Summer 8-12-2018

No Pass Zone: Preventing Patient Falls

Rheea Fe Bustos
rheea.bustos@gmail.com

No Pass Zone: Preventing Patient Falls

Rheea Fe Bustos

University of San Francisco

Abstract

Problem: According to the Agency for Healthcare Research and Quality (AHRQ), an estimated 700,000 to 1,000,000 inpatient falls occur in the United States every year. **Context:** In an August 2017 observation of bed alarm activations in patients' rooms, it was noted that there was no designated staff member to answer alarms. This causes a delayed response time, which can result in patient falls. The root cause involved unclear expectations regarding what staff members are responsible for answering alarms. **Interventions:** Standard work was created to have the closest available person respond to the patient's bed alarm. Initial implementation began in the Lombard unit. Ultimately, the project became called the No Pass Zone and all Med/Surg units and interdisciplinary teams were trained. **Measures:** The goal for the No Pass Zone will be to increase the use of standard work for answering bed alarms with any available staff member closest to the patient's room responding and decrease bed alarm response times by less than 60 seconds 100% of the time. The global aim for the established falls program at ZSFGH, of which the No Pass Zone is a component, is to decrease falls with injury from 3.1 to 2.3 falls per month by August 31, 2018. **Results:** After initial implementation in the Lombard unit, average bed alarm response times decreased and response times lasting more than 60 seconds were almost eliminated. Post intervention data after all Med/Surg units and interdisciplinary teams were trained showed the highest proportion of bed alarms lasting longer than 60 seconds occurred in the sitter and isolation rooms. The PDSA and bed alarm standard work were revised to include workflow to answer bed alarms in the sitter and isolation rooms. Staff members were educated on the revision. Post intervention data will be collected by the end of August 2018. **Conclusions:** Since the implementation of the falls program at ZSFG, the rate of patient falls has stabilized and continued to decrease during the No Pass Zone intervention period.

Introduction

Problem Description

According to the Agency for Healthcare Research and Quality (AHRQ, 2013), an estimated 700,000-1,000,000 patients fall in the hospital each year in the United States. The AHRQ defined a patient fall as an unplanned descent to the ground with or without injury. Spirgiene, Bosch-Leertouwer, Watson, Spirgys, and Nadirbekova (2013) described the factors pertaining to high-risk patient falls in an acute care setting such as having a newly altered mobility from recent surgery, unsteady gait, being confused or agitated, frequent toileting or incontinence, or having a history of previous falls.

Zuckerberg San Francisco General Hospital (ZSFGH) is the only Level 1 Trauma hospital in the San Francisco Bay Area (Ehrlich, 2016). The hospital serves a diverse group of people such as immigrants and the homeless population. The patient population consists of people from various ethnic groups, including Hispanics 35%, Asians 23%, White 21%, and African Americans 17% (ZSFGH, 2016). The Med/Surg units at ZSFGH specialize in acute trauma injuries such as multiple fractures and penetrating wounds, as well as neurologic conditions like stroke and traumatic brain injuries. Factors such as impaired mobility and altered cognition can lead to fall-related injuries among patients. ZSFGH has an established falls program, which aims to increase patient safety by assessing patients whom are at high risk for falls and implementing tools to increase staff awareness such as bed alarms.

Available Knowledge

Using the PICO statement (See Appendix A for PICO Statement), the patient population involves high-falls risk patients in the Med/Surg units at ZSFGH. The intervention to be implemented involves training all RNs, patient care assistants (PCAs), and interdisciplinary

teams to answer the bed exit alarm if they are the closest available person to the patient's room. An alternative intervention would be to continue using the current workflow, which was having no designated staff member to answer the bed alarm. The goal of the improvement is to increase the use of standard work for answering bed alarms with the closest available person to the patient's room responding; decrease the bed and chair alarm response times by less than one minute 100% of the time; and increase interdisciplinary collaboration to address alarms.

There were numerous articles found relating to fall interventions used in an inpatient setting, but there were limitations in finding articles focusing predominantly on bed alarm use. Data was gathered on fall interventions through scholarly journals found from the University of San Francisco (USF) library database and Google Scholar, as well as the Agency for Healthcare Research and Quality (AHRQ). The various search words used were "fall interventions", "bed exit alarms in acute care setting", "bed exit alarm response times", "reducing inpatient falls", and "inpatient wireless technology." The publication dates of the selected articles ranged from 2007-2017. There were three articles chosen that were most relevant to the topic.

In order to decrease patient injury, implementation of a fall prevention program is necessary. Healthcare providers should be educated in identifying high-risk patients, communicating the risk level to the patient, family, and interdisciplinary team, and implementing fall precautions and interventions. The fall prevention program consists of continuing education that instructs all staff in the hospital to be aware of environmental indicators, assessment tools, and fall prevention strategies (Spirgiene, Bosch-Leertouwer, Watson, Spirgys, & Nadirbekova, 2013).

In a study that was done by Cuttler, Barr-Walker, and Cuttler (2017), patients and hospital staff were educated on preventing patient falls and injury through video, icons, and bed

alarms. The article discussed the barriers to their medical-surgical units that led to patient falls such as lack of communication between nursing shifts regarding the patient's fall risk and failure of the patient to activate the call light. In regards to alarm use in the unit, new bed alarms were introduced with adjustable activation sensitivity that allowed staff to reach the bedside before the patient exits. Nurses were responsible for training their peers on the bed alarm use. The authors continued to explain the studies that used bed alarms along with other methods of fall prevention, such as patient education and fall risk signs or icons. The studies reported a statistically significant decrease in falls.

Guarascio-Howard (2011), argued wireless devices increased communication among hospital staff members and decreased response times to patient calls and bed exit alarms. The wireless technology involved the nurse call system and telephones located at each nursing station that would notify the staff for patient-initiated calls or bed exit alarms activations. The staff members were trained and data collection included number of patient calls, bed exit alarms calls, and response times to calls. Results showed staff members responding to bed exit alarms in less than 1 minute 62% of the 37 calls, increased communication and monitoring patient status among staff members, and decrease in patient falls.

Rationale

When implementing interventions that involve patient safety, the healthcare providers such as the nurses, PCAs, and the interdisciplinary team are the key stakeholders (See Appendix B for Stakeholder Analysis). Additionally, each patient at risk for falling is a key stakeholder. Educating staff members, including the interdisciplinary team, to answer the bed alarm if they are the closest to the patient's room is important in creating a cohesive environment of safety for patients.

Before implementing changes, it is essential to understand theories, such as transformational leadership theory, which can help motivate staff members to be compliant with the changes made in the Med/Surg units.

Transformational leadership is defined as a theory or style that focuses on the need for leaders who are willing to embrace change, reward and guide staff members in understanding their roles within the organization (Finkelman, 2016). The theory also emphasizes the importance of creating a positive work environment within the organization, and motivates staff to become self-aware and take risks to improve. According to Qarani (2017), transformational leadership motivates staff members to feel responsible by providing opportunities for development and learning. The author argues that leadership style is directed towards either concern for the people or for production. Transformational leadership concerns both the production and people in which leaders motivate staff members to achieve the shared vision. The rules and regulations of the theory are flexible and the individual bringing change to the unit creates a solid relationship with the staff members, which results in trust and increased motivation.

According to Haynes and Strickler (2014), encouraging mutual support between staff members improves care and reduces negative outcomes. The authors also described facilitating teamwork and communication using team STEPPS techniques such as situational awareness, which urges staff members to be aware of the environment around them and the utilization of tools such as CUS words and SBAR to reduce gaps in communication.

