Fall 12-10-2020

Decreasing the Fall Rate on a Medical Surgical Unit with an Enhanced Fall Algorithm in the Electronic Medical Record

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Abstract

This paper summarizes the quality improvement falls prevention project on a Medical-Surgical unit with an Enhanced Fall Algorithm incorporated in the Electronic Medical Record conducted by two Clinical Nurse Leader students of University of San Francisco.

This project addresses the patient falls events in a San Francisco-Bay Area Hospital on a Medical-Surgical unit. The aim is to decrease the rate of falls on a Medical-Surgical microsystem unit by 50% with an Enhanced Fall Algorithm incorporated into the Electronic Medical Record by June 2021. The patient population consists of general medical surgical patients where many of the patients have an increased risk for falls. Efforts at patient falls prevention will be planted at identifying patient risk with an Enhanced Fall Algorithm as a way to improve patient safety.

Utilizing Kotter's Eight Step Process for Leading Change, the literature review revealed that to prevent patient falls, evidence based practice must be implemented. Incorporating the Enhanced Fall Algorithm tool in the EMR was presented to the frontline staff for development, appropriateness, evaluation and sustainability. Outcome measure of patient falls reduction with a target goal of preventing one patient fall from a baseline of two falls per quarter will be measured by tracking patient falls trend. The goal of this implementation is prevention of one patient fall per quarter from a baseline of 2.04 by June 2021, and will be tracked with a run chart.

The results of this implementation are expected to show a decrease in patient falls relative to the median rate of falls within the hospital from 2 falls per quarter to 1 fall per quarter until June 2021. The importance of the CNL role with this improvement project is to understand how the microsystem works, gaining support from stakeholders, collaboration with frontline staff and incorporating evidence based practices which are parts of the CNL competencies and training.

Introduction

The project aims to improve patient safety by reducing falls with an Enhanced Fall Algorithm in the Electronic Medical Record on a Medical Surgical unit at a San Francisco-Bay Area Hospital by June 1th, 2021. The framework for this project is for patients to be safe from harm as one of the six aims of the Institute of Medicine (IOM) is safety as a highlight of patient care (IOM, 2001).

According to the Quality and Safety Education for Nurses (QSEN), there are some areas of care where improvement in delivery is needed. Some of these are interprofessional collaboration, use of evidence based practice, continuous quality improvement; focus on safety, and the use of informatics to improve the care delivery in any microsystem (Stalter & Mota, 2018).

Patient falls and injury in the hospital setting has unfavorable patient outcomes that lead to diminished patient independence, reduced functional capacity and increased mortality (AACN, 2013). Furthermore, it is associated with lower quality of life (Leavy et al., 2015). Some of the factors that can strengthens the safety of the patient and reduce falls and injury within the microsystem are adherence to falls prevention protocol, staff mindfulness regarding patient environment and safety, a comprehensive and effective handoff report, and ongoing safety conversation/reporting between the interdisciplinary team using a network or tools on the Electronic Medical Record.

Three of the primary clinical nurse leadership themes have been utilized in the project and are important components of the CNL competencies. The CNL themes include: Team Leadership, Educator and System Analyst, and Inter- professional Communication (AACN, 2013). As a Team Leader, the CNL will work with the current Falls Committee team members at the San Francisco-Bay Area Hospital with the appropriate delegation and collaboration of work. As an Educator,

developing an educational tool for the nursing staff regarding the use of an Enhanced Fall Algorithm focused on evidence based practice. Finally as a System Analyst, the CNL students have conducted a comprehensive microsystem assessment to identify the current tools and procedures used for falls prevention and the gaps in performance.

The San Francisco-Bay Area Hospital mission is to improve community access to a quality, culturally sensitive and affordable healthcare delivery system, which is dedicated to improving community health status, promoting preventive practices and wellness, and providing coordinated and appropriate health care services. In their vision they are committed to improving community access to a quality, culturally sensitive and affordable healthcare delivery system which is dedicated to improving community health status, promoting preventive practices and wellness, and providing coordinated and appropriate health care services. Values that support their mission includes: integrity, respect, empowerment, teamwork, accountability, and quality improvement.

The ongoing incidence of patient falls on the Medical Surgical unit at the San Francisco-Bay area Hospital requires intervention. The global aim of the project is to reduce patient falls on the Medical-Surgical unit at the San Francisco-Bay Area Hospital. The process begins with the initial patient assessment on admission onto the unit, and it ends when the patient is safely discharged home after acute care treatment. Supporting the project aim requires increasing the knowledge of the nursing staff on current policies of reducing the incidence of falls, introducing the Enhanced Fall Algorithm to the staff, and collaborating education sessions regarding this tool as a method to reduce falls and injury to the patient.

The Enhanced Fall Algorithm (see Appendix B: EFA components) is a model which takes in account multiple risk factors such as: age, gender, ethnic group, BMI, chronic conditions, nursing assessment, Morse scale, medications with high alert for falls, lab values, glucose, WBC,

RBC, K, Ca, and Alb, sleeping patterns, Braden assessments, nutrition, activity level, sensory perception, immobility, and past admissions to the hospital. During patient admission to the hospital, nurses and other staff members obtain information and assess the patient. After the initial admission, nurses insert the information into the Electronic Medical record (Moskowitz et al., 2020).

Following data input during admission, the patients risk score is calculated and when a high risk is calculated, the score is yielding on the summary page in the EMR. After the risk is assessed, measures of precautions and high risk protocols can be implemented. Each component has a score value and the total risk score for falls is the sum of these values. Patients who scored 64 or less have a low risk for fall, 65 and 119 is a medium risk, and scores above 120 is a high fall risk patient. According to the Moskowitz et al., (2020) study, the Enhanced Fall Algorithm was implemented in seven nursing units between the years of 2016-2018. The percentage of falls using the Enhanced Fall Algorithm decreased in the low risk population, and increased in the medium and high risk populations. Moreover, using the Enhanced Fall Algorithm versus traditional measures such as just the Morse scale, showed an increase in accuracy from 72.2% to 84.0%. Those units had a rate of 3.79 per 1,000 patient days, after the implementation of the Enhanced Fall Algorithm, the rate of falls per 1,000 patient days decreased to 3.04.

Identifying risks for falls with the Enhanced Fall Algorithm is a more accurate way to identify patients who are vulnerable to falls. By taking into account multiple factors such as demographics, chronic conditions, labs, and medications, the Enhanced Fall Algorithm is able to improve the accuracy of fall risk and perform in a more efficient way to decrease falls in high risk patients (Moskowitz et al., 2020). According to Hong HJ net al., (2015) and Yokota et al., (2017)

who incorporated the Enhanced Fall Algorithm in their studies, it was determined that this model has the best predictive performance for high risk patients.

The Enhanced fall Algorithm improve the efficiency and accuracy of identification of patients at risk for falls compared with the use of traditional measures such as Morse Fall Scale. By using the Enhanced Fall Algorithm nurses will be able to focus on risk reduction of patients at risk of falls. This model is novel and provides a calculated score for fall risk in the Electronic Medical Record with the multiple other contributing factors taken into account and flagging in the system the high risk patients during their hospitalization.

