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Reducing Inpatient Falls on a Cardiovascular Progressive Care Unit: A Quality Improvement Study to Implement Interprofessional Intentional Rounding

Deidra Pennington

A Clinical Research Project submitted to the Graduate Faculty of

JAMES MADISON UNIVERSITY

In

Partial Fulfillment of the Requirements

for the degree of

Doctor of Nursing Practice

School of Nursing

December 2019

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## **Dedication Page**

This project is dedicated to my husband Gary, my daughters Kaitlin and Allison, and my loving family, friends, and colleagues who have provided continual support throughout my DNP journey.

## **Acknowledgements**

I would like to sincerely thank Dr. Jeannie Garber my project chair and long-time mentor, without who's guidance this journey would not have been the same. I am indebted to Dr. Stephen Lovern, my project committee member and preceptor who provided endless hours of educational guidance and emotional support. Ms. Sandra Sayre was an unparalleled exemplar of servant leadership, offering her time unselfishly over the course of my entire DNP studies. Ms. Evelyn Rubongoya and her fall prevention team made this project possible and whole-heartedly united to improve patient outcomes. A world of gratitude is offered to Mrs. Joyce Rakes for her expertise in falls data and her vast experience and wealth of knowledge. Most importantly, I thank God who provided the opportunity for me to study at a prestigious university and for the abilities to attain this degree.

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## Abstract

Patient falls remain a significant concern for hospitals despite years of focus and research on the topic. Most hospitals have robust fall prevention policies in place containing numerous interventions, yet few demonstrate evidence of long-term sustainability in fall reduction. Patient falls impact overall health outcomes and result in higher costs for the patient and facility due to increased lengths of stay and more medical tests. The location for this study was the cardiovascular progressive care unit (CVPCU) at a Level 1 Trauma Center and academic hospital. This unit underwent a relocation and merger of two nursing units in the fall of 2018. Literature supports that patient quality suffers during unit restructuring and reorganization. A quality improvement project incorporating a Plan-Do-Study-Act (PDSA) format was implemented to provide ongoing analysis. Interprofessional intentional rounds were implemented following staff education and placement of a 5 P's reminder sign over each patient bed. A short qualitative survey was distributed to nursing staff at the end of each PDSA cycle to determine barriers and facilitators of the process. Measurements to gauge fall reduction efforts were the number of monthly falls and falls per 1000 patient. The number of monthly falls decreased to 0 during the third and fourth PDSA cycle. Falls per 1000 patients days decreased from 2.72 to 1.46. Thematic analysis of staff surveys revealed benefit of reminder signs, staffing ratios, teamwork, and personal accountability. Recommendations include developing formal interprofessional rounding processes on high-risk fall patients and utilizing reminders to improve effectiveness of rounds.

*Key words:* Patient falls, falls with injury, falls prevention, falls strategies

## **Introduction and Background**

An important role of the nurse is to advocate for improved health of patients through safe, quality care (Institute of Medicine [IOM], 2011). Those delivering care on the frontline must be vigilant to prevent never events and execute duties responsibly. The negative outcomes from inpatient falls affect not only the patient and family but the nursing staff as well. A culture of safety seeks reduction of harm by collaboration, interprofessional initiatives, and team accountability (Lange, 2012). The interventions of this project aim to improve the safety of patients on a CVPCU at a Level 1 Trauma Center academic hospital by reducing falls.

### **Problem Description: Nature and Significance of the Local Problem**

This DNP project was conducted on a 25-bed CVPCU at a 703-bed tertiary care facility designated as a Level 1 Trauma Center and academic hospital. This busy unit was formed by a recent relocation and merger of the vascular and cardiac surgery progressive care units during December 2018. Prior to the relocation and merger, both units struggled to reduce their inpatient fall rates. Falls with injury occurred during the previous year and toileting-related falls proved significant for both the vascular and cardiac surgery units.

Literature supports that patient quality can suffer during times of unit restructuring and reorganization (Vifladt, Simonsen, Lydersen, & Farup, 2016). Due to this fact, the senior director expressed concern that patient falls would increase as a result of the unit relocation and merger. For the previous vascular unit employees, the design and layout of the new unit was substantially different than their previous unit. The previous cardiac surgery employees worked on a unit with similar design and layout. The new unit incorporated a very long hallway projecting away from the nurse's station,

preventing direct observation of high-risk fall patients. An additional challenge was the new team dynamics formed by joining staff from two different units.

### **Available Knowledge**

**Summary of the Problem.** Patient falls remain a significant concern for hospitals despite years of focus and research on the topic. Medical publications as early as the 1950's relate a rising concern for patient safety due to falls (Grubel, 1959; Thurston, 1957). Literature abounds regarding fall prevention strategies and program evaluations. Most hospitals have robust policies containing numerous interventions, yet few demonstrate evidence of long-term sustainability in fall reduction. Safe environmental controls to prevent falls depend on human endeavors for reliability and success.

More than 600,000 people around the world die annually from falls-related injuries, the risk increasing with age (World Health Organization [WHO], 2018). Substantial injuries such as hip fractures occur in older adults that fall because of the effect of aging on the body (Centers for Disease Control and Prevention, 2018). Thirty-seven million people seek healthcare treatment annually for injuries incurred during falls (WHO, 2018). Falls are considered a world-wide issue, threatening longevity and quality of life (WHO, 2018). From October 2017 through September 2018, the institution of this study reported 391 inpatient falls and 2.43 falls per 1000 patient days. For the same time period, vascular PCU experienced 18 inpatient falls and 2.68 falls per 1000 patient days. Cardiac surgery PCU had 17 inpatient falls and 2.52 falls per 1000 patient days.

Patient falls are a significant source of injury and financial burden to the healthcare system. The Joint Commission (2015) reports hospital falls as a leading cause of sentinel events, with 60% of patients dying because of falls. Falls that occur during

hospitalization result in greater length of stay, additional medical tests, and higher healthcare expenditures for the patient and facility (Ganz, Huang, Saliba, & Shier, 2013). Patients who fall while in the hospital stay an average of six additional days and spend an extra \$14,000 in treatments (Joint Commission, 2015). Factors that lead to patient falls include a lack of employee education, ineffective policies, poor assessment and communication, inadequate leadership, and physical layout (Joint Commission, 2015). Accrediting bodies such as The Joint Commission and AACN Magnet Recognition Program® require healthcare facilities to have comprehensive fall reduction protocols (Joint Commission International, 2017; Lake, Shang, Klaus, & Dunton, 2010).

To improve patient care, the Centers for Medicare and Medicaid Services (CMS) in 2008 established disincentive penalties for 11 hospital-acquired conditions (Bae, 2016). Inpatient falls are among these 11 conditions and are considered nurse-sensitive quality outcomes since they are largely affected by nursing care (Bae, 2016). Since the inception of the CMS financial penalties, hospitals created improved systems of monitoring and collection of data to comply with mandatory reporting of quality data to central collection agencies (Kurtzman, 2010). Consistent reduction in patient falls have not resulted from the implementation of these disincentives (Burston, Chaboyer, & Gillespie, 2014).

