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Improving Quality Through Nursing Participation At Bedside Rounds In A Pediatric Acute Care Unit

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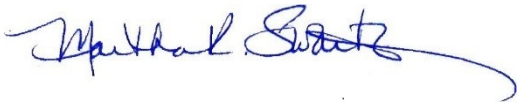

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Title

Improving Quality Through Nursing Participation at Bedside Rounds in a Pediatric Acute Care Unit

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Abstract

Implementation of bedside rounds enhances communication and collaboration between physicians and nurses, resulting in improved clinical outcomes. Yet, the literature demonstrates that it remains difficult for nurses to attend rounds if they don't know when they are happening. This project aimed to: increase nurses' presence, participation and contribution at bedside rounds in a pediatric acute care unit, enhance clinical teamwork and collaboration, and improve quality outcomes. Nurses carried a pager so that physicians could alert them of rounds. Perception of teamwork and collaboration was assessed via surveys pre- and post- intervention as well as the National Database of Nursing Quality Indicators (NDNQI®)'s annual survery evaluating RN and MD interactions. Other quality outcome measures included length of stay and patient satisfaction through Press Ganey™ surveys. Findings demonstrated that when nurses were notified in advance, their participation in rounds increased from 44.4 to 73%. Length of stay decreased from 2.5 days prior to the project to an average of 2.10 during the project. Scores on inpatient satisfaction surveys increased from 82.4 to 92.2%, and nursing communication improved from 83.3 to 95.65%. Interprofessional collaboration as reflected by the inclusion of nurses at bedside rounds led to positive outcomes in patient care. Increasing nurses' presence and providing them with a role in patient care rounds is an important step towards fostering teamwork and collaboration with physicians and enhancing family-centered care in a pediatric inpatient setting. Further research measuring the impact of interprofessional collaboration in healthcare is needed.

Keywords: quality improvement, nurse communication, collaboration, pediatric acute care unit, bedside rounds.

Introduction

Problem Description

A need for interprofessional collaboration.

Over the last few years, guidelines from regulatory agencies such as the Joint Commission (TJC) (2017), the U.S. Department of Health and Human Services (2015), and the Agency for Healthcare Research and Quality (2015), have focused on the need for improved quality outcomes at every healthcare institution. Providing higher-quality care and maintaining patients' safety must be priorities for an industry at risk for a range of human errors.

More than 20 years ago, Zinn (1995) revealed that poor communication and collaboration practices were identified as the most common causes of preventable clinical errors. Further reports from TJC reveal that communication failures were the root cause of over 70 percent of sentinel events (The Joint Commission on Accreditation of Healthcare Organizations, 2005). Additionally, nurses have cited communication issues with physicians as one of the two most highly contributing factors to patient care errors according to the National Council of State Boards of Nursing report (n.d.).

A fundamental theme common to most recommendations for an improved healthcare delivery-system is enhanced interprofessional collaboration among disciplines. In inpatient settings, collaboration and communication can potentially be enhanced through daily, bedside rounding, in which physicians, nurses, families, and other healthcare members provide input on the patients' plan of care.

Research on bedside rounds has been limited. A Cochrane review concluded that insufficient evidence existed to evaluate the impact of these rounds (Shields, Pratt, Davis & Hunter, 2007). Additionally, the lack of consistent participants in bedside rounds makes the

implementation of a randomized controlled trial very difficult (Rappaport, Katterer, Nilforoshan & Sharif, 2012).

The purpose of this article is to summarize the critical evidence on interprofessional collaboration and its impact on bedside rounds, to describe the design and results of a pilot project in a pediatric acute care setting designed to increase nurses' participation in bedside rounds, and to discuss the implications and next steps for improving nursing contributions during rounds. The findings of this quality improvement project are described according to the Revised Standards for Quality Improvement Reporting Excellence (SQUIRE 2.0) guidelines as outlined by Ogrinc et al. (2015).

Equal partners

Teamwork and collaboration may not come naturally. The perceived hierarchy of healthcare providers, with physicians "at the top," although changing, may continue (Voyer, 2013). Equity and partnership are both identified by Porter-O'Grady and Malloch (2015) as essential features of an effective team. *Partnership* is essential to building relationships, involves all staff members in decisions and processes, implies that each member has a key role in fulfilling the mission and purpose of the organization, and is critical to the healthcare system's effectiveness (Batson, 2004; Porter-O'Grady & Hinshaw, 2005). *Equity* is a guiding principle for integrating staff roles and relationships into structures and processes to achieve positive patient outcomes. Teamwork based on equity maintains a focus on services, patients, and staff, and indicates that no one role is more important than any other. While there may be differences in terms of scope of practice, knowledge, authority, or responsibility, each team member is essential to providing safe and effective care (Porter-O'Grady & Hinshaw, 2005; Batson, 2004). Additionally, Porter-O'Grady and Malloch (2015), have stated that "equity assumes equality, but it bases that

assumption on notions of value" (p. 129). They continued to suggest that equity is promoted when the members are present because of their unique capacity to contribute. Furthermore, team members should have the ability to share their knowledge and experience to influence the team and what it does (Porter-O'Grady & Malloch, 2015).