Organizational priorities should place safety at the first attention because this is directly linked to the organizational mission of the hospital to provide a safe environment, affordability and high quality healthcare. Patient falls has a negative financial impact on the organization. Not only patient falls contribute to increased healthcare premiums, it is also decrease reimbursement for Medicare patient (see Appendix C: SWOT analysis).

This project is very important to work on because it will enhance team awareness regarding fall risk in a convenient and efficient way embedded in the Electronic Medical Record, which will eventually reduce patient injuries and improve patient outcomes. This project will be a benefit to the microsystem and finally will implement the changes in order to reduce falls. This important opportunity is within the global aim of reduction of falls on the unit. In reducing the amount of falls, the microsystem will follow the ethical principles of beneficence and nonmaleficence (ANA, 2011). This will contribute to a better reputation and satisfaction, and a Hospital with a safe environment.

Problem description

Patient falls has the potential to cause physical and emotional harm regardless of the outcome, not only to the patients but to the staff and the organization. The American Nurses Association defined a fall as an unplanned descent to the floor with or without injury to the patient (Anderson et al., 2008). In the hospital setting patient falls are the leading cause of injuries among the older adults, can lead to patient injuries, prolonged hospital stays, and higher costs to the hospital (Dunne et al., 2014).

Falls in the older adult's population can cause severe injuries and even death. Preventing potential injuries and costs to the 3rd floor of Medical Surgical unit is critical. The AHRQ (2013) state that one third of falls can be prevented if evidence based tools are implemented by the interdisciplinary team. At the San Francisco-Bay area Hospital, current best practice policies are in place to prevent falls, yet they are still occurring. According to data from the San Francisco-Bay Area Hospital, patient falls on the Medical Surgical unit are still occurring and summarized in Table 1. According to a Run chart the rate of falls per 1000 patient days on the Medical-Surgical unit is 2.04 for 2019, compared to national benchmark of 3.14. The 2005-2009 control mean fall rate is 2.34 with a median of 2 falls per quarter. While the number of falls on the Medical-Surgical unit is lower than the Benchmark, there is always a place for improvement of patient safety.

Patients in high risk for falls on Medical-Surgical units are identified in the hospital using nursing assessments. One popular assessment of falls is the Morse Fall Scale (MFS). However, those assessments tools have a high rate of mistakes and are not very accurate resulting in falls and injuries of patients. The Enhanced Fall Algorithm is an individualized fall assessment that was developed with the updated guidelines of the Joint Commission to improve patient outcomes.

Available knowledge

The PICOT question: How does an Enhanced Fall Algorithm in the Electronic Medical Record (I), compared with previous methods of falls prevention (C), in decreasing the rate of falls from 2.04 by 50% (O), in the Medical-Surgical unit a San Francisco-Bay Area Hospital (P), during a four-month time span (T)? A database search at PubMed, Scopus, CINAHL and Cochrane Database was performed using the key words: Electronic Medical Record, Fall, decreasing, and prevention in the PICO question, yielding 100 studies which were further narrowed down to 6-10 relevant articles.

Every year between 700,000 and 1,000,000 falls occur in hospitals due to falls and mortality rates have increased in the recent years in the United States which is an issue at the national level today. Unfortunately, 30-35% of these falls result in injury and approximately 11,000 falls result in death (Health Research & Educational Trust, 2016). Furthermore, patients on the Medical-Surgical units appear to be at higher risk for falls than intensive care patients.

Reports on the national level show that falls happen roughly between 3.67 and 6.26 per 1000 patient days. While 2% result in serious injuries, fifth of the falls result in some type of injury. Multiple risk factors contribute to increased risk of falling on a Medical-Surgical unit such as medications side effects, altered mobility after a surgery, history of falls, altered mental status and frequent toileting (Cuttler et al., 2017).

The US Patient Protection and Affordable Care Act 2010 aimed to intervene in order to decrease by 40% patient falls and as a result of injuries in some hospitals. However, by the end of 2014, the agency for Healthcare Research and Quality reported that hospital falls were essentially unchanged from 2010 levels.

Negative consequences of falls to patients include different types of harm such as physical, emotional and financial. Even falls that cause no physical injuries can cause harm such as fear related to the events surrounding the fall, and trauma from the adverse event which can lead to a functional decline. Not only the patients are impacted, the staff and the organization are faced by emotional distress and increased hospital costs. The costs of fatal falls in 2012 resulted in $616.5 million and non fatal falls resulted in $30.3 billion in healthcare costs. In 2015, these costs increased by 3.4% to $637.7 million and $31.3 million respectively (Burns, Stevens, & lee, 2016).

Staff in the hospital has a complex and potentially conflicting set of goals when treating patients. Hospital personnel need to treat the problem that prompted the patient‘s admission, keep the patient safe, and help the patient to maintain or recover physical and mental function. Thus, fall prevention must be balanced against other priorities. Fall prevention requires an interdisciplinary approach to care. To accomplish and coordinate fall prevention efficiently, there has to be an organizational culture that promotes teamwork and communication.

Nurses play a key role in assessing the patient risk for falls and whether to implement fall prevention strategies (Cox et al., 2015). Training of the nursing staff on hourly rounding of patients who are at risk of falls through engagement, communication, and teamwork decrease patient fall rate (Morgan et al., 2017). Delivery of information regarding patient fall risk between the interdisciplinary team members has a crucial impact on patient injuries and adverse events. Incorporating a change on a Medical-Surgical unit with an Enhanced Fall Algorithm in the Electronic Medical Record station alerts nurses of patients at high risk for falls is a measure to decrease the rate of falls. A huddle after a fall is a communication tool used to inform the staff of falls that happened in the last 24 hours (Rowe, 2012)

Rationale

Kotter's Eight-Step Process for Leading Change (see Appendix D: Kotter's steps) was chosen as the appropriate change theory to guide the planning and implementation of this project (Kotter, 2016). The objective was to create sense of urgency of the falls rate and then to build a coalition of people who will guide and communicate its activities. Forming a strategic vision and make people to drive the change with a common goal of reducing falls was initiated. Enabling the action of implementation by removing barriers and generating a short term wins to track the progress and recognize the efforts will be elaborated in order to sustain acceleration and the last and institute the change (Kotter, 2016, p. 1).

Specific global aim of the project: we will decrease the rate of falls in the San Francisco-Bay Area Hospital on a Medical-Surgical unit by 50% from a rate of 2.04 with an Enhanced Fall Algorithm in the Electronic Medical Record by June 2021. In reducing the amount of falls, the microsystem will have a better reputation, continues safe environment and the organization would receive reimbursement sustaining the Institute of Medicine's important aim for safe patient care (IOM, 2001).

Clinical Microsystem Analysis

This is a San Francisco-Bay Area hospital with a 100 acute care beds that provides a wide range of medical, surgical, and specialty care to a multicultural community with an emergency services, acute care, and behavioral health, and rehabilitation.

