

**Improving Interdisciplinary Communication on the Medicine Progressive Care Unit**

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**Abstract**

Effective interdisciplinary communication has been shown to reduce healthcare cost, improve staff satisfaction, and improve patient care. However, since the Medicine Progressive Care Unit (MPCU) accepts patient admissions from multiple medicine disciplines, it has led to unstructured interdisciplinary communication. The purpose of this 12-week quality improvement project was to improve processes surrounding interdisciplinary communication on the MPCU through the standardization of bedside rounding procedures. To evaluate the success of this project throughout implementation, staff satisfaction, patient length of stay, and number of adult rapid responses/codes were examined. The project resulted in a rounding tool utilization rate of 14.97% and a 7% increase in overall staff satisfaction. These findings have the potential to financially benefit patients and the organization, while encouraging the nursing staff to be leaders at the bedside. Potential benefits of the project are clear, but the project also uncovered the continued work needed to further define structured bedside rounding and its impact on interdisciplinary communication.

*Keywords:* interdisciplinary communication, nurse to physician communication, physician to nurse communication, standardized rounding tool, in-patient, hospital

**Table of Contents**

Acknowledgements .....	2
Abstract .....	3
Section I: Introduction .....	7
Background.....	7
Organizational Needs Statement.....	7
Problem Statement.....	9
Purpose Statement.....	9
Section II: Evidence.....	11
Literature Review.....	11
Evidence-Based Practice Framework.....	16
Ethical Consideration and Protection of Human Subjects.....	18
Section III: Project Design.....	21
Project Site and Population.....	21
Project Team.....	23
Project Goals and Outcomes Measures.....	24
Implementation Plan.....	28
Timeline.....	29
Section IV: Results and Findings.....	30
Results.....	30
Discussion of Major Findings.....	34
Section V: Interpretation and Implications.....	36
Costs and Resource Management.....	36
Implications of the Findings.....	37

Sustainability .....	39
Dissemination Plan .....	39
Section VI: Conclusion.....	41
Limitations and Facilitators.....	41
Recommendations for Others.....	42
Recommendations for Further Study.....	43
Final Thoughts.....	44
References.....	45
Appendices.....	52
Appendix A: Literature Matrix.....	52
Appendix B: Rounding Tool.....	74
Appendix C: Revised Rounding Tool.....	75
Appendix D: Staff Satisfaction Survey.....	76
Appendix E: Survey Permission.....	78
Appendix F: Length of Stay Metric.....	79
Appendix G: Rapid/Code Metric.....	80
Appendix H: Rounding Tool Utilization.....	81
Appendix I: Rounding Tool Compliance.....	82
Appendix J: Data Collection Tool.....	83
Appendix K: Project Timeline.....	84
Appendix L: Satisfaction Survey Scores.....	86
Appendix M: Rounding Tool Utilization Data.....	89
Appendix N: Rounding Tool Compliance Data .....	90

Appendix O: Number of Adult Rapid Responses/Codes Data..... 92

Appendix P: Length of Stay Index.....93

Appendix Q: Budget..... 94

Appendix R: Doctor of Nursing Practice Essentials..... 95

## **Section I. Introduction**

### **Background**

With rising pressure to do more with less, there is immense opportunity to streamline every health care process. One of the major areas of opportunity is more effective interdisciplinary communication (Burgener, 2017). Ineffective interdisciplinary communication leads to an increased risk of patient mortality, readmission, delayed care, and staff dissatisfaction resulting in higher health care cost (Foronda et al., 2016; The Joint Commission, 2015; Vermeir et al., 2015). In 2014, North Carolina (NC) spent roughly \$71 million on health care, with an enormous percentage being spent on hospital care (Kaiser Family Foundation, n.d.; Lassman et al., 2017; United States Department of Commerce, n.d.). The fiscal impact and negative outcomes associated with interdisciplinary communication highlight the need for improvement. Of particular interest to this project, was a hospital within a large health care system located in the central part of NC. To respect the confidentiality of this prominent health care organization, it will be referred to as Organization X. The topic of this project focused on improving interdisciplinary communication in the Medicine service line at Organization X, but more specifically on the Medicine Progressive Care Unit (MPCU).

### **Organizational Needs Statement**

The MPCU was established 12 years ago and is one of four progressive care units within the main hospital of Organization X where 12 different inpatient service lines exist ranging from Surgery to Pediatrics. The unit is part of the Medicine service line, which comprises an intensive care unit, a progressive care unit, and three acute care units. The MPCU is the only unit in the Medicine service line accepting patients from six different medicine specialties ranging from general medicine to nephrology. This diversity created a strain on interdisciplinary communication (██████████, personal communication, May 26, 2020). The expressed desire of

Organization X was to improve interdisciplinary communication to increase efficiency and decrease waste while still maintaining quality patient care ([REDACTED], personal communication, May 26, 2020).

Various metrics were examined to support the need to improve interdisciplinary communication on the MPCU. The first metric examined pertained to patient safety. In the calendar year 2019, the MPCU had 435 adult rapid responses, which surpassed similarly composed units in the hospital at Organization X ([REDACTED], personal communication, July 9, 2020). In addition, the MPCU had a 54.7% nursing staff turnover rate in FY 2020 ([REDACTED], 2019). This turnover rate did not detail the length of employment or reason for departure. However, it was considerably higher than the organizational goal of 7% for voluntary turnover in the first 24 months of employment ([REDACTED], 2019). Another metric examined was staff satisfaction. Results of the 2018 Workforce Engagement Survey administered by Organization X reported too few responses on communication practices to gauge staff satisfaction ([REDACTED], personal communication, November 3, 2020). However, informal staff complaints highlighted the need for improved interdisciplinary communication. The last metric examined was length of stay (LOS). The average length of stay (LOS) for patients on the MPCU was 6.39 days ([REDACTED], personal communication, July 24, 2020). This LOS was slightly lower than the predicted FY 2019 Vizient LOS of 6.4 patient days ([REDACTED], personal communication, October 16, 2020). However, Organization X still reported missing their 2019 FY organizational goal to decrease patient LOS by 0.75 which highlighted the continual push for unit improvement ([REDACTED], 2018).

The metrics identified above and the recognized need to reform interdisciplinary communication by national initiatives both support the need for improved interdisciplinary

communication on the MPCU. These national initiatives encompass the Triple Aim and Healthy People 2030. The Healthy People 2030 initiative addresses the improvement of patient and physician communication (Office of Disease Prevention and Health Promotion, n.d.). By addressing interdisciplinary communication on the MPCU, improvements will undergird the provider's awareness and thereby enhance patient and provider communication. Another national standard addressed was the Triple Aim published by the Institute for Healthcare Improvement (IHI) (n.d.) which states health care should strive for three targets: increased patient satisfaction, decreased cost, and improved health of individuals (IHI, n.d.). The project aligns with the Triple Aim because improving the quality of communication affects all target outcome points. Effective communication methods affect employee trust, define clear work instructions, develop problem-solving skills, and build stronger teams. A high functioning team indirectly benefits patient satisfaction, health care costs, and patient outcomes.

### **Problem Statement**

The MPCU accepts patient admissions from multiple medicine disciplines which led to a problem with interdisciplinary communication. Current MPCU metrics display a high nursing turnover rate, higher than average number of adult rapid responses/codes called, and suboptimal LOS metrics, which could point to gaps in interdisciplinary communication.

### **Purpose Statement**

The purpose of the DNP project was to improve interdisciplinary communication on the MPCU. Organization X has identified problematic interdisciplinary communication on the MPCU and set out to remediate it to further comply with state and organizational benchmarks. This objective was met by standardizing interdisciplinary rounding procedures on the MPCU. Measurement of improved staff satisfaction, LOS, and number of MPCU adult rapid

responses/codes called were the metrics used to evaluate the success of enhancing interdisciplinary communication.

## **Section II. Evidence**

### **Literature Review**

A comprehensive search was done using the databases of PubMed, Cumulative Index of Nursing and Allied Health Literature (CINAHL) and Scopus. Other search methods employed were Google Scholar and forward searching. Key words, MeSH terms and major headings used to search the literature included “interdisciplinary communication”, “cross-disciplinary”, “cross disciplinary”, “closed unit”, “closed model”, “nurse-physician”, “length of stay”, intervention, communicat\*, improv\*, multidisciplinary, hospital, and outcome. Filters used included a five-year publication limit, full-text, and English. Google Scholar alone returned thousands of publications. The first 150 articles were reviewed based on a five-year publication limit.