In a study aimed to evaluate the perception of both physicians and nurses on collaboration and clinical decision making through simulation, Maxson and colleagues (2011) demonstrated that nurses and physicians have significantly different perceptions of clinical decision-making. This study indicated that a better understanding by physicians of the challenges faced by the nurses after implementation of the simulation project led to more effective communication and better interprofessional relationships. These findings emphasize the importance of developing strategies to gain an understanding of these perceived role differences and, thus, optimize the nurse-physician relationship. Furthermore, physician-nurse collaboration can be affected by the lack of understanding of each other's role according to Robinson, Gorman, Slimmer, and Yudkowsky (2010). In their study, a crucial finding was that "nurses expressed frustration that physicians did not understand the independent nature of their practice or the scope of their practice." (Robinson et al., 2010, p. 214).

This contrasts with the findings from a study conducted by Muller-Juge et al. (2013) in which nurses and physician residents were interviewed about each other's role. It was surprising to find that nurses' general responses included a statement saying, "my role, well in two points: the first one is my autonomy, which is proper to nursing care. Then comes patient care through medical delegation, or we are here to execute doctor's orders…" (pp. 3-4). Sharma and Klocke (2014) stated that power gradients prevent nurses from demanding cooperative patient rounding.

In their research, it was found that nurses perceived rounding time as an "investment that made them an equal partner in patient care with a valued opinion," (Sharma & Klocke, 2014, p. 476). Moreover, Benner (2007) suggested that challenges to sustaining positive outcomes for patients involve the hierarchical approach in the implementation of rounds, with the physicians remaining as the decision makers (p. 166).

With this said, "Pediatric care has adopted the philosophy of a family-centered care approach in order to maximize the well-being of pediatric patients. The philosophy is founded on the collaboration of the family, nurses and hospital staff to plan, provide, and evaluate care" (Saleeba, 2008, p. 2). As parents are involved in bedside rounds and are better informed about their child's condition, the decision-making process shifts from solely physician-driven to more collaborative.

Available Knowledge

Interprofessional collaboration and bedside rounds to improve quality.

Patient safety related to human error was studied by Donchin and colleagues (2003) who recommended that, "regarding verbal briefings, it is highly desirable that nurses be included in the physicians' rounds and have a formal role in the information exchange" (p. 146). Furthermore, Edwards (2008) suggested that bedside rounds should promote an environment that gives all disciplines an opportunity to provide input, and facilitate frequent and effective communication. This results in "improved patient safety through more accurate transfer of information, more efficient use of time and resources, and a decrease in medical errors" (p. 256). Similarly, Arford (2005) summarized the need for collaboration in healthcare when she suggested that providing the best patient care possible must begin with clear and appropriate communication.

In reponse to some of these findings, the Institute for Healthcare Improvement (IHI) along with the Robert Wood Johnson Foundation, developed a national program called Transforming Care at the Bedside in 2003. A total of ten hospitals contributed to this program aimed to "improve the quality and safety of patient care on medical and surgical units; increase the vitality and retention of nurses; engage and improve the patient's and family members' experience of care; and improve the effectiveness of the entire care team." (p. 4). A subsequent initiative on optimizing communication and teamwork supported that "true transformation in a medical-surgical setting begins and ends with the front-line staff, working in close collaboration with a multidisciplinary team" (Lee, Shannon, Rutherford & Peck, 2008, p. 15).

Several studies have looked at the outcomes of collaboration between physicians and nurses with varying results (O'Leary et al., 2011; Gonzalo et al., 2014; Muething et al., 2007; Zwarenstein, 2009). While most of these studies have found some benefit in quality outcomes, other findings showed unremarkable changes. In the study conducted by Muething and colleagues, implementation of bedside rounds enhanced a sense of communication and collaboration as perceived by families and resulted in improved clinical outcomes, such as reducing time to discharge. Additionally, collaboration between physicians and nurses has been shown to decrease costs, length of stay, and negative outcomes (Baggs et al., 1992; Curley et al., 1998; Evanoff et al., 2005; O'Leary et al., 2010). Furthermore, in a study by Towsend-Gervis, Cornell and Vardaman (2014), it was suggested that structured bedside rounds reduced readmission rates through the close monitoring of risk factors affecting potential readmissions. Meanwhile, Gonzalo, Kuperman, Lehman and Haidet (2014) found a correlation between collaboration and quality outcomes following the survey of nurses and their inclusion in bedside rounds, while a similar study conducted by O'Leary et al. (2011) suggested no difference. Moreover, Towsend-Gervis,

Cornell and Vardaman (2014) found no improvement in patient satisfaction due to collaborative rounding.

