THE USE OF VIDEO MONITORING TO DECREASE FALLS

A Scholarly Project

Submitted to the

Faculty of Liberty University

In partial fulfillment of

The requirements for the degree

Doctor of Nursing Practice

By

Marie Mo, MSN, RN, NE-BC

Liberty University

Lynchburg, VA

October 2021

A Scholarly Project

Submitted to the

Faculty of Liberty University

In partial fulfillment of

The requirements for the degree

Doctor of Nursing Practice

By

Marie Mo, MSN, RN, NE-BC

Liberty University

Lynchburg, VA

October 2, 2021

Scholarly Project Chair Approval:

Tonia R. Kennedy, Ed. D., MSN, RN -BC, CCRN-K Date

ABSTRACT

Fall prevention is a constant challenge for inpatient nursing staff. The purpose of this project is to demonstrate that falls in hospitalized patients will decrease with the initiation of video monitoring. A fall while in the hospital can lead to increased length of stay, increased cost to the organization, lack of reimbursement from Medicare, and the worst outcome is the patient never returning to baseline. Nursing staff struggle with fall prevention daily and are often unsuccessful. One to one sitters are often utilized as a fall prevention measure; this can be draining to hospital resources. Identified best practices of one-to-one sitters, 15-minute checks, review of medications, and rehabilitation consults are current strategies to attempt to reduce falls, however, patients are still falling. Over more recent years fall prevention technology such as video monitoring has been developed to bridge the gap of unsuccessful traditional measures. Data was collected from post fall huddle reports and patient safety reports. Descriptive statistics were utilized to describe fall data after the implementation of telesitter video monitoring. Outcomes included the decrease of falls as well as a decrease in severity of injury after the implementation of telesitter video monitoring. The implementation of telesitter video monitoring decreased falls and falls with injury in this organization.

DEDICATION

I would like to dedicate this manuscript to my family, friends and coworkers who had endless patience during this process.

ACKNOWLEDGEMENTS

I would like to thank my preceptor and mentor for this project, AnnMarie Papa, DNP,RN,CEN,NE-BC,FAEN,FAAN and Tonya Kennedy Ed. D., MSN, RN -BC, CCRN-K, my academic mentor. Both had patience and guided me through this process.

Table of Contents

SECTION ONE: INTRODUCTION

Fall prevention is a constant challenge for inpatient nursing staff. According to Schubert (2020), fall rates in the United States range from 3.3 to 11.5 falls per 1000 patient days. The expectation of the patient and family is that patient will be kept safe while in the hands of the healthcare workers during their hospital stay. Unfortunately, the opposite often occurs due to changes in the patient's health while in the hospital (Hignett & Wolf, 2016). A fall while in the hospital may lead to increased length of stay, increased cost to the organization, lack of reimbursement from Medicare, and the worst outcome is the patient never returning to baseline. Nursing staff struggle with fall prevention daily and are often unsuccessful.

Background

Daley, Fetherman, & Turner (2020) define falls as a "sudden, unintentional, descent, with or without injury to the patient which results in the patient coming to rest on the floor or on some other surface" (p. 1). Although there is not a national benchmark for inpatient falls, the Agency for Healthcare Research and Quality (2019) predicts the rate of falls to be three to five per 1000 patient days translating to 700,000 to 1 million inpatients falling each year and one third of these ending in a serious injury. In addition, one third of these falls are preventable (Kiyoshi-Teo et al., 2019). Although, numerous assessments, interventions, toolkits, and protocols have been developed, falls remain a problem in acute care institutions.

The goal as healthcare professionals is to exercise the ethical principle of nonmaleficence or "do no harm". Fear of falling a second time can lead to a decrease in physical activity and independence which can bring on a host of secondary issues (Daly, Fetherman, & Turner ,2020). There is a large financial impact of falls to an acute care institution: monetary penalties from Medicare, the increase in the cost of the hospital stay if the length of stay is extended, and the

need for a patient sitter (Centers for Medicare and Medicaid Services, 2019). The additional cost for a hospital stay when a patient falls is approximately $13,000 and length of stay is increased on average of 6.3 days (Tzeng & Yin, 2015).

Often after a patient fall, the hospital assigns a one-to-one sitter to the patient for continuous observation presenting a challenge to hospital resources (Purvis et al., 2018). Not only does it take away a patient care assistant from the other patients on the nursing unit, but it is also extremely costly resulting in hundreds of dollars per day. Identified best practices of one-to-one sitters, 15-minute checks, review of medications, and rehab consults are some of the current strategies to attempt to reduce falls. Ambutas, et al., (2017), indicates that fall alerts have not been proven to make a significant reduction in the incidence of falls. In the more recent years fall prevention technology such as video monitoring has been developed to bridge the gap of unsuccessful traditional measures.

Sand Jecklin, Johnson, Tringhese, Daniels, & White (2018) report acute care staff including nurses and patient care associates feel video monitoring supports patient safety with a standardized process. When staff are supportive of a process, success is likely to follow. One organization decreased patient falls from 3.5 falls per 1000 patient days to 2.8 falls per 1000 patient days with the implementation of video monitoring (Sand Jecklin, Ray Johnson, & Tylka 2016).

Problem Statement

Falls are an issue that continues within acute care institutions despite repeated assessments and a variety of interventions. Falls with injury can be devastating. Patients and their families who experience the trauma associated with a fall often endure the fear of falling again, decreased activity and at times, loss of independence.

Purpose of the Project

The purpose of this project is to demonstrate that falls in hospitalized patients will decrease with the initiation of video monitoring. Total falls, falls with injury, and falls with serious injury should all decrease with the initiation of telesitter, a video monitoring system.

Clinical Question

In hospitalized patient populations will there be a decrease in falls over a three-month period with the implementation of a remote telesitter video monitoring system in comparison to pre collected falls data without the use of video monitoring?

Essentials of Doctoral Education for Advanced Practice Nursing

This project is supported by five of the Essentials of Doctoral Education for Advanced Practice Nursing: Essential I (Scientific Underpinning for Practice); Essential II (Organizational and Systems Leadership for Quality Improvement and Systems Thinking); Essential III (Clinical Scholarship and Analytical Methods for Evidence Based Practice); Essential IV (Information Systems/Technology and Patient Care); and Essential VI (Interprofessional Collaboration for Improving Patient and Populations Health Outcomes, Information Systems).

Essential I correlates with the new practice approach of video monitoring for positive outcomes. It is a representation of knowledge translation to benefit the patients and respond to demands that occur daily to keep patients safe. Organizational and systems leadership are essential skills for the doctoral prepared nurse. This skill aligns with Essential II which speaks to finding care approaches to impact patient care based on scientific findings and demonstrating accountability for patient safety initiatives. Essential II also addresses designing, directing, and evaluating quality improvement methods to promote safe, patient centered care. Telesitter video monitoring is a quality patient safety initiative making the patient the center of care. Essential III

represents the evidence that was retrieved and evaluated to determine if the new video monitoring program would be effective. The evidence supported the proposal to implement this new safety program. The telesitter video monitoring program is representative of designing and implementing technology to improve quality outcomes and decrease harm. The nurse prepared at the doctoral level has the skills to apply knowledge of information technology combined with knowledge of nursing theory to successfully implement the program. Essential VI represents the inter-professional collaboration of improving patient outcomes and information systems demonstrated by leading the team to implement this change in care delivery.

SECTION TWO: LITERATURE REVIEW

Search Strategy

A comprehensive search was conducted via the following search engines: CINAHL, PROQUEST, Science Direct, PubMed, the Jerry Falwell Library, and the University of Phoenix Library. Key words utilized in all searches were inpatient falls, falls in older adults, falls in acute care, falls in the hospital, fall prevention, patient safety, video monitoring for fall prevention, and telesitter for fall prevention. Parameters for the search included English and within the last five years from the search. Studies conducted in other settings other than acute care and that did not include hospital inpatients were eliminated. No articles were found using the hand method. Articles of an editorial nature were eliminated.

Critical Appraisal

Twenty articles were reviewed and analyzed. Articles chosen were related to fall assessment, prevention, and video monitoring. Five articles looked at the knowledge of fall predictors and staff education to impact fall rates. Klymo et al. (2016) reviewed antecedents to falls in acute care but had such a small sample making the study insignificant. Moe et al. (2015)

utilized logic regression from a larger study to identify three predictors of falls to assist staff in fall prevention. Taylor et al. (2019) performed a retrospective study of fall assessment with risk factor identification to prevent falls. This study identified elimination as a common cause of falls for this organization. Kiyoshi- Teo, et al. (2019) explored history of falls as a predictor of future falls especially when hospitalized and found this increase importance of fall prevention. Aryee, James, Hunt, & Ryder (2017) compared variables associated with the ABC mnemonic and the relationship to inpatient falls. The ABC mnemonic is age, bones, and anticoagulation. The authors found no relationship, however non-ABC variables did correlate with fall risk. Although these studies were small and not generalizable, they do show that knowing predictors of falls can have a positive impact on fall rates.

Four articles investigated the combination of staff education and the implementation of a fall prevention program. Ambutos, Lamb, & Quigley (2017) sought to impact falls with staff education and implementation of a toolkit. Although they were successful at fall reduction, their analysis did not break out the components of education and the toolkit to identify which specific measures had the positive impact on falls. Hill et al. (2015) studied the impact of patient and staff education on patient falls. Although, the staff and patients did engage in the education, it was difficult to determine the impact on falls. Reyset et al. (2019) measured perceptions of patients and staff on the implementation of a fall prevention program. While this sample size was over 3,000, there was no impact on falls. Low survey response rate to measure perceptions made it difficult to determine a true effect. Spano-Szekely (2018) asked does an evidence-based fall prevention program including assessments and individualized interventions impact patient falls. Levin was used as a theoretical model and frequent PSDA cycles were performed. This team was successful decreasing falls from 3.21 per 1000 patient days to 1.14 falls per 1000 patient days.

While two of these studies did not show an impact, the last study showed that frequent attention in the way of frequent PSDA cycles did clearly show a positive impact.

The impact of video monitoring was evaluated by five studies and two reviews of an implementation. Sand-Jenklin et al. (2018) reviewed staff and patient perceptions on video monitoring. Perceptions were supportive of video monitoring as a fall prevention measure. Kroll et al. (2020) evaluated video monitoring for suicide patients and found they were able to keep the patients safe. Sand-Jenklin, Ray Johnson, & Tylka (2016) implemented a centralized video monitoring system as a measure of fall prevention. Overall, the fall rate did decrease after implementation of the system. This decrease represented all patients not just patients who received video monitoring. It would be interesting to separate the two groups of patients. Votruba et al. (2016) evaluated the effectiveness of remote video monitoring to reduce patient falls. Unmonitored patients fell 10% more than monitored patients. Quigley Votruba, & Kaminski (2019b) performed a descriptive study of 71 hospitals who had implemented a video monitoring. All had success and related their success to organization culture and attitude. Purvis et al. (2018) wrote up the experience of her team in implementing video monitoring with identification of strengths and what to build on. Burtson & Vento (2015) reviewed implementation at a large medical center who had a reduction in falls credited to a strong implementation program of staff engagement.

Au et al. (2018) sought to impact their monthly fall rate by initiating a stay in the bay program. Data was collected electronically over a three-year period. There was adequate research design as far as data collection and structure with the exception of each unit involved acting as its own control. Although the researchers had some doubts regarding the reliability of the

software, feedback from the staff did verify the positive results. This initiative decreased falls by 26% which was statistically significant.

Daley, Fetherman, & Turner (2020) sought to compare the effects of two staffing patterns in addition to the use of an electronic surveillance system. This was a strong research study with randomization and a solid study sample. The organization has a strong commitment to this program and its implementation. Although the study period was short at three months, there was a decrease in falls.

Toye et al. (2019) questioned if the number of times a patient experiences a bed move has an impact on falls. Patients were identified at high risk for falls through the emergency department. There was a lack of standardization with data collection with the potential of missing data as data collection was by hand through one office and only on weekdays. Patient acuity was not considered. Survey responses were low and the researchers were unable to correlate bed moves with patient falls. Tzeng & Yin (2015) communicated the importance of patient engagement in fall prevention and concepts for staff to improve their efforts in fall prevention.

Overall, most literature reviewed had a solid research procedure and analysis, however most were limited with regard to generalizability as they were carried out in one organization and one region. Many studies relied on agreement of study participants choosing to participate resulting in low participation.

In almost every instance, the fall rate was affected in a positive manner by tactics enacted. It is clear from the studies that communication and education are key to successful outcomes. Most studies were a level six according to Melnyck Levels of Evidence.