Specific Project Aim

According to the Institute for Health Improvement (2018), successful fall prevention strategies include identifying high-fall risk patients and implementing interventions that involve

multidisciplinary support. The specific aim for the project involves reducing fall-related injuries among high-falls risk patients and to improve patient safety in the hospital (See Appendix C for Global Aim Statement). The process begins with holding the closest available staff member to a patient's room responsible for answering the bed/chair alarm. The process ends with the patient remaining safe and free from fall-related injury. By working on the process, we expect (1) increased patient safety, (2) improved staff satisfaction with team collaboration and (3) improved collaboration among interdisciplinary team members. It is important to work on this now because we have identified the need to improve (1) patient safety, (2) patient satisfaction, (3) knowledge of patient safety among interdisciplinary teams, (4) staff communication and, (5) prevention of near misses and errors.

Methods

Context

Bed alarms are often used in the Lombard unit at ZSFGH as a tool to prevent patient falls. A microsystem assessment was done in the Lombard unit using the 5 P's (See Appendix D for 5 P's). During a pre-observation of bed alarm activations in patients' rooms, it was noted that there was no designated staff member to answer alarms. A Plan-Do-Study-Act (PDSA) was created to identify the root cause of the problem and create interventions for improvement (See Appendix E for PDSA #1). The unclear expectation regarding which staff members were responsible for answering bed alarms caused a delayed response time, which could result in a patient fall. In order to prevent patient falls, the current bed alarm standard work must be improved by setting the expectation that any available staff member closest to the patient's room should answer the bed alarm. When defining the meaning of utilizing standard work within an

organization, it is a lean tool that forms the baseline for continuous quality improvement (Lean Enterprise Institute, 2017).

After conducting a SWOT analysis of the bed alarm project, the strengths of improving the bed alarm standard work includes availability of safety tools (bed/chair alarms in every room, Responder 5 alarm system); cost efficiency (paper materials, in-services); ability to collect pre and post intervention data from Responder 5; and access to all nursing staff during the Med/Surg Annual Update. The weaknesses involve access to interdisciplinary staff for trainings and the need to overcome ingrained culture and alarm fatigue to achieve process compliance. The opportunities are improving patient safety, increasing nursing staff and interdisciplinary collaboration, and learning opportunities. There were no identified threats (See Appendix F for SWOT Analysis).

Intervention

The in-service trainings were held in front of the nurses' station to ensure adequate room and free from distractions. A message was sent through Responder 5, the nurse call system, to alert nurses and PCAs in the Lombard unit to meet in the nurses' station for an in-service training on fall prevention. The nurses and PCAs received the message through their banana phones twice a shift during downtime hours. The Clinical Nurse Leader (CNL) student and preceptor described the current problem, which was the lack of a designated person for answering bed alarms. The finalized bed alarm standard work was introduced, which included the major steps of bed alarm utilization and the rationales (See Appendix G for Standard Work). The staff members were informed that patient safety is everyone's responsibility and they are expected to respond to the alarms if they are the closest available person to the patient's room. Additionally, informative handouts were given to the staff members alongside the teaching (See

Appendix H for Handouts). Staff members were encouraged at the end of the in-service to voice their opinions regarding the standard work, express concerns and suggest changes. A signage sheet was passed around to staff members that participated in the in-service to acknowledge that the education was received.

After the bed alarm standard work was implemented in the Lombard unit, the PDSA was revised to include all Med/Surg units and interdisciplinary teams (See Appendix I for PDSA #2). Additionally, the bed alarm implementation became known as the No Pass Zone, a concept that originated as a patient experience initiative to provide quick and effective responses to patient's needs (Hospital Quality Institute, 2018). Interdisciplinary teams are being trained and encouraged on a continual basis to get involved in the safety culture movement. Education materials include a PowerPoint presentation with informational handouts. In addition, No Pass Zone signage had been posted on all main doors before entering the units to remind all staff members of their responsibility to keeping patients safe in the units.

Measures

The measurable targets when the No Pass Zone was first initiated in the Lombard unit was to train 80% of dayshift staff, and collect post intervention data from Responder 5 data one month after initiating standard work. The expected outcome was to respond to bed alarms in less than 60 seconds 100% of the time by the beginning of November 2017. After the No Pass Zone was revised to include all Med/Surg units and interdisciplinary teams, the measurable target was changed to train all Med/Surg staff on revised standard work by the end of April 2018 and collect post data by the beginning of June 2018. The goal for the No Pass Zone will be to increase the use of standard work for answering bed alarms with any available staff member closest to the patient's room responding, decrease bed alarm response times by less than 60

seconds 100% of the time. The global aim of the falls program, of which the No Pass Zone is a component, is to decrease fall with injury from 3.1 to 2.3 falls per month by August 31, 2018

Ethical Considerations

There were no ethical concerns that occurred throughout the process of the project.

Results

Results

Post intervention data was collected in the beginning of November 2017 after initial implementation in the Lombard unit. Using Responder 5 and the nurse call system, the data showed average bed alarm response times decreased and response times lasting more than 60 seconds were almost eliminated (See Appendix J for Lombard Unit Results). After all Med/Surg units and interdisciplinary teams were trained, post intervention data was collected in the beginning of June 2018 for each unit. Overall, there was a small improvement in average response times and mixed improvements in alarms lasting more than 60 seconds in the Med/Surg units. A countermeasure summary was created to explain the historical data, the top contributors to the identified problem, the stratified post-intervention data, and countermeasures (See Appendix K for Countermeasure Summary). After stratifying the data, the results showed the highest proportion of bed alarms lasting longer than 60 seconds occurred in the sitter and isolation rooms. In order to identify barriers on answering alarms in the sitter and isolation rooms, surveys were handed out to staff members in all Med/Surg units (See Appendix L for Survey Results). The main barrier to not answering bed alarm was due to becoming busy with the patient to turn the alarm off. The PDSA and bed alarm standard work were revised to include workflow to answer bed alarms in the sitter and isolation rooms (See Appendix M for PDSA #3). In-service trainings were rolled out to educate staff members about the revised standard work. Additionally, staff members were shown the pre and post intervention data, as well as a layout

map of their unit marking the rooms where bed alarms frequently occurred. Post intervention data will be collected by the end of August 2018.

Some of the barriers encountered included compliance, staff availability for training, and designating responsibility for specific rooms. In order to maintain compliance among healthcare providers regarding patient safety, ongoing in-services were important in order to revisit historical data, current data, and improvements within the quality of care. Additionally, multiple in-service training days were organized in order to reach the most staff members and have each unit assessed to determine the best times to do the huddles. Lastly, after performing a countermeasure summary of the post data collection on bed alarm response time, designating responsibility for answering alarms in isolation and coach rooms may be the contributing factor to the long alarms there.

After conducting a survey regarding the helpfulness of the No Pass Zone, the results showed the implementation had been very helpful.

Discussion

Summary

An estimated 700,000-1,000,000 patients fall in the hospital each year in the United States. Bed alarms are often used at ZSFGH as a tool to prevent patient falls. During a pre-observation of bed alarm activations in patients' rooms, it was noted that there was no designated staff member to answer alarms. The steps that were implemented in order to have the closest available person answer the bed alarm included creating standard work for bed alarms use on all Med/Surg units, doing in-service trainings to all Med/Surg staff and educating interdisciplinary teams, displaying and maintaining No Pass Zone signage on all Med/Surg units, and collecting pre and post intervention data to evaluate effectiveness and make changes. The recent change

that has been implemented since evaluating the post intervention data involved including responsibility of answering bed alarms in the sitter and isolation rooms due to those specific rooms having the highest proportions of bed alarms times lasting more than 60 seconds.