Several studies have reviewed nurses' perception of collaborative practice as it relates to their involvement in bedside rounds (Burns, 2011; Fulmer et al., 2014; Gonzalo et al., 2014; Sharma et al., 2014). Most of these studies have sought to identify the barriers to promoting nursing participation in the care of patients and families, demonstrating that it remains difficult for nurses to attend rounds if they don't know when they occur. Furthermore, these studies have also indicated the limited time both nurses and physicians have to round during their daily routines.

In a study conducted by Burns (2011), she noted that the primary challenge in achieving collaboration at bedside rounds was the coordination of time between physicians and nurses. Similar results were found by Gonzalo and colleagues who argued that the timing of rounds continues to be a hurdle in the promotion of collaborative practice. This study evaluated the perceptions of nurses, attending physicians, and housestaff physicians regarding the benefits and barriers to bedside interprofessional rounds. A total of 171 surveys were sent with responses distributed as follows: nursing staff, 91%; attending physicians, 75%, and housestaff physicians, 88%. The survey results indicated that bedside rounds not only improved communication between nurses and physicians, but also improved awareness of clinical concerns and improved team-building between nurses and physicians (Gonzalo et al., 2014). Other responses highlight the positive impact on clinical outcomes and processes, such as decreased length-of-stay and timeliness of consultations. Additionally, with hospital budgets being closely monitored, staff responded that bedside rounds reduced the ordering of unnecessary tests and treatments. The surveys also identified barriers such as "nursing staff have limited time, or coordinating the start time of encounters with arrival of both physicians and nurses" as the main contributors (p. 648).

The challenge of coordinating times to conduct interprofessional bedside rounds was also identified as noteworthy by Lyons, et al. (2013). In studies conducted by Crumlish, Yialamas, and McMahon (2009), and Merel, McKinney, Ufkes, Kwan, and White (2016), it was estimated that hospitalists took an average of 17 minutes and 12 minutes per patient respectively. Bedside rounds that promote exchanging input from the different professions resulted in "opportunities to get a more in-depth assessment of the patient as an important advantage in delivering high quality care. For patients, the fact that the team had a more in-depth understanding of their condition is important for their overall safety and can help prevent future complications" (Lyons, p. 201).

Family-centered care and quality in pediatrics.

Family-centered care (FCC) is defined as a partnership approach to healthcare decision-making between the family and healthcare provider (Kuo et al., 2012). Furthermore, according to Sisterhen, Blaszak, Woods and Smith, (2007), FCC is based on the understanding that patients and their families need open, honest, and unbiased communication with all the members of the healthcare team. Furthermore, according to Just (2005), "family-centered care is a philosophy that guides practitioners away from paternalistic approaches in their delivery of care and toward partnerships with families" (p. 179). Also, according to Lewandowski and Swartz (2018), "identifying parental (and patient) concerns is a vital and a key step in creating meaningful partnerships with the family that will lead to positive outcomes." (p. 83)

Wells and Partridge (2011), suggested that family contributions to the development of new quality initiatives are vital to evaluate the effectiveness of care coordination among providers. The crucial role of the family in pediatrics to bring about better quality outomes is described by Pettoello-Mantovani, Campanozzi, Maiuri, and Giardino (2009). They state that, "it is now a

consolidated convincement in pediatrics that acceptance and correct practice of family-centered approaches will produce better health outcomes…" (p. 3). The Agency for Healthcare Research and Quality (AHRQ), in *Will It Work Here?: A Decisionmaker's Guide to Adopt Innovation* (2008), identified that divisions operating independently of each other may create a barrier to the implementation of an innovative quality study. This publication was designed to recognize that there is a gap in communication among professions and seeks to narrow the gap on independent practice by facilitating a more collaborative approach in order to improve patient and family-centered care. A contributing medical center in this project was the Golisano Children's Hospital in Rochester, New York, which implemented a new bedside round process including families, nurses, and other professionals. The initiative was promoted by residents, and nurses quickly joined because they, "recognized the benefits of improved communication, clarity of the care plan, increased efficiency of their workday, and improved ability to advocate for their patients" (p. 94).

Bedside rounds as a means to enhance family-centered care

The foundational concept of family-centered care is attributed to Dr. William Osler (as cited in Davidson, Falk, Kleba & Bull, n.d., p.1), who in 1903 stated that "the best teaching is taught by the patient himself." Dr. Osler, a prominent physician at Johns Hopkins Hospital, brought medical students out of the lectures and pioneered teaching rounds.

According to Gonzalo, Chuang, Huang and Smith (2010), bedside rounds offer opportunities to teach physical diagnosis and model skills in communication and professionalism. Bedside rounds offer an opportunity to establish a plan of care for patients and families is offered by the heath care team. Historically, medical teams exclusively conducted bedside rounds without any other discipline or the family participating. However, observational studies have demonstrated that the majority of patients want to participate in the discussion (Sisterhen et al., 2007). Bedside

rounds are now more commonly known as family-centered rounds, in which patients and families are involved in decision-making (Mittal, 2014). Bedside rounds are described as "interdisciplinary work rounds at the bedside in which patient and family share in control of the management plan" (Sisterhen et al., p. 320).