**Literature review.** A literature review to investigate evidence-based fall prevention strategies for adult patients hospitalized in acute care settings was conducted of the databases CINAHL, MEDLINE, and Cochrane Library. Articles were included for review if published in English between the years 2013 and 2018 and if interventions were appropriate for the medical-surgical and progressive care environment. Exclusion criteria

included studies aimed to one specific population of patients and if no description or abstract was available. CINAHL search using Boolean technique for keywords falls and inpatient, falls and medical-surgical, patient falls and strategies, and patient falls and prevention, produced 1,054 results. After excluding inappropriate or duplicate finds, 119 abstracts were printed and reviewed. Thirty-eight articles meeting inclusion criteria were read, from which 10 articles with interventions appropriate for the study unit were selected for the literature review. Medline with full text was searched with keywords patient falls and strategies, and patient falls and prevention, producing 153 results. From 44 abstracts reviewed, three articles were read and one included in the literature review. Cochrane Library was searched with the four combinations of terms used in CINAHL, producing two articles, one included in this review. A total of 12 articles meeting the search criteria are included in this literature review.

***Teamwork and interprofessional collaboration.*** Seven of the 12 articles mentioned components of teamwork and interprofessional collaboration to achieve falls reduction (Daniels, 2016; Hardin, Dienemann, Rudisill, & Mills, 2013; Hefner, McAlearney, Mansfield, Knupp, & Moffatt-Bruce, 2015; Morgan et al., 2016; Sand-Jecklin, Johnson, & Tylka, 2016; Spicer, Delmo, & Agdipa, 2017; Tzeng & Yin, 2017; Votruba, Graham, Wisinski, & Syed, 2016). To focus more intently on fall reduction, the development of new staff positions to complement existing models may improve care delivery. Two institutions created new roles for technicians to monitor patient surveillance video systems and alert staff to prevent patient falling (Sand-Jecklin, 2016; Votruba et al., 2016). A new lead nursing assistant role to bridge the communication gap to licensed nurses was implemented in one study (Daniels, 2016). A large healthcare

system sought the input of leaders, patients, and families to create a visual Falls Wheel for patient room doors (Hefner et al., 2015). The Falls Wheel is utilized by an interprofessional team of providers and serves as a visible reminder about the patient's fall assessment score (Hefner et al., 2015). Collaborative intentional rounding is achieved when nurses and nursing assistants alternate rounding every other hour (Morgan et al., 2016). To develop an innovative falls prevention campaign, one article highlighted the formation of a planning team comprised of pharmacy personnel, physical therapy, and nursing staff (Spicer et al., 2017). Additionally, this institution implemented intentional team rounding by charge nurses, primary nurses, nursing assistants, and managers on high-risk fall patients (Spicer et al., 2017). Collaborative education teams provide valuable information to staff and use a variety of healthcare professionals to train employees (Hardin et al., 2013).

***Combined interventions.*** Eight articles indicate that falls reduction is attained by combining interventions instead of using a single modality (Brosey & March, 2015; Cangany, Back, Hamilton-Kelly, Altman, & Lacey, 2015; Daniels, 2016; Hardin et al., 2013; Hefner et al., 2015; Sand-Jecklin et al., 2016; Spicer et al., 2017; Tzeng & Yin, 2017). Fall reduction programs commonly include numerous interventions such as non-slip socks, fall risk assessments completed every shift, colored armbands, markers outside of room or on door, and environmental safety attention to clutter in walkways and around the patient bed (Hardin et al., 2013; Sand-Jecklin, 2016). Brosey and March (2015) assert that patient care during rounds be structured using the acronym PEEP, representing pain, elimination, environment, and position. One institution found success by implementing a unique slogan for the falls campaign, 'No Fall Zone,' combined with staff education, a

validated assessment tool, reminders on the ceiling above patient bed, and a signed patient/family contract (Cangany et al., 2015). One study reinforced baseline education on best rounding practices with follow-up education through a journal club and an education board in a common area of the nursing unit (Daniels, 2016). Hefner et al. (2015) established a website and instituted daily email reminders to serve as a resource for staff implementing a Falls Wheel on patient room doors. Structured nurse reflection and required follow-ups with patient and families reinforce the personalization of the patient experience (Spicer et al., 2017). Registered nurses perceive increased observation, bed-related precautions, education on call bell use, and provision of assistive devices among the most effective patient falls prevention strategies (Tzeng & Yin, 2017).

***Communication.*** Methods to assist communication among the healthcare team is mentioned in seven of the 14 reviewed articles (Brosey & March, 2015; Daniels, 2016; Hefner et al., 2015; Morgan et al., 2016; Sand-Jecklin, 2016; Spicer et al., 2017; Votruba et al., 2016). Formal discussion at staff meetings provide a forum for updates and discussion on falls projects (Brosey & March, 2015). Signs on the patient's door or above bed, and in-room white erase boards serve as ready references for employee communication (Brosey & March, 2015; Hefner et al., 2015; Spicer et al., 2017). Special interventions, such as video monitoring, require easily visible signage to alert patients and visitors (Sand-Jecklin, 2016). When placed in conspicuous locations, log sheets for documenting rounding activities aid workflow when staff perform patient rounds (Morgan et al., 2016). Daily huddles serve to promote communication among the interprofessional team (Daniels, 2016; Hefner et al., 2015; Spicer et al., 2017).

Standardized reporting protocols improve communication and prevent omission of important information during hand-off (Votruba et al., 2016).

***Education.*** Fall prevention programs utilize a variety of instructional methods to educate employees. Eight articles included in this review highlight different strategies, components, and time commitments for training (Brosey & March, 2015; Cangany et al., 2015; Daniels, 2016; Hardin et al., 2013; Morgan et al., 2016; Sand-Jecklin, 2016; Spicer et al., 2017; Votruba et al., 2016). Timeframes for education on programs or interventions lasted 10 minutes, 20 minutes, 40 minutes, 8 hours, or two days (Brosey & March, 2015; Cangany et al., 2015; Morgan et al., 2016; Spicer et al., 2017; Votruba et al., 2016). The type of educational setting ranged from flexible drop-in meetings, 1:1 manner, and structured classroom formats (Brosey & March, 2015; Morgan et al., 2016; Spicer et al., 2017). Education was offered by the way of videos or lecture-type presentations (Brosey & March, 2015; Cangany et al., 2015; Votruba et al., 2016). Innovative strategies include education boards and journal clubs (Daniels, 2016). Topics for education reviewed historical falls data, observations from current studies, guidelines for intentional rounding, reenactment of falls events, Lean techniques, ergonomic approaches to falls, and new technology (Brosey & March, 2015; Cangany et al., 2015; Morgan et al., 2016; Sand-Jecklin, 2016). One article specifically mentioned the need to re-educate staff about the study intervention techniques and quality goals (Daniels, 2016).

***Intentional rounding.*** Intentional rounding is noted in four of 12 articles as a highly effective intervention to reduce inpatient falls (Brosey & March, 2015; Daniels, 2016; Morgan et al., 2016; Spicer et al., 2017). A variety of rounding recommendations were noted in the literature. Formal rounding guidelines provide structure and

consistency for nurse implementation (Brosey & March, 2015; Spicer et al., 2017).