After conducting a survey regarding the helpfulness of the No Pass Zone, the results showed the implementation had been very helpful.

Conclusions

Since the implementation of the falls program at ZSFGH, the rate of patient falls has stabilized (See Appendix N for Falls Data). Given the multiple components of the falls prevention program, which includes the No Pass Zone, patient falls with injury have already decreased prior to intervention and have only continued to decrease during the intervention period.

Improving current processes such as bed alarm use to make them more efficient will not only reduce the hospital cost of patient falls with injury, but also overall improve patient safety. ZSFGH aims in providing quality patient-centered care and safety. The various healthcare professionals within the clinical microsystem work together to ensure patients obtain the best quality of life. Processes continue to change due to evidence-based practice and assessment tools. Improving processes, such as designating the closest staff member to answer the bed alarm, will decrease the risk of patient falls and ultimately improve patient safety.

References

AHRQ. (2013, January 31). *Preventing falls in hospitals*. Retrieved from https://www.ahrq.gov/professionals/systems/hospital/fallpxtoolkit/index.html

https://www.cdc.gov/healthyyouth/evaluation/pdf/brief16.pdf

Cuttler, S., Barr-Walker, J., & Cuttler, L. (2017). Reducing medical-surgical inpatient falls and injuries with videos, icons, and alarms. *BMJ Open Quality*, 1-9. doi:10.1136/bmjoq-2017-000119

Ehrlich, S. (2016, November 15). *Zuckerburg san francisco general FY1516 annual report.* Retrieved from https://www.sfdph.org/dph/files/hc/HCAgen/HCAgen2016/Nov%2015/01a%20ZSFG%20FY1516%20Annual%20Report_20161103.pdf

Finkelman, A. W. (2016). *Leadership and management for nurses: Core competencies for quality care*. Boston: Pearson.

Guarascio-Howard, L. (2011). Examination of wireless technology to improve nurse communication, response time to bed alarms, and patient safety. *Health Environments Research & Design Journal.* Vol 4, Issue 2, pp. 109 – 120. doi: 10.1177/193758671100400209

Hospital Quality Institute. (2018). *The no pass zone for patient safety.* Retrieved from http://www.hqinstitute.org/post/no-pass-zone-patient-safety

Institute for Healthcare Improvement. (2018). *Falls prevention*. Retrieved from http://www.ihi.org/Topics/Falls/Pages/default.aspx

Lean Enterprise Institute. (2017). *Standardized work: The foundation for kaizen*. Retrieved from https://www.lean.org/Workshops/WorkshopDescription.cfm?WorkshopId=20

Qarani, W. (2017). Transformation leadership: A strategy towards staff motivation. *I-Manager's Journal on Nursing*, 7(1). Retrieved from http://0eds.a.ebscohost.com.ignacio.usfca.edu/eds/pdfviewer/pdfviewer?vid=0&sid=1ab82a46-805a-44d9-9d5c-d9d4f53f368b%40sessionmgr4006

Spirgiene, L., Bosch-Leertouwer, H., Watson, M., Spirgys, A., & Nadirbekova, G. (2013). Improving patient safety: Implementation of falls prevention strategy in hospital. *Gerontologija,* 14(4), 235-242. Retrieved from http://www.gerontologija.lt/files/edit_files/File/pdf/2013/nr_4/2013_235_242.pdf

Haynes, J., & Strickler, J. (2014). TeamSTEPPS makes strides for better communication.*Nursing*, 44(1), 62-63. doi:10.1097/01.nurse.0000438725.66087.89

ZSFGH. (2016). *About the hospital and trauma center.* Retrieved from http://zuckerbergsanfranciscogeneral.org/about-the-hospital/

Appendix A: PICO Statement

P: The patient population for my project involves all high-falls risk patients on the Med/Surg unit at ZSFG.

I: The intervention implemented was to train all staff members (including interdisciplinary teams) to answer the bed exit alarm if they are the closest available person to the patient's room on all Med/Surg units.

C: An alternative intervention involved the workflow being used before the No Pass Zone was implemented, which was to have only RNs and PCAs answer the bed exit alarms with no designate staff member to answer the alarm.

O: The goal of the No Pass Zone concept is to increase the use of standard work for answering bed and chair alarms with the closest available person to the patient's room responding; decrease the bed and chair alarm response times by less than one minute 100% of the time; and increase interdisciplinary collaboration to address alarms and ensure patient safety. Recently, the bed exit alarm Standard Work was revised to include responsibilities for answering bed exit alarms in the coach and isolation rooms, which was found to have the highest proportions of bed exit alarms lasting more than 60 seconds.

Appendix B: Stakeholder Analysis

Stakeholder	**Interest or requirement in the program**	**What the program needs from stakeholder**	**Perceived attitudes and risks**	**Actions to take**
RNs	Answer bed/chair exit alarms if closest available person	No Pass Zone concept; Standard work on bed/chair alarms; Education on patient fall prevention	May not want to make changes to current practice. Risk of noncompliance and/or practice drift.	In-service training for Med/Surg units on No Pass Zone and SW; display signs; pre and post observation data; Program maintenance.
PCAs	Answer bed/chair exit alarms if closest available person	No Pass Zone concept; Standard work on bed/chair alarms; Education on patient fall prevention	May not want to make changes. Risk of noncompliance	In-service training for Med/Surg units on No Pass Zone and SW; display signs; pre and post observation data; upkeep
Interdisciplinary Team	Answer bed/chair exit alarms if closest available person	No Pass Zone concept; Education on patient fall prevention	May not want to make changes. Risk of noncompliance	Education to interdisciplinary team on No Pass Zone; display signs
Nursing Leadership	Financial costs for falls with injury. Responsibility for safety drivers in Med Surg area.	Buy-in, feedback. Allow PI time to work on program. CEO newsletter to cover No Pass Zone	Constantly shifting priorities could cause NPZ resources to be reallocated to other programs.	Keep leadership apprised of NPZ progress via bi-monthly meeting and countermeasures summary report.

Appendix C: Global Aim Statement

Name: Rheea Bustos

Theme for Improvement: To respond to bed alarms in less than 60 seconds 100% of the time by the August 31, 2018.

Global Aim Statement
To reduce falls with injury per month from 3.1 to 2.3 falls per month by August 31, 2018.

The process begins with holding the closest available staff member to patient's room responsible for answering the bed/chair alarm.

The process ends with the patient remaining safe and free from fall-related injury.

By working on the process, we expect (1) increased patient safety, (2) improved staff satisfaction with team collaboration, (3) improved collaboration among interdisciplinary team members.
It is important to work on this now because we have identified the need to improve (1) patient safety (2) patient satisfaction, (3) knowledge of patient safety among interdisciplinary teams, (3) staff communication, (4) prevention of near misses and errors.