Initial searches from all databases, including the 150 from Google Scholar, returned 797 articles. This vast return was screened for title and relevance which narrowed the number of articles to 65. The levels of evidence were evaluated utilizing the Melnyk and Fineout-Overholt (2015) model. Inclusion criteria were Levels of Evidence from I to V, in-patient hospital settings, and interventions to revise poor interdisciplinary communication. Exclusion criteria included studies with narrow patient diagnoses, redundancy, and setting. Abstracts of 65 articles were then examined and narrowed to 14 articles. See Appendix A for literature matrix.

### ***Current State of Knowledge***

Communication is a tool everyone uses daily both professionally and personally. To all professions, it is viewed as important, but usually not a situation of life or death. However, in health care the importance of effective communication, more specifically interdisciplinary communication, is paramount. The searched literature stated without effective interdisciplinary communication there were adverse patient situations, inefficiencies, and overall decreased

quality of care (Afsar-Manesh et al., 2019; Gausik et al., 2015; Mercedes et al., 2016; Tan et al., 2017). The outcomes for ineffective interdisciplinary communication imply every health care professional plays a role. The literature searched identified no defining characteristics to ineffective interdisciplinary communication. Reported barriers to interdisciplinary communication included culture, preference, style, time, and technology (Heip et al., 2020; Tan et al., 2017).

### ***Current Approaches to Solving Population Problem(s)***

Given the serious consequences of poor interdisciplinary communication the searched literature identified multiple solutions. These included interdisciplinary rounding, specialized communication tools, in-depth undergraduate communication coursework, strong leadership modeling, nurse-physician unit leadership collaboration, team training, performance dashboards, and the restructuring of units to allow for physician availability (Buljac-Samardzic et al., 2020; Fox et al., 2016; Gausik et al., 2015; Ratelle et al., 2019; Tan et al., 2017; United States Department of Health and Human Services, n.d.).

The literature went on to further define interdisciplinary rounding as all members of the interdisciplinary team visiting the patient at their bedside to discuss the plan of care (Gausik et al., 2015; Ratelle et al., 2019). Specialized communication tools were defined as ways to structure relevant information to standardize communication (Buljac-Samardzic et al., 2020). One example of a specialized communication method is the Situation-Background-Assessment-Recommendation (SBAR) tool. The SBAR communication tool requires the user to present the current situation, the background, the users' assessment of the situation, and finally the recommendation. For example, if a patient was experiencing hypotension, this would be the situation. The background could be multiple days of not taking in adequate fluid. The assessment

could follow as decreased skin turgor and dry mucous membranes leading to the recommendation of a fluid bolus. Another intervention found in the literature was undergraduate coursework, where students received instruction on how to communicate with members of the interdisciplinary team (Tan et al., 2017). Unit leadership modeling was an intervention in the literature working to improve the leadership already in place on the unit. This intervention worked to empower the leadership to create a culture in which the nurses advocated for their patients. However, it was not detailed how this intervention was performed. Another intervention that spoke to leadership was nurse-physician unit leadership collaboration. This intervention assigned one nurse leader and one physician leader to agree on goals that increased teamwork between physicians and units (United States Department of Health and Human Services, n.d.). The literature defined team training as courses co-workers attended outside of unit work activities which presented critical role play scenarios to strengthen teamwork (Buljac-Samardzic et al., 2020). The literature also detailed unit restructuring as an intervention. Unit restructuring assigned one designated physician team to each nursing unit, which encourages consistency (Tan et al., 2017). The final intervention of a performance dashboard assigned a numerical value to the team's performance, including communication, and gave a performance-based metric to achieve (Fox et al., 2016).

### ***Evidence to Support the Intervention***

The approaches discussed in the literature were interdisciplinary rounding, specialized communication methods, in-depth undergraduate communication coursework, strong leadership modeling, performance dashboard, nurse-physician unit leadership collaboration, team training, and unit restructuring (Buljac-Samardzic et al., 2020; Gausik et al., 2015; Katz et al., 2017; Kyeremanteng et al., 2019; O'Leary et al., 2019; Ratelle et al., 2019; Tan et al., 2017). The most

distinguished intervention presented in the literature was unit restructuring because it allowed every unit to have a dedicated physician team. The attraction to unit restructuring was its ability to improve hospital cost, improve interdisciplinary communication, and LOS (Katz et al., 2017; Kyeremanteng et al., 2019; Tan et al., 2017). However, due to the current budgetary constraints and global pandemic influences, this intervention was not an option in the current environment for Organization X. The next intervention discussed was team training. While team training may have been feasible for some organizations, team training was not sustainable for Organization X due to the academic structure of constant physician rotations. Early academic education was another intervention acknowledged. Early academic education was not selected due to Organization X's lack of ability to influence undergraduate coursework nationwide. Performance dashboard utilization was another intervention discussed in the literature. According to Tan et al. (2017), technology removed face-to-face human interaction essential to improved communication; therefore, it was decided to avoid this intervention. In addition, collaborative nurse-physician unit leadership was discussed as a solution for improving interdisciplinary communication. Collaborative unit leadership was not a feasible option for this project. The diversity of medical teams covering the MPCU and their constant rotation schedule made it difficult to create a consistent collaborative unit leadership model. The last intervention discussed in the literature suggested changing communication methods. Utilization of specialized communication methods like the Situation, Background, Assessment, and Recommendation (SBAR) only addressed a symptom of the problem, not the root cause; therefore, using this alone would not have been a long-term solution for Organization X (Buljac-Samardzic et al., 2020).

All the interventions above support collaborative interdisciplinary communication. To have strong interdisciplinary communication, standardization must exist. The literature reported

the primary intervention to standardize interdisciplinary communication was through interdisciplinary rounding (Buljac-Samardzic et al., 2020; Gausik et al., 2015; Heip et al., 2020; Mercedes et al., 2016; Ratelle et al., 2019). Heip et al. (2020) supported interdisciplinary rounds, at a minimum, should consist of a physician and nurse. While interdisciplinary rounding was already in existence on the MPCU, it did not always include the bedside nurse and the primary medical team. Improvement in staff satisfaction levels was yet another evidence-based benefit of interdisciplinary rounding (Mercedes et al., 2016; Sunkara et al., 2020; United States Department of Health and Human Services, n.d.).

In addition, Mercedes et al. (2015) reported combining interdisciplinary rounding with a communication tool was one way to improve staff satisfaction. One tool used was the ABCDEF bundle originally created by Marra et al. (2017). In fact, Stollings et al. (2020) reported use of this tool in interdisciplinary rounding improved structure and communication. This rounding tool was already being used in the Medical Intensive Care Unit at Organization X, but not on the MPCU (██████████, personal communication, November 3, 2020). To encourage continuity throughout the Medicine service line, the ABCDEF bundle was incorporated in the interdisciplinary rounding improvement project on the MPCU. The ABCDEF bundle was originally developed for the intensive care setting. “The ABCDEF bundle includes: Assess, Prevent and Manage Pain, Both Spontaneous Awakening Trials and Spontaneous Breathing Trials, Choice of analgesia and sedation, Delirium assessment, prevention, and management, Early Mobility and Exercise, and Family engagement and empowerment” (Marra et al., 2017, para. 1). Not all these points were relevant to patients with an intermediate level of care. To ensure this rounding tool was applicable to the MPCU, it was revised in collaboration with key stakeholders. To streamline interdisciplinary communication on the MPCU, the rounding tool

included assessments of bodily systems, core measures such as venous thromboembolism prophylaxis, and other common questions the medical team receives (see Appendix B and C).

Finally, the project partner reported improving interdisciplinary rounding was a viable way to improve interdisciplinary communication on the MPCU ([REDACTED], personal communication, October 7, 2020). While this was the chosen intervention, evidence in the literature supported improving interdisciplinary rounding had varied effects on LOS (Ratelle et al., 2019; Sunkara et al., 2020). To properly evaluate the LOS metric used in this project, a clear awareness that numerous factors influence LOS was essential.

### **Evidenced-Based Practice Framework**

The first step in identifying a project framework was done by identifying the needs of the organization. The expressed needs were previously identified as maintaining quality health care while improving interdisciplinary communication through increasing efficiency and decreasing waste ([REDACTED], personal communication, May 26, 2020). The second step taken to ensure the project aligns with a specific framework was to identify the project's goal. The goal of the project was to eliminate inefficiencies in the current interdisciplinary communication processes on the MPCU. To strategically and successfully eliminate waste, a lean thinking framework was employed.

Lean thinking was developed to cut delays, reduce errors, and decrease waste, while focusing on output the customer values (Womack & Jones, 1996). In the case of this project, the customer was the interdisciplinary team member. Lean thinking is always achieved through a five-step process: value identification, value streaming, flow, pull, and perfection. Value identification is critical because it allows the customer to identify what is of value to them. The next step is value streaming which rids waste as perceived by the customer. After waste is

removed, flow ensures no interruption in the improved process, and finally pull must be established. By using pull in lean thinking, it balances supply and demand. Pull, in lean thinking, requires demand must exist before supply provisions are made. The last step of perfection is perhaps the most crucial because it allows for continuous improvement.