Synthesis

The review of literature supports the study question of the impact of video monitoring on hospitalized patients. While not all research was vast in its implementation and results, there were several considerations to take into the planning of this study. Staff education seems to be key in successful implementation. The studies with comprehensive education had a higher yield of results and more succinct findings. Staff education will be key in implementation of video monitoring. Post fall huddles were important in retrieving timely and accurate data. Jones et al. (2019) found huddles to have a positive impact repeat falls even with participation in huddles being about 60%. Howard et al. (2018) found post fall bedside debriefings to decrease their overall fall rate as well as repeat falls. Debriefings also increased staff awareness of risk factors and causes of falls.

The key to success as derived from the literature review is comprehensive planning on the front end with communication and education. Studies that had a clear method of collecting data achieved more data as opposed to relying on participants to complete at their leisure.

The literature review was positive to assist in the planning of this study to set up the study for the best outcomes. Opportunities for improvement of staff involvement and education, patient education, real time feedback, and comprehensive job descriptions and procedures are all key to the success.

Conceptual Framework

The Iowa Model of Evidence Based Practice was utilized as a framework for this project. There were three main triggers that prompted this project: labile fall rates, a consistent rate of falls with injury, and increased one to one sitter hours impacting the number of hands on the nursing units. As a result, the following question was developed: In the hospitalized patient

population, will there be a decrease in falls over a three-month period with the implementation of a remote tele-sitter video monitoring system in comparison to pre-collected falls data?

The topic of falls is important to the organization from the staff level up to the Board Quality Committee who has asked for updates the previous two quarters. An existing falls team will be involved as well as an interdisciplinary team for planning and implementation. Since June 2020, the base fall rate has increased from 2.82 to 3.13 with a goal of 3. Census and one to one sitter hours have increased since the pandemic slowed in the warmer months. Injuries consist of 17 minor injuries, one moderate, and one serious injury. A literature review, current fall trends, and evaluation of the Avasure Telesitter system and process has provided the motivation to move forward with this project.

Theoretical Framework

Imogene King's Theory of Goal Attainment provides structure and theory to support the use of Video Monitoring Systems for prevention of patient falls. According to Petiprin (2020), human beings have three needs: the need for health information, the need for care to prevent illness, and the need for care when he or she is unable to care for him or herself. The focus of nursing is the care of the patient and when role expectations are congruent and when the nurse communicates with the patient supplying nursing knowledge, goals are achieved. Achieved goals result in satisfaction and safe patient care.

The nurses, the patient care assistants, and the video monitor technicians all want to help the patient achieve their goals. This occurs during their interactions of providing care and educating the patient. The video monitoring system is a device that allows the patient to feel as if he or she has not lost privacy and independence, but the care team is there to remind the patient and keep the patient safe so the patient can continue to meet the care goals.

Video monitoring is one way to assist nursing staff to help keep patients at high risk for falls safe during a vulnerable time while in the hospital. Educating the patient may be as simple as reminding the patient to call for help which is one function of the video monitor technician. The goals of the patient and the care team are the same, to help the patient heal while keeping the patient safe. Video monitoring is the perfect way to accomplish that for many patients while allowing them to feel they do not have a babysitter.

Summary

Preventing patient falls is an important objective in the nursing goal of do no harm. There have been many studies that have evaluated fall prevention, fall prevention assessments, and video monitoring. In their own way, each has resulted in at least one factor to improve fall prevention for patients. Hospitals often resort to one-to-one sitters as a last resort in fall prevention, but this is not an evidence proven tactic. Remote video monitoring has been proven in the literature as an effective method to prevent falls in hospital patients.

SECTION THREE: METHODOLOGY

Design

This is an evidence-based practice project using a quasi-experimental approach to collect and analyze data. The project design will utilize the Iowa model to guide a practice change (Iowa Model Collaborative, 2017). The practice change is implementation of the Avasure telesitter video monitoring system.

Measurable Outcome

The measurable outcome of this study is the number of falls in hospitalized patients who have received video monitoring as a fall prevention measure. This will be measured over a three-month period after implementation of the system. There are four injury categories: minor,

moderate, major or serious, and death as defined by The Joint Commission (n.d.) on the TST data collection sheet (Appendix C). Minor injury resulted in application of a dressing, ice, cleaning of wound, a limb elevator, topical medication, bruise, or abrasion. Moderate injury resulted in suturing, application of steri strips or skin glue, splinting of a muscle or joint strain. Major or serious injury resulted in surgery, casting, traction, required consultation for neurology (basilar skull fracture, small subdural hematoma), internal injury (rib fracture, small liver laceration) or patients with coagulopathy who receive blood products as a result of the fall. Death is patients who died as a result of the fall. The data will be extracted from patient safety reports and post fall reports (the Joint Commission TST form) completed during the post fall huddle. This will be performed by the Quality Department nurse who currently performs this data extraction.

Setting

This study will be conducted at a community hospital in East Norriton, in Southeastern Pennsylvania, northwest of Philadelphia. The hospital consists of four medical surgical units (120 beds); the intensive care unit (22 beds) and the mother baby unit (20 beds). A letter of support of the project is in Appendix D.

Population

For the purposes of this study, both genders, male and female, will be included. There will be no cultural exclusions. All inpatients who meet inclusion criteria for video monitoring who receive telesitter video monitoring will be included in the study. Inclusion criteria include fall risk with a Morse score greater or equal to 45, require close observation; are not violent in behavior; or patients exhibiting the following behaviors: restless, pulling at tubes, wandering, climbing, or property destruction. Exclusion criteria include suicidal and homicidal patients;

aggressive and violent behavior; and patients in behavioral restraints. Patients with a language barrier or hearing disability may be excluded from monitoring per the RN discretion. The patient's primary nurse will determine eligibility and initiate video monitoring. For the purposes of this study, HIPAA will not be an issue as no patient identifiers will be used and data will be evaluated in an aggregate nature.

Ethical Considerations

While a consent is not required, the patient and patient's family must be educated. Education will occur verbally by the primary nurse at the time of initiation with the support of a written pamphlet. The patient's right for privacy should always be respected. The camera should be placed in privacy mode during hygiene activities, medical discussions, and examinations.

Data Collection

Data collection will be initiated by the nurse caring for the patient who falls with notification of the nursing supervisor. The nursing supervisor comes to the nursing station connected with the fall to conduct a post fall huddle including completion of a post fall debrief form. A new piece of this process will be to evaluate if the patient meets inclusion criteria for telesitter. The primary nurse will enter a patient safety report. Detailed data of the fall and report of injury will be on these documents. The video monitor technicians will be required to log all patients on telesitter video monitoring which will be used to reconcile patients on video monitoring. All staff who have potential to be involved in a patient fall will be educated on the data collection procedure as a review. There is a standardized algorithm for both process and patient selection provided by Avasure that will be evaluated by the implementation team for appropriateness for this organization (Appendix E).

Tools

There will be two main tools for data collection related to patient falls: The Joint Commission Post Fall Huddle form also called the Targeted Solutions Tool (TST) form and Patient Safety Reports. All falls at this organization require both forms to be completed with each fall. Because both forms are currently in use and have existing approvals for use. A third resource for the study will be telesitter video monitoring log (Appendix F) that will have an identifier for each patient who receives video monitoring. The patients and families will receive an educational handout as a resource created by the Implementation Team (Appendix G). Avasure Telesitter will be onsite for two days prior to go live for didactic and hands-on education for all nursing staff. Superusers on each unit as well as the leadership team and nursing education will provide education to staff who could not attend initial education and be available ongoing as a resource. Avasure will also be onsite for go live support.

Intervention

Continuous video monitoring is initiated and discontinued solely on nursing judgement and does not require a physician order. On admission and each shift during the nursing assessment, the nurse will determine the need for video monitoring based on inclusion criteria and document in the medical record.

In addition, the nurse is responsible for:

- Notification of the nursing supervisor of the patient
- Patient and family education that continuous video monitoring will be initiated and the criteria for discontinuation. A patient education handout will be provided. Education will be documented in the medical record.
- Affixing sign on door of patient room indicating video monitoring.

- Communicating report to the video monitoring technician.
- Performing a view and sound check with the video monitoring technician.

The nurse manager/director of each unit will be responsible to perform a daily assessment for continued appropriateness of video monitoring for their assigned patients. This will be performed by the nursing supervisor on off shifts and weekends. In addition to the log at the video monitoring station, the supervisor will also keep a shift-by-shift list of who is on video monitoring on the same grid currently utilized for the one to one sitter list. The nursing supervisor will also keep a waiting list as needed and triage patients who could benefit from video monitoring.

Video monitoring failure will be defined by activation of the stat alarm three times in thirty minutes; ineffective or unsuccessful redirection in a short period of time; or the monitoring of one individual interferes with the monitoring of others.

If there is video monitoring downtime, the primary nurse and nursing leadership will determine what is needed to keep the patient safe up to and including a one to one sitter.

Data Analysis

Descriptive statistics will be utilized to describe the basic features of the study. Univariate analysis, meaning one variable, will be utilized to describe the data set (Trochim, 2020). Univariate analysis will include measures of central tendency (the mean, the median, and the mode). Distribution will be summarized to include the frequency or range of variables where the data will be grouped into categories to include, but not limited to age, sex, hours on video monitoring, and time of day. Location of fall, minor injury, moderate injury, and serious injury will also be evaluated.

SECTION FOUR: RESULTS

Descriptive Statistics

Fall data was extracted from the Joint Commission TST system for six months prior to implementation of telesitter. Fall rates below are calculated per 1000 patient days.

	Pre Implementation	Post Implementation
Mean	2.73	2.61
Median	2.53	2.36

The mean and median injury rates were equal pre implementation. Both rates decreased post implementation. The severity of injury decreased from pre implementation to post implementation with all injuries being minor. There was one month post implementation with an injury rate of zero. All falls with injury post implementation were minor in nature with zero moderate and zero major.

	Pre implementation	Post Implementation
Mean Injury Rate	0.869/1000 patient days	0.679/1000 patient days
Median Injury Rate	0.869/1000 patient days	0.786/1000 patient days
Minor Injury	89%	100%
Moderate Injury	11%	0
Major Injury	0	0

The mean age of those who fell pre implementation was 69 with a median of 60 and a mode of 61. Fifty five percent were male, and forty five percent were female. Most falls occurred on the 36-bed medical surgical unit with 33% of the falls occurring there. There were three patients who fell twice, and all were on the telemetry unit. Post implementation, the mean age was 68 with a median of 65 and a mode of 79. Forty five percent were male with 55% female. Most of the falls occurred on the 36-bed medical surgical unit and the step down unit with 32% of the falls occurring on each of those units. Lastly, 71% of patients who fell were identified as a fall risk both pre and post implementation.

	Pre Implementation	Post Implementation
Age: Median	60	65
Age: Mean	69	68
Age: Mode	61	79
Male	55%	45%
Female	45%	55%

Measurable Outcome

The clinical question to be answered was in hospitalized patient populations will there be a decrease in falls over a three-month period with the implementation of a remote tele-sitter video monitoring system in comparison to pre collected falls data? The pre implementation mean was 2.73 falls per 1000 patient days with a post implementation mean of 2.61 per 1000

patient days. Therefore, with the implementation of the Telesitter video monitoring system, falls did decrease overall in hospitalized patients.

SECTION FIVE: DISCUSSION

Implication for Practice

The organization's fall rate decreased with the implementation of telesitter, although the post implementation for this study was only three months. It will be interesting to track this trend. While the organization has not realized a large decrease in patient falls, according to the Avasure data base, 66 falls were prevented in April and 156 falls were prevented in May. These numbers are taken from the data within the Avasure monitoring system and based on documentation from the technicians. Utilization of the system is hovering at approximately 60% with an Avasure goal of 91% utilization. The system is still new with both video technicians and nursing staff still adjusting, however communication is an identified area that continues to improve.

According to Quigley, Votruba, & Kaminski (2019b), stat alarms 19.2 seconds or greater have a higher correlation to falls. This organization's stat alarm response was 14 seconds for April and 12 seconds for May. The video technician has the ability to set off a stat alarm for true emergent situations. With only 71% of patients that fell identified as at risk for falls, there is some work to be done to ensure completion of fall risk. This may impact an increase in usage.

In addition to patient safety to decrease adverse events, three new uses for video monitoring have been identified: video monitoring for suicide patients, video monitoring to assist in violence in the workplace, and assistance with care of COVID 19 patients. According to Avasure (2019), the Joint Commission for Hospital Accreditation stated that the use of video monitoring for patients who are not at high risk for suicide is up to the discretion of the

organization. Avasure has developed three key takeaways on this topic: patient selection must be based on risk stratification, a defined policy is developed, and technology meets the guidelines such as a clear direct line of sight on the patient. This may be helpful to this organization as there have been times where the majority of patients on one-to-one supervision are behavioral in nature such as suicide or 302 commitments. Quigley, Votruba, & Kaminski (2019a) performed a study with the use of video monitoring to evaluate aggressive and violent behaviors. The use of the stat alarm can be utilized to quickly elicit assistance. In another study, Quigley, Votruba, & Kaminski (2021) utilized video monitoring surveillance to enhance communication with COVID 19 patients while saving personal protective equipment (PPE) usage.

