

  - Geriatric Assessment Units (GAU) – Quebec in the 1970s
    - Same as above though some manage acute care

ACE

- First ACE Unit was established at University Hospitals of Cleveland in the early 1990s

  - Comprehensive geriatric assessment coupled with continuous quality improvement to redesign care delivery for older adults admitted to acute care units

  - "prehab" from day of admission with primary goal to "help patients maintain or achieve independence in basic activities of daily living"

ACE Model of Care: Core Components

- Patient-centered IDT geriatric care

- Nurse-driven geriatric care processes

- Medical care review with a focus on preventing iatrogenesis

- Early care transition planning

- Prepared environment promoting safe mobility and cognitive stimulation
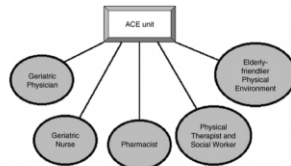
80 yo admitted with Pneumonia

Usual care versus ACE Unit care

ACE Unit Outcomes

- RCTs
  - Improved performance of basic ADLs from admission to discharge
  - Overall health status rated higher at discharge
  - Significant improvement in processes of care and patient, caregiver, and provider satisfaction

- 2009 meta-analysis
  - Significantly reduced functional decline at hospital discharge compared to usual care and higher likelihood of living at home following hospitalization
  - Overall patient-care related costs savings (reduced LOS, reduced re-admissions, and decreased adverse events and hospitalization associated disability

ACE Unit Outcomes

- 2012 meta-analysis
  - Significant reduction in falls, delirium, functional decline, length of stay, discharges to nursing home
  - More discharges to home
  - No change in pressure ulcers, mortality, or readmissions

- 2013 systematic review
  - Medical review, early rehabilitation, and patient-centered care were proven to be the most effective and are considered evidence-based leading practices

Appendix G

ACE Unit Checklist

Furniture/Equipment	• Bed • Patient chair with armrests • Visitor chair • Nightstand • Over-bed table • Telephone • Patient and appropriate staff trash cans • Lever handle on bathroom door • Divider curtain between beds • Assistive equipment and call bell within patient's reach
Spacing pathways	• Clearance space of 3 feet around the bed (except the headwall). • Minimum 3 feet between patient beds in semi-private rooms • Clear pathway from bed to bathroom and entrance/exit to room

Safe bed exit	• Safe bed exit on patient's dominant or preferred side
	   ➤ Items on safe exit side:
	       o Nightstand
	       o Bedside commode
	   ➤ Items NOT on safe exit side
	       o Over bed table
	       o Chairs

Lighting	o Diffuse lighting that projects vertically o Under bed light that illuminates floor around bed o Low lighting at base of walls o Light controls on bed rail and call light

Bathroom	• Walk-in/wheel-in shower with curb-less threshold
	   ➤ Doorway wide enough for patient and equipment
	• Continuous grab bars
	   ➤ Flip down bars not recommended for toilet area
	• Sink with no support between sink and floor
	• "No slip" surface on floor
	• Elevated toilet seat
	• Emergency cord and call light accessible from both toilet and shower

Hallways	• No equipment stored permanently in hallways ➤ If in use, store to one side • Low glare floors with visual breaks • Handrails on both sides of hall that are either a different color than the walls or have built in lighting to provide contrast • Diffuse lighting that projects vertically • Mirrors for blind corners
Multi-purpose Room	• Puzzles • Large clock • Rocking chairs • Table and chairs for meals (pending COVID status)

Adapted from Palmer (2018)