In the unit of implementation, the MPCU, there are six multiple different medical specialties caring for patients. This is different from other units at Organization X, which usually only accept patients from one, two, or at most three medical specialties. This diversity of medical specialties created wasteful interdisciplinary communication on the MPCU in Organization X. Wasteful interdisciplinary communication referred to multiple different medical specialties with different ways of conducting bedside rounding where no standardization existed. Planning began with obtaining feedback through focus groups composed of physicians and nurses currently serving MPCU. This gave visibility to allow further identification of interdisciplinary communication waste, possibilities of value streaming, and served to help gain early stakeholder support. Using a standardized process supported by evidence to guide communication during interdisciplinary rounding, ensured flow. This standardized process will serve as a reference point for effectively sustaining interdisciplinary communication long after the project's cessation. The next step in lean thinking is pull. Pull was quite possibly the easiest step in the process as there will always be a demand for quality interdisciplinary communication. To keep interdisciplinary communication as the focal point, discussing LOS and other metrics was a key part of interdisciplinary rounding improvement. Finally, the step of perfection is the perpetuation of continuous improvement and was evaluated through frequent Plan-Do-Check-Act reviews on the interdisciplinary rounding process.

As noted, the Plan-Do-Check-Act cycle is a four-step model for continual improvement (Shewhart, 1986). The first step is planning. Planning for this intervention was done by looking at evidenced based literature and meeting with stakeholders at Organization X to determine the perceived needs. The do step was performed by deploying the intervention of standardized rounding. The check step was performed by gathering staff feedback on the intervention of change through survey collection and staff feedback. Finally, act is the step of perfection. This final step required a perpetual act of improvement and was performed through frequent Plan-Do-Check-Act processes.

### **Ethical Considerations & Protection of Human Subjects**

Research studies prepare new evidence and quality improvement (QI) projects transcribe research findings into practice (Moran et al., 2020). This difference does not exempt QI projects from touting the high fundamental ethical standards of beneficence, respect for persons, and justice (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979). Detailed below are the considerations of how this project will remain equitable, avoid harm, avoid exploitation, and meet organizational standards of QI projects at Organization X.

The first ethical consideration was to ensure interventions were carried out equitably to every participant in the intervention. While the intervention of improving interdisciplinary rounding affects all members of the interdisciplinary team, the target groups of this intervention are both physicians and nurses. To guarantee the intervention was equal to every participant, all medicine teams and every nurse on the MPCU were given an opportunity to participate in the QI project. However, their participation was not forced, as the QI intervention was free from coercion and participation was voluntary. No personal identification data was collected from the

satisfaction survey. The metrics of staff satisfaction, patient LOS index, and number of adult rapid responses/codes measured throughout the project were shared aggregately at dissemination. Project successes and failures were obtained from an informal feedback process and shared accordingly.

The next step to ensuring this QI intervention maintains high ethical standards and protects human subjects was to assess the potential harm involved with implementation. The only feasible potential harm would be the participants feeling uncomfortable communicating with individuals from other disciplines and potential communication style differences. This risk of feeling uncomfortable with communication styles is encountered daily. The need for clear interdisciplinary communication is an essential job requirement in health care. Another risk considered was the protection of patient information. It should be highlighted that no patient or participant was at risk of being identified because all patient data was de-identified and reported aggregately. All staff satisfaction responses were conducted anonymously through online survey completion.

The target population of the QI intervention includes physicians and nurses at Organization X. According to the Collaborative Institutional Training Initiative (CITI) Program (n.d.b), employees are defined as a vulnerable population. The employee participants were not placed at risk or taken advantage of through the duration of the project. No one was forced to participate in the project, and participating individuals had no reporting hierarchy to the Project Leader.

To ensure the validity of the information, protection for human subjects, and desired quality achievement for research projects, all proposals for projects must go through a formal review board approval process. In preparation for this formal approval process, CITI modules

were completed. CITI modules are developed to provide education surrounding all activities involved in the research process (CITI Program, n.d.a). The modules completed in preparation of the formal approval process for this project included Group 2-Social and Behavioral Research and Group 3-Research Involving Data and Specimens Only (CITI Program, n.d.b). These modules informed the Project Leader of vital history, research processes, and populations present in research. Knowledge gleaned from these modules allowed the Project Leader to conduct an ethical project.

An ethical project review is essential. An unethical project predisposes the participants to risks including, but not limited to, physical and emotional harm. If one project falls short of current ethical standards, then the ability of the organization to perform research could be taken away. However, CITI training was just one step in the process to ensure the project approach was designed in an ethical manner. As detailed, Organization X is a large organization and has an in-house institutional review board (IRB). Prior to implementation, the project proposal was submitted to Organization X's IRB. The IRB deemed the project as a quality improvement initiative; therefore, no further formal IRB review was required. In addition, the project proposal was sent to Organization X's Nursing Research Council (NRC). The NRC is an organization overseeing all research involving nurses at Organization X and ensures projects meet all the compliance pieces prior to project commencement (██████████, n.d.b). In addition to Organization X's IRB, the Project Leader went through the university's IRB initial review process by completing a series of questions and summary of project plan and intention. The project was deemed quality improvement and no further review was required from the university IRB. The faculty leader oversaw the organizational IRB, NRC process, and the university's IRB process to ensure information accuracy.

### **Section III. Project Design**

#### **Project Site and Population**

As the chosen project site, Organization X is a large public health system located in the central part of North Carolina and is affiliated with an academic institution. Academic institutions are committed to learning and focusing on improvement, which is advantageous to facilitating successful quality improvement projects. While the entire organization is committed to quality improvement, the primary project participants consisted of Medicine Progressive Care Unit (MPCU) staff nurses and the organization's physicians from different medical specialties. The perceived barrier with these staff members was the daily rigor of their jobs in the current environment of the global pandemic. The primary benefit of implementing this project was to improve communication in the target population, further advancing staff satisfaction and workflow improvement. Interdisciplinary communication was not only an efficiency improvement but also contributed to the health and wellness of the patients served on the MPCU.

#### ***Description of the Setting***

Organization X is in a resource rich area of central North Carolina with multiple satellite locations across the state. It is a public nonprofit institution with an academic focus serving a wide range of North Carolinians ranging from indigent to wealthy (██████████, n.d.a). Organization X works in conjunction with its medical school to advance medical knowledge and provide cutting edge research-based health care. The main medical campus has over 950 beds comprising five hospitals with 12 different service lines ranging from psychiatry to medicine. The Medicine service line is composed of five nursing units: 6 Bedtower, 3 West, 8 Bedtower, the Medicine Progressive Care Unit (MPCU), and the Medicine Intensive Care Unit.

The MPCU project site is a 24-bed progressive care unit supporting patients ranging in age from young adults to geriatric adults with a variety of medical needs and thus cared for by

different medical specialties. The average patient stay in this unit is 6.39 days (██████████, personal communication, July 24, 2020). As a general rule, the MPCU accepts patients with medical diagnoses ranging from septic shock to diabetic ketoacidosis. This diverse patient population translates into six different medical teams caring for patients on the MPCU. The teams include Medicine Team B (nephrology service), Medicine Team K (infectious disease service), Medicine Team G (pulmonary service), Medicine Team U (general medical team), Medicine Team I (intensive care medical team), and the Hospitalist Team. There is no limit to the number of patients a particular medical team can have on the unit and the beds are on a first come first serve basis. On any given day, the unit is usually at full capacity.

### ***Description of the Population***

Due to the impact of the COVID-19 pandemic, the staffing composition of the MPCU changed weekly. Before the pandemic, the unit staffing model consisted of eight bedside nurses each caring for three patients, three assistive personnel, and one unit secretary. The ninth nurse was referred to as the charge nurse and was responsible for assisting with daily task flow and decisions surrounding patient admission and discharge traffic. During the COVID-19 pandemic, the MPCU's staffing model encompassed approximately 11 bedside nurses, three assistive personnel, and one unit secretary. At full unit capacity, each bedside nurse was responsible for two to three patients depending on patient acuity. A 12<sup>th</sup> nurse was scheduled as the charge nurse who held the same pre-pandemic role. For the patients without COVID-19, each medical team consistently comprised two residents, an attending, a medical student, and a pharmacist. The biggest challenge to this project was the medical team's rotating composition and diversity of medical specialties. As Organization X is a teaching hospital, the residents and physicians rotate services on a staggered schedule every two weeks. The educational level for all members of the

interdisciplinary team requires an associate degree or higher. It should also be noted that assistive personnel and ancillary service members are integral to the structure of the MPCU. Assistive personnel are unit secretaries and nursing assistants. Ancillary service members include case managers, therapists, and pharmacists who provide services based on the patient's level of need. Ancillary service members inconsistently participate in interdisciplinary rounding; therefore, were not included in the project's intervention.