The focus of this study was to evaluate a decrease in falls with the implementation of video monitoring, the organization realized a gain of an increase of patient care associates on the nursing units. This puts more hands at the patient bedside which also contributes to patient safety.

Sustainability

While it is still early in the post implementation evaluation period, the organization is committed to this new process and has purchased six more cameras for a total of twelve. The organization has also realized a reduction in injury as well as severity of injury. The program continues to grow each day as the organization works on hard wiring the processes. There have been no falls while a patient has been on telesitter video monitoring. Along with the six new cameras, the organization has committed to a permanent second monitor tech. The project is a success but there is still work to be done.

Dissemination

Video monitoring data is shared monthly at the organizational falls committee and at the regular monthly video technician meeting. Moving forward, an infogram with statistics of the program and a breakdown of falls data will be distributed to each nursing unit for posting and sharing at staff meetings. Updates are provided twice a year to the organization's Board Quality Committee. The results of this study will be included in all of the above communication tactics.

References

Agency for Healthcare Research and Quality. (2019). *Preventing falls in hospitals*. https://www.ahqr.gov/professionals/systems/hospital/fallpstoolkit;fallpxtk3html

Ambutos, S., Lamb, K., & Quigley, P. (2017, May-June). Fall reduction and injury prevention toolkit: implementation on two medical surgical units. *Med Surg Nursing*, *26*(3), 175-179, http://ezproxy.liberty.edu/login?qurl=https%A%2F%2Fwww.proquest.com%2Fscholarly-journals%Ffall-reduction-injury-prevention-toolkit%2Fdocview%F1906916551%Fse-2%3Faccountid%3D12085

Au, U.M., Judge, A., Foster, C., Brooke, A., James, K., Marriott, T. & Lamb, S.E. (2018). Do portable nursing stations within bays of hospital wards reduce the rate of inpatient falls? An interrupted time series analysis. *Age and Aging,* 818-824. doi:10.1093/ageing/afy097

Aryee, E., James, S., Hunt, G. & Ryder, H. (2017). Identifying protective and risk factors for injurious falls in patients hospitalized for acute care; a retrospective case control study. *BMC Geriatrics, 17*(), 1-9. DOI: 10.1186/s12877-017-0627-9

Avasure. (2019). *New clarity for video monitoring on suicide risk patients*. https://avasure.com/suicide-risk-patients-video-monitoring-advantages-become-clear/

Burtson, P., & Vento, L. (2015, July/August). Sitter reduction through mobile video monitoring. A nurse driven sitter protocol and administrative oversight. *Journal of Nursing Administration, 45*(7/8), 1=7. DOI: 10.1097/NNA.0000000000000216

Centers for Medicare and Medicaid Services. (2019). *Hospital Acquired Infections*. https://www.cms.gov/Medicare/medicare-Fee-for-SErvice-Payments//HospitalAcqCond/hospita;-Acquired_Conditions.html

Daley, B., Fetherman, B., & Turner, J. (2020). Staffing utilization and fall prevention with an electronic surveillance video system. A randomized controlled study. *Journal of Nursing Care Quality*, 1-5. Doi: 10.1097/NCQ.0000000000000472

Hignett, S., & Wolf, S. (2016). Reducing inpatient falls: human factors and ergonomics offers a novel solution by designing safety from the patient's perspective. *International Journal of Nursing Studies, 59,* A1-A3. Http://dx.doi.org/10.1016/j.ijnurstu.2016.02.007

Hill, A.M., McPhail, S., Francis-Coad, J., Waldron, N., Etheron-Beer, C., Flicker, L., Ingram, K. & Haines, T. (2015). Educators' perspectives about how older hospital patients can engage in a falls prevention education programme: a qualitative process evaluation. *British Medical Journal,* 1-8. 10.1136bmjopen-2-15-009780

Howard, K., Juster, J., Hlodash, G., Feil, D., Gunther, J. & Schneider, M. (2018, November-December). Improving fall rates using bedside debriefings and reflective emails: one unit's success story. *Med Surg Nursing*, *27*(6), 388-391, http://ezproxy.liberty.edu/login?qurl=https%3A%2F%2Fwww.proquest.com%2Fscholarly-journals%2Fimproving-fall-rates-using-bedside-debriefings%2Fdocview%2F2159927984%2Fse-2%3Faccountid%3D12085

Jones, K.J., Crowe, J., Allen, J.A., Skinner, A.M., High, R., Kennel, V., & Reiter-Palmon, R. (2019). The impact of post fall huddles on repeat fall rates and perceptions of safety culture: a quasi-experimental evaluation of a patient safety demonstration project. *BMC Health Services Research,* (), 1-14. https://doi.org/10.1186;s/2913-019-4453-y

Kiyoshi- Teo, H., Northrup-Snyder, K., Cohen, D., Dieckman, N., Stoyles, S., Winters-Stone, K., & Eckstrom, E. (2019). Older hospital inpatients' fall risk factors, perceptions, and daily activities to prevent falling. *Geriatric Nursing*, *40*(), 290-295, doi: 10.1016/j.gerinurse.2018.11.005

Klymo, K., Etcher, L., Muchiando, J., & Royse, M. (2016, September/October). Video monitoring: a room with a view, or a window to challenges in fall prevention research. *Med Surg Nursing*, *25*(5), 329-333, http://ezproxy.liberty.edu/login?qurl=https%3A%2F%2Fwww.proquest.com%2Fscholarly-journals%2Fvideo-monitoring-room-with-view-window-challenges%2Fdocview%2F1827241401%2Fse-2%3Faccountid%3D12085

Kroll, D., Stanghellini, E., DesRoches, S., Lydon, C., Webster, A., O'Reilly, M., Hurwitz, S., Aylward, P., Cartright, J., McGrath, E., Delaporta, L., Meyer, A., Kristan, M., Falaro, J., Murphy, C., Karno, J., Pallin, D., Schaffer, A., Shah, S…Mulloy, D. (2018, May). Virtual monitoring of suicide risk in the general hospital and emergency department. *General Hospital Psychiatry*, *63*(), 33-38. https;doi.org/10.1016/j.genhosppsych.2019.01.002

Moe, K., Brockopp, D.,McCowan, D., Merritt, S., & Hall, B. (2015). Major predictors of inpatient falls. *Journal of Nursing Administration*, *45*(10), 498-502, doi: 10.1097/NNA.0000000000000241

Purvis, S., Kaun, A., McKenna, A., Weber Viste, &J. Federov, E. (2018, March/April). Outcomes of clinical nurse specialist practice in the implementation of video monitoring at an academic medical center. *Clinical Nurse Specialist*, *90-96*. doi: 10.1097/NUR.0000000000000356

Quigley, P., Votruba, L., & Kaminski, J. (2021, March-April). Registered nurses, patient engaged video surveillance, and COVID 19 patient outcomes. *Med Surg Nursing, 30*(2), 89-96. http://ezproxy.liberty.edu/login?qurl=https%3A%2F%2Fwww.proquest.com%2Fscholarly-journals%2Fregistered-nurses-patient-engaged-video%2Fdocview%2F2517547071%2Fse-2%3Faccountid%3D12085

Quigley, P., Votruba, L., & Kaminski, J. (2019a). Impact of patient engagement video surveillance on nursing workforce safety. *Journal of Nursing Care Quality*, *00*(00), 1-7. doi: 10.1097/NCQ.0000000000000450

Quigley, P., Votruba, L., & Kaminski, J. (2019b). Outcomes of patient engaged video surveillance on falls and other adverse events. *Clinical Geriatric Medicine, 35*(), 253-263. doi:/10.1016/j.cger.2019.01.0050749-0690/19/

Reyset, B., Talseth-Palmer, B.A., Lydersen, S., & Farup, P. (2019). Effects of a fall prevention program in elderly; a pragmatic observational study in two orthopedic departments. *Clinical Interventions in Aging*, *14*, 145-154. https://www.dovepress.com/by 165.215.209 on 15-May-2019

Sand- Jecklin, K., Johnson, J., Tringhese, A., Daniels, C., & White, F. (2018). Video monitoring for fall prevention and patient safety. *Journal of Nursing Care Quality*, *34*(2), 145-150, doi: 10.1097/NCQ.0000000000000355

Sand-Jecklin, K., Ray Johnson, J., & Tylka, S. (2016). Protecting patient safety. Can video monitoring prevent falls in high risk patient populations. *Journal of Nursing Care Quality, 31*(2), 131-138, doi: 10. 1097/NCQ.0000000000000163

Schubert, C. (2020, March). The challenge of reducing patient falls in hospitals. *Annals of Internal Medicine*, *172*(5), 356-357, doi:10.7326/M19-4005

Spano-Szekely, L., Winkler, A., Water, C., Dealmeida, S., Brandt, K. Williamson, M., Blum, C., Gasper, L., & Wright, F. (2018). Individualized fall prevention program in an acute care setting - an evidence-based practice improvement. *Journal of Nursing Care Quality*, *34*(2), 127-132, doi: 10.1097/NCQ/0000000000000344

Taylor, B., Tymkew, H., Vyers, K., Taylor, M., Roney, W., Costantinou, E. (2019). Implementation of fall preventions over the past 15 years. Impact on inpatient injury and insights into the future. *Journal of Nursing Care Quality*, *35*(4), 365-371, doi: 10.1097/NCQ.0000000000000468

The Joint Commission (n.d). TST Fall Event Data Collection Form. Joint Commission Center for Transforming Healthcare. https://www.centerfortransforminghealthcare.org/

Toye, C., Slatyer, S., Kitchen, S., Ingram, K., Bronsom, M., Edwards, D., van Schallwyk, W., Pienaar, C., Wharton, P., Bharat, C. & Hill, K. (2019). Bed moves, ward environment, staff perspectives, and falls for older people with high falls risk in an acute hospital: a mixed methods study. *Clinical Interventions in Aging*, *14*, 2223-2237. https://www.dovepress/by 165.215.209.15 on 18-Jan-2020

Trochim, W. (2020). *Descriptive statistics*. http://conjointly.com/kb/descriptive-statistics/

Tzeng, H.M., & Yin, C.Y. (2015, November-December). Patient engagement in hospital fall prevention. *Nursing Economics*, *33*(6), 326-334, https://ezproxy.liberty.edu/login?qurl=https%3A%2F%Fwww.proquest.com%Fscholarly-jouranls%2Fpatient-engagement-hospital-fall-prevention%2Fdocview%2F1750045067%2Fse-2%Faccountid%

Votruba, L., Graham, B., Wisinski, J., & Syed, A. (2016, July/August). Video Monitoring to reduce falls, and patient companion costs for adult inpatients. *Nursing Economics, 34*(4), 185-189, http://ezproxy.liberty.edu/login?qurl=https%3A%2F%2Fwww.proquest.com%2Fscholarly-journals%2Fvideo-monitoring-reduce-falls-patient-companion%2Fdocview%2F1812897629%2Fse-2%3Faccountid%3D12085

Appendix A
Evidence Table

Author, Year	Study Purpose, Objectives	Design, Sampling, Method, & Subjects	LOE	Interventions & Outcomes	Results	Study Strengths and Limitations.
Ambutos, S., Lamb, K., & Quigley, P. (2017)	To improve organizational structure and capacity to identify and address solutions for patients at risk for falls. Specific goals were to reduce patient falls and falls with injury and to increase staff knowledge of fall reduction strategies.	The toolkit was implemented at a 664-bed academic hospital on two medical surgical units. Falls and falls with injury per 1000 patient days were evaluated. Data was collected through a handwritten post fall huddle form with interdisciplinary participation. The paper form is entered into an electronic safety form. Data is compared with NDNQI data.	III	The injurious Fall Prevention Organizational Self-Assessment was completed by organizational leaders and the fall prevention team. This helped to determine the organization's readiness and target education. Education was provided to the nursing staff as well as to the interdisciplinary ancillary departments. An interprofessional post fall huddle was implemented and this data was	Falls and falls with injury decreased with use of a falls toolkit. Falls dropped from 7.98 / 1000 patient days to 6.6/1000 patient days. Falls with injury decreased from 0.68/1000 patient days to 0.53/1000 patient days.	A strength of this study was the inclusion of staff which assisted with the support of the program. Results are not generalizable. There was not an evaluation of the different components of the toolkit to decipher which had a positive impact.

				collected and shared with the staff.		
Au, U., Judge, A., Foster, C., Brooke, A., James, K., Marriott, T., & Lamb, S.E. (2018).	To evaluate whether the monthly fall rate would change after initiating stay in the bay.	This was a natural experimental design study. The sample included 17 nursing units across two hospitals in Buckinghamshire, U.K. Each bay included four to six patients. The nursing units were picked based on a higher fall rate. The units picked must also have a Stay in the Bay program. Inpatient falls data was collected through reporting software. Data was collected monthly from April 2014 to December 2017. Portable nursing stations were introduced	III	Portable nursing stations on wheels were placed with each bay on the ward allowing staff to carry out their duties while in each patient bay. Staff were encouraged to utilize the portable nursing stations rather than utilize the main nursing station.	Falls decreased by 26% after the introduction of nursing stations in the patient care bays.	Each unit acted as its own control which jeopardized success across other units. The researchers also conveyed they had some concerns related to the reliability of the software system. A strength was feedback directly from the staff which supported the numbers data.

