7-9-2024

Implementation of Intentional Hourly Rounding at Pediatric Hospital

Margaret Bernard
University of Missouri-St. Louis, mb8tc@umsl.edu

Implementation of Intentional Hourly Rounding at Pediatric Hospital

Margaret Bernard

B.S. Nursing, Marquette University, 2019

A Dissertation Submitted to The Graduate School at the University of Missouri-St. Louis in partial fulfillment of the requirements for the degree Doctor of Nursing Practice with an emphasis in Pediatric Nurse Practitioner

August 2024

Advisory Committee

Dr. Charity Galgani
DNP, APRN, WHNP-BC
Chairperson
Dr. Emily Winn
DNP, APRN, PPCNP-BC, PMHS

Dr. Kristen Chandler, DNP

Abstract

Problem: Intentional hourly rounding improves patient safety and can impact patient fall rates. At a pediatric hospital in suburban Missouri, the fall rate is 25%. This quality improvement project worked to implement a standardized intentional hourly rounding process at a pediatric hospital to bolster their fall prevention program.

Methods: This quality improvement project was conducted using a descriptive, observational design utilizing patient chart review and hospital quality department records. The setting was a 60-bed pediatric hospital in the Midwest with 2 inpatient units that specializes in chronic, complex care. The sample was a convenience sample of 92 male and female patients ages 0-23 years of age admitted at the time of project implementation. The project focused on implementing intentional hourly rounding on two inpatient units. The 5 P's (pain, position, potty, possessions, and pathways) was the chosen standardization. The project ran for 12-weeks from January to March. Fall rates were tracked as well as the safety metric of safe bed heights to analyze how intentional hourly rounding impacted patient safety.

Results: The fall rate prior to implementation was 25%. After the twelve-week project, the fall rate was 19.5%. The p-value was 0.45. Of inpatient beds, 87.9% were found at a safe height which was almost 5% more than prior to implementation.

Implications for Practice: Future quality improvement projects should be done to continue evaluating for patient safety improvement and fall rate reduction. A longer project time would allow for a larger sample size and greater information to analyze.

Keywords: pediatrics, falls, intentional hourly rounding, patient safety

Implementation of Intentional Hourly Rounding at Pediatric Hospital

Patient safety is a health care priority, especially in the inpatient hospital setting. One concern in providing safe health care is a hospital's inpatient fall rate. Falls can occur from bed, during transfers, or while ambulating. Patient falls in the hospital can lead to worse outcomes. Falls can result in longer hospital stays, minor injuries, or long-term disability. They also pose a financial burden to the hospital due to many insurance companies not reimbursing for injuries or subsequent needs related to inpatient fall events (Kim et al., 2021). Hospital systems are concerned with patient well-being, medical expenses, and overall safety therefore addressing fall concerns remains a top priority for improvement.

Improvement on a hospital-wide basis is not as straightforward as simply increasing awareness. Fall events are more than a forgotten bed rail or non-skid sock; falls can be multifaceted events that require multifactorial solutions (LeLaurin & Shorr, 2019). The complexities of patient acuity, individual needs, staffing availability, and the variability of patient conditions create a challenge to completely preventing inpatient falls. Initiatives to address falls and safety are dependent upon the bedside workers who are the frontline for fall prevention. Nurses make up a significant proportion of bedside staff who are equipped to sustain changes that prevent falls and subsequent adverse outcomes. Frontline workers report greater buy-in to a process if they feel supported by management with the change and involved in the process (Toole et al., 2016). Decreasing the rate of falls and improving the safety and well-being of patients requires positive

nurse opinions and attitudes. Proper education, support, and involvement helps create successful, long-lasting quality improvement projects (Sun et al., 2020).

Several approaches are used in hospitals to decrease falls. Examples of fall prevention strategies include staffing ratios, alarms, and patient education (LeLaurin & Shorr, 2019). Another strategy is the implementation of an intentional hourly rounding program by bedside staff. Hourly rounding is an expectation of many floors and units within a hospital. Hourly rounding entails each patient being checked upon at least once an hour by hospital staff (Ryan et al., 2018). Hospitals have different protocols on how this is accomplished with either the assigned nurse or nursing assistant performing these routine checks. Intentional rounding expands this concept by standardizing it for each staff. All bedside staff perform the same steps every hour to ensure each patient's needs are met. Without a standardization of the rounding process, each nurse or assistant could be providing inconsistent care (Ryan et al., 2019).

