

Spring 5-17-2018

Multifarious Interventions to Reduce Falls on the Medical-Surgical Units

Wenjie Ying
yingwenjie1@hotmail.com

Follow this and additional works at: <https://repository.usfca.edu/capstone>

 Part of the [Nursing Administration Commons](#), and the [Other Nursing Commons](#)

Recommended Citation

Ying, Wenjie, "Multifarious Interventions to Reduce Falls on the Medical-Surgical Units" (2018). *Master's Projects and Capstones*. 756.
<https://repository.usfca.edu/capstone/756>

This Project/Capstone is brought to you for free and open access by the Theses, Dissertations, Capstones and Projects at USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. It has been accepted for inclusion in Master's Projects and Capstones by an authorized administrator of USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. For more information, please contact repository@usfca.edu.

Multifarious Interventions to Reduce Falls on the Medical-Surgical Units

Wenjie Ying, RN

University of San Francisco

Multifarious Interventions to Reduce Falls on the Medical-Surgical Units

Falls are prevalent in the hospital settings. Falls have been intractable problems that lead to high injurious and mortality rates. The average inpatient falls across healthcare settings in the U.S. range from 2.2 to 17.9 per 1000 patient days, and up to 10 % of the inpatient falls resulted in various degrees of injuries (Rowe, 2013). Healthcare organizations and patients suffered sizable economic losses caused by fall-related events (Barett, Vizgirda, & Zhou, 2017). Rowe (2013) suggests that 92% of falls are avoidable if clinicians take comprehensive preventative measures against relevant internal and external risk factors. The regulatory agencies, such as the Joint Commission and the Centers for Medicare and Medicaid Services, consider falls as the leading indicators to measure the quality of care (Barett, Vigirda, & Zhou, 2017; Rowe, 2013).

In the 236-bed regional trauma center, leaders continued expressing the concerns for the rising number of inpatient falls since December 2017. Based on the quality report on the True North Metric dashboard, the Medical-Surgical fall rates were 3.46 and 3.22 per 1000 Patient Days in 2017 and 2018 respectively. The results do not look good as the fall rates in both years were 2% above the benchmark. The hospitals host mixed patient population with various socioeconomic, educational, ethical, and cultural backgrounds. Most patients come from Oakland and the neighboring cities. (Alameda County Medical Center, 2011). In 2017, all staff in the Medical-Surgical department attended the eight-hour training session regarding updated fall prevention protocols, fall prevention kits, interventions, the process of occurrence report, and mobility assessment. At the unit level, managers had implemented daily leadership rounding, hourly rounding, routine audits, and bedside shift report to promote patient satisfaction and ensure high quality of care. Even with many proactive leadership initiatives to improve patient care quality, patient falls continued occurring. The total inpatient falls in January and February

were sixteen, and eight of which happened on the Medical-Surgical floor. The cumulative fall incidents have triggered systemwide concerns for patient safety, and multilevel leaders were calling on people to use evidence-based approaches and clinical expertise to solve problems collectively.

The 56-bed Medical-Surgical department will be the site for the CNL project. The department hosts patients from diverse ethical and socioeconomic backgrounds. Patients' ages range from 18 to 101 years old. Based on the observation, twenty-nine percent of the patients are above 60 years old. The units have eight rooms that design for patients with high fall risks. For patients with super high-risk profiles, physicians and nurse leaders will provide a sitter as an extra layer of protection. All data collected from observations, interviews, survey, HCAHPS reports, and the Truth Metrics fall dashboards will help with identifying performance gaps and areas for improvement.

Clinical Leadership Theme

In response to the recurring problems of inpatient falls, all levels of leaders have reached a consensus on making systematic changes in fall prevention practices. Reducing falls is a dynamic process as the causes of falls are multifactorial (Rowe, 2013). To avoid confusion, leaders must continue communicating, motivating, monitoring, and involving group decisions in any planned activity (Wojciechowski, Pearsall, Murphy, & French, 2016). Wojciechowski et al. (2016) indicate that it is crucial for clinical leaders to understand the evolving nature of change in the complex healthcare environment. Clinicians integrating the concept of transformational leadership into practices often demonstrate positive impacts on transforming the organizational culture, teamwork behaviors, work ethics, and the collaborative activities among the multidisciplinary team (Ducharme, Bernhardt, Padula, & Adams, 2017).

In the planning stage, leaders should strive to inspire all stakeholders to share their visions and develop general agreement on the common goal of the project. Gathering interprofessional wisdom in creating bundles of fall prevention strategies to prevent falls is congruent with the national purpose to promote patient safety (Ganz et al., 2013). The aim of the CNL project is developing multicomponent strategies to address various fall-related risk factors and reduce falls on the Medical-Surgical unit. The process will begin with identifying the patient's fall risk factors upon admission and end when doctors discharge the patient from the hospital. The expected results will include reduced preventable falls, shortened staff responsiveness to call lights, increased patient satisfaction, improved patient mobility, and enhanced staff's understandings of essential fall risk factors and fall prevention strategies. Creating solutions to prevent falls is critical now because falls lead to adverse health outcomes and increased medical expenditures (Silva & Hain, 2017).

Statement of the Problem

Since December 2017, the number of falls has increased dramatically in the inpatient settings. Executive leaders established multilevel fall committees to seek input from interdisciplinary professions to look for the causes. Based on the CalNOC report from the quality department in January and February 2018, there were twenty-four falls in all hospital locations. Eight falls happened on the general Medical-Surgical units. Out of eight patients who fell, two resulted in injuries. Since last year, leaders had updated fall prevention policies, created the bundle of fall prevention kits, designed high visibility rooms equipped with low beds and double-side mats for patients with high risk for falls, hosted 8-hour educational session regarding fall prevention for all nurses on the Medical-Surgical units, and coached staff for hourly rounding. In the fall committees, other leaders recommended to provide extra education to nurses

regarding fall prevention strategies, develop a support system to improve patient mobility and coordinate with pharmacists to minimize medication-induced fall risks. Rowe (2013) indicated the importance of assessing the patient and environment for associated fall risk factors. Then, developing a fall prevention plan consisting of multiple strategies to tackle various fall-related factors will have a higher chance to prevent falls (France et al., 2017). The surge of patient falls triggered the needs to investigate the causes further. Hospital leaders had taken the lead in crafting the fundamental fall prevention policies. The front-line nurses require comprehensive education on fall prevention interventions, patient safety handling techniques, and side effects of specific medications.

Project overview

After identifying the problems and establishing the purpose of the project, the ideas were shared with leaders and staff on the Medical-Surgical floor to gain initial buy-ins for the project. The project will focus on educating nursing staff on multicomponent fall prevention strategies, components of hourly rounding, fall risk factors, side effects of specific groups of medications, and the mobility-algorithm decision-making tools. CNAs will receive separate training on hourly rounding, communication, fall prevention protocols, patient engagement in mobility training. The specific aim includes reducing falls on the Medical-Surgical floor by 50%, reinforcing nurses' adherence to fall prevention protocols, providing in-services to nurses and CNAs on multicomponent fall prevention strategies, helping RNs understand the adverse effects of specific medications, and introducing the evidence-based mobility algorithm by May 14, 2018. The specific aim is relevant to the global aim. The difference is the specific aim delineates measurable outcomes after executing a plan of actions by the defined deadline (Nelson, Batalden, & Godfrey, 2007).

Methodology

Rationale

The project follows the cycles of plan, do, study, and act (PDSA) to test, monitor, and refine the change process (Nelson, Batalden, & Godfrey, 2007). The microsystem assessment includes collecting relevant data and analyzing patterns through the True North Metrics dashboard, audits, HCAHPS reports, observations, and the survey to identify areas for improvement. The project incorporates various assessment methods to map out problems in the process of patient care. The root-cause analysis fishbone diagram lists possible causes of inpatient falls under five domains: patients, process, environment, knowledge, and resources (Appendix A). The patient's health conditions, low compliance with fall protocols among staff, inconsistency of hourly rounding, poor hand-off communication about the patient's mobility status, delayed in staff responsiveness, lack of communication with medications, decreased knowledge in mobility status, inadequate resources, and chronic staffing shortage, are contributing factors for increased patient falls on the Medical-Surgical units. The content of fall prevention strategies will include evidence-based guidelines and information that specially designed to tackle the problems identified in the fishbone diagram. The flowchart displays the whole process of fall prevention practice from the time of the patient's admission to discharge (Appendix B). Drawing the map helps to look for deficient areas, errors, and skipped steps in various phases of patient care. The practice provides opportunities to refine the process of improvement. The stakeholder analysis assesses the degree of shared interests from other entities (Appendix C). The analysis indicates that the project gains general support from most of the multidisciplinary team involved in the fall prevention activities. Having multilevel leaders and employees embrace change to promote the culture of safety will optimize patient's outcomes,

transform staff's behaviors and nurture positive work ethics (Campion & Famolaro, 2018). The SWOT analysis (Appendix D) systematically analyzed the potential impact of the internal attributes of the organization and variables from the external environment on the project (Marquis, & Huston, 2009). On the good side, all levels of leaders had implemented systemwide fall prevention protocols to promote patient safety. Even though the problems, such as budget limits, staffing shortage, and lack of resources etc., persist in the organization, leaders see opportunities for fall reduction if interdisciplinary team work collaboratively to utilize evidence-based sources in developing comprehensive fall prevention strategies. The process of SWOT analysis helps with setting achievable goals and objectives in the defined timeline. Overall, the SWOT analysis and root-cause analysis provide a comprehensive overview of various contributing factors for falls.