Appendix D: Microsystem Assessment using 5Ps

Purpose	Patients	People	Processes	Patterns
Prevent patient falls and falls with injury. Increase adherence to standard work for alarm management.	High falls-risk patients on Med/Surg units. Defined by Schmid score > 3 and clinical judgement.	RNs/PCAs unable to answer alarms due to workload and multiple alarms going off (alarm fatigue). Lack of accountability for answering alarm (assume someone else is answering alarm, patient whose alarm went off is not theirs). Lack of education among interdisciplinary team on fall prevention	Implement No Pass Zone for alarm management: -Create PDSA -Educate M/S staff and interdisciplinary teams using No Pass Zone concept and standard work -Display signs -Evaluate program using Pre & Post bed exit alarm response times from Responder 5	Based on Evaluation of Post-intervention alarm times: -Revise PDSA -Revise SW -Survey effectiveness of No Pass Zone -Present Countermeasure summary -Reevaluate No Pass Zone program

Appendix E: PDSA #1

PDSA Problem Solving Tool

ZUCKERBERG SAN FRANCISCO GENERAL Hospital and Trauma Center

Subject:	Bed/Chair Alarm Use	Start Date:	01/24/18
		Revision #:	1
Submitted by:	Alonn, Rheea	Approved by:	Falls Taskforce

PLAN

- Problem Statement: According to the Agency for Healthcare Research and Quality (AHRQ), an estimated 700,000 to 1,000,000 inpatient falls occur in the United States every year. Bed/chair alarms are often used in the unit as a tool to prevent patient falls. In an August 2017 observation of bed alarm activations in patients' rooms, it was noted that there was no designated staff member to answer alarms. This causes a delayed response time, which can result in patient falls.
- Potential Root cause(s): Unclear expectations regarding what staff members are responsible for answering alarms.
- Countermeasure/Improvement Idea to test: Draft and roll out standard work for answering bed/chair alarms.
- Predicted result(s) of this test: Increased use of standard work for answering bed/chair alarms with the closest available person to the patient's room responding and decreased alarm response times.
- Measurable targets to determine success or failure:
  - Calculate average bed alarm response times and the number of bed alarm response times greater than 60 seconds using Responder 5 data from 01/01/18- 01/29 /18 by 02/01/18.
  - Train 80% of nightshift RNs and PCAs on standard work by 02/19/18.
  - Perform a post-observation 1 week after initiating standard work. Decrease average response time from 28 seconds to <20 seconds and respond to bed alarms in less than 60 seconds 100% of the time by 02/27/18.

DO

What tasks are planned/completed to test your countermeasure/improvement idea?

Tasks (include population/setting)	Person Responsible	Due Date	Date Completed
1. Pre-observation Determine high risk patients/Set alarms Calculate Bed/Chair Alarm response rates based on Responder 5 data.	Rheea	02/01/18	
2. Draft & Finalize standard work	Rheea	9/29/17	8/18/17
3. Rolling in-services to train 80% of nightshift staff	Rheea	Completed by 02/19/18	
4. Implement standard work for answering bed/chair alarms	Rheea	02/20/18	
5. Post-observation	Rheea	02/27/18	

Version 2, September 3, 2015

PDSA Problem Solving Tool

Document what actually happened: Standard work for bed/chair alarm was finalized and education was provided to day shift RN's and PCA's on the 4th floor medsurg unit. In-service and one-on-one education was provided. Handouts that were shown and given included the standard work, background information about the "No Pass Zone", and criteria for High Falls Risk patient. Staff members expressed understanding and asked meaningful questions. Standard work was implemented on 10/25/17. Post-observation showed closest staff member answering bed/chair alarms.

STUDY

- Summarize measurable results of test:
- What worked well? In-service, one-on-one education, handouts
- What didn't work well? None
- Unintended consequences: None
- Constraints/Barriers/Root Causes: Unable to educate 80% of RN's due to some RN's not on schedule during education days

ACT

- What will you adjust, adopt or abandon in future tests?
- Unresolved barriers: Switching out old beds without updated bed alarm adapter—still in process
- Next steps: Educate remaining day shift nurses who have not received information, educate night shift nurses, policy approval

Appendix F: SWOT Analysis

STRENGTH	**WEAKNESS**
• Availability of safety tools (bed/chair alarms in every room, Responder 5 alarm system) • Cost efficiency (paper materials, in-services) • Ability to collect pre and post intervention from Responder 5 • Access to all nursing staff in Annual Update	• Need to overcome ingrained culture and alarm fatigue to achieve process compliance. • Access to interdisciplinary staff for trainings
OPPORTUNITY	**THREAT**
• Improve patient safety • Increase nursing staff and interdisciplinary collaboration • Learning opportunity	• None identified

Appendix G: Standard Work

Standard Work Instructions

SFGH LEAN MANAGEMENT

Title: Bed/Chair Alarm Use – The "NO PASS ZONE"

Performed By: RNs & PCAs **Date: 05/15/18**

Owner: 42/44 **Revised By: Rheea & Alonn** **Revision #: 4** **Takt Time:**

	Major Steps	Details (if applicable)	Time	Diagram, Work Flow, Picture, Time Grid
1	**High falls risk patients are identified by primary RN.**	High falls risk patients are identified via Schmid score at time of shift assessment and clinical judgement.	**1 min**	
2	**Determine need/utility of chair or bed alarm.**	Primary RN has responsibility for consulting with charge RN, PCA, PT/OT, MD re: specific falls risk factors and determining whether the bed or chair alarm helps to alleviate those risks.	**Varies**	
3	**Set Bed/Chair alarm and communicate its use to other team members. Make sure R5 is plugged in at the back of the bed.**	PCAs, PT/OT, MD, charge RN, etc. need to know that the alarm is in use in order to respond to the alarm and/or to reset the alarm if the patient has been repositioned. The alarm will not sound in the nursing station if the R5 cable is not plugged in to the cable on the wall (see picture).	**1 min**	
4	**Bed/Chair alarms will sound in the room and nursing station. The closest available team member must answer the alarm to prevent the patient from falling.**	**Everyone has responsibility for answering alarms.** The assigned RN or PCA is not likely to be able to answer an alarm fast enough to prevent a fall based on a phone call. Therefore, the closest team member who is available to answer must do so to prevent a fall and address the patient's need. **For coach rooms,** the coach PCA may not be able to help the patient/turn off the alarm. The nearest staff member outside the room should also respond to the alarm to ensure patient safety needs are addressed in a timely manner. **For isolation rooms,** the alarm is very hard to hear in the hallway. Anyone who hears the alarm sound in the nursing station should respond to the alarm, since the closest person may not be able to hear the alarm.	**Varies**	
5	The bed exit Responder 5 call rings to the primary RN phone as the first call.	Bed/chair alarms will only ring on one tier and the primary RN needs to know that the patient tried to exit the bed/chair. Tier 2 is programmed to be the first call for the alarm to provide this information to the RN.	1 min	
6	Reset the alarm once the patient has returned to bed/chair.	Nonclinical/non-nursing staff are trained not to turn off or silence alarms. It is the RN/PCA responsibility to ensure that the alarm is activated before leaving the room.	1 min	

Appendix H: Handout

Establishing Safe Alarm Management Through The No Pass Zone

Starting in 2016, Alarm Management programs were added as a **Joint Commission National Patient Safety Goal**. This was largely in response to Sentinel Events like the one below:

A stable, ventilator-dependent patient (KP) was placed in a room across from the nurses' station. The nurse caring for this patient then received a post-operative patient whose condition was deteriorating. A code was called for the post-op patient and several staff in the area responded to assist. During this emergency, KP's ventilator tubing had become disconnected and the ventilator starting alarming. However, no one responded to the alarm until a custodian passing by approached the nurses' station and notified the unit clerk that he had noticed an alarm coming from KP's room for several minutes and wanted to make sure someone was notified. At this point, the clinical staff realized that KP was quickly deteriorating and immediately responded. Unfortunately, they could not resuscitate KP.

