Putting a Human Face on Harm: Reducing Patient Adverse Events through Story-telling

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Abstract

Patients are unintentionally harmed in healthcare settings across the country every day. This evidence-based quality improvement project was designed to decrease the total number of patient harm events and increase nurse engagement in the problem-solving process by using patient stories to change human behavior. The project organization had embarked on a journey to zero avoidable harm events through the implementation of a Quality Management System that encourages frontline staff to actively participate in problem-solving experiments to learn from adverse events and prevent future injury. The utilization of story-telling during post-harm huddles was implemented across three intermediate-care units who had utilized the post-harm huddles, without story-telling over the previous 12 months. A pre-and post-survey was administered to measure nursing engagement in the problem-solving process as it specifically relates to the post-harm huddle. Avoidable patient harm events were also captured and the project focused specifically on the harm events of central line-associated blood stream infections, catheter-associated urinary tract infections, hospital-acquired pressure injuries, and falls with injury. Findings included a total of 18 harm events across the three project units as compared to 10 events in the comparison period. Nurse engagement scores increased by a mean of 0.2 points across the three project units combined. While the incremental increase in engagement was small, sustaining story-telling beyond the three month implementation period may result in a decrease in total numbers of patient harms and an increase in nursing engagement, resulting in improved quality outcomes for the organization.

Keywords: harm, nurse, engagement, story-telling, quality

Table of Contents

Section I. Introduction

Story-telling has been used throughout the years to entertain, describe a series of events or share knowledge. Serious stories, which are not intended for entertainment purposes, are real stories, involve real human beings, and engage others to interact based on their emotional response to what is shared (Lugmayr et al., 2016). The art of storytelling has emerged as an innovative tool used in healthcare to address patient harm events. This quality improvement project sought to explore the use of story-telling to better understand the human experience, both of nurses and patients.

Background

Patients are unintentionally harmed in healthcare settings across the country every day. Since the Institute of Medicine (IOM; 1999) published "*To Err is Human: Building a Safer Health System",* hospitals have focused their efforts on creating a safe environment in which patients can receive care. While progress has been made, the occurrence of patient harm events leads to one of the top 10 causes of death or disability worldwide (World Health Organization [WHO], 2020). In addition to the human cost, the financial burden placed on the health care system related to adverse events is substantial. It is reported that patient harm results in 15% of total hospital costs, which translates into trillions of dollars annually (Slawomirski et al., 2017).

Organizational Needs Statement

The targeted project site has identified decreasing patient harm as a top priority within its strategic plan and recently implemented a new Quality Management System (QMS). The QMS utilizes the Plan-Do-Study-Act (PDSA) model to implement real-time problem solving or experiments when evaluating each patient harm event including central line associate bloodstream infections (CLABSI), catheter-associated urinary tract infections (CAUTI),

hospital-acquired pressure injuries (HAPI), and falls with injury. The overall goal is to increase front-line staff engagement in the quality improvement process and ultimately decrease the total number of harm events as measured by the National Database of Nursing Quality Indicators (NDNQI).

The NDNQI was established in 1998 by the American Nurses Association (ANA) to build a database of the hospital and unit-level data that could be utilized to improve the quality of nursing care (Schomer, 2016). Monitoring the nursing-sensitive indicators allows the staff to determine if interventions put into place are effective in addressing quality improvement efforts. The NHSN is used by many healthcare organizations across the United States to track hospital-acquired infections and provides benchmark data that assists in identifying areas of concern and measures outcomes of solutions implemented (Center for Disease Control and Prevention [CDC], 2020). The identified project hospital reports data to these organizations quarterly.

As of July 2020, the organization falls below the top quartile benchmarks for both CLABSI and CAUTI when compared to like organizations in the NDNQI. Patient falls with injury (rate per 1000 inpatient days) meet the NDNQI target for the top quartile but fail to meet the top decile benchmark. Recent quality improvement initiatives have led to improvements in HAPI stage two or greater. The project hospital currently meets the top decile for preventing pressure ulcers, outperforming the mean when benchmarked against NDNQI like organizations.

A key component of the QMS is the engagement of front-line staff. The project hospital tracks nurse engagement and empowerment. Given the increased demands on our front-line nursing staff, it is often difficult for staff to participate in quality improvement activities during their scheduled work hours. The organization hopes to increase the staff's ability to offer solutions to problems by engaging them in brief huddles that are 15 minutes or less, real-time

when patient harm events occur (Agency for Healthcare Research and Quality [AHRQ], 2020). The project hospital conducts an employee satisfaction survey annually. In 2019, staff empowerment scores fell below the benchmark in the survey conducted by a national patient and staff satisfaction survey company. Innovative problem solving of patient harm events requires staff to be engaged in the decisions that affect their work (Gandhi et al., 2020).

The goal of this project aligns with the Institute for Healthcare Improvement (IHI; 2020) Triple Aim Initiative to improve the patient experience, improve the population's health, and reducing healthcare costs. Monroe (2016) found that patient satisfaction was impacted by the development of hospital-acquired infections. By decreasing patient harm events, quality of care can improve and positively impact patient satisfaction. Eliminating unnecessary injury or unintended outcomes can improve the overall health of the population for whom the project hospital is providing care. Organizations face increased costs related to patient harm which include medical costs, increased staffing needs, and litigation (Padgett et al., 2017). Decreasing patient harm and medical errors can impact the third of the Triple Aim Initiatives by decreasing the cost of per capita care overall.

Problem Statement

According to the WHO (2020), hospitalized patients have a one in ten chance of being injured during their stay. In the fiscal year 2020, the project hospital reported a total of 313 avoidable harms in a 12-month period. For nursing to meet the top decile benchmark for nursing quality indicators (NDNQI), this organization must decrease the total number of avoidable harms by engaging staff in the problem-solving process.

Purpose Statement

The purpose of this project was to decrease the total number of patient harm events and increase staff engagement in the problem-solving process by using patient stories to change human behavior.

Section II. Evidence

Literature Review

A comprehensive literature search was conducted using the Laupus Health Services Library. Databases searched included: Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed, and Google Scholar. Keywords were identified and searched in each database, individually and utilizing the Boolean operator "OR" to ensure all possible terms were included and "AND" to narrow the number of articles identified. The MESH terms included: patient, patient stories, narrative, story-telling, zero harm, harm, safety, and quality improvement. Articles identified in the reference lists of selected literature were also chosen for review to support the project goals. The timeframe for inclusion was set at five years along with English language, full text, and books and journal articles. The original searches yielded 557 articles and after the limitations were set, 247 remained. A review of titles and abstracts aided in limiting the number of articles further. Melnyk and Fineout-Overholt's (2011) model was used to evaluate levels of evidence, assigning each article as a Level I-VII. The four articles chosen as supportive evidence ranged from Levels VI-VII. A detailed appraisal of the literature selected can be found in Appendix A.