To identify fall-related risk factors and look for areas for improvement, it is crucial to exam the microsystem environment systematically. Compared to the data in December 2017, the number of inpatient falls only declined slightly from 27 to 24. From all assessment, the investigation revealed three areas that required attention. First, the 30-patient audits showed sixty-nine percent of nurses' compliance with applying the bundle of fall prevention kits to patients with moderate to high risk for falls. Second, most staff did not feel confident to mobilize the patient based on the assessment findings. Third, the quarterly HCAHPS revealed delayed staff responsiveness to call lights and poor communication of medications between the nurse and the patient.

Following the assessment in the microsystem, a survey (Appendix E) was developed to further investigate nurses' knowledge of medications and perceptions of the patient's mobility status. Out of twenty-nine responses, sixty-eight percent of nurses feel less confident in

ambulating or transferring the patients. Seventy-six percent of them considered the communication about the patient's mobility status during the shift change as vague. Forty-five percent of them claimed not knowing the patient's mobility baseline. Forty-one percent of staff felt frustrated about the lack of support on the floor and required additional education to hone the skills of safe patient handling and mobility assessment. Sixty-seven percent of RNs claimed good understanding of the side effects of specific medications that may impose higher risks for falls. Poor communication about the patient's fall risks among nurses and other interdisciplinary teams will delay effective care and compromise patient safety (Murphy, 2013). Tzeng, Hu, and Yin (2016) are certain that improved staff responsiveness to call lights and adequate staffing are likely to decrease falls. Majority of nurses thought that additional education on fall prevention strategies and a standardized clinical guideline would help them to customize the plan of care and choose interventions to improve the patient's mobility functions. Rowe (2013) states that strengthening training, updating staff with evidence-based fall prevention tools, engaging patients in fall prevention programs, and communicating with nurses about the audits, benchmark performance, and fall risk indicators will promote the culture of safety.

Cost-Effective Analysis

Falls, in general, are costly. The estimated annual cost for falls is about 31 billion dollars (Centers for Disease Control and Prevention, 2018). Silva (2017) predict that 67.7 billion healthcare dollars will be spent on fall-related injuries in 2020. Treating each injurious fall costs around 30,000 dollars (Centers for Disease Control and Prevention, 2016). Each inpatient fall will delay the patient's discharge for up to 6 days and add extra costs of \$14,000 (France et al., 2018). Falls with no or minor injury will also cost around \$3,500 (Quigley & White, 2013). With the new regulations from the Centers for Medicare and Medicaid Services, the hospital may have

pay for the costs of diagnoses, interventions, prolonged hospitalization, and treatment associated with preventable fall-related injuries (France et al., 2017). In Appendix F, is a list of fall-associated costs, educational spending, and the net saving after the educational program in the cost-effective analysis diagram. There were six falls with no injury and two falls with injuries from January to February 2018. Each additional day of hospital stay will cost around \$8,184 per day (Inpatient summary report, 2015). By adding extra six days of hospital stays and other treatment costs, the total costs for eight falls are \$147, 208. In the diagram, calculated is the total costs of in-services, labor time, and educational materials for 99 RNs, 37 CNAs, and all the housekeepers. The estimated price for color-printed teaching materials is \$149. The duration of in-services is one-hour and a half-hour for RNs and CNAs respectively. The average RN's hourly pay is \$64, and the CNA's is \$28. Most nurses are part-time and full-time employees. The total in-services will cost \$6,336 for RNs and \$518 for CNAs. The average CNL's salary is \$8,705 monthly and \$104,467 annually (Glassdoor, 2017). Finally, the cost for the entire educational project will be \$33,118. By May 14, 2018, if the fall prevention program helps to reduce falls by 50% with no reported injuries, the projected savings will be significant. According to the diagram in Appendix E, after subtracting the educational cost, the net saving before and after implementing the program will be \$100,090.

Lewin's Change Theory

The project incorporates the Lewin's change theory. The Lewin's change theory consists of three steps, "unfreezing," "changing/moving," and "refreezing" (Wojciechowski et al., 2016). The theory is widely used by many nurses to monitor the process of improvement at the point of care. In the unfreezing stage, leaders repeatedly communicate the vision with staff, define the severity of the problems, and delineate the needs for change (Wojciechowski et al., 2016). In the

second phase of Lewin's theory, leaders diligently discover new approaches or interventions based on the needs assessment to promote improvement (Wojciechowski et al., 2016). In the last stage, leaders and workers appreciate the positive outcomes but also become cautious to maintain the new behaviors and sustain the change (Wojciechowski et al., 2016).

Data Source/Literature Review

The PICO framework was adopted to search and review relevant articles. The PICO elements were defined as follows. P (problem): Increased patient falls on the Medical-Surgical floor. I (intervention): the implementation of multicomponent fall prevention strategies, which incorporate the staff education on mobility assessment, side effects of specific medications, components of hourly rounding, and the efficient model of communication. C (Comparison): Other departments without the implementation of fall prevention program. O (Outcome): Succeed in fall reductions in the Medical Surgical department. Comparing other departments without the multifaceted prevention strategies, will the Medical-Surgical floor have decreased fall rates after implementing the bundle of fall prevention strategies with additional staff education on mobility assessment, medications, hourly rounding, and model of communication?

According to the assessment of the units, the identified fall risk factors were used as potential keywords to search related articles through CINAHL complete database. While seeking more keywords "fall prevention" together with other keywords, "mobility," "toileting," "exercise," "medication," "rounding," and "communication," numerous peer-reviewed articles were found from 2013 to 2018. After careful screening, six articles will mostly support the aim of my project.

Barrett, Vigirada, and Zhou (2017) summarized a 3-month descriptive study conducted in a Magnet Healthcare System. The study surveyed five hundred and three RNs and three hundred

and ninety-six PCTs. The purpose was to test whether RNs and PCTs on the Medical-Surgical floors had different understandings of patients' fall risk factors while helping them with toileting. The study concluded that RNs and PCTs had different understandings of patients' associated risk factors, including medications, secondary diagnoses, and toileting. Thus, it is vital for RNs to involve PCTs in the plan of care and communicate with them consistently regarding the patient's conditions, mobility status, side effect of medications, and precautions (Barrett et al., 2017). The current project will include education for RNs, CNAs, and sitters. The study findings support the goal to improve the quality of communication among RNs, CNAs, and sitters.

Frances et al. (2017) described a pilot study conducted on three acute patient care units at the 649-bed Vanderbilt University Medical Center in 2014. The quality improvement project used the design of a pre-post study to test whether the multifaceted fall prevention strategy could target various types of fall risk factors and reduce falls on three acute patient care units with total 86 beds. The authors indicated that most falls were preventable with early detection of fall risk factors. Clinicians should assess fall risks by reviewing patient's clinical conditions, examining the environment, monitoring toileting patterns, observing activity levels, tracking the staffing level, and evaluating medications (France et al., 2017). The finding of the pre-post study concluded the effectiveness of fall prevention interventions, which contain strategies to improve leadership collaboration, increase the quality of rounding, enhance staff education, and promote environmental safety (Frances et al., 2017). This research indicated the importance of developing fall prevention strategies that will involve multicomponent interventions to tackle various risk factors among assessed populations and environment.

Lee and Kim (2017) conducted a systematic, meta-analysis review over six thousand nine hundred and ninety randomized control trails before December 28, 2014, through five research

databases. The reviewers selected twenty-one published articles based on multiple inclusion criteria. Five thousand five hundred and forty 82.6-year old people from various nursing facilities in both experimental and control groups participated in selected studies. The authors aimed to find the relationship between exercise and fall reductions. The results found a positive association between fall reduction and exercise involving mobility training with the assisted devices on strength, gait, balance, and body functions. The finding indicated that combining fall prevention strategies with mobility interventions would reduce falls among elderly populations (Lee & Kim, 2017). The research highlights the benefits of using mobility interventions as part of the fall prevention strategies.

Park, Satoh, Miki, Urushihara, and Sawada (2015) systematically reviewed 36 studies in the MEDLINE and CINHAI databases from May 2008 to April 2013. The authors aimed to find out the association between poly-medications and fall risks. The results indicated that older people taking multiple medications at the same time had higher risks for falls. Psychotropic agents, antidepressants, sedatives, sleeping aids, and hypnotics could all trigger the risks for falls among elderly. The study suggests the importance of considering medication factors when developing the plan for fall preventions.

Silva and Hain (2017) described a fall prevention project in a 408-bed Rehabilitation hospital in 2012. The project followed the PDSA model. Before implementing the project, the educators conducted a root-cause analysis for 65 patients of all age groups. The multidisciplinary team leaders created action plans based on identified risk factors from the root-cause analysis. Clinicians should thoroughly assess fall risk factors, personalize the plan of care, and apply multifaceted fall prevention strategies to reduce falls (Silva & Hain, 2017). The study indicates

that lowering falls require a clinician to use both clinical judgment and evidence-based tools to identify risks, customize care, monitor process and evaluate outcomes.