		into the wards in April 2016. Falls per 1000 patient days was the indicator monitored.				
Aryee, E., James, S., Hunt, G. & Ryder, H. (2017).	To identify variables associated with the risk of or protection against falls with injury in an inpatient setting and to evaluate variables associated with the ABC mnemonic. (A = Age; B = Bones; C = anticoagulation	A retrospective study performed at an academic medical center comparing patients with falls with injury versus patients who did not fall. Data included demographics, patient history including fall history, outcomes, and discharge disposition. Multivariate analysis with logic regression was utilized to determine odds ratios	III	An electronic medical record review was performed through queries to identify the variables.	117 fallers and 320 control patients were identified. The ABC parameters did impact identification of inpatients at risk for falls nor were associated with falls. Non-ABC variables did demonstrate and association with falls.	Depending on how the query was performed, there could be unknown limitations in the process. There is strength in the sample size.
Burtson, P., & Vento, L. (2015)	To discuss program implementation, structures and processes.	Implementation occurred at a large academic medical center in California.	VI	Implementation was a comprehensive design of protocols, policies, and procedures	This organization realized more than a 20% decrease in sitter hours.	This organization found that a strength for implementation of a program

	Financial and quality outcomes are also described.	Baseline data was collected prior to implementation.		tied with education and communication to engage the staff prior to implementation. During the initial period, there was extensive rounding and support to the staff.	The fall rate decreased from 3.4 falls per 1000 patient days to 2.5 falls per 1000 patient days.	such as this is upfront communication and education to engage the staff.
Daley, B., Fetherman, B., & Turner, J. (2020).	To compare the effects of two staffing patterns inconjuction with the use of an electronic surveillance system on patient falls.	Adults older than 18 years of age on an inpatient medical unit. Participants were randomized to receive electronic surveillance system monitoring with a dedicated rounder or an electronic surveillance system without a dedicated rounder	II	The electronic surveillance system was implemented on two wings of a medical surgical unit. Staffing for the system included a monitoring technician and a dedicated rounder. The video technician communicated with the staff on the floor by alarms within the system and also verbally directly with the staff.	A three-month study encompassing 1032 patients. There were 8 falls (6 with no rounder and 2 with rounder). There was an ideal staffing pattern for 7 of the 8 falls. There was a decrease in falls per 1000 patient days.	A strength of the study was the commitment to this program and implementation techniques were thorough. Two falls were in bathroom which are unseen on the monitor. Five of the eight falls were identified as an opportunity for promptness of the call from the monitoring technician

						and in two of these there was a family member or staff member present with the patient at the time of the fall.
Hignett, S., & Wolf, L.(2016)	Analysis of falls from the patient perspective	None; Editorial opinion with references	VII	Review of falls related to human factors and ideas to design fall prevention from a patient perspective	Good ideas looking at falls from a different perspective	Not a great deal of usable information, but makes one think differently
Hill, A.M., McPhail, S., Francis-Coad, J., Waldron, N., Etheron-Beer, C., Flicker, L., Ingram, K. & Haines, T. (2015).	To explore the perspectives of educators to determine if education can assist in prevention of falls in older patients	Ten physiotherapists were trained as educators delivering education in eight rehab facilities in Western Australia over an eight week time period Ten physiotherapists were trained as educators delivering education in eight rehab facilities in Western Australia over an eight	VI	Patients were provided a DVD to view and a written workbook to read. This was followed up with one to three individualized education sessions with one of the educators. Education was also provided to the staff so they could support the program.	Patients engaged in education which resulted in motivation to use behaviors to assist in falls prevention.	The researchers believe that even though this qualitative data may be difficult to generalize, they do believe that it can be determined that education does have an impact on falls.

		week time period. Data was obtained from three sources: focus group, interview, and notes from educators and researcher notes over 30 weeks.				
Howard, K. Husier, J. Hlodath, G., Feil, D., Gunther, J. & Schneider, M. (2018)	To decrease fall rates and repeat falls. To increase staff knowledge and awareness of fall risk factors and causes of falls	Fall rates on two medical surgical units. Staff feedback through daily communication with staff not a survey	VI	Continued with normal fall data collection for fall rates and details of falls. Managers elicited feedback from staff regarding post fall huddles verbally and through email	The fall rates did decrease in both med surg units with implementation of post fall huddles	The units need to continue to strive to increase compliance of huddles and education of staff.
Jones, K.T., Crowe, J. Allen, J.A., Skinner A.M., High, R., Kennel, V., Reiter-Palmon, R. (2019)	To identify relationships between post fall huddles with fall rates and perceptions of safety culture and teamwork.	Perceptions of safety surveys and review of falls	VI	All falls were reviewed. Survey participation rates were low. Two year project in 16 small rural hospitals	Fall rates decreased in patients with post fall huddle. No repeats.	Hospitals were small and in a rural environment which make results not generalizable. Very small response rate of safety surveys

Kiyoshi-Teo, H., Northup-Snyder, K., Cohen, D., Dieckman, N., SToyles, S., Winters-Stone, K., &Eskstrom, E. (2019)	To identify relationships of fall risk factors, perceptions, and activities of daily living with patient engagement and fall prevention in hospitalized older adults	Surveys and chart reviews	VI	All admitted patients received a letter of invitation to participate in the survey. Study team members also approached patients.	A fall within three months of hospitalization was correlated with increased risk of falls during a hospitalization.	Small sample size and only represented patients at high risk for falls
Klymo, K., Etcher, L., Munchiando, J., & Royse, M. (2016)	To explore antecedents to falls in an acute care setting through the experience of health care providers.	A qualitative study with a focus group methodology. Thirty-four participants were included in the study. All were at least 18 years of age, could speak English and has experience as one of the following: registered nurses, patient care assistants, one to one sitters, and video monitoring technicians	VI	Staff were questioned about their thoughts and feelings regarding video monitoring through interview and focus groups	Five themes of antecedents were identified: challenging hazards in the patient room, behaviors exhibited by the patient, antecedent appearance during video monitoring, environmental conditions, and patient behaviors. The antecedents identified were consistent with previous literature reviews.	Sample size small and self-selected. Study lacked patient feedback. Staff feedback coincided with literature reviews.

Kroll, D., Stranghellini, E., DesRoches, S., Lydon, C., Webster, A., O'Reilly, M., Hurwitz, S. , Aylward, P., Cartright, J., McGrath, E., Delaporta, L., Meyer, A., Kristan, M., Falaro, L., Murphy, C., Karno, J., Pallin, D., Schaffer, A., Shah, S…..Mullo y, D. (2020).	To determine whether continuous virtual monitoring is an intervention that facilitates patient observation through video technology to monitor suicide risk in the general hospital and Emergency Department.	A retrospective analysis of a protocol to select patients on suicide precautions receiving virtual monitoring between June, 2017 and March 2018. The site was an academic tertiary adult hospital in Boston, MA. Nurses who cared for patients on suicide precautions were included as well as patients who were chosen by psychiatry consults.	III	Physicians determined patient eligibility for video monitoring. Patients received monitoring based on device availability. Patients were required to agree to the monitoring.	The researchers state that video monitoring is feasible for monitoring suicide risk when the patient has low impulse risk. A nurse preference survey was administered to 210 times. There were no adverse events in patients who received video monitoring. Thirty nine patients were included in the study of which none had an adverse event. Thirty four of these thirty nine had termination of monitoring due to discharge, transfer, or	Sample size small. Nurse return rate was very low at twelve responses which is not adequate to understand the nurse's opinion of the monitoring.

					discontinuation of suicide precautions. The remainder were because the patient could not be redirected by the technician.	
Moe, K., Brockopp, D.,McCowan, D., Merritt, S., & Hall, B. (2015).	To identify key factors predictive of falls in hospitals	This was a secondary data analysis was performed on high risk falls assessments to include patients from five types of inpatient units across 4 hospital sites in southeastern United States. Patient units included medical surgical urban, medical, surgical rural, psychiatry urban, intensive care urban, and rehab urban. Secondary data analysis	VI	Seven items were extracted from a larger study: falls in the last 6 months, age, mental status, elimination status, mobility, medications, and nurse's clinical judgment. These items were then analyzed to seek meaningfulness.	Three factors were identified as strong predictors of falls: a fall within the last six months, confusion, and taking a laxative. These results were consistent across hospitals, across the different units with hospitals, and urban versus rural.	Due to the same geographic region may not be generalizable to other areas and other hospital settings. Data is representative of assessments not patients.

		was performed on 281,863 high risk fall assessments.				
Purvis, S. Kaun, A., McKenna, A., Weber Viste, J. & Federov, E. (2018)	To design a program utilizing video cameras to keep patients safe.	No subjects; this is program development	VII	Evaluated video companies; performed a literature search; developed a team; developed policy and procedure; job descriptions; and provided education to both video technicians and floor staff.	Less falls with patients being video monitored	The Clinical Nurse Specialists leading this project did a good job with planning and initiating this project. Their eyes were open enough to also be open to improvements.
Quigley, P., Votruba, L., & Kaminski, J. (2019).	The authors asked the following questions regarding video monitoring: the age distribution of patients enrolled in video monitoring and the duration of monitoring; trends in verbal engagement, alarm rates, alarm	This is a descriptive study with data retrieved from a national data base across 71 hospitals with the identifical video monitoring system. Avasure Telesitter Video Monitoring aggregated the data to provide metrics.	VI	There was no new implementation. Data was collected from hospitals with the video monitoring in existence. Data was collected from June 1, 2017 through May 31, 2018.	Patients between 65 and 84 years of age had the most hours and most days on video monitoring and the most interventions. However, patients 18-64 had the most falls (assisted and unassisted) along with	

	response time by age; rate of adverse events by age; do these differences impact falls; and is there a cost savings with video monitoring?				the most elopements. Patients 65-84 had the most tube dislodgements	
Reyset, B., Talseth-Palmer, B.A., Lydersen, S., & Farup, P. (2019).	To determine the impact of a falls prevention program on the fall rate, the patient safety culture, and patient perceived safety.	All patients over the age of 64 years of age admitted during two registration periods with a length of stay over 24 hours. Patient Safety Culture was measured by the Safety Attitudes Questionnaire. The Norwegian Patient Experience Questionnaire was used to measure patient perceived safety. Falls were measured by real numbers. The patients were in one	VI	The intervention department participated in the "In Safe Hands" campaign which included three aims: reduce adverse patient events, build sustainable systems for patient safety, and to improve patient safety culture. This was the foundation for the development of a falls prevention program consisting of fall assessments including	3, 143 patients were included with 114 fallers. Ten patients had two falls with an overall fall rate of 7.3 falls/1000 patient days. The fall prevention program had no impact on falls. The safety culture survey did reveal a correlation between a patient safety culture and patient outcomes. The patient safety	Strengths: the intervention and control unit were similar units. The study considered both responses from staff and patients. Limitations: Low response rates for both surveys. Falls were looked at retrospectively and there was some question as to accuracy of the documentation and therefore the results.

		of two locations, a control department and an intervention department		identification of risk factors and fall risk reduction strategies.	program did have an impact on the patient perceived safety.	
Sand-Jecklin, K., Johnson, J., Tringhese, A., Daniels, C., & White, F. (2018).	Evaluation of the monitoring process at a large teaching hospital with the goal of making improvements and standardization of monitoring process. Specific aims of the study were to identify patient and family perceptions related to monitoring including perceptions on communication and privacy and impact on patient safety; staff (nursing and monitor techs) perception on monitoring	A non-experimental descriptive survey to monitor perceptions. The sample consisted of Nursing staff, Video monitoring technicians, patients, and family members on medical surgical units.	VI	Nurses and patients received a survey with a cover letter. Video technicians were invited via email. Surveys were collected for one month.+	All groups felt the video monitoring process was effective in preventing patient falls and promoted patient safety.	This study was conducted within one division in a single hospital making it not generalizable. Patient acuity was not included. Survey responses were low. The study did not correlate patient acuity, falls, and bed moves. Despite limitations, results were utilized to make improvements to the program.

	including suggestions for improvement; and to review and revise the process for video monitoring.					
Sand-Jecklin, K., Ray Johnson, J., & Tylka, S. (2016).	To describe the process of implementing centralized video monitoring as a fall prevention strategy and to document outcomes as they related to patient falls, video monitor technician behaviors, and the use of patient sitters.	Hospitalized patients at a high risk for falling via the Hendrich II falls risk assessment or have had a previous fall at a large academic medical center in Mid Atlantic United States. Baseline data was collected for 6 months including the number of falls, injuries, and observational sitter use. Post implementation included all baseline indicators plus video monitor technician records.	III	Implementation included the purchase and installation of equipment. A job description for the video monitoring technician was developed. An algorithm was developed to identify appropriate patients for monitoring. Education was provided to the nursing staff. Patients and families were educated.	Falls per 1000 patient days decreased from 3.9 to 2.8. With video monitoring, patients can be better protected, falls can be reduced, and costs can be decreased.	The falls per 1000 patient days included monitored patients and nonmonitored patients. It would be interesting to see how many falls occurred in the monitored patients only.