Current State of Knowledge

Cohen and Stewart (2016) published a composite of events including seven stories written by clinicians from the healthcare industry. The narratives included individual cases

where there had been a failure in a process or staff error resulting in an unfavorable outcome for the patient and/or clinician. Through the act of story-telling, patient safety issues and root causes were identified. Cohen and Stewart identified the elements of unreliability in each instance and as healthcare organizations strive to be a high-reliability industry, understanding where these breakdowns occur is imperative.

There are multiple ways in which one can engage patients and learn from their experiences. Baker et al. (2016) conducted a review of three case studies that spanned four organizations to evaluate how patients are involved in quality improvement initiatives. Each case study outlined: 1) examples of quality initiatives patients participated in; 2) patient roles and responsibilities; 3) strategies for recruiting patients; 4) aspects of successful engagement; and 5) outcomes. One organization reported the use of patient input to develop a toolkit for staff to utilize before discharging a patient with a new hip fracture. Utilizing the patient experiences and input, staff utilization of the toolkit improve from 60% to 95%, and patient satisfaction scores improved from 60% to 80% (Baker et al., 2016).

Scanlon et al. (2017) performed a quality improvement project that utilized quantitative outcome measures and a formative evaluation process to implement a CAUTI reduction program. The project included the implementation of CAUTI champions, CAUTI rounds, a nurse-driven CAUTI protocol, and CAUTI root cause analysis. A multi-disciplinary team met monthly to review CAUTI events and process failures in a blame-free environment. Sharing the story of each avoidable patient harm that occurred resulted in front-line staff contributing to the development of best practices and a renewed commitment to patient safety. Scanlon et al. reported a decrease in the incidence of CAUTIs in their Intensive Care Unit by 89% over 18 months and a decrease in the number of catheter days, over the same time, by 58%.

Kaplan et al. (2019) completed a quality improvement project to reduce HAPIs using apparent and systemic analysis. Unlike root cause analysis, apparent cause analysis (ACA) can be conducted quickly and results in an action plan to address the issue and monitor organizational trends (Crandall et al., 2017). In the project conducted by Kaplan et al. (2019), an ACA was conducted when a HAPI occurred. Skincare experts validated the findings, conducted a chart review, and assembled a multi-disciplinary team within seven days to discuss the patient harm event. Each ACA started with a review of the patient story. Team members then engaged in discussions to identify where process breakdown occurred and opportunities for improvement. The ACA was conducted at the unit level and if trends were seen across the organization, a systemic analysis was performed utilizing the same multi-disciplinary approach to problem-solving. By sharing the story of the harm, including the patient information and the systemic challenges, to engage team members in the problem-solving process, the organization reported nearly a 50% decrease in HAPI since the implementation of the program.

Evidence to Support the Intervention

A comprehensive review of the literature supports involving patients in quality improvement efforts and utilizing the patient stories of harm events to engage staff to develop solutions. Healthcare leaders must engage frontline staff as well as patients to provide the level of care our patients expect and deserve (Baker et al., 2016, Cohen & Stewart, 2016, Kaplan et al., 2019, Scanlon et al., 2017). Incorporating the patient's story or perspective into efforts for change is documented to improve quality and safety and a basis on which to develop policy (Lamprell & Braithwaite, 2016). The project hospital has embarked on a journey to zero harm, to empower frontline staff to drive real-time problem-solving. Sharing the story of the patient

experience is a key part of the QMS, creating an emotional connection to the event via story-telling.

Evidence-based Practice Framework

Identification of the Framework

This project was implemented utilizing the IHI Psychology of Change Framework (Hilton & Anderson, 2018). The framework is based on the transformation of one's self including their thought process, their emotions, and behavior. This change in self goes hand in hand with the transformation of the system in which one works. The objective of the framework is to create an environment where groups and individuals have the power and courage to implement and sustain change.

The framework is designed so each domain is interconnected and one may move throughout the domains at different points in time. The domains include: 1) Unleash Intrinsic Motivation, 2) Co-Design People-Driven Change, 3) Co-Produce in Authentic Relationship, 4) Distribute Power, and 5) Adapt in Action (Hilton & Anderson, 2018). According to Hilton and Anderson (2018), each domain attributes to activating one's agency, which gives power and courage, leading to actions with purpose. This project utilized public narrative to unleash intrinsic motivation. The IHI Psychology of Change Framework describes the public narrative model developed by Marshall Ganz (2009) and includes the story of self, the story of us, and the story of now. Using this story-telling model can engage staff through an emotional connection, motivating team members by exploring each stakeholder's 'why?'(Hilton & Anderson, 2018).

Engaging team members on the frontlines to offer solutions to the problem co-designs people-driven change (Hilton & Anderson, 2018). In other words, they 'co-design' the plan to implement to solve the problem at hand. This will happen during the post-harm huddles. The

next domain in the framework is to co-produce authentic relationships (Hilton & Anderson, 2018). When the staff who are directly involved with the challenges of providing high-quality care are empowered to implement solutions, they grow as professionals and assume accountability for carrying out the change. The project organization utilized a Just Culture to ensure staff feels they can engage in the process without penalty or assignment of blame. The organization must commit to this bottom-up approach to solving problems.

Hilton and Anderson (2018) define power as 'relational.' It is not a title one holds. Power results when experts of the work come together, sharing their expertise to accomplish a specific goal. The domain of distribution of power occurs when leaders act as coaches, build relationships, and encourage the professional development of the staff (Hilton & Anderson, 2018). The project hospital must continue to develop leaders as coaches, allowing the distribution of power throughout the quality improvement cycle.

Adapt in action, the final domain occurs when staff finds the courage to use the power they have been given (Hilton & Anderson, 2018). The organization will utilize the PDSA methodology to evaluate the actions put in place and adapt based on their success. Solutions to problems are often implemented with success; however, if the change in practice is not sustained, the problem recurs when people return to the way they did things before. The project hospital utilized this framework to create and sustain the change.