Wilson, Richards, Slavin, Wiechec, Jagow, Gomez, and Perlaki (2015) narrated the process of staff designing and implementing the mobility algorithm and communication tool on four patient care units in a 461-bed Beaumont hospital. The project aimed to find out whether applying the mobility algorithm and visual communication tool had a positive effect on patients' mobility functions. After six months, the findings from pre-surveys and post-surveys indicated that streamlined communication about the patient's mobility status and having standardized clinical decision-making tool boosted nurses' sense of confidence to exercise the patient and reduce fall rates (Wilson et al., 2015). The project emphasizes the importance of having clear communication about the patient's mobility baselines among patient care team. The results of the project will support one of my objectives to reduce falls by improving interprofessional communication patterns.

Timeline

According to the timeline (Appendix G), the fall prevention project will start on January 23, 2018, and end on May 11, 2018. From January 23, 2018, to March 1, 2018, the initial preparation focused on engaging stakeholders, exchanging ideas with others, receiving feedbacks, collecting data from various sources, reviewing the trends of fall data, searching multiple pieces of literature, conducting surveys, and analyzing the audits. By March 2018, the assessment of the process map, root-cause analysis, stakeholders analysis, and staff's knowledge and educational needs through the Google survey will be completed. The initial in-service for RNs happened on February 8, 2018. The in-service helped nurses to learn how to navigate the EMR system, see the overview of patient's conditions and look for the notes of ancillary

professions. Then, the electronic survey regarding nurses' perceptions of the patient's mobility status was sent through the work email to all staff in the department. On March 1, 2018, twenty-nine responses were received. Based on the survey results, the educational materials were developed for both RNs and CNAs from Feb 15, 2018, to March 9, 2018. According to my assessment, ninety-three percent of the Stryker beds missed the communication cords, which can alert all nurses' stations when the patient gets out of bed and triggers the bed alarm. Therefore, two sessions of in-services for housekeepers about how to use and maintain the Stryker bed communication cords had been conducted.

By all accounts, educational materials were developed, and RNs were taught about the components of hourly rounding (Appendix H), common fall risk factors including medication side effects (Appendix I), and the use of the mobility algorithm (Appendix J). Besides, for CNAs, a brochure was created with focuses on hourly rounding, standard fall prevention strategies, and the efficient model of communication. The education about the multifaceted fall prevention strategies for RNs and CNAs will begin on March 14, 2018, and end on May 3, 2018. During the period, the data of falls will be collected continuously from the fall dashboard, and the new occurrence will be analyzed individually. Finally, outcome evaluation will start on April 14, 2018, and end on May 11, 2018, to measure the effectiveness of the project.

Expected Results

After months of collaborative work, the following actions, collecting fall data from the fall dashboard, reviewing the audits, analyzing the HCAHPS scores, and comparing survey results, will be conducted to assess the effectiveness of the project. The project will be considered as successful if the outcomes meet the following objectives. The unit will have 50% of fall reductions by May 11, 2018. 100% of nurses will comply with the fall prevention protocols and use 4 Ps to

address patient's needs during the hourly rounding. More than 90% of the nurses will achieve better understandings of the fall risk factors and medication-associated risks. The scores of staff responsiveness and medication communication in the HCAHPS report will increase up to 10% below the 2018 target goal. Finally, in the post-survey, the assessment will focus on what degree the mobility algorithm decision-making tool has helped nurses to decide on mobility interventions. The expected outcomes also include 90% of nurses rating higher on staff communication about the patient's mobility status. Overall, achieving and sustaining the optimal result of fall reductions requires sophisticated clinical knowledge, evidence-based guidelines, careful planning, cultural change, and collective efforts from all (Silva & Hain, 2017).

Nursing Relevance

Developing effective fall prevention interventions is a complicated process. The success of fall reduction cannot rely on a single preventative method. It is imperative for nurses to detect the risk from early on by understanding the fall risk factors, working collectively to prevent falls based on the unique patient's conditions and collaborate with interdisciplinary teams to personalize the plan of care (Silva & Hain, 2017). Developing multicomponent fall prevention strategies requires inputs from all stakeholders (Ganz et al., 2013). Nurses play essential roles in protecting patient safety. Nurses equipped with advanced knowledge in fall prevention strategies will be able to utilize evidence-based fall prevention tools to assess risks, instill preventative measures, and coordinate services across disciplines to improve patient outcomes.

Summary Report

In response to high fall rates in the inpatient settings, multidisciplinary leaders gathered monthly in multilevel fall committees to review fall data, discuss root-cause analyses of multiple fall incidences, renew policies, and create ideas to try new improvement. The fall rates in

December 2017 (3.97) and January 2018 (3.27) stayed above the hospital target goal of 2 falls per 1000 patient days. Out of sixteen inpatient falls from January to February 2018, six non-injurious and two injurious falls happened on the 56-bed Medical-Surgical floors. In HCAHPS performance, the Staff responsiveness in February and communication with meds in January were 16% and 15% below the target goals respectively (Appendix L). The above results brought up a sense of urgency to create a vision for change on the Medical Surgical floors. The project adopted the PDSA cycles and used the Lewin's change theory to push forward the change process. It started with engaging all stakeholders and gaining leadership support. The next step involves dissecting information and analyzing problems based on data collected from the microsystem assessment, survey, reports of the QI department, root-cause analysis, and process map. The SWOT, which systematically reviewed the organization's intrinsic and extrinsic attributes, helped with the creation of achievable goals for the project. Based on above information, the global aim of the project is to reduce fall through staff education on multicomponent fall prevention strategies, reinforcing compliance with fall bundles, streamline hand-off communication, improve knowledge of patient mobility and promote understanding of medications' side effects. The objectives after the staff education include reducing fall by 50%, enhancing compliance with fall bundles to 100%, increasing confidence in patient mobility among ninety percent of nurses, and improving the scores of staff responsiveness and communication with meds in HCAHPS survey by May 14, 2018.

In the process of finding supporting evidence, the PICO method was adopted to search articles with relevant information on fall prevention strategies, patient mobility improvement, risk factors associated with medications through CINAHL complete. Ten pieces of articles were selected through the searching process. The review of six kinds of literature supported the

purpose and objectives of the project. Various tools in the fall prevention toolkit from AHRQ were widely used during the stage of planning, implementation, and evaluation.

The project strictly followed the projected the timeline (Appendix G). Most RNs and CNAs had received the education on fall prevention. The ones on leave or vacations during the period will receive training in the future sessions. During the implementation, clinical educators also provided extra in-services regarding the use of Stryker bed cords, which will alert the consoles in all nurses' stations when the bed alarm is off.

The evaluated data after the stage of implementation was positive. After a slight increase in patient falls in March, the number of falls dropped dramatically to one in April (Appendix K). Compared to the prior fall data in January, the units so far had achieved 80% of fall reductions. The random audits of thirty patients in April reflected 100% of nurses' adherence to the application of fall prevention bundles. The report from the QI department in March also indicated 92.6% of compliance to the fall prevention bundle among twenty-seven patients on the Medical-Surgical units. The compliance rate based on personal audits had increased from 69% in January to 100% in April. In the most recent HCAHPS report, the score of staff responsiveness reached 3% above the target goal. The rate of communication with meds surpassed the target goal by 20% (Appendix L). In thirty-three responded post-educational surveys (Appendix M), RN staff's confidence in patient mobility increased from 31% to 81%. The rate of staff communication about the patient's mobility status during shift report increased from 25% to 85%. One hundred percent of RN who conducted the survey indicated a greater understanding of medications' side effects. Overall, the education on multicomponent fall prevention strategies, leadership engagement, and interdisciplinary collaborations had a positive impact on fall

reductions. Even though the rate of staff's confidence in patient mobility and hand-off communication did not reach the objectives, the overall results had an upward trend.

Due to limited time, it is hard to evaluate whether the results will be sustainable. The plan in the future will include working collaboratively with leaders to overcome existing barriers, such as budget limitations, staffing shortage, and lack of resources to help RNs with patient mobility improvement. So far, the Stryker bed cords had been installed in rooms designed for high-fall risk patients. The executive leaders are planning on progressively establishing Stryker bed cords in all patients' rooms, linking call lights to nurses' phones, developing mobility improvement plans, and reinforcing patient and family education on fall prevention. Leaders will collaborate with nurse educators to incorporate fall prevention education in new employee orientation, traveler orientation, and annual nursing skill competency. Mid-level managers will work with members of the unit-based council to track the progress of fall prevention, monitor fall data, search for evidence-based information, and address emerging problems. Leaders should communicate with staff in shift huddles regarding the post-fall debriefing or updated information on fall prevention.