Appendix H

Gap Analysis

Objective	Current state	Ideal state	Identified gap
• Develop a business case for ACE Unit • Obtain agreement from senior leadership for implementing ACE unit • Develop plan to enhance physical space • Coordinate with Medical Staff to conduct daily medical review • Establish plan for multidisciplinary rounding • Incorporate focus on discharge to baseline into RN assessment	• Patients are assigned to open beds, no organized approach to care of patients over a specific age • Various hospitalists round on different patients with no continuity to patients or units assigned • Geriatrician not involved in rounding; sees patient when consult ordered • Physical space has not been modified for elderly patients (soft lighting, large clocks, flooring)	• Patients over the age of 75 are cohorted in a specific area, cared for by staff who have had training regarding the ACE model of care • Physical space is modified (prepared to expand to four adjacent rooms if demand exceeds capacity) • Hospitalists modify their assignments to ensure consistency with ACE unit patients • Geriatrician involved in rounding • Activity room available for patients and family members	Lack of structure and process to optimally support and benefit patients over the age of 75
Education	• NICHE training offered but not required • CNS covers general medical/surgical	• NICHE training mandatory for RNs on the 4th floor • Allows for geriatric CNS to be involved in a specific program that ties to their unique training • ACE unit education for all staff assigned to	Lack of specific knowledge related to care of patients over the age of 65 and associated risk factors

		the 4th floor inclusive of nursing, allied health clinicians, PCCs, and chaplaincy	
Enhanced care for elderly	Patients are assigned to any open bed	Patients over the age of 75 who meet admission criteria will be assigned to the ACE unit	Patients given "routine" or "usual" care without regard to the special needs of elderly patients
Physician knowledge	Hospitalist physicians managed all patient admissions	• Include geriatrician as part of the steering committee • Utilize the geriatrician to provide physician education (perhaps CME) • Provide ACE unit education to hospitalist group	• Lack of specific knowledge related to ACE model • Lack of geriatrician involvement
Elder-friendly environment	All patient rooms are set up the same	Rooms identified for use with the ACE unit would have modified lighting, wall colors highlighting earth tones, large clock, furniture, and flooring with contrast from wall	Lack of physical modifications to make unit elder friendly

Appendix I

Gantt Chart

MANAGER NAME	PROJECT START DATE
Kim Colonnell	FEB 2020

WBS	Tasks	Start Date	End Date	% DONE	ASSIGNED TO	Q1 2020 JAN	FEB	MAR	Q2 2020 APR	MAY	JUN	Q3 2020 JUL	AUG	SEP	Q4 2020 OCT	NOV	DEC	Q1 2021 JAN	FEB	MAR	Q2 2021 APR	MAY	JUN	Q3 2021 JUL	AUG	SEP
1	Obtain Approval	3/1/20	6/30/20	100%	KC			■	■	■	■															
1.1	Review with Area Manager	3/15/20	3/15/20	100%				■																		
1.2	Review with Regional CNE	6/1/20	6/30/20	100%							■															
2	Identify Space	2/1/20	3/1/20	100%	KC		■	■																		
2.1	Meet with Staff	2/1/20	3/1/20	100%	LO		■	■																		
2.2	Identify Physical Plant Issues	2/1/20	2/1/20	100%	LO		■																			
2.3	Meet with Plant Maintenance	2/1/20	2/1/20	100%	JC		■																			
3	Outline Project	3/1/20	12/1/20	80%	KC			■	■	■	■	■	■	■	□	□										
3.2	Prepare Gantt Chart	3/1/20	5/1/20	100%				■	■	■		■														
3.1	Review with AFO	7/1/20	7/31/20	100%								■														
3.2	Review with Area Manager	7/1/120	7/31/20	100%								■														
3.4	Review with project team	11/1/20	12/1/20	50%												□	□									
4	Identify MD Champion	3/1/20	9/15/20	100%	KC			■	■	■	■	■	■	■												
4.1	Meet with Hosp Med Dir	3/1/20	3/30/20	100%	KC			■																		
4.2	Meet with Hospitalists	3/1/20	3/30/20	100%	KC			■																		
4.3	Meet with Geriatrician	8/1/20	9/15/20	100%	KC								■	■												
5	Establish Project Team	2/1/20	9/30/20	85%	KC		■	■	■	■	■	■	■	■												
5.1	Identify Key Stakeholders	2/1/20	3/30/20	100%			■	■																		
5.2	Setup Introductory Meeting	2/1/20	3/30/20	100%			■	■																		
5.3	Develop Outcomes	3/1/20	3/30/20	100%				□																		
5.4	Identify educational needs for staff	7/1/20	8/15/20	100%								■	■													
5.5	Implement Education	8/1/20	1/30/21	25%									■	■	■	■	■	■								
6	Complete Prospectus	9/1/20	11/30/20	80%	KC									■	■	■										
7	Implement Project	3/1/21	5/1/21	0%	Team															□	□	□				
7.1	Communication	1/1/21	2/28/21	0%														□	□							
7.2	Develop Survey tool	2/1/21	2/28/21	0%															□							
7.2	PDCA cycle	3/1/21	5/1/21	0%																□	□	□				
7.3	Data Collection	3/1/21	5/30/21	0%																□	□	□				
7.4	Data Analysis	4/1/21	6/15/21	0%																	□	□	□			
8	Evaluate Program	3/1/21	6/30/21	0%	KC															□	□	□	□			
8.2	Implement survey tool	4/1/21	5/1/21	0%																	□	□				