Ethical Consideration & Protection of Human Subjects

According to the *Code of Ethics for Nurses with Interpretive Statements*, it is the duty of the nurse to enhance the profession through research and translation of existing knowledge (American Nurses Association [ANA], 2015). It is the obligation of the nurse to follow all ethical standards when conducting any such work that involves human subjects and therefore

they must honor the subjects rights at all times (ANA, 2015). All ethical standards were upheld while conducting this project and there are no ethical implications for the participants. All participants engaged in the post-harm huddles and learned of the patient stories.

The project leader completed the required Collaborative Institutional Training Initiative (CITI) Program modules to ensure the rights of the human subjects who participated. This ethics and compliance training was required by the project organization before submission to the Institutional Review Board (IRB). The project was submitted to the project site's IRB for determination and found to meet quality improvement exemption, category 2 on September 28, 2020 (see Appendix B). After approval from the project site IRB, the project was submitted to the academic site and found to qualify as a quality improvement project on September 29, 2020 (see Appendix C).

Section III. Project Design

Project Site and Population

The project hospital is a 186 bed, non-profit, community hospital and is a part of an academic health system. Located in central North Carolina, this hospital is committed to providing high-quality, cost-conscious care to the community. The organization has embarked on a journey to zero avoidable harm events through the implementation of a QMS that encourages frontline staff to actively participate in problem-solving experiments to learn from adverse events and prevent future injury. The organizational commitment to improving patient outcomes and eliminating harm, as well as personnel resources that were already in place facilitated the implementation of the project.

The demands on nursing at the bedside are ever-evolving and the project site QMS encourages real-time and brief problem-solving sessions. This model allowed the frontline staff

who were involved in the events leading to harm to participate in the process but engagement past the initial huddle was often difficult. Hospital operations run 24 hours, seven days a week, and creating a standard format in which the story-telling process would be utilized consistently was imperative as the project leader would not be present around the clock. An additional barrier for the implementation included the size of the organization and the geographic location of other health system entities that made the inclusion of other like units unfavorable.

Description of the Setting

The utilization of story-telling during post-harm huddles was implemented in three target units of the project site. The units consisted of inpatient intermediate care medical-surgical units who had utilized the post-harm huddles, without story-telling over the previous 12 months. Nursing leaders and frontline staff had been previously trained on the QMS and the expectation to perform a post-harm huddle existed.

Description of the Population

The population for participation included all Registered Nurses (RNs) and Nursing Care Assistants (NCAs) working on each of the identified units. The nursing leaders and Clinical Nurse Specialists (CNSs) of each unit were included as they are also participants in the post-harm huddles. The problem-solving process involves a multi-disciplinary team; however, outside of the nursing staff, those team members vary based on the harm event and therefore would not consistently participate in the project.

Project Team

The project site committee was comprised of an interdisciplinary team that allowed for collaboration, implementation, and evaluation of the quality improvement initiative. The project site champion, who also serves as the Chief Nursing Officer (CNO) offered guidance and

support while assisting with overcoming barriers that existed. The Chief Quality Officer shared the organizational vision for incorporating story-telling to reduce avoidable harm events and provided support for utilizing the QMS coaches during post-harm huddles. Their involvement ensured consistency in the story-telling process and supported the nursing leadership team when conducting the huddles.

Data analysis and collection were performed through partnerships with the Nursing Director of Quality and Magnet and the Nursing Program Manager of Safety. The Chief Human Resource Officer offered guidance and provided organizational permission to utilize the nursing engagement survey questions, pre-and post-implementation. The collaboration and support of this team, as well as support from executive nursing leaders across the health system, allowed the project leader to evaluate the use of patient stories in a structured, real-time problem-solving process (see Appendix D).

Project Goals and Outcome Measures

The goal of this project was to reduce avoidable patient harm events by increasing nursing engagement in the problem-solving process. A pre-and post-survey was administered to measure nursing engagement in the problem-solving process as it specifically relates to the post-harm huddle. Avoidable patient harm events were also captured that attributed to CLABSIs, CAUTIs, HAPIs, and patient falls with injury.

Description of the Methods and Measurement

Nurse Engagement Survey. In order to assess the outcome of improved engagement, a nurse engagement survey (see Appendix E) was utilized. The participants created a unique anonymous identification code to allow for the project leader to determine the staff members who completed both the pre-and post-engagement survey. Demographic information collected

included the primary work unit and position held on the unit. The work area was identified as 3rd, 4th, or 5th-floor nursing units and was reported as a percentage (%) of the total number of respondents. The participant's position was identified as a staff nurse, nursing care assistant, or nursing leader and was reported in percentages (%). Both sets of demographics were illustrated in table format. The project leader also reported the number of participants that completed both the pre-and post-survey.

The nurse engagement survey included four questions that have been asked as a part of a larger organization staff satisfaction survey in 2019. The questions were asked as they specifically related to the post-harm huddles and focused on engagement in the process. Each question was scored with a response of one through five, with one being strongly disagreed and five being strongly agreed. The respondents' scores for each question were aggregated, separately by pre-and post-survey data and a comparative means analysis was performed to determine if there is any increase after story-telling was incorporated into the post-harm huddle. This data was presented in table format to demonstrate the nursing perception of engagement scores pre- and post-project implementation.

Harm Events. The second defined outcome was to decrease avoidable harm events. Avoidable harm events defined as a CLABSI, CAUTI, HAPI, or fall with injury would be measured in total numbers via a harms dashboard. The findings were compared to three months of historical data from (October 1, 2020, to December 31, 2020) and were presented in a bar graph for each type of event.

Harm events are also submitted to a national database, NDNQI, that provides benchmarking and performance as a rate. CLABSI rates are calculated by the number of events divided by the total number of central line days. CAUTI rates equal the total number of events

divided by catheter days. HAPIs are calculated by the number of hospital-acquired pressure injuries stage two and above divided by the total number of patients performed in the quarterly point prevalence study. Patient falls with injury are calculated by the number of injury falls divided by 1000 patient days or ambulatory visits per the respect ted area. Quarterly benchmarking is established based on the data submitted by all hospitals that use NDNQI. Central measures of tendency and comparison groups like bed size, Magnet status, teaching status, etc. are used as comparative groups. The organization utilizes Case Mix Index (CMI) as the compassion group for all the defined harm measures.