The microsystem where this quality project takes place is a 12- bed Medical Telemetry unit. The formal and informal leaders of the unit include the Chief Nursing and Operations Officer, Director of acute care services, charge nurses, and floor nurses on the unit. The patient population is primarily adult or geriatric and the most common ethnicities are non-Hispanic white, and Asian.

On the Medical Telemetry floor, nurses begin their day with a hand off report to discuss all patient information. The hands off includes the identification of patients who are at risk for falls. Also, the report includes patient medications, prescriptions, dressing changes, and new orders. The appropriate precautions are then initiated when fall risk was identified. These interventions include non-skin socks; call light within reach, a sign of precaution such as a yellow falling star outside the door, bed in the lowest position and placing the patient close to the nurse's station.

The stakeholders who will affect the implementation of this project are the nurse managers and the floor nurses who will provide support for the CNL project. The chief nursing officer and the director of acute care services can help address some resistance among nurses and other interdisciplinary team.

Methods

In support of the mission of the San Francisco-Bay Area Hospital, a strategic plan of action will be conducted to achieve a high level of safety, quality, and efficiency goals. A microsystem assessment will be performed for the Medical Surgical unit to learn the environment of care. Nurse feedback and patient falls data will be assessed, retrieved, and analyzed for opportunities for improvement. An interdisciplinary approach with a commitment for the safety of the patient will be approached in order to reduce patient falls and injury.

Staff surveys regarding the current fall measures and if there is a need for change were conducted on the Medical Surgical and Telemetry unit (see Appendix E: nurses survey). This survey allowed the CNL students to explore the current fall measures and to get an idea about the nurse's perspectives regarding falls.

Currently, the Electronic Medical Record is integrated and widely used at the hospital. Despite this integration, patients are still experience falls and not being properly identified with

effective assessment tools as a fall risk patient. Based on the survey (see Appendix F: fishbone of nurses survey) it was apparent that nurses understood the use of the Electronic Medical Record; however, there is no place to chart a fall on it, assess and highlight the patient who is at risk of fall. Some of the nurses highlighted that some measures to prevent falls are not very effective due to human errors as forgetting to turn a bed alarm on or the inability of the staff to meet acuity needs of the patient. In addition to that, some patients are forgetting to use call lights, confused about their medications, and staff being assigned to patients that are not their patients. Nurses highlighted the inadequate staffing and rounding on the unit, as well as management being not familiar with patient needs regarding falls risk. Furthermore, nurses are using their judgment most of the times as oppose of using an Evidence Based Practice tool in the Electronic Medical Record.

The strengths and weaknesses of the microsystem have been identified. Some of the strengths that have been identified are increased hospital reputation, increased safety score of the hospital. Some of the weaknesses are barriers to incorporating a new tool on the Electronic Medical Record, and current rate of falls in the Medical- Surgical unit. Some of the challenges that need to be mitigated are sustainable financial backing for the project, rate of technological change making it difficult for nurses to adapt to methods of communication and adjust to a new assessment tool on falls (see Appendix C: SWOT analysis).

As the goal for the falls prevention project is to implement an Enhanced Fall Algorithm a cost benefit analysis was conducted and summarized in Table 2. An estimate net benefit of $85,900 saved per year was realized. In this estimate, the average hospital values were used. The total cost of IT training is $42,629.06 per 1,000 patient days. The cost of falls per 1000 patient days is $49,758. Reducing falls, means reducing length of stay and saving $85,900 per 1,000 patient days with the implementation of the Enhanced Fall Algorithm and training of the staff. The cost utility

of falls avoidance results in better patient outcomes, improved quality of life, and consequentially decreased cost for the patient and the organization

Intervention

Collaboration from the interdisciplinary team members is essential in order to obtain insight and help address the patient fall issues in a timely manner. Incorporating the Enhanced Fall Algorithm tool in the EMR for the unit, and establishing an educational program for the staff, on using a new way of assessment on fall risks and prevention, will be presented to frontline staff for development, appropriateness and sustainability. The CNL will work closely with the Quality, Educational, and Informatics Department at the San Francisco-Bay Area hospital to guide and educate the staff about the new method of communication in order to reduce falls.

Study of the intervention

Currently, fall prevention policies require consistent implementation by the staff for it to be successful. Sometimes barriers in communication and delays in the delivery of information may increase the prevalence of adverse events. Obtaining an innovative assessment tool in the Electronic Medical Record as a safety huddle and messaging and yielding other staff members on some important cues regarding care of the patient for the incoming staff is essential and evidence based practice studies support the process of improving communication to increase staff awareness and patient outcomes (Moskowitz et al., 2020).

The intervention that was introduced to the Medical-Surgical unit is the use of an Enhanced Fall Algorithm in disseminating the fall risk patients through an innovative tool in the EMR. Safety discussion of adherence to fall prevention practices and highlighting of the fall risk patients through the EFA increases staff awareness to be mindful of the patients who are at risk for falls and injury.

The CNL students will evaluate and observe the RN and other team members using the Enhanced Fall Algorithm. The next step will be a questionnaire for the team members to identify teaching and implementation success and to see if this new method of information delivery with highlighting the fall risk of patients is successful and helpful.

Measures

Outcome measure of patient falls reduction with a target goal of preventing one patient fall from a baseline of two falls per quarter will be measured by tracking patient falls trend. Using the current and the most updated evidence based practice of falls prevention and implementation of innovative tools in order to improve patient outcomes can contribute to reduction of patient falls and injury. The goal of this implementation is prevention of one patient fall per quarter from a baseline of 2.04 per 1,000 patient days by June 2021, and will be tracked with a run chart. Staff compliance with the use of the Enhanced Fall Algorithm will be measured in order to keep the patient safety. Compliance of the staff with the EFA can be directly observed and randomly audited in order to keep a safe patient environment.

Results

The results of this implementation are expected to demonstrate a decrease in patient falls in the Medical-Surgical microsystem relative to the median rate of falls within the hospital from two falls per quarter to one fall per quarter until June 2021.

The implementation plan have begun in creating a sense of urgency based on Kotter's eight steps with presenting a poster presentation for the staff, meeting with floor 3 staff members, and delivering surveys for post-meetings. The next step was building a guiding coalition and elicits volunteers/unit champions from meetings with initial falls committee meetings. Following that it is important to form a strategic vision and initiatives by formation of PDSA cycles that will be rolled

out to the staff and encourage their input for future revisions. By creating a suggestion box, summary of project and goals in the break room, process mapping and Failure Modes and Effects Analysis, action can be enabled by removing barriers on the unit. Short term wins will be created and defined and there will be a sustained acceleration with PDSA revisions and staff meetings. Finally, the change will be instituted and a unit champion will be assigned for the project.

Discussion

The project identified several key findings regarding the overall process of this quality improvement project. The implementation plan can be explained by Kotter's eight step theory of change, when creating a sense of urgency goal is to make individuals aware of an existing problem and a possible solution that is likely to be supported (see Appendix G: Gantt chart). A coalition of people is needed to support the change and should be made up of a range of skills, a range of experience and people who come from different areas of the microsystem to maximize its effectiveness. A change initiative is likely to be very complicated and can often be hard to understand, for this reason creating a vision is useful in generating support from the whole microsystem. By enlisting a volunteer army, the vision can be communicated throughout the organization together with staff input and revision of the PDSA cycles.