Diffuse responsibility is a recognized safety concern in clinical alarm management. In order to manage the large amount of noise in busy and monitored environments, clinicians often "tune out" alarms that are not related to their own patient assignment. There is an underlying assumption that someone else is responding to an alarm associated with another clinician's patient. One approach to solving this issue is to implement the "No Pass Zone."

Creating a No Pass Zone

The **No Pass Zone** concept originated as a patient experience initiative to provide quick and effective responses to patient's needs. Employees are reminded that care of the patient is everyone's responsibility and they are expected to respond to alarms and patient call lights when walking through the hallways. For example, patients often use their call light to ask for assistance in walking to the restroom. If they are concerned that the wait for help is too long, they may get out of bed unassisted, endangering themselves to a fall. Additionally, the No Pass Zone reduces the risk that diffuse responsibility will result in a delayed response to an alarm.

Adapted from the Hospital Quality Institute http://www.hqinstitute.org/post/no-pass-zone-patient-safety

Appendix I: PDSA #2

PDSA Problem Solving Tool

ZUCKERBERG SAN FRANCISCO GENERAL
Hospital and Trauma Center

Subject:	No Pass Zone Implementation for Fall Reduction	Start Date:	03/06/18
		Revision #:	1
Submitted by:	Alonn, Rheea	Approved by:	Falls Taskforce

PLAN

- Problem Statement: According to the Agency for Healthcare Research and Quality (AHRQ), an estimated 700,000 to 1,000,000 inpatient falls occurs in the United States every year. Bed/chair alarms are often used in the unit as a tool to prevent patient falls. In an August 2017 observation of bed alarm activations in patients' rooms, it was noted that there was no designated staff member to answer alarms. This causes a delayed response time, which can result in patient falls.
- Potential Root cause(s): Unclear expectations regarding what staff members are responsible for answering alarms.
- Countermeasure/Improvement Ideas to test:
  - Draft and roll out standard work for answering bed/chair alarms to Med/Surg units.
  - Educate interdisciplinary teams on No Pass Zone.
- Predicted result(s) of this test:
  - Increased use of standard work for answering bed/chair alarms with the closest available person to the patient's room responding and decreased alarm response times.
  - Increased interdisciplinary collaboration to address alarms and ensure patient safety.
- Measurable targets to determine success or failure:
  - Calculate average bed alarm response times and the number of bed alarm response times greater than 30 seconds using Responder 5 data on H42/44 from 08/17/17-08/31/17 by 10/11/17.
  - Train 80% of dayshift H42/44 RNs and PCAs on standard work by 10/24/17.
  - Perform a post-observation on H42/44 1 week after initiating standard work. Respond to bed alarms in less than 60 seconds 100% of the time by 11/02/17.
  - Train all of Med/Surg units on standard work by 04/23/18.
  - Train interdisciplinary teams on No Pass Zone concept by 08/01/18.
  - Perform a post-observation 1 week after trainings complete. Respond to bed alarms in less than 60 seconds 100% of the time by 05/01/18.

DO

What tasks are planned/completed to test your countermeasure/improvement idea?

Tasks (include population/setting)	Person Responsible	Due Date	Date Completed
1. Pre-observation on H42/44 Determine high risk patients/Set alarms Calculate Bed/Chair Alarm response rates based on Responder 5 data.	Rheea	09 /20/17	09/20/17
2. Draft & Finalize standard work	Alonn	9/29/17	8/18/17
3. Rolling in-services to train 80% of H42/44 staff	Rheea	10/24/17	10/24/17

PDSA Problem Solving Tool

4. Implement standard work for answering bed/chair alarms	Rheea	10/25/17	10/25/17
5. Post-observation on H42/44	Rheea	11/02/17	11/02/17
6. Train all of Med/Surg units using in-service trainings, handouts posted and by email, and reminders (laminated signs on nursing consoles and before entering unit)	Alonn & Rheea	04/23/18	
7. Educate interdisciplinary teams on No Pass Zone using PowerPoint presentation. **Interdisciplinary Teams** ✓ Utilization Management ✓ Dietary/Nutrition ✓ PT/OT/ST (Michelle) ✓ Social Work ✓ Pharmacy ✓ Infection Control ✓ Lift Team (Justin) ✓ Eligibility (Brigida) ✓ Facilities (Tom & Brigida) ✓ Volunteers (Sasha) ○ EVS ○ MDs-Attending ○ RT ○ Food and Nutrition ○ Chaplain ○ Psych Liaisons ○ Transport ○ All RNs (Annual Update)	Alonn , Dana, & Rheea + individuals designated in the list	08/01/18	
8. Post-observations	Rheea	05/01/18	

STUDY

Summarize measurable results of test:

- What worked well? All Med/Surg units were provided education.
- What didn't work well? Difficult to tell the percentage of staff reached. Will continue efforts.
- Unintended consequences: None noted.

Constraints/Barriers/Root Causes: Staff availability for training, attention to posted/emailed education.

ACT

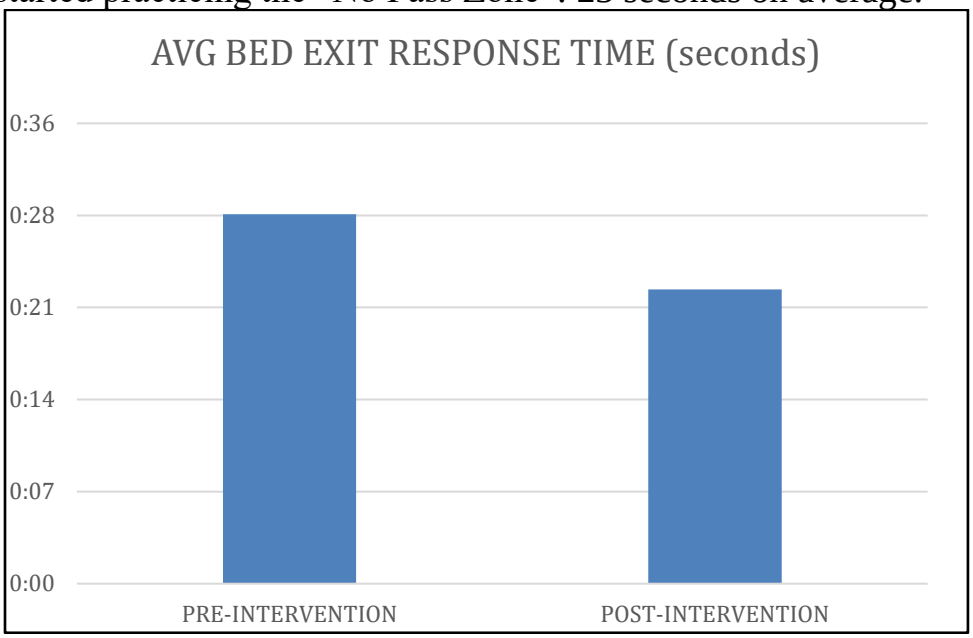
- What will you adjust, adopt or abandon in future tests?
- Unresolved barriers:
- Next steps: Will continue to follow-up