Alongside barriers from staff to successful fall prevention strategies, specifics of patient populations can also impact fall numbers. Fall prevention in the pediatric population is especially challenging because of the varying stages of development across patients. As children develop, they require different support to grow and push back against boundaries as they explore their limitations (Orenstein & Lewis, 2022). Fall prevention strategies for pediatric populations need to consider the dynamic nature of childhood development. It is also a factor in the increased number of falls seen within a pediatric hospital. Younger children such as infants and toddlers desire attention and security from caregivers which could motivate them to fall while reaching for an adult.

As a child enters school age, they are exploring how the world works. This curiosity also increases the risk of falls. During adolescence, a teenager is finding themselves and experimenting with risks and limitations. This impulsiveness can increase fall risk as well (Orenstein & Lewis, 2022). Recognizing child development will help to create a well-rounding fall prevention strategy.

A well-known standardization of hourly rounding is called “The Five P’s” (Sai Ram et al., 2019). This is a mnemonic device to remember five aspects of care that need to be addressed within each hour. The first three P’s are pain, position, and potty. The bedside staff should ensure the patient is resting comfortably and does not need interventions for pain. They should also check that the patient is in a safe position and does not require a position change. Pressure ulcers can be a significant risk for many hospitalized populations. Voiding and bowel management are important in keeping patients comfortable (Popovic & Drew, 2014). The last two P’s in the Five P’s mnemonic vary by facility, usually to best reflect the needs of the inpatient population. The options for the remaining P’s include personal belongings, pumps, plugs, possessions, pathways, or periphery (Sai Ram et al., 2019).

At a midwestern, suburban, pediatric hospital, hourly rounding is currently the expectation of nursing staff. Bedside staff complete hourly rounding around 90% of the time any given week. The staff involved in hourly rounding include bedside nurses and nursing assistants. However, the facility lacks a standardized process for rounding.

The purpose of this quality improvement project is to implement a standardized intentional hourly rounding process at a pediatric hospital on two inpatient units. The aim

is to decrease the rate of falls by 5% over three months. The hospital is currently utilizing a multifactorial approach to falls and safety consisting of individual patient fall risk assessments that are updated each shift, utilizing colored armbands that correspond to a patient's fall risk, and providing patient education of safety measures. With the current safety measures in place, the 60-bed facility recorded 22 patient fall events in a 84 day period. Introducing the Five P's at the hospital will bolster their fall prevention program. The following Five P's will be used for the project: pain, position, potty, possessions, and pathway (Juhn, J., 2023). The primary outcome measure will be the fall rate per 1000 patient days following implementation of a standardized intentional hourly rounding process using the Five P's. The secondary outcome measure will be the percentage of patient beds compliant with a safe bed height to measure compliance with patient safety procedures. The questions for this study will be:

In pediatric patients ages 0-23 years admitted to two inpatient units at a midwestern, suburban, pediatric hospital following implementation of a standardized hourly rounding procedure:

1. What is the fall rate?
2. What is the percentage of inpatient beds recorded at a safe height?

Literature Review

A literature review was conducted to analyze the current evidence on best practices for fall preventions and intentional hourly rounding. The literature search was completed utilizing Google Scholar, PubMed, and CINAHL as the search engines. Key search terms were *intentional rounding or hourly rounding or purposeful rounding,*

hourly rounding strategy, intentional hourly rounding, hourly rounding and fall prevention, 5Ps of hourly rounding. The Boolean operators utilized were AND and OR. The initial number of publications generated was 1,921. Inclusion and exclusion criteria were applied with the inclusion of articles published in the past five years and articles from English speaking countries. Pediatric specific articles were limited as pediatric is a vulnerable population, and so, search criteria did not limit age as factor to provide a robust search. Inpatient adult information will be applied to procedures at a pediatric hospital in this project. Articles were excluded if a full text was not available to the public. This narrowed the search to 58 articles. Eight articles were selected for use in the literature review.

Intentional rounding has the potential to decrease fall rates within hospitals. When compared to non-standardized rounding, falls have been shown to decrease when staff have consistent, purposeful measures with each hourly check (Christiansen et al., 2018). Maintaining a standard of how each patient is treated helps ensure safety measures are utilized and increases the likelihood that fall risks will be identified and mitigated. The easier that nurses can identify patient fall risks, the better they can prepare to prevent falls from occurring (Sun et al., 2020). Patient outcomes can be improved with intentional hourly rounding as well as addressing patient needs, not simply safety concerns. Improved pain management and safety correlates to improved outcomes (Sai Ram et al., 2019). Decreasing falls also decreases poor outcomes associated with hospital falls. When implemented appropriately, with support from higher management, intentional rounding is correlated with decreased patient falls (Sun et al., 2020).