References

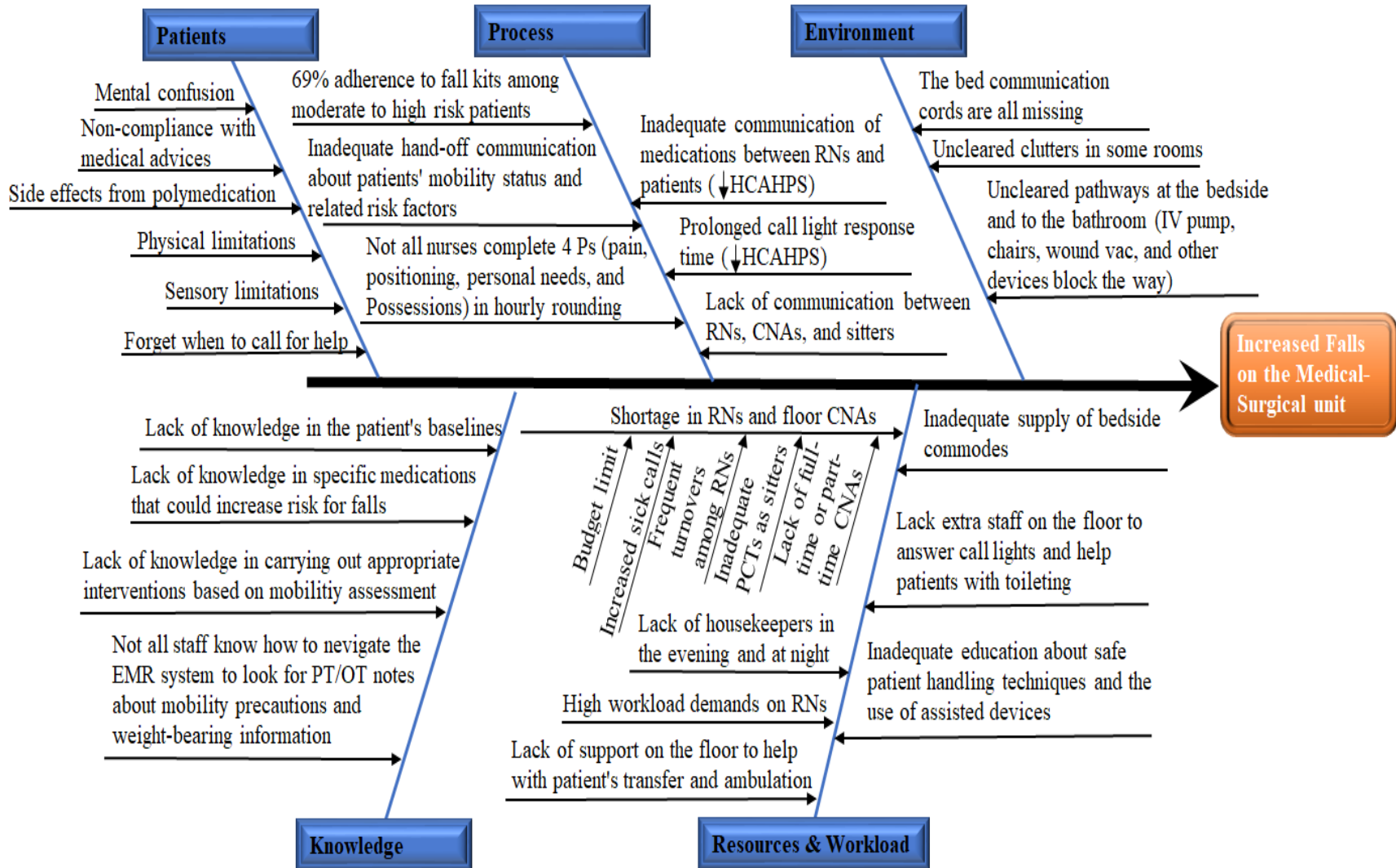
- Alameda County Medical Center. (2011). Alameda county medical center delivery system reform incentive pool proposal for the California section 1115 waiver demonstration years six-ten. Retrieved from http://www.dhcs.ca.gov/Documents/1_ACMC%20DSRIP%20Proposal.pdf
- Barrett, M. B., Vizgirada, V. M., & Zhou, Y. (2017). Registered nurse and patient care technician perceptions of toileting patients at high fall risk. *MEDSURG Nursing, 26*(5), 317-323.
- Campione, J., & Famolaro, T. (2018). Promising practices for improving hospital patient safety culture. *Joint Commission Journal on Quality & Patient Safety, 44*(1), 23-32.
doi:10.1016/j.jcjq.2017.09.001
- Centers for Disease Control and Prevention. (2016). Costs of falls among older adults. Retrieved from <https://www.cdc.gov/homeandrecreationalafety/falls/fallcost.html>
- Centers for Disease Control and Prevention. (2017). Important facts about falls. Retrieved from <https://www.cdc.gov/homeandrecreationalafety/falls/adultfalls.html>
- Ducharme, M. P., Bernhardt, J. M., Padula, C. A., & Adams, J. M. (2017). Leader influence, the professional practice environment, and nurse engagement in essential nursing practice. *Journal of Nursing Administration, 47*(7/8), 367-375.
doi:10.1097/NNA.0000000000000497
- France, D., Slayton, J., Moore, S., Domenico, H., Matthews, J., Steaban, R. L., & Choma, N. (2017). A Multicomponent fall prevention strategy reduces falls at an academic medical center. *Joint Commission Journal on Quality & Patient Safety, 43*(9), 460-470.
doi:10.1016/j.jcjq.2017.04.006

- Ganz, D. A., Huang, C., Saliba, D., Shier, V., Berlowitz, D., ... & Neumann, P. (2013). Preventing falls in Hospitals, a toolkit for improving quality of care. *Agency for Healthcare Research and Quality*. Retrieved from <https://www.ahrq.gov/sites/default/files/publications/files/fallpxtoolkit.pdf>
- Glassdoor. (2017). Clinical nurse leader salaries. Retrieved from https://www.glassdoor.com/Salaries/clinical-nurse-leader-salary-SRCH_KO0,21.htm
- Inpatient summary reports. (2015). *OSHPD*. Retrieved from <http://gis.oshpd.ca.gov/atlas/topics/use/inpatient#charts>
- Lee, S. H., & Kim, H. S. (2017). Exercise interventions for preventing falls among older people in care facilities: A meta-analysis. *Worldviews on Evidence-Based Nursing*, 14(1), 74-80. doi:10.1111/wvn.12193
- Marquis, B. L., & Huston, C. J. (2009). *Leadership roles and management functions in nursing, theory and application*. Philadelphia: Lippincott Williams & Wikins.
- Murphy, B. (2013). Mobility/activity circles: A quality improvement effort to reduce falls. *MEDSURG Nursing*, 22(6), 365-369.
- Nelson, E. C., Batalden, P. B., & Godfrey, M. M. (2007). *Quality by design*. San Francisco: Jossey-Bass A Wiley Imprint.
- Park, H., Satoh, H., Miki, A., Urushihara, H., & Sawada, Y. (2015). Medications associated with falls in older people: systematic review of publications from a recent 5-year period. *European Journal of Clinical Pharmacology*, 71(12), 1429-1440. doi:10.1007/s00228-015-1955-3

- Quigley, P. A. & White, S. V. (2013). Hospital-based fall program measurement and improvement in high reliability organizations. Retrieved from <http://nursingworld.org/MAINMENUCATEGORIES/ANAMARKETPLACE/anaperiodic/anap/ojin/tableofcontents/vol-18-2013/no2-May-2013/Fall-Program-measurement.html>
- Rowe, R. J. (2013). Preventing patient falls: What are the factors in hospital settings that help reduce and prevent inpatient falls? *Home Health Care Management & Practice*, 25(3), 98-103. doi:10.1177/1084822312467533
- Silva, K. B., & Hain, P. (2017). Fall prevention: Breaking apart the cookie cutter approach. *MEDSURG Nursing*, 26(3), 198-213.
- Tzeng, H. M., Hu, H. M., & Yin, C. Y. (2016). Understanding inpatient injurious fall rates using medicare's hospital compare data. *MEDSURG Nursing*, 25(4), 255-269.
- Wilson, C., Richards, N., Slavin, B., Wiechec, J., Jagow, D., Gomez, S., & Perlaki, B. (2015). Nursing staff perceptions and fall rates with a quality improvement project for mobility screening and written bedside communication: A pretest-posttest design. *American Journal of Safe Patient Handling & Movement*, 5(2), 55-65.
- Wojciechowski, E., Pearsall, T., Murphy, P., & French, E. (2016). A case review: Integrating lewin's theory with lean's system approach for change. *Online Journal of Issues in Nursing*, 21(2), 1. doi:10.3912/OJIN.Vol21No02Man04