Version 1 March 6 2018

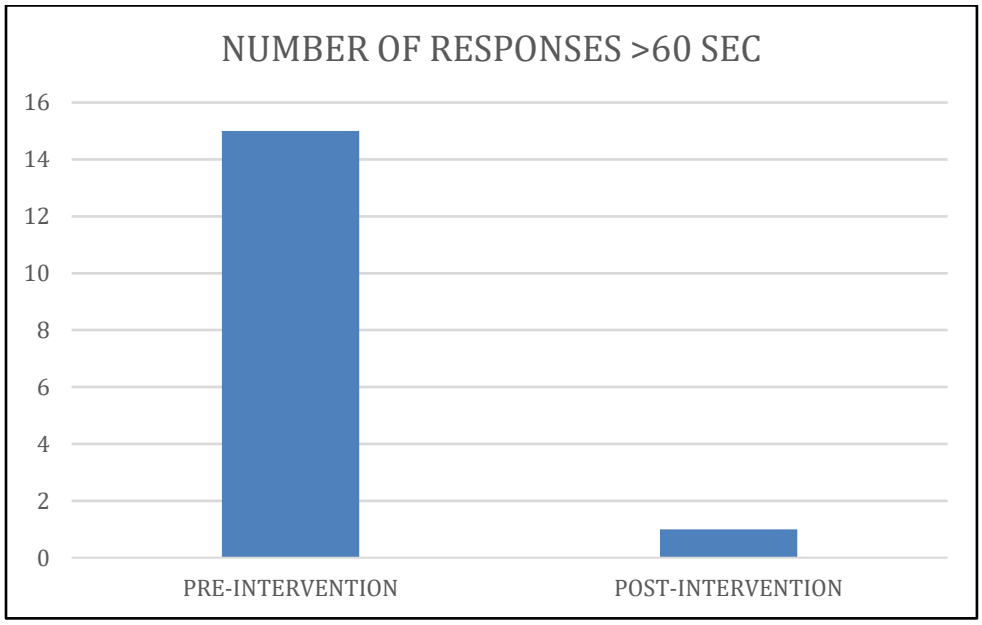
Appendix J: Lombard Unit Results

RESULTS OF "NO PASS ZONE" PDSA
OCTOBER 2017
H42/44

Bed exit response times were already < 30 sec on average, but they are even better after we started practicing the "No Pass Zone": 23 seconds on average.



The **big improvement** was in almost eliminating bed exit alarm response times > 60 seconds. After the "No Pass Zone", there was only one alarm that we took longer than 60 seconds to answer!



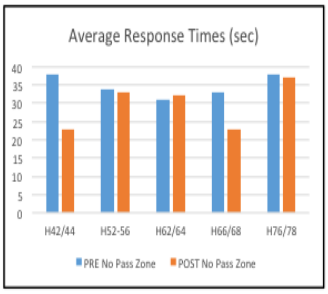
Great Work H42/44!!

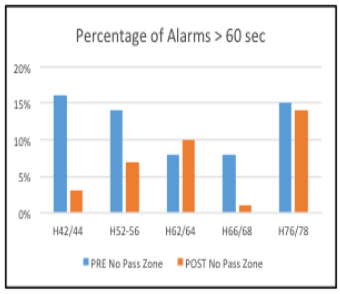
Appendix K: Countermeasure Summary

True North Metric: Safety, Quality
Target: Reduce mean bed exit alarm response times to < 30 sec and eliminate bed exit alarms > 1 min for all med/surg units after implementation of the No Pass Zone program for interdisciplinary alarm management.

Date: 6/4/18

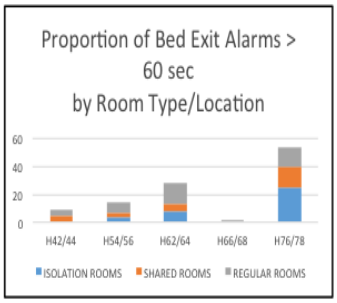
Historical Data

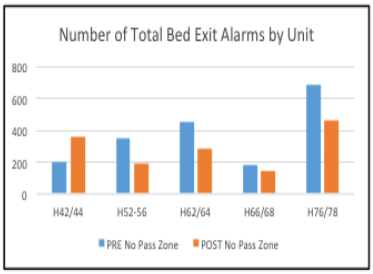




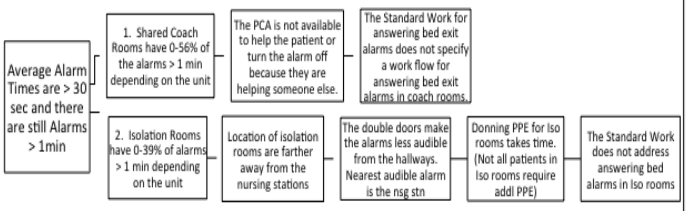
Problem: Bed exit alarm targets not met after implementation of the No Pass Zone (Average response times > 30 sec on HH54/56, H62/64, and H76/78; alarms > 1 min on all units).