Patient satisfaction improves with intentional rounding (East et al., 2020). Patients have a better hospital experience when their needs are addressed promptly and when they experience positive outcomes. Having nursing staff round and check on their status once an hour, allows needs to be addressed in a timely manner (Sai Ram et al., 2019). Nursing staff also report being able to better predict the needs of their patients and better address concerns as patients are not waiting for staff to be available (East et al., 2020). Patient satisfaction is a metric regularly recorded. It can be increased with improved communication. Being present and active at the bedside provides an opportunity to create patient-centered communication to improve patient satisfaction (Karaca & Durna, 2019).

Intentional rounding is not only correlated with decreased fall rates and increased patient satisfaction, it is also associated with non-fall related impacts within the hospital. With the use of intentional rounding, nurses were better able to recognize fall-risk patients (Sun et al., 2020). Intentional rounding is also correlated to decreased call-light use by patients (Johnson & Bryant, 2020). Call lights are one of the many alarms utilized in the hospital that may be associated with alarm fatigue among bedside staff if used frequently. This “alarm fatigue” can prevent staff from promptly responding to the call lights. Decreased call-light usage indicates fewer unaddressed patients’ needs when the nurse is not bedside. It also can improve nurse alarm fatigue and the time it takes to address call lights. If needs are addressed when the nurse is in the room, then nurses will not be pulled away to answer call lights (Johnson & Bryant, 2020).

Because there are many benefits in addition to patient fall reduction, many hospitals are apt to encourage the use of intentional hourly rounding on patients by

bedside staff. Research has shown that current highly-ranked institutions are already using intentional rounding in their multifactorial approach to improve patient safety (Al Danaf, 2018). These hospitals usually set the benchmark for how to provide the highest quality care to patients. Intentional rounding is a component of high-quality, evidence-based practice.

Despite known benefits, intentional rounding can still be challenging to implement and maintain on hospital floors. There are several barriers to implementation and maintenance. The attitude of nurses is a primary barrier to successful implementation. Bedside nurses will be the frontline individuals performing hourly rounding. Many nurses report negative attitudes toward the concept of hourly rounding (Ryan et al., 2018). They do not see it as beneficial and feel it is a burden to their already busy day. These attitudes make nurse buy-in for quality improvement projects for hourly rounding very challenging (Toole et al., 2016). Even though a majority of studies report negative attitudes of nurses, it is not a universal phenomenon. Select studies show nurses appreciate hourly rounding and feel the process allows them to save time because it they are more proactive about patient needs (East et al., 2020).

Staff negative attitudes usually stem from a lack of appropriate patient staffing ratios and perceived time constraints. Hourly rounding becomes one more task for a nurse to accomplish in an already busy schedule. A contributing component of creating a negative view of hourly rounding is viewing it as “something to check off” instead of an intentional act to perform cares (Toole et al., 2016). Support and education from management are paramount in counteracting this viewpoint. When management sets an

expectation of intentional hourly rounding, they must also then provide appropriate staffing and support. Frequent, positive education needs to occur to emphasize the benefits hourly rounds create (Sun et al., 2020). Eliciting and accepting feedback from bedside nurses is also important (Toole et al., 2016). Creating a system of hourly rounding that recognizes the realities of bedside nursing can create more long-term compliance and benefits. When bedside nurses are active participants in the planning and implementation of quality improvement projects in their workplace, there is greater likelihood of staff support. Staff barriers must be considered when implementing intentional hourly rounding in a workplace (Sun et al., 2020).

Gaps in the literature include that many of the studies reported weak results (Christiansen et al., 2018). The data can be challenging to work through because of mixed feedback from nurses compared to patients, as well as, inconclusive results of the efficacy of intentional rounding (Ryan et a., 2018). These inconsistencies demonstrate that improving safety does not have one simple solution. Studies show that adherence to rounding is often poor, and staff feedback is mixed. Further data is needed and a broader focus on larger system improvements such as nurse-patient ratios also need to be addressed (LeLaurin & Shorr, 2020). Intentional rounding may still have a place in the hospital with proper support and realistic implementation expectations. High-performing hospitals are more likely to use intentional rounding in addition to other patient satisfaction and safety practices (Al Danaf et al., 2018). Patient and staff education on fall prevention and hourly rounding, with sufficient management support, is key in the successful implementation of a standardized hourly rounding system.