In 2003, the American Academy of Pediatrics (AAP) recommended that, "conducting attending physician rounds in the patients' rooms with the family present should be standard practice" (p. 693). In a more recent publication, the AAP released *Guiding Principles for Team-Based Care*, highlighting the importance of interprofessional collaboration and redefining key characteristics of a team in order to improve patient care (Katkin et al., 2017). Additionally, the Institute for Patient and Family-Centered Care (n.d.) outlined four principles characterizing FCC: dignity and respect, information sharing, participation, and collaboration. In pediatrics, and in a family-centered care environment, the child is recognized as the "family's child" rather than "our patient." Bedside rounds serve as a process in which family-centered care is promoted.

There are several studies noting the benefits of involving families in the rounding process and as active partners in the clinical setting (Muething, Kotagal, Schoettker, Gonzalez del Rey & DeWitt, 2007; Kuo et al., 2012; Subramony, Hametz & Balmer, 2013). However, limited attention had been paid to the valuable role nursing plays.

Alerting the nurse ahead of time is an important component of the process for conducting bedside rounds if they are to be active participants. Real-time notification of rounds being conducted may not facilitate nursing presence, because it does not allow for nurses' workload and overall workflow to be taken into account. According to Fulmer et al. (2014), nurses are more likely to participate in rounds if they can anticipate when their patients will be discussed and plan accordingly.

Muething et al. (2007) suggested that efficiency is improved through the presence of nurses at bedside rounds, as relevant information regarding the patient's condition over the previous 24 hours and progress made towards meeting discharge goals are discussed. Additionally, nurses have less of a need to page residents to clarify orders. Finally, families have been found to have fewer questions regarding the plan of care, thereby improving discharge timeliness (Muething et al., 2007).

So why is it a challenge to increase nursing participation in bedside rounds? In a study, Maxson et al. (2011) demonstrated that nurses and physicians have significantly different perceptions of clinical decision-making (p.35). Furthermore, physician-nurse collaboration is affected by the lack of understanding of each other's role according to Robinson, Gorman, Slimmer, and Yudkowsky (2010, p. 211). Finally, there seems to be a lack of agreement on how to incorporate family-centered care into everyday clinical practice (Kuo et al., 2012, p. 297).

Currently, education emphasizing collaboration is being presented as an important part of the medical curriculum to assist bridging the gap between the different views of physicians and nurses. However, tools and procedures are needed to better implement this in pediatric inpatient settings.

Rationale

The nature of this problem determined that the study be implemented as a quality improvement project. According to Donabedian (1988), quality of patient care is influenced by two intertwined elements: technology and interpersonal processes defined through the relationship with the patient. Interpersonal processes are described as the vehicle from which technology is implemented to achieve positive quality outcomes. Donabedian stated that "the management of

interpersonal process is to a large degree tailored to the achievement of success in technical care" (p. 1743).

Donabedian's framework assessment of quality of care includes three components of healthcare: structure, process, and outcome:

- Structure denotes the availability of resources and system design where care is provided.
- Process addresses the interaction between the patient and the provider(s).
- Outcome describes how the care delivered affects the patient's health (1988, p. 1745).

Interprofessional processes functioning effectively within a team also constitute the foundation of family-centered care. While the main focus is the patient and family, effective communication among healthcare providers and families is highly correlated with overall quality of care ratings and parental satisfaction (Sisterhen et al., 2007; Homer et al, 1999; Ammentorp, Mainz & Sabroe, 2005; Co et al., 2003).

Specific Aims

The overall goal of this project was to increase nursing's presence and participation at bedside rounds, foster teamwork and collaboration to promote bedside rounds, and ultimately improve care through improved quality outcomes. Based on a review of evidence indicating that interdisciplinary, family-centered bedside rounds improve quality outcomes, the specific aim of this project was to design, operationalize, implement and evaluate a process to enhance communication and further expand the role of the nurse in bedside rounds at an acute care unit at Stony Brook Children's Hospital. The outcomes of this process intervention were measured according to changes in the level of RN participation in rounds, provider perceptions of teamwork and collaboration, patient length of stay, and patient/family satisfaction with care.

Methods

Context

The project was conducted at Stony Brook Children's Hospital, Long Island, New York on the pediatric acute medical surgical unit. This unit serves approximately over 200 patients per month with main diagnoses covering the different respiratory diseases such as cystic fibrosis, asthma, and bronchiolitis. Also, orthopedic surgeries such as scoliosis repairs are common in the patient population.

Prior to the implementation of this project, there was not a consistent structure and process for conducting bedside rounds and, although families were invited to participate, the nurses were typically not. This led to many frustrations on the nurses' part as relevant information regarding patient care was often not readily communicated by the medical team. Based on input from nursing leadership, nursing staff, and physicians, plans were developed to implement a change in communication strategies as to the timing of rounds.