Appendix J

Post Project Survey

Kaiser Permanente San Rafael - ACE Unit Survey
August 1, 2021

Name (optional) _____
Job Title: (RN, Pharmacist, Social Worker, etc.) _____
The ACE unit has been open for 3 months. The purpose of the survey is to get feedback on issues
and ideas on how to resolve them. Thank you in advance for your participation!
Please rate each statement with 1 being the lowest and 5 being the highest.

1. I have worked on the ACE unit since it opened
   _____YES   _____NO

   if NO, would you like to work on the ACE unit? Name:

   _____

   if YES, please continue with the survey

2. I felt I knew what the goals for the ACE unit were
   1   2   3   4   5

3. I felt I knew what was expected of me in my role on the ACE unit
   1   2   3   4   5

4. I felt the team was prepared to care for ACE patients
   1   2   3   4   5

5. I felt we had the support we needed to attend and contribute to ACE rounds
   in an effective manner
   1   2   3   4   5

6. I feel the current ACE workflow is working (e.g., communication of ACE
   patients on the unit, times of rounds, what rooms they are placed in, etc.)
   1   2   3   4   5

7. I feel we had the resources we need to care for ACE patients

   1   2   3   4   5

8. I feel multidisciplinary rounds have been beneficial for the patient and the team

   1   2   3   4   5

9. I feel there has been an adequate amount of communication about the ACE unit

   1   2   3   4   5

