Implementing Evidence-Based Fall Reduction Interventions in an Urban Emergency Department

Nichole L. Schmidt

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Implementing Evidence-Based Fall Reduction Interventions in an Urban Emergency Department

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Date of Submission: July 31, 2018
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Abstract

The patient population that is falls in the emergency department (ED) tends to differ from population that falls on inpatient units. However, there is no validated fall risk assessment for the ED setting. In an ED in a western Michigan hospital a fall reference card was designed and trialed by a small group of ED nurses on twenty-five ED patients. The fall reference card was created as a quick-reference guide for the assessment of fall risk, and the implementation of evidence-based fall risk interventions. The card utilized interventions supported by literature as the most common reasons for ED falls. The fall reference card trial demonstrated a 100% increase in fall risk assessment and documentation in the ED of the western Michigan hospital. The nature of this project was to determine if the implementation of a fall risk assessment in the ED setting followed by implementation of fall risk interventions would reduce falls and falls with injury in the ED microsystem, as compared to the current practice of not assessing for fall risk. A larger scale trial would be ideal to determine if the fall reference card was successful in improving awareness of a patients fall risk and reducing ED falls.

Keywords: falls, ED falls, emergency department falls, ER, emergency room falls, preventing falls
Chapter 1: Introduction and Microsystem Assessment

Each year in the United States between 700,000 and 1,000,000 people fall in the hospital setting (Agency for Healthcare Research and Quality [AHRQ], 2013). The AHRQ (2013) defines a fall as any unintentional descent to the floor, regardless of whether injury occurs to the patient. According to The Joint Commission (TJC) approximately 30-50% of falls result in injury which leads to the need for an additional 6.3 days of hospitalization on average and estimates that the average fall with injury generates $14,000 in additional costs (2015).

Beginning in 2008 the Centers for Medicare and Medicaid Services (CMS) issued provision for hospital acquired conditions (HAC), and payment penalties have been put in place on fourteen different HACs. Incorporated in the HACs are falls and trauma, and injuries that occur as the result of a fall, including: fractures, dislocations, intracranial injuries, crushing injuries, burns, and other injuries (CMS, 2015). These CMS provisions made hospitals responsible for the fees associated with treating injuries related to falls and have therefore created a financial incentive for hospitals to prevent falls.

The Emergency Department (ED) is unique environment within the healthcare setting, and the patients presenting are often in acute stages of physical and/or mental illness, and are intoxicated (McErlean & Hughes, 2017). Due to the acute stages of illness patients can be more impulsive or acutely confused leading to a greater risk of falling. Fall risk assessment tools, such as the Morse fall risk scale, that are utilized in the inpatient setting are not validated for the ED (Alexander, Kinsley, & Waszinski, 2013; Townsend, Valle-Ortiz, & Sansweet 2016). Patient falls continue be a significant concern for hospitals not only because of increased costs, but also due to public reporting of falls and patient morbidity and mortality rates (Townsend, et al., 2016). The purpose of this chapter is to present the assessment of the ED microsystem, introduce the clinical problem and present rationale for the project, recognize stakeholders,
assess feasibility of the project, identify potential barriers and challenges, and provide a brief overview of the project.

**Microsystem Assessment**

The microsystem assessment was a needs assessment that provided an awareness of the processes, strengths, weaknesses, opportunities, and threats of the microsystem (Nelson, Batalden, Godfrey, & Lazar, 2011). During the microsystem assessment within the ED of a western Michigan hospital current processes and practices were observed, quality initiatives and indicators were reviewed, and caregivers were informally interviewed.

In 2017 the median age of patients in the microsystem was 44.5 years of age, and there are slightly more females than males treated. Six percent of the patient population was psychiatric patients, and six percent were alcohol intoxication patients. The psychiatric population had an increased risk of substance abuse and dependence disorders (Cooper, 2017). However, no data available from the western-Michigan hospital to reveal the extent of the overlap in the psychiatric and alcohol intoxication populations presenting to the ED. Abdominal pain was the most common diagnosis seen in the ED in 2017. The Emergency Severity Index (ESI) is a five-level triage system used to rate the acuity of the patient with one being the most urgent, and five being the least urgent (AHRQ, 2013). In the ED population 4.5% of patients were ESI level 1, 26% of patients were ESI level 2, 58% of patients were ESI level 3, 11% of patients were ESI level 4, and 0.5% of patients were ESI level 5.

Within the ED there are 80 full-time equivalents (FTEs) equaling 75 Registered Nurses (RNs). The RNs are required to maintain their basic life support (BLS), advanced cardiac life support (ACLS), and pediatric advanced life support (PALS) certifications. Many of the RNs had also taken the trauma nurse core course (TNCC), and the emergency nursing pediatric course
(ENPC), although it is not mandatory at this time. Six-percent of the ED RNs were certified, having earned their Certified Emergency Nurse (CEN) accreditation. Of the RNs in the ED microsystem 25.3 percent had their Associate Degree in Nursing (ADN), 73.3 percent had a Bachelor of Science in Nursing (BSN), and roughly 1 percent had a Master of Science in Nursing (MSN). In addition to RNs there were 33 patient care technicians (PCTs) employed in the department.

The ED cared for 67,000 patients in 2016. It is a level two trauma center serving approximately seven surrounding counties. Within the department there were 40 regular ED rooms, four trauma rooms, four negative air flow rooms, and six rooms equipped to deal specifically with psychiatric patients. The ED is a non-unionized facility that achieved the American Nurses Credentialing Center (ANCC) Magnet designation for the nursing care delivered within this organization. This was a significant achievement as Magnet-recognized organizations embody a collaborative culture, where nurses are valued as integral partners in the patient’s safe passage through their healthcare experience (ANCC, 2018).

The ED was divided up into four teams. Each team occupies one corner of the department and includes a team station surrounding on three sides by private patient rooms. Teams one and two were open 24 hours per day. Team three was open daily from 9:30am until 1:30 am, and team four was open daily from 10:00 am until 2:00 am. Each team was staffed with one or two patient care technicians (PCTs), three to four RNs, and one health unit coordinator. Teams one and two were each staffed with one physician, and teams three and four were each staffed with one nurse practitioner (NP) or physician’s assistant (PA). In addition, there were one or two RNs triaging patients, one sorting RN, and one charge nurse. The sorting RN was responsible for
assigning the order in which patients are triaged as they present to the ED, assigning rooms, and monitoring ambulance traffic in the department to assign beds prior to their arrival.

The ED was supported by formal leadership that included the hospital Chief Nursing Officer, ED Nursing Director, the ED Medical Director, the ED Department Manager, the ED Clinical Nurse Leader (CNL), the ED Clinical Nurse Specialist, the ED Informatics Specialist, and the ED nursing educator. Support was also provided by numerous hospital departments, such as: security officers, social workers, case management, physical therapy, interpretation services, pharmacy, radiology, and the laboratory. During informal interviews all caregivers agreed that nursing leadership within the ED was supportive and the leaders effective. Caregivers also felt the ED CNL was valuable due to the frontline leadership and resources the role provided. There were caregivers who felt that the morale was better on the day shift versus the night shift.

Clinical Problem, Project Rationale, and Stakeholders

Clinical Problem

The leadership within the ED microsystem had identified that falls were a clinical problem. The rates of falls were displayed for the ED on the National Database for Nursing Quality Indicators (NDNQI) scorecard at a rate per 1000 patient days. An organization’s individual fall rate is not made public by NDNQI, but fall benchmarks are reported publicly by the Michigan Hospital Association. In 2012 and 2013 the rate for the ED was .71 falls per 1000 patient days, and at that time the CNL initiated education on fall prevention and updated the fall policy. The fall rates then decreased to .32 falls per 1000 patient days in 2014. However, the fall rates steadily increased each year since with .33 falls in 2015, .40 falls in 2016, and .43 falls per 1000 patient days in 2017. Falls occurred nearly equally on day shift and night shift.
Project Rationale

Preventing falls was not only necessary to uphold the highest level of patient safety but also to avoid the financial burden falls can place on an organization. The CMS identified falls as a “never event” meaning that falls are considered a preventable occurrence in the hospital setting, and they no longer reimburse costs associated with falls and fall related injuries during hospitalization (Staggs, Mion, & Shore, 2015). The Magnet Recognition Program also monitors falls, and therefore excessive fall rates can impact an organization’s ability to maintain their Magnet status for nursing care (Hester, Tsai, Rettiganti, & Mitchell, 2016). “Falls are one of the nursing quality indicators monitored not only by the National Database for Nursing Quality Indicators, but also the National Quality Forum, and the Collaborative Alliance for Nursing Outcomes” (Trepanier & Hillsenbeck, 2014, p. 136).

Stakeholders

Many EDs do not routinely perform a fall risk assessment on admission, because many risk assessments are designed only for the inpatient setting (Townsend, et al., 2016). In the ED the current practice did not include a fall risk assessment on admission, or at any point during the patients stay in the ED. Having the tools and abilities to accurately identifying patients at a high risk for falling in the ED is the initial step to enhancing patient safety, and avoiding extended hospitalization related to fall related injuries (Alexander, et al., 2013). Preventing falls must also include implementing fall prevention interventions once the fall risk was identified and should be approached as a multidisciplinary responsibility (Alexander, et al., 2013). Nurses are critical to assessing for fall risk and implementing fall prevention practices, but all caregivers must be educated on fall prevention interventions and their responsibility to ensure patient safety (Townsend, et al., 2016).
The Hendrich II Fall Risk Model (HFRM) and Morse Fall Risk scale have been validated and proven successful in the decreasing falls in the inpatient setting, yet the need for a validated ED fall risk assessment tool still exists (Townsend, et al., 2016). The greatest limitation associated with the use of the Morse Fall Risk scale in the ED setting is the lack of information available at the time of triage or admission, depending on the patient’s acuity, which can lead to the under-triage of a patient’s true risk of falling (Murphy, Murphy, Hastings, & Olberding, 2015). The KINDER 1 fall risk assessment (FRA) tool was designed for rapid identification of the patient’s risk for falling in the ED setting guided by five assessment points based on the most common factors related to ED falls. (Townsend, et al., 2016). If the patient meets the criteria for one or more items on the KINDER 1 FRA they are identified as a high-risk for falling (Alexander, et al., 2013). While the KINDER 1 FRA tool is relatively new and in need of further research to ensure validity, it has been able to provide some promising results thus far.

The EDs clinical practice guideline (CPG), *Fall Prevention*, included interventions that were to be set in motion if a patient was identified as a risk for falling. The CPG was specifically developed for the ED by the ED Clinical Nurse Leader and ED Clinical Nurse Specialist. Interventions include applying skid-proof socks, use of bed alarms, placing a sitter with the patient, placing the call light within reach, assuring the room is well lit and free of clutter, and hourly rounding. However, with no fall risk assessment tool implemented in the ED the decision to initiate these interventions was subjective.

Currently, when a fall occurs the Charge Nurse, RN, PCT, and Physician caring for the patient perform a post-fall huddle and complete the post-fall huddle form. In addition to the post-fall huddle the RN completes a VOICE report, an online occurrence screening tool, to report the fall. The post-fall huddle form is forwarded to the ED CNL, and the ED fall champions for
EVIDENCE-BASED FALL REDUCTION INTERVENTIONS

review. If a fall with injury occurs a root-cause analysis (RCA) takes place. Every fall that occurs within the organization is reviewed by the system-wide fall champion team during a quarterly meeting.

Feasibility and Potential Challenges/Barriers

When implementing a quality improvement project, it important to consider the feasibility of the initiative. The feasibility includes the amount of time necessary to complete the project, identifying if there are sufficient amounts of patients to include in the project, recognizing the availability of adequate resources to complete the project, and the consideration of the level of expertise of those involved to the lead the initiative (Melnyk & Fineout-Overholt, 2015). Within the ED microsystem there was support from the leadership to support the mission to reduce ED falls. The ED fall champions, who had expertise in the ED, demonstrated and verbalized buy-in on working to reduce falls. The fall champions attended regular meetings, participated in a gap-analysis, and assisted with the cause and effect diagram to establish the opportunities to reduce falls. Staff interviews revealed their knowledge of an increase in ED falls, and their understanding of the need to reduce falls. The ED has a sufficient patient population to trial a fall risk assessment and fall risk interventions, and the department manager had indicated support for staff education related to process changes and the risk assessment.

Melnyk and Fineout-Overholt state, “Common barriers to evidence-based practice (EBP) implementation include inadequate knowledge and skills, weak beliefs about EBP, poor attitudes towards EBP, a lack of EBP mentors, social and organizational influences, and economic restrictions” (2015, p. 206). Within the ED microsystem there were barriers to successful reduction of ED falls through implementing evidence-based changes. First, there was no validated fall risk assessment tools for the ED setting. The only fall risk assessment tool
available in the electronic health record (EHR) for the health system was the Morse Fall Risk scale, which was only validated for the inpatient setting. If the KINDER 1 fall risk assessment were to prove successful in reducing ED falls, it could only be added to the EHR if approval were received from the health system. However, the ED informatics RN identified an area in the EHR where the RNs can chart that fall risk precautions were “initiated” for trialing purposes (see Appendix A). Second, several toolkits had been developed by TJC and the Institute of Healthcare Improvement (IHI) aimed at reducing falls. None of these toolkits were ED focused, but could be adapted for the ED. Last, many of the ED nurses were newer graduates who have yet to attain the knowledge and expertise of more seasoned ED caregivers.

**Nature of the Project**

Falls are a multifaceted issue in the hospital setting. It has been identified that patients in the ED setting are falling under circumstances that differ from those in the inpatient setting (McErlean & Hughes, 2017). The KINDER 1 fall risk assessment had been designed for use in the ED to rapidly and accurately identify a patient’s risk of falling, but required further testing to ensure validity (Alexander, et al., 2013). It was also recognized that screening alone is not sufficient in reducing the number of falls in the ED setting, and RNs also needed to implement fall prevention strategies (Alexander, et al., 2013). Simply initiating the use of a fall risk assessment in the ED of the western Michigan hospital many not have proved effective in reducing the number of patient falls. In addition, staff education regarding the importance of performing fall prevention tactics was equally important in decreasing the number of patients falling in the ED of a western Michigan hospital.