The model most appropriate as the framework to guide this project is the Institute for Healthcare Improvement Model for Improvement. This model utilizes two parts. The first is establishing questions to be addressed by the project. The second part is a cyclical method to implement new evidence-based practice called a PDSA cycle (Institute for Healthcare Improvement, 2023). A cycle starts with a researcher planning an intervention (plan), implementing it (do), collecting data to evaluate the effect of the intervention (study), and then deciding how to proceed with the project (act). A single quality improvement project will often have several PDSA cycles completed within it. (NHS England and NHS Improvement, 2021). A PDSA cycle will evaluate the intentional rounding initiative, allow for identification of improvement, and position the staff to continue adjusting the intervention to best serve the patients with future cycles (NHS England and NHS Improvement, 2021).

In summary, evidence has shown that intentional hourly rounding is correlated with reduced fall rates, increased patient satisfaction, and improved patient safety. Overall, patient falls are decreased after implementation of intentional hourly rounding. Fall reduction, however, does not decrease universally when intentional rounding is implemented due to several identified common barriers such as negative nurse attitude and poor compliance. These barriers can be addressed with appropriate education and management support. The realities of nursing responsibilities need to be considered when developing expectations of hourly rounding. Even if the number of falls do not decrease after implementation, hourly rounding often improves patient satisfaction scores. This is because patients feel their needs are more promptly addressed and they have better communication with bedside staff when checked on hourly. Patients use their call lights

less frequently with this improved communication, which decreases unnecessary interruptions in the nurses' workflow. Safety can also improve with a greater recognition of fall risks identified through intentional hourly rounding. Intentional hourly rounding is shown to be implemented at high-performing hospitals through quality improvement projects. These projects typically educate bedside staff on the Five P's of hourly rounding that have been catered to the specific hospital needs and use the measures consistently.

Methods

Design

This quality improvement project followed a descriptive, observational design. A retrospective chart review was used to assess the number of inpatient falls in pediatric patients aged 0-23 years at a suburban, Midwestern hospital. The project was conducted from January 29, 2024 to April 22, 2024. Pre-implementation data was collected from November 6, 2023 to January 28, 2024. Hospital quality records of safe bed heights were used to assess the secondary outcome of safe bed heights.

Setting

The setting of this project was a pediatric hospital in the Midwest that specializes in pediatric chronic, complex care. The hospital is a 60-bed facility and the two units of focus in this project see a total average of 268 patients a year. Admitting diagnosis of patients include respiratory disease/concern, gastrointestinal disease or concern/ feeding needs, genitourinary disorder/ renal disease, neurodevelopmental disorders/delays, skin concerns/ subcutaneous disorder, orthopedic/ musculoskeletal disorder/ concern, psychiatric diagnosis, neurological/ sensory organ disorder, infectious disease, general rehabilitation, pain management, endocrine/ metabolic disorder, cardiology disorder/

concern, newborn/ premature infant, and general admission concern. Majority of patients require intensive inpatient rehabilitation and medical stabilization. The bedside staff involved in the quality improvement project were the nurses and nursing assistants.

Sample

The sample was a convenience sample of the patients at the hospital during pre-implementation and post-implementation time periods. Inclusion criteria are male and female patients, aged 0-23 years admitted to an inpatient unit. Exclusion criteria are patients seen on an outpatient basis and patients older than 23 years of age. Retrospective chart reviews were used to collect patient demographics and fall rates.

Approvals

The project was granted permission from the hospital leadership. Approval from the university institutional review board (IRB) and doctoral committee were obtained. There are no known risks or ethical considerations for this project.

Procedures

The intervention implemented was a standardization of nursing hourly rounding. Nursing staff (nurses and nursing assistants) were expected to check on patients every hour. This project created a standard practice for each of the hourly checks called intentional hourly rounding. This standardization was done using the 5P's of hourly rounding with nursing staff assessing five specific needs every hour. These needs are summarized as pain, potty, position, possessions, and pathway. Prior implementation, data was collected regarding the evidence behind intentional hourly rounding. Facility data was collected regarding fall rates and hourly rounding compliance. Education on intentional hourly rounding was provided to bedside staff. Following implementation,

twelve weeks of post-implementation data was collected again and analyzed. The tools required for this project were technology programs such PowerPoint to create education material regarding intentional hourly rounding for nursing staff and data collection tools for chart reviews and data analysis.