Effective intentional rounds include multiple checks in the patient room such as clearing the pathways and addressing toileting needs (Brosey & March, 2015; Spicer et al., 2017).

Some protocols allow rounding every two hours during the night, but others prefer rounding every hour (Brosey & March, 2015; Daniels, 2016). Acronyms such as PEEP that stands for pain, elimination, environment, and position, are useful reminders of rounding checks (Brosey & March, 2015). Daniels (2016) follows scripting for rounds using the four P's method that include pain, position, potty, and possessions. One study recommended placing rounding champions in each nursing unit to support sustainability of rounding efforts (Brosey & March, 2015). Alternating rounding duties every other hour between nurses and support staff promotes a shared-workload approach (Morgan et al., 2016).

Several articles adding value to the importance of intentional rounding were serendipitously found outside the auspices of this literature review. An integrative review of 14 studies explored the topic of intentional rounding to reduce inpatient falls (Hicks, 2015). The author notes that rounding may reduce falls by up to 50% and is a key intervention to include in falls policies (Hicks, 2015). Hicks (2015) found that effective rounding is focused on the four P's of patient care: Pain, potty, position, and possessions. Structured rounding protocols and the use of a checklist aid consistency of staff performance (Hicks, 2015). Rounds varied according to the frequency of occurrence, level of staff performing, and whether rounds included scripting or formal plans (Hicks, 2015). Thirteen of the fourteen studies reviewed experienced a reduction in patient falls after implementing intentional rounding (Hicks, 2015). Additional benefits of intentional

rounding include increased patient and staff satisfaction, and a reduction in call bell use (Hicks, 2015). A study by Nuckols et al. (2017) investigated registered nurse performance of intentional rounding and found that development of a systematic rounding protocol decreased overall nurse time spent on falls prevention and saved between \$800,000 and \$1.9 million dollars.

*Single interventions.* Seven articles contain reference to single falls interventions that may benefit reduction programs and one study found lack of supporting evidence for clinical decision support alerts (Cangany et al., 2015; Hardin et al., 2013; Lytle, Short, Richesson, & Horvath, 2015; Sand-Jecklin, 2016; Singh, Okeke, & Edward, 2015; Spicer et al., 2017; Tzeng & Yin, 2017; Votruba et al., 2016). Three studies showed a reduction in the number of falls by implementing video monitoring systems into existing falls programs (Hardin et al., 2013; Sand-Jecklin, 2016; Votruba et al., 2016). Virtual siderails included in one video monitoring system provide an additional protective feature and alarms if the patient attempts to disembark the bed (Hardin et al., 2013). One study notes fewer falls among patients staying in multi-bed rooms as compared to single-bed rooms (Singh et al., 2015). One article featured improved patient assignments for nursing assistants by grouping high-risk fall patients in proximity (Spicer et al., 2017). Tzeng and Yin (2017) investigated nurse's perceptions of effective falls interventions and found the most reported strategies as increased lighting, decreased noisy stimuli, clearing pathways, patient rounding, education on call bell, and use of assistive devices (Tzeng & Yin, 2017). One article evaluates the implementation of clinical decision supports related to fall prevention documentation in an electronic health record (Lytle, Short, Richesson, & Horvath, 2015). Alerts to remind nurses to document falls assessments and care plans

improved documentation compliance but did not correlate with a reduction in the number of falls (Lytle, Short, Richesson, & Horvath, 2015).

***Literature review conclusion.*** Fall prevention research spans numerous programmatic ventures and includes a variety of interventions and strategies. Review of the 12 articles in this review discovered six themes related to fall prevention: Teamwork and interprofessional collaboration, combined interventions, communication, education, intentional rounding, and single interventions. A unique strategy incorporating these concepts could benefit fall reduction programs and aid sustainability.

## **Rationale**

**Theoretical Framework.** Neuman systems model served as the theoretical framework for this DNP project (Neuman, 1989). According to the systems model, the client is the system and exists in a holistic interrelationship with the subsystems (Neuman, 1989). Wellness is defined as a continuum relating to client stability and affected by three types of stressors (Neuman, 1989). Identifying these stressors in high-risk fall patients helps the nurse provide safe care and implement protective strategies (Pattaramongkolrit, Sindhu, Thosigha, & Somboontanot, 2013). Intrapersonal stressors pertain to physical abilities such as strength, cognition, function, and vision (Pattaramongkolrit et al., 2013). Interpersonal stressors include psychosocial factors, while extra-personal stressors relate to the environment with items such as lighting, clutter, and assistive devices (Pattaramongkolrit et al., 2013). Buffers, called lines of defense, protect the patient from stressors and aid the patient's ability to remain free of illness (Neuman, 1989).

Neuman (1989) outlines the basis of health promotion through three levels of prevention: Primary, secondary, and tertiary. The nurse may implement interventions to reduce patient stressors in each of these levels of prevention (Neuman, 1989). Primary prevention improves a patient's lines of defense or decreases risk factors. Secondary prevention provides treatment of symptoms to improve health and wellness. Tertiary prevention aims to protect the client's reconstitution or return to health following illness. Neuman's system model incorporates a nursing process format (Neuman, 1989). The American Nurses Association (n.d.) list 5 steps of the nursing process as assessment, diagnoses, outcomes/planning, implementation, and evaluation. During the nursing diagnosis, patient assessment of fall risk is obtained, and stressors recognized. Once a diagnosis is made, planning involves development of primary, secondary, and tertiary prevention to promote patient wellness. During implementation, primary, secondary, and tertiary prevention are conducted. Once evaluation is complete, the plan is modified.

The Neuman's system model fits as a framework for a fall reduction program because of its ability to analyze the patient situation (system) and synthesize the multi-factorial components of the relationship between the system and subsystems. Lines of defense can be strengthened through appropriate fall reduction strategies implemented as primary prevention. Stressors can be identified and removed to decrease the patient's likelihood of sustaining a fall. Using the nursing process to outline patient care provides a familiar foundation for nurses to structure care for the high-risk fall patient.

**Assumptions.** Several basic assumptions pertained to the execution of this project. First, the institution's nursing policy for care to the patient at risk for falls reflects current best practice recommendations and evidence from the literature. Secondly, all

employees have access to the fall reduction equipment necessary to provide safe care. Lastly, processes for reporting patient events are functional and efficient to provide appropriate aggregation of falls data.

**Barriers.** Staffing considerations are a concern across all nursing units of this facility. The impact of deficient staffing levels is one factor that was considered for inclusion as the project progressed. Additionally, implementation was slated from June through September of 2019, a time when staffing was affected by employee vacations and an increase in paid time off. To attain adequate staffing levels in light of vacations, overtime, resource pool staffing, and travel nurses are utilized. The number of new graduate nurses and medical residents peaked during the summer months. There was a possibility that the new graduates and medical residents would require extra education.

### **Specific Aims: Purpose of the Project**

The aim of this DNP project was to reduce the number of monthly falls by 20% among adult patients on a cardiovascular progressive care unit. A quality improvement study endeavored to answer the clinical question, “Does implementation of interprofessional intentional rounding on a cardiovascular progressive care unit decrease the number of monthly falls and the falls per 1000 patient days?” Neuman’s system model was the theoretical foundation for a plan-do-study-act (PDSA) project to achieve these aims.