The goal of this quality improvement clinical immersion project was to decrease falls by implementing an assessment in the ED to identify a patient’s risk of falling, followed by the
implementation of evidence-based intervention from the hospital’s clinical practice guideline if the risk of falling was identified. To guide the successful implementation of the project the Model for Improvement, along with the Plan-Do-Study-Act cycle was be utilized. The education and implementation of practice changes to reduce falls, included: assessing and documenting fall risk, utilizing white boards in the room to communicate the fall risk and hourly rounding, and the use and documentation of bed alarms and hourly rounding.

A gap-analysis was performed through observations within the microsystem, by meeting and collaborating with the ED fall champions, post-fall huddle form audits, and chart audits. This analysis exposed that on several occasions interventions to reduce falls were not put into place until after the patient had already fallen. A review of thirty-five post-fall audits found only four Registered Nurses (RNs) documented a fall risk assessment, and on post fall huddle forms several RNs noted that fall-risk interventions were initiated (such as Posey bed alarms) only after the patient had already fallen. The nature of this project was to determine if the implementation of a fall risk assessment in the ED setting followed by implementation of fall risk interventions would reduce falls and falls with injury in the ED microsystem, as compared to the current practice of not assessing for fall risk.
Chapter 2: Literature Review

Literary searches were conducted in CINAHL and PubMed using the terms “who falls in the emergency department,” “falls in the Emergency Department,” “assessing for fall risk to reduce patient falls,” “the impact of falls on a patient,” and “impact of falls on a hospital.” The term “who falls in the emergency department” delivered 264 results, “falls in the emergency department” produced 907 results, “assessing for fall risk to reduce patient falls” supplied 608 results, “impact of falls on a hospital” generated 1,118 results, “impact of falls on a hospital” generated 469 results. There were fifteen articles chosen for the final review. These articles were chosen based on the quality of the research and the date of publication within the last five years.

A search was also conducted for information surrounding the incidence of falls, fall prevention, and fall risk assessment from the Center for Disease Control (CDC), Institute for Healthcare Improvement (IHI), The Joint Commission (TJC), and the Agency for Healthcare Research and Quality (AHRQ). The search results were reviewed and literature on determining the incidence of falls, how falls impact patients and hospitals, how inpatient and primary care settings are assessing for fall risk, who falls in the ED setting, and assessing ED patients risk of falling became the focus of the literary review (see Appendix B).

Incidence of Fall

In the Hospital Setting

As previously mentioned, between 700,000 and 1,000,000 people fall in the hospital setting in the United States (US) each year (AHRQ, 2013). Roughly one-third of falls that occur in the hospital result in a fracture or a head trauma (AHRQ, 2017). Falls with serious injury are unfailingly among the top ten sentinel events reported each year to The Joint Commission (2015). A sentinel event is any occurrence within the hospital that results in the death or serious
EVIDENCE-BASED FALL REDUCTION INTERVENTIONS

injury of a patient (TJC, 2013). Sixty-three percent of falls that are reported to The Joint Commission as a sentinel events result in death (TJC, 2015).

In the Community Setting.

“Every second of every day in the United States an older adult falls, making falls the number one cause of injuries and deaths from injury among older Americans” (CDC, 2016). Additionally, across the United States an older adult dies every 19 minutes as the result of a fall (National Council on Aging, 2016). Falls are also the number one cause of a traumatic brain injury, and 95% of hip fractures occur because of a fall (CDC, 2017). This is important to mention because the nearly 2.8 million injuries that occur because of a fall are treated in EDs annually (National Council on Aging, 2016; CDC, 2017).

The Impact of Falls on the Patient

Falls can result in minor and serious injuries to patients which can lead to the need for additional medical care or a reduction in the functional capacity of the patient (Tanrikulu & Sari, 2017). For instance, hip fractures in adults over age 65 have been shown to not only affect their physically capabilities, but also their mental capabilities along with their functional and social balance (Negrete-Corona, Alvarado-Soriano, & Reyes-Santiago, 2014). Studies have also concluded that as many as 50% of patients who suffer a hip fracture die within six months of the injury, and those who do survive never regain full function and independence (Negrete-Corona, et al., 2014).

Falls present a danger to the quality of life for older adults (Phelan, Mahoney, Voit, & Stevens, 2015). A traumatic brain injury (TBI) can lead to issues with intellect and communication, behavioral and emotional changes, and sensory deficits (Mayo Clinic, 2014). In 2013, TBIs acquired from a fall accounted for 2.3 million ED visits and hospitalizations in the
United States, with 50,000 of those Americans dying due to a TBI (CDC, 2017). Often after falling, even when no injury is sustained, 20% to 39% of people develop a fear of falling which can affect their daily activities and abilities to preform self-care (CDC, 2017; Phelan, et al., 2015). A fear of falling leads to a reduction in activity putting them at greater risk of a decline in their strength which can alter their balance, placing them at a greater risk of suffering a repeat fall (Greenburg, et al., 2014).

**The Impact of Falls on the Hospital**

The provisions made by CMS have made hospitals responsible for the fees associated with treating hospital acquired conditions and have created a financial drive for hospitals to prevent falls (CMS, 2016). For example, if a patient were admitted to the hospital with pneumonia and then falls and breaks their hip, insurance will pay for the services rendered for treatment of their pneumonia, but not for the cost to repair their hip (CMS, 2016). Falls without injury are estimated to cost an organization an additional $1,139 to $2,033, while the cost of falls with serious injury extend to an additional $17,567 to $30,931 (Spetz, Brown, & Aydin, 2015). “Patient falls impose a significant financial cost for organizations, including increased expenditures to ensure an injury did not occur, treatment in the case of an injury, and expenses associated with potential lawsuits when injury does occur” (Spetz, et al., 2015, p. 50).

Falls and falls with injury rates are also a part of the nursing-sensitive indicators monitored nationwide (Spetz, et al, 2015). Nursing-sensitive indicators examine the relationship between exceptional nursing care and patient outcomes (National Database of Nursing Quality Indicators [NDNQI], 2018). The CMS has proposed requiring that hospital fall rates be measured and reported in a nursing sensitive indicators registry, for example the NDNQI (Dunton, 2011). Fall rate benchmarks are reported by the NDNQI. Reported fall rates become
important as hospitals work to reduce costs associated with falls, as well as maintaining distinctions such as Magnet Status.

Assessing Fall Risk

Inpatient Setting

The Joint Commission requires the use of a standardized and validated FRA tool in acute care facilities and prefers that this tool be incorporated into the electronic medical record (TJC, 2015). The Joint Commission is a not-for-profit entity that accredits healthcare organizations within the United States (TJC, 2018). Earning accreditation from The Joint Commission signifies the organizations commitment to upholding excellence and performance standards (TJC, 2018). The most commonly used FRA tool validated for the inpatient setting is the Morse Fall Risk Scale (Miake-Lye, Hemple, Ganz, & Shekelle, 2013; Hemple, et al., 2013). However, the Hendrich II Fall Risk Model and the Saint Thomas’s Risk Assessment Tool in Falling Elderly Inpatients (STRATIFY) are validated for inpatient FRA and commonly used as well (Miake-Lye, et al., 2013; Hemple, et al., 2013).

In general, inpatient settings utilize a multitude of interventions to reduce the risk of falling once a fall risk has been identified (Miake-Lye, et al., 2013). Interventions include staff and patient education, fall risk signage, fall alert bracelets, non-skid footwear, frequent rounding and toileting schedules, medication review, bed and chair alarm use, diversional activities, post-fall huddles, and approaching falls as a multidisciplinary responsibility (Miake-Lye, et al., 2013; Coyle & Mazaleski, 2016). No one intervention has been shown to substantially reduce the rate of falls (Miake-Lye, et al., 2013; Hemple, et al., 2013). “High-quality evidence shows that multicomponent interventions can reduce risk for in-hospital falls by as much as 30%” (Miake-Lye, et al., 2013, p. 391).
Primary Care Setting

Many primary care providers (PCPs) follow the clinical practice guideline (CPG) developed by the American Geriatric Society and British Geriatric Society (AGS/BGS) to screen, assess, and manage falls (Phelan, et al., 2015). If a patient has fallen two or more times in the past year or has felt unsteady, then the PCP should complete a full fall risk assessment (Phelan, et al., 2015). The fall risk assessment includes: the history of falls, medications, postural hypotension, a fall-focused physical exam, functional and environmental assessments, and laboratory tests (Phalen, et al., 2015).

The CPG follows up the fall risk assessment with suggested interventions for the management of fall risk (Phelan, et al., 2015). The management of fall risk includes reducing the chances of falling, reducing the risk of injury, maintaining the highest possible level of mobility, and providing ongoing follow-up (Phelan, et al., 2015). A fall risk assessment is also a mandatory piece of the initial Medicare examination, and PCPs can receive payment and incentives for completing the fall risk assessment through the Medicare Annual Wellness visit and participating in the Physician Quality Reporting System (Phelan, et al., 2015).

Falls in the Emergency Department

The patients falling in the ED differ from those falling in the inpatient setting. Patients in the inpatient setting who are at the greatest risk of falling tend to be over age 70, to be male, to have impaired cognition or mobility, and to be taking medications that affect their central nervous system (McErlean & Hughes, 2017). However, in the ED the patients who are under the influence of alcohol or illicit drugs are most likely to fall (McErlean & Hughes, 2016; Tanrikulu & Sari, 2017; Terrell, Weaver, Giles, & Ross, 2009). It has also been identified that patients...
who fall in the ED also tend to be younger with a mean age of 50 (McErlean & Hughes, 2016; Tanrikulu & Sari, 2017; Terrell, et al., 2009).

**Assessing Fall Risk in the Emergency Department.**

Performing a fall risk assessment (FRA) is essential at all entry points within a healthcare system, however, many EDs do not perform FRA because a validated tool for the ED setting does not exist (Townsend, et al., 2016; Alexander, et al., 2013). Validated inpatient FRA tools, such as the Morse Fall Risk scale, are ineffective and inefficient in capturing a patient’s risk of falling in the ED (Alexander, et al., 2013). Townsend, et al., (2016) recognized that ED nurses were not performing a routine FRA upon presentation to the ED, and initiated use of the KINDER 1 FRA, which was found in that study to be effective in reducing falls. In the three quarters following the implementation of the KINDER 1 FRA in the ED falls without injury were reduced to 0.07 from 0.21 falls per 1000 patients and falls with injuries were reduced to 0.0 from 0.21 falls per 1000 patients (Townsend, et al., 2016). Assessing patients on arrival for the common risk factors associated with ED falls—alcohol intoxication and substance abuse, presentation to ED due to a fall, patient age greater than 70 years, and impaired mobility—may increase the awareness and opportunity to implement interventions to prevent falls in the ED setting (Townsend, et al, 2016).

**Fall Risk Interventions**

Assessing for the risk of falls is the first step to preventing falls, but must be followed by the implementation of fall reduction interventions. There is a lack of research that identifies one specific intervention that prevents patients from falling in the hospital. Dykes, et al. discusses the benefit of adopting fall prevention strategies tailored to the patients fall risk assessment findings, in other words, a more individualized approach to preventing falls (2017).
**Bed Alarms**

The effects of applying bed alarms to reduce falls has been researched. Results of this research have identified that bed alarms are successful in some cases to prevent falls, yet unsuccessful in others. One study was performed over a six-month period using three phases. In the preintervention phase no bed alarms were used, the intervention phase bed and chair alarms were placed, and in the postintervention phase no alarms were used (Wong-Shee, Phillips, Hill & Dodd, 2014). Wong-Shee, et al. (2014) identified a statistically significant decrease in falls between the preintervention phase and the intervention phase. During the intervention period of the study fall the incidence density (ID) was 1.86 falls per 21 bed days, compared to 2.92 falls per 21 bed days during the preintervention phase (Wong-Shee, et al., 2014).

**Hourly Rounding**

The implementation of proactive hourly rounding by the nurse or patient care technician has been shown to reduce falls in the hospital setting. The rounding involves standardized actions including: assessing pain and positioning, toileting, placing call light and personal items within reach, tidying the room, and informing patient of your next return (Goldsack, Bergey, Mascioli, & Cunningham, 2015). One study demonstrated that after the implementation of proactive hourly rounding falls were reduced from 3.9 falls to 1.3 falls per 1000 patient days (Goldsack, et al., 2015). Another study found the fall rate was reduced over one year from 44 falls pre-implementation of hourly rounding to 22 falls after the implementation of hourly rounding (Morgan, et al., 2016).

**Conclusion**

Patients fall often and for varying reasons both in hospital and community settings. The literature supports that there is no simple formula for reducing falls. Research has not pointed to
one fall risk intervention or fall reduction program as being preferred (Spetz, et al., 2015). Programs that are successful at reducing falls are multifaceted and multidisciplinary, and involve a combination of environmental measures, clinical interventions, utilization of a standardized and validated fall risk assessment, as well as technological interventions (AHRQ, 2017). The use of a clinical practice guideline in primary care settings and validated fall risk assessment tools in the inpatient setting provide standardization for assessing and managing fall risks. Reducing falls continues to be a focus in primary care and in the hospital setting not only to increase patient safety, but also to control the large price tag associated with falls.

It has been identified that patients in the ED setting are falling under circumstances that differ from those in the inpatient setting (McErlean & Hughes, 2017). To rapidly and accurately assess ED patients for a risk of falling utilizing a fall risk assessment tool designed for ED use, such as the KINDER 1, has proven beneficial but need further testing to ensure its validity (Alexander, et al., 2013). It has also been recognized that screening alone is not sufficient in reducing the number of falls in the ED setting, and nurses also need to implement fall prevention strategies (Alexander, et al., 2013). Due to the lack of a validated fall risk assessment tool for the ED setting it may be useful to focus on assessing what is known about the populations who falls in the ED to effectively reduce the number of patient falls. Staff education should include both the importance of performing a fall risk assessment and implementing interventions to reduce falls in the ED setting.
Chapter 3: Quality Improvement Framework

The Model for Improvement (MFI) is a nationally recognized framework developed by Associates in Process Improvement (Institute for Healthcare Improvement [IHI], 2017). The MFI is an easy-to-use and effective tool for guiding efficient quality improvement projects (IHI, 2017). The first steps of the MFI are building a team of stakeholders to identify the aim of the improvement effort, to establish metrics for measuring outcomes, and to recognize the change necessary to accomplish the aim (see Appendix C) (IHI, 2017). The next step of the MFI is the Plan-Do-Study-Act cycle (PDSA; Appendix C). The PDSA cycle is used to plan and test change on a small scale prior to a large-scale implementation of evidence-based fall reduction interventions (IHI, 2017).