Intervention

Communication among physicians and nurses to meet project's objectives.

For this project, bedside rounds were slightly modified to establish an explicit role for nurses. Previously, the initial patient presentation describing the chief complaint was the residents' responsibility. With this project, the nurse was expected to present the chief complaint and overnight concerns.

To increase nurse participation, nurses carried a pager. Via the alpha-numeric paging system, with the assistance of a portable computer, residents were instructed to page the nurses ahead of time to inform them when rounds would occur. A daily log was produced by the unit's clerk and provided to each of the senior residents with the pager number and patient assignment

for each nurse. The medical teams were instructed to notify the nurses prior to the patient assigned to the nurse.

Study of the intervention.

The project was conducted over a duration of three months. Pre-data were collected using an audit tool (appendix A) to gain a baseline of the current rounding process and to identify how often nurses participated at bedside rounds. This tool contained information on whether the physicians alerted the nurses via the paging system, and whether this alert was used in advance of the actual rounds occurring. Additionally, this information also specified if the nurses were present at the beginning of rounds or if they joined later.

Following a collaborative planning session with senior and chief residents, the project was initiated for a duration of eight weeks. Data during the project implementation were categorized as weeks 1-4 and 5-8 to match published monthly reports. Assistance from the information technology (IT) department was required to generate a monthly report via Cerner ™ that captured lengths of stay by the hospitalist service. This report, along with other monthly reports based on patients' acuity and patient/family satisfaction, provided the necessary data to evaluate the impact of the project. Only aggregate data were used and there was no identifying staff information collected.

The average number of nurses participating daily on this project each month varied between 5 and 6, with 2 full teams of hospitalists with senior residents managing the communication. There were twelve nurses and ten physicians who completed the pre-intervention surveys and eight nurses and seven physicians who completed post-intervention surveys.

Students from the Stony Brook School of Nursing were recruited as data collectors. They completed training in the protection of human subjects and had no knowledge of the previous process used for rounds. The intent of bringing in data collectors not familiar with the unit was to minimize bias.

Measures

Resources available to implement this quality project

Bedside rounds were audited three times per week for eight weeks (weeks 1-4 & 5-8) using an audit tool (appendix A) reflecting the newly adopted process. Following the completion of data collection, data analysis commenced.

In addition to the audit tools, pre- and post- surveys (appendices B & C) were provided to both physicians and nurses. These surveys were adapted from Sexton and colleagues' (2006) safety attitudes survey research, indicating information of the nurse's ability to attend and participate in rounds. These confidential surveys included questions covering details on their perception of teamwork and collaboration, and questions specific to the bedside rounds. Questions involving teamwork and collaboration included "I feel satisfied with the quality of collaboration I experience with physicians/nurses," and "nursing input is well received by physicians in this unit." Questions related to bedside rounds included "I feel included at medical rounds" and "I participate at medical rounds."

Analysis.

With our aims in mind, we obtained frequency data from direct observations at bedside rounds and translated these data into a percentage reflecting the number of times nurses were alerted and participated. Those conducting the observations followed the two medical teams at rounds and included data stating whether the resident paged the nurse ahead of time; whether the

nurse was present at the beginning or during rounds; and if the nurse participated. The impact of the project was also determined by comparing several reports. Collaboration with our information technology department facilitated access to data gathered from our institutional software.

Data obtained from Cerner™ provided information on length of stay. In order to minimize any confounding factors, such as seasonal differential diagnoses reflected through average monthly patient acuity, or average daily census, further reports from Cerner™ were obtained. An average monthly acuity report was obtained from documentation in the electronical health record based on daily patient assessments. Clinical indicators were scored along a five point Likert scale. Scores ranged from 1, representing severe deviation from normal, to 5, indicating no deviation from normal. Normal was defined as the expected value of a person of similar age and same sex (Moorhead, Johnson, Mass & Swanson, 2018). In our pediatric acute care setting our acuity level varied from 3-7 with a mean score of 5. Additionally, the average daily census was gathered from the midnight census report.

The National Database of Nursing Quality Indicators (NDNQI®) was utilized to assess teamwork and collaboration. A question within the RN survey representing RN-MD interactions included a scale ranging from 0 to 6, comparing academic medical centers with pediatric medical-surgical units. Moreover, a percentile was obtained every year to assist in understanding how an institution compares with other peer hospitals. This annual survey complemented the pre- and post-project implementation survey adapted from Sexton et al. (2006).

Lastly, monthly surveys gathered from Press Ganey™ indicated patient satisfaction. This survey was mailed to families following discharge and requested them to rate their responses to questions on a scale from 1 (very poor) to 5 (very good). Raw scores were then transformed into national percentile ranks between 0 and 100. High percentile ranks indicated higher patient

satisfaction ratings. We used these data to obtain information regarding communication between nurses and patients and overall level of satisfaction based on perceived care.

We used these reports from 2015 and compared them to the time of project implementation in 2016 to assess the project's success.