## **Methods**

### **Contextual Elements**

The location for this DNP study was the CVPCU at a 703-bed Level 1 trauma center and academic hospital. This flagship facility for a large non-profit health system

accepts a large number of private and government payers and provides financial aid and charity care. Serving as a tertiary care center for a large portion of the state, the hospital attends the highest acuity patients in the region and incorporates a wide variety of specialties not available elsewhere. The facility maintains Magnet Recognition® and participates in the Daisy Award for Extraordinary Nurses program. The CVPCU was formed by the relocation and merger of two nursing units in the fall of 2018, the vascular progressive care unit and the cardiac surgery progressive care unit. Literature supports that patient quality suffers during unit restructuring and reorganization (Vifladt, Simonsen, Lydersen, & Farup, 2016).

### **Intervention(s) and the PDSA Cycles**

A quality improvement project was designed using the PDSA tool. Three PDSA cycles were completed, averaging 5 weeks in duration. Existing literature and falls data analysis guided interventions in subsequent cycles. Short PDSA cycles allow revision to project and intervention modifications if needed (Institute for Healthcare Improvement, 2019).

Institutional Review Board (IRB) applications were submitted to both the hospital and university. The determination was made that this study did not meet the requirements as human subject research and did not require IRB oversight. This quality improvement project did not require consent from patients. Nurse's participation in the survey served as consent. Fall measures used for analysis are deidentified, collected, and distributed by the nursing quality department.

**Plan.** The initial intervention in the first PDSA cycle was implementation of a formal process of interprofessional intentional rounding on high-risk fall patients. The

iterative process of the PDSA cycles allowed for short-term evaluation and improvements contributing to this quality improvement study (Holly, 2014). Planning for this intervention included creation of an interprofessional fall prevention team for the CVPCU comprised of registered nurses and nursing assistants. A member of the physical therapy department and an ambulatory aid were considered for participation by the fall prevention team but were not included due to inconsistency in their staffing assignments. After forming team objectives, a communication plan and meeting dates were determined (Holly, 2014). The team reviewed the existing nursing policy on care to the patient at risk for falls. This information was utilized to compare and contrast current practice against best practice recommendations from the literature. An education plan was developed based on selected adoptions from the literature and included a review of current policy and causes of historic falls such as the need to remain with patients while toileting. Staff were educated in monthly meetings as well as information posted on four bulletin boards in the unit (Daniels, 2016). Education was ongoing and reinforced by the fall prevention team to ensure that all employees participated. A fall prevention slogan/campaign was selected and titled “Not on My Watch.” Reminder signs to aid effectiveness of hourly rounding were placed over patient beds. The falls team created the signs on bright orange laminated paper. Daniel’s (2016) four P’s acronym for pain, potty, position, and possessions was placed on the signs. However, the fall prevention team requested to include a fifth “P” to indicate place bed in lowest position (See Appendix A, Figure A1).

**Do.** Interprofessional intentional rounding was conducted on an hourly basis according to the plan adopted by the fall prevention team. Prior to implementation, completion of staff education took place at unit meetings and through posted education.

Fall prevention campaign information remained in place in the appropriate locations on the unit.

**Study.** At the end of each cycle, the number of falls and falls per 1000 patient days were reviewed, and analysis performed. Run charts compared fall data for one-year prior to project implementation and throughout the study period (See Appendix B, Figure B1). Staff were given updates on the number of monthly falls at monthly staff meetings. Barriers and facilitators of the process were assessed following each cycle by qualitative data collection.

**Act.** Recommendations from the literature and data analysis guided subsequent interventions and/or process modifications. Staff were updated at the end of each cycle regarding progress on fall reduction and any modifications that need to be implemented. The qualitative survey at the end of PDSA cycle 1 revealed a need to improve compliance with education (See Appendix C, Table C1 for survey questions and staff responses). The falls team requested that the posted education have bright orange paper for increased visibility. Educational flyers in 2 of the 4 posted locations had disappeared and needed replaced. Reminders were provided verbally and through email from leadership. At the end of PDSA cycle 2, the falls team requested that a signature list be placed alongside the posted education to designate completion and employees were reminded by the unit director to complete education and sign the list. At the end of cycle 3, 98% of the staff had completed the education. The falls team members assigned themselves staff to follow up in a 1:1 manner.

### **Study of the Interventions**

To fully understand the extent of fall events on the CVPCU, a meeting was held with the nursing department quality specialist to review historic data. A spreadsheet of falls for fiscal year 2017-2018 demonstrates falls per patient days higher than the average number for the hospital. A breakdown of all fall events realized opportunity for improvement in toileting related falls, assisted falls, and differences among certain shifts and days of the week. To monitor monthly progress, the number of falls each month was placed on a run chart (See Appendix D, Figure D1). After speaking with the CVPCU leadership team, it was determined that a revamp of the falls committee personnel was welcomed, as well as education to staff regarding hospital policy and interprofessional rounding as cycle 1 of the PDSA project.

The selection of run charts to display data is a method that was easily understood by the CVPCU team and visually assisted them in tracking progress. A run chart displaying historic falls data one-year prior to implementation was shared with the unit as part of the ongoing education plan. A second run chart graphed monthly data to demonstrate progress. A meeting was planned with the nursing quality specialist to create a map of fall events. This revealed geographic location of the patient falls according to unit lay-out (See Appendix E, Figure E1).

### **Measures**

Three PDSA cycles occurred from June 1, 2019 through September 30, 2019. Measurements to gauge fall reduction efforts were the number of falls that occurred monthly and the falls per 1000 patient days. These two fall indicators are collected by the nursing quality improvement specialist. The number of monthly falls are collected each month and a report sent to the senior director. Falls per 1000 patient days are reported at

the end of the year, after total yearly patient days are available. To serve as a baseline in this project, historic falls data from the individual units one-year prior to the merger were obtained. Falls data for the new merged unit began with the month of the relocation, December 2018. Qualitative data collection occurred at the end of each cycle to obtain feedback about barriers and facilitators of the hourly rounding process (Bonnell & Smith, 2014).

### **Analysis**

Data analysis occurred at the end of each cycle. The number of monthly falls were entered into a run chart and compared with the previous data. Additionally, debriefs occurred between the unit director and DNP student project leader following each fall event. Due to the small sample size, post-intervention parametric or nonparametric comparison testing was not performed. Qualitative data was collected by way of short electronic survey at the end of each PDSA cycle to obtain feedback from the staff about barriers and facilitators of the hourly rounding process. Thematic analysis was used to categorize qualitative survey.

### **Findings**

Historic data revealed a mean fall occurrence of 0.9 during the year prior to the implementation of this quality improvement study. During the first four months of the intervention implementation, the mean fall occurrence increased to 1.0. There were 2 falls for both June and July, however, during the last two months of the study, the number of falls each month were 0. The overall aim of this study was to decrease the number of monthly falls by 20%. The number of total falls for 2018 on the previous CVPCU

location were 18, making the 20% reduction target 14.4. The number of falls for 2019 on the relocated CVPCU were 8, thus comfortably meeting the target of 14.4.