Discussion of the Data Collection Process

Before implementation of the project, the project leader met with each participating unit nurse leaders to ensure support for the project. Each unit holds daily huddles where announcements are made and the project was present to the staff on each shift over several days. The project leader also presented an overview of the project at each unit staff meeting utilizing a PowerPoint presentation. A reminder about the project was placed on each unit huddle board with the project leader's contact information. Emails to each eligible staff member were sent to introduce the project purpose and to inform them of the pre-and post-nurse engagement survey dates.

The nursing engagement survey questions were chosen by the project leader because they addressed the staff perception of psychological safety to engage in the QMS and post-harm problem-solving process, as well as if their voices were considered, and they had the power to drive a change. The survey was administered via email in Qualtrics® to enable the inclusion of staff across all units and shifts and to allow for anonymous responses. The survey data was then retrieved after being posted for two weeks and scores were recorded in an Excel spreadsheet to

allow for comparisons between pre-and post-survey data. The survey was administered two weeks before (starting January 1, 2021) and immediately after the completion (starting April 16, 2021) of the project.

Total harm events were captured using the existing organization Safety Reporting System and were compiled in the hospital harms dashboard. The data was extracted from this dashboard and maintained in an Excel spreadsheet. Data collection began with 18 months (July 1, 2019 to December 31, 2021) of historical data and weekly data was extracted throughout the implementation phase. The total number of events was recorded as well as each individual event and categorized by CLABSI, CAUTI, HAPI, or fall with injury. The process was already in place for this data to be reported quarterly by the Nursing Director of Quality and Magnet to NDNQI. Benchmark and performance data for the nursing quality indicators was obtained for the time of the intervention (January 1, 2021-March 31, 2021) on June 15, 2021. This data was compared to the NDNQI benchmark data for the organization, prior to the project implementation (October 1, 2020 to December 31, 2020).

Implementation Plan

A meeting with the project champion occurred on October 14, 2020 to review the project timeline and implementation plan. A review of the IRB approval and documents submitted to both the project and academic site were reviewed to ensure the goals of the project and data collected were within the project plan. The tool that would be utilized to assist participants in creating the patient's story was reviewed with the Chief Quality Officer for final approval on October 29, 2020 and it was found to meet the organizational vision for incorporating story-telling in the QMS.

Engaging front-line staff to participate in the identification of the root cause of patient harm events is imperative. Before information was shared with staff, a meeting was held with each project unit nurse manager, clinical team lead and QMS coaches to discuss an overview of the project, including how story-telling impacts patient safety outcomes and a review of the tool to develop the story. These meetings were completed by October 23, 2020. The project plan was also presented to the project hospital Nurse Executive Committee on October 26, 2020, to inform them that there would be a variation in how post-harm huddles were being performed on the project units.

Each nurse on the identified units was encouraged to participate in the post-harm huddle if they were caring for or involved with that patient event. Education sessions were offered to all participants via staff meetings, shift huddles, and scheduled in-services. The educational sessions included the background of story-telling, a review of the story-telling tool, and the expectations on time required to develop the story and were completed by November 12, 2020. The pre-survey to evaluate nursing engagement was administered November 13-November 30, 2020 with weekly reminders to encourage the participants to complete the survey.

On January 18, 2021, the start date for the project, the project participants began incorporating story-telling into the post-harm huddles. Post-harm huddles occur after each patient harm event and the huddle occurs within 24 hours of the event. The participants were coached to utilize the story-telling guide by the project leader, QMS coaches, and nursing leaders in the development of the patient story (see Appendix F). Each participating nursing unit had a copy of the story-telling guide, which included information readily available in the patient medical record as well as organizational data around the historical impacts of each type of harm event. The charge nurse or the patient care nurse who participated in the huddle was responsible

for obtaining the information and telling the story. After the first two huddles, a de-brief occurred to evaluate the process and obtain feedback on the ability to extract the patient's story from the medical record.

Story-telling was included in the post-harm huddle a total of 15 times during the project implementation. The project concluded on April 15, 2021. After the project period, a post-survey was administered via email over a two-week timeframe (April 16, 2021 to April 30, 2021) and weekly email reminders, in addition to huddle announcements were used to encourage participation.

Section IV. Results and Findings

Results

This evidence-based project implemented story-telling into the hospital's existing post-harm huddle. The story was compiled and told by a member of the nursing team involved in the event and focused on the person, not the patient. There were a total of 18 harm events across the three project units. Given the timing of three of these events, story-telling was only incorporated into the post-harm huddle 15 times.

Outcomes Data

Nurse Engagement. Nurse engagement in the post-harm huddle process was measured pre-and post-project implementation. The survey was administered via Qualtrics® and sent out via email. The surveys were active for two weeks before and two weeks after project implementation. A total of 54 out of 300 eligible team members responded to the pre-implementation survey and there were 57 out of 309 eligible respondents to the post-implementation survey. A total of 16 participants completed both the pre-and post-engagement

survey. The unit in which the participant worked and the role of each respondent was captured and reported as percentages of the total number of participants in Table 1.

Pre-implementation, the 3rd floor had 26 responses, the 4th floor had six responses, and the 5th floor had 22 responses. Registered nurses accounted for 25 of those who responded, 20 nursing care assistants, and nine nurse leaders. Post-implementation, the 3rd floor had a total of 30 staff who responded, the 4th floor had nine, and the 5th floor had 18 respondents. Registered nurses accounted for 30 responses, 21 nursing care assistants, and six nurse leaders.

Table 1

Demographic Characteristics of Survey Participants

Total Number of Respondents	3rd Floor		4th Floor		5th Floor		Total
	n	%	n	%	n	%	n
Role - Pre							
Staff	13	52.0%	2	8.0%	10	40.0%	25
NCA	10	50.0%	2	10.0%	8	40.0%	20
Leader	3	33.3%	2	22.2%	4	44.4%	9
Role - Post							
Staff	16	53.3%	4	13.3%	10	33.3%	30
NCA	12	57.1%	3	14.3%	6	28.6%	21
Leader	2	33.3%	2	33.3%	2	33.3%	6

Note. Pre-implementation survey N=54. Post-implementation survey N=57.

Nurse engagement scores in the post-harm huddle were measured using a four-question survey. Questions were scored on a scale of one through five, with one being strongly disagreed and five being strongly agreed. Higher scores were related to a more positive response. Before the project implementation, the mean score for nursing engagement across all three project units was 3.89. After the pre-implementation survey was complete, the three units participated in the

project, incorporating story-telling in the post-harm huddles. After completion of the 12-week project, the three units were surveyed using the same four-question survey and the mean nurse engagement score increased to 4.09 across all three units. The details of each question score by project unit location are detailed in Table 2.