Model for Improvement

Establishing the Team

An effective team must be assembled to guide the quality improvement project (IHI, 2017). This team should include a clinical leader, a technical expert, and a day-to-day leader from the microsystem (IHI, 2017). The clinical leader has the influence to organize, test, and implement change (IHI, 2017). The technical expert is fluent in quality improvement techniques and can assist with mining and presenting data (IHI, 2017). The day-to-day leader is a frontline expert on the quality improvement project and confirms that tests of change are implemented (IHI, 2017).

Establishing the Aim

The aim of the quality improvement project should remain specific, measurable and clearly defined (IHI, 2017). The aim should include numeric goals (IHI, 2017). For example, the aim for this CNL student project is to increase the implementation and documentation of
evidence-based fall reduction interventions in the ED by 50% by August 1, 2018. Numeric goals keep the aim focused and clear, as well as creating the pressure to change (IHI, 2017). The team should also be aware of the need to readjust the aim when needed (IHI, 2017). At times it may become necessary to focus on a smaller part of the problem to help the organization achieve the desired aim (IHI, 2017).

**Establishing Metrics**

Establishing metrics is a significant component of the change process (IHI, 2017). These measurements allow the quality improvement team to determine if the changes in practice are demonstrating improvement (IHI, 2017). The metrics should be assessed as a balanced set of measures that include: outcome measurements, process measurements, and balance measurements (IHI, 2017).

**Outcome Measures.** This metrics gauges if the quality improvement project to increase documentation of evidence-based fall reduction interventions is providing an increase in the quality of the care delivered to the patient (IHI, 2017). For example, monitoring the year-to-date fall rate to assess if the quality improvement project is resulting in fewer falls. The outcome measures allow the team to determine if the changes in practice are leading to an improvement (IHI, 2017).

**Process Measures.** This metric allows the team to track the change in practice and to assure that the intended interventions are being completed. For example, the team monitors for an increase in the documentation of evidence-based fall reduction interventions to ensure compliance and assess for barriers. The process measures allow the team to determine if the education and changes in the process are successful in achieving the goal (IHI, 2017).
Balance Measures. This metric allows the team to give thought and consideration to the system from different viewpoints and dimensions (IHI, 2017). For example, if ED nurses are dedicating a greater amount of time to assessing for fall risk, performing hourly rounding, and placing and responding to bed alarms there may be an increase in the length of stay metric. Monitoring balance measures ensures that changes from this quality improvement project are not creating issues in other areas of the microsystem (IHI, 2017).

Establishing the Change

When selecting a change, it is important to recognize change that leads to improvement is developed from a change concept (IHI, 2017). Change concepts are approaches to change that guide the development of specific ideas into successful changes and improvements (IHI, 2017). A change concept, such as improving workflow, should be used in conjunction with the quality improvement team’s knowledge of evidence-based fall reduction interventions and the workflow of the microsystem. Ideally, the team would next run PDSA cycles to test the proposed change on a small scale to determine if the change results in an improvement (IHI, 2017).

Plan-Do-Study-Act

The PDSA is a cyclical model that tests small change, assesses outcomes, and allows for adjustments in the quality improvement process prior to full-scale implementation (IHI, 2017). This process can help decipher which intervention could potentially have the greatest impact on reducing falls, expose potential issues, and reveal a broader range of potential solutions (IHI, 2017). During a change process several cycles of the PDSA may be required as the quality improvement team learns more about the issues (IHI, 2017).
Plan. An appropriate small test of change begins with the development of a statement by the quality improvement team regarding the question they are attempting to answer, along with an educated guess about the anticipated results (IHI, 2017). The question should be specific and include who is involved, what is attempting to be accomplished, where it will be tested, and when it will be tested (IHI, 2017). In this phase the plan for data collection is also identified (IHI, 2017).

Do. In the early phases of the PDSA cycle the quality improvement team should test the change on a small scale (IHI, 2017). While testing the change it is important that the team document issues and unexpected findings (IHI, 2017). Data collection is initiated, and analysis of the data may begin within this stage of the change process (IHI, 2017).

Study. After the trial is complete the team should study the results and analyze the data. The data collected should be compared to the educated guess formulated during the planning phase of the PDSA cycle (IHI, 2017). Once the team has completed their summary of the data they should consider the lessons that have been learned throughout the test of change (IHI, 2017).

Act. Based on the finding from the study phase of the process modifications to the plan may be necessary to achieve the aim of the quality improvement process (IHI, 2017). The team should utilize the data to determine what elements of the plan were successful, and what adjustments are required. After adjustments are identified the team prepares a plan for the next test of change (IHI, 2017). This PDSA process is repeated until a successful change process is identified, and the aim of the project is achieved.
Application of the Model for Improvement in ED Setting

The Team

The quality improvement team within the microsystem of the western Michigan hospital included the ED Fall Champions, the ED Clinical Nurse Leader (CNL) student, the ED CNL, and the ED Informatics Specialist. Hereafter, this team will be referred to as the ED Falls Quality Improvement (QI) team. The ED Fall Champions served as the day-to-day experts and were ED registered nurses representing each shift. The ED CNL student represented the clinical leadership necessary to facilitate change. The ED CNL supported the ED CNL student in providing clinical leadership. The ED informatics specialist provided input regarding the electronic health record and assisted in determining fields for datamining and data presentation.

The Aim

Literature on falls in the ED setting and fall reduction interventions was reviewed by the ED CNL student. As previously described, the ED CNL student performed chart audits on all patients who fell in this ED of a western Michigan hospital between January 1, 2016 and December 31, 2017. The current practice in the ED setting did not include evidence-based fall interventions.

Subsequently, the QI team determined the need for evidence-based fall reduction interventions to be employed in the ED setting and the existing ED specific clinical practice guideline, Fall Prevention, utilized. The team decided that evidence-based fall reduction interventions are defined as completion and documentation of the identification of a fall risk, followed by hourly rounding and application of the bed alarm when a fall risk was identified. The aim of the quality improvement project was to integrate the assessment of fall risk, the use of the white board to communicate fall risk, hourly rounding, and the use of bed alarms into the
current practice of ED nurses. First, the goal was to increase the documentation of fall risk identification, hourly rounding, and bed alarm placement within the electronic medical record, measured by weekly chart audits (see Appendix D). Second, the goal was to increase the use of white boards to communicate fall risk identification and hourly rounding, and increase bed alarm use, measured by weekly visual audits (see Appendix D).

The Metrics

**Outcome Measures.** For this quality improvement project, the number of falls and falls with injury per 1,000 patient visits served as the outcomes measurement. This measurement determined if increasing or implementing the documentation of evidence-based fall reduction interventions reduced the number of ED falls. If a reduction in patient falls is seen after the re-implementation of the ED clinical practice guideline, *Fall Prevention*, this would result in higher quality and safer patient care.

**Process Measures.** For this quality improvement project, the documentation of the fall risk identification and reduction interventions in the electronic medical record served as the process measurement. The use of the white boards in patient rooms to communicate hourly rounding and fall risk was also monitored for process measurements. Weekly chart and visual audits were performed and examined as data points for compliance in documentation and implementation evidence-based fall reduction interventions, and in the use of the white boards to communicate hourly rounding and fall risk (see Appendix D). Additionally, patient care technicians on each shift began auditing bed alarm equipment daily to ensure that all necessary components were available and functional.
Balance Measures. Monitoring other metrics that could be affected by the change in practice created by this quality improvement project is essential. Length of stay, left without being seen, and patient and staff satisfaction metrics were monitored and considered. These metrics were reported on the ED monthly dashboard.

The Change

The expectation was that following the education every patient would be screened on admission and with changes in condition for his or her risk of falling, and that evidence-based fall reduction interventions would be implemented when a risk of falling was identified. The nurses and patient care technician (PCTs) were instructed to document the presence of a fall risk and hourly rounding in the electronic health record, and on the white board in the patient’s room (see Appendix A). The nurses and PCTs were also instructed to document the application of a bed alarm in the electronic health record (see Appendix A). This allowed for standardization of the assessment process and the documentation of the evidence-based fall reduction interventions (IHI, 2017). Education for the nurses and PCTs was developed by the ED CNL, the ED CNL student, and the ED nurse educator (see Appendix E and Appendix F for educational module and quiz). The education was administered through the health systems online educational platform.

Plan

The ED quality improvement team predicted that nurse and PCT education on the utilization of the ED Fall Reduction CPG would increase the documentation and use of evidence-based fall reduction interventions and fall risk identification. Emergency department nurses and PCTs received education on the importance of assessing and identifying the risk of falling, utilizing the white board to communicate hourly rounding and fall risk, and implementing evidence-based fall reduction interventions. Prior to the education being introduced department wide it was trialed on the ED Fall Champions. The education specifically included where to
document interventions within the electronic health record and introduced the fall reference card that served as the guide to fall risk identification (see Appendix A). The education also incorporated where to find supplies such as gait belts, non-slip socks, and bed alarm supplies. At the conclusion of the educational module the nurses and PCTs completed a twelve-question quiz to validate comprehension of the material (see Appendix F).

Data was collected from electronic medical record and visual audits to determine the success of the education. The electronic medical record was audited for documentation of the fall risk identification, hourly rounding, and bed alarms. Visual audits included use of the white boards to communicate hourly rounding and fall risk, and the application of the bed alarm.

Do

The education and implementation of evidence-based fall reduction interventions was trialed on a group of five ED nurses for optimal control (see Appendix E and Appendix F). The fall reference card provided a space for relaying comments and challenges to the quality improvement team during the trial (see Appendix G). While the trial was being conducted a paper copy of the fall reference card was utilized, in addition to documenting evidence-based fall reduction interventions in the electronic medical record. The paper copies were returned to the ED CNL student via the ED CNLs mailbox. The CNL student performed chart audits on the ED nurses who participated in this small test of change to examine the documentation of the evidence-based fall reduction interventions.

Study

At the completion of the trial the ED quality improvement team met to discuss the what went well during the trial and what improvements were needed. During this meeting all paper copies of the fall reference card were made available to the team so that comments and concerns could be discussed. The results of the chart and visual audits for documentation and
implementation of the evidence-based fall reduction interventions were also presented at the meeting (see Appendix D).

Act

When the data is favorable and there is an increase in the documentation of the evidence-based fall reduction interventions the team would decide to test the change on a larger scale. When the data shows an adverse effect or no changes in the amount of documentation of evidence-based fall reduction interventions, the team would decide to extend the test timeframe with the same small group of nurses or abort the change all together. In either situation it may be necessary to readjust or modify the intervention and begin the PDSA cycle repeatedly until optimal results are achieved (IHI, 2017).

Conclusion

The Model for Improvement and PDSA are proven methods for implementing successful and sustainable change (IHI, 2017). The Model for Improvement guides the ED quality improvement team to clearly identify the goals and choose intervention that are specific and measurable (IHI, 2017). In addition, the PDSA cycle assists the team in planning and testing the change, analyzing the results, and acting on what is learned (IHI, 2017). The Model for Improvement equips the ED quality improvement team with a model to thoroughly assess the problem and possible interventions to increase the documentation of evidence-based fall reduction interventions (IHI, 2017). The PDSA offers the flexibility to modify those interventions and run tests of change as necessary (IHI, 2017).
Chapter 4: Planned Clinical Quality Improvement Initiative

**Project Purpose**

**Clinical Problem**
In 2012 and 2013 the Emergency Department (ED) fall rate was .71 per 1000 visits in the ED microsystem of a western-Michigan hospital. In 2013, the ED Clinical Nurse Leader (CNL) and the ED Clinical Nurse Specialist modified the health systems evidence-based clinical practice guideline (CPG), *Fall Prevention*, making the CPG specific to the ED microsystem. Following the modification of the ED, *Fall Prevention*, CPG the ED CNL initiated staff education on fall prevention. After the implementation of the updated CPG and staff education the ED microsystem fall rates were reduced to .32 falls per 1000 patient visits in 2014.

However, the fall rates within the ED microsystem were trending upward with .33 falls in 2015, .40 falls in 2016, and .43 falls per 1000 patient visits in 2017. In 2016 six falls resulted in patient injury, and in 2017 three falls resulted in patient injury. The microsystem assessment, chart audits, and visual audits revealed that the current practice within the microsystem did not include consistent utilization of the CPG, *Fall Prevention*, by nursing staff to identify fall risk or implement fall reduction interventions (see Appendix D).

**Clinical Outcomes, Project Aim, and Goals**

The aim of the clinical quality improvement initiative was to reduce ED falls by increasing the use of the ED clinical practice guideline, *Fall Prevention*. Specifically, the project focused on a process for nurses and patient care technicians (PCTs) to document the identification of a patient’s fall risk, and the re-implementation of hourly rounding and use of bed alarms. The ED Fall Champions were educated on the new process for identifying the presence of a fall risk, implementing hourly rounding and bed alarm use, documenting in the electronic health record, and communicating with the healthcare team via white boards in patient
room. To analyze the success of the education weekly visual and chart audits were conducted by the ED CNL student for one month (see Appendix D).

The short-term goal was to increase the documentation of fall risk identification, hourly rounding, and bed alarms. The use of the white board to communicate fall risk and hourly rounding, as well as an increase in bed alarm use were also a part of the short-term goal of the project. Following the ED Fall Champion education the project was trialed for a one-month period. During this trial the ED CNL, the ED CNL student, and ED Falls Champions continually assessed the process for successes and opportunities for improvement.