Identifying barriers with a suggestion box and process mapping will help eliminate obstacles on the way for a successful change. Change processes often take a while to reap any rewards and this can cause support to fall if individuals think their effort has been wasted. Weekly staff meetings, kickoff party, and data sheet creation are just some of the ways to implement in order to reduce frustration of staff and create a sense of success and motivate people. To sustain and cement the change for long after it has been accomplished, goals and consistent evaluation has to be continued. Encouraging employees across the microsystem to adopt the changes, celebrating

the adoption and success, keeping stakeholders on board and continued evaluation with revisions and feedback will promote the change to the core of the microsystem.

Through the time of the project at the San Francisco-Bay Area hospital, the CNL students learned to demonstrate flexibility, assertiveness and adaptability. Moreover, the CNL students were able to evidence the complexity of lateral integration. In order to be successful, the CNL must coordinate, collaborate, communicate and continuously evaluate patient outcomes. In this project the CNL students were able to distinguish and perceive these skills as part of the evidence based practice project.

Nursing and CNL relevance

This project has a significant devotion to the nursing role. It is important for a nurse to fulfill a fall assessment correctly which can prevent falls and improve patient outcomes. Fall assessment must include different aspects and take into account multiple risk factors. The Enhanced Fall Algorithm contributes to a better and more accurate assessment and identification of fall risk at the hospital.

This project also demonstrates the importance of collaboration as a nurse as well as a CNL. The Enhanced Fall Algorithm is taking into account multiple factors which require nurses to work with the interdisciplinary team to create a correct assessment and identify the fall risk of the patient.

This quality improvement project emphasizes the ethical principle of beneficence by doing well for the patient which is a core competency of being a patient advocate (Beauchamp & Childress, 2009). Once the nurse identified the multiple risk factors and incorporate it into the EFA, the nurse should generate the fall risk of the patient and institute precautions as soon as possible as part of the ethical principle of beneficence. Intervention may include but not limited to

raising the three side rails up, posting a yellow alert sign, setting the bed alarm, and other evidence based practice mediations.

The CNL responsibility in the acute care setting is to execute quality improvement projects. The CNL have the education and can use tools such as root cause analysis, failure mode effect and complete analysis of the microsystem. The CNL has the continuity and influence on the patient's plan of care and have the responsibility of evaluating patient outcomes. The CNL is an important and beneficial asset to the microsystem and to the mesosystem where successful PDSA cycles can be implemented or revised for future implementations.

Conclusion

The CNL students have experienced an exceptional educational experience with this quality improvement project. The topic of this project is very important because almost all hospitals experiencing falls on their units and trying to reduce their occurrence. To ensure patient safety and reduction of falls, continued evaluation is required. The CNL students greatly benefited from practicing the quality improvement process and from thorough study of evidence based practice regarding fall prevention. The CNL understanding regarding of how properly assess fall risk factors with an innovative tool in the Electronic Medical Records, allow the CNL students to understand the difference between research and quality improvement project, correctly analyze systems, anticipate risk and mange outcomes using evidence based practice.

Improvement and reduced patient falls on the medical-Surgical unit at the San Francisco Bay Area hospital will be observed and expected with the implementation of the Enhanced Fall Algorithm. The importance of the CNL role with this improvement project is to understand how the microsystem works, their risks, gaining support from stakeholders, collaboration with frontline

staff and incorporating evidence based practices which are parts of the CNL competencies and training.

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Tables

Table 1

Fall quarterly data 2017-2019

Category	2017 Q1	2017 Q2	2017 Q3	2017 Q4	2018 Q1	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3		Median
Fall Incidents	5	3	1	2	1	6	5	1	5	2	0		2
Falls with Injury	0	0	0	1	0	0	0	0	0	0	0		
Fall Rate per 1000 patient days	2.34	1.81	0.67	1.68	0.61	5.2	3.8	0.72	2.81	1.21	0		
National Benchmark	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14		
2005-2009 Control Mean Fall Rate	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34		
Patient Days	2136.75	1657.46	1492.54	1190.48	1639.34	1153.85	1315.79	1388.89	1779.36	1652.89			
Fall Rate per 1000 Patient Days/Year				1.69826				2.36455		2.03948			
Average of Row 4 per Year				1.625				2.5825		2.01			

Table 2

Cost Benefit Analysis

Cost-Benefit Analysis (per 1000 patient days)					
Benefits					
Item	**Savings**	**Number**	**Frequency**	**Subtotal**	**Total Savings**
Cost for Fall with Injury	$14,056	3.54 falls (Bouldin et al., 2013)	1000 patient days	$49,758	$49,758
Length of Stay	$3,532 per day for inpatient hospital cost (KFF, 2020)	6.3 days added to LOS for falls (Joint Commission Center, 2020)	3.54 falls per 1000 patient days	$45,916	***$128,529***
Costs					
Item	**Savings**	**Number**		**Subtotal**	**Total Cost**
IT Training/Set-Up	$55.57/hour (median salary for Health Care IT in SF)	8 hours	One time cost	$444.56	$444.56
IT Reformatting time	$55.57/hour (median salary for Health Care IT in SF)	8 hours	One time cost	$444.56	$889.12
Training Time for Nurses	$51.98/hour (median salary for RN in SF MS unit)	2 nurses, 3 shifts, 0.5 hrs	One time cost (training)	$155.94	$1,045.06
Nursing Time	$51.98/hour (median salary for RN in SF MS unit)	0.1 hr, 8 patients	1000 patient days	$41,584.00	***$42,629.06***
Net Benefits Calculation					
					Calculation
				Benefits	$128,529
				Costs	$42,629
				Net Benefits	***$85,900***

Appendix A

IRB Non-Research Determination Form

Title of Project: Decreasing the Fall Rate on a Medical Surgical Unit with an Enhanced Fall Algorithm in the Electronic Medical Record.

Data that Shows the Need for the Project

One of the most important aspects of patient safety is the prevention of patient falls. The project will address the ongoing patient falls on a medical-surgical oncology unit in an inpatient hospital setting. After performing a literature review revealing that to prevent patient falls, evidence- based practices must be implemented and known by the nursing staff and patients. One of the six aims of the Institute of Medicine (IOM) that provides as the framework for this project is for patients to be safe from harm from the care they receive (IOM, 2001). It seems like a lot of research can be found regarding using the EMR to decrease falls, most of them are about Morse fall scale; however, very few articles were trying to incorporate a new approach in the EMR and even more importantly looking into the data using the Morse falls scale in comparison with other fall assessments sales. From the research I have done, Morse scale is not a very effective way to reduce falls at the hospital and there is a need for new and innovative tools in the EMR that can decrease patient falls.