Stratified Data





Top Contributor

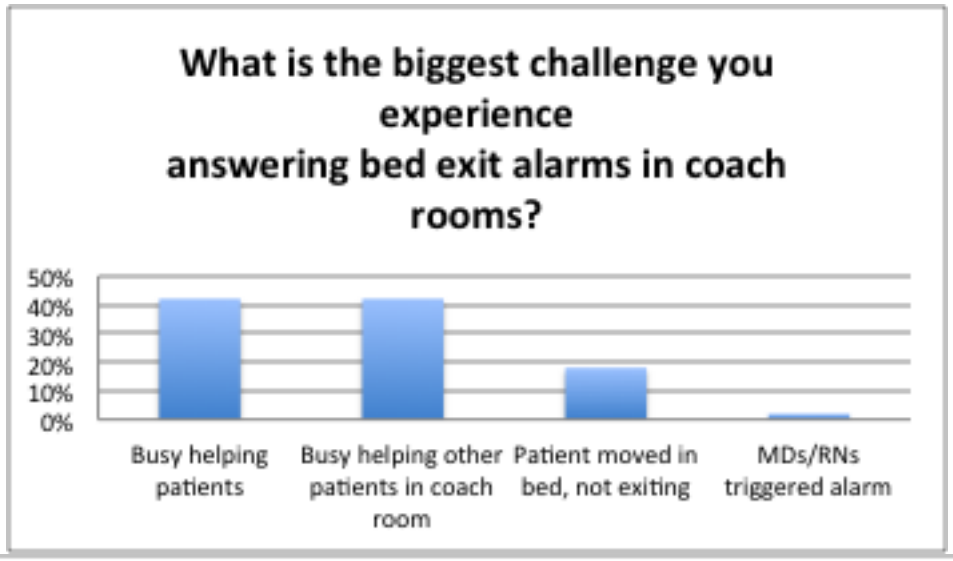


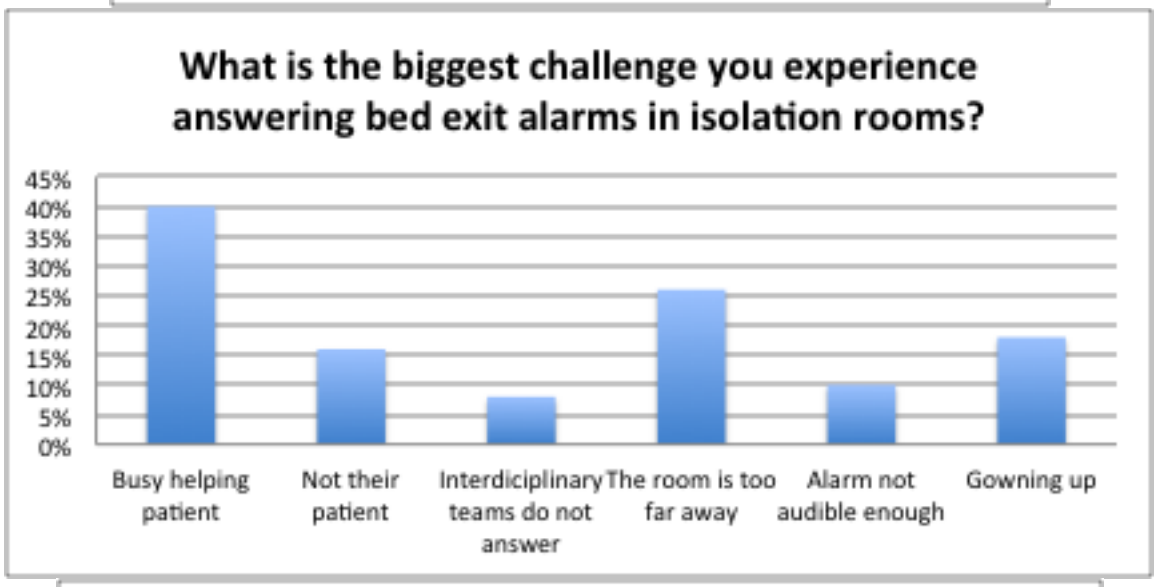
Lack of connectivity to R5 in isolation rooms is a serious risk for patients falling, but does not contribute to these data. If the bed is not plugged into Responder 5 then the bed alarm would not be captured in the R5 bed exit alarm report. These instances might be occurring in addition to the instances captured here.

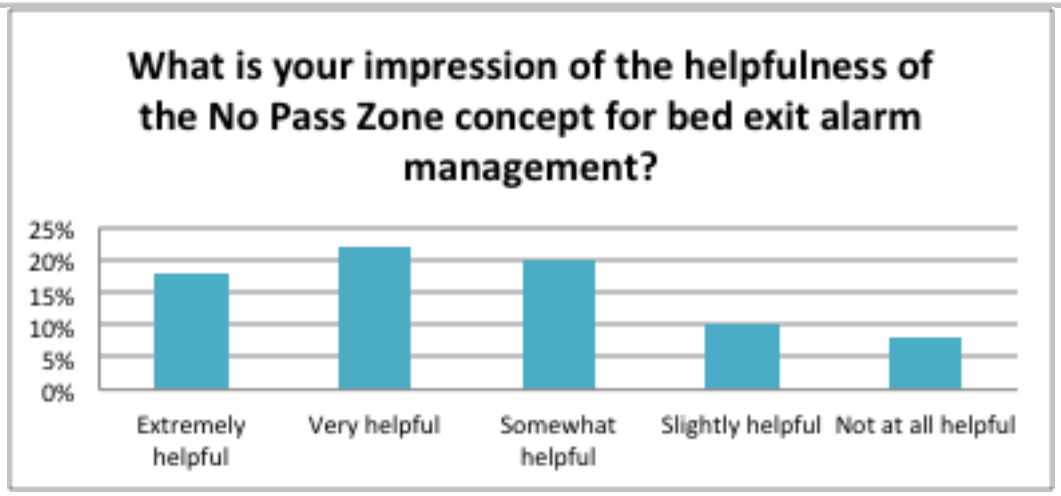
Action Plan/Countermeasures

Action	Who	When	Status
Refine the Standard Work to include workflow for answering bed exit alarms in Coach Rooms. Roll out new SW.	Alonn/Rheea	5/16/18 – 6/1/18	Complete
Survey Med/Surg PCAs and RNs about barriers to answering bed exit alarms. Use this to inform additional countermeasures.	Alonn /Rheea	5/16/18-6/1/18	Complete
Test audibility of alarm from Iso room	Alonn/Dana	5/16/18	Complete
Examine role of charge RN in assigning rooms to high falls risk patients	Alonn/Rheea	6/4/18	In Progress

Appendix L: Survey Results







Appendix M: PDSA #3

ZUCKERBERG SAN FRANCISCO GENERAL
Hospital and Trauma Center

Subject:	No Pass Zone Implementation for Fall Reduction	Start Date:	05/23/18
		Revision #:	2
Submitted by:	Alonn, Rheea	Approved by:	Falls Taskforce

PLAN

- Problem Statement: According to the Agency for Healthcare Research and Quality (AHRQ), an estimated 700,000 to 1,000,000 inpatient falls occur in the United States every year. Bed/chair alarms are often used in the unit as a tool to prevent patient falls. In an August 2017 observation of bed alarm activations in patients' rooms, it was noted that there was no designated staff member to answer alarms. This causes a delayed response time, which can result in patient falls.
- Potential Root cause(s): Unclear expectations regarding what staff members are responsible for answering alarms.
- Countermeasure/Improvement Ideas to test:
  - Draft and roll out standard work for answering bed/chair alarms, first to H42/44, then to all Med/Surg units.
  - Educate interdisciplinary teams on No Pass Zone.
  - Revise and roll out standard work to include coach and isolation room responsibilities for answering bed/chair alarms.
- Predicted result(s) of this test:
  - Increased use of standard work for answering bed/chair alarms with the closest available person to the patient's room responding and decreased alarm response times.
  - Increased interdisciplinary collaboration to address alarms and ensure patient safety.
- Measurable targets to determine success or failure:
  - Calculate average bed alarm response times and the number of bed alarm response times greater than 30 seconds using Responder 5 data on H42/44 from 08/17/17-08/31/17 by 10/11/17.
  - Train 80% of dayshift H42/44 RNs and PCAs on standard work by 10/24/17.
  - Perform a post-observation on H42/44 one week after initiating standard work. Respond to bed alarms in less than 60 seconds 100% of the time by 11/02/17.
  - Train all of Med/Surg units on standard work by 04/23/18.
  - Train interdisciplinary teams on No Pass Zone concept by 08/01/18.
  - Perform a post-observation one month after trainings complete. Respond to bed alarms in less than 60 seconds 100% of the time by 06/01/18.
  - Stratify post-observation data and edit SW to address any remaining deficiencies in alarm responses by 06/01/18
  - Train 80% of dayshift Med/Surg staff on revised standard work by 07/18/18
  - Perform post-observation one week after initiating revised standard work. Respond to bed alarms in less than 60 seconds 100% of the time by 08/31/18.

DO

What tasks are planned/completed to test your countermeasure/improvement idea?