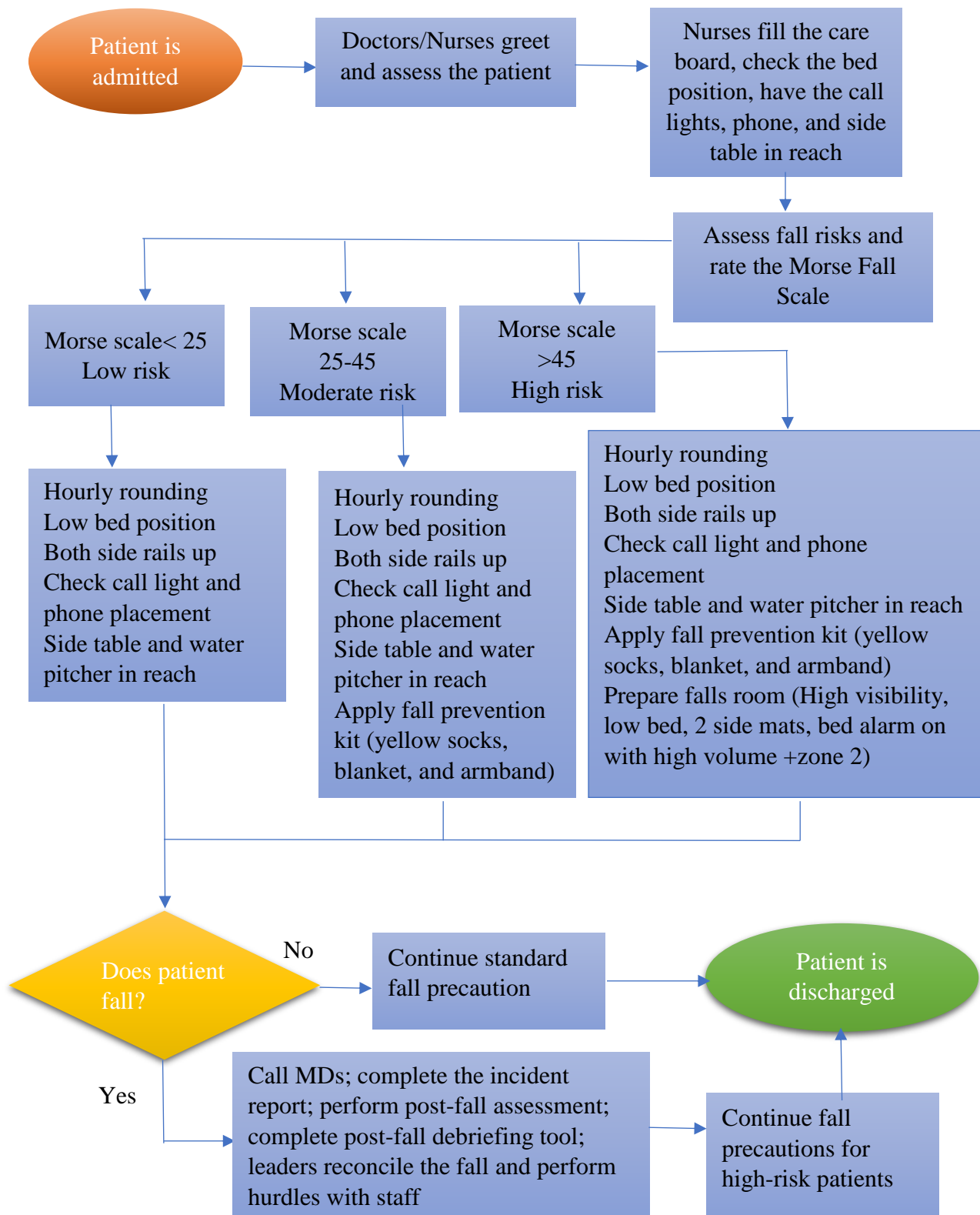
Appendix A

Root-Cause Analysis Fishbone Diagram



Appendix B

Process Map



Appendix C

Stakeholders Analysis

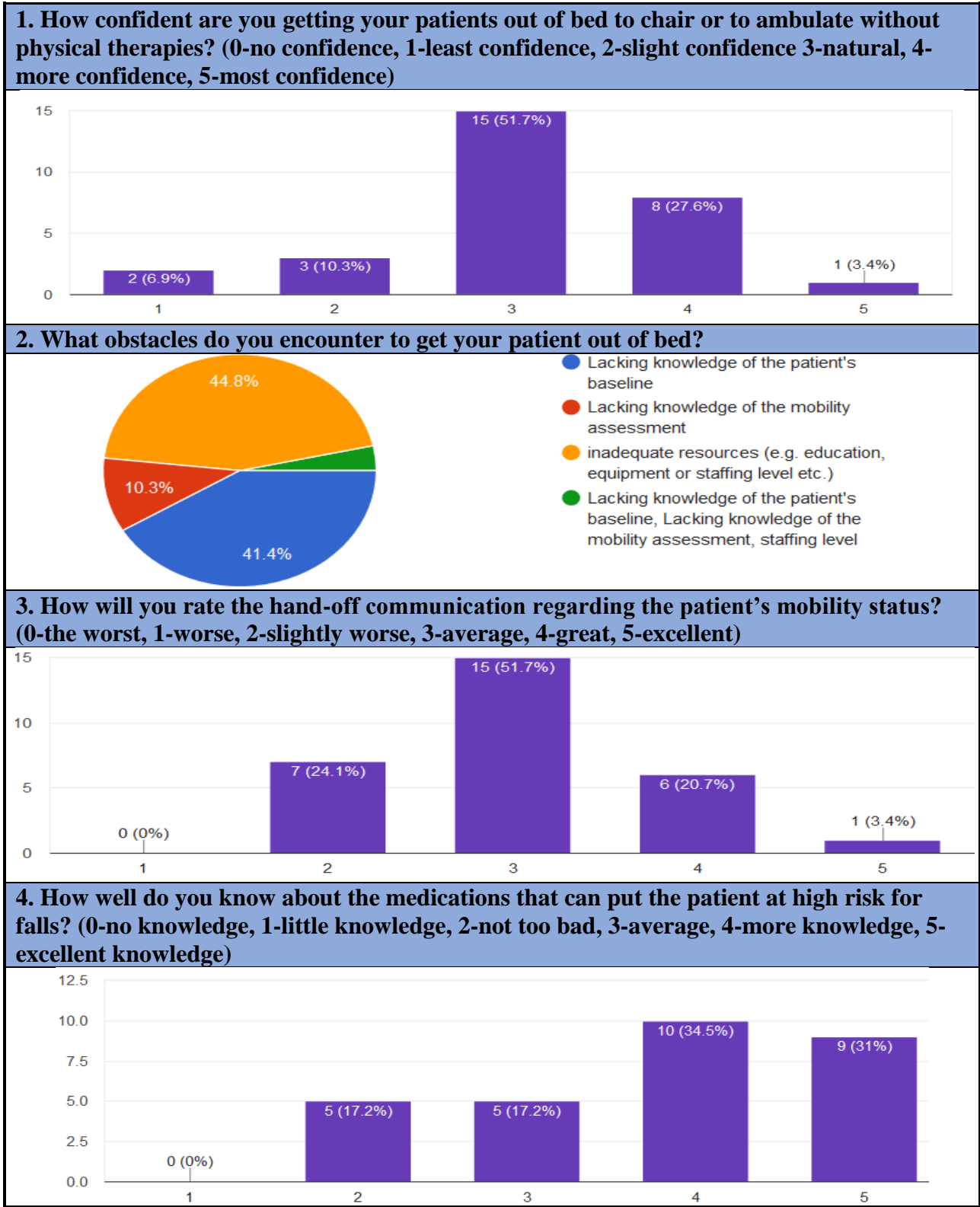
Position of the person	No interest at all	No interest	Neutral	Agree	Strongly agree
CNE					X
Director of Magnet program					
Vice president of patient care					X
Director of the Medical-Surgical floor					X
Manager					X
Assistant managers					X
Nurse Educators					X
Respiratory therapists				X	
Physical therapists					X
Occupational therapists					X
Social workers				X	X
Dietitians			X	X	
Residents					X
MDs					X
Pharmacists					X
RNs				X	X
CNAs				X	X
Housekeepers		X Continue to engage them throughout the project	X	X	

Appendix D

SWOT Analysis

<p>STRENGTHS</p> <ul style="list-style-type: none"> • Strong culture of safety • Fall prevention bundles in place • Well-established fall prevention protocols • Leaders commit to working collaboratively to reduce falls 	<p>WEAKNESSES</p> <ul style="list-style-type: none"> • Budget limit to schedule extra CNAs on the floor. • Too many per diems, not enough full time/part time CNAs. • Lack of support team to help nurses to move and ambulate the patient. • Nurses do not feel entirely competent to mobilize the patient • The department does not have enough bedside commodes • Fall care plan lacks detailed information about medications that could increase fall risks. • Lack of continuous education on fall prevention
<p>OPPORTUNITIES</p> <ul style="list-style-type: none"> • Having leaders to revisit fall prevention protocols • Search and develop evidence-based fall prevention guidelines and clinical-decision making algorithms to promote the patient’s mobility • It is an excellent opportunity for leaders to review the current staffing patterns, gather opinions from staff, and prioritize budget for patient’s safety • An interdisciplinary team will work more collaboratively to eliminate potential fall risk factors • Staff will benefit from additional education about fall prevention strategies 	<p>THREATS</p> <ul style="list-style-type: none"> • Increased acuity of illnesses among patients in the community • The organization may have to limit the future budget to recruit additional staff due to its vast investment in new EMR system • Increased admission of patients who have fallen at home and in skilled nursing facilities • Having a massive influx of patients with altered mental problems secondary to chronic alcoholism and drug intoxication

Appendix E: Nurses' Perceptions of the Patient's Mobility Status Pre-survey (n=29)