Ethical Considerations

No ethical issues were identified during the planning or implementation phases of this QI project. Patient identifying information was removed from reports and Stony Brook's Institutional Review Board approved the project. There were no conflicts of interest noted.

Results

RN participation at bedside rounds.

This project was designed to increase nurses' participation at bedside rounds. An average of five to six nurses participated in the project each month and attended rounds on one pediatric unit. Table 1 summarizes the frequency of nurses being informed of the timing of rounds, whether they were present at rounds, and whether they participated in rounds. Over the three months of the project, the number of patients presented totaled 230 with 17 observations being excluded from data analysis due to incomplete audit forms. Initially, at the beginning of the project (April), the pre-data showed that nurses were informed only nine times (12.5%) for 72 patients presented. When associating RN participation and early notification alone, only 4 out of the 9 (44.4%) participated. These figures improved during the 8-week intervention as residents were being trained to use the beepers to alert nurses. During the second 4 weeks (weeks 5-8), the relationship between being informed in advance and participation was 19 times and 78.9% respectively. The overall implementation period reflected a total of 63 times that nurses were notified in advance

and a participation rate of 73%. Analyses of these data reflected a strong association between nurses being notified and nurses being present and participating.

Table 1: Frequency of Nurses Being Informed of Bedside Rounds in Advance and Who Participated.

	Number of Patients who were presented at Rounds	Instances in which Nurses Responsible for Patients were Notified in Advance		Instances in which Times Nurses Notified in Advance Participated	
		N	%	N	%
Pre Data	72	9	12.5	4	44.4
Weeks 1-4	70	44	62.8	31	70.4
Weeks 5-8	71	19	26.7	15	78.9
Number of Intervention Patients	141	63	44.6	46	73.0
Total Number of Patients	213	72	33.8	50	69.4

Perception of teamwork & collaboration.

Following project implementation, NDNQI® results on the category of RN – MD interaction were improved from the previous year. During 2015, the nursing staff scored a 4.00 out of 6, placing Stony Brook below the 10th percentile, compared to 4.48 and above the 25th percentile in 2016.

Pre-intervention data were collected from twelve registered nurses in April and from eight RNs in July after the intervention (Table 2). Overall, nurses' perceptions on the quality of collaboration with physicians improved by 12%.

Table 2: RN Survey Responses Pre- and Post-Bedside Round Intervention.

	Almost Always				Sometimes				Almost Never			
	Pre		Post		Pre		Post		Pre		Post	
In this unit,	N	%	N	%	N	%	N	%	N	%	N	%
Nursing input is well received by physicians on unit	10	83	4	50	2	17	4	50	0		0	
It is difficult to speak up if I perceive a problem with patient care	4	31	3	38	2	15	2	25	6	54	3	37
Decision making in this clinical area utilizes input from relevant personnel	8	67	5	62	4	33	3	38	0		0	
The physicians and nurses work as a well-coordinated team	10	83	4	50	2	17	4	50	0		0	
I am asked/notified to attend rounds daily*	5	41	3	37	2	17	5	63	5	42	0	
I feel included at medical rounds	5	42	3	37	4	33	5	63	3	25	0	

Adapted with permission from the Safety Attitudes Questionnaire by Sexton et al., (2006).

Pre-intervention data were collected from ten physicians and post-intervention data was collected from seven physicians (Table 3). Physicians reported overall that nurses' input was well-received and that their contributions to decision-making were helpful and relevant.

Table 3: MD Survey Responses Pre- and Post-Bedside Round Intervention.

	Almost Always				Sometimes				Almost Never			
	Pre		Post		Pre		Post		Pre		Post	
Items – In this unit,	N	%	N	%	N	%	N	%	N	%	N	%
Nursing input is well received by physicians in this unit	8	80	6	86	2	20	1	14	0	0		
Do you feel the nurses find it difficult to speak up if I perceive a problem with patient care?	2	20	0		2	20	0		6	60	7	100
Decision making in this clinical area utilizes input from relevant personnel	8	80	6	86	2	20	1	14	0	0		
The nurses work as a well-coordinated team	8	80	5	71	2	20	2	29	0	0		
The nurses are asked to attend rounds daily*	5	50	5	71	5	50	2	29	0	0		

Adapted with permission from the Safety Attitudes Questionnaire by Sexton et al., (2006).

Length of Stay

We compared institution data on length of stay during the intervention period with data from the prior year covering the same months. Quality outcomes collected during comparable timeframes demonstrated a shortened length of stay during the eight-week period of project implementation. The length of stay decreased from 2.5 days prior to the study, to 2.03 days during the first 4 weeks of the project, to 2.18 days during the remaining 4 weeks respectively. The length of stay the year before for the same period was 2.68 days during the pre-data period, 2.79 days and 2.65 days during project implementation.