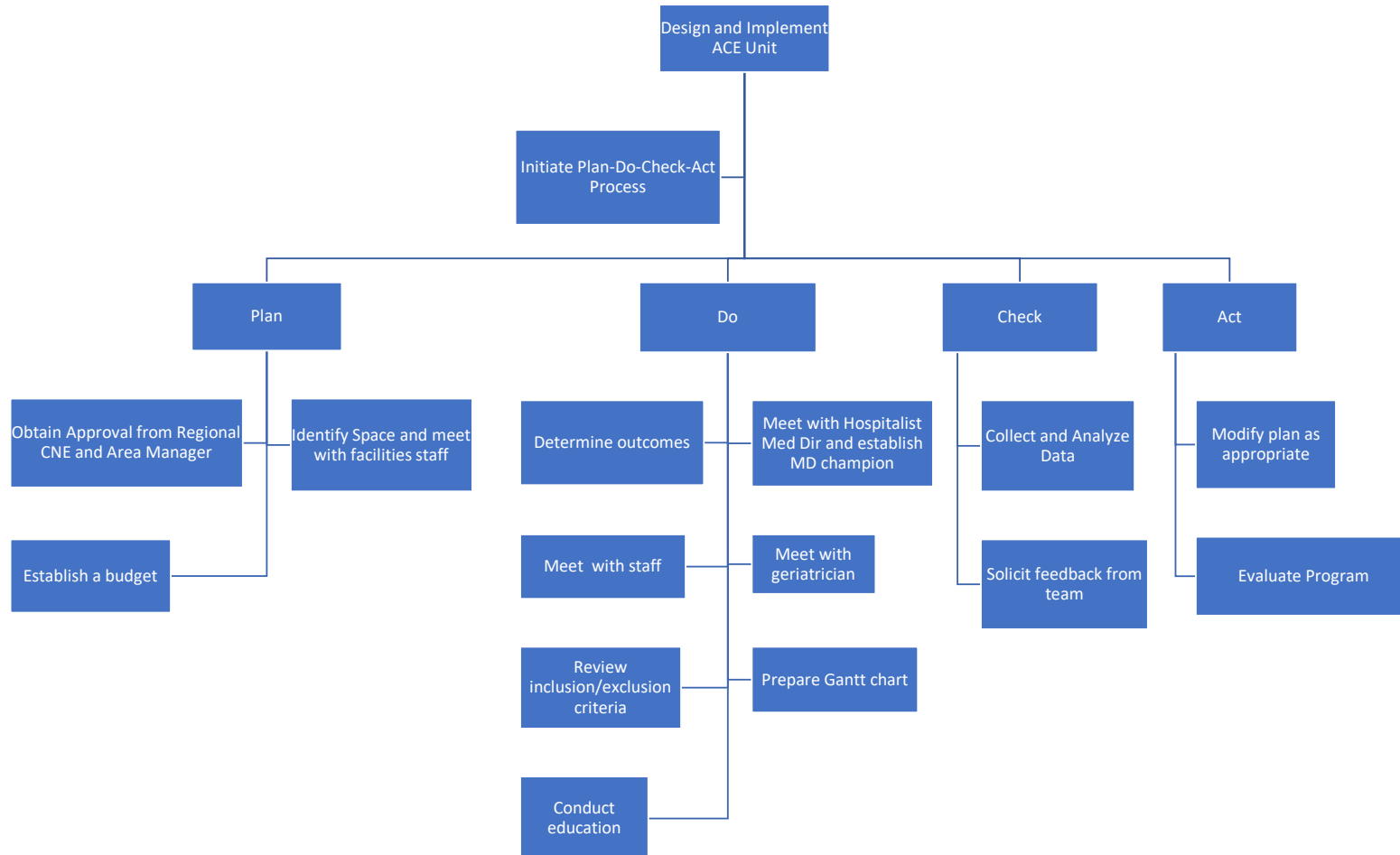10. I feel we are making a difference for the patients admitted to the ACE unit

   1   2   3   4   5

Comments or suggestions:

_____

_____

Please return completed surveys to unit manager. Thank you!
Adapted from "6 Obstacles to Any Project and How to Clear Them" Teamwork.com

Appendix K

Work Breakdown Structure

Appendix L

Budget

Patient rooms	Cost	Completed	Not completed
Touch lamps: Touch lamps with LED lighting on side tables (bolted down)	8 @ $100/ea		**$800**
Glass in Patient Doors: Assist with visibility	TBD		
Bedside tables: Non-institutional bedside tables	8 @ $250/ea	$2000	
Chairs: Patient chairs	8 @ $1300/ea	$10,400	
Draperies: Draperies on windows	9 @ $50/ea		$450
Large clocks	6 @ $30/ea	$180	
Subtotal		*$12,580*	*$1,250*
Miscellaneous			
Wireless video	TBD		
Elopement alarms	TBD		
Handrails for hallways	TBD		
Activity room			
Tactile area (Snoezelen concept)	2 @ $5,000 ea		$10,000
Storage for games/crafts	1 @ $250	$250	
Large table for crafts/games	1 @ $300	$300	
Large screen RV	1 @ $600	$600	
Music/CD player	1 @ $200	$200	
Subtotal		*$1,350*	*$10,000*
Education/Misc.			
Combined hourly rate RN, PCT and Unit Assistant Staff; per hour of education	25 @ $100/hr	$2,500	
Miscellaneous office supplies	$100	$100	
Subtotal		*$2,600*	
Grand Total	*$27,780*	*$16,530*	*$11,250*

Note. 4 West ACE Unit: Flooring and Painting – Completed; not included in budget**.** Updated 9/17/21