The AHRQ (2013) asserts one-third of falls can be prevented if evidence-based tools are implemented. Falls among hospitalized patients is an issue experienced at national level in the United States. Between 700,000 and 1,000,000 falls occur in hospitals every year. Furthermore, approximately 30-35% of these falls result in injury and 11,000 falls result in death (Health Research & Educational Trust, 2016).

Aim Statement: Reducing falls on the Medical-Surgical unit by 50% at the Chinese Hospital by 6.1.2021.

Description of Intervention(s)

An evidence based project implementing an Enhanced Fall Algorithm strategy to decrease the rate of falls on a Medical-Surgical unit. Methods would include a breakdown of the interventions that will be implemented on the future. Most of them will include nurse's surveys, micro system assessment, staff education regarding the new tool in the EMR, and evaluation of the education process and patient falls after implementing the Enhanced Fall Algorithm.

Desired Change in Practice

The desired change is reducing the rate of falls by 50% with an Enhanced Fall Algorithm in the EMR on a Medical Surgical unit.

Outcome measurement(s)

The main goal is to reduce the falls on the unit and improve safety by introducing a new assessment and risk for fall tool to the unit. The measurement can be made by how many falls were on the unit before and how many falls are now per 1000 days.

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

Comments:

Signature of Supervising Faculty:

November 15, 2020

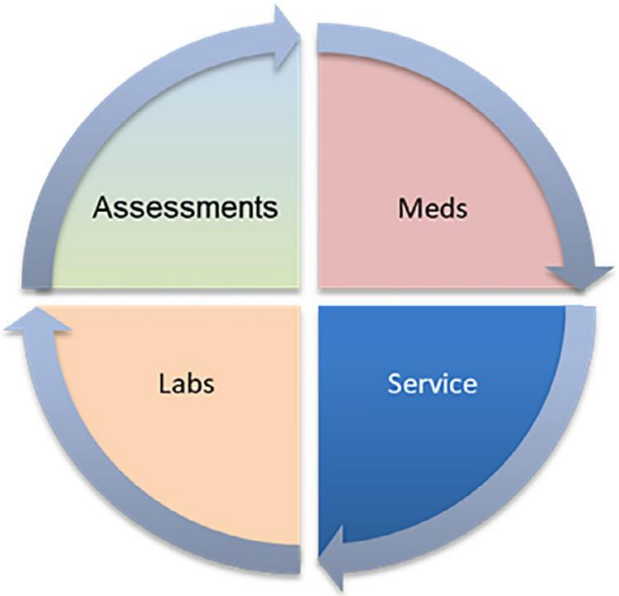
Signature of Student: Natali Sokolovski (date) 11/4/2020

Project Title:	**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.	Yes	
The specific aim is to improve performance on a specific service or program and **is a part of usual care**. ALL participants will receive standard of care.	Yes	
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.	Yes	
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.	Yes	
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.	Yes	
The project is conducted by staff where the project will take place and involves staffs who are working at an agency that has an agreement with USF SONHP.	Yes	
The project has **NO** funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.	Yes	
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.	Yes	

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 X hospital or agency and as such was not formally supervised by the Institutional Review Board."*	Yes	

Appendix B

Components of the Enhanced Fall Algorithm



Morse high	53	Anti Psychotic	52	Ca>10.1	31	Neurology	35
Restless	25			AST>100	28	Pulmonary Medicine	24
Morse mid	23	Anti Epileptic	33	AST61-100	21	Geriatrics	15
BS not adequate nutrition	19			Na<130	20	Medicine	12
BS Friction/Shear potential problem	16	Anti depression	25	WBC<4.3	17	Ophthalmology	-1
Male	15			Glucose >165	16	Orthopedics	-5
Readm in prior 30 days	10	Anti Anxiety	18	AST 41-60	15	Surgery	-5
BS completely immobile	-55			Cl<96	15	Gastroenterology	-9
		Anti Histamine	13	Alb <2.4	14	Vascular Surgery	-15
				AST 31-40	14	Nephrology	-17
				Alb 2.5-2.7	13	Cardiology	-19
				RBC<3.7	11	Gynecology	-23