### **Project Team**

The team involved in the planning, implementation, and analysis of this project was composed of the Project Leader, the Project Site Champion, and the Faculty Member responsible for oversight. The Project Leader has been a bedside nurse on the MPCU for over five years and had insights to the unit's interdisciplinary rounding processes and its gaps. The Project Leader was in the process of completing her doctoral education to become a Family Nurse Practitioner. The Project Leader's role consisted of planning, designing, implementing, and evaluating the project.

The Project Site Champion, while formerly an assistant manager on the MPCU, now holds a role as a credentialed quality excellence leader at Organization X. The role of the Project Site Champion was to assist with data collection and provide guidance on the quality improvement process. With over 15 years of experience at Organization X, the chosen Project Site Champion was a perfect fit for the role (██████████, personal communication, July 24, 2020). The Project Champion was well networked with the ability to influence decision makers in the Medicine service line who are empowered to champion this project.

The last integral member of the project team was the Faculty Member who advised the Project Leader throughout the project. While this member of the project team is currently in a

faculty role, her experience includes leadership at large health care organizations. In addition to the faculty role, she holds a position at the American Nursing Credentialing Center as a reviewer for Magnet designations (East Carolina University, n.d.).

Key stakeholders involved in the project included physicians and nurses. The physician stakeholders included in the project were the current chief residents and the hospitalist representative. The nursing stakeholder was the current nurse manager of the MPCU. All the key stakeholders advocated support and aided in championing the project; therefore, their roles were invaluable.

### **Project Goals and Outcome Measures**

The goal of this project was to improve interdisciplinary communication on the MPCU. To achieve this goal, the implemented intervention was to utilize a standardized rounding tool during bedside rounds. The outcome metric is a critical factor to consider in any project; in this case it was deemed as staff satisfaction. Other metrics that were tracked and monitored for positive or negative trends included patient LOS, number of adult rapid response calls, and codes.

Staff satisfaction was measured with a survey which was used at project initiation, midterm, and at the project's conclusion. During project planning, a 10% increase in staff satisfaction survey results from project initiation to cessation was deemed to indicate success. Process metrics were tracked weekly throughout the 12-week implementation phase. The project team determined project success would be defined as a 50% rounding tool utilization and 75% rounding compliance rate for each team. No metrics of success were defined for the additional metrics measured including patient LOS index and number of adult rapid responses/codes. Not defining a goal for the LOS metric was a team decision supported by literature reporting no

change to LOS data with improved communication practices. It was also a team decision to not set a goal for the number of adult rapid responses/codes because of the factors beyond communication that influenced this metric such as patient acuity.

### ***Description of the Methods and Measurement***

There were two vital metrics used in project data analysis: process measurements and outcome measurements. Process measurements consisted of the steps evaluated to achieve a particular outcome (Moran et al., 2020). Outcome measurements refer to organizational benchmarks the Project Leader seeks to improve. Both measurement methods should be used in conjunction.

The outcome metric used for this project was staff satisfaction. It was selected as the outcome metric given the high nursing turnover rate of 54.7% on the MPCU in FY 2020 (██████████, 2019). This metric was measured through the completion of a staff satisfaction survey (see Appendix D). This survey was a 17-item survey with responses measured on a six-item Likert scale and was adapted from The Safety Attitudes Questionnaire published by Sexton et al. (2006). Of the 17 questions asked in the survey, five questions applicable to the project intervention were added by the Project Leader. Permission to use the shortened version of this survey was obtained from the author (see Appendix E). The full survey's reliability and validity through multilevel factor analysis indicated a  $p$ -value of 0.9 and Cronbach alpha of 0.85 (Nguyen et al., 2015; Sexton et al., 2006).

Additional metrics tracked and evaluated throughout the project's implementation included MPCU patient LOS data and the number of adult rapid responses/codes on the MPCU (see Appendix F and Appendix G). Patient LOS data was tracked in Organization X's LOS index, which is a figure comparing national data to organizational data. This metric was chosen

by the project team due to organizational reports of missing the 2019 FY organizational goal to decrease patient LOS by 0.75 (██████████, 2018). The next metric included in the project was the number of adult rapid responses/codes on the MPCU. As mentioned previously, the number of adult rapid responses/codes was chosen as a metric due to the high number occurring on the MPCU compared to similar units at Organization X (██████████, personal communication, July 9, 2020).

Process metrics for this project included utilization and compliance of the rounding tool. These process metrics were chosen to determine if the project itself was making progress as it advanced in the timeline. Utilization of the tool was tracked by collecting the number of tools turned in at the end of the week divided by the denominator of average daily patient census times 100 (see Appendix H). Rounding tool compliance was tracked through four questions: did the medical team perform daily rounds, was the resident's name known, was the nurse asked to attend rounds, and did the nurse attend rounds (see Appendix I). At the time of weekly collection, only information below the perforated line of the rounding tool was removed from the facility with no identifying information listed (see Appendix J). Remaining information was shredded and was not included in data collection to ameliorate compromising any identifying patient information.

### ***Discussion of the Data Collection Process***

Elements of data collection included staff satisfaction surveys, MPCU patient LOS, number of adult rapid responses and number of codes called on the patients in the MPCU. Staff satisfaction surveys were created with Qualtrics and distributed electronically via email to physicians covering the MPCU and MPCU nurses. Since no baseline staff satisfaction data existed, staff satisfaction was established one week prior to implementation through a staff

satisfaction survey (██████████, personal communication, November 3, 2020). Throughout implementation the same satisfaction survey was sent at week seven and week 13. Staff had two weeks to complete the survey each time it was deployed. In addition to survey collection, physicians and nurses were questioned informally throughout implementation on their satisfaction with the rounding tool and communication practices.

Baseline data and implementation data for MPCU patient LOS and number of adult rapid responses/codes called on the MPCU was obtained from Organization X and stratified by the medical team. Baseline data and implementation data for both metrics were collected during the same months of February, March, and April, but consecutive fiscal years 2020 and 2021. The Project Leader obtained MPCU patient LOS data from the Project Site Champion (see Appendix F). At first, data on the number of adult rapid responses/codes called was obtained from the Adult Specialty Care Department Manager (see Appendix G). In the middle of implementation, the Adult Specialty Care Department Manager left her position; therefore, the data was obtained from a physician stakeholder.

The process metrics tracked weekly included the utilization and completion of the daily rounding tool. The daily patient census was used to assist in determining the rounding tool utilization rate. This information was obtained by a daily email from the MPCU Nurse Manager (see Appendix H).

All data mentioned above was stored in the Project Leader's personal password protected computer in multiple excel files for data analysis purposes. Aggregate data were plotted using various charts. During implementation, process metrics from the rounding tool, informal feedback, and barriers were used to guide PDCA cycles.

### **Implementation Plan**

Implementation began in January 2021 and took place over a 13-week period. The first week of implementation was dedicated to participant education followed by staff satisfaction survey collection. An educational video was attached to an email sent to physicians and nurses completing bedside rounding on the MPCU. This educational session included information on project details and the importance of interdisciplinary rounds.

On Sunday of the second week, the standardized rounding tool was implemented (see Appendix B). The tool was made available in a designated folder at each nursing station. A reminder notice to complete the tool was located near each nurse's station. The night shift nurse was instructed to complete the rounding tool on each of his or her assigned patients. The tool was handed off to the day nurse during shift change. The day nurse updated the tool as needed and shared the pertinent information with physicians during daily bedside rounds. After rounding was completed, the day shift nurse completed the information below the perforated line on the rounding tool. At the end of each day, the day shift nurse placed the paper rounding tool in a designated collection location at each nurse's station.

Weekly throughout the implementation phase, nursing feedback was obtained at safety huddles. Physician satisfaction was obtained through the electronic staff satisfaction survey conducted prior to implementation at midterm, and completion (see Appendix D). Physician feedback was obtained through informal interactions. Throughout the project's implementation phase, biweekly meetings were held with the Project Site Champion. Monthly meetings were held with the Faculty Member. In addition, patient LOS and the number of adult rapid responses/codes were monitored monthly. Feedback from all sources was incorporated into one of the five planned bi-weekly Plan-Do-Check-Act cycles. The Plan-Do-Check-Act cycles

consisted of reviewing information gathered from data, staff feedback, Project Site Champion feedback, and project faculty feedback.