The institution reports falls data on a budget year calendar that runs from October 1 through September 30. At the end of 2018, the falls per 1000 patient days for CVPCU were 2.68. At the end of 2019, the falls per 1000 patient day for the CVPCU were 1.46 (See Appendix F, Figure F1). Hospital-wide falls per 1000 patient days were 2.43 for 2018 and 2.35 for 2019. The National Database of Nursing Quality Indicator (NDNQI) benchmark for CVPCU for 2019 was 2.69. The NDNQI comparison was not included in hospital reports for 2018. CVPCU falls per 1000 patient days were compared to 2 similar cardiac progressive care units having the same target of 2.69 (referred to as Unit A and Unit B for anonymity). The falls per 1000 patient days for Unit A was 2.23 and Unit B was 3.43 (See Appendix G, Figure G1).

Following each PDSA cycle, a short qualitative survey was sent electronically to staff. Survey 1 had 10 respondents, Survey 2 had 5 respondents, and Survey 3 had 50 respondents. Survey 1 and 2 were distributed over a time of high census and staff vacations. The deployment of Survey 3 occurred at the time of monthly staff meetings where staff were reminded 1:1 to complete the survey. There were variations in the questions for each survey based upon feedback from the falls prevention team.

Over the course of the three surveys, the percentage of staff performing patient rounds increased from 90% and 80% on the first and second surveys respectively, to 95.92% on Survey 3 (See Appendix H, Figure H1). The percentage of staff reporting that the 5 P's signs above the patient bed did not help their rounding, declined from 30% on Survey 1, 20% on Survey 2, and 0% on Survey 3. It is unclear whether an increased

awareness of the signs or falls campaign influenced this answer, however more staff reported the sign as helpful as the project progressed.

At the time of Survey 3, a total of 47 respondents (95.92%) answered they were routinely participating in hourly rounding on high-risk fall patients. Of the 50 respondents, 0 responded the 5 P's sign had no effect on rounding, 16 respondents (32%) replied somewhat, while 34 (68%) answered the sign helps me perform better most of the time. In regard to whether the education increased the number of times rounds were performed on patients, 43 (87.67%) responded yes, while 6 (12.24%) responded no. Themes identified from staff responses that could improve compliance with rounding included continued reminders and reminders from leadership, better communication and teamwork, incentives for performance, patient/family education on the 5 P's, equipment needs, improved staffing, grouped patient assignment, and relocating high-risk fall patients near the nurse's station.

The overall summary of staff survey responses provides valuable insight to this project. The deployment of surveys at the end of each PDSA cycle, allowed staff the opportunity to reflect on individual performance and how each staff member enhanced patient safety. An unintentional consequence of the surveys were the reinforcement and reminders offered to staff who participated. Completion of education and participation in rounding increased over the period of the intervention. Staff responded that the education did increase the number of times they rounded on high-risk fall patients. General awareness of the intervention and falls campaign increased steadily throughout the project. Responses about barriers to rounding were consistent on all 3 surveys. Key concerns to improve rounding compliance centered around the need for improved staffing

and better teamwork and collaboration. Lack of, or broken equipment, was not reported as a widespread barrier, however 2 responses on Survey 3 did relay minor needs. The majority of staff relayed that the 5 P's signs above patient beds were a helpful reminder as they performed intentional rounding. Staff requested that patients and families be educated on the 5 P's, and that reminders continue in the future to improve performance of rounding. Remarks communicated a desire for increased effort to place high-risk fall patients near the nurse's station and to consider the location of high-risk fall patients when shift assignments are made.

### **Recommendations/Implications**

Although many institutions have evidence-based fall prevention policies, patients continue to fall as a result of numerous factors. This quality improvement project was established to reduce inpatient falls on CVPCU by 20%. Even though the target was achieved, there were other considerations that could have potentially influenced the outcome. A system initiative to reduce falls was implemented toward the end of this project. One staff member referred to the "call don't fall" system initiative in the post PDSA surveys. Over the course of this project, the hospital upgraded the call bell system with the ability to turn the light in the hallway above the patient door to a yellow color to denote the patient as high-risk for falling.

Key facilitators of this project included a high degree of support from stakeholders, an organizational climate supportive of quality initiatives, and collaboration from the nursing quality department for data retrieval. The positive working relationship between the senior director, unit director, DNP student, and unit staff played a significant role in the ease of project implementation. Barriers encompassed project implementation

over the summer months when staff frequently request vacation time off and the natural difficulties that occur when project teams attempt to align meetings amidst busy schedules. Positive unintended consequences involve exceptional input and responses from staff in the post PDSA cycle survey questions and staff support for the continued efforts in next steps for this project. Negative, albeit important, unintended consequences include identification of a potential pattern in geographic falls. Although room numbers for the location of falls were not linked to any patient data, the rooms where falls occurred were graphed on a map of the unit. The falls prevention team expressed surprise that at least half of the patient falls were in rooms considered close the nurse's station. Since the data is deidentified, it is unknown whether patients fell more than one time, what caused the fall, and the sequelae of injury.

A major strength of this project was the clinical significance posed by the study findings. Serial staff surveys reflect increasing knowledge and heightened awareness about the falls campaign and study intervention over the course of the 4-months. The surveys allowed the team to identify process changes that needed revision. This was a staff-led project, yielding selection of realistic and achievable goals. Interprofessional collaboration among the fall prevention team provided ongoing feedback to the DNP student and encouragement for staff participation. The problem of falls was identified by senior leadership as an indicator needing improvement. Besides the patient, leadership proved to be the greatest stakeholder and consistently supported the endeavors of this project. Other stakeholders included patients, nurses, nursing assistants, physicians, physical therapy, and occupational therapy. Historic data was obtained from 1-year prior to the intervention implementation to allow review of past performance and set a

baseline. Comparison data included the NDNQI benchmark for falls per 1000 patient days for 2 similar progressive care units and the overall hospital falls per 1000 patient days. Additionally, current fall rates was compared to the number of falls from the previous vascular PCU and cardiac surgery PCU prior to the merger. These comparisons allowed leadership to assess the unit's performance and set expectations for improvement. The literature search offered current and relevant evidence-based practices to add strength to the study.

The greatest weakness of the study was the short time frame (4-months) of project implementation. The results of the study are not generalizable due to the small sample and execution of the project in one nursing unit of one hospital. Also, due to the small sample size, no statistical analysis was performed. Although the results appear clinically significant, no cause and effect are asserted. The amount of competing priorities in regard to performance improvement focus areas for the unit may have unintentionally stressed the staff, resulting in less focus on the falls initiative. The unit of study has a list of 24 quality improvement priorities in the categories of staff satisfaction and engagement, patient experience, elimination of hospital acquired infections and conditions, and patient throughput. Additionally, the unit is still developing team dynamics and other internal processes as a result of organizational changes related to the merger and relocation.

Opportunity for future study in falls prevention exists in the continuation of this project past the study conclusion. The project slogan, "not on my watch," will continue in place, as well as the 5 P's reminder signs above each patient bed. Additional education to staff will include the importance of hourly rounding and the new call bell system with doorway light to indicate high-risk for falling. A longer time to observe the relationship

between interprofessional intentional rounding and the number of monthly falls and falls per 1000 patient days on CVPCU would be beneficial. The potential exists to expand this study to the entire cardiovascular service line and possibly the health system.