Several factors, such as acuity and/or daily census, can influence length of stay. The project was implemented during a time that reflected a patient population that was sicker: average monthly

acuity at the same time last year was 4.53 vs 4.89 during the pre-data period, and 4.51 vs 4.72 during project implementation. Additionally, the average daily census remained unchanged from the previous year: 16.6 patients per day in 2015 vs.17 patients per day during the project in 2016.

Table 4: Average Length of Stay (ALOS) in days comparing year of implementation and previous year.

	ALOS - 2015	**ALOS - 2016**
	Number of days	*Number of days*
January	3.05	2.53
February	2.76	2.56
March	2.32	2.76
April	2.68	2.5 [PreData]
Weeks 1-4	2.79	2.03 [Project Implementation]
Weeks 5-8	2.65	2.18 [Project Implementation]
July	2.6	2.39

Patient Satisfaction

Our final quality indicator was patient and family satisfaction using monthly reports from Press Ganey™. The reports indicated an improvement from the month of pre-data collection for different categories. For the overall feedback on nursing, the score increased from 82.4% during pre-data to 91.2% & 93.2% during project implementation. For nursing communication to patients and families, we used the category of whether "nurses kept you informed," showing an equal improvement from 83.3% during pre-data, to 94.4% and 96.9% during the project. For the previous year the scores for this category were 86.5%, 72.9% and 85.7% respectively.

Table 5: Press Ganey TM Patient Satisfaction scores regarding "overall nursing care",comparing year of implementation and previous year.

	2015	**2016**
	%	*%*
January	89.4	84.1
February	92.4	88.9
March	82.5	77.1
April	89.8	82.4 [PreData]
May	78.5	91.2 [Project Implementation]
June	80.2	93.2 [Project Implementation]
July	95.3	86.5
August	96.4	95.2
September	88.7	91.8
October	84.6	91.1
November	90.2	91.4
December	90.8	93.5

Table 6: Press Ganey TM Patient Satisfaction scores on "nurses kept me informed" comparing year of implementation and previous year.

	2015	**2016**
	%	***%***
January	85.4	75
February	89.7	84.1
March	80.8	75
April	86.5	83.3 [PreData]
May	72.9	94.4 [Project Implementation]
June	85.7	96.9 [Project Implementation]
July	93.8	93.8
August	95.6	95
September	86.8	87.5
October	75	82.1
November	95.5	91.7
December	88.2	87.5

Discussion

This project demonstrated an improvement in quality outcomes reflecting a decreased length of stay and improvement in patient satisfaction on a pediatric acute care unit as a direct result of increased nursing presence and participation at bedside rounds. While perceived teamwork and collaboration via the adapted survey were unremarkable, both nurses and physicians felt that nurses' contribution to bedside rounds must be encouraged and promoted in order to achieve positive outcomes. Our pilot study sought to highlight the impact of nursing presence and participation at bedside rounds on quality outcomes while fostering an environment where physicians and nurses could interact professionally.

Previously identified research reflected a lack of knowledge on how to incorporate family-centered care into the clinical setting. Bedside rounds serve as a process in which family-centered care is promoted. Understanding each team member's role, in addition to encouraging family contribution, is fundamental for better quality outcomes.

We hypothesize that these improvements were directly related to increased communication and resulted from an increased nursing participation at bedside rounds. For this project, increasing nursing presence and providing nurses with a more prominent role were the initial steps toward fostering teamwork and collaboration between physicians and nurses in an acute care setting.

Interpretation

Our findings align with and support current literature. Similar to the results from Sharma et al. (2014), we reported an increased nursing participation at bedside rounds from 44.4 to 73% when notifying the nurses ahead of time using a communication device. Palokas et al. (2014) expanded upon Sharma's contribution by describing how the use of a hands-free communication device improved nursing participation at bedside rounds, but missed a key feature of the study: the relevance of alerting the nurses ahead of time, reducing the barriers resulting from the lack of coordination between physicians and nurses, as is suggested by Burns (2011) & Gonzalo et al. (2014).

At the same time, the use of technology has been identified in previous research as contributing to an improved sense of teamwork and collaboration. Burns (2011) suggested that feedback from safety questionnaires provided to the nursing staff indicated an improvement in their perception of teamwork and collaboration. This relationship is equally supported by Rosen, Stenger, Bochkoris, Hannon and Kwoh (2009).

Improvement in patient satisfaction during the project supported findings by Rappaport et al. (2012), clearly strengthening the connection between interprofessional bedside rounds and their impact on patients' and families' satisfaction.

Finally, by establishing a process for better interprofessional collaboration, we reinforced findings from Gonzalo et al. (2014), and Muething et al. (2007). We have concluded that length of stay can improve when there is communication between the different team members.

Limitations

In our project, several limitations were identified. First, frequent resident rotations made it challenging to implement a consistent process and to have residents remember to notify nurses fifteen minutes prior to rounds. Nurses were not routinely notified fifteen minutes prior to rounds. A second limitation was the use of the alpha-numeric paging system, an outdated communication method that was unreliable at times. The low number of responses from the pre- and post-implementation surveys regarding perception of teamwork and collaboration also limits reliable interpretation. Finally, a committed leadership to the project facilitated change in process during implementation. However, it became challenging for the unit's leadership to allocate time to supervise the newly adopted process to ensure sustainability.