The long-term goal was to decrease the fall rates per 1,000 patient visits in the ED. Falls are reported monthly and by unit. The ED CNL and ED Fall Champions continue to track falls and monitor the impact the project had on the decreasing the rate of falls in the ED.

**Implications for Informatics**

The quality improvement initiative leverages specific areas within the electronic health record (EHR) for the documentation of the identification of a fall risk, hourly rounding, and the use of a bed alarm (see Appendix A). The ED informatics specialist was consulted on decisions regarding where to document within the EHR to ensure the chosen fields could generated reports. Standardizing the documentation fields within the EHR also increased the validity of chart audits. The education included screenshots that directed the nurses and PCTs to the appropriate documentation fields within the EHR (see Appendix A).

**Anticipated Challenges**

Within the ED microsystem there were barriers to successful reduction of ED falls identified. First, there was no validated fall risk assessment (FRA) tools for the ED setting. The only FRA tool embedded in the EHR for the health system was the Morse Fall Risk scale, which
is only validated for the inpatient setting. The KINDER 1 FRA is being trialed for the ED setting. If the KINDER 1 were validated to reduce ED falls it could only be added to the EHR if approval was received from the health system. The inability to embed an ED validated fall risk assessment within the EMR was a recognized barrier.

Second, staff buy-in to make the practice change was also a potential barrier. If the practice change is cumbersome or time-consuming compliance would be minimal. The time constraint for this project did not allow for the CNL student to continually follow-up on the project, and sustainability was left to the ED Fall Champions and ED CNL. It was also challenging to ensure all nurses and PCTs completed the education because it was not mandatory. Due to a delay in uploading the educational module online educational platform, the monitoring of education completion would be done by the ED CNL. Third, the department was initiating education and a change in practice with the care of patients with suicidal ideation, and the start of these change projects simultaneously was a potential barrier.

**Measurement: Sources of Data and Tools**

**Pre-Implementation Data and Tools**

To identify the current practice in the microsystem several tools were utilized to gather data. The ED CNL student completed weekly visual and chart audits during Gemba walks and completed a cause and effect diagram to assist with the gap analysis. A checklist was developed by the ED CNL student to standardize the information collected during Gemba walks for the visual and chart audits (see Appendix D). During visual audits the CNL student checked patient rooms for use of the white board to communicate the patients fall risk and hourly rounding, and for the use of bed alarms (see Appendix D). Chart audits were completed to assess documentation of fall risk identification, bed alarms, hourly rounding in the EHR, and to
determine if the patient would have been identified as a fall risk if properly assessed using the fall reference card (see Appendix D and Appendix G).

Additionally, the ED CNL student performed chart audits on all patients who fell January 1, 2016 through December 31, 2017. These charts audits included the patients age, date and time of fall, diagnosis, completion of fall risk assessment prior to fall, hourly rounding, and documentation of bed alarm use prior to fall (see Appendix D). These retrospective chart audits were done to identify potential trends in ED falls.

An audit for supplies was also conducted. Audits revealed that non-skid socks were kept in the cupboard of every patient room, all extra supplies for bed alarms are kept in the supply room, and gait belts were kept in the physical therapy supplies. To make gait belts more accessible for staff the ED CNL and ED CNL student ordered four new plastic gait belts, and one was placed at each team station. The location of non-skid socks, bed alarm supplies, and the new location and care of gait belts was communicated in the fall education module in the online educational platform. The educational module also instructed patient care technicians to audit bed alarms in each room at the start of each shift to ensure they are complete and functional.

A cause and effect diagram was completed with the assistance of the ED Fall Champions (see Appendix H). The cause and effect diagram was utilized to determine the barriers that existed within the microsystem preventing staff from utilizing the CPG, Fall Prevention. The contributing factors surrounding the staff, the environment, the materials, the methods, and the equipment were discussed and analyzed by the ED CNL student and the ED Fall Champions.
Post-Implementation Data and Tools

After the implementation of the education and utilization of the CPG, *Fall Prevention*, visual and chart audits were conducted by the ED CNL student. A Gemba walk, visual audits, and chart audit was completed by the ED CNL student weekly. Chart audits were done to assess the documentation of fall precautions initiated, bed alarms, hourly rounding in the EHR, and to identify if the patient would have been identified as a fall risk if properly assessed using the fall reference card (see Appendix D). Visual audits were done to assess communication of fall risk and hourly rounding on the white board in patient room, and placement of bed alarms (see Appendix D). Visual and chart audit were done by the ED CNL student on a weekly basis beginning one week after the educational module was administered to the ED Fall Champions and concluded after one month.

Chart audits were also completed by the ED CNL student on all patients who fell post-implementation for one month. These charts audits included the patients age, date and time of fall, diagnosis, completion of fall risk assessment prior to fall, hourly rounding, and documentation of bed alarm use prior to fall (see Appendix D). This was done to assess for fall trends and opportunities for improvement.

Steps for Implementation of Quality Improvement Initiative

The Model for Improvement (MFI) is the nationally recognized framework that will guide this quality improvement initiative (see Appendix C) (IHI, 2017). The MFI asks three questions: What are we trying to accomplish?, How will we know when a change is an improvement?, and What change can we implement that will result in an improvement? (IHI, 2017)? After answering these questions, the next step of the MFI is the utilization of the Plan-Do-Study-Act cycle (PDSA). The PDSA cycle was used to plan and test change on a small scale
prior to a large-scale implementation of evidence-based fall reduction interventions (IHI, 2017). See Appendix I for a timeline for each phase of the process.

The Aim- What are we trying to accomplish?

In the first step of the MFI the aim of the initiative is defined (IHI, 2017). During this phase the ED Clinical Nurse Leader (CNL) student presented the ED CNL and ED Fall Champions with literature supporting evidence-based interventions to reduce the risk of patients falling in the ED. The ED CNL student also presented the ED Fall Champions with the data from chart and visual audits highlighting the current practices surrounding fall prevention within the microsystem. The existing evidence-based ED clinical practice guideline, *Fall Prevention*, was also reviewed with the ED fall champions. The ED clinical practice guideline included all the elements identified in the literature review performed by the ED CNL student.

After evaluating the literature, the data, and the clinical practice guideline the ED CNL student and the ED Fall Champions decided that the aim of the quality improvement initiative is to decrease the incidence of falls in the ED. This would be accomplished by increasing the use of the ED, *Fall Prevention*, clinical practice guideline, and the implementation of evidence-based fall prevention interventions. Specifically, the first goal was to increase the documentation of fall risk identification, hourly rounding, and bed alarm placement within the electronic medical record, measured by weekly chart audits (see Appendix A). The second goal was to increase the use of white boards to communicate fall risk identification and hourly rounding and increase in bed alarm use, measured by weekly visual audits (see Appendix D). Increasing the use of the ED, *Fall Prevention*, clinical practice guideline integrated the implementation and documentation of evidence-based fall reduction interventions into the current practice of ED nurses.
The Metrics- How will we know when a change is an improvement?

Establishing specific metrics allowed the quality improvement team to determine when changes in practice are demonstrating improvement (IHI, 2017). For this quality improvement project both visual and chart audits were performed weekly by the ED CNL student utilizing standardized spreadsheets (see Appendix D). The ED CNL student performed visual audits to assess the use of the white board in patient rooms to communicate the patients fall risk and hourly rounding, and for the placement of bed alarms (see Appendix D). The ED CNL student performed chart audits to assess for documentation of the initiation of fall precautions, hourly rounding, and bed alarm use (see Appendix D). Chart audits were also completed on all patients who fall for one-month post-implementation (see Appendix D).

The Change- What change can we make that will result in an improvement?

The ED nurses and patient care technicians (PCTs) were instructed on changes in practice and the quality improvement initiative through an educational module in the online educational platform (see Appendix E). The organizations online educational platform allowed both nurse and patient care technicians to be assigned the same educational module and quiz (see Appendix E and Appendix F for more information on the educational module and the quiz). Prior to the introduction of the educational module to all nurses and patient care technicians, the module and quiz was piloted on the ED Fall Champions. The necessary adjustments were made, and the module was sent to the ED Educator for placement in the online educational module. Due to high demand there was a delay in uploading the educational module into the online educational platform.

Education focused on the expectation that every patient would be screened on admission and with changes in his or her condition for their risk of falling. The education included the
implementation of evidence-based fall reduction interventions, specifically hourly rounding and use of bed alarms, when a fall risk was identified. A fall reference card was developed to assist the staff with fall risk identification and was posted at all computer workstations (see Appendix G).

The nurses and PCTs were instructed that only the nurse can document the presence of a fall risk in the electronic health record (see Appendix A). The education reflected that both nurses and PCTs can document fall risk interventions, such as the application of a bed alarm and hourly rounding, in the electronic health record (see Appendix A). Nurses and PCTs were also educated that both can utilize the white boards in patient rooms to communicate the fall risk and hourly rounding. This supported the standardization of the process for assessing the risk of falling, and documenting evidence-based fall reduction interventions (IHI, 2017). Due to the delay in uploading the education module in Health Stream no nurses or PCTs had completed the module after it was trialed on the ED Fall Champions. The ED CNL monitored nurse and PCT completion of the educational module going forward.

**Utilizing the PDSA Cycle**

The PDSA is a cyclical model that tests small change, assesses outcomes, and allows for adjustments in the quality improvement process prior to full-scale implementation (IHI, 2017). This quality improvement process as piloted on the ED Fall Champions prior to a larger scale implementation. After piloting the educational module, quiz, and fall reference card use on the ED Fall Champions adjustments the necessary changes were made to the project. Due to time constraints the educational module and quiz were sent to the ED Educator for placement in online educational platform after one trial with the ED Fall Champions. Ideally, several cycles of the PDSA may be required to achieve the desired results.
**Plan.** The prediction was that nurse and PCT education on the utilization of the ED clinical practice guideline, *Fall Prevention*, would increase the documentation and use of evidence-based fall reduction interventions. The increase use of the clinical practice guideline would also lead to a reduction in the fall rates on the unit.

**Do.** The education and implementation of the evidence-based fall reduction interventions in the ED CPG, *Fall Prevention*, were piloted on the ED Fall Champions. During the pilot the small group of participants was asked to provide feel back on the fall reference cards, the educational module, and the module quiz (see Appendix E, Appendix F, and Appendix G). Adjustments to the educational module, the module quiz, and the fall reference card were made after gaining the feedback of the ED Fall Champions during the pilot, and the module and quiz were then sent to the ED Educator to be placed in the online educational platform. The process to place the educational module into the online educational platform took longer than anticipated due to a high demand of requests.

**Study.** The ED Clinical Nurse Leader (CNL) student performed the weekly chart and visual audits beginning one week after the initiation of the pilot to assess for compliance with the implementation and documentation of the evidence-based fall reduction interventions—fall risk identification, hourly rounding, bed alarm use, and utilization of the white board beginning one week after the pilot began (see Appendix D). At the completion of the small group pilot the ED CNL student presented the data to those involved in the trial and the quality improvement team via an email. The ED CNL student and the ED Fall Champions met to discuss the trial after four weeks. The Quality Improvement Team consists of the ED CNL student, the ED CNL, the ED Informatics Specialist, and the ED Fall Champions.
Act. At the completion of the small group trial the data from chart and visual audits, as well as the input from the ED Fall Champions was reviewed. The ED Fall Champions and the ED CNL student communicated frequently by text message and email and decided to modify the fall reference card on two occasions to make the documentation requirements clearer (see Appendix J and K). The revised fall reference card was then trialed for two additional weeks. Following the second trial of the fall reference card the quality improvement team decided to proceed with implementing the education and quiz via the educational module.

Conclusion

The Model for Improvement provides a framework to thoroughly assess the problem and possible interventions to increase the documentation of evidence-based fall reduction interventions to reduce the incidence of ED falls (IHI, 2017). In addition, the implementation of evidence-based fall reduction intervention in the ED has the potential to reduce the costs associated with falls that result in injury. In 2016 and 2017, nine falls with injury occurred within the ED of the Mid-West hospital. The Joint Commission estimates that each fall with injury creates an average of $14,000 in costs not reimbursed by insurance companies (2015). Therefore, in 2016 and 2017 the Mid-West hospital may have spent $126,000 on the treatment related to falls that resulted in injury in the ED. Initiating a quality improvement project focused on the implementation of evidence-based fall reduction interventions in the ED could not only heighten patient safety but may also reduce the costs accrued by the hospital when a fall takes place.
Chapter 5: Clinical Evaluation

The Emergency Department (ED) Clinical Nurse Leader (CNL) student identified an issue with the increasing number of patient falls in the ED after completing the microsystem assessment in August 2017. The CNL student performed a literature review to discover evidence-based solutions for reducing falls in the ED. There was evidence-based literature that proper fall risk identification, followed by the implementation of fall risk interventions reduced falls. The western Michigan hospital had developed an ED specific clinical practice guideline (CPG), *Fall Prevention*, in 2013. The elements of this CPG that were supported by evidence to have the greatest impact on reducing falls were compiled into a one-page, Fall Reference Card (see appendix G). The Fall Reference card was designed to be a quick reference guide for nurses and patient care technicians (PCTs) to identify fall risk and implement interventions. The Fall Reference Card was trialed by the ED Fall Champions in July 2018.

The ED CNL student met with the ED Fall Champions on six occasions. During these meetings a cause and effect diagram was completed (see appendix H), the current ED fall prevention CPG was reviewed and used as the baseline to perform a gap analysis, and the fall champions offered input on the design of the Fall Reference Card. The ED CNL student developed an educational module for ED nurses and PCTs and presented the education to the ED Fall champions. Immediately following this education, the first trial of the Fall Reference Card began and included only the ED Fall Champions. Paper copies of the card were used for the trial and returned to the ED CNL student.

After one week of the trialing the original Fall Reference Card, the ED Fall Champions expressed to the ED CNL student that the information on the card was too cumbersome. The ED CNL student revised the Fall Reference Card and supplied copies of the new card to the ED Fall Champions (see Appendix J). The revised Fall Reference Card was trialed for two weeks. The
feedback on the revised Fall Reference Card was positive and indicated that the card was more user-friendly, but still burdensome. The card was again revised and distributed to the ED Fall Champions, along with five additional staff nurses for trailing (see Appendix K). The five additional staff nurses were selected at random to participate in the trial. Following this one week trial the feedback was favorable, and this was determined by the team to be the final product of the Fall Reference Card.