Researching trends in the geographic location of falls on the unit may reveal patterns influenced by bed assignments, patient acuity, level of fall risk, and a variety of other precipitating causes. Plans for dissemination include presenting this project at the healthcare system's regional nursing conference and submission to a national or international professional nursing journal for publication.

### **Conclusion**

This study to decrease inpatient falls on CVPCU highlighted interprofessional collaboration and input from a staff-led fall prevention team. The need to decrease inpatient falls was identified by nursing leadership and an aim of 20% reduction determined. The clinical question explored was: "Does implementation of interprofessional intentional rounding on a cardiovascular progressive care unit decrease the number of monthly falls and the falls per 1000 patient days?" Because of the recent unit merger and relocation, a heightened awareness existed to prevent deterioration of quality measures. Work processes and team dynamics on the new unit continued to evolve during the study period. A turnover of nursing staff occurred when employees were allowed to relocate to the new unit or stay on the previous unit under new management. As a result of the turnover, a revamp of the fall prevention team was required with new members representing registered nurses and nursing assistants. A review of the literature identified six key elements of effective falls prevention as teamwork and interprofessional collaboration, combined interventions, communication,

education, intentional rounding, and single interventions. Neuman systems model ideally fit as a framework in this study because of the focus on the client and the client's relationship with the subsystem (Neuman, 1989). Neuman's (1989) inclusion of primary, secondary, and tertiary prevention further justified the applicability of this model in preventing inpatient falls.

After IRB approval at both the hospital and university, the falls team commenced to compare and contrast the actual strategies implemented on CVPCU to the hospital policy and best practices identified in the literature review of this paper. Great concern was expressed that intentional rounding was inefficient or absent. With strong recommendation from the literature, interprofessional intentional rounding was selected as the primary intervention to reduce falls on this unit. Other elements suggested in the literature and included in this study were a formal education plan, reminder signs, selecting a project slogan, and periodic reinforcement of education.

Inpatient falls consistently rank as a leading quality indicator having opportunity for great improvement. Organizations invest a significant amount of time, money, and human resources to implement fall reduction strategies. Patients suffer injury, incur greater healthcare expenditures, and have longer recovery periods if they experience a fall while hospitalized. The Joint Commission (2015) reports that each patient who experiences a fall in the hospital, spends approximately \$14,000 on additional medical care. After implementing interprofessional intentional rounding, the nursing unit of study had 2 fewer falls than during the same 4-month timeframe the previous year. If the same reduction trend would continue for an entire year, there would be 6 fewer falls. Based on the Joint Commission estimate, the nursing unit would avoid roughly \$84,000 in

preventable expenditures by decreasing patient falls through interprofessional intentional rounding.

Despite great effort by hospitals, sustainability in reducing fall rates remains elusive. This quality improvement study benefited from using the PDSA rapid cycle improvement format. By frequently communicating results to the falls prevention team and performing end of cycle qualitative staff surveys, continuous feedback was elicited to enhance the process. The results of this study were similar to those found in current literature. This project will prove helpful to other nurses determined to impact quality outcomes and reduce inpatient falls. Interprofessional collaboration and effective team communication improved fall prevention efforts for CVPCU and correlated with a reduction of inpatient falls. Ultimately, the effective interprofessional intentional rounding embraced a hands-on approach to care that cannot be replaced by technology.

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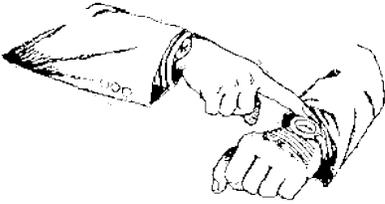
## Appendix A

Figure A1. Falls Reduction Educational Talking Points

Falls Reduction Talking Points

- Interprofessional rounding is one of the most effective ways to reduce inpatient falls.
- The hospital policy “Patients at Risk for Falls: Documentation and Prevention” includes rounding as a primary intervention, along with not leaving high risk fall patients alone while toileting.
- Rounding on high risk fall patients is done by assistive staff on odd hours and RNs on even hours.
- **When rounding, remember to check the 5 P’s**
  - **Pain** – ask the patient if they are having pain
  - **Place bed low** – bed should be in lowest position
  - **Position** – ask the patient if they need a position change or performed scheduled turn
  - **Possessions** – ask the patient if they have everything they need within reach
  - **Potty** – ask about toileting needs and remain with patient while toileting
- All staff review the hospital policy “Patients at Risk for Falls” which was revised 12/2018.
- Sign attendance sheet for inservice credit.

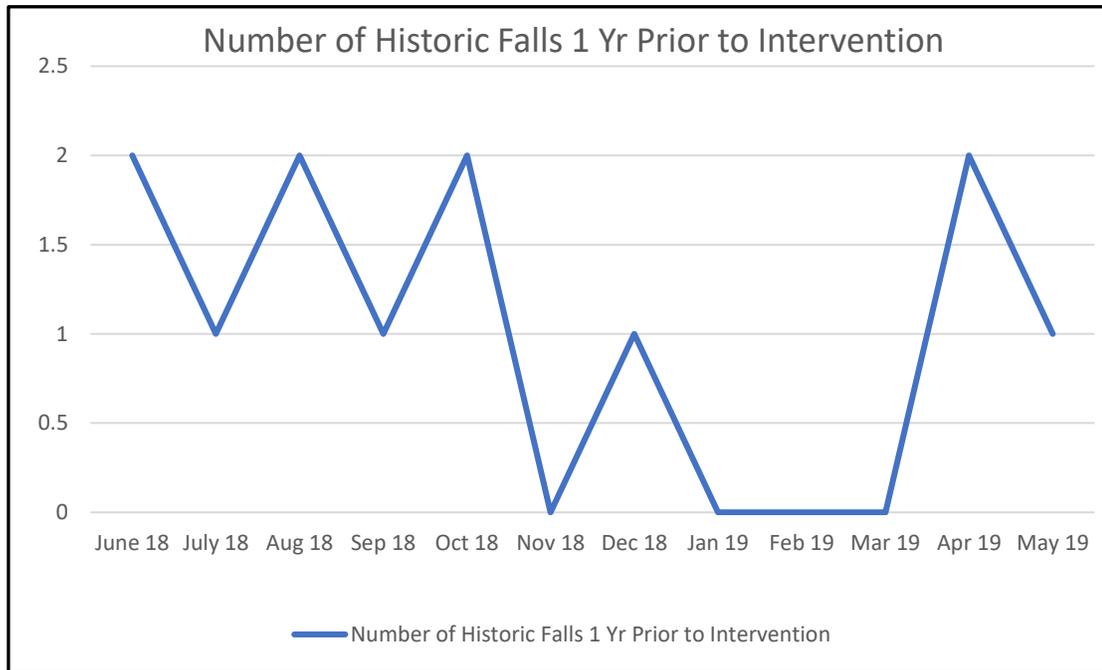
*Not on my watch!*



A black and white line drawing of a hand pointing to a wristwatch. The hand is wearing a sleeve with a cuff, and the watch is on the wrist. The watch face is visible, showing a dial with hands and numbers. The hand is pointing towards the watch with the index finger.