Schubert, C. (2020)	Not research, was an opinion	Opinion after review of literature	VII	Defined the current state of falls rates and discussion on mechanisms that have been found effective with the pros and cons.	Additional research required to evaluate the effectiveness of sitters	Very brief
Spano-Szekely, L., Winkler, A., Water, C., Dealmeida, S., Brandt, K. Williamson, M., Blum, C., Gasper, L., & Wright, F. (2018).	In hospitalized medical surgical patients, does an evidence-based fall prevention program including assessments and individualized interventions based on patient specific risks decrease the fall rate?	Medical surgical patients in a 245 bed community hospital. The evidence-based improvement model (EBPI) by Levin was utilized as the method of using evidence-based practice to direct the change. Small PDSA cycles were utilized throughout the study.	III	A Fall prevention program was developed by key stakeholders. The program included the following in addition to existing precautions: an injury risk assessment, medication review and assessment, a mobility assessment, communication procedures, and purposeful hourly rounding, A post falls debrief was also added to the program.	Fall rate decreased to 1.14 from 3.21. 72% reduction in sitter usage In addition, numerous "good catches occurred after implementation of a video monitoring program in addition to a 54% reduction in falls.	Other than video monitoring, it was difficult to determine which other interventions were successful. A strength is the team is committed to continuing this project and continuing to build on this initial work.

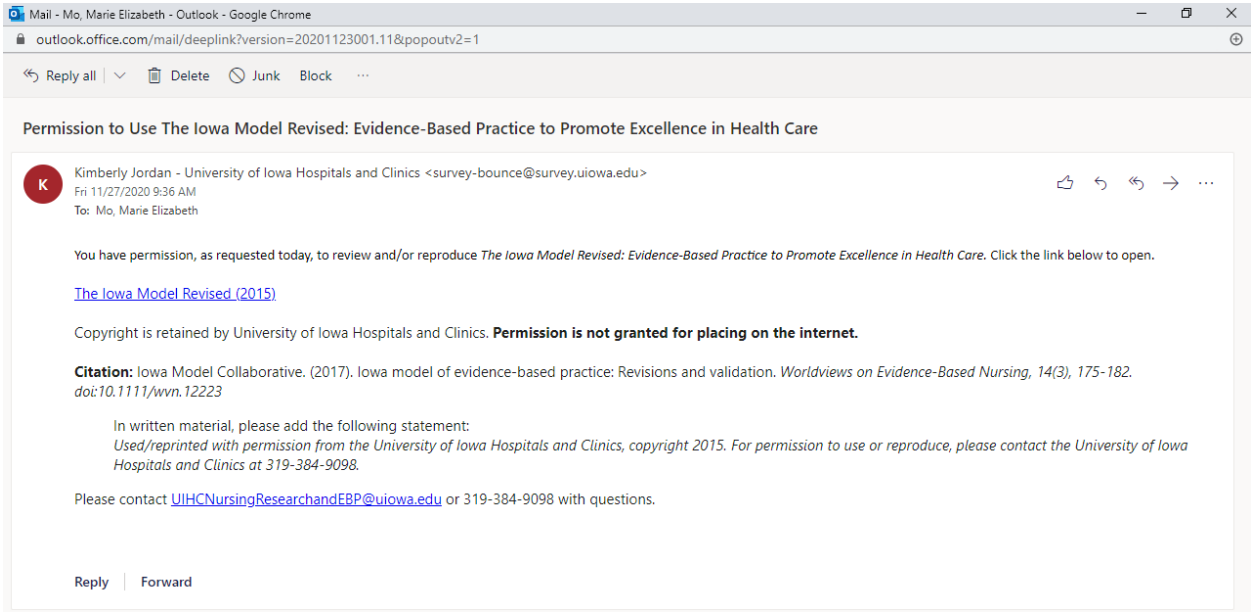
				Members of the team and educators educated the staff.		
Taylor, B., Tymkew, H., Vyers, K., Taylor, M., Rorley, W., & Constantinou, E. (2020).	To describe characteristics, risk factors, and injury rates of adult inpatients who fell. Specific aims of this study were to describe patient characteristics, risk factors, and injury rates, and age; compare institution fall data from 2001-2002 with current; and to determine potential predictors of falls with injury.	Adult patients at least 18 years of age who fell between January 1, 2017 and December 31, 2017 at a large academic medical center. Data was compared to 2001-2002. Data was collected from the electronic medical record and the adverse event reporting system with regard to the following: patient fall (assisted or unassisted, circumstance, time of fall, and injury versus no injury); demographics, patient type, history of falls, and	IV	Data was collected from adverse event reports and the medical record.	1134 falls were analyzed. Although there was no change in fall rate , there was a 50% decrease in falls with moderate to severe injury. Elimination was the most common circumstance along with nighttime. The patient often went to the bathroom with waiting for assistance.	A retrospective study at a single academic institution may not be generalizable to other settings. Identification of patients was dependent on staff identification. The number of months in the baseline and the data period were not equal. There was no control group who did not fall to compare

		discharge location.				
Toye, C., Slatyer, S., Kitchen, S., Ingram, K., Bronsom, M., Edwards, D., van Schallwyk, W., Pienaar, C., Wharton, P., Bharat, C. & Hill, K. (2019).	To determine if there is an association between falls and the number of bed moves a patient experience.	A mixed methods cohort study. A quantitative evaluation of the effect of bed moves on falls and a concurrent qualitative descriptive approach. Patients greater or equal to 70 years of age admitted to acute care via the emergency department. These patients were identified at high fall risk in the emergency department.	VI	A patient log and tracking tool was completed by the project office daily on weekdays and Mondays for the weekends to include patient inclusion, fall risk assessments, bed moves along with specifics of patient falls. Questionnaires were distributed to all participating staff prior to the initiation of the study to evaluate patient centeredness and degree of staff inter professional collaboration. Select staff were invited to participate in focus groups.	486 emergency department admissions were tracked between those who fell and those who did not. Twenty seven patients fell. Patients experienced one to eight bed moves during a single hospitalization. Fallers had a median of three moves within their hospital stay compared to the nonfallers who had two. The type of nursing unit did not have an impact. Patient interviews correlated with patient moves increasing patient stress. Staff	This study was conducted within one division in a single hospital making it not generalizable. Patient acuity was not included. Survey responses were low. The study did not correlate patient acuity, falls, and bed moves.

				A sample of patients were interviewed by telephone or in person (patient's choice) to determine the patient's perception regarding falls risk and experiences when hospitalized.	interview themes included inadequate communication between nursing units and staff pressure at the time of the moves.	
Tzeng, H.M. & Yin, C.Y. (2015)	Discussion of patient engagement and fall prevention	Review of inpatient falls and supportive literature	VII	Robust discussion of inpatient falls, risk factors, financial burden, and importance of patient centeredness.	Decreasing fall injuries and fall prevention continue to be a challenge Patient engagement can support positive outcomes	Good discussion and suggestions for fall prevention.
Votruba, L., Graham, B., Wisinski, J., & Syed, A. (2016)	To evaluate the effectiveness of remote video monitoring with a dedicated telesitter to reduce falls and reduce patient companion use on inpatient adults.	All adult patients admitted to one of three study units (a critical care/intermediate unit, a neuroscience unit, and a senior adult unit) were eligible in a 350 bed urban not for profit hospital. Exclusion	VI	Protocols were developed to determine video technician response to patient activity along with communications priorities and methods between technicians and nursing staff.	Falls decreased by 35%. Nonmonitored patients fell more than monitored patients by 10%. Patient companion hours decreased by 10%. Video monitoring is a safe	Study period was small at three months. Would a smaller telesitter to patient ratio decrease falls further. In this study is was 12 patients to one technician

		criteria included behavioral restraints and patients at risk for harm to self or others. Baseline falls data was collected for nine months prior to implementation as well as number of one to one companion hours. Post implementation included review of paper logs that included interventions.		Eight-hour training was provided to the telesitters that included the three domains of learning: cognitive, affective, and psychomotor. Training was also provided to the charge nurses. Selection criteria was developed by a subgroup of nurses. Once the above was accomplished, the video monitoring system was implemented.	alternative to patient companions and does not increase fall risk.	

Appendix B
Permission to Use the Iowa Model



Mail - Mo, Marie Elizabeth - Outlook - Google Chrome

outlook.office.com/mail/deeplink?version=20201123001.11&popoutv2=1

Reply all | Delete | Junk | Block | ...

Permission to Use The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care

K

Kimberly Jordan - University of Iowa Hospitals and Clinics <survey-bounce@survey.uiowa.edu>
Fri 11/27/2020 9:36 AM
To: Mo, Marie Elizabeth

You have permission, as requested today, to review and/or reproduce *The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care.* Click the link below to open.

The Iowa Model Revised (2015)

Copyright is retained by University of Iowa Hospitals and Clinics. **Permission is not granted for placing on the internet.**

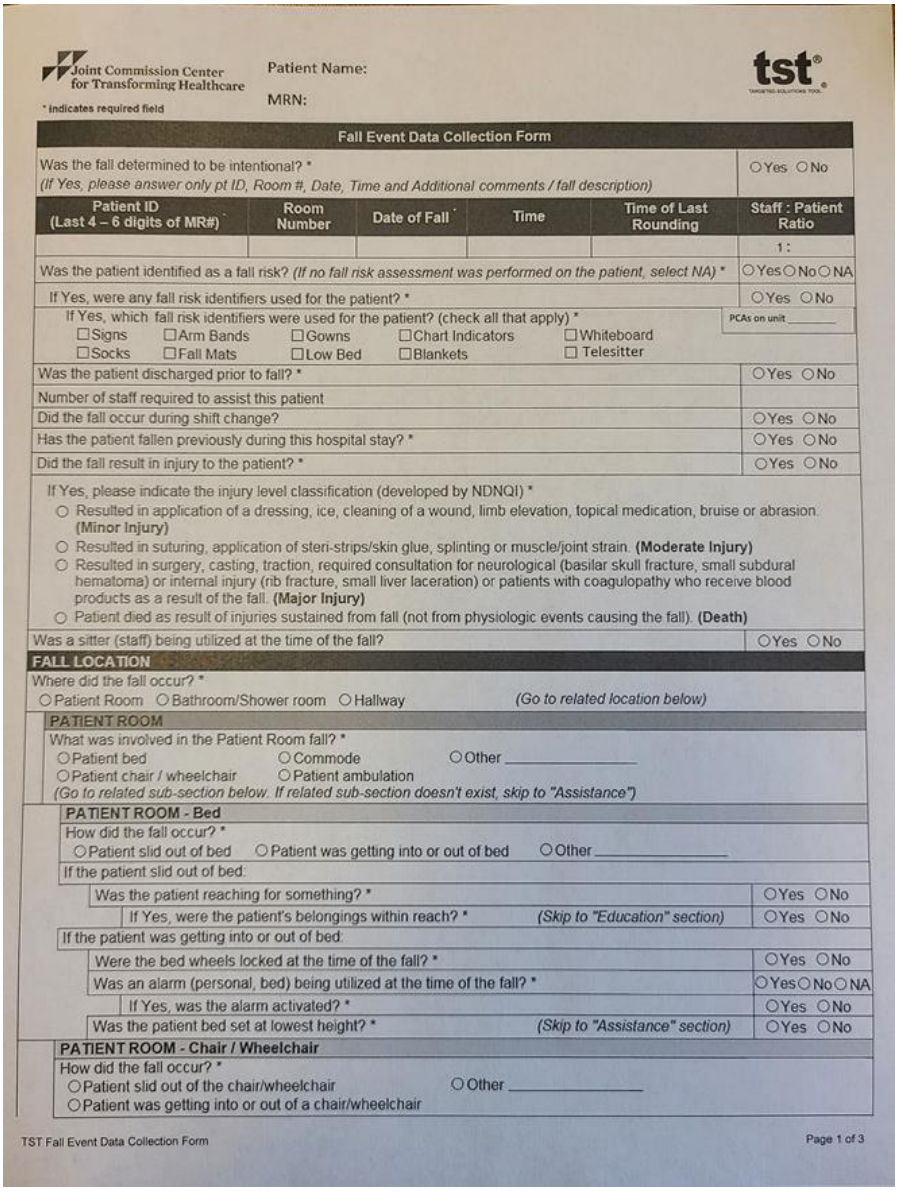
Citation: Iowa Model Collaborative. (2017). Iowa model of evidence-based practice: Revisions and validation. *Worldviews on Evidence-Based Nursing, 14(3), 175-182. doi:10.1111/wvn.12223*

In written material, please add the following statement:
Used/reprinted with permission from the University of Iowa Hospitals and Clinics, copyright 2015. For permission to use or reproduce, please contact the University of Iowa Hospitals and Clinics at 319-384-9098.