### **Timeline**

In summer 2020, early ideas for the project's formulation began, which included interdisciplinary collaboration with the project site, topic research, and literature review. An intervention was selected in the fall of 2020. Based on the selected intervention, information was provided for the IRB review process at both the organizational and university level. No formal IRB review process was required. In November 2020, approval to proceed with the project was obtained at the organization and university. Implementation began in January 2021. The project was performed over a period of 13 weeks with 12 of those weeks including data collection, five PDCA review processes, and informal feedback sessions. The project concluded in the summer of 2021 with data collection, data analysis, and dissemination. See Appendix K for a detailed timeline.

## Section IV. Results and Findings

### Results

The goal of this project was to improve interdisciplinary communication between physicians and nurses on the Medicine Progressive Care Unit (MPCU). To accomplish this goal, a standardized rounding tool was deployed for use in bedside rounding with the intention to increase communication and collaboration between physicians and nurses on the MPCU. The success of the project was measured through outcome metrics, process metrics, and additional metrics. The chosen outcome metric was staff satisfaction and the process metrics included rounding tool utilization and compliance. Additional metrics monitored throughout implementation were patient length of stay (LOS) index and number of adult rapid responses/codes on the MPCU.

#### *Outcome Metric*

No baseline staff satisfaction data was available prior to project implementation. Descriptive data detailing the years of experience, cultural origin, or gender was not formally collected in the project staff satisfaction survey. However, the project staff satisfaction survey was distributed to both genders with a wide range of staff experience ranging from one to 20 years and to representatives from a variety of cultural backgrounds.

The initial staff satisfaction survey was sent to 45 nurses and eight physicians covering patient care on the MPCU. Of the 45 nurses, 13 (28.89%) responded and three of the eight physicians (37.5%) responded. The overall average staff satisfaction score for the initial survey was 3.98 with 5 being the highest score. When scores were separated by role, the satisfaction scores were 3.94 for nurses and 4.29 for physicians (see Appendix L).

Staff satisfaction data was collected again at week seven of implementation. While the satisfaction survey did see a drop in participation, from 28.89% to 17.95% (n=7) for nursing and from 37.5% to 30% (n=6) for physicians, the overall satisfaction score increased to 4.12 from 3.98. When scores were separated by roles, the nursing satisfaction rate increased to 4.196 from 3.94 and the physician satisfaction score decreased to 4.15 from 4.29 (see Appendix L).

Staff satisfaction data were collected again at project conclusion. The final staff satisfaction survey was sent to 38 nurses with only five (13.16%) responding. For physicians, the participation rate in the final staff satisfaction survey was 23.33% as it was sent to 30 physicians with seven responding. Again, indicating a decrease in participation rate from both the initial and midterm staff satisfaction survey. However, the overall satisfaction score increased to 4.2695 from 4.12 at week seven and 3.98 initially. The individual nursing satisfaction scores decreased to 3.80 from 3.94 at week seven and physician satisfaction score improved to 4.518 from 4.29 at week seven (see Appendix L). The decrease in nursing satisfaction scores was supported by a nursing turnover rate of 8.42% for the months of implementation (██████████, personal communication, June 15, 2021). Throughout implementation the overall satisfaction scores improved from 3.98 to 4.2695 indicating a little above a 7% increase in overall staff satisfaction rate.

To truly evaluate the effectiveness of the intervention throughout implementation, individual question responses were evaluated for variance. The first question examined was if nursing input was well received by physician colleagues. Analysis from this question showed a decrease in overall nursing satisfaction from a score of 4.15 initially trending down to a final score of 3.8 and an increase in physician satisfaction from a score of 4.66 to 5. The combined score for physicians and nurses reported an increase in teamwork from a score of 3.68 to 4.46

and concluding at 4.58. Another question evaluated was related to team collaboration. From the initial to final survey, there was an increase from a 4.08 to 4.2 satisfaction score that nurses experienced good collaboration with physicians on the MPCU. Yet there was a decrease in the physician satisfaction score with nursing collaboration from a rate of 5 at initiation to 4.86 at project conclusion. A factor to be considered in reviewing the findings, different physicians completed the initial, week seven, and final survey due to availability and scheduling constraints. Appendix D outlines detailed survey questions and Appendix L depicts nursing and physician satisfaction scores.

### ***Process Metrics***

Quantitative results from rounding tool utilization can be found in Appendix M. As discussed previously, there were no baseline metrics for rounding tool utilization. The goal set at project initiation of 50% rounding tool utilization was not met. During implementation, rounding tool utilization grew from 0.59% concluding with 14.97% in week 12. The week with the highest rounding tool utilization was week 11 with a 31.33% utilization. It should be noted a staff incentive encouraging rounding tool utilization was deployed at week 10. Qualitative feedback on rounding tool utilization rates concluded it was not that bedside rounds were not performed, but rather the rounding tool was not completed. Patient acuity and failure to remember to turn in rounding tool forms were reasons participants reported as lack of form utilization.

The quantitative data for rounding tool compliance by Medical Teams can be found in Appendix N. The goal for rounding tool compliance was 75% for all teams. Only Medical Team I met the goal of 75% rounding compliance and was consistent in their rounding tool compliance with almost 100% compliance every week. For the other teams involved in the intervention, weekly data varied widely and was influenced by the number of patients each medical team

admitted to the unit during specific weeks. Consistent qualitative feedback from nursing staff was that their physician colleagues did not inform them of bedside rounding time, while the physicians indicated they often forgot to include nurses in bedside rounding.

### *Additional Metrics*

As stated previously, no definition of success was set for the number of adult rapid responses/codes or the LOS index since they were both influenced from factors outside of communication. When considering data collected on the number of adult rapid responses/codes, numbers actually increased during months of implementation. However, a decreasing trend in the number of adult rapid responses/codes called were noted when comparing three months from the year prior to implementation (2020) to three months during implementation (2021). When comparing February 2020 to February 2021 and March 2020 to March 2021, every medical team saw a decrease in the number of adult rapid responses/codes called. With the exception of Medical Team U, which had only 1 more adult rapid responses/codes called in March 2021 compared to March 2020 (see Appendix O for comparison). In February 2021, no adult rapid responses/codes were called on the MPCU. Due to the influence of the COVID-19 pandemic, the MPCU consisted largely of patients with an intensive care accommodation code in February 2021 (██████████, personal communication, May 18, 2021). As a rule, Organization X does not call adult rapid responses/codes on intensive care patients. While the number of intensive care patients decreased throughout the implementation period, their presence on the MPCU persisted throughout project implementation. This influenced the adult rapid responses/codes metric since there were more intensive care patients on the MPCU in 2021 compared to 2020.

The data comparing LOS index can be found in Appendix P. Almost all of the Medical Teams LOS index data saw a decrease when comparing months from fiscal year (FY) 2020 to

2021 with some exceptions. The first exception was with Medical Team I whose patient LOS index increased when comparing February FY 2020 to FY 2021 and March FY 2020 to FY 2021. FY 2021 did include more data from Medical Team I, as more of their patients were admitted and discharged from the MPCU (██████████, personal communication, May 18, 2021). Another data point of note was the patient LOS index for Medical Team W in March FY 2021, which was 4.09 days. This finding substantiated that several factors influence patient LOS index including barriers to discharge.

### **Discussion of Major Findings**

There was a 7% increase in combined overall staff satisfaction. However, throughout implementation, there was a decrease reported in nursing satisfaction (3.98 to 3.80), but an increase in physician satisfaction (4.29 to 4.518). These findings were not consistent with findings in the literature, which stated nurses often reported the most benefit from improved communication practices (Katz et al., 2017; Mercedes et al., 2016). Yet this finding substantiates qualitative feedback from nurses who reported they were not being notified of bedside rounding. The finding of physician satisfaction rates being higher than nursing satisfaction rates are supported by literature findings that physicians have a more positive outlook on communication practices (Mercedes et al., 2016).

Utilization and compliance rates of standardized rounding tools were not discussed in the literature and no baseline was available for project comparison. While the rounding tool utilization rate did not meet its target of a 50% utilization rate, it steadily increased throughout implementation. This displayed a desire to work towards improved communication. Rounding tool compliance provided insight to further educational opportunities and further study recommendations. Literature reports, at minimum, interdisciplinary rounding should contain the

physician and the nurse (Heip et al., 2020). The project finding indicated 23.6% of the time nurses were not being asked to attend bedside rounds.

Adult rapid responses/codes decreased when compared to the same pre-intervention months. This supported the literature finding that without effective interdisciplinary communication there are adverse patient situations (Tan et al., 2017). Varied LOS index found throughout project implementation supported the literature finding of varied effects of improved communication practices impact on LOS (Ratelle et al., 2019; Sunkara et al., 2020).