### Appendix B

Figure B1. Historic Falls 1 Year Prior to Intervention



## Appendix C

Table C1  
*Staff Survey Questions and Responses*

Survey Question #	Question	Results
Survey 1		
Question # 1	Have you completed the falls education recently posted on 7 South about interprofessional rounding on high-risk fall patients? Yes No	10 respondents 10 Yes - 100% 0 No – 0%
Question # 2	Have you routinely been participating in hourly rounding on high-risk fall patients during the past month? Yes No	10 respondents 9 Yes - 90% 1 No – 10%
Question # 3	Do you know the name of the slogan for the 7 South fall prevention campaign? Yes No	10 respondents 3 – Yes 30% 4 – No 40% 3 – Unanswered
	What is the name of the slogan?	3 Comments: 2 – Not on my watch 1 – 5 P's
Question # 4	In the past month, did you have all the necessary equipment you needed to care for the high-risk fall patient on 7 South and was the equipment working properly? Yes No If no, please explain why.	10 respondents 10 Yes - 100% 0 No – 0%
Question # 5	What barriers to hourly rounding did you have this month?	7 respondents (one with multiple answers) Staffing ratios (3) Patient acuity (2) Time (1) None (2)

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Question # 6	What things made hourly rounding easier this month?	4 respondents Orange Sign - 5 P's sign (2) Correct staffing (1) None (1)
Question # 7	Are you aware of the 5 P's sign above the patient's bed? Yes No	10 respondents 9 Yes - 90% 1 No - 10%
Question # 8	How have the 5 P's signs above the patient's bed affected your rounding? A) None. The sign has not affected my rounding. B) Somewhat. The sign serves as a reminder occasionally. C) A lot. The sign helps me perform better rounds most of the time.	10 respondents 3 - None 30% 5 - Somewhat 50% 2 - A lot 20%

#### Survey 2

Question # 1	Have you completed the falls education recently posted on 7 South about interprofessional rounding on high-risk fall patients? Yes No	5 respondents 3 -Yes 60% 2 - No 40%
Question # 2	Have you routinely been participating in hourly rounding on high-risk fall patients during the past month? Yes No	5 respondents 4 -Yes 80% 1 - No 20%
Question # 3	Did completing the falls education increase the number of times you round on high-risk fall patients? Yes No	5 respondents 1 -Yes 20% 4 - No 80%
Question # 4	Do you know the name of the slogan for the 7 South fall prevention campaign? Yes No What is the name of the slogan?	5 respondents 4 - Yes 80% 1 - No 20% 4 Comments: Not on my watch (2) Call don't fall (1)

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		5 P's (1)
Question # 5	In the past month, did you have all the necessary equipment you needed to care for the high-risk fall patient on 7 South and was the equipment working properly? Yes No If no, please explain why.	5 respondents 5 – Yes 100% 0 – No 0%
Question # 6	What barriers to hourly rounding did you have this month?	4 Respondents Short staffing (2) Patient needed to sleep (1) Patient acuity (1)
Question # 7	What things made hourly rounding easier this month?	0 respondents
Question # 8	Are you aware of the 5 P's sign above the patient's bed? Yes No	5 Respondents 5 – Yes 100% 0 – No 0%
Question # 9	How have the 5 P's signs above the patient's bed affected your rounding? A) None. The sign has not affected my rounding. B) Somewhat. The sign serves as a reminder occasionally. C) A lot. The sign helps me perform better rounds most of the time.	5 respondents 1 – None 20% 4 – Somewhat 80% 0 – A lot 0%

### Survey 3

Question # 1	Have you completed the falls education recently posted on 7 South about interprofessional rounding on high-risk fall patients? Yes No	50 respondents 49 Yes - 98% 1 No – 2% (New staff member – plans to do education)
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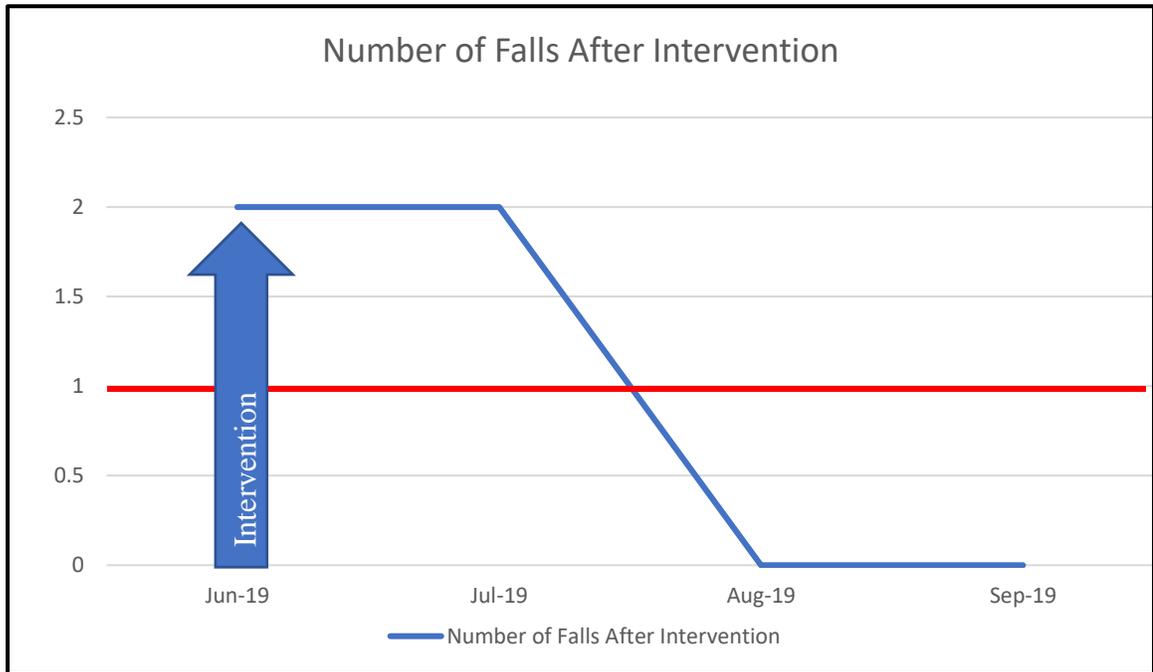
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Question # 2	Have you routinely been participating in hourly rounding on high-risk fall patients during the past month? Yes No	50 respondents 47 - Yes 95.92% 2 – No 4.08%
Question # 3	Did completing the falls education increase the number of times you round on high-risk fall patients? Yes No	50 respondents 43 - Yes 87.76% 6 – No 12.24%
Question # 4	How have the 5 P's signs above the patient's bed affected your rounding? A) None. The sign has not affected my rounding. B) Somewhat. The sign serves as a reminder occasionally. C) A lot. The sign helps me perform better rounds most of the time. How have the 5 P's signs above the patient's bed affected your rounding?	50 respondents 0 – None 0% 16 – Somewhat 32% 34 – A lot 68%
Question # 5	What can be done to improve rounding compliance on high-risk patients?	44 respondents Continue reminders/Leadership reminders (10) Better communication (1) Teamwork (6) Incentives tied to personal performance (1) Teach patients/families about the 5 P's (1) Enforce compliance & accountability (3) Grouped assignments (2) Improved Staffing ratios (10) Equipment (2) Move patients near nurse's station (1)