Total New Score: Low <65 Mid 65-119 High ≥120

Appendix C

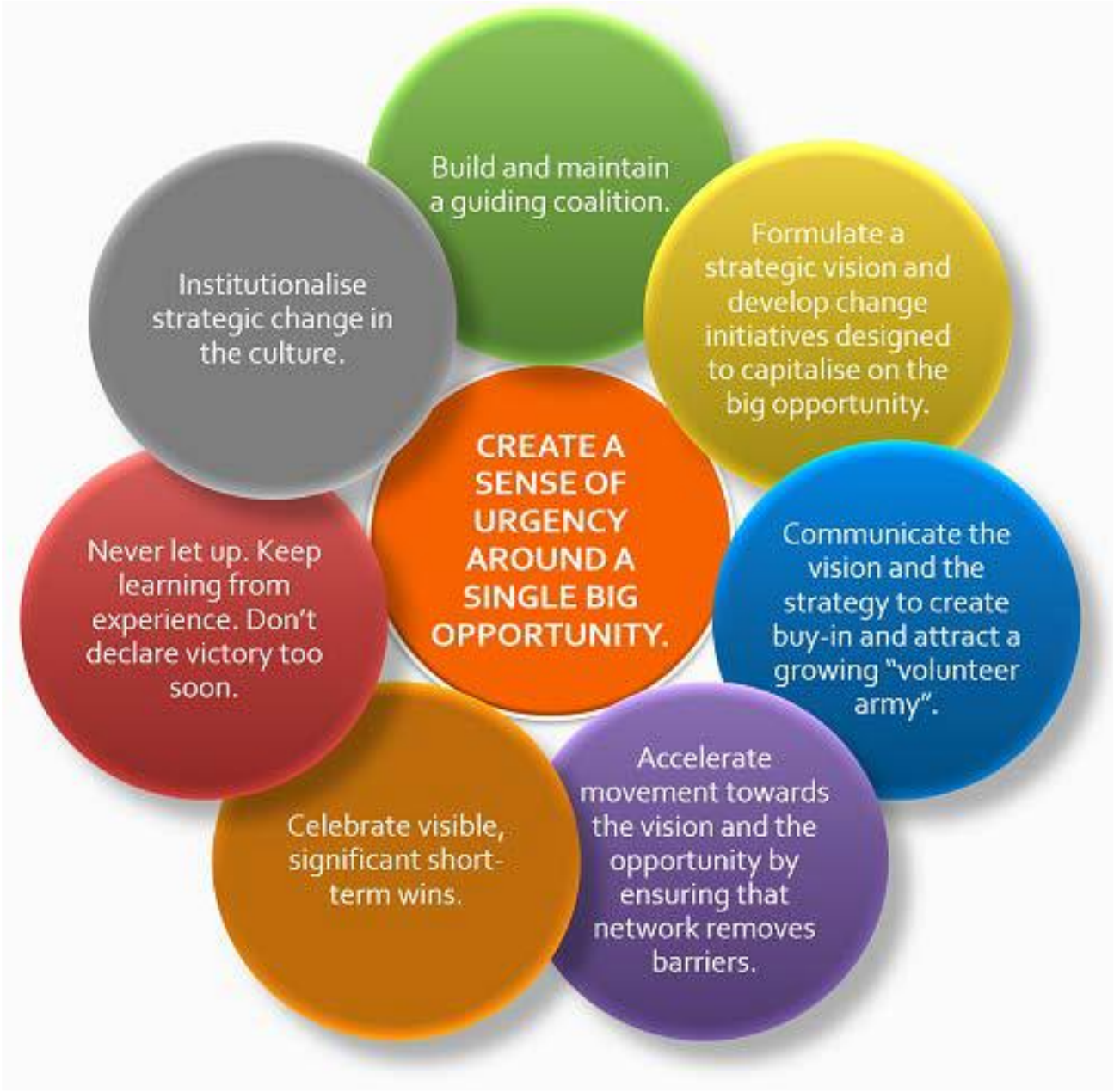
SWOT Analysis Template

Decreasing Falls through Interdisciplinary Communication Board/Cards

Strengths	**Weaknesses**
What can we use? (Internal) • Increase patient satisfaction • Increase hospital's reputation • Increase Safety score of Hospital • Improve on Hospital's Values of Quality Improvement and Teamwork	**What can we improve? (Internal)** • Morale of Nursing staff • Barriers to Interdisciplinary Communication • Current rate of falls in the Medical-Surgical unit • Improved communication model between staff • Delay in delivering of information
Opportunities	**Threats/Challenges**
What can we exploit? (External) • Reduce length of stay • Reduce adverse events • Reduce miscommunication • Industry trends of safety in falls prevention	What needs to be mitigated? (External) • Sustainable financial backing for the project • Rate of technological change making it difficult for nurses to adapt to methods of communication • Coronavirus Pandemic may lead to distractions from decreasing falls • Nurses who need to adapt and adjust to a new method of communication (education)

Appendix D

Kotter's 8-Step Process for Leading Change (Kotter, 2016)



Appendix E

Chinese Hospital Staff Survey

Please take this voluntary 6 question survey regarding the current state of falls prevention and communication on your unit. It should take no longer than 7 minutes to complete. Thank you for your help! If you have any questions, feel free to email fast@usfca.edu. -- USF ME-MSN Students, Lauren Fast & NataliSokolovski

1. What floor do you currently work on? *

   Check all that apply.

   - [ ] Floor 2
   - [ ] Floor 3
   - [ ] Floor 4

2. On a scale of 1-5, how urgent do you believe addressing patient falls on this unit is? *

   Mark only one oval.

   1 2 3 4 5

   Not urgent at all — Extremely urgent

3. What is the cause of patient falls on your specific unit?

4. What can be done on this unit to prevent patient falls? *

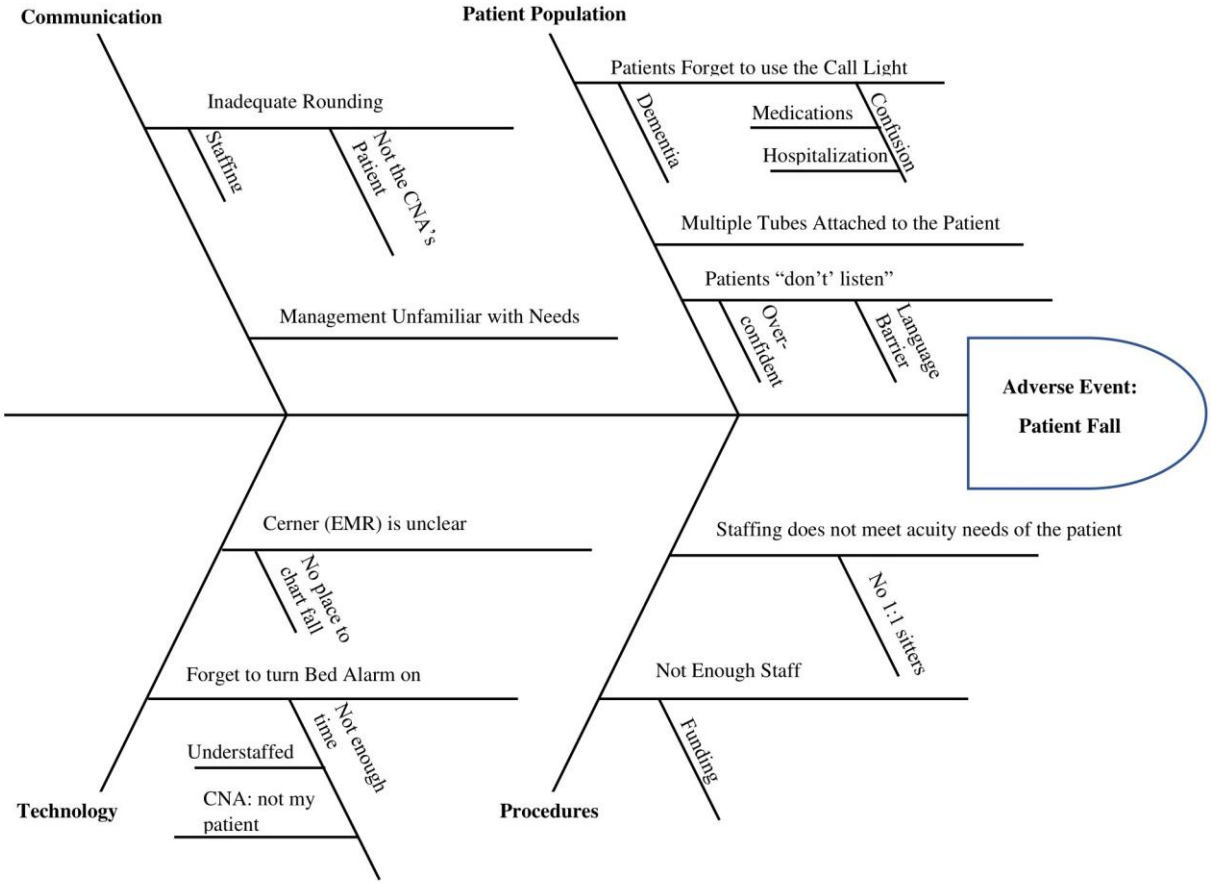
5. On a scale of 1-10, how poor (1) to excellent (5) would you rate communication between the disciplines (nursing, physical therapy, management, physicians, etc) in this unit? *

   Mark only one oval.