The western Michigan hospital decided in May of 2018 that all units would begin tracking falls using The Joint Commissions, Falls Targeted Solutions Tool (TST). The TST is designed to measure the current state within the organization, analyze causes of falls, implement solutions to reduce falls, and sustain improvements (TJC, 2018). The ED CNL student set up the TST tool for the ED by creating the team, sending the invitation emails, educating the charge nurses and fall champions about the tool, and monitoring the site for module and quiz completion. The invitation email described the new TST tool, informed them of the requirement to watch a ten-minute video, and the necessity to take a mandatory ten-question quiz. The ED CNL student tracked the completed modules and the quizzes from the TST website, and all assignments were completed by the due date. Staff nurses were instructed in shift report to meet with a charge nurse or a fall champion after a fall occurred to complete the TST online together. In addition, the ED CNL student worked with the Nursing Informatics Specialist to have the TST icon and link added to the desktop of every computer for ease of access to the site.

**Project Successes and Strengths**

The engagement of the ED Fall Champions throughout the process was a monumental success. The ED Fall Champions attended all scheduled meetings from October 2017 through July 2018, and actively participated in developing the plan to reduce ED falls. The ED Fall
Champions were also representative of each shift with one working days, two working afternoons, and one working nights. The ED CNL was also supportive of the project by providing the ED CNL student with history behind the ED clinical practice guideline, Fall Prevention, and connecting the student with the appropriate resources.

The trial of the fall reference card showed the technique for identifying the fall risk and implementing interventions to be successful. Prior to the trial of the fall reference card data was collected for pre- and post-implementation comparison. Pre-implementation data was compiled over two weeks leading up to the trial by performing Gemba walks, and completing visual and chart audits on 65 patients during this time (see Appendix L). The Fall Reference Card was applied to each of the 65 patients to determine if they were at high risk for falling, and 52 of the patients were at high risk of falling. However, during pre-implementation audits fall risk was documented on zero of the 65 patients, hourly rounding was documented on only ten of 65 patients, and bed alarms were documented on only one of 65 patients (see Appendix L).

Following the trial of the Fall Reference Card, chart audits were completed by the ED CNL student. During the first three weeks of the Fall Reference Cards trial twenty paper copies of the Fall Reference Card were returned to the ED CNL student. Due to the low volume of returned cards five additional nurses were randomly asked to participate during the last week of the trial and this produced five additional paper copies of the Fall Reference Card, for a total of 25 returned cards. The paper copies of the Fall Reference Card contained patient identifiers used to perform chart audits. Audits revealed fall risk and hourly rounding was documented on 24 or the 25 patients, and bed alarm use was documented on 22 or the 25 patients (see Appendix M). Overall, the use of the Fall Reference Card has improved the documentation of fall risk identification, hourly rounding, and bed alarms. Emergency Department fall rates will be
assessed by the ED CNL over the next year to determine if the increased awareness resulted in fewer ED falls.

The use of the Falls TST was also a success for the ED. After the ED logs 30 falls in the TST the tool will identify trends in falls and generate solutions to reduce falls. Using this information, the ED CNL and ED Fall Champions will be able to identify and address the greatest issues leading to patient falls.

**Project Challenges and Weaknesses**

There were several project challenges and weaknesses identified. Due to the timeline for this student project the Fall Reference Card was trialed by four ED Fall Champions and five front line nurses, and the education was trialed by four ED Fall Champions. Also, the scope of the education was limited in Health Stream to ED nurses and PCTs. For this project site, it was recommended to implement the educational module for all nurses and PCTs. In addition, it was recommended that the educational module be expanded to include other disciplines, such as: social work, case management, and physicians.

The trail took place over a four-week period during the ED Fall Champions scheduled shift. Several times during the trial the ED Fall Champions were placed the in the triage or sorter position during their shift. When placed in these positions they were unable to trial the Fall Reference Card because they are not directly caring for patients. Two of the four ED Fall Champions also took a one-week vacation during the time of the trial limiting their availability to participate. The ED Fall Champions also verbalized that the paper copies were accidently sent to medical records with the chart, or they forgot to return it to the ED CNL student. Some Fall Reference Cards were retrieved from medical records, and the ED Fall Champions were able to
review the lists of patients they cared for and supply the ED CNL student with the patient names for chart audits.

The electronic medical record (EHR) also created challenges. There was not one area within the EHR to address fall risk and interventions. The western Michigan hospital is a part of a larger network of hospitals and approval for changes to the EHR could be a lengthy process. Additionally, all changes to the current EHR were halted because the decision was made to change EHR vendors in the next year. Therefore, using existing documentation and fields for documentation were identified. This resulted in nurses navigating in and out of several screens during the trial to document the patients fall risk and interventions to reduce falls.

There were also competing priorities. During the one-month trial, the nurses were required to complete their yearly self-evaluations, and complete over twenty online educational modules that if left undone impacted their yearly evaluation scores. There were also major process changes and an educational module within the department related to how suicidal patients are cared for and triaged. Cumulatively, this made the timing of the Falls QI project less than ideal due to the amount of change occurring in the department at this time and made maintaining department wide engagement and momentum difficult.

**Evaluation of the Model for Improvement and PDSA**

The Model for Improvement (MFI) guided the ED CNL student and the ED Fall Champions in selecting a specific change, in approaching the change with deliberate intention, and in developing metrics to measure the results of the change. The use of the MFI kept the project focused even when the timeline was shortened. This model will assist the ED CNL and ED Fall Champions in sustaining the project going forward.
The Plan-Do-Study-Act (PDSA) was used continually throughout the quality improvement (QI) project. The PDSA cycle allowed the ED CNL student to repeatedly readjust the QI project as issues or barriers were identified to ensure the success. For example, the ED Fall Champions communicated to the ED CNL student that the Fall Reference Card was too cumbersome, and the ED CNL used PDSA cycles to revise the card and redirect the QI project. The Fall Reference Card was modified using the feedback from the ED Fall Champions on two occasions. Additionally, the use of the Fall TST tool was not part of the initial implementation plan. The ED CNL and ED CNL student were trained to use the TST in late May 2018. The TST was then added to the Health Stream educational module and implementation plan.

**Project Sustainability**

The ED CNL student performed a handoff of the project to the ED CNL and ED Fall Champions, who were very engaged and will likely sustain the project going forward. During this handoff they were supplied with a fall issue brief outlining the initial microsystem assessment, the current state of fall risk assessment and intervention implementation, pre-implementation data, and post-trial data (see Appendix N). The ED CNL students A3 was also presented to the ED CNL and ED Fall Champions to communicate the journey taken to reduce ED falls (see Appendix O). The ED CNL student sent all data collected, all drafts of the Fall Reference Card, the educational module and quiz, and the fall issue brief to the ED CNL for use during sustaining the project.

The CNL student also developed a fall binder that contained the necessary tools to sustain the project. The falls binder included copies of the TST online data collection tool to be used in the event of computer downtime, the user guide for completing the TST tool, definitions for types of falls, the educational module, and the ED clinical practice guideline, *Fall Prevention.*
This binder is kept at the charge nurses station in the ED at the western Michigan hospital. The ED CNL student and the ED CNL also traveled to the western Michigan hospitals second ED across town and met with the department manager and fall champion at this site. During the meeting, the ED CNL student presented the on-line learning platform educational module, set up the TST tool for the second ED site, and provided education on the use of the TST tool. A fall binder was also developed for this ED.

**Project Outcome**

Pre-implementation chart and visual audits were conducted in real time during Gemba walks on 65 patients over a two-week period (see Appendix L). The visual audit component required that the ED CNL student enter the patient’s room to assess the use of the white board to communicate fall risk and hourly rounding, and to assess for bed alarm placement. Audits were performed entirely by the ED CNL student. The Fall Reference Card was applied to 65 random patients to determine if they were at a high risk of falling. Of the 65 patients audited, 52 were found to be at a high risk of falling. Pre-implementation visual audits revealed that the white boards in patient rooms were used to communicate fall risk on three of the patients, white boards in patient rooms were used to communicate hourly rounding on five of the patients, and bed alarms were placed on one of the patients. Pre-implementation chart audits revealed that fall risk was identified and documented on none of the patients, hourly rounding was documented on ten of the patients, and bed alarm were documented on one of the patients.

Following the completion of the Fall Reference Card trial, 25 paper copies of the Fall Reference Card were returned to the ED CNL student. The paper copies of the Fall Reference Card included two patient identifiers and were utilized by the ED Fall Champions to indicate why the patient was a fall risk, which fall risk interventions where initiated, and to communicate concerns or barriers. The post-trial audits of the Fall Reference Card and revealed 100% of the
patients were identified as a high fall risk, bed alarms were placed in 84% of patients, and the white boards where used to communicate hourly rounding and the fall risk in 92% of the patients (see Appendix M). The post-trial chart audits revealed bed alarms were documented in the EHR 84% of the patients, hourly rounding was documented in the EHR in 92% of the patients, and the fall risk was documented EHR in 92% of the patients (see Appendix M).

The one-month trial period was sufficient in length, but due to the barriers with participation due to vacations and staffing assignments a larger group to trial the Fall Reference Card would be recommended to obtain more data. Overall, the data that was obtained during the trial period demonstrated that the use of the Fall Reference Card increased the documentation of fall risk assessment by 100%, increased the documentation of hourly rounding by 77%, and increased the documentation of bed alarm use by 82% (see Appendix M). The fall rates, which the setting monitors, will be the best indication to the success of the QI project.

**Project Implications for Nursing Practice**

In 2008, the Center for Medicare and Medicaid Services (CMS) issued provisions and payment penalties for hospital acquired conditions (HAC) (CMS, 2015). Included in these HAC are falls and trauma and injuries that are sustained as the result of a fall (CMS, 2015). These provisions mean that hospitals are now responsible for the fees related to treating patients and their injuries after a fall. The average cost of a hospital fall without injury is $1,139 to $2,033 (Spetz, et al., 2015). Even when a fall does not result in an injury the hospital is responsible for the fees associated with diagnostic studies to rule out an injury. The average cost of a hospital fall with serious injury is $17,567 to $30,931 (Spetz, et al., 2015). By 2020 it is estimated that falls with injury will be costing the United States over 17 million dollars (Trepanier & Hilsenbeck, 2014). Therefore, preventing falls is not only driven by our desire to protect the patients physical and emotional well-being, there is now financial incentive to reduce falls.
The quality improvement (QI) project to reduce falls in the ED of a western Michigan hospital has the potential to reduce the number of falls with a minimal cost to the hospital. The QI project trail demonstrated a 100% improvement in fall risk identification in a short timeframe. A cost benefit analysis revealed that the project has cost roughly $915.00. To date the project has cost $789.00 in nursing hours between education and meetings, $104.00 in the purchase of four gait belts, and $14.00 in printing and laminating supplies. The western Michigan hospital already had bed alarms and white boards in every patient room prior to the QI project. Going forward as the Health Stream educational module is introduced to all nurses and PCTs the cost to complete the half hour module is estimated to be $1,500.00. Overall, the cost of the QI project is approximately equivalent to one fall without injury.

**Enactment of Master of Science in Nursing Essentials**

The nine Master’s of Science in Nursing (MSN) Essentials are the core framework for all MSN programs, regardless of intended practice setting (American Association of Colleges of Nursing, 2011). During the planning and implementation of the QI project the ED CNL student utilized the MSN Essentials. Essentials One and Four directed the ED CNL student in searching literature for evidence-based solutions to the identified clinical problem and applying guidelines to improve patient care in a diverse setting. Essential Two directed the ED CNL student’s leadership role, decision making skills, and the ability to design and implement changes to improve patient care.

Additionally, Essential Three directed the ED CNL student in implementing an evidence-based QI project, in analyzing the information and data associated with the project, and in promoting an environment of accountability and productive communication amongst the team. Essential Five directed the ED CNL student in utilizing the EHR and displaying data.
Six and Eight directed the ED CNL student in developing a patient centered strategy to reduce falls and improve safety. Essential Seven guided the ED CNL student in the interprofessional collaboration elements of the quality improvement project. Essential Nine guided the ED CNL student in employing knowledge and design strategies that integrated improvements in nursing practice at the bedside.

**Conclusion**

Based on the preliminary data from the trial phase of the quality improvement (QI) project, the department-wide implementation of the project has the potential to greatly increase the awareness of a patient’s fall risk for falling and possibly reduce patient falls. The true impact of the project will be known when fiscal year 2019 fall data is released. The implementation of the Fall Targeted Solutions Tool will assist the ED Fall Champions and the ED CNL to identify specific contributing factors to patient falls and provide them with solutions to address these factors. Overall, the QI project has provided a foundation for the ED CNL and the ED Fall Champions to carry forward and continue to work to reduce patient falls.
References


https://www.jointcommission.org/about_us/about_the_joint_commission_main.aspx


https://www.jointcommission.org/assets/1/18/SEA_55.pdf


http://www.jointcommission.org/assets/1/18/SEA_55.pdf


https://www.centerfortransforminghealthcare.org/tst_pfi.aspx
https://www.mayoclinic.org/diseases-conditions/traumatic-brain-injury/basics/complications/con-20029302


Appendix A

Screen Shots for Documentation Within the Electronic Health Record

Note. Area to document Fall Precautions “initiated” in iView within electronic health record.

Note. Area to document hourly rounding within the electronic health record.