Appendix M

SWOT Analysis

Strengths	Weaknesses
• Staff geriatrician participated in rounds and provided expert clinical oversight • Support from local and regional leadership • Staff engagement • CNE experience with ACE unit • Space available	• Complacency on the part of some clinical staff • Manager's commitment • Staff resistance due to union influence
Opportunities	**Threats**

• Opportunity for evidence-based practice
 	
• Increased patient and family satisfaction
 	
• Engage staff in creating positive, patient centered, and caring work environment
	• Competing priorities for staff and leaders
	
	• COVID-19 possibly delaying implementation
	
	• Competing organizational priorities pushed out from regional or program office possibly delaying implementation
	
	• Staffing issues
	    o Delays in posting replacement staff positions requisitions
	    o Delays in filling PCT positions

Appendix N

Cost Avoidance

ROI = (cost avoidance measure) (X) - Cost of investment - new costs or $_+$ new savings

	Cost Avoidance Measure
Readmission	$11,300
↓ LOS	$2260

1. Decreased Length of Stay (LOS)

Patient on the ACE unit will have strong focus on discharge planning with a goal of returning them to baseline

Current LOS for patients 75 and older with medical diagnosis (ACE criteria) is 3.9
Predicted average of 30 discharges/month for the ACE unit
Based on literature, ACE model of care is predicted to reduce LOS by 0.5

Med/Surg cost per day is $2260 x LOS 3.9 = $8814
Med/Surg cost per day $2260 x new LOS 3.4 = $7684
$8814 - $7232 = $1130 cost avoidance/patient*30 = $33,900/mo   or $271,200/year (pro-rated May-Dec)

2. Readmission to the hospital

Goal for ACE patients is to avoid readmission. In 2020 the hospital had an average of 4 readmissions per month (48/year) in less than 30 days for over patients over the age of 75 meeting ACE criteria. Based on geriatrician professional opinion and literature, goal is to reduce readmissions by 2/month (24/year).

The hospital readmission cost the facility $11,300 each.

2020 loss: $11,300*4 = $45,200
2021 $11,300*2 = $22,600
($11,300) (4) – ($11,300) (2) = *$22,600/mo or $180,800/yr (pro-rated May-Dec)*

Assumptions: Med/Surg cost /day is $2260 and Med/Surg readmission cost is $11,300 (taken from Area Finance Officer conversation). Reduction in LOS and readmissions begins in May following April implementation of ACE unit

TOTAL of cost avoidance: *$452,000 (8 months)*

Cost of investment – Salary: What role or roles will drive intended outcome?

	Falls	Readmission	LOS
PCT	Yes	Yes	Yes

New hire PCTs: salary $25/hour x 2080 x 4.2 FTEs + benefits = $218,400 + 87,360 = **$305,760**
(benefits at 40%)
RN salary: $85/hour x 20 RNs x 2 hours for education = **$3,400**
PCT salary: $25/hour x 5 PCTS x 2 hours for education = **$250**
(benefits not included for education time)

TOTAL for new hires and training: *$309,410*
Note: the 4.2 PCTs were not realized therefore there was not a labor cost of $305,760
Net labor expense was for training only =   *$3650*

Appendix O

Chi-Square

Variable	Fall	Delirium diagnosis
ACE Unit*	2	10
Non-Ace Unit (usual care)**	5	79

Note: *n = 51 ACE patients.
** n = 285 non-ACE or usual care patients

Appendix P

Pearson's Correlation Coefficient

	Falls	Admits w/ delirium final Dx
T score CLOF Variance	0.246878039	-0.08161444

	Falls	T score CLOF Variance
Admits w/ delirium final Dx	-0.79056942	-0.08161444

	Admits w/delirium final dx	T score CLOF Variance
Falls	-0.79056942	0.246878039

Appendix Q

PDCA Plan

Act
- Implement suggested changes
- Communicate to staff
- Add additional rooms if needed
- Modify inclusion criteria if needed

Plan
- Create business plan
- Meet with staff and med staff
- Identify space
- Develop Budget
- Identify inclusion criteria
- Modify physical space
- Utilize organization development leader to address change with staff
- Establish data collection tool for project
- Share data for pt population with staff