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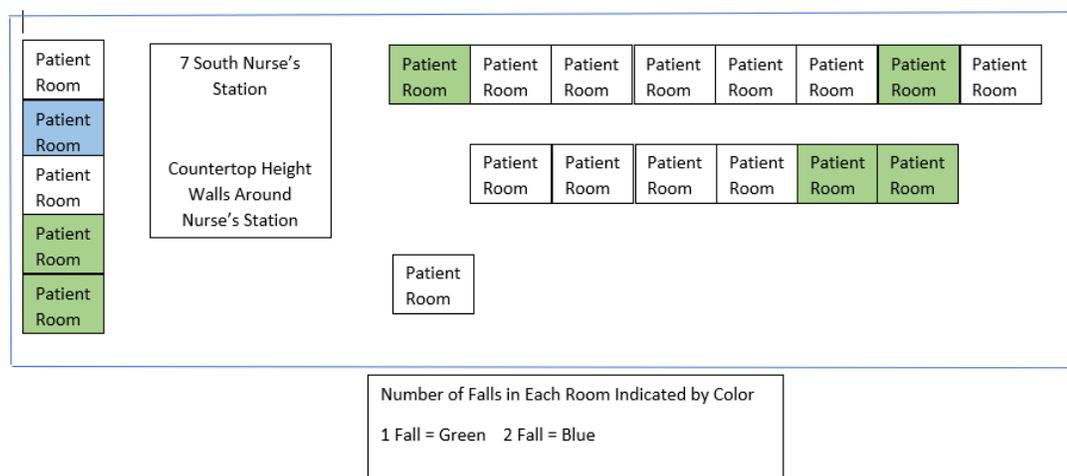
### Appendix D

Figure D1. Number of Falls After Intervention on CVPCU



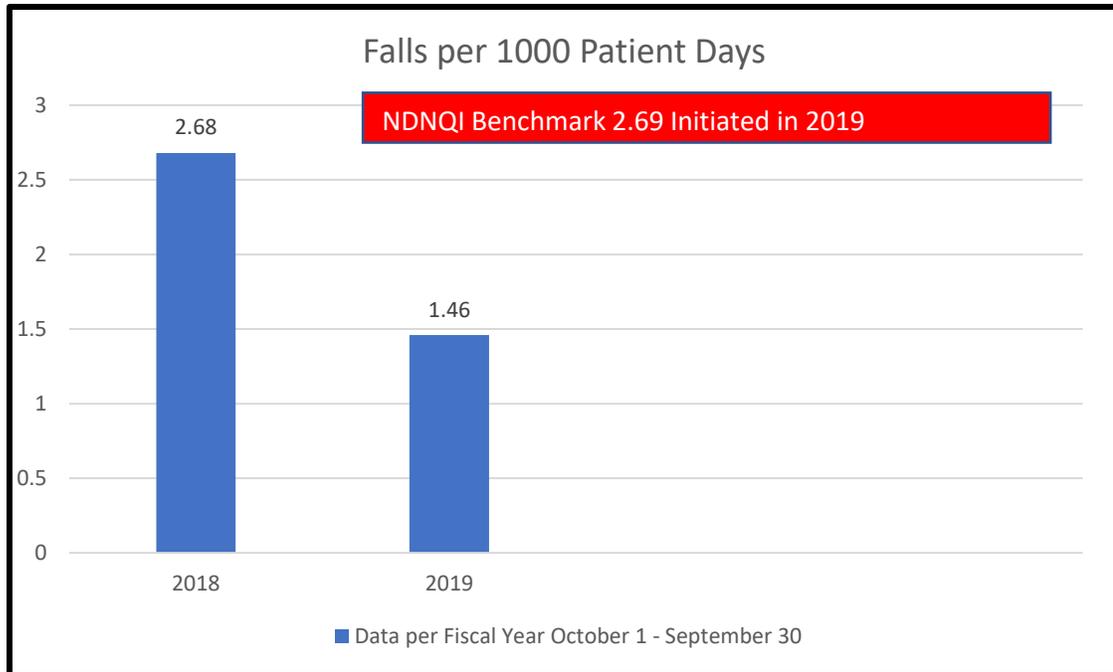
## Appendix E

Figure E1. Geographic Location of Falls on CVPCU December 2018 – September 2019



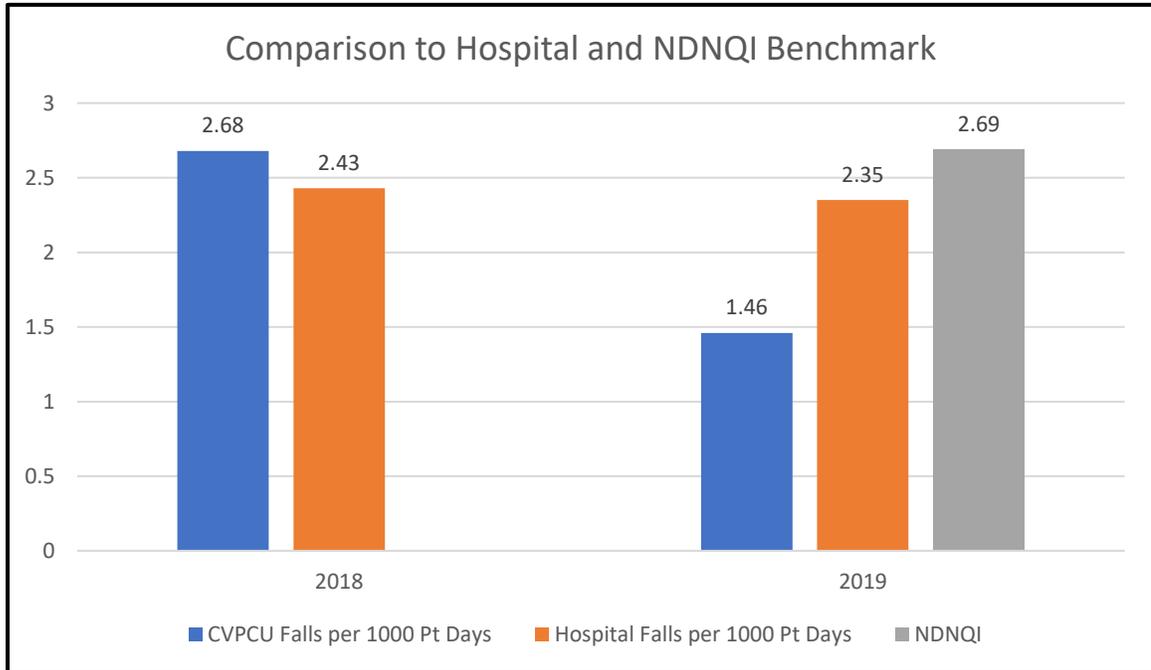
### Appendix F

Figure F1. CVPCU Falls per 1000 Patient Days



## Appendix G

Figure G1. Comparison to Hospital and NDNQI Benchmark



## Appendix H

Figure H2. Staff Survey Responses by Number