6. What can be done, in your opinion, to improve communication between the disciplines on the unit? *

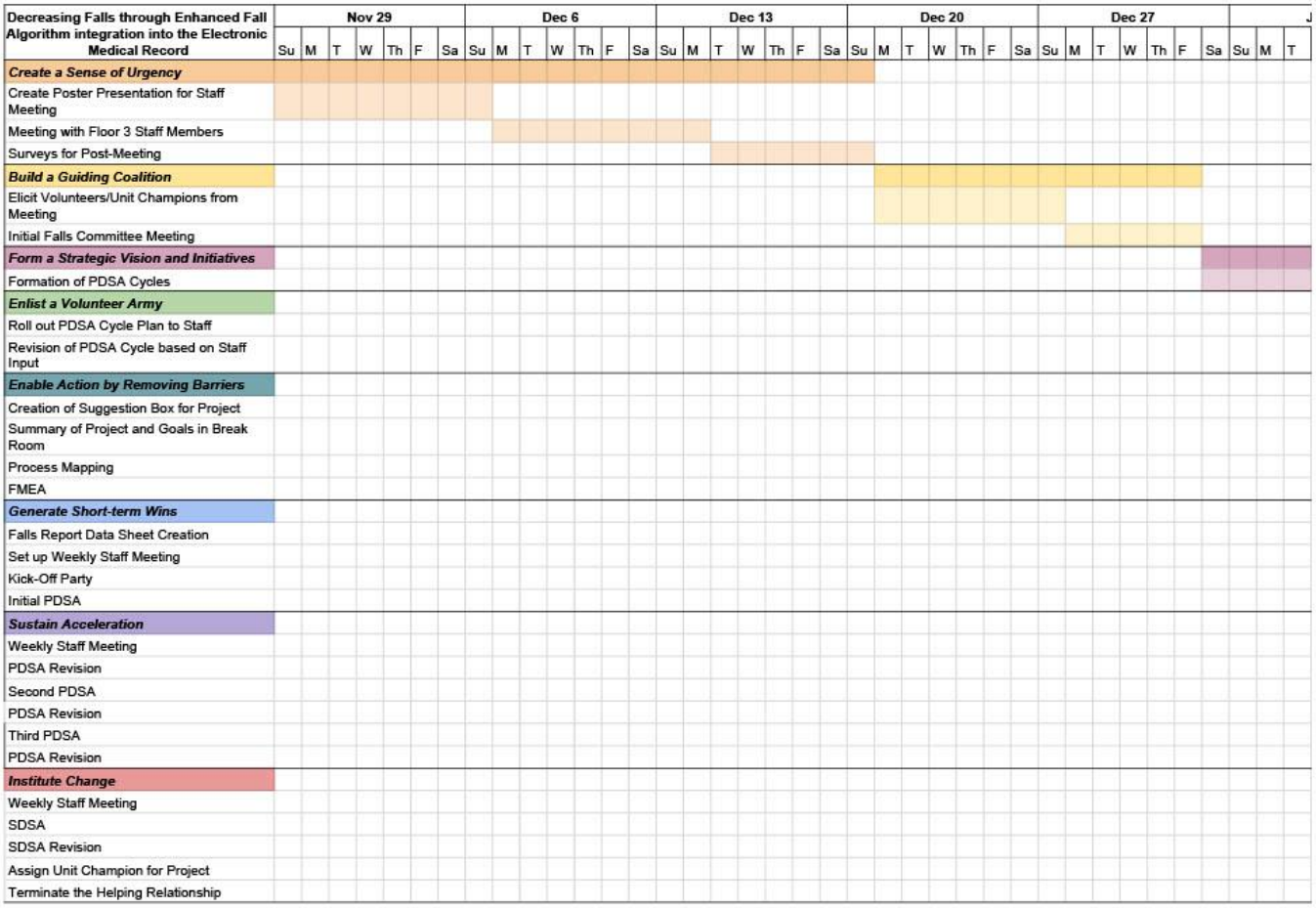
Appendix F

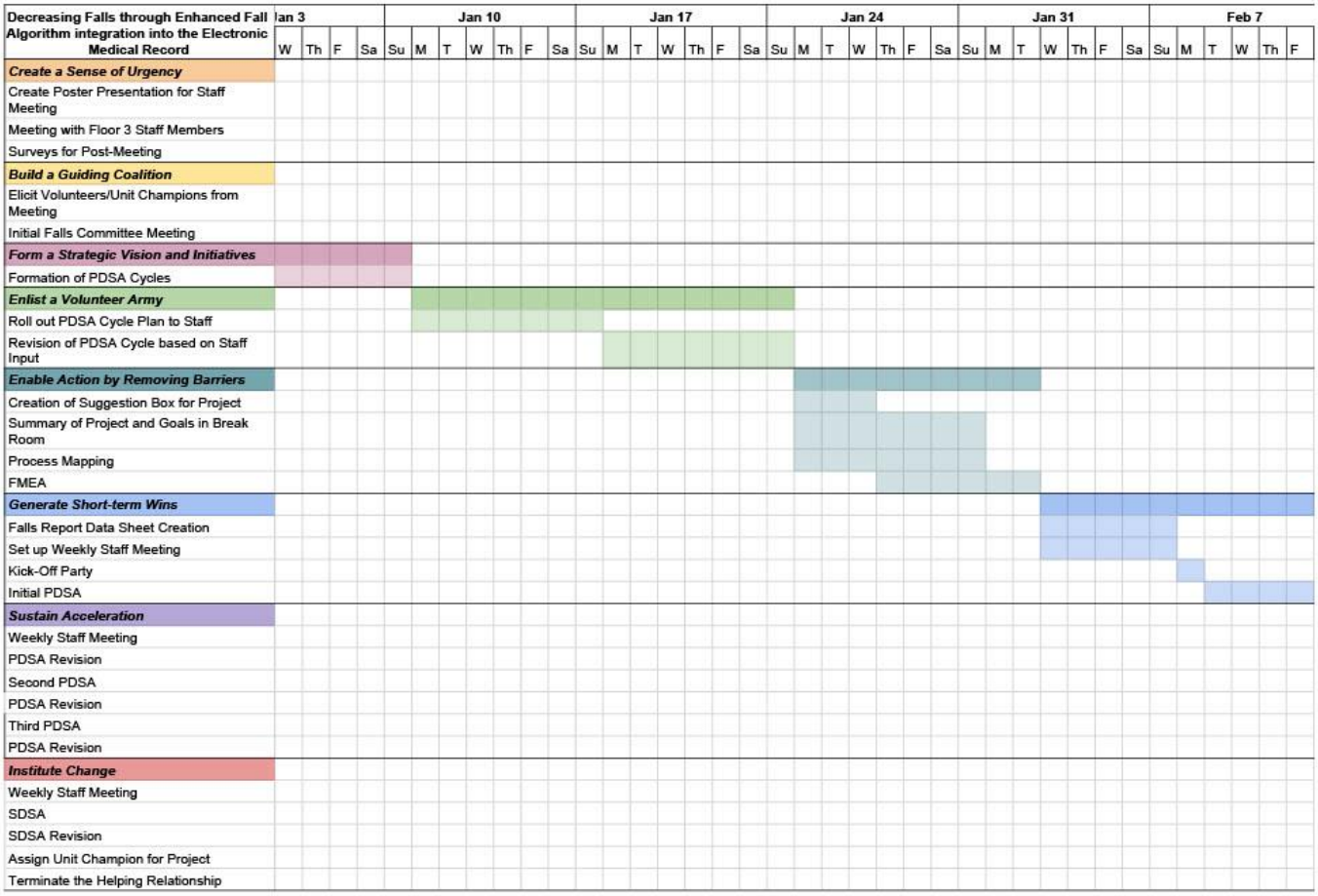
Fishbone: Nurses Survey Analysis

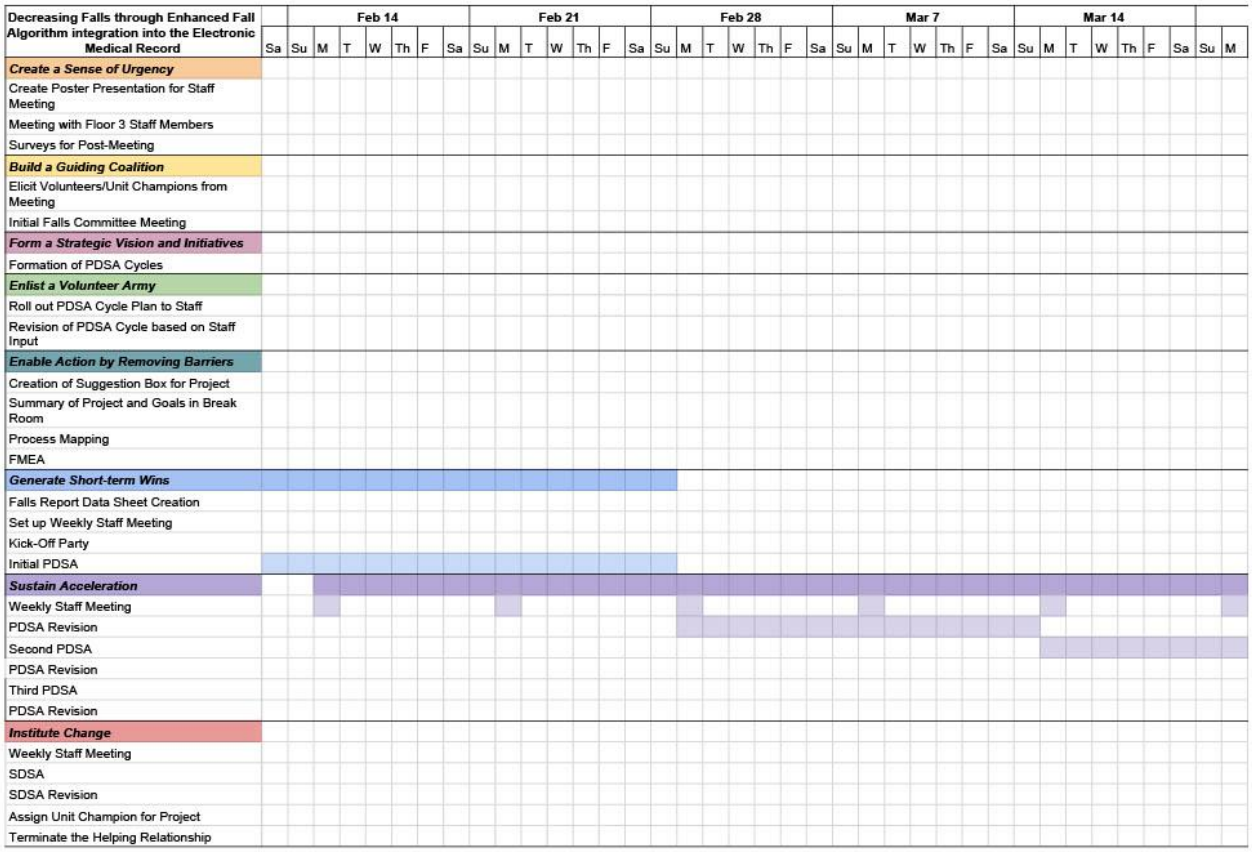


Appendix G

Gantt chart




Decreasing Falls through Enhanced Fall Algorithm integration into the Electronic Medical Record
Jan 3
Jan 10
Jan 17
Jan 24
Jan 31
Feb 7
W Th F Sa Su M T W Th F Sa Su M T W Th F Sa Su M T W Th F Sa Su M T W Th F Sa Su M T W Th F
Create a Sense of Urgency
Create Poster Presentation for Staff Meeting
Meeting with Floor 3 Staff Members
Surveys for Post-Meeting
Build a Guiding Coalition
Elicit Volunteers/Unit Champions from Meeting
Initial Falls Committee Meeting
Form a Strategic Vision and Initiatives
Formation of PDSA Cycles
Enlist a Volunteer Army
Roll out PDSA Cycle Plan to Staff
Revision of PDSA Cycle based on Staff Input
Enable Action by Removing Barriers
Creation of Suggestion Box for Project
Summary of Project and Goals in Break Room
Process Mapping
FMEA
Generate Short-term Wins
Falls Report Data Sheet Creation
Set up Weekly Staff Meeting
Kick-Off Party
Initial PDSA
Sustain Acceleration
Weekly Staff Meeting
PDSA Revision
Second PDSA
PDSA Revision
Third PDSA
PDSA Revision
Institute Change
Weekly Staff Meeting
SDSA
SDSA Revision
Assign Unit Champion for Project
Terminate the Helping Relationship


Decreasing Falls through Enhanced Fall Algorithm integration into the Electronic Medical Record
Feb 14
Feb 21
Feb 28
Mar 7
Mar 14