## **Section V. Interpretation and Implications**

### **Costs and Resource Management**

When evaluating the expense of the project, materials and time were considered. The materials used included four folders, four magazine file holders, printer ink, paper, and staff incentives. The financial summation of these materials was approximately \$148.46. The labor factored into the cost of the project included the Project Leader's time spent researching, developing, collaborating, implementing, and evaluating the project, totaling approximately 168 hours. The time project participants and key stakeholders spent completing rounding tools, surveys, supporting the project through collaboration or data collection was also considered. The time project participants spent rounding was not included in the budget since this is considered part of their current job roles. Together both time and material totaled an estimated \$6,407.71 (see Appendix Q).

After the expense of the project was calculated, it was compared to the potential benefits. Ineffective interdisciplinary communication leads to an increased risk of patient mortality, readmission, delayed care, medication errors, and staff dissatisfaction resulting in higher health care cost (Foronda et al., 2016; The Joint Commission, 2015; Vermeir et al., 2015). The average cost associated with one medication error ranged from \$8,439 to \$8,898 (Choi et al., 2016). In addition, staff dissatisfaction often leads to turnover and forces an organization to hire and train more staff. According to the United States Bureau of Labor Statistics (n.d.), the average hourly salary of a nurse is \$36.33 per hour. With an orientation length of six to 12 weeks, the cost to orient one nurse ranges from \$7,847.28 to \$15,694.56. Comparing the cost of this project at \$6,407.71 to the prevention of one medication error costing the organization at least \$8,439, shows there were obvious fiscal benefits to this project.

The cost and benefit of this project should also be considered on a larger scale. Improving interdisciplinary communication at an organizational level would include more expenditures, but also more opportunities for savings. Further expenditures would include the time and resources it would take to educate staff. Education could be incorporated at new employee orientation or through yearly competencies performed at Organization X. Education on this scale would take time and skilled staff members to lead the educational sessions. While these expenditures seem monumental, so do the benefits. Taking the monetary benefits mentioned above from improving communication in staff retention and reduction in medication errors could outweigh the cost of increasing education at the organizational level. A formal cost benefit analysis should be performed on a larger scale to substantiate this claim.

### **Implications of the Findings**

#### ***Implications for Patients***

While patients did not directly participate in this project, the implications to healthcare consumers are important. The project intended to improve interdisciplinary communication on the MPCU through the primary outcome metrics of staff satisfaction. An approximate 7% increase in staff satisfaction enhanced the opportunities for physicians and nurses to communicate more effectively. This improved communication could prevent a medication error, an adverse patient event, or delayed patient care. Improving communication and collaboration improves continuity of care between physicians and patients, which is a 2030 Healthy People goal (Office of Disease Prevention and Health Promotion, n.d.). This project promoted communication between critical members of the interdisciplinary team allowing the bedside nurse to advocate for patient needs by providing continuity of care with minimal financial cost to patient care.

***Implications for Nursing Practice***

Improved communication between physicians and nurses elevates nursing practice by encouraging collaboration, improving patient advocacy, and increasing universal satisfaction. This project allowed the bedside nurse to advocate for their patient by allowing them to collaborate with the medical team by sharing interventions relevant to the plan of care. In the future, this project could serve as a model to enhance communication between physicians and nurses at other hospitals.

***Impact for Healthcare System(s)***

While this project was performed in one hospital unit at Organization X, it highlights the significant variables inherent in communication practices during rounds; namely, time of day, composition of the rounding team, and rounding discussion/collaboration. This variability exposed the need for standardizing rounding practices with as much standardization as possible given the changeable nature of healthcare.

This project also impacts the organization by improving the satisfaction of its employees. Satisfied employees allow an organization to further meet quality metrics and financial goals. Employees who are satisfied positively impact the patients and healthcare workers they encounter on the job. Financially, satisfied employees improve patient satisfaction scores thus impacting reimbursement and decreasing the cost associated with staff turnover. With improved communication, cost reduction could also be seen with decreasing medication errors and delayed patient care. All of these benefits come with minimal associated project cost and impact the organization in a large way.

**Sustainability**

The project site plans to continue the use of the rounding tool; therefore, sustainability must be financially and logistically considered. Financially, it would not cost the organization anything to continue the project in its current state since paper cost is already budgeted. Cost would be incurred if the organization desired to continue tracking rounding tool utilization and compliance. However, this cost could be budgeted into unit quality monitoring initiatives. Logistically, education would need to continue due to staff turnover, but it could be incorporated into unit yearly competencies and physician orientation. The paper rounding tools could be laminated to further support sustainability as it would further reduce time and cost. Integrating the rounding tool into the electronic health record would also support sustainability, but was beyond the scope of this project. Electronic integration of the rounding tool is further discussed in the recommendations section.

**Dissemination Plan**

The project was disseminated in three places. The first was with the partnering organization. Dissemination of findings at the partnering organization gave the organization knowledge of ways to further improve interdisciplinary communication practices on the MPCU. Dissemination at the project site included members of the Nursing Research Council, nurses on the MPCU and physicians. The platform for dissemination was virtual and in-person. Dissemination of findings at the project site occurred in July 2021.

The project findings were also disseminated with the partnering university. Dissemination was required to fulfill program requirements as well as to contribute to the knowledge of the nursing profession. The DNP paper was submitted to the University's repository, the ScholarShip, and an oral presentation was given to the faculty and peers.

Dissemination to the university took place in July 2021. Finally, since this project was completed in a critical care setting, an abstract submission is planned in August 2021 to the American Journal of Critical Care.

## Section VI. Conclusion

### Limitations and Facilitators

Throughout the course of the project there were many things that facilitated the success of the project. The project site, Organization X, was one of the biggest facilitators in this project. Organization X is a teaching organization that values quality improvement. This organizational structure was beneficial because the site had a formalized process to follow to enact change and welcomed change as part of the teaching culture. Part of this welcomed change was the project site team who embraced change enough to collaborate with the Project Leader. This team included the Project Site Champion who was responsive to questions, knowledgeable about the quality improvement process, and connected at the organization. These connections supported the Project Leader's ability to troubleshoot barriers through previously established relationships with key stakeholders. The stakeholders involved in the project also facilitated the project by assisting in data collection and promoting staff involvement. For example, the MPCU Nurse Manager allowed the Project Leader to speak at monthly staff meetings, place reminders around the unit, and participate weekly in a safety huddle. Other members aiding the project included individuals who uploaded and tracked length of stay (LOS) and adult rapid response/code data. The most integral members of the project were the participants whose work facilitated improved communication and provided better patient care.

This project was not without limitations. The biggest limitation was the COVID-19 pandemic. The influence of this pandemic was so wide it halted all quality improvement projects at the organization for a period of time which delayed implementation. Due to the pandemic, the unit transformed from a unit caring for only intermediate level of care patients into a unit caring for both intensive and intermediate level of care patients. As discussed previously, this change influenced the number of adult rapid responses/codes called on the Medicine Progressive Care

Unit (MPCU). This influenced the number of patients certain medical teams could accept and admit to the unit. In addition, varied patient acuity levels led to an influx of unfamiliar travelling nursing staff. The travelling staff started at various times throughout implementation, which made it difficult to thoroughly educate these individuals.

Another limitation to the project was the physician rotation schedule, which occurs on a 2-week time frame, and the physician team composition. Due to rotating schedules and physicians' availability, the individual physicians completing the survey were different at pre-implementation and weeks seven and 13. By project design, the attending physicians were not educated on the intervention or included in the survey since they did not directly interface with nurses throughout the day or at bedside rounds. This project design excluded one team, the hospitalist team, which consists only of attending physicians from the education and survey distribution. The Project Team decided it was only fair to exclude the hospitalist team from data analysis.

### **Recommendations for Others**

The recommendations for others who set out to replicate this project are abundant. The first is to choose a project site with a willing core staff and a high level of stakeholder support. When planning the intervention, consider all members who need to be educated on the intervention. Keep in mind it is better to over educate than to under educate participants. A process cannot change if participants have no education on process modification. It would be best to offer this education in a group setting prior to implementation. Group setting education would allow for role definition, team introductions, and questions to be addressed. Additional educational aspects important to consider include specifics of what patient details to cover in rounds, rounding time frame, which interdisciplinary members need to be present, and who is

responsible for rounding start time notification. It would also be helpful to have one or several unit champions. Providing these champions would allow the project to succeed when the project leader is unavailable and allow for project sustainability.

When considering sustainability and scalability, all the above recommendations should be considered. In addition, it would be recommended to implement on a smaller scale with a maximum of one to two physician teams who preferably do not rotate on a two-week schedule or to other units. Starting slow would guarantee sustainability by decreasing variation in the project intervention. Decreasing variation would allow the intervention to survive and be integrated into a unit's or organization's culture. When considering long-term sustainability, education must continue. A recommendation for a method to continue education would be through yearly competencies and or at new employee orientation.