Table 2

Nurse Engagement Survey Results

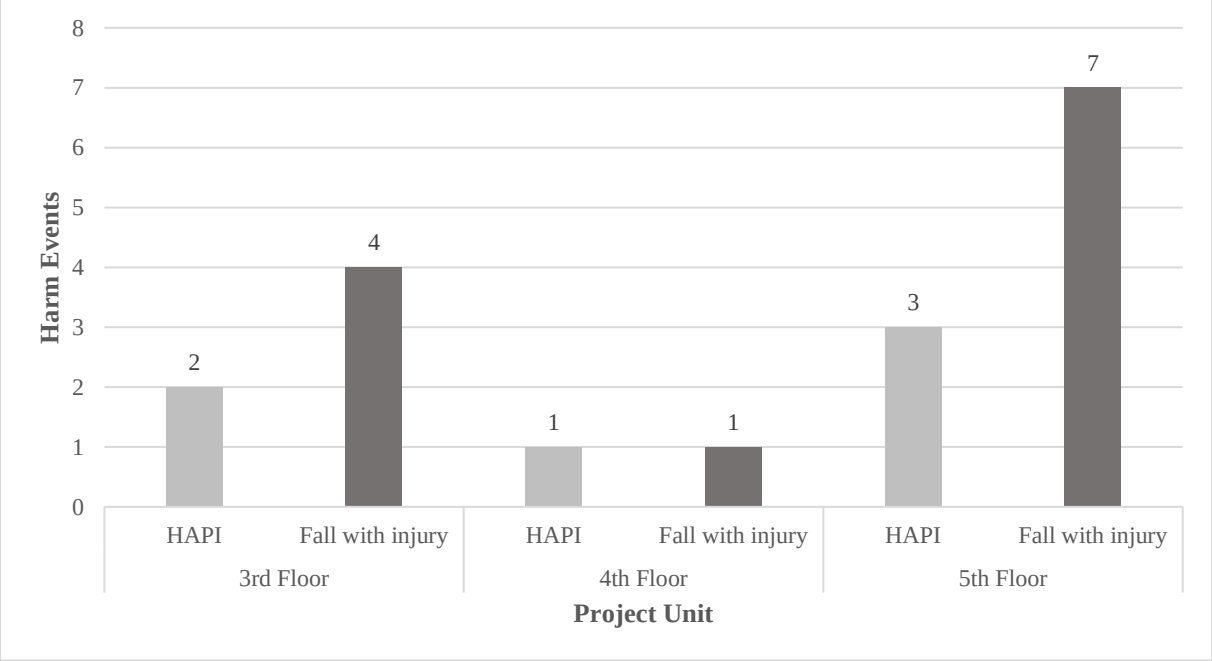
	Pre Data	Post Data	Difference
Q1 - My ideas and suggestions are seriously considered by the person I report to			
3RD	3.92	4.23	0.31
4TH	4.33	4.22	-0.11
5TH	3.59	3.89	0.30
All Units	3.83	4.12	0.29
Q2 - In this work setting/department, it is easy to discuss errors			
3RD	4.15	4.23	0.08
4TH	4.00	3.89	-0.11
5TH	3.77	4.17	0.39
All Units	3.98	4.16	0.18
Q3 - I am involved in decisions that affect my work			
3RD	3.81	3.90	0.09
4TH	3.83	3.89	0.06
5TH	3.27	3.67	0.39
All Units	3.59	3.82	0.23
Q4 - I have a chance to use my strengths every day at work			
3RD	4.35	4.30	-0.05
4TH	4.00	4.33	0.33
5TH	4.05	4.11	0.07
All Units	4.19	4.25	0.06

Note. Responses on a scale of one through five. One-Strongly Disagree and Five-Strongly Agree.

Patient Harms. Patient harm data was collected for each project unit during the 12 week implementation period. Harm was defined as a CLABSI, CAUTI, HAPI, or fall with injury. A total of 18 harm events were reported during the project period, which included zero CLABSIs, zero CAUTIs, six HAPIs, and 12 falls with injury. Six events occurred on the 3rd floor, two events on the 4th floor, and 10 events on the 5th floor (see Figure 1). There were a total of 18 harm events during the project implementation period as compared to 10 events in the pre-implementation comparison period.

Figure 1

Total Patient Harm Events



Note. There were no CAUTIs or CLABSIs reported during the project period, January 18, 2021, through April 15, 2021.

Nursing quality indicators for performance and benchmark data, as reported by NDNQI, were also collected (see Table 3). Performance data for the reporting period (January 1, 2021, to March 31, 2021) of the project units revealed falls with an injury rate for the 3rd floor as 1.04, 4th floor as 0.31, and the 5th floor as 3.29. The rates are calculated by the number of falls with injury per 1000 patient days. For NDNQI, HAPIs stage two and above are collected using a point prevalence survey, one point in time. On audit day, the 5th floor was the only unit reporting this harm for a rate of 2.94. There were no reported CLABSIs or CAUTIs.

Table 3

NDNQI Performance and Benchmarking

	Pre-Rate	CMI-BM	Post-Rate	CMI-BM
Falls				
3RD	0	0.58	1.04	0.85
4TH	0.61	0.58	0.31	0.85
5TH	0	0.7	3.29	0.62
CLABSI				
3RD	0	0.35	0	0.47
4TH	1.42	0.35	0	0.47
5TH	0	0.99	0	0.6
CAUTI				
3RD	0	0.72	0	0.9
4TH	0	0.72	0	0.9
5TH	0	1.47	0	1.1
HAPI				
3RD	0	2.37	0	2.88
4TH	5.41	2.37	0	2.88
5TH	0	1.76	2.94	5.06

Note. Pre-implementation performance rate and benchmark data from October 1, 2020, through December 31, 2020. Post-implementation data January 1, 2021, through March 2021. CMI-BM: Case Mix Index-Benchmark.

Discussion of Major Findings

Incorporation of story-telling into the post-harm huddle was supported by the project unit leaders and staff. The staff were very comfortable telling the story of the patient and their illness; however, telling the personal story was difficult in the beginning. The story of the person was often short and staff quickly started speaking to the patient's diagnosis or the harm event itself. After the first few attempts, the staff became more comfortable with the process and the stories became more detailed and more personal. Others participating in the huddle, including advanced practice nurses and other members of the multi-disciplinary team, would often add information they knew about the person and staff also began telling the story without being prompted by the unit or project leader.