Check
- Meet with ACE committee weekly
- Evaluate data
- Obtain feedback from staff on process
- Review inclusion criteria
- Determine if space allocation is sufficient

Do
- Review inclusion/exclusions criteria
- Educate House Supervisors and admitting staff
- Educate ED staff and med staff
- Educate nursing staff, ancillary health providers, PCCs, chaplaincy

Appendix R

Certificate of Completion for IHI Quality and Safety

Institute *for*
Healthcare
Improvement

Certificate of Completion

IHI OPEN SCHOOL: BASIC CERTIFICATE IN QUALITY & SAFETY

This certificate is awarded to

Kim Colonnelli

In recognition of successful completion of the basic curriculum comprising 18
hours of online learning in the areas of

IMPROVEMENT CAPABILITY, PATIENT SAFETY, LEADERSHIP,
PERSON- AND FAMILY-CENTERED CARE, AND TRIPLE AIM FOR
POPULATIONS

In support of improving patient care, the Institute for Healthcare Improvement is jointly accredited by the
Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for
Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide
continuing education for the healthcare team. The activity was designated for 18.00 hours of AMA PRA
category 1 credit.

Derek Feeley
President and CEO
Institute for Healthcare Improvement

53 State Street, 19th Floor, Boston, MA 02109 USA   т 617 301-4800   ihi.org

736c1100-3c35-4eb9-bf1a-1e3f17f5ea36   7/9/2020 11:15:30 PM

Appendix S

CITI Program Certificate for Ethical Training and Research

CITI PROGRAM

Completion Date 02-May-2020
Expiration Date 02-May-2023
Record ID 36489595

This is to certify that:

Kimberly Colonnelli

Has completed the following CITI Program course:

Not valid for renewal of certification through CME. Do not use for TransCelerate mutual recognition (see Completion Report).

Level I - Behavioral Intervention (Curriculum Group)
Level I - Behavioral Intervention (Course Learner Group)
1 - GCP (Stage)

Under requirements set by:

Kaiser Permanente

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w66eb56f0-2ca2-42c5-bc91-960fa7ede227-36489595

Appendix T

Doctor of Nursing Practice

Statement of Non-Research Determination Form

UNIVERSITY OF | School of Nursing and
SAN FRANCISCO | Health Professions

Doctor of Nursing Practice
Statement of Non-Research Determination (SOD) Form
The SOD should be completed in NURS 7005 and NURS 791E/P or NURS 749/A/E

General Information

Last Name:	Colonnelli	**First Name:**	Kimberly
CWID Number:	20597856	**Semester/Year:**	Summer 2020
Course Name & Number:	791 Practicum		
Chairperson Name:	Dr. Mary Lynne Knighten	**Advisor Name:**	Dr. Mary Lynne Knighten

Project Description

1. *Title of Project*

> Improving Care of the Elderly by Implementation of an ACE Unit in an Acute Care Setting

2. *Brief Description of Project*

Clearly state the purpose of the project and the problem statement in 250 words or less.

> The proposed EL-DNP project aims to improve outcomes for elderly patients admitted to an Acute Care for the Elderly (ACE) unit in an acute care community hospital. The purpose is to determine if the implementation of an ACE unit is a cost-effective model that minimizes functional decline. The elderly population is rising, and patients over the age of 65 account for 50% of healthcare dollars spent (Mattison, 2019). Elderly patients are at risk for iatrogenic illness when hospitalized.
>
> The proposed DNP project will address the PICO(T) question: In patients over the age of 65 (P), how does hospitalization in a unit designed to care for the elderly (I) compared to hospitalization in a general medical/surgical population (C) affect patient falls and hospital onset delirium (O) within 60 days of admission (T).
>
> The conceptual framework used for the development of this project is adopted from the Institute for Healthcare Improvement (IHI) model developed by Associates in Process Improvement (API). A qualitative review of the ACE model by leaders in the field of geriatric medicine supports a structured approach. Four main principles guide the successful operation of an ACE unit: 1) physical environment, 2) patient-centered care, 3) medical review, and 4) appropriate preparation for discharge (Palmer, 2018). The independent variable would be admission to the hospital (ACE model implementation). The measurable dependent variables would be patient falls, onset of delirium, and the ability to return the patient to their documented baseline.