Please contact UIHCNursingResearchandEBP@uiowa.edu or 319-384-9098 with questions.

Reply | Forward

Appendix C
The Joint Commission TST Form Page 1



Joint Commission Center for Transforming Healthcare

Patient Name:

MRN:

tst®

* indicates required field

Fall Event Data Collection Form

Was the fall determined to be intentional? * ○Yes ○No
(If Yes, please answer only pt ID, Room #, Date, Time and Additional comments / fall description)

Patient ID (Last 4 – 6 digits of MR#)	Room Number	Date of Fall	Time	Time of Last Rounding	Staff : Patient Ratio
					1 :

Was the patient identified as a fall risk? *(If no fall risk assessment was performed on the patient, select NA)* * ○Yes ○No ○NA

If Yes, were any fall risk identifiers used for the patient? * ○Yes ○No

If Yes, which fall risk identifiers were used for the patient? (check all that apply) * PCAs on unit _____

☐Signs ☐Arm Bands ☐Gowns ☐Chart Indicators ☐Whiteboard
☐Socks ☐Fall Mats ☐Low Bed ☐Blankets ☐Telesitter

Was the patient discharged prior to fall? * ○Yes ○No

Number of staff required to assist this patient

Did the fall occur during shift change? ○Yes ○No

Has the patient fallen previously during this hospital stay? * ○Yes ○No

Did the fall result in injury to the patient? * ○Yes ○No

If Yes, please indicate the injury level classification (developed by NDNQI) *

○ Resulted in application of a dressing, ice, cleaning of a wound, limb elevation, topical medication, bruise or abrasion. **(Minor Injury)**
○ Resulted in suturing, application of steri-strips/skin glue, splinting or muscle/joint strain. **(Moderate Injury)**
○ Resulted in surgery, casting, traction, required consultation for neurological (basilar skull fracture, small subdural hematoma) or internal injury (rib fracture, small liver laceration) or patients with coagulopathy who receive blood products as a result of the fall. **(Major Injury)**
○ Patient died as result of injuries sustained from fall (not from physiologic events causing the fall). **(Death)**

Was a sitter (staff) being utilized at the time of the fall? ○Yes ○No

FALL LOCATION

Where did the fall occur? *
○Patient Room ○Bathroom/Shower room ○Hallway *(Go to related location below)*

PATIENT ROOM

What was involved in the Patient Room fall? *
○Patient bed ○Commode ○Other _____
○Patient chair / wheelchair ○Patient ambulation
(Go to related sub-section below. If related sub-section doesn't exist, skip to "Assistance")

PATIENT ROOM - Bed

How did the fall occur? *
○Patient slid out of bed ○Patient was getting into or out of bed ○Other _____

If the patient slid out of bed:

Was the patient reaching for something? * ○Yes ○No

If Yes, were the patient's belongings within reach? * *(Skip to "Education" section)* ○Yes ○No

If the patient was getting into or out of bed:

Were the bed wheels locked at the time of the fall? * ○Yes ○No

Was an alarm (personal, bed) being utilized at the time of the fall? * ○Yes ○No ○NA

If Yes, was the alarm activated? * ○Yes ○No

Was the patient bed set at lowest height? * *(Skip to "Assistance" section)* ○Yes ○No

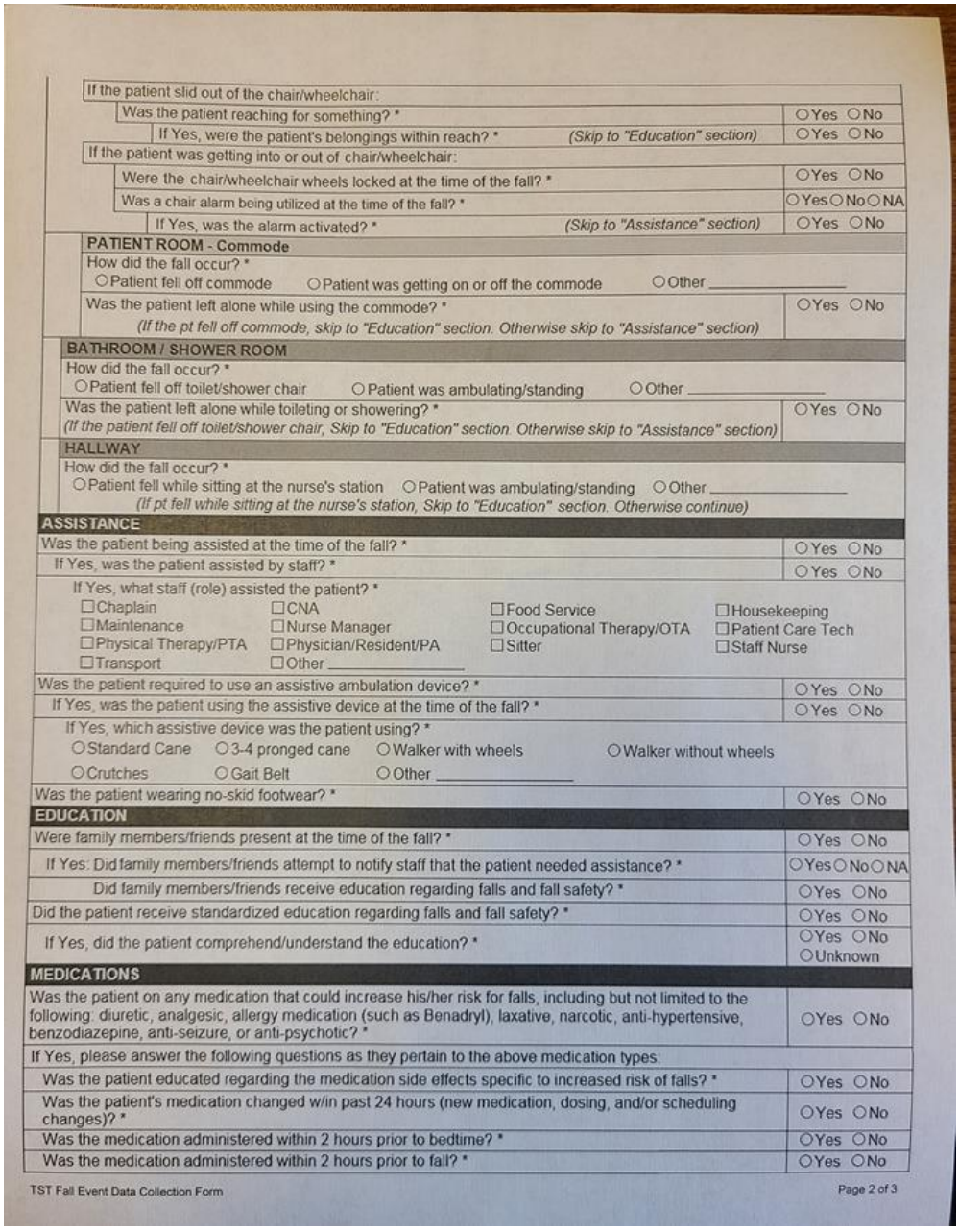
PATIENT ROOM - Chair / Wheelchair

How did the fall occur? *
○Patient slid out of the chair/wheelchair ○Other _____
○Patient was getting into or out of a chair/wheelchair

TST Fall Event Data Collection Form Page 1 of 3

Appendix C

The Joint Commission TST Post Fall Report Page Two



If the patient slid out of the chair/wheelchair:
- Was the patient reaching for something? * ○Yes ○No
- If Yes, were the patient's belongings within reach? * *(Skip to "Education" section)* ○Yes ○No

If the patient was getting into or out of chair/wheelchair:
- Were the chair/wheelchair wheels locked at the time of the fall? * ○Yes ○No
- Was a chair alarm being utilized at the time of the fall? * ○Yes ○No ○NA
- If Yes, was the alarm activated? * *(Skip to "Assistance" section)* ○Yes ○No

PATIENT ROOM - Commode

How did the fall occur? *
○Patient fell off commode ○Patient was getting on or off the commode ○Other _____

Was the patient left alone while using the commode? * ○Yes ○No
(If the pt fell off commode, skip to "Education" section. Otherwise skip to "Assistance" section)

BATHROOM / SHOWER ROOM

How did the fall occur? *
○Patient fell off toilet/shower chair ○Patient was ambulating/standing ○Other _____

Was the patient left alone while toileting or showering? * ○Yes ○No
(If the patient fell off toilet/shower chair, Skip to "Education" section. Otherwise skip to "Assistance" section)

HALLWAY

How did the fall occur? *
○Patient fell while sitting at the nurse's station ○Patient was ambulating/standing ○Other _____
(If pt fell while sitting at the nurse's station, Skip to "Education" section. Otherwise continue)

ASSISTANCE

Was the patient being assisted at the time of the fall? * ○Yes ○No

If Yes, was the patient assisted by staff? * ○Yes ○No

If Yes, what staff (role) assisted the patient? *
☐Chaplain ☐CNA ☐Food Service ☐Housekeeping
☐Maintenance ☐Nurse Manager ☐Occupational Therapy/OTA ☐Patient Care Tech
☐Physical Therapy/PTA ☐Physician/Resident/PA ☐Sitter ☐Staff Nurse
☐Transport ☐Other _____

Was the patient required to use an assistive ambulation device? * ○Yes ○No

If Yes, was the patient using the assistive device at the time of the fall? * ○Yes ○No

If Yes, which assistive device was the patient using? *
○Standard Cane ○3-4 pronged cane ○Walker with wheels ○Walker without wheels
○Crutches ○Gait Belt ○Other _____

Was the patient wearing no-skid footwear? * ○Yes ○No

EDUCATION

Were family members/friends present at the time of the fall? * ○Yes ○No

If Yes: Did family members/friends attempt to notify staff that the patient needed assistance? * ○Yes ○No ○NA

Did family members/friends receive education regarding falls and fall safety? * ○Yes ○No

Did the patient receive standardized education regarding falls and fall safety? * ○Yes ○No

If Yes, did the patient comprehend/understand the education? * ○Yes ○No ○Unknown

MEDICATIONS

Was the patient on any medication that could increase his/her risk for falls, including but not limited to the following: diuretic, analgesic, allergy medication (such as Benadryl), laxative, narcotic, anti-hypertensive, benzodiazepine, anti-seizure, or anti-psychotic? * ○Yes ○No

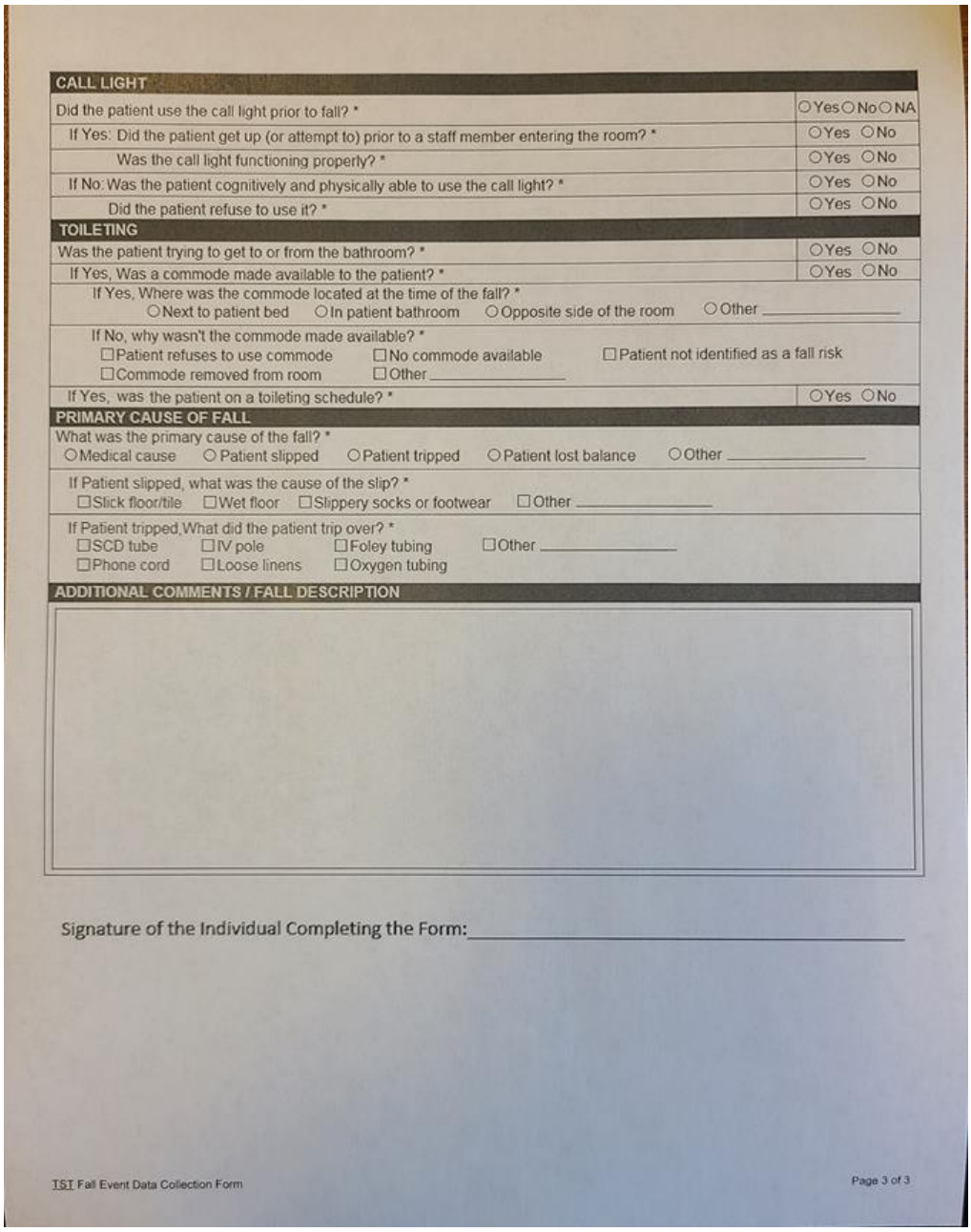
If Yes, please answer the following questions as they pertain to the above medication types:

- Was the patient educated regarding the medication side effects specific to increased risk of falls? * ○Yes ○No
- Was the patient's medication changed w/in past 24 hours (new medication, dosing, and/or scheduling changes)? * ○Yes ○No
- Was the medication administered within 2 hours prior to bedtime? * ○Yes ○No
- Was the medication administered within 2 hours prior to fall? * ○Yes ○No

TST Fall Event Data Collection Form Page 2 of 3

Appendix C

The Joint Commission TST Post Fall Report Page Three



CALL LIGHT

Did the patient use the call light prior to fall? *	○ Yes ○ No ○ NA
If Yes: Did the patient get up (or attempt to) prior to a staff member entering the room? *	○ Yes ○ No
Was the call light functioning properly? *	○ Yes ○ No
If No: Was the patient cognitively and physically able to use the call light? *	○ Yes ○ No
Did the patient refuse to use it? *	○ Yes ○ No

TOILETING

Was the patient trying to get to or from the bathroom? *	○ Yes ○ No
If Yes, Was a commode made available to the patient? *	○ Yes ○ No

If Yes, Where was the commode located at the time of the fall? *
○ Next to patient bed ○ In patient bathroom ○ Opposite side of the room ○ Other _____

If No, why wasn't the commode made available? *
☐ Patient refuses to use commode ☐ No commode available ☐ Patient not identified as a fall risk
☐ Commode removed from room ☐ Other _____

If Yes, was the patient on a toileting schedule? *	○ Yes ○ No

PRIMARY CAUSE OF FALL

What was the primary cause of the fall? *
○ Medical cause ○ Patient slipped ○ Patient tripped ○ Patient lost balance ○ Other _____

If Patient slipped, what was the cause of the slip? *
☐ Slick floor/tile ☐ Wet floor ☐ Slippery socks or footwear ☐ Other _____

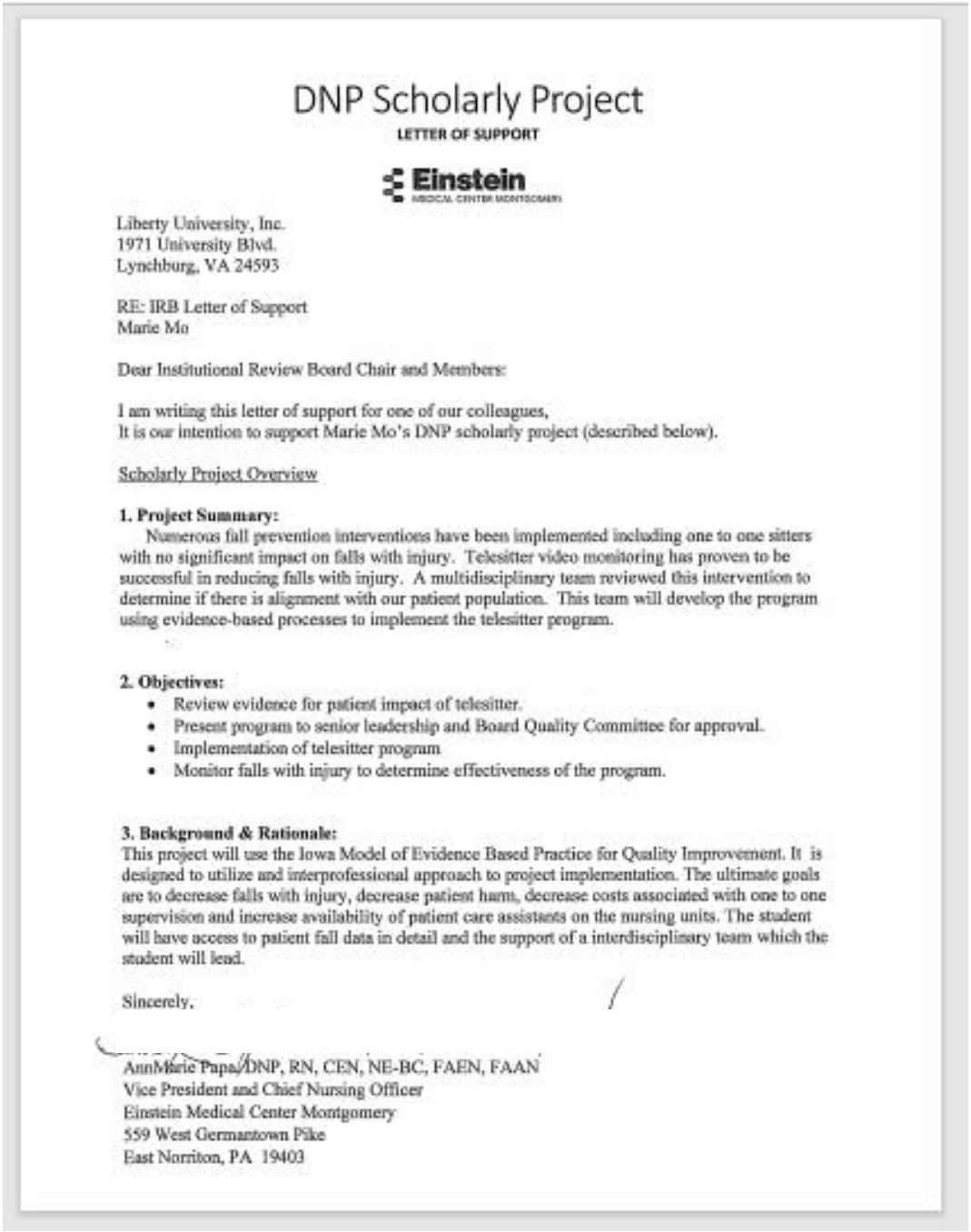
If Patient tripped, What did the patient trip over? *
☐ SCD tube ☐ IV pole ☐ Foley tubing ☐ Other _____
☐ Phone cord ☐ Loose linens ☐ Oxygen tubing

ADDITIONAL COMMENTS / FALL DESCRIPTION

Signature of the Individual Completing the Form: _____

TST Fall Event Data Collection Form Page 3 of 3

Appendix D
Letter of Support



DNP Scholarly Project

LETTER OF SUPPORT

Einstein
MEDICAL CENTER MONTGOMERY

Liberty University, Inc.
1971 University Blvd.
Lynchburg, VA 24593

RE: IRB Letter of Support
Marie Mo

Dear Institutional Review Board Chair and Members:

I am writing this letter of support for one of our colleagues,
It is our intention to support Marie Mo's DNP scholarly project (described below).

Scholarly Project Overview

1. Project Summary:
Numerous fall prevention interventions have been implemented including one to one sitters with no significant impact on falls with injury. Telesitter video monitoring has proven to be successful in reducing falls with injury. A multidisciplinary team reviewed this intervention to determine if there is alignment with our patient population. This team will develop the program using evidence-based processes to implement the telesitter program.

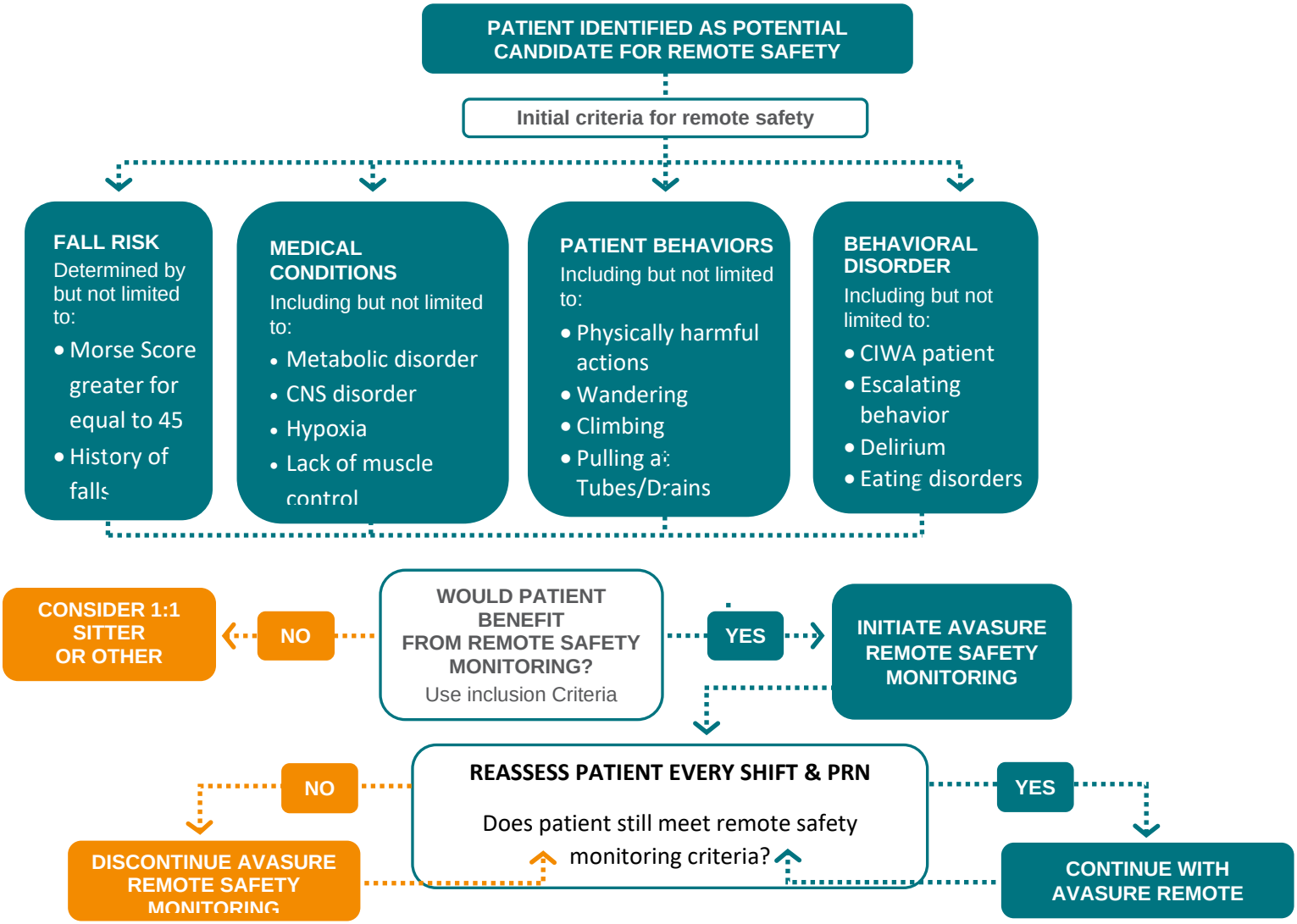
2. Objectives:
- Review evidence for patient impact of telesitter.
- Present program to senior leadership and Board Quality Committee for approval.
- Implementation of telesitter program
- Monitor falls with injury to determine effectiveness of the program.

3. Background & Rationale:
This project will use the Iowa Model of Evidence Based Practice for Quality Improvement. It is designed to utilize and interprofessional approach to project implementation. The ultimate goals are to decrease falls with injury, decrease patient harm, decrease costs associated with one to one supervision and increase availability of patient care assistants on the nursing units. The student will have access to patient fall data in detail and the support of a interdisciplinary team which the student will lead.