One of the three project units (4th floor) did not participate in story-telling. There were only two harm events reported on this unit and the first harm occurred three weeks after the project began. This event happened during the night shift and the staff completed the huddle before the nursing or project leader being made aware. The second event that occurred on the 4th floor happened two days before the project concluded and was not reported until after April 15, 2021. This unit had lower participation scores in the pre-and post-engagement survey than the other units and also saw a decrease in engagement on two of the four survey questions. These findings may have been attributed to turnover in nursing leadership as well as RN staff positions.

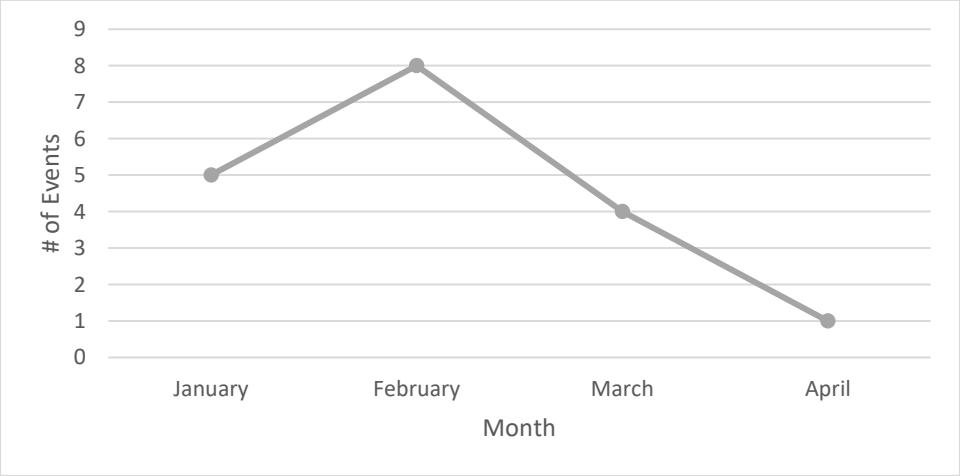
The organization utilizes NDNQI for nursing-sensitive indicators. The comparative group the organization uses is CMI: Medium. This comparative group categorizes hospitals that

are at the mean to one standard deviation above the mean of all hospitals that submit data for that quarter. The CMI remained unchanged from the comparison period throughout the implementation period; therefore, the increase in harms during the project period should not be a reflection of increasing acuity.

The goal of this evidence-based project was to decrease patient harm events by improving nurse engagement in the post-harm huddle through the use of story-telling. While the total number of harm events increased during the project implementation, there was a decrease throughout the project. There was a total of 13 events during the first six weeks of the project and five during the last six weeks (see Figure 2). Staff was willing to incorporate story-telling into the post-harm huddle on the two units that the majority of the events occurred and an improvement in nurse engagement scores was reported overall. The findings may indicate the need for a longer implementation period as nursing engagement scores began to improve and may lead to a sustained overall decrease in the total number of harms.

Figure 2

Harm Events Trend



Note. Harm events trended over the implementation period, January 18, 2021, through April 15, 2021.

Section V. Interpretation and Implications

Cost-Benefit Analysis

To remain fiscally viable, hospitals have shifted their focus from quantity-based to quality-based care. In 2008, the Centers for Medicare and Medicaid (CMS) began implementing programs that reward hospitals that provide high-quality care and penalizing those who experience unacceptable rates of hospital-acquired infections and harms (CMS, 2020). With this shift in reimbursement, this project aligns with the strategic priority of the hospital to protect its patients from avoidable harm.

Nurse Engagement

Nurses who are engaged have a feeling of fulfillment from their work, are included in the decisions that affect that work, and have access to opportunities for professional growth and development (Brooks Carthon et al., 2019). Brooks Carthon et al. (2019) report that engagement in one's work can result in better patient outcomes and higher patient satisfaction. In addition, improved patient outcomes as measured by nursing quality indicators and a decrease in turnover rates can be correlated with high nurse engagement (Ong et al., 2017).

NSI Nursing Solutions (2020) reports turnover rates in North Carolina at 19.9%. The average cost to replace a registered nurse in the United States is $44,000 and for each percentage point the turnover rate can be decreased, an organization will save approximately $306,400 per year (NSI Nursing Solutions, 2020). The turnover rate for this organization was 17% in 2020. By improving nurse engagement, this project could potentially decrease the turnover rates by 2%, and therefore save the organization $613,000 annually.

Patient Harm Events

One outcome of this quality improvement project included a reduction in patient harm events with a focus on CLABSIs, CAUTIs, HAPIs and falls with injury. While the project did not demonstrate a reduction in the number of events when compared to the three months before project implementation, a cost-saving was obtained for each avoided adverse outcome. An analysis of the cost to organizations when a patient experiences an avoidable harm event found that a patient who developed a CAUTI had an increased cost of $13,053 per admission, a CLABSI resulted in an increased cost of $27,941, a HAPI resulted in $25,792 of additional cost, and a fall with injury increased cost by $6,308 (Anand et al., 2019). Given the project units reported nine CLABSIs in the fiscal year 2020, preventing those infections could result in a $251,469 cost savings to the organization. By eliminating the five CAUTIs that occurred in FY20, the organization would save $65,265.

Resource Management

The personnel resources for the implementation of this project were already in place, as the hospital QMS provided a structure for leader and coaching support of the post-harm huddles. The huddles occurred in the unit nursing station therefore space was not a constraint and also allowed for bringing staff together in an open area during the pandemic. The laminated tool for assisting staff was placed on the unit huddle board and was accessible to staff as they prepared their story. There was no need for additional copies and one extra copy was available in the nurse manager's office in the event one was misplaced. Initial and ongoing education of the project was performed via zoom for staff meetings or in-person at the daily unit huddle which occurred at shift change.

Implications of the Findings

The results of this project were reviewed to determine the implications for the patients, nursing practice, and the hospital. While the impact on total patient harm events did not show a favorable outcome, there was an increase in nurse engagement scores as it related to the post-harm huddle process. Improved nurse engagement would ultimately benefit the hospital over time.

Implications for Patients

The implications for patients in this project focused on unintentional patient harm events. As staff became more comfortable with the story-telling process, there was a decrease in the number of events that occurred. A return of patient support persons into the hospital setting, post-pandemic, may also increase the staff's ability to learn the story of the person. A decrease in total patient harm events could be a secondary outcome to improved nurse engagement; therefore, benefiting the patient as the staff becomes more engaged in the problem-solving process.