Note. Area to document bed alarms within the electronic health record.
## Appendix B

### Literature Review

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<th>Citations</th>
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<th>Measurement of Major Variables</th>
<th>Data Analysis</th>
<th>Study Findings</th>
<th>Appraisal of Worth to Practice</th>
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<tbody>
<tr>
<td>Spetz, J., Brown, D. S., &amp; Aydin, C. (2015). The Economics of Preventing Hospital Falls</td>
<td>None Mentioned</td>
<td>Fall data obtained from CALNOC. PubMed lit search for literature to measure falls with serious injury and falls with any injury. Rates of injury were calculated by authors and summarized in table 1</td>
<td>Fall rates before and after: 10 articles Fall costs by severity: 7 articles Cost of fall prevention programs: 5 articles.</td>
<td>Hospital inpatient fall rates and impact of interventions Cost of hospital patient falls Costs of hospital patient falls prevention programs</td>
<td>Fall rates pre and post-intervention, decline per 1000 patient days. (table 1) Cost in dollars for falls without injury, falls with injury, and falls with serious injury (table 2)</td>
<td>AHRQ Patient Safety Indicator Toolkit was utilized to guide cost calculations.</td>
<td>Tables 4 &amp; 5</td>
<td>Limitation: Some inconsistency could exist in estimated costs. The study assumes that hospitals will achieve a reduction in fall rates by actively implementing prevention efforts. Costs may vary by region due to local costs of labor/equipment/supplies.</td>
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<td>Citations</td>
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<td>Hempel, S., Newberry, S., Wang, Z., Booth, M., Shanman, R., Johnsen, B., Shier, V., Saliba, D., Spector, W.D., &amp; Ganz, D. A. (2013). Hospital Fall Prevention: A systematic review of implementation, components, adherence, and effectiveness</td>
<td>None mentioned</td>
<td>Systematic review</td>
<td>US Acute Care Hospitals</td>
<td>Studies reporting in-hospital falls for intervention and concurrent or historic comparatives</td>
<td>Fall prevention interventions</td>
<td>Incidence rate ratios (IRR)</td>
<td>81% of studies included multiple components (risk assessments, visual alerts, patient education, rounding, bed alarms, and post-fall evaluations). Only a fraction of the 59 hospitals reported sufficient data to compare fall rates, and pooled estimates found no statistically significant intervention effect.</td>
<td>59 acute care hospitals—large sample size Many of the studies did not use a validated fall risk assessment tool Identified that most fall reduction programs are multi-component Identified the need for better reporting of outcomes and detailed information on implementation strategies in future research.</td>
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### Inpatient Fall Prevention Programs as a Patient Safety Strategy

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<th>Study Findings</th>
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<td>Miake-Lye, I. M., Hemple, S., Ganz, D. A., &amp; Shekelle, P. G. (2013).</td>
<td>None Mentioned</td>
<td>Systematic Review</td>
<td>Searched PubMed from 2005-Sept 2012</td>
<td>- The problem of patient safety strategies - review process - benefits and harms - implementation costs and considerations - patient safety/culture/ teamwork/ leadership</td>
<td>Intervention components included in the studies (table 1). Study year</td>
<td>Table 1 (pg 392) And Table 2 (pg. 393). Review showed that multi-component in-facility fall prevention programs resulted in statistically and clinically significant reductions in rates of falls. Confidence intervals and Rate ratios were supplied.</td>
<td>Evidence indicates that inpatient multi-component programs are effective at reducing falls. 7 themes associated with successful fall programs - leadership support - engagement of front-line staff - multi-disciplinary committee - interventions should be test piloted - information systems capable of providing data - patient and staff education - changing attitudes towards fall “nothing can be done” “inevitable”</td>
<td>Limited by the quality and quantity of original research articles. Review was systematic and high quality demonstrating the benefits of fall reduction programs and identified 7 common themes.</td>
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<td>Coyle, R. &amp; Mazaleski, A. (2016).</td>
<td>DMAIC Six Sigma</td>
<td>Defined the problem-increased number of falls in the inpatient setting</td>
<td>Hospital inpatient unit</td>
<td>Improvement-bed alarms-reinforcing a “no-pass” zone-remaining with high fall risk patients during toileting-hourly rounding-diversional activities-creating a standard of communication aids (signage, wristbands)-daily huddle-continuous education-access to high-low beds-updating fall policy-creating partnerships-initiation of post-fall debriefings</td>
<td>Fall rates prior to implementation vs fall rates after implementation</td>
<td>Prior to implementation Fall rates Q4 2012 were 3.53/1000 pts Q4 2013 were 3.69/1000 pts Post implementation Q1 2014 were 1.69/1000 pts</td>
<td>Culture of fall prevention has improved. Employees now recognize that it is everyone’s job to keep pts safe Dietary and transport staff even respond to bed alarms</td>
<td>Limitation- only one unit No discussion of statistical significance or how data was analyzed. Is a good example of how multidisciplinary approach and use of DMAIC model can be successful.</td>
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<td>McErlean, D. R., Hughes, J. A. (2017). Who falls in an adult emergency department and why—a retrospective review</td>
<td>None mentioned</td>
<td>Design: Retrospective, observational study initially conceived within a quality paradigm using quantitative data.</td>
<td>In a large inner city, tertiary ED that sees approx. 60,000 adults (aged 16+) per year. For the period of time studied the department saw 293,000 pts.</td>
<td>Extracted from electronic incident report: Pt demographics, fall type, location and outcome of fall (defined on table 1, pg 14) Extracted from the EHR: patient arrival times, medications ingested, current prescribed medications, and risk factors for falling (defined on tables 1-3, pg 14).</td>
<td>Means and SD are presented for all continuous variables and frequencies are shown for categorical variables. Descriptive statistics were presented for all of the collected variables. Means and SD are presented for all continuous variables and frequencies are shown for categorical variables. Fall rates per 1000 presentations are presented over time and time to fall is also presented.</td>
<td>During the study period a total of 190 falls occurred at a rate of .63 falls per 1000 presentations. 95.7% of these falls resulted in no or minimal harm to the patient. The use of high-risk medications, recreational substances and alcohol were prevalent throughout the ED population (vs. the inpatient population). The most likely time for a pt to fall was during mobilization, especially to the bathroom. Pts falling in the ED also tend to be younger than in other settings.</td>
<td>Strengths: First conducted a look into who and why patients fall in the inpatient setting, and then looked at who and why patients fall in the ED setting. 5 years of data Limitations: one hospital setting, and may not be transferrable to another hospital setting. Some data was missing from the electronic incident reporting system, and the EHR. Authors identify that a deeper analysis of associated variables such as high-risk meds, medical dx, and disposition needs to occur.</td>
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<td>Terrell, K. M., Weaver, C. S., Giles, B. K., &amp; Ross, M. J. (2009). ED Patient Falls and Resulting Injuries.</td>
<td>None Mentioned</td>
<td>Retrospective study of ED medical records and incident reports related to ED patient falls.</td>
<td>Level 1 trauma center 2-year period Oct 2003-Sept 2005 Falls that occurred in the ED observation unit 57 falls</td>
<td>8 assessment parameters-Based on Hendrick II Fall Risk Model—Gender, hx of depression, hx of altered elimination, mobility problems, presence of cognitive impairment, presence of benzo’s or antiepileptics. Also—Age, time, presence of ETOH, meds adm prior to fall, circumstances around fall, side rails up, ED disposition, injury occurred, diagnostic tests performed d/t fall.</td>
<td>Only the first fall among subjects was studied Simple descriptive statistics used to summarize data</td>
<td>Avg age 50 67% men Table pg 91 21 of 57 had a Hendrick II score greater than 5, which represents a 37.5% sensitivity to recognizing fall risk</td>
<td>Nearly 20% of those who fell were intoxicated. Hendrick would have only predicted 1/3 or the falls. Fewer than 10% of the falls resulted in injury</td>
<td>The authors recognize that the Hendrick II Fall Risk Model is not reliable in identifying the risk of falling in the ED. Only 1 ED Relied on accurate documentation and reporting of falls.</td>
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<td>Townsend, A. B., Valle-Ortiz, M., Sansweet, T. (2016). A Successful ED Fall Risk Program Using the KINDER 1 Fall Risk Assessment Tool</td>
<td>Kotter</td>
<td>Retrospective review of ED fall data for each quarter of 2013. Included risk assessment scores, total number of falls, and the circumstances of each fall. Data on falls were collected retrospectively prior to the project launch, and concurrently after project implementation. Evaluated both the baseline data collected on the HFRM and the number of ED falls, obtained from the hospitals risk management department. The plan was to demonstrate an increase in fall screenings, and a decrease in pt falls.</td>
<td>Ed patients in a hospital in southern New Jersey</td>
<td>Documentation of use of Fall Scale in ED (yes or no) Number of falls in the ED (per 1000 pts).</td>
<td>No statistical reliability information was mentioned. No mention of how many pts had a fall risk assessment documented in their EHR. Table 1 on page 495 discusses number of pts, number of falls, falls/1000 pts, and falls with injuries.</td>
<td>Table 1 on pg 495 shows number of falls /quarter, and falls/1000 pts/quarter. Figure 3 on page 497 shows ED Falls/1000pts comparing 2013 fall data with post-implementation 2014 fall data.</td>
<td>During the first 4 weeks of the project 937 pts (27%) were identified as high risk for falls using KINDER 1. During the subsequent 3 quarters, the total number of falls decreased; reported falls without injury dropped from .21 to .07 per 1000 pts, and falls with injury were reduced from .21 to 0.0 per 1000 pts.</td>
<td>Limitations: KINDER 1 is a recently developed tool and has not been extensively tested for validity, sensitivity, and specificity. The falls reported are reported voluntarily, and is not mandatory (so there may be underreporting of falls). Limited to 3 quarters of data. Study conducted in one ED. No statistical analysis used to validate that findings and decreased fall rates were statistically significant. No mention on if any falls were excluded for any reason. Did not discuss where data was collected from. Strengths: only 1 fall by the end of Q3 in 2014. No risk of harm if study intervention or findings are trialed. Their model is feasible.</td>
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<td>Alexander, D., Kinsley, T. L., Waszinski, C. (2013). Journey to a Safe Environment: Fall Prevention in an Emergency Department at a Level I Trauma Center</td>
<td>None mentioned</td>
<td>In July 2008 they implemented the inpatient fall risk assessment used at their facility, in the ED. They monitored fall rates throughout 2009, and 40 pts fell. Of those 40 pts only 17 had been identified as a fall risk, and 5 should have been but were not (total of 22 of 40). Developed the KINDER 1 ED Fall risk assessment tool, and this was applied retrospectively to all fall pts. Between Jan 2007 and Oct 2010 (150 pts), and would have identified close to 100% of ED fall risk pts.</td>
<td>All patients who fell in the ED from July 2008 to Sept 2011. They looked at how many patients fell, when they fell, why they fell/what they were trying to do—toileting, intoxication, etc.</td>
<td>ED Falls/1000 patient visits: Q4 2008: .45 Q1 2009: .52 Q2 2009: .43 Q3 2009: .45 Q4 2009: .27 Q1 2010: .72 Q2 2010: .60 Q3 2010: .32 Q4 2010: .36 Q1 2011: .66 Q2 2011: .38 Q3 2011: .37 Q4 2011: .55</td>
<td>No statistical reliability information was mentioned. The scale used to measure outcomes was whether a decrease was seen in the number of falls occurring in the ED. The KINDER 1 fall scale is a 5 questions assessment tool, and yes to any of the 5 questions indicates fall risk.</td>
<td>Figure 3 on page 350 shows the ED Falls per 1000 patient visits. KINDER 1 Fall Risk assessment was set to implement on Aug 10, 2010. From Oct 2010-Nov 2011 34 pt fell, and 73% of those 34 pts had been identified as a fall risk. An examination of the circumstances of the fall showed that none of the pts who fell had prevention strategies in place. In short, they were getting better about assessing for fall risk, but were not implementing prevention techniques. They then educated on prevention techniques, and hourly rounding by volunteers. Between Oct 2010 and Sept 2011 only 1 pt fell.</td>
<td>Figure 3 on page 350 shows the ED Falls per 1000 patient visits. KINDER 1 Fall Risk assessment was set to implement on Aug 10, 2010. From Oct 2010-Nov 2011 34 pt fell, and 73% of those 34 pts had been identified as a fall risk. An examination of the circumstances of the fall showed that none of the pts who fell had prevention strategies in place. In short, they were getting better about assessing for fall risk, but were not implementing prevention techniques. They then educated on prevention techniques, and hourly rounding by volunteers. Between Oct 2010 and Sept 2011 only 1 pt fell.</td>
<td>Some aspects of the study may not be feasible for all facilities. Such as the volunteers to assist with hourly rounding. The strengths of the study include that it took place over several years and tested inpatient fall risk assessments prior to testing their KINDER 1 tool. They were able to identify that fall prevention cannot be a one-step process and must include the assessment for fall risk followed by the implementation of fall prevention protocols. Limitations: it was only measured in one ED. No statistical analysis used to validate that findings and decreased fall rates were statistically significant. No mention on if any falls were excluded for any reason. Did not discuss where data was collected from. The authors did not talk about limitations.</td>
</tr>
<tr>
<td>Citations</td>
<td>Conceptual Framework</td>
<td>Design/Method</td>
<td>Sample/Setting</td>
<td>Major Variables of Study</td>
<td>Measurement of Major Variables</td>
<td>Data Analysis</td>
<td>Study Findings</td>
<td>Appraisal of Worth</td>
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<tr>
<td>Wong-Shee, A., Phillips, B., Hill, K., &amp; Dodd, K. (2014). Feasibility, acceptability, and effectiveness of an electronic sensor bed/chair alarm in reducing falls in patients with a cognitive impairment in a subacute ward. <em>Journal of Nursing Care and Quality</em>. 29(3), 253-262.</td>
<td>None mentioned</td>
<td>2-part study. The first part used a repeat measure single cohort design, the second part used descriptive and qualitative analyses to assess electronic bed/chair alarm acceptance from nursing staff. 3 consecutive 21-day phases: preintervention phase, intervention phase (sensors in place), postintervention phase (sensors removed). Falls were measured over all 3 phases. 19 pts were present for all 3 phases.</td>
<td>Phase 1: patients admitted to a subacute ward over a 6-month period were included if they met the following criteria: cognitive impairment (defined as mini-mental exam score less than 25), high fall risk (defined as a score of 3 or more using the TNH-STRATIFY), had sustained 1 or more falls during current admission or in last 21 days, frequent toileting/ Incontinence requires staff for ambulation. Phase 2: all permanently employed nurses surveyed anonymously using 7 Likert items &amp; 3 open-ended questions</td>
<td>Phase 1: Demographics- age, gender, length of stay. Medical-cognitive, continence, and mobility status Fall risk assessment-TNH-STRATIFY Fall incidence and fall related injury were collected from medical records and hospital incident reporting database</td>
<td>Descriptive analysis was performed for all demographic, medical and fall data using SPSS version 17.0 SD, Percentages, 95% CI, Incident rate ratio (IRR), p-values, z distribution,</td>
<td>There was a significant decrease in the fall incident density (ID) during the intervention period vs the preintervention and post intervention period. Preintervention vs intervention IRR= 1.918 falls Intervention vs postintervention IRR=.0664 falls Preintervention vs postintervention IRR= 1.273 falls</td>
<td>There was a significant decrease in the fall rate for all patients while the electronic bed/chair alarm was in place. The decrease in falls may have resulted from several factors: effectiveness of sensors, increased staff awareness, a natural variation in fall incidence, or patients were less vulnerable to falls.</td>
<td>Limitations: Lack of a control group was discussed, small sample size of 1 ward, potential for under reporting of falls. Research over a longer time period, with more participants, and with randomization of bed-alarm use is needed.</td>
</tr>
</tbody>
</table>
Appendix C

The Model for Improvement and the PDSA Cycle (IHI, 2017)

**AIM- What are we trying to accomplish?**
The aim of the quality improvement project is to increase the use of the ED Fall Prevention CPG to integrate the implementation and documentation of evidence-based fall interventions into the current practice of ED nurses.