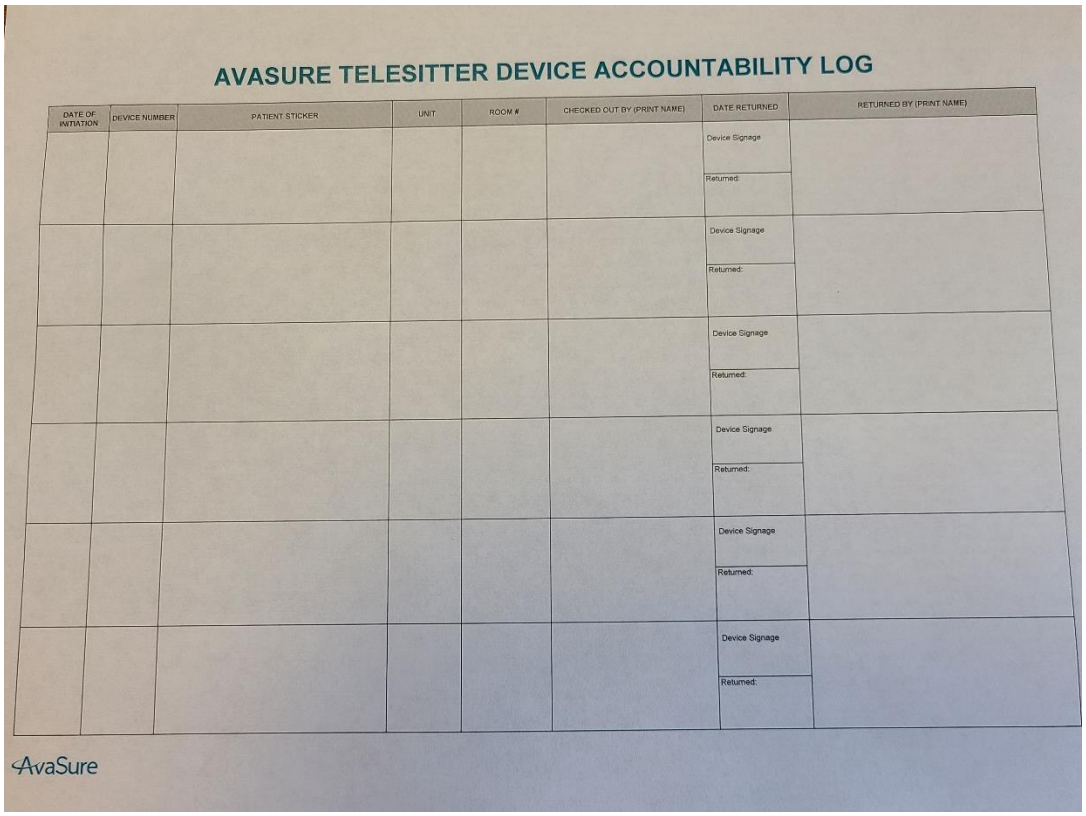
Sincerely,

AnnMarie Papa, DNP, RN, CEN, NE-BC, FAEN, FAAN
Vice President and Chief Nursing Officer
Einstein Medical Center Montgomery
559 West Germantown Pike
East Norriton, PA 19403

Appendix E
Patient Selection Algorithm



Appendix F
Video Monitoring Log



AVASURE TELESITTER DEVICE ACCOUNTABILITY LOG

DATE OF INITIATION	DEVICE NUMBER	PATIENT STICKER	UNIT	ROOM #	CHECKED OUT BY (PRINT NAME)	DATE RETURNED	RETURNED BY (PRINT NAME)
						Device Signage Returned:	
						Device Signage Returned:	
						Device Signage Returned:	
						Device Signage Returned:	
						Device Signage Returned:	
						Device Signage Returned:	

AvaSure

Appendix G
Patient Education Handout

AvaSure

THE AVASURE TELESITTER®: PATIENT MONITORING TECHNOLOGY

Protecting patients from falls

Patient safety and privacy are our highest priorities. For this reason, we are using the AvaSure TeleSitter, a patient monitoring device that helps decrease your risk of falls. Falls may cause injuries ranging from scrapes and bruises, to broken bones or serious head injuries. This can lead to a longer hospital stay.

HOW THE TELESITTER WORKS

The TeleSitter monitoring device is a tool that we use to ensure that you are safe, even if you are alone in your room. It has a video camera and two-way audio, which allows a trained staff member to see and speak to you. When you are trying to get up, the staff member will ask you to stay in bed until a healthcare provider arrives in the room to provide help.

Staff members will monitor you from a central room by watching a video feed. They can see you all of the time—except when the TeleSitter is set to "privacy mode." However, the only time they can hear you is when they talk to you over the speaker. The TeleSitter does not ever record video or audio. A member of the nursing staff is always available whenever you need anything. Use your nurse call button to ask for help.

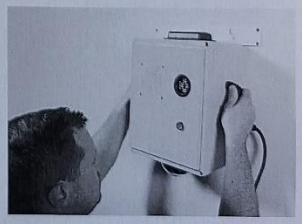
When the TeleSitter light is on, the staff member who is monitoring you can see you. When the light is off, the privacy cover is on, and they cannot see you. The privacy cover is used when your doctor or nurse is providing care and when you are dressing, bathing, or using the toilet. When the doctor or nurse is finished, they will ask the staff member to remove the privacy cover and resume monitoring.

Your nurse decides if you no longer need the monitoring device. When your health has improved, and you are safe from falls or injury, TeleSitter monitoring can be stopped.

Questions about the TeleSitter? Ask your nurse for more information.

A mobile device being moved to a patient room.

The permanent, ceiling device (above) and a portable, wall-mounted device being set up (below).



www.avasure.com

Appendix H
Citi Training Certificates

CITI PROGRAM

Completion Date 19-Dec-2020
Expiration Date 19-Dec-2023
Record ID 38892405

This is to certify that:

Marie Mo

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

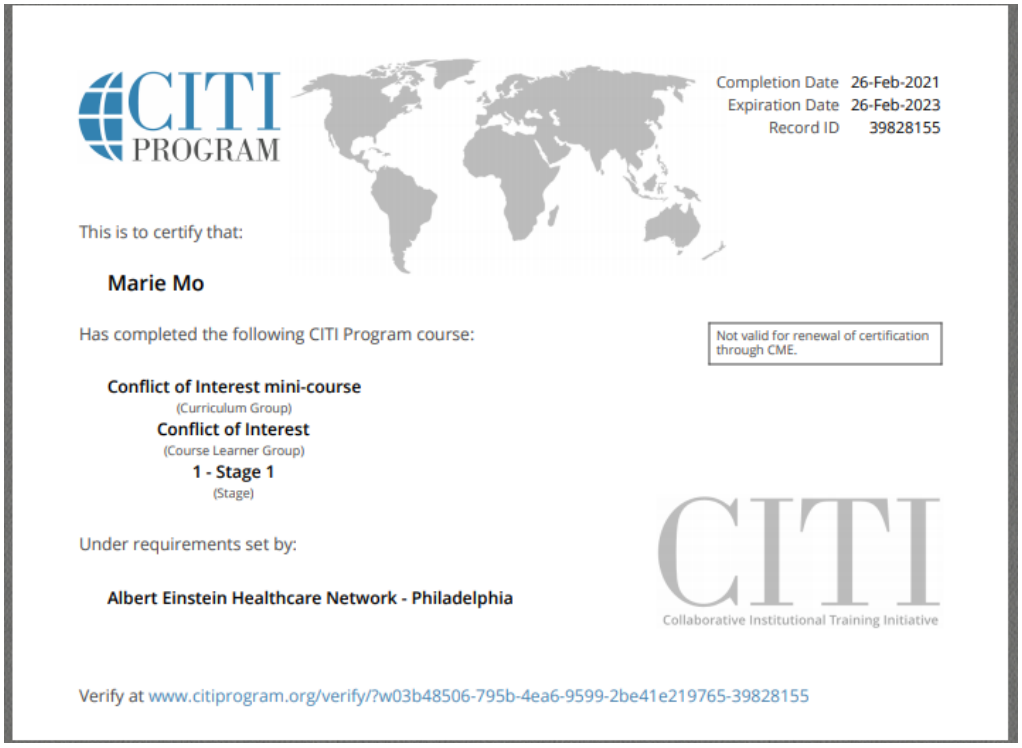
Biomedical Research - Basic/Refresher
(Curriculum Group)
Biomedical & Health Science Researchers
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Liberty University

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w92d5b787-7a39-49c8-b25b-2aa2cbca33a5-38892405



CITI PROGRAM

Completion Date 26-Feb-2021
Expiration Date 26-Feb-2023
Record ID 39828155

This is to certify that:

Marie Mo

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Conflict of Interest mini-course
(Curriculum Group)
Conflict of Interest
(Course Learner Group)
1 - Stage 1
(Stage)

Under requirements set by:

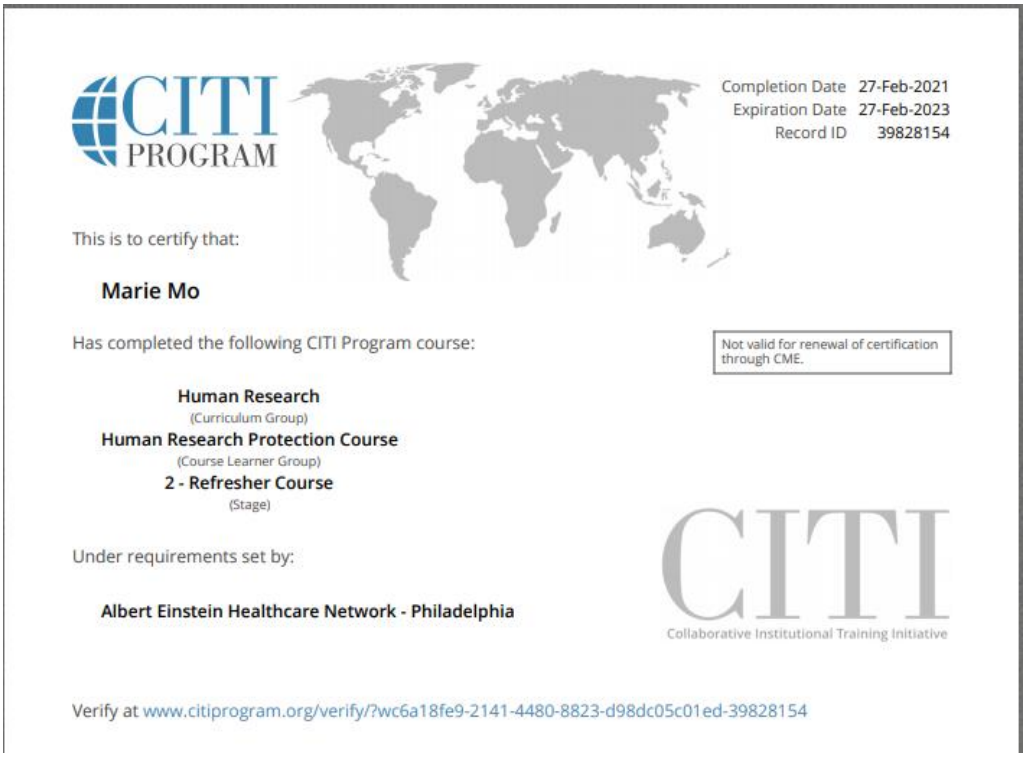
Albert Einstein Healthcare Network - Philadelphia

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w03b48506-795b-4ea6-9599-2be41e219765-39828155

Appendix H

Citi Training Certificates



CITI PROGRAM

Completion Date 27-Feb-2021
Expiration Date 27-Feb-2023
Record ID 39828154

This is to certify that:

Marie Mo

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Human Research
(Curriculum Group)
Human Research Protection Course
(Course Learner Group)
2 - Refresher Course
(Stage)

Under requirements set by:

Albert Einstein Healthcare Network - Philadelphia

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?wc6a18fe9-2141-4480-8823-d98dc05c01ed-39828154

Appendix I
IRB Response

March 15, 2021

Re: IRB Application - IRB-FY20-21-709 Video Monitoring to Reduce Falls

Dear Marie Mo and Tonia Kennedy,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study does not classify as human subjects research. This means you may begin your research with the data safeguarding methods mentioned in your IRB application.

Decision: No Human Subjects Research

Explanation: Your study is not considered human subjects research for the following reason: Evidence-based practice projects are considered quality improvement activities, which are not "designed to develop or contribute to generalizable knowledge" according to 45 CFR 46.102(l).

Please note that this decision only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued non-human subjects research status. You may report these changes by completing a modification submission through your Cayuse IRB account.

Also, although you are welcome to use our recruitment and consent templates, you are not required to do so. If you choose to use our documents, please replace the word *research* with the word *project* throughout both documents.

If you have any questions about this determination or need assistance in determining whether possible modifications to your protocol would change your application's status, please email us at irb@liberty.edu.

Sincerely,
G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
Research Ethics Office