Implications for Nursing Practice

Innovative ways to engage nurses in their work are imperative to providing high-quality care. Looking beyond the patient's story and into the personal story of the person being cared for provides staff insight into their ‘why’ and brings meaning to their work. This project provided a framework for incorporating story-telling into the existing problem-solving process. Involving the front-line nurse in the implementation of experiments to address patient harm events allows the team to make decisions that impact the work they do. This project supports the organizational QMS and promotes ongoing quality improvement work, to move the nursing profession forward.

Impact for Healthcare System

The incorporation of story-telling into the post-harm huddle aligns with the hospital and health system's strategic goal of zero patient harm. Improved nurse engagement should result in improved patient outcomes and a decrease in nursing turnover rates (Ong et al., 2017). Elimination of each patient harm event will result in overall cost savings per admission for the organization and increase reimbursement from payers. In addition to these cost-reduction benefits, the organization would also benefit from the cost and time required to address nursing turnover.

Sustainability

The sustainability of this project is recommended as it aligns with the organizational strategic goal of eliminating all patient harm. The current QMS provides the structure to continue incorporating story-telling into the post-harm huddles and adoption on other units throughout the hospital is recommended. The standard work that exists for non-participating units will need to be updated to reflect the inclusion of story-telling. The organization will need to identify an individual or group of individuals to conduct training across new units and conduct retraining of the unit that did not utilize story-telling during the implementation phase. The project leader will remain at the project site and executive leadership will determine if this leader will continue to lead the project or if delegation is required. Ongoing utilization of the PDSA model in the quality management work will be required to determine the outcomes of the new standard work at defined intervals.

Dissemination Plan

The findings of this project will be shared inside the hospital and across the health system. Results will be presented to the Project Site Champion and the Chief Quality Officer. With the approval of the Project Site Champion, project outcomes will be presented to the hospital Nursing Executive Team, the health system Nursing Executive Council and at the hospital Manager's Meeting. The health system also holds an Annual Patient Safety Conference and an abstract will be submitted for consideration of a poster presentation at that event. Due to limitations on large group meetings, the date of that meeting is still to be determined. The results of this project will also be presented as a public presentation to the East Carolina School of Nursing Doctoral Program and the project paper will be submitted to the College of Nursing through the ScholarShip repository.

Section VI. Conclusion

Limitations

Limitations are defined as the challenges or shortcomings of a project that may lead to unanticipated outcomes or conclusions (Ross & Bibler Zaidi, 2019). One limitation of this project was that story-telling was implemented in the inpatient setting and harms can occur outside of regular business hours when the project leader was not present. Two story-telling opportunities were missed as the event happened after hours and the post-harm huddle was conducted before the project leader or nurse leaders were aware. Multiple staff across all shifts had been educated on the project expectations; however, without leadership presence, story-telling was omitted. One of the participating units missed one of only two opportunities for storytelling due to this. This project required staff to change the current standard work for the

structure of the post-harm huddle and project leadership presence was imperative in the early stages of the project to ensure staff followed the new process.

Another limitation of the project was in the development of the story. This project was implemented during the COVID-19 pandemic and visitor restrictions were in place. It is often difficult to obtain a thorough psychosocial or medical history when family support persons are not present. Staff shared that they also learned about the person they were caring for, not the patient, through conversations with family and without family or support persons at the bedside that made getting to know their story difficult.

The final limitation was related to the timing of the project start date. The project leader had intended to implement the project from January 1, 2021, through March 31, 2021, to align with NDNQI reporting quarters. Due to an unexpected delay caused by a large hospital initiative that required surveying of staff, the project site requested delaying the start date. The project was delayed by two weeks. The NDNQI performance and benchmarking data reporting dates could not be changed thus leading to gaps in the comparison period. The project started on January 18, 2021, and ended on April 15, 2021.

Recommendations for Others

The incorporation of story-telling into the QMS post-harm huddle was facilitated by the structure already in place by the organization. Support from hospital and health system leadership is essential when adding standard work to an existing organizational priority. Gandhi et al. (2020) describe a total system approach, requiring leaders to be engaged and take responsibility for their organizational outcomes for quality improvement work to be successful. Extensive education on the process for conducting quality improvement projects has been conducted for all members of the health care team and expansion to other units across the

hospital is possible. Staff buy-in and understanding of why they were being asked to tell the person's story was also vital. Connections made with patients on a personal level allow organizations to provide patient-centered health care resulting in improved outcomes and patient satisfaction (Bokhour et al., 2018).

The inclusion of additional units in the project would have allowed for additional story-telling opportunities given one unit did not participate due to the small number of harm events and the timing of those events. Recommendations for focused education of the night-shift and weekend Clinical Team Leads would be made to ensure compliance with the project after hours. Leaders should ensure all team members have a clear understanding of the vision when implementing change and by doing so they have the ability to influence participation and patient outcomes (Boamah et al., 2018). Lastly, the consideration of outcome measures should correlate with the project timeline. A delay in the project start time can impact the ability to compare quarterly data from outside organizations.

Recommendations Further Study

To deliver patient-centered care, nurses must acknowledge the patients know themselves and what motivates them far better than their healthcare providers (Salmond & Echevarria, 2017). Salmond and Echevarria report that an understanding of what motivates the patient and involving them in decisions around meeting quality and care goals is needed for patient partnerships. Evidence supports the inclusion of patients in safety initiatives and suggests that increased patient involvement will improve understanding of these interventions aimed at eliminating preventable harm (Bishop & Macdonald, 2017). Recommendations for further study would include the patient in the post-harm huddle. With the patient's permission, the discussion

could begin at the bedside, allowing staff to learn to person's story in their own words and not from the medical record.

Final Conclusion

Patients are unintentionally harmed in hospitals across the national on a daily basis. Innovative problem solving of patient harm events requires staff to be engaged in the decisions that affect their work and the utilization of story-telling increases staff engagement in that process. The inclusion of patients in safety initiatives such as post-harm huddles may improve the patient's understanding of these interventions aimed at eliminating preventable harm and the recommendation to allow the patient to tell their own story should be considered.