**METRICS-How will we know that a change is an improvement?**
Documentation of evidence-based fall reduction interventions, and implementation of fall reduction interventions will increase by 50% by July 31, 2018. Weekly chart and visual audits.

**SELECTING THE CHANGE- What change can we make that will result in an improvement?**
The expectation is that following the education every patient will be assessed on admission and with changes in condition for his or her risk of falling, and that evidence-based fall reduction interventions will be implemented and documented when a risk of falling is identified.

- **Plan**
  - The ED quality improvement team predicts that nurse and patient care technician education on the utilization of the ED Fall Prevention CPG will increase the documentation and use of evidence-based fall reduction interventions.

- **Do**
  - The education & Fall Reference Card implementation of evidence-based fall reduction interventions will be piloted on a small group.

- **Study**
  - Visual & Audit charts for one month. Assess compliance with implementation and documentation of evidence-based fall reduction interventions and user friendliness of fall reference card. Present data to team.

- **Act**
  - If increase in implementation & documentation of fall reduction interventions is noted decide whether to extend or expand study or implement. If no improvement, reassess intervention & prepare for another PDSA cycle.

The Quality Improvement Team
- ED CNL
- ED CNL STUDENT
- ED Informatics Specialist
- ED Fall Champions
Appendix D

Fall Audit Tools

**Note.** This tool will be used for the retrospective audit of falls that occurred between January 1, 2016 through December 31, 2017, and for audit of falls that occur for one-month post-implementation.

**Note.** This tool will be utilized for pre and post implementation real-time audits during Gemba walks.

**Note.** This tool will be utilized to conduct random weekly chart audits post-implementation.
Appendix E

Fall Educational Module

Identifying Patients at Risk of Falling & Implementing Interventions to Reduce the Risk

Objectives
By the end of this module learners will be able to:
1. Explain the determinants that place a patient at a high risk for falling.
2. Describe the interventions that reduce a patient's risk of falling.
3. Demonstrate the proper documentation of fall risk identification and interventions in the electronic health record.

Clinical Practice Guideline: Fall Prevention
• Currently has an ED clinical practice guideline for Fall Prevention (ED Operational Guideline #21). Insert Link to CPG #21 here.
• This educational module is intended to increase awareness and utilization of the clinical practice guideline to prevent falls.

Fall Risk Determinants
1. Presence of cognitive impairment
2. Sedatives or antidepressants
3. Physical weakness
4. History of falls
5. Other medical factors

Fall Reference Card

A Fall Reference Card has been developed to use as a quick reference and reminder to assess fall risk and implement interventions.

The Fall Reference Card will be posted on computer workstations.
Identifying Fall Risk

- After identifying the patients at risk for falling:
  - Document fall precautions “实施” in viewer
  - Identify fall risk on white board in patient rooms.
  - Communicate fall risk to PCA
  - Initiate and document fall risk interventions

Documentation of Fall Risk Identification and Interventions

- Documentation of the fall risk identification must be done by the RN within the electronic health record.

- However, PCAs can document fall risk interventions (such as non-slip socks, gait belts, beds low and laced, bed alarms) in the electronic health record and utilize the white boards within the patient rooms.

Fall Interventions

- **Hourly Rounding**:
  - Document rounding in flow chart.
  - Utilize white boards in patient rooms to communicate hourly rounding.
  - Rounding should include:
    - Assessing patient pain level
    - Reviewing patient's position
    - Bathing
    - Placing call light and belongings within reach.
    - Tidying the room to avoid clutter
    - Asking patient of their needs

Fall Interventions

- **Bed Alarms**:
  - Check rooms at beginning of shift to ensure bed alarm supplies are available in every patient room.
  - Additional supplies for bed alarms can be found in the supplies room.
  - Place bed alarms on patients determined to be at high risk of falling.
  - Document application of bed alarm in flowchart.
**Fall Interventions**

- Additional Interventions to Prevent Falls in High Risk Patients:
  - Educate: Keep Patient’s bedside rails up at all times
  - Utilize alarms in patient room to communicate fall risk
  - Never leave a patient who is at risk of falling unattended in the bathroom or on a commode
  - Request a sitter if the patient is unable to understand fall risk and impulse

**Documenting Interventions**

- Many of these interventions can be documented in iView
- Bed alarms can be documented here under “safety measures,” or under “Fall risk interventions” as previously mentioned.

**Documenting Patient Education on Falls**

- There is an area within iView to document patient education
What do I do If a Fall Does Occur?

- After ensuring the patient is cared for and safe, there are 3 steps to
documenting the fall:
  1. You must complete the post-fall huddle form in the Ad Hoc section of the
electronic medical record.
  2. You must complete a VOICE report.
  3. You must meet with the Charge Nurse or ED Fall Champion as soon as
possible after the fall to complete the Joint Commissions Targeted Solutions
Tool online together. This online form replaces the Learning from Defects
Tool.

Questions?

- Contact Nikki Schmidt, GVSU CNE Student

References
Appendix F

Post-Fall Educational Module Quiz Questions

1. Where are gait belts kept?
   a. In each patient room
   b. At each team nurses station
   c. In the supply Pyxis

2. Which of the following patient’s are at a high risk of falling?
   a. A patient age 70 or older
   b. A patient who fell prior to arrival due to a seizure
   c. A patient medicated with Dilaudid in the ED
   d. A patient under the influence of alcohol
   e. A patient with bilateral below the knee amputations who is wheel chair bound
   f. All of the above

3. Which of the following patients should be assessed for their risk of falling?
   a. A 75yo male presenting with COPD
   b. A 6yo female with a sore throat
   c. A 50yo female who is septic and confused
   d. A 25yo with a finger laceration
   e. All patients should be assessed for their risk of falling

4. A patient presents to the ED. She is only 22yo, but she is intoxicated. She is cooperative, but forgetful and attempts to get up out of bed at times without using her call light. This patient is at a high risk of falling--
   a. True
   b. False
5. Which of the following patients are at the greatest risk of falling?
   a. A 75yo male presenting with COPD
   b. A 6yo female with a sore throat
   c. A 50yo female who is septic and confused
   d. A 25yo with a finger laceration
   e. A & C
   f. A & D

6. Where in the electronic health record do you document that fall precautions were "Initiated"

   #6 Correct answer is D
7. Where in the electronic health record do you document that a bed alarm was placed?

- A & C, the bed alarm can be documented under Safety Tools and Technology or under Safety Measures.

8. Who is responsible for documenting the fall risk interventions (examples: bed alarm, non-skid socks, gait belt, bed low and locked) that are in place in the electronic health record?

- The RN
- The Charge Nurse
- The Physician, NP, or PA
- The PCA
- The RN and PCA
9. Where in the electronic health record do you document hourly rounding?

- a. IView ED Interventions Fall Risk Interventions Safety Tools and Technology
- b. IView ED Frequent Assessment Rounding Observations Document Rounding Hourly
- c. IView ED Interventions Safety Safety Measures
- d. IView ED Frequent Assessment Precautions Fall Precautions Initiated Document on Admission and with changes in condition

#9 Correct answer is B

10. Who is responsible for initiating and maintaining the communication of hourly rounding and the fall risk on the white boards in patient rooms?
   - a. The RN
   - b. The Charge Nurse
   - c. The Physician, NP, or PA
   - d. The PCA
   - e. The RN and PCA

11. Only the RN is responsible for documenting that Fall Precautions are initiated in the electronic medical record?
   - a. True
   - b. False
12. How many documents need to be completed when a fall occurs, and who do I contact to complete the Falls Targeted Solutions Tool (TST)?

a. Three documents need to be completed: the online TST tool, a VOICE Report, and the ad hoc post-fall assessment in the electronic health record. You should contact the charge nurse or an ED fall champion to complete the TST tool together.

b. Four documents need to be completed: the online TST tool, a VOICE Report, the Learning from Defects Tool, and the ad-hoc post-fall assessment in the electronic health record. You should contact the ED CNL or Department Manager to complete the TST tool.

c. Four documents need to be completed: the online TST tool, a VOICE Report, the Learning from Defects Tool, and the ad-hoc post-fall assessment in the electronic health record. You should contact the charge nurse or an ED fall champion to complete the TST tool.

d. Three documents need to be completed: the online TST tool, a VOICE Report, and the Learning from Defects Tool. You should contact the ED CNL or Department Manager to complete the TST tool.
Appendix G

Fall Reference Card (Original Version)

Patient is a Fall Risk (FR) if meets 1 or more of the following criteria:

- They are presenting the ED due to a fall (including syncope and seizures).
- Weakness or Impaired Mobility/Balance/Strength.
- Altered Mental Status (including ETOH/substance abuse, behavioral health, and confusion).
- Age 70 or greater.
- It is your nursing judgement that this patient is at risk of falling.

Also consider use/administration of medications that alter judgement and gait.

Document Fall Precautions "Initiated" in IView

If patient is FR+, implement AND document FR interventions

Fall Risk Interventions:
- Hourly Rounding
- Use of Bed Alarm
- Call light & bedside table within reach
- Bed locked and in lowest position with side rails up
- Utilize whiteboard in patients room to identify Fall Risk & communicate rounding
- Educate Patient and Family/Support person of patients Fall Risk, and the need for assistance with ambulation.
- Do not leave patient unattended on BSC or in BR
- Use of Gait belt
- Use of gripper socks
- Is a sitter necessary for patient safety?
- Consider use of wheelchair at DC

*FALL RISK SHOULD BE ASSESSED UPON ARRIVAL TO THE DEPARTMENT, IF THERE IS A CHANGE IN THE PATIENTS CONDITION, AND UPON TRANSITION OF CARE BETWEEN RNs.

Fall Risk Status and interventions in place should be included in RN-to-RN Handoff

COMMENTS: (How can we make the process better for Nurses, PCTs, and the Patients?)
### Appendix H

**Falls Risk Cause and Effect Diagram**

#### Team:
- MSN Scholarly Project

#### Project:
- Implementation of EB Fall Reduction Interventions

#### Cause and Effect Diagram:

- **People**
  - High-risk fall populations: Alzheimers Mental Status, >70yrs, weakness, presenting due to a fall.
  - ETOH patient population
  - Psychiatric patient population
  - Patients not visible by RN at all times.

- **Environment**
  - Hourly rounding is considered a part of minimal documentation.
  - No fall risk assessment performed on arrival to ED, large ETOH and psych g1 population.
  - The only communication that the g1 is a high fall risk is on the white board.

- **Materials**
  - Bed Alarms are available in all g1 rooms.
  - No fall risk assessment tool in EHR.

- **Methods**
  - No fall risk assessment done until after g1 falls.
  - Hourly rounding is not performed consistently.
  - Bed Alarms often not utilized until after g1 falls.
  - Lengthy response to call lights.

- **Equipment**
  - No fall risk assess done until after g1 falls.
  - Bed Alarms equipment is occasionally missing.
  - Wheelchairs not readily available in ED, kept by security.
  - Wheelchairs not utilized upon DC for high fall risk pts.
  - Only the Morse Fall Risk assess is avail in EHR.

---

*(IHI, 2017)*
Appendix I

Timeline for Quality Improvement Initiative

<table>
<thead>
<tr>
<th>Activity</th>
<th>Completion Date(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Microsystem Assessment</td>
<td>• August 2017</td>
</tr>
<tr>
<td>• Perform ED Chart Audits on Patients who fell January 1, 2016-December 31, 2017</td>
<td>• September 2017-January 2018</td>
</tr>
<tr>
<td>• Meet with ED Fall Champions to discuss falls in the ED, completed cause-and effect diagram</td>
<td>• October 2017</td>
</tr>
<tr>
<td>• Attend Health System Fall Meeting with ED Fall Champions</td>
<td>• October 2017, November 2017, February 2018</td>
</tr>
<tr>
<td>• Gemba Walk for Visual Fall Audits</td>
<td>• January 2018-March 2018</td>
</tr>
<tr>
<td>• Define Clinical Problem</td>
<td>• February 2018</td>
</tr>
<tr>
<td>• Met with ED Department Manager to inform her of quality improvement initiative and gain support.</td>
<td>• February 2018</td>
</tr>
<tr>
<td>• Began IRB process for project approval</td>
<td>• February 2018</td>
</tr>
<tr>
<td>• Establish Quality Improvement Project Team</td>
<td>• February 2018</td>
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<tr>
<td>• Met with Quality Improvement Project Team to Establish project aim, metrics, and change</td>
<td>• February 2018</td>
</tr>
<tr>
<td>• Worked with ED Informatics Specialist to determine documentation fields</td>
<td>• February-March 2018</td>
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<tr>
<td>• Began the development of Health Stream Module Education</td>
<td>• April 2018</td>
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<tr>
<td>• Immersion Site IRB Approval</td>
<td>• May 9, 2018</td>
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<td>• GVSU IRB Approval</td>
<td>• May 16, 2018</td>
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<tr>
<td>• Pre-Implementation Gemba walks (visual and chart audits)</td>
<td>• May 21, 22, 29, 30 and June 1, 2018</td>
</tr>
<tr>
<td>• Met with ED Educator for Health Stream approval- approval granted</td>
<td>• May 22, 2018</td>
</tr>
<tr>
<td>• TST Training</td>
<td>• May 22, 2018</td>
</tr>
<tr>
<td>• Equipment Audits completed, gait belts ordered</td>
<td>• May 30, 2018</td>
</tr>
<tr>
<td>• Trialed ED Falls Health Stream Module &amp; quiz on ED Fall Champions</td>
<td>• June 1, 2018</td>
</tr>
<tr>
<td>• Begin first PDSA pilot with Fall Champions</td>
<td>• June 1, 2018</td>
</tr>
<tr>
<td>• Finalized educational module and quiz &amp; sent to ED Educator</td>
<td>• June 7, 2018</td>
</tr>
<tr>
<td>• Discussed Trial with ED Fall Champions and Revised Fall Reference Card</td>
<td>• June 17, 2018</td>
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<tr>
<td>• TST &amp; Fall education with satellite ED</td>
<td>• June 29, 2018</td>
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<tr>
<td>• Roll-Out Department wide education and process change</td>
<td>• Projected July-August 2018</td>
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Appendix J

Fall Reference Card (Revision 1)

Patient is a Fall Risk (FR) if meets 1 or more of the following criteria......