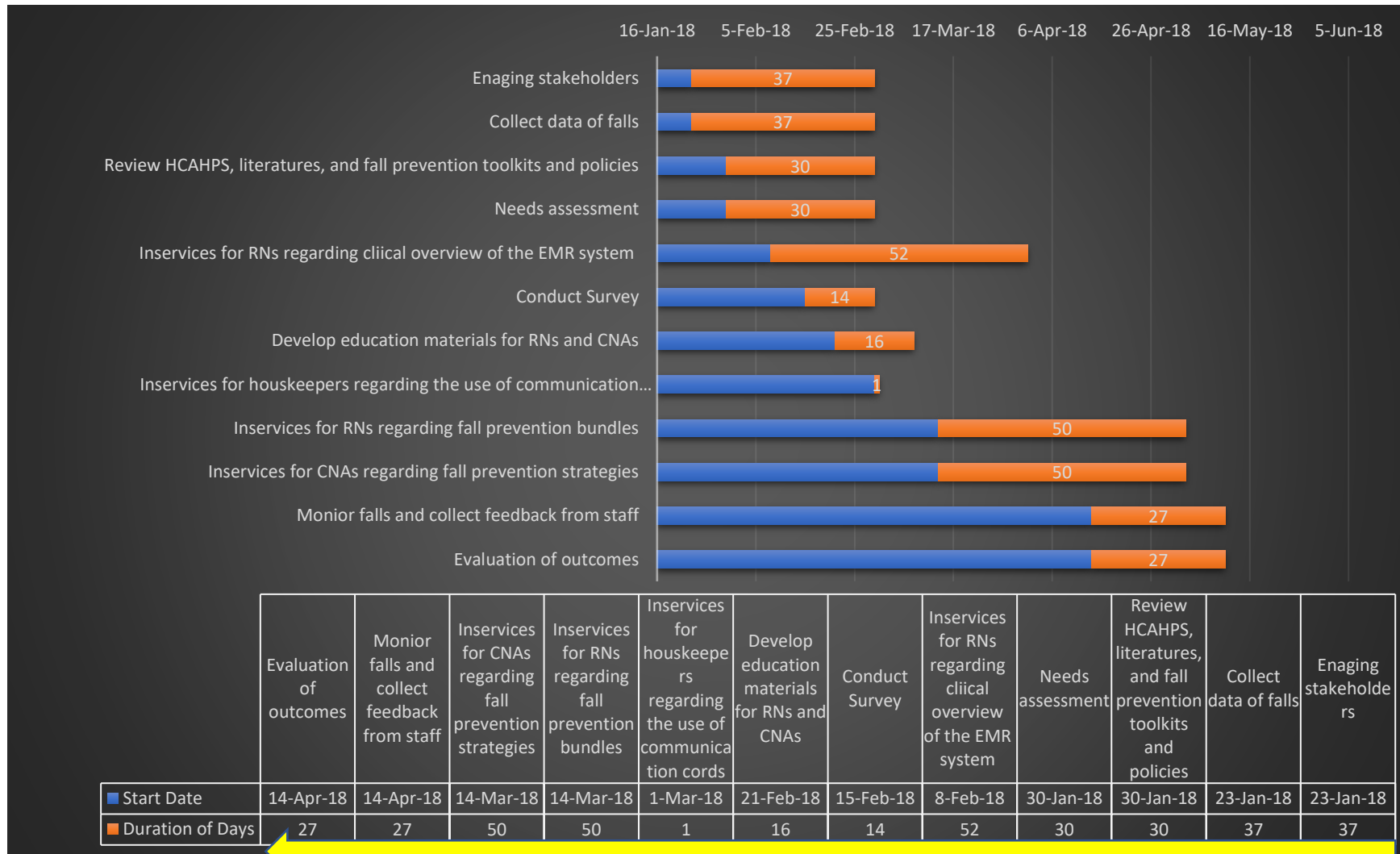
Appendix F

Cost-Effective Analysis

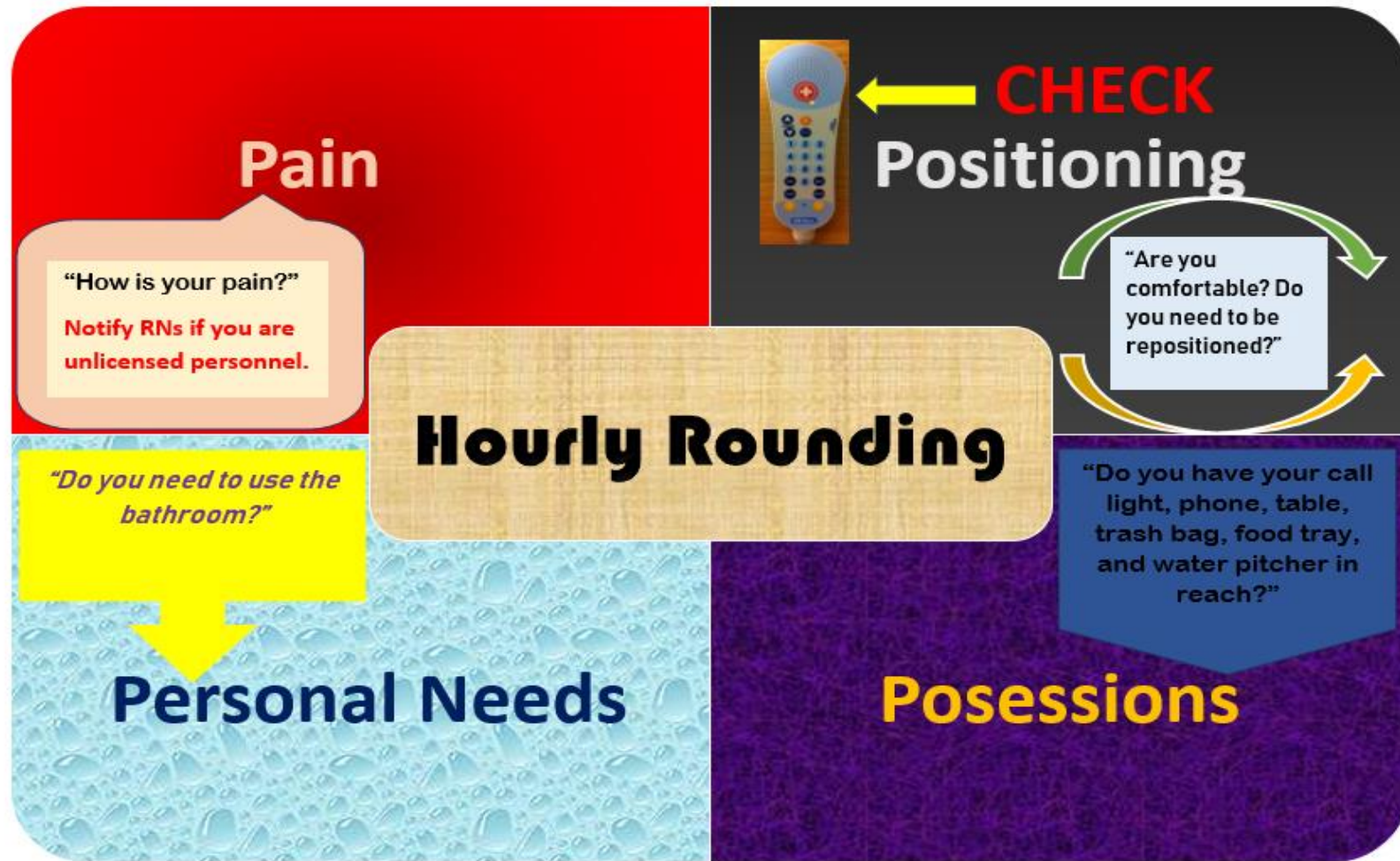
Events	Additional Cost	Fall prevention education & labor time	Cost
Falls with injuries (n=2)	2 x \$ 14,000 =\$ 28,000	Teaching materials	\$149
Falls with no or minor injuries (n=6)	6 x \$3,500=\$21,000	One-hour in-service for 99 RNs	\$6,336
Extended LOS with each injurious fall (6 days) x daily inpatient charge (\$8,184)	6 days x \$8,184 =\$49,104	Half-hour in-service for 37 CNAs	\$518
		Housekeepers In-service at the shift change	\$0
Extended LOS with each injurious fall (6.3 days) x daily inpatient charge (\$8,184)	6 days x \$8,184 =\$49,104	3-month CNL pay	\$26,115
Total Cost	\$147,208	Total Cost	\$33,118
Expected Cost Associated with Falls After the Project			
Falls with no or minor injuries (n=4)		4 x \$ 3,500 = \$14,000	
Potential Net Savings			
Total additional hospital costs for falls before the project		\$147,208	
- Total additional hospital costs for falls after the project		-\$14,000	
- Hospital's spending on education about fall prevention		-\$33,118	
= Net savings		\$100,090	