### **Recommendations Further Study**

As stated previously, physicians reported barriers to involving nurses in bedside rounding included notification. A recommendation for further study includes addressing the barrier of including the bedside nurse in interdisciplinary rounding through reminders or notification alerts. Areas requiring further study include ways to mitigate rounding participation and tracking participation. Perhaps participant rounding notification and tracking attendance could take place through an electronic performance model embedded in the existing electronic health record. Studying how to incorporate a real time rounding tool into the electronic medical record would benefit sustainability and accessibility.

Further studying who officially needs to be involved in bedside rounding would not only benefit Organization X, but other teaching hospitals too. Topics of interest for hospitals to study include the direct impact of interdisciplinary communication on turnover and burnout rates. In

addition, further studying ways to improve communication would benefit all members of the healthcare team including patients.

### **Final Thoughts**

The intention of this project was to impact interdisciplinary communication between physicians and nurses on the MPCU. The MPCU is a 24-bed in-patient nursing unit located in a large education-based healthcare organization. This project was supported by expressed needs from the Project Site Champion, a high MPCU nursing turnover rate, a high number of MPCU adult rapid responses/codes, and a suboptimal LOS index. Over a 13-week period, a standardized rounding tool was implemented during bedside rounding with six different medical teams. Project success was evaluated by staff satisfaction survey results, round tool utilization, rounding tool compliance, number of adult rapid responses/codes, and patient LOS index.

While the project was performed throughout the COVID-19 pandemic, it does not diminish the overall findings and implications it had on physicians, nurses, and patients. A 7% overall increase in staff satisfaction allowed patients to benefit from an organization which values the Healthy People 2030 goal of improving communication between physicians and patients (Office of Disease Prevention and Health Promotion, n.d.). This project advanced nursing practice by encouraging bedside nurses to advocate for their patients and supported the organization to further highlight areas needing improvement. The project also supported advancements in healthcare communication by identifying components of the standardized rounding tool to be integrated into the electronic health record. In conclusion, this project fostered interdisciplinary communication and highlighted the need for continued work in this area to benefit patients, staff, and the healthcare organization.

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**Appendix A**

**Literature Matrix**

<b>Authors</b>	<b>Year Pub b</b>	<b>Article Title</b>	<b>Theory</b>	<b>Journal</b>	<b>Purpose and take home message</b>	<b>Design/Anal ysis/Level of Evidence</b>	<b>IV DV or Themes concepts and categories</b>	<b>Instr. Used</b>	<b>Samp le Size</b>	<b>Sample method</b>	<b>Subject Charac.</b>	<b>Comments/ critique of the article/met hods GAPS</b>
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<p>Katz, J., Lishmanov, A., Van Diepen, S., Yu, D., Shen, H. M., Pauley, E., Bhatia, J., Buntaine, A., Das, A., Dangerfield, C., McLaughlin, B., Stouffer, G. A., &amp; Kaul, P.</p>	<p>2017</p>	<p>Length of stay, mortality, cost, and perceptions of care associated with transition from an open to closed staffing model in the cardiac intensive care unit</p>	<p>None identified</p>	<p><i>Critical Pathways in Cardiology</i></p>	<p>The purpose of the article was to determine if there was a benefit in outcomes, overall cost/resource consumption, and staff satisfaction/perception transitioning from an open unit to a closed unit staffing model</p>	<p>Level IV</p>	<p>Retrospective and prospective data collection on an open to closed unit staffing model.</p>	<p>Likert scale Logistic Regression Modeling</p>	<p>670</p>	<p>Retrospective data collection, prospective data collection, and anonymous survey</p>	<p>49.6% of patients were admitted to the open unit and 50.4% were admitted to the closed unit. APACHE scores were statistically the same for the closed unit patients when compared to the open unit patients. Patient demographics are roughly the same. African Americans slightly increased in the closed unit</p>	<p>Synthesis: Data collection was completed when the CICU was an open and closed unit. Variables included illness severity, diagnosis, resource use, and outcomes. Data was then compared, which showed a decrease in LOS in the closed vs. open unit, a decrease in total cost of care, and a decreased readmission rate. Anonymous surveys were completed on MDs and nurses. Both groups responded</p>
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											<p>model. Past history of MI slightly increased in the closed model.</p> <p>positively to the closed unit model. MDs responded education was better, less interruption, and better collaboration. Nursing identified better communication, better learning, and more freedom. Limitations: Findings may not be generalizable to other institutions. Due to the differences in time frames, practice may have varied between providers. Does not address the providers actually being "part</p>
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<p>Tan, T. C., Zhou, H., &amp; Kelly, M.</p>	<p>2017</p>	<p>Nurse-physician communication: An integrated review</p>	<p>N/A</p>	<p><i>Journal of Clinical Nursing</i></p>	<p>The purpose was to find factors influencing nurse to physician communication and interventions to improve communication.</p>	<p>Level I</p>	<p>4 themes: 1. communication styles 2. factors that facilitate nurse-physician communication 3. barriers to effective nurse-physician communication 4. interventions to improve nurse-physician communication.</p>	<p>N/A</p>	<p>22 studies</p>	<p>5 databases ranging from 2005-2016</p>	<p>Articles kept: full-text, English, excluded if contained students, excluded if other members of interdisciplinary team</p>	<p>Synthesis: Factors which influence nurse/physician communication include common understanding, trust/respect collaboration. Barriers to effective communication: lack of opportunities (face-to-face), EMR (because it sends the message that once an order is in there is no need to communicate), MDs desire to practice alone, preference on communication, culture, and insufficient information.</p>
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												localizing physicians to a particular unit. Face to face communication forces positive interactions by repetition and building rapport. Article talks a lot about barriers to effective communication.
Kyeremanteng, K., Hendin, A., Bhardwaj, K., Thavorn, K., Neilipovitz, D., Kubelik, D., D'Egidio, G., Stotts, G., & Rosenber, E.	2017	Neuroscience Intermediate-Level Care Units Staffed by Intensivists: Clinical Outcomes and Cost Analysis	None identified	<i>Journal of Intensive Care Medicine</i>	The purpose of the study was to determine patient outcomes and cost outcomes for implementing a dedicated Intensivist to staff an intermediate care unit	Level IV: Retrospective	Concept: Comparing pre-intensivist staffing to post.	Descriptive Analysis ; Kruskal-Wallis 1-way analysis of variance	2931	Retrospective data collection	Average age 59.5; 52.8% males, 47.2% females.	Synthesis: There was a decrease in LOS when the intermediate care unit was staffed by one physician/team. This led to a decrease in overall cost. No benefit was found in mortality, or other "place

												holder" data. Limitations: Single-center study; therefore, limitations include generalizability. Inability to control for confounding variables due to the retrospective study design. No mention of communication Comments: There was also a decrease in LOS in ED, which was believed to be due to the increased availability of intermediate beds. MDs salary was not factored into the cost
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												benefit of the study.
Gausik, C., Lautar, A., Miller, L., Palleria, H., & Schlaudecker, J.	2015	Structure d nursing communication on interdisciplinary acute care teams improves perceptions of safety, efficiency , understanding of care plan and teamwork as well as job satisfaction	None identified	<i>Journal of Multidisciplinary Healthcare</i>	To determine the effect of structured, patient centered bedside report on safety, efficacy, job satisfaction, care plan understanding, and teamwork	Level III: Controlled Trial	IV: Rounding type: structured interdisciplinary bedside rounds vs. physician centered rounds. DV: safety, retention, and care plan understanding	Likert scale	62	Survey	Nurses, Certified Nursing Assistants, Physical Therapist , and Social workers.	Synthesis: this article speaks to the great effect interdisciplinary rounding has on nurse retention and job satisfaction. Providing structure to bedside rounding allows members of the interdisciplinary care team to effectively communicate key ideas to the plan of care for a patient. limitations: the article had a small sample size and short time frame of

												intervention . The survey did not survey physicians. Usefulness: Article supported rounding as a tool to improve interdisciplinary communication.
Mercedes, A., Fairman, P., Hogan, L., Thomas, R., & Slyer, J. T.	2016	Effectiveness of structured multidisciplinary rounding in acute care units on length of stay and satisfaction of patients and staff a quantitative systematic review	None identified	<i>JBIR Database of Systematic Review and Implementation Reports</i>	To evaluate the effectiveness of structured multidisciplinary rounds (MDR), using a structured communication tool in acute care units on LOS and satisfaction of patients and staff.	Level I: Systematic Review	N/A	Studies individually appraised with tools via the Joanna Briggs Institute (JBI)	8 studies included	English articles from the inception of each database until June 30, 2015, using a standardized data extract tool from JBI	Inclusion Criteria: Adult patients admitted to acute care units and healthcare providers who provide direct care for adult patients hospitalized in in-patient acute care units.	Synthesis: MDR was proven beneficial for staff satisfaction, more specifically an increase in nursing satisfaction. Using a tool (the review did not name a certain one) may be beneficial to keep the MDR on track and streamline the