- They are presenting the ED due to a fall (including syncope and seizures).
- Weakness or Impaired Mobility/Balance/Strength.
- Altered Mental Status (including ETOH/substance abuse, behavioral health, and confusion).
- Age 70 or greater.
- It is your nursing judgement that this patient is at risk of falling.

Fall Risk Interventions:

- Hourly Rounding
  - Assessing patients pain level
  - Assessing patients position
  - Toileting
  - Placing call light and belongings within reach
  - Tidying the room/free of clutter
  - Informing patient of your next return
- Place Bed Alarm Under Patient
- Use White Board in patient rooms to communicate Fall Risk & Hourly Rounding
## Fall Reference Card

### Patient is a Fall Risk (FR) if meets **1** or more of the following criteria......

- [ ] They are presenting the ED due to a fall (including syncope and seizures).
- [ ] Weakness or Impaired Mobility/Balance/Strength.
- [ ] Altered Mental Status (including ETOH/substance abuse, behavioral health, and confusion).
- [ ] Age 70 or greater.
- [ ] It is your nursing judgement that this patient is at risk of falling.

**Also consider fall risk when patient uses or you administer medications that alter judgement and gait.**

### Fall Risk Interventions:

- [ ] Hourly Rounding
- [ ] Use of Bed Alarm
- [ ] Call light & bedside table within reach
- [ ] Bed locked and in lowest position with side rails up
- [ ] Utilize whiteboard in patients room to identify Fall Risk & communicate rounding
- [ ] Educate Patient and Family/ Support person of patients Fall Risk, and the need for assistance with ambulation.
- [ ] Do not leave patient unattended on BSC or in BR
- [ ] Use of Gait belt
- [ ] Use of gripper socks.
- [ ] Is a sitter necessary for patient safety?
- [ ] Consider use of wheelchair at DC

---

**FALL RISK SHOULD BE ASSESSED UPON ARRIVAL TO THE DEPARTMENT, IF THERE IS A CHANGE IN THE PATIENTS CONDITION, AND UPON TRANSITION OF CARE BETWEEN RNs.**

Fall Risk Status and interventions in place should be included in RN-to-RN Handoff.
Appendix L

Pre-Implementation Data

Fall Risk by Criteria of Fall Reference Card

Sixty-Five chart audits were completed randomly over a two-week period prior to the fall educational module and fall reference card trial with the ED Fall Champions. Fifty-two of the 65 patients were found to be high fall risks when assessed using the Fall Reference Card.

Fall Risk by Diagnosis by Criteria of Fall Reference Card

In the same 65 chart audits completed randomly over a two-week period prior to the fall educational module and fall reference card trial with the ED Fall Champions 52* patients were found to be at a high risk of falling when measured against the Fall Reference Card. They are categorized here by the diagnosis designating the patient as a high fall risk by criteria of the Fall Reference Card. |

*3 patients were both >70 years old and had weakness/impaired mobility (Imp. Mob), 3 patients were both >70 and had syncope or a fall, and 2 patients were both >70 years old and had an altered level of consciousness (LOC).
Visual Audits

- Bed Alarms in Place
  - No: 62
  - Yes: 3

- Fall Risk Identified on White Boards
  - No: 60
  - Yes: 5

- Hourly Rounding Documented on...
  - No: 64
  - Yes: 1

*Visual Audits performed in ED Rooms

Chart Audits

- Bed Alarm Documented in Record
  - No: 55
  - Yes: 1

- Hourly Rounding Documented in IView
  - No: 65
  - Yes: 10

- Fall Risk Identified in Record in IView
  - No: 0
  - Yes: 0

*Chart audits performed from specific fields within the EHR, that corresponded with the falls educational module.
Appendix M

Post-Trial Data

Pre and Post Implementation Data

- Bed Alarm in Place: Pre (n=65) 2% vs. Post (n=25) 84%
- Fall Risk ID'd on White Board: Pre (n=65) 5% vs. Post (n=25) 92%
- Hourly Rounding on White Board: Pre (n=65) 8% vs. Post (n=25) 92%
- Bed Alarm Documented: Pre (n=65) 2% vs. Post (n=25) 84%
- Hourly Rounding Documented: Pre (n=65) 15% vs. Post (n=25) 92%
- Fall Risk Documented: Pre (n=65) 0% vs. Post (n=25) 92%

Goal line at 50%.
Appendix N
Falls Quality Improvement Project Hand-off Issue Brief

Points of Interest:

- There are currently no validated ED fall assessment tools.
- Current literature reflects that the patient population that falls in the ED differs from the population that falls in inpatient units.
- The current ED clinical practice guideline, Fall Prevention, included all of the components that current literature supports as high risk for falling in the ED, such as age 70 yrs, altered mental status, presenting due to a fall, & weakness.
- Falls were reduced from 21 in 2013 to 32 falls/1000 patients in 2014 after fall education was done.
- Majority of our ED Falls occur with patients who present due to a fall (seizures), or altered mental status (ETOH).

What I have learned... the current state:

- I conducted a microsystem assessment from May to August 2017.
- I reviewed ED falls that occurred in 2016 and 2017.
- I looked at the current practice for fall assessment and implementing fall interventions.
- I performed a literature review to identify the current evidence-based practices related to fall prevention.

What I have done...

- Literature supports the identification of fall risk and hourly rounding as best ways to prevent falls.
- Completed Cause and Effect Diagram and Gap Analysis.
- Meetings with Fall Champions to develop plan for reducing falls by improving awareness of patients with a fall risk.
- IRB approval for project.
- The Joint Commission Targeted Solutions Tool (TST). All Fall Champions and Charge Nurses have completed the online tutorial for use.
- Developed Power Point Health stream Education and Quiz for RNs and PCTs.
- Developed Fall Reference Card for trialing the assessment of fall risk and interventions.
- Surveyed RNs & PCTs on what they felt was the best way to reduce falls (over 50% felt increasing bed alarm use would reduce falls)
- Gait Belts placed at each nurses station.
EVIDENCE-BASED FALL REDUCTION INTERVENTIONS

Prior to the trial of the Fall Reference Card I performed 65 chart and visual audits.

During chart audits I looked at documentation of fall risk identification, bed alarm placement, and hourly rounding.

During visual audits I looked at the utilization of the white board to communicate fall risk and hourly rounding, and the use of bed alarms.

I applied the Fall Reference Card to all 65 patients to identify if the patients would be a fall risk by this criteria, and 52 of 65 patients were identified as a high fall risk.

The Fall Reference Card Trial and Looking Ahead for Sustainability

- Revisions were made to Fall Reference Card on 6/17 and 7/18 after feedback was received.
- Monitor completion of Health Stream Module and quiz results.
- Determine monthly meeting schedule for ED Fall Champions.
- New gait belts have been placed at each Team Station.
- Monitor aspects of plan that may require follow up for compliance, such as bed alarm supplies.
- Continue use of the TST Fall tracking tool and assess for trends after approximately 30 days.

Pre and Post Implementation Data

- Bed Alarm in Place: Pre (n=65) 10%, Post (n=25) 2%, Goal 0%
- Fall Risk ID’d on White Board: Pre (n=65) 92%, Post (n=25) 92%
- Hourly Rounding on White Board: Pre (n=65) 84%, Post (n=25) 92%
- Bed Alarm Documented: Pre (n=65) 10%, Post (n=25) 55%, Goal 65%
- Hourly Rounding Documented: Pre (n=65) 13%, Post (n=25) 65%
- Fall Risk Identified on White Board: Pre (n=65) 13%, Post (n=25) 15%
- Hourly Rounding Documented: Pre (n=65) 10%, Post (n=25) 65%
Appendix M

Falls A3 Quality Improvement Guideline

<table>
<thead>
<tr>
<th>Grand Valley State University Clinical Immersion Project</th>
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<tbody>
<tr>
<td><strong>Project Title:</strong> Implementing Evidence-Based Fall Reduction Interventions in an Urban Emergency Department</td>
</tr>
<tr>
<td><strong>Team Leader:</strong> Nikki Schmett</td>
</tr>
<tr>
<td><strong>Project Champion:</strong> Nikki Schmidt/ED CNL</td>
</tr>
<tr>
<td><strong>Start Date:</strong> 5/1/2017</td>
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<tr>
<td><strong>Updated Date:</strong></td>
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</table>

**Background (Define):**
Falls can be detrimental to a patient's physical and mental health. Can lead to patient mortality. Generate a cost to the hospital (injuries=27,000, without injury=3,500) ([Ht, 2012]). ED falls may soon be reported in the NQF (Pay for Performance). Number of falls can impact Magnet Status/DNAsignificant.
Reducing falls was focused on in 2012 due to the high number of falls. The clinical practice guideline was revised and staff were educated, and it did reduce falls per 1000 patient days.

**Proposed Solutions (Improve):**
- "Increase the use of the existing ED Fall Prevention clinical practice guideline. Focus on the assessment of falls for admission, the use and documentation of bed alarms and hourly rounding, and the utilization of the white board to communicate fall risk and hourly rounding." Education will be rolled out as a Health Stream module with a 12 question quiz at completion of the module. Working with ED Fall Champions to triage Fall Reference Card. "Working to increase awareness of fall risk assessment by utilizing card and health stream module. "Seat belt ordered and placed at each team station. Timeboards with fall risk identification and hourly rounding tracking already exist in every room (except trauma rooms), re-education on using these white boards. "Bed alarms already exist in every room except trauma rooms), re-education on use of bed alarms. "Non-slip socks available in patient rooms, re-education on using socks for high risk fall patients."

**Problem Statement (Define):**
In the ED patient population, what is the effect that fall risk assessment, hourly rounding, and bed alarm use will have on reducing falls, as compared to the current practice of no fall risk assessment, and inconsistent bed alarm use and hourly rounding, when assessed over a one-month period?

**Current Condition (Measure):**
- Falls are reported in the ED via VOICE report
- Past fall bundle forms are completed and returned to the ED CNL and then reviewed by champions.

**Root Cause Analysis (Analyze):**
- Met with ED Fall Champions and completed a Fishbone Diagram to discover issues surrounding falls: Not all patients escorted or placed in wheelchair at discharge, inconsistent Pad/Bed alarm use, the admitting/discharge process with registration, Length of time to answer call lights, lack of identification to all staff the patients risk of falls - discussed light outside doors, ETOH patients placed in waiting room by ambulance crew while they await triage, discussed the variances between what the fall policy states what is actually being done on the unit to prevent falls.

<table>
<thead>
<tr>
<th>Implementation Plan (Improve)</th>
</tr>
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<tbody>
<tr>
<td><strong>Activity</strong></td>
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<tr>
<td>Microsystem Assessment</td>
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<tr>
<td>Met with Fall Champions (ongoing every 3 months)</td>
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<tr>
<td>Determine focus of fall prevention/Review Clinical Pract Gals</td>
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<tr>
<td>Completed Fall and Effect Diagram</td>
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<td>Gap Analysis</td>
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<tr>
<td>Developed Fall Reference Card</td>
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<tr>
<td>Develop Health Stream Module</td>
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<tr>
<td>Trialed Health Stream on Fall Champions</td>
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<tr>
<td>Fall Champions began trialing fall reference card</td>
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<tr>
<td>Modifications made to Health Stream &amp; go live developed (seat belt)</td>
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<tr>
<td>New Fall Belt at each Team Station</td>
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<tr>
<td>Met with ED Manager and Fall Champion at Southwest ED</td>
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<tr>
<td>Preimplementation chart and visual audits</td>
</tr>
</tbody>
</table>

**Performance Measures (Measure Control):**

<table>
<thead>
<tr>
<th>Measure/Metric</th>
<th>Current State</th>
<th>After Trial/Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bed Alarm use upon admission</td>
<td>2%</td>
<td>84%-95%</td>
</tr>
<tr>
<td>Bed Alarm documentation</td>
<td>2%</td>
<td>84%-95%</td>
</tr>
<tr>
<td>Hourly Rounding documentation</td>
<td>15%</td>
<td>92%-95%</td>
</tr>
<tr>
<td>Use of white board to communicate fall risk</td>
<td>5%</td>
<td>92%-95%</td>
</tr>
<tr>
<td>Use of white board to communicate hourly rounding</td>
<td>8%</td>
<td>92%-95%</td>
</tr>
<tr>
<td>Documentation of fall precautions &quot;initiated&quot;</td>
<td>0%</td>
<td>92%-95%</td>
</tr>
</tbody>
</table>

**Fall Rates** 431800 patient visits 17-2017
Goal is .9%00 patient visits in FY 2019