Appendix G

Garnett Chart for Project Timeline



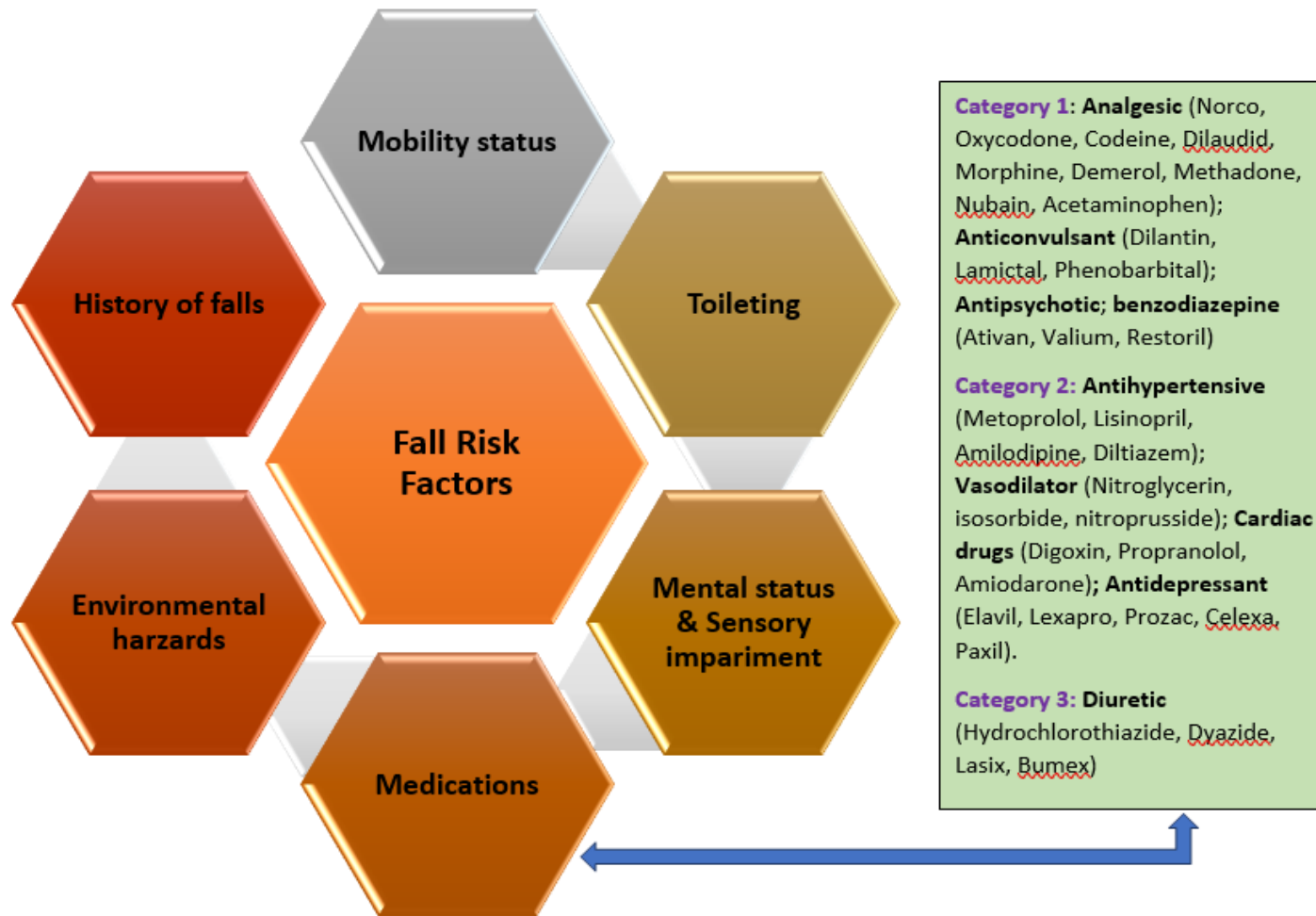
Appendix H: The Educational Flyer about Hourly Rounding



Reference

Chiles, M. P. (2016). The 4 P's of Reducing the risk of falls. *Health Quality Innovators*. Retrieved from http://www.hqi.solutions/wp-content/uploads/2017/05/NH_Flyer_The4Ps_101516_Final.pdf

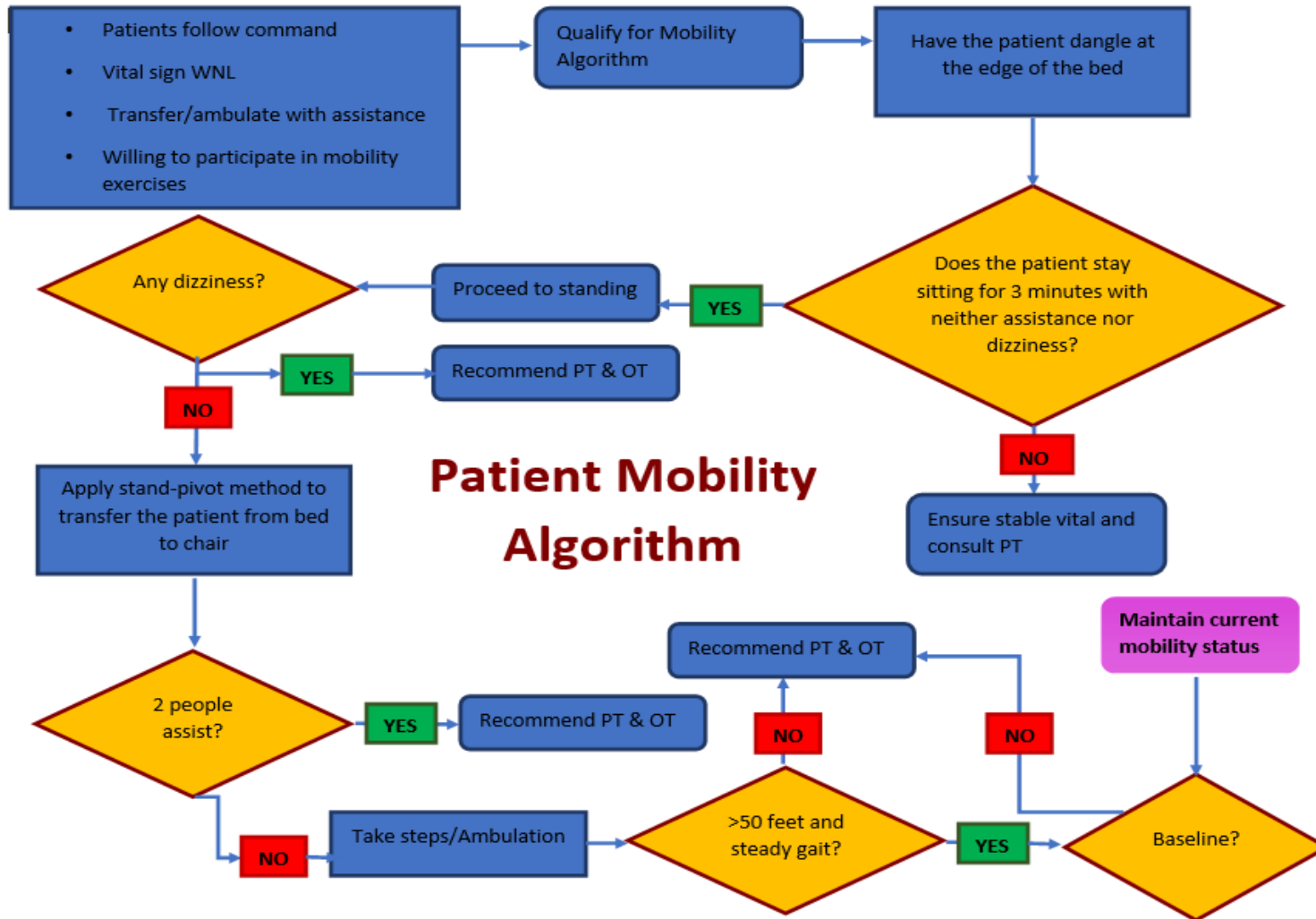
Appendix I: The Educational Flyer about Fall Associated Risk Factors



Reference

Ganz, D. A., Huang, C., Saliba, D., Shier, V., Berlowitz, D., ... Neumann, P. (2013). Preventing falls in Hospitals, a toolkit for improving quality of care. Agency for Healthcare Research and Quality. Retrieved from <https://www.ahrq.gov/sites/default/files/publications/files/fallpxtoolkit.pdf>