Tasks (include population/setting)	Person Responsible	Due Date	Date Completed
1. Pre-observation on H42/44 Determine high risk patients/Set alarms Calculate Bed/Chair Alarm response rates based on Responder 5 data.	Rheea	09 /20/17	09/20/17
2. Draft & Finalize standard work	Alonn	9/29/17	8/18/17
3. Rolling in-services to train 80% of H42/44 staff	Rheea	10/24/17	10/24/17
4. Implement standard work for answering bed/chair alarms	Rheea	10/25/17	10/25/17
5. Post-observation on H42/44	Rheea	11/02/17	11/02/17
6. Train all of Med/Surg units using in-service trainings, handouts posted and by email, and reminders (laminated signs on nursing consoles and before entering unit)	Alonn & Rheea	04/23/18	04/23/18
7. Educate interdisciplinary teams on No Pass Zone using PowerPoint presentation. **Interdisciplinary Teams** ✓ Utilization Management ✓ Dietary/Nutrition ✓ PT/OT/ST (Michelle) ✓ Social Work ✓ Pharmacy ✓ Infection Control ✓ Lift Team (Justin) ✓ Eligibility (Brigida) ✓ Facilities (Tom & Brigida) ✓ Volunteers (Sasha) ✓ EVS (Sasha) ✓ Transport ✓ Psych Liaisons ✓ RT ✓ All RNs (Annual Update) ○ MDs-Attending ○ Food and Nutrition ○ Chaplain ○ Eligibility	Alonn , Dana, & Rheea + individuals designated in the list	08/01/18	Still in process with hardest to reach teams.
8. Post-observations	Alonn, Rheea	06/01/18	06/01/18
9. Create countermeasure summary using post-observation data	Alonn, Rheea	06/01/18	06/01/18
10. Revise Bed Alarm SW to include coach and isolation room responsibilities	Alonn, Rheea	06/01/18	06/01/18
11. Survey Med/Surg staff regarding bed alarm issues	Alonn, Rheea	07/18/18	07/18/18
12. Roll out revised SW to Med/Surg units	Alonn, Rheea	07/18/18	07/18/18
13. Post observations	Alonn	08/31/18	

STUDY

Summarize measurable results of test:

- What worked well? All Med/Surg units were provided education. Anecdotally, all teams were receptive to the training and agreed that the program makes intuitive sense.
- What didn't work well? Difficult to determine the percentage of staff reached. Will continue efforts.
- Unintended consequences: None noted.

Constraints/Barriers/Root Causes: Staff availability for training, attention to posted/emailed education. According to stratified post-observation data, alarm response to coach and isolation rooms have a higher proportion of long alarm times, especially on H54/56 and H76/78. We hypothesize that physical layout may be a barrier to alarm response. Designating responsibility for answering alarms in isolation and coach rooms may be contributing to long alarms there.

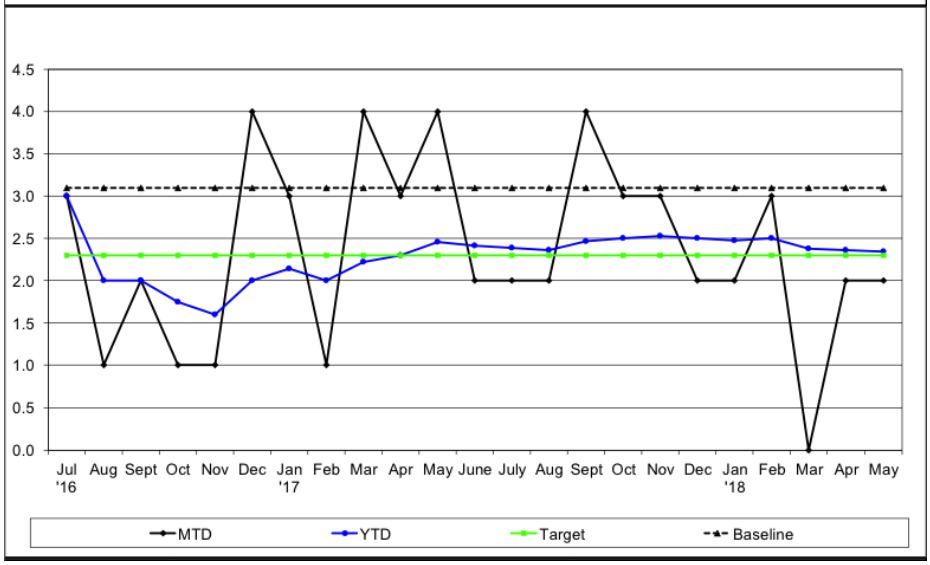
ACT

- What will you adjust, adopt or abandon in future tests? We will survey staff to determine whether there are other barriers to answering alarms that are not currently known.
- Unresolved barriers:
- Next steps: Will continue to educate nursing staff/ reach out to other departments. Will conduct a survey and then incorporate that information into future versions of the SW and/or to guide future interventions. Will educate nursing staff about the updated SW that reflects conditions in isolation and coach rooms.

Appendix N: Falls Data

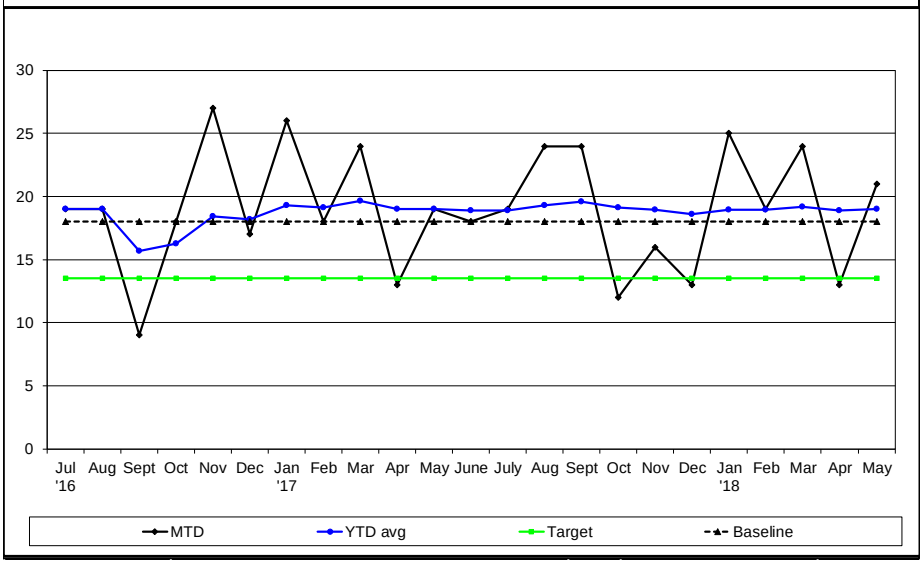
Falls with Injury

FY16-18 Scorecard:	**Med Surg**	FY16-18 Target:	**2.3**
True North:	*Safety*	Yr End % Improvement:	25.8%
Measure Of:	*#*		
Owner:	*Leslie*	FY15-16 Baseline:	**3.1**
Goal Statement:	*Limit Falls with Injury to 2.3 per month*	FY 16-18 YTD:	**2.3**
		YTD % Improvement:	24.3%



Total Falls for All Med/Surg Units

FY16-18 Scorecard:	**Med Surg**	FY16-18 Target:	**13.5**
True North:	*Safety*	Yr End % Improvement:	25%
Measure Of:	*#*		
Owner:	*Dana*	FY15-16 Baseline:	**18.0**
Goal Statement:	*Limit number of falls to 13.5 per month*	FY 16-18 YTD:	**19.0**
		YTD % Improvement:	-5.6%



Results based on new target after successfully meeting old baseline.

Appendix O: IRB Review

EVIDENCE-BASED CHANGE OF PRACTICE PROJECT CHECKLIST *

STUDENT NAME: Rheea Fe Bustos

DATE: 05/10/18

SUPERVISING FACULTY: Robin Jackson

Instructions: Answer YES or NO to each of the following statements:

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

ANSWER KEY: If the answer to **ALL** of these items is yes, the project can be considered an Evidence-based activity that does NOT meet the definition of research. IRB review is not required. Keep a copy of this checklist in your files. If the answer to ANY of these questions is **NO**, you must submit for IRB approval.

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