Data collection

Data was collected by retrospective medical record review and facility specific data collection. Data was de-identified by the IT department and quality department prior to assessment by the primary investigator. Any chart reviewed was completed on the hospital campus. No patient identifiers were needed to complete data collection as all data was charting compliance, overall fall and safety data unrelated to patient specific factors, and patient demographics. Pre-implementation and post-implementation fall rates were compared as well as percentages of safe bed heights.

Results

The total number of patients seen during the implementation period was 92 (*n* = 92). The gender most frequently seen was male (n = 55, 56%) followed by female (n = 37, 44%). The age group most commonly seen was ages 0-5 years (n = 47, 60%), followed by ages 6-17 years (n = 38, 37%), and lastly, 18 years or older (n = 7, 9%). The predominant admission diagnosis was respiratory disease (n = 29, 47%) followed by gastrointestinal disorder/ feeding concern (n = 24, 19%). See Appendix A.

Four primary admission diagnoses, of the fifteen seen on the units, were associated with falls. The four diagnoses were neurological/ sensory organ admissions,

orthopedic/ musculoskeletal admissions, respiratory admissions, and gastrointestinal/ feeding admissions.

The fall events recorded during the quality improvement project tracked both total fall events as well as patients with fall events as the facility had individual patients that had repeat falls in both groups. When falls were analyzed by individual patients instead of by individual fall events, there were a total of twelve patients who fell resulting in the 18 fall events. Six individual patients fell multiple times with the following demographics: three males ages 0-5 years all fell two times, two females ages 0-5 years both fell two times, and one male ages 6-17 years fell two times.

A Chi-square analysis was run on the total fall rate as well as on each demographic group fall rate. Analysis of fall rates by patients with fall events was also run. The total fall events following implementation were 18 fall events with 19.5% fall rate. Prior to implementation, the fall rate was 25%. This is greater than a 5% change. The Chi-square analysis resulted in a p-value of 0.45. The p-value for each demographic group was also determined. The only p-value less than 0.05 was the neurologic disorder diagnosis group which had a p-value of 0.03. See Appendix B.

The secondary outcome measure for this study was the percentage of safe bed heights. The percentage of beds set at a safe height prior to implementation was 83.19%. Following implementation, 80 out of 91 inpatient beds were left in a safe position, resulting in 87.9% of beds at safe height. These results indicated a nearly 5% increase in routinely set safe bed heights.

Discussion

The aim of this quality improvement project was to decrease the fall rate by 5% over three months. This was achieved with an original fall rate of 25% decreasing to 19.5%. The p-value when comparing these rates was not statistically significant. A decrease in falls, though, shows a clinical difference. In addition, the percentages of safe bed heights were tracked and indicated a nearly 5% increase in sustained safe bed heights.

Several limitations could have impacted the project outcome. The project length was only twelve weeks. A long study time would have provided a larger sample size and more data points to consider. The population also has barriers. Pediatric populations can have more impulsive tendencies and require unique approaches to care. The rehabilitation component of the hospital could also play a role in slow improvements in fall rates because population factors, such as mobility, acuity, and ability, are regularly changing. Another barrier to success was nursing charting and buy-in. The decision was made to implement the intervention without a change in nurse charting. Nurses also vocalized uncertainty during education about the feasibility of the change.

The strength in this project was the information collected on clinical outcomes. The demographics within this project demonstrate the dynamic nature of pediatric rehabilitation and the need for a dynamic approach to patient safety and fall risk. The variation between fall rates among the varying sexes, age groups, and diagnoses shows the need for a multisystem approach to patient safety and fall prevention. The rehabilitation population also has vast variation within patients and injury recovery which

could impact which patients fall. Demographic information could help guide future fall prevention strategies as well. The statistically significant change in neurologic admission fall rates is important when considering which groups of patients are falling the most and which fall rates are impacted by interventions. This finding must also be considered in light of the changing patient population such as a decrease in neurologic admissions or discharge of patients with repeat falls.