3. **AIM Statement: What are you trying to accomplish?**
- What do you hope to accomplish with this project? Aims should be SMART, specific, clear, well-defined, and at a minimum describe the target population, the desired improvement, and the targeted timeframe.
- To improve (your process) from (baseline)% to (target)%, by (timeframe), among (your specific population)

Complete this statement: The aim of this project is to decrease the occurrence of falls, and delirium (while remaining cost-neutral) by 10% from baseline of 12 falls/12 month period and by 5% from baseline of 13.5% of encounters diagnosed with delirium, for patients over the age of 65 admitted to the ACE unit compared to usual care patients on the same unit, by August 2021.

4. **Brief Description of Intervention (150 words).**

> The intervention will be the establishment of an ACE unit within a medical-surgical unit in an acute care setting. A certain number of beds will be designated as "ACE Unit" beds. The four principles of a successful ACE unit:
> 1) Modifying the physical plant will include different flooring, wall coloring and lighting.
> 2) Patient-centered care includes specific interventions for the patient's diagnosis while minimizing functional decline.
> 3) Medical review is a multi-disciplinary team, including pharmacy, chaplaincy, nursing staff, coordination of care (discharge planning and social work) and physical therapy to review and initiate appropriate orders, including medications that may increase risk of delirium.
> 4) Preparation for discharge is meant to prepare the patient to return to their baseline (Palmer, 2018)
>
> The nursing team at Kaiser Permanente San Rafael does not have a structured shared governance model. Input from and education for the nursing staff will include staff meetings as well multi-disciplinary team meetings specific to implementation and operation of the ACE unit.

4a. How will this intervention be implemented?
- Where will you implement the project?
- Attach a letter from the agency with approval of your project.
- Who is the focus of the intervention?

> 1. **Where will this project be implemented?**
>   The ACE unit will be located with a medical/surgical unit at Kaiser Permanente San Rafael.
> 2. **Letter of support** from Kaiser Permanente Regional CNE is attached.
> 3. **Who is the focus of the intervention?**
>   The focus of this intervention is any patient over the age of 65, who is admitted to the ACE unit for a medical diagnosis. Excluded will be patients with severe psychosis, alcohol withdrawal, patients unable to ambulate either alone or with assistance, and patients admitted to other patient care units.
> 4. **How will stakeholders and participants be informed?**
>   An interprofessional task force will be created to meet with staff who will work on this unit. A physician champion will be identified as part of the team. The nursing staff will complete NICHE (Nurses Improving Care for Health System Elders) training, which provides principles, resources, and tools to provide patient-centered care for older adult patients (NICHE, 2020). Data will be reviewed with staff regarding the ACE model, current outcomes, and goals for care of patients on this unit. Patients and family will be informed upon admission. Patient and family members will be informed throughout the stay about the purpose of the intervention.

- How will you inform stakeholders/participants about the project and the intervention?

5. Outcome measurements: How will you know that a change is an improvement?
- Measurement over time is essential to QI. Measures can be outcome, process, or balancing measures. Baseline or benchmark data are needed to show improvement.
- Align your measure with your problem statement and aim.
- Try to define your measure as a numerator/denominator.
  - What is the reliability and validity of the measure? Provide any tools that you will use as appendices.
  - Describe how you will protect participant confidentiality.

Outcome measurements:

The independent variable for this project is admission to the ACE unit. The dependent variables will be patient falls and hospital induced delirium.

The aim for this project is to decrease harm for elderly patients by implementing an organized approach to acute care. The problem statement is "The elderly population is rising and patients over the age of 65 account for 50% of healthcare dollars spent. Elderly patients are at risk for iatrogenic illness when hospitalized in an acute care setting (Mattison, 2019). The measurement will be a reduction in falls within a 6-month period by 10% from baseline. The other measurement will be the reduction of hospital acquired delirium by 5% from baseline.