Conclusions

This project led to an improved change in the culture of the unit, with physicians and nurses understanding each other's role better and respecting each other. However, the nurses reported not feeling prepared for the responsibility of discussing the chief complaint, while the physicians recognized the importance of the nurses' input reporting overnight concerns. For nurses, reviewing the adapted process frequently to ensure everyone is aware and highlighting these two vital points at change of shift would be instrumental in a successful exchange of information at

bedside rounds. Identifying more opportunities to collaborate with physicians would also help promote an environment that welcomes nursing input.

Both physicians and nurses came to recognize together that they each had critical information to share and learned to respect each other's contribution. They also agreed that, whenever possible, both physicians and nurses should be present and participate in bedside rounds. Frequent nursing and physician leadership rounding to review this new process, as well as its integration during physician and nursing orientations, would assist in sustaining this project. Additionally, sharing quality outcomes with the staff would ensure ongoing motivation and understanding of their impact on patient care.

We demonstrated the impact of promoting interprofessional collaboration at bedside rounds on quality outcomes in a pediatric acure care unit. While we experienced challenges to sustaining the project, continuing this work is important. If we are able to anticipate barriers, this project could be adopted indefinitely. We also feel that, although our setting is specific to pediatrics, it is worth exploring the possibilities of implementation in an adult setting.

Enabling interprofessional bedside rounds and inviting the family and/or patient when applicable to the discussion on the plan of care are key in pediatrics. Promoting a family-centered care environment and practice facilitates everyone's input and places the patients and families at the center of care.

Quality improvement projects are not just a physician responsibility, but fall to every member of a healthcare team. Healthcare professionals should be equally accountable as they all share a common goal: restoring the patient to an optimal health state. Quality outcomes, such as shortened length of stay and improved patient satisfaction, provide beginning evidence for the promotion of nursing inclusion in bedside rounds.

Funding

No funding was required; This project had no commercial or financial support.

Appendix A. Audit Tool

Auditing Tool

Date	

please check as appropriate

I. Was the nurse informed the team was rounding on their patients?	Yes		No	
a. If Yes: Was the nurse informed as rounds were beginning?				
...or in advance?				
b. How was the nurse notified?				
Verbal notification from resident or medical student?				
Pager?				
Another nurse?				
Clerk?				
II. Was the nurse present at the start of rounds?	Yes		No	
III. Did the nurse stay until the end of rounds?	Yes		No	
IV. Did the team give the RN the opportunity to participate in rounds?	Yes		No	
V. Did the nurse participate in rounds?	Yes		No	
a. If Yes: Did the nurse address concerns about the patient?				
Did the nurse present any history of overnight events				

Audit completed by	

628 **Appendix B. RN survey**

	Always	Almost Always	Uncertain	Almost Never	Never
Nursing input is well received by physicians in this unit	□	□	□	□	□
In this unit, it is difficult to speak up if I perceive a problem with patient care	□	□	□	□	□
Decision making in this clinical area utilizes input from relevant personnel	□	□	□	□	□
The physicians and nurses here work together as a well-coordinated team	□	□	□	□	□
I am asked/notified to attend rounds daily*	□	□	□	□	□
I feel included at medical rounds*	□	□	□	□	□
I participate at medical rounds*	□	□	□	□	□
I am satisfied with the quality of collaboration that I experience with physicians	□	□	□	□	□
I am satisfied with the quality of collaboration that I experience with nurses	□	□	□	□	□

Adapted with permission from Sexton *et al*. (2006). The safety attitudes questionnaire: psychometric properties, benchmarking data, and emerging research. *BMC Health Services Research*. 6: 44. doi:10.1186/1472-6963-6-4

(*) Questions added specific to the project

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631

Appendix C. MD survey

Please circle level of training:

PGY 1 PGY 2 PGY 3 Attending

	Always	Almost Always	Uncertain	Almost Never	Never
Nursing input is well received by physicians in this unit	□	□	□	□	□
In this unit, do you feel the nurses find it difficult to speak up if I perceive a problem with patient care?	□	□	□	□	□
Decision making in this clinical area utilizes input from relevant personnel	□	□	□	□	□
The nurses here work together as a well-coordinated team	□	□	□	□	□
The nurses are asked to attend rounds daily*	□	□	□	□	□
The nurses participate in daily rounds*	□	□	□	□	□
The physicians do a good job with making the nurses feel included in daily rounds	□	□	□	□	□
I am satisfied with the quality of collaboration that I experience with the nursing staff	□	□	□	□	□

Adapted with permission from Sexton *et al.* (2006). The safety attitudes questionnaire: psychometric properties, benchmarking data, and emerging research. *BMC Health Services Research.* 6: 44. doi:10.1186/1472-6963-6-4

(*) Questions added specific to the project

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