Patient safety metrics was also a component of this project to measure if intentional hourly rounding improved patient safety. The metric measured was safe bed height compliance. There was almost a five percent increase in beds at a safe height after implementation. This could have been impacted by the intentional hourly rounding because of more deliberate checks of patient environment. This change could also be due to the types of patients at the time. Certain types of patients require more bed moves than others. Some patient populations could also have more independence in their mobility than others impacting the height of the beds. More beds in a safe position, no matter the reason, is a positive for patient safety.

Conclusion

Patient safety is an important consideration for hospital administrators, quality teams, and the bedside staff who interact the most directly with patients. Greater intention with those interactions is the premise behind standardizing hourly rounding for nursing staff. Although this implementation was not a statistical success during this quality improvement project, it provided information for future initiatives and reflected a clinical change with a 5% decrease in fall rate. Future PDSA cycles with longer timeframes will

provide larger samples sizes and would provide a larger sample. A cycle could also specifically focus on one high risk group such as male sex, neurologic admissions, or 0-5 year age group. Future projects could also work with bedside staff to incorporate their input on the hourly rounding process and work to streamline charting to make the process more accessible for nursing staff. A larger and longer focus on staff education and process reinforcement should also be considered.

The findings of this quality improvement project point the way to the future for this project site's fall interventions. This project was the first-time detailed patient demographics were considered in fall interventions and could provide the baseline for future projects. The improvement in safe bed heights could also lay the groundwork for projects to measure other safety metrics at bedside. Falls occur due to many factors and having fall interventions that look at falls from multiple perspectives will help create a safer patient experience.

References

Al Danaf, J., Chang, B. H., Shaear, M., Johnson, K. M., Miller, S., Nester, L., Williams, A. W., & Aboumatar, H. J. (2018). Surfacing and addressing hospitalized patients' needs: Proactive nurse rounding as a tool. *Journal of Nursing Management, 26*(5), 540-547. https://doi.org/10.1111/jonm.12580

Christiansen, A., Coventy, L., Graham, R., Jacob, E., Twi, D., & Whitehead, L. (2018). Intentional rounding in acute healthcare settings: A systematic mixed-method review. *Journal of Clinical Nursing, 27*(9-10), 1759-1792. https://doi.org/10.1111/jocn.14370

Chowa, L. (2021). Introducing an evidence-based protocol to reduce and prevent fall events among elderly hospice patients. *Patient Safety & Quality Improvement Journal, 9*(2), \109-119. https://doi.org/ 10.22038/psj.2021.49691.1277

East, L., Targett, D., Yeates, H., Ryan, E., Quiddington, L., & Woods, C. (2020). Nurse and patient satisfaction with intentional rounding in a rural Australian setting. *Journal of Clinical Nursing, 29*(7-8), 1365-1371. Https://doi.org/10.1111/jocn.15180

Institute for Healthcare Improvement. (2023). How to Improve: Model for Improvement. *IHI.* https://www.ihi.org/resources/how-to-improve

Johnson, B. & Bryant, L. (2020). Call bell usage: Tracking the effect of hourly staff rounding. *Clinical Journal of Oncology Nursing, 24*(3). https://doi.org/10.1188/20.CJON.328-330

Juhn, J. (2023). *Reshaping nurses' attitudes toward hourly rounding to increase patient safety and instill values-based care: A quality improvement initiative* [Unpublished doctoral dissertation/ master's thesis]. University of New Hampshire.

Karaca, A. & Durna, Z. (2019). Patient satisfaction with the quality of nursing care. *Nursing Open, 6*(2), 535-545. https://doi.org/10.1002/nop2.237

Kim, E., Kim, G., & Lim, J. (2021). A systematic review and meta-analysis of fall prevention programs for pediatric inpatients. *Int J. Environ. Res. Public Health, 18*(11). https://doi.org/10.3390/ijerph18115853

LeLaurin, J. & Shorr, R. (2019). Preventing falls in hospitalized patients: State of the science. *Clin Geriatr Med., 35*(2), 273-283. https://doi.org/10.1016/j.cger.2019.01.007

NHS England and NHS Improvement. *Plan, Do, Study, Act (PDSA) cycles and the model for improvement.* (2021). [Pamphlet]. https://www.england.nhs.uk/wp-content/uploads/2022/01/qsir-pdsa-cycles-model-for-improvement.pdf

Orenstein, G. A. & Lewis, L. (2022, November 7). Eriksons stages of psychosocial development. *StatPearls*. https://www.ncbi.nlm.nih.gov/books/NBK556096/