Sa Su M T W Th F Sa Su M T W Th F Sa Su M T W Th F Sa Su M T W Th F Sa Su M T W Th F Sa Su M
Create a Sense of Urgency
Create Poster Presentation for Staff Meeting
Meeting with Floor 3 Staff Members
Surveys for Post-Meeting
Build a Guiding Coalition
Elicit Volunteers/Unit Champions from Meeting
Initial Falls Committee Meeting
Form a Strategic Vision and Initiatives
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Second PDSA
PDSA Revision
Third PDSA
PDSA Revision
Institute Change
Weekly Staff Meeting
SDSA
SDSA Revision
Assign Unit Champion for Project
Terminate the Helping Relationship

Decreasing Falls through Enhanced Fall Algorithm integration into the Electronic Medical Record	Mar 21					Mar 28						Apr 4						Apr 11						Apr 18						Apr 25				
	T	W	Th	F	Sa	Su	M	T	W	Th	F	Sa	Su	M	T	W	Th	F	Sa	Su	M	T	W	Th	F	Sa	Su	M	T	W	Th	F	Sa	Su	M	T	W	Th
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Create Poster Presentation for Staff Meeting																																					
Meeting with Floor 3 Staff Members																																					
Surveys for Post-Meeting																																					
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Terminate the Helping Relationship																																					

Decreasing Falls through Enhanced Fall Algorithm integration into the Electronic Medical Record			May 2							May 9							May 16							May 23							May 30							
	F	Sa	Su	M	T	W	Th	F	Sa	Su	M	T	W	Th	F	Sa	Su	M	T	W	Th	F	Sa	Su	M	T	W	Th	F	Sa	Su	M	T	W	Th	F	Sa	Su
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