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Appendix A

Literature Matrix

Authors	Year Pub	Article Title	Journal	Purpose and take home message	Level of Evidence	Comments/critique of the article/methods GAPS
Baker, Fancott, Judd & O'Conner	2016	Expanding patient engagement in quality improvement and health system redesign: Three Canadian case studies.	*Healthcare Management Forum*	Case study reviews to evaluate impact of patient involvement in quality improvement initiatives	Level VII	The authors found that patient involvement and sharing of their experiences improved overall staff utilization of discharge toolkit and patient satisfaction.
Cohen & Stewart	2016	The stories clinicians tell: Achieving high reliability and improving patient safety.	*The Permanente Journal*	Utilization of story-telling to share 7 narratives of patient harm with the intent to identify where breakdowns occurred	Level VII	The authors found that review of the patient story led to development of high reliability processes around patient safety.
Kaplan, Maykick-Youngberg, Liao & Francis	2019	Journey to zero harm.	*Nursing Management*	Quality improvement (QI) project utilizing apparent cause analysis for HAPIs. Each analysis started with sharing the patient story. Story included patient information and system challenges.	Level VI	The authors found that by engaging the staff by incorporating the patient story led to a 50% reduction in HAPI.
Scanlon, Wells, Wollforde, Khameraj & Baumgarten	2017	Saving lives and reducing harm: A CAUTI reduction program.	*Nursing Economics*	QI project of CAUTI reduction program. Included patient story in multi-disciplinary review of each harm event.	Level VI	The authors found that through staff engagement in the problem solving process, there was a new found commitment to problem solving and a decrease in the incidence of CAUTIs.

Appendix B

Institutional Review Board Determination

[redacted]

RD DECLARATION OF EXEMPTION FROM IRB REVIEW

ng protocol meets the criteria for a declaration of exemption from 01(b), 45 CFR 46.102 (f), or 45 CFR 46.102 (d), satisfies the Privacy Rule as described in 45 CFR 164.512(i), and satisfies Food and Drug Administration regulations as described in 21 CFR 56.104, where applicable.

Protocol ID: Pro00106896
Reference ID: Pro00106896-INIT-1.0
Protocol Title: Putting a human face on harm: reducing patient adverse events through story telling
Principal Investigator: Deborah Allen
Review Date: September 28, 2020
Expiration Date: **Does not expire*
Exempt Category: Category 2: Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met: i. The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects; ii. Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation; or iii. The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by .111(a)(7).

*This Declaration of Exemption from further IRB Review is in effect from September 28, 2020 and does not expire. However, changes to the proposed research will require an amendment requesting re-review for exemption. Reportable serious adverse events and unanticipated problems related to the research that place subjects or others at risk of physical, psychological, economic, or social harm must be promptly reported to the IRB and will result in reconsideration of the activity's exempt status.

[redacted]

Appendix C

ECU Institutional Review Board Determination

Based on your responses, the project appears to constitute QI and/or Program Evaluation and IRB review is not required because, in accordance with federal regulations, your project does not constitute research as defined under 45 CFR 46.102(d). If the project results are disseminated, they should be characterized as QI and/or Program Evaluation findings. Finally, if the project changes in any way that might affect the intent or design, please complete this self-certification again to ensure that IRB review is still not required. Click the button below to view a printable version of this form to save with your files, as it serves as documentation that IRB review is not required for this project. 9/29/2020

Appendix D

Project Site Committee

Project Site Committee Plan			
Project Committee Member	Member Role and Expertise	Implementation Steps and Execution	Meeting Schedule
Chief Nursing Officer	Project Site Champion	Offer guidance and support throughout project, remove barriers	Weekly In-person or via virtual meeting
Chief Quality Officer	Executive leader for QMS, project site and health system	Provide vision for utilizing human stories in reducing harm, historical data for project site hospital and approval of template for story-telling	Bi-Weekly In-person or via virtual meeting
Nurse Managers/Clinical Team Leads	Nursing leaders of project units. Leaders in post-harm swarms. Clinical experts in care delivery. Empowered to drive change on unit.	Set expectations for huddle components (story-telling), lead/coach front line staff, assist with implementation of staff experiments to decrease/prevent harm	Weekly In-person or via virtual meeting
Quality Management System (QMS) Coaches	Trained/expert in QMS and serve as coach to leaders in each post harm swarm.	Provide standard work for each post harm huddle. Coach team to ask questions to share the patient story.	Bi-Weekly In-person or via virtual meeting
Nursing Director, Quality and Magnet	Expert in quality measures and outcomes data	Assist with Magnet, Nursing Quality Indicators outcomes data, participant in post harm swarms, project advocate	Bi-Weekly In-person or via virtual meeting
Nursing Program Manager, Safety	Expert in safety data collection and dissemination (Harms Database) and identifying harms that occur via Safety Reporting System	Provide breakdown of patient harms per unit, reports patient harms in daily safety huddle to ensure post harm swarms happen timely	Monthly In-person or via virtual meeting
Chief Human Resource Officer	Expert in staff satisfaction survey and Just Culture	Development, pre- and post- implementation survey. HR Resource.	Monthly In-person or via virtual meeting

Appendix E

Staff Engagement Survey (Pre & Post Project Implementation)

Survey Recipients: Nursing Leaders and Staff

Answer the following questions to create your unique anonymous ID for this survey:

What are the last 4 digits of your cell phone: ___ ___ ___ ___

What are the first 3 letters of your favorite color: ___ ___ ___

What is the date of your birth (1-31): ___ ___

Our organization implemented its Quality Management System in 2019. As a part of our Commitment to Zero Harm, our team conducts swarms (huddles) after a harm event occurs on each unit. The following questions are specifically related to your perceptions as it relates to the post-harm swarms that occur on your unit.

Primary Work Unit (select one): 3rd floor_____, 4th floor_____, 5th floor_____

Position (select one): Staff Nurse_____, NCA_____, Nurse Leader (NMO, CTL, CNS)_____

1. My ideas and suggestions are seriously considered by the person I report to.
    1- Strongly Disagree
    2- Disagree
    3- Neither Agree Nor Disagree
    4- Agree
    5- Strongly Agree

2. In this work setting/department, it is easy to discuss errors.
    1- Strongly Disagree
    2- Disagree
    3- Neither Agree Nor Disagree
    4- Agree
    5- Strongly Agree

3. I am involved in decisions that affect my work.
    1- Strongly Disagree
    2- Disagree
    3- Neither Agree Nor Disagree
    4- Agree
    5- Strongly Agree

4. I have a chance to use my strengths every day at work.
    1- Strongly Disagree
    2- Disagree
    3- Neither Agree Nor Disagree
    4- Agree
    5- Strongly Agree

Appendix F

Story-telling Guide Example