Popovic, Z. & Drew, C. (2014). *5P's: Proactive patient rounding* [PowerPoint slides]. https://mtpin.org/wp-content/uploads/2019/12/Res_PtSafe_5PsPatientRounding.pdf

Ryan, L., Jackson, D., Woods, C., & Usher, K. (2018). Intentional rounding: An integrative literature review. *Journal of Advanced Nursing, 75*(6), 1151-1161. https://doiorg.ezproxy.umsl.edu/10.1111/jan.13897

Sai Ram, M., John, J., & John, S. (2019). Purposeful hourly rounding by nurses: A best practice implementation project. *International Journal of Nursing Care, 7*(2), 16 19. https://doi.org/10.5958/2320-8651.2019.00022.X

Sun, C., Fu, C., O'Brien, J., Cato, K., Stoerger, L., & Levin, A. (2020). Exploring practices of Bedside shift report and hourly rounding: Is there an impact on patient falls?. *The Journal of Nursing Administration, 50*(6), 355-362. https://doi.org/10.1097/NNA.0000000000000897

Toole, N., Meluskey, T., & Hall, N. (2016). A systematic review: Barriers to hourly rounding. *Journal of Nursing Management, 24*(3), 283-290. https://doi.org/10.1111/jonm.12332

Appendix A

Table 1

Inpatient Demographics

Variable	n	%
Sex		
Female	37	44
Male	55	56
Age		
0-5 years	47	60
6-17 years	38	27
18 years and over	7	12
Admission Diagnosis		
Neurological/ Sensory Organs	19	15
Orthopedic/ Musculoskeletal	11	9
Respiratory	29	47
Gastrointestinal/Feeding	24	19
Skin/Subcutaneous	4	5
Cardiovascular	3	3
Genitourinary/ renal	1	2
General rehabilitation	1	1

Note. Total sample, n=92

Appendix B

Table 2

Fall Rates

	By Fall Events					By Patient with Fall Events				
	Pre-Implementation		Post-Implementation			Pre-Implementation		Post-Implementation		
	n	Fall rate (%)	n	Fall rate (%)	p-value	n	Fall rate (%)	n	Fall rate (%)	p-value
Total Falls	22	25	18	19.5	0.45	14	15.9	12	13	0.62
Sex										
Female	3	9.4	6	16.2	0.46	3	9.4	4	10.8	0.87
Male	19	33.9	12	21.8	0.23	11	19.6	8	14.5	0.53
Age										
0-5 Years	11	30.6	13	27.7	0.81	5	13.9	8	17.0	0.74
6-17 Years	10	22.2	5	13.2	0.35	8	17.8	4	10.5	0.41
18 Years and older	1	14.3	0	0	0.32	1	14.3	0	0	0.24
Admission Diagnosis										
Neurologic	13	44.8	2	10.5	0.03	9	31.0	2	10.5	0.16
Orthopedic/ Musculoskeletal	4	25	2	18.2	0.75	2	12.5	2	18.2	0.73
Respiratory	3	12.5	8	27.6	0.25	3	12.5	8	27.6	0.25
Gastrointestinal/ Feeding	2	15.4	6	25	0.59	1	7.7	6	25.0	0.28