Appendix J: The Educational Flyer about Mobility Algorithm

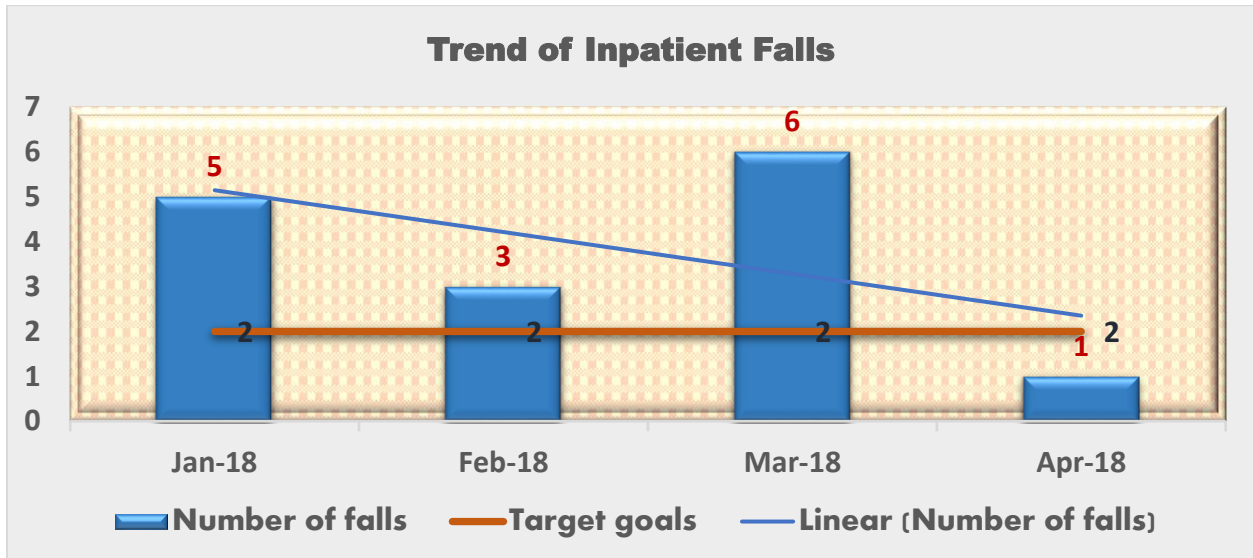


Reference

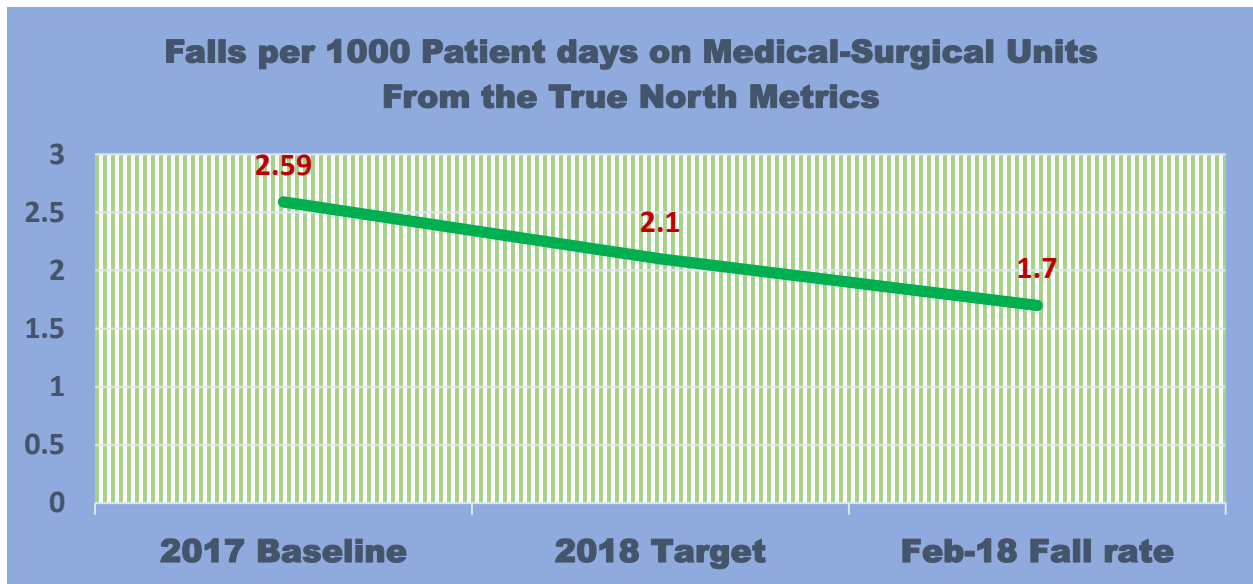
Ganz, D. A., Huang, C., Saliba, D., Shier, V., Berlowitz, D., ... Neumann, P. (2013). Preventing falls in Hospitals, a toolkit for improving quality of care. *Agency for Healthcare Research and Quality*. Retrieved from <https://www.ahrq.gov/sites/default/files/publications/files/fallpxtoolkit.pdf>

Appendix K

Evaluation of Falls on Medical-Surgical Units

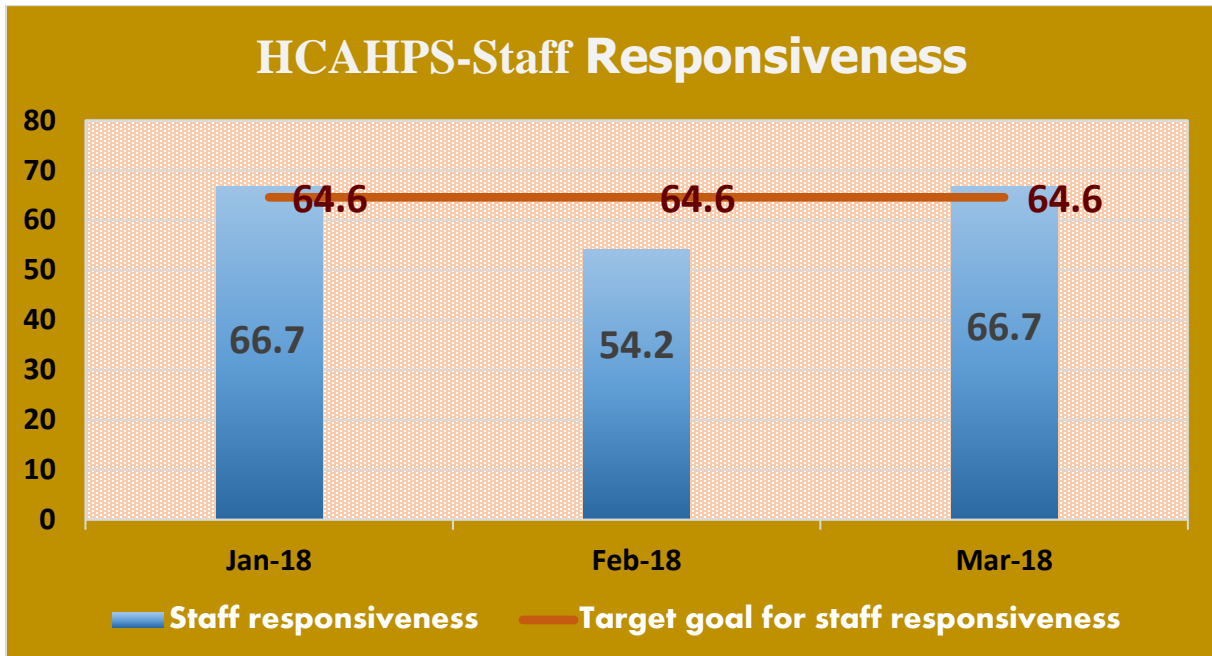


Fall Data From 2017-2018 on Medical-Surgical Units

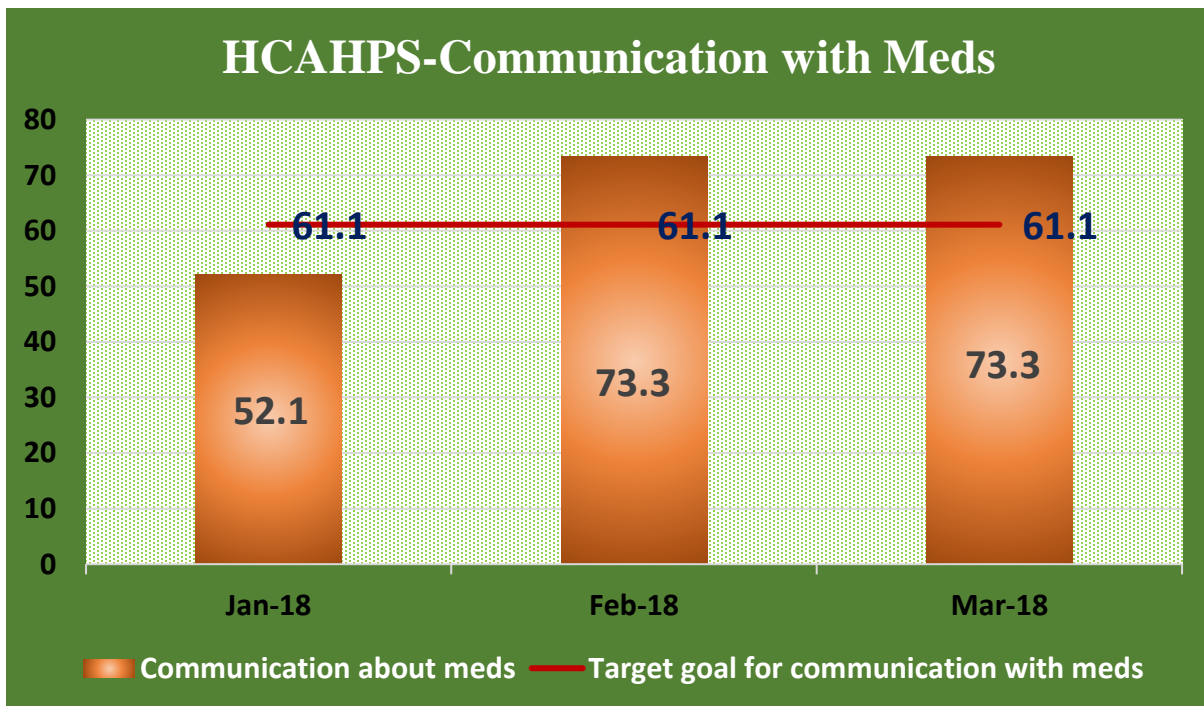


Appendix L

The Trend of HCAHPS: Staff Responsiveness



The Trend of HCAHPS: Communication with Meds



Appendix M

Post Educational Survey

Please take time to answer the following questions. The following responses will be rated as 1.

Strongly Disagree, 2. Disagree, 3. Neutral, 4, Agree, and 5. Strongly Agree

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I am confident of transferring and ambulating patients based on PT's recommendations and my assessment. (RN only).	1	2	3	4	5
2. I know when to coordinate with PTs based on the recommendations on the mobility algorithm. (RN only)	1	2	3	4	5
3. I understand the side effects of specific categories of medications that may increase the risk of falls. (RN only)	1	2	3	4	5
4. I receive sophisticated hand-off report regarding the patient's mobility status, risk factors, and related fall precautions. (All staff)	1	2	3	4	5
5. The current staffing level is adequate for nursing staff to perform routine exercises with patients. (All staff)	1	2	3	4	5