Participant confidentiality will be protected by staff following established policies and procedures related to privacy. Any chart review for data collection and discussion regarding patients on the ACE unit for use in project implementation, publication or review will refrain from using names, or medical record numbers, or other individual patient identifiable information.

References

Mattison, M. (2019). Hospital Management of Older Adults. https://www.uptodate.com/contents/hospital-management-of-older-adults

Nurses Improving Care for Health System Elders (NICHE). (2020). Nicheprogram.org

Palmer, R (2018). The acute care for elders unit model of care. *Geriatrics. 3*(3), 59. https://dx.doi.org/10.3390%2Fgeriatrics3030059

UNIVERSITY OF | School of Nursing and
SAN FRANCISCO | Health Professions

DNP Statement of Determination
Evidence-Based Change of Practice Project Checklist*
The SOD should be completed in NURS 7005 and NURS 791E/P or NURS 749/A/E

Project Title:

Improving Care of the Elderly by Implementation of an ACE Unit in an Acute Care Setting	

Mark an "X" under "Yes" or "No" for each of the following statements:	Yes	No
The aim of the project is to improve the process or delivery of care with established/ accepted standards, or to implement evidence-based change. There is no intention of using the data for research purposes.	x	
The specific aim is to improve performance on a specific service or program and **is a part of usual care**. <u>All</u> participants will receive standard of care.	x	
The project is **not** designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case control). The project does **not** follow a protocol that overrides clinical decision-making.	x	
The project involves implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does **not** develop paradigms or untested methods or new untested standards.	x	
The project involves implementation of care practices and interventions that are consensus-based or evidence-based. The project does **not** seek to test an intervention that is beyond current science and experience.	x	
The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP.	x	
The project has **no** funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.	x	
The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., **not** a personal research project that is dependent upon the voluntary participation of colleagues, students and/ or patients.	x	
If there is an intent to, or possibility of publishing your work, you and supervising faculty and the agency oversight committee are comfortable with the following statement in your methods section: *"This project was undertaken as an Evidence-based change of practice project at Kaiser San Rafael and as such was not formally supervised by the Institutional Review Board."*	x	

Answer Key:

- If the answer to <u>all</u> of these items is "Yes", the project can be considered an evidence-based activity that does <u>not</u> meet the definition of research. IRB review is not required. Keep a copy of this checklist in your files.
- If the answer to <u>any</u> of these questions is "No", you must submit for IRB approval.

*Adapted with permission of Elizabeth L. Hohmann, MD, Director and Chair, Partners Human Research Committee, Partners Health System, Boston, MA.

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used: http://answers.hhs.gov/ohrp/categories/1569

UNIVERSITY OF | School of Nursing and
SAN FRANCISCO | Health Professions

DNP Statement of Determination
Evidence-Based Change of Practice Project Checklist Outcome
The SOD should be completed in NURS 7005 and NURS 791E/P or NURS 749/A/E

Project Title:

Improving Care of the Elderly by Implementation of an ACE Unit in an Acute Care Setting

☒ This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). **Student may proceed with implementation.**

☐ This project involves research with human subjects and **must be submitted for IRB approval before project activity can commence.**

Comments:

This document has been reviewed by myself and the student's second committee member: Dr. Catherine Coleman. Dr. Knighten

Student Last Name:	Colonnelli	**Student First Name:**	Kimberly
CWID Number:	20597856	**Semester/ Year:**	Summer 2020
Student Signature:	*Kimberly A. Colonnelli*	**Date:**	*July 30, 2020*
Chairperson Name:	Mary Lynne Knighten, DNP, RN, NEA-BC		
Chairperson Signature:	*Dr. Marylynne Knighten*	**Date:**	7/31/2020
DNP SOD Review Committee Member Name:	*Catherine M. Coleman DNP*		
DNP SOD Review Committee Member Signature:	*Catherine M. Coleman DNP, RN, CNL, CPHQ*	**Date:**	*Reviewed 7/30/2020*

REV 071819, 091619DNPPHL FACULTY MEETING