Note. Only diagnosis groups that had fall events included in table

Appendix C

Table 3

Beds at Safe Height

Variable	n	%
Safe height beds	80	87.9%

Appendix D

Table 4

Results of Chi² Analysis of Fall Rates by Fall Events

	Group 1 Incidence Rate	95% Confidence Interval	Group 2 Incidence Rate	95% Confidence Interval	Incidence Rate Difference	95% Confidence Interval	P-Value	Incidence Rate Ratio	95% Confidence Interval	P-Value
Total Fall Events	0.25	0.1567 to 0.3785	0.1957	0.116 to 0.3092	0.05435	-0.08342 to 0.19211	P = 0.4394	1.2778	0.6542 to 2.5277	P = 0.4452
Female Falls	0.09375	0.01933 to 0.27398	0.1622	0.0595 to 0.353	-0.06841	-0.23929 to 0.10247	P = 0.4326	0.5781	0.09355 to 2.7070	P = 0.4610
Male Falls	0.3393	0.2043 to 0.5298	0.2182	0.1127 to 0.3811	0.1211	-0.0755 to 0.3177	P = 0.2274	1.5551	0.7167 to 3.5128	P = 0.2342
Falls Age 1-5 Years	0.3056	0.1525 to 0.5467	0.2766	0.1473 to 0.473	0.02896	-0.20447 to 0.26239	P = 0.8079	1.1047	0.4481 to 2.6723	P = 0.8060
Falls Age 6-17 Years	0.2222	0.1066 to 0.4087	0.1316	0.0427 to 0.3071	0.09064	-0.09292 to 0.27421	P = 0.3331	1.6889	0.5260 to 6.2973	P = 0.3498
Falls Age 18 Years and Older	0.1429	0.0036 to 0.7959	0	0 to 0.527	0.1429	-0.1371 to 0.4229	P = 0.3173	—	—	—
Neurologic Falls	0.4483	0.2387 to 0.7666	0.1053	0.0127 to 0.3802	0.343	0.0196 to 0.6664	P = 0.0376	4.2586	0.9641 to 38.870	P = 0.0348

Orthopedic Falls	0.25	0.0681 to 0.6401	0.1818	0.022 to 0.6568	0.06818	-0.2937 to 0.43006	P = 0.7119	1.3750	0.1971 to 15.200	P = 0.7509
Respiratory Falls	0.125	0.0258 to 0.3653	0.2759	0.1191 to 0.5436	-0.1509	-0.3973 to 0.0955	P = 0.2301	0.4531	0.07743 to 1.8879	P = 0.2489
Gastrointestinal Falls	0.1538	0.0186 to 0.5557	0.25	0.0917 to 0.5441	-0.09615	-0.41 to 0.21769	P = 0.5482	0.6154	0.06074 to 3.4415	P = 0.5917

Appendix E

Table 5

Results of Chi² Analysis of Fall Rates by Patients with Fall Events

	Group 1 Incidence Rate	95% Confidence Interval	Group 2 Incidence Rate	95% Confidence Interval	Incidence Rate Difference	95% Confidence Interval	P-Value	Incidence Rate Ratio	95% Confidence Interval	P-Value
Patients with Fall Events	0.1591	0.087 to 0.2669	0.1304	0.0674 to 0.2278	0.02866	-0.08241 to 0.13973	P = 0.6131	1.2197	0.5236 to 2.8867	P = 0.6198
Females with Falls	0.09375	0.01933 to 0.27398	0.1081	0.0295 to 0.2768	-0.01436	-0.16506 to 0.13634	P = 0.8519	0.8672	0.1270 to 5.1260	P = 0.8690
Males with Falls	0.1964	0.0981 to 0.3515	0.1455	0.0628 to 0.2866	0.05097	-0.10297 to 0.20491	P = 0.5163	1.3504	0.4948 to 3.8674	P = 0.5284
Age 1-5 Years with Falls	0.1389	0.0451 to 0.3241	0.1702	0.0735 to 0.3354	-0.03132	-0.20312 to 0.14047	P = 0.7208	0.8160	0.2100 to 2.8289	P = 0.7399
Age 6-17 Years with Falls	0.1778	0.0768 to 0.3503	0.1053	0.0287 to 0.2695	0.07251	-0.09167 to 0.2367	P = 0.3867	1.6889	0.4525 to 7.6641	P = 0.4084
Age 18 Years and Older with Falls	0.1429	0.0036 to 0.7959	0	0 to 0.527	0.1429	-0.1371 to 0.4229	P = 0.3173	—	—	—

Neurologic with Falls	0.3103	0.1419 to 0.5891	0.1053	0.0127 to 0.3802	0.2051	-0.0718 to 0.482	P = 0.1467	2.9483	0.6102 to 28.041	P = 0.1567
Orthopedic with Falls	0.125	0.0151 to 0.4515	0.1818	0.022 to 0.6568	-0.05682	-0.35229 to 0.23866	P = 0.7063	0.6875	0.04983 to 9.4847	P = 0.7254
Respiratory with Falls	0.125	0.0258 to 0.3653	0.2759	0.1191 to 0.5436	-0.1509	-0.3973 to 0.0955	P = 0.2301	0.4531	0.07743 to 1.8879	P = 0.2489
Gastrointestinal with Falls	0.07692	0.00195 to 0.42859	0.25	0.0917 to 0.5441	-0.1731	-0.4667 to 0.1205	P = 0.2479	0.3077	0.006689 to 2.5361	P = 0.2798