												Also, MDR utilization for a structured communication tool.	approach. Limitations: Generalizability is limited due to the small sample sizes of the studies included. Usefulness: Multidisciplinary rounding is level B evidence according to JBI.
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<p>Heip, T., Hecke, A. V., Malfait, S., Biesen, W. V., &amp; Eeckloo, K.</p>	<p>20 20</p>	<p>The effects of interdisciplinary bedside rounds on patient centeredness, quality of care and team collaboration: A systematic review</p>	<p>None identified</p>	<p><i>Journal of Patient Safety</i></p>	<p>The purpose was to explore evidence on interdisciplinary bedside rounds (IBRs) on patient centeredness, quality of care and team collaboration ; the feasibility of IBRs; and the differences in definitions</p>	<p>Level I: Systematic Review</p>	<p>N/A</p>	<p>Downs and Black Checklist</p>	<p>33 articles</p>	<p>PubMed, Web of Science, and Cochrane databases were all searched. Search included articles in English, Dutch, and French</p>	<p>No exclusion criteria for article age or study design.</p>	<p>Synthesis: IBR varies widely in definition and structure. IBR is shown to be beneficial in LOS/ patient satisfaction/ staff satisfaction, but with a very low level of evidence. The IBR needs structure and defined roles. Noted constraints to IR include time, inconsistency in participation, and role clarity Limitations: the date of article inclusion goes back until 1998; therefore, it may be</p>
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<p>Afsar-Manseh, N., Perkins, C., Breger, K. S., &amp; Zadunayski, M. M.</p>	<p>2019</p>	<p>ABCs of hospitalized patients: A simple before and after study of a communication tool to improve the quality of patient care</p>	<p>None identified</p>	<p><i>Journal of Patient Safety</i></p>	<p>This study examined the effectiveness of a communication tool used to mitigate adverse hospital events.</p>	<p>Level V</p>	<p>8 categories for QI: fall risk, glucose, CVAD, Skin, DVT prophylaxis, Foley use, GI prophylaxis, and telemetry</p>	<p>ABC communication tool</p>	<p>39 bed unit</p>	<p>pre and post intervention</p>	<p>2 medical units.</p>	<p>Synthesis: The ABC tool was used as an effective way for staff to streamline communication techniques. It did this by highlighting several key things to focus on in rounds and allowed MDs to have more autonomy with practice after rounding. However, it did not show improvement in all 8 categories of QI. Limitations: each check item on the communication tool was not applicable</p>
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												to every patient. Usefulness: Usefulness is limited due to the limited level of evidence, but it was interesting to see a display of different tools used in Interdisciplinary Rounding
Ratelle, J. T., Sawatsky, A. P., Kashiwagi, D. T., Schouten, W. M., Erwin, P. J., Gonzalo, J. D., Beckman, T. J., & West, C. P.	2019	Implementing bedside rounds to improve patient-centered outcomes: a systematic review	None identified	<i>BMJ Quality and Safety</i>	The purpose of the review was to define bedside rounding and how implementation was carried out. Also, to determine the effects of bedside rounding on outcomes.	Level I: Systematic Review	N/A	None	29 articles	Databases: Ovid MEDLINE, Ovid Embase, Scopus and Ovid Cochrane Central Registry	No exclusion criteria	Synthesis: rounding at the bedside is well supported to include necessary interprofessional collaboration and promote patient safety, but the review did not conclude the benefit of patient centered care. Very



<p>Buljac-Samardzic, M., Doekhie, K. D., &amp; van Wijngaarden, J. D. H.</p>	<p>20 20</p>	<p>Interventions to improve team effectiveness within health care: A systematic review of the past decade</p>	<p>None identified</p>	<p><i>Human Resources for Health</i></p>	<p>The purpose of this systematic review was to provide an overview of the interventions used to address team performance outcomes.</p>	<p>Level I: Systematic Review</p>	<p>Results were filtered into 4 concepts. 1. training 2. tools 3. Organizational redesign 4. a combination of the previous types.</p>	<p>Literature review</p>	<p>297</p>	<p>Databases included: Embase, Medline Ovid, web of science, Cochrane library, Psych info, CINAHL, Ebsco, and Google scholar. The search was conducted from 2008-2018</p>	<p>Exclusion criteria: Professions outside healthcare, literature reviews, studies that did not share results of the intervention on team functioning, and studies performed by students.</p>	<p>Synthesis: Of the 4 concepts, group training is the most frequently cited and the most likely to be effective. Training included programs like TeamStepps. Other cited tools include SBAR. From organizational structure, results were varied because of the wide variety in intervention and mixed nature of the results. Limitations: all categories may have not been identified. Review</p>
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												only focuses on English articles in the grey literature. Usefulness: To my project, the usefulness is they did cite restructuring as one of the categories.
O'Leary, K. J., Johnson, J. K., Manojlovich, M., Goldstein, J. D., Lee, J., & Williams, M. V.	2019	Redesigning systems to improve teamwork and quality for hospitalized patients (RESET): Study protocol evaluating the effect of mentored implementation to redesign clinical	None identified; Clinical microsystems framework	<i>BMC Health Services Research</i>	The purpose of this research study is to identify the impact of 5 interventions (used in combination) on patient outcomes and healthcare teamwork.	Level IV: Longitudinal	5 different interventions: 1. closed unit 2. bipartisan unit leadership 3. performance dashboard 4. interdisciplinary rounding 5. increased patient involvement	Parallel group study design and pre and post test instruments	4 hospital locations.	N/A	Out of the 4 hospitals, all have 200-300 beds. 2 are teaching hospitals.	Synthesis: The study is currently ongoing. The primary outcomes measured are staff satisfaction, adverse medical events, patient satisfaction, and workflow. Limitations: The study is not complete yet. Usefulness:

		microsystems										All interventions used to improve IC are used in this study
Sunkara, P. R., Islam, T., Bose, A., Rosental, G. E., Chevli, P., Jogu, H., Tk, L. A., Huang, C. C., Chaudhary, D., Beekman, D., Dutta, A., Menon, S., Speiser, J. L.	2020	Impact of structured interdisciplinary bedside rounding on patient outcomes at a large academic health center	None identified	<i>BMJ Quality and Safety</i>	The purpose of this study was to determine if structured interdisciplinary rounding had an impact on length of stay.	Level 3: Controlled trial	IV: rounding type DV: LOS	Structured bedside rounding	1 "large" university hospital	Regression analysis	24 bed medical unit used for the intervention	Synthesis: The benefits of this study were that it compared 2 units with similar structure. The study also talked about the composition (MD, nurse, pharmacy, case management) of the interdisciplinary team and the role of nursing in the study. They did use one nurse who was responsible for f/u on discharge actions. Limitations: The study

												was only completed at one location. Usefulness: The 7-day readmission rate was decreased.
United States Department of Health and Human Services	n.d.	Improve projects led by unit-based teams of nurse, physician, and quality leaders to reduce infections, lower cost, improve patient satisfaction, and nurse-physician communication	None identified	<i>Agency for Health Care Quality and Research</i>	The purpose was to improve interdisciplinary communication by employing a model in which nurses and physicians both "lead" the unit	Level IV	Concept: co-leadership	Model of co-leadership. Teams used a nurse, physician, and project manager	22 nursing units.	Pre and post comparison of key metrics	University of Pennsylvania Healthcare system	Synthesis: By establishing a co-leadership unit model, the infection rate, adverse event, medication reconciliation, staff and patient satisfaction all increased. Limitations: The study reports the large use of financial resources and stakeholders needed to get the project started. Usefulness:

												the article gives a great model for how to sustain the project and intervention . Also, presents another intervention to the problem of interdisciplinary communication
Fox, L. A., Walsh, K. E., & Schainker, E. G.	2016	The creation of a pediatric hospital medicine dashboard : performance assessment for improvement	None identified	<i>Hospital Pediatrics</i>	The purpose of the study was to create a dashboard to improve patient care	Level IV: Longitudinal	N/A	Performance dashboard	30 Hospitalist employed at 5 different sites	Longitudinal data collection	1 tertiary care hospital and 4 community hospitals	Synthesis: the performance dashboard showed improvements as a way to more easily identify trends and key performance indicators Limitations: The limitations of this study is that it was completed in a pediatric

												setting Usefulness: Proposes another intervention to improving interdiscipli nary communicat ion
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## Appendix C Revised Rounding Tool

Date	Team	Room
<b>NURSING</b>		
A: Assess, Prevent, and Manage  <b>CHANGE IN STATUS?</b>	<b>NEURO Status</b>  <b>CARDIAC Status</b>  <b>GI/GU (UOP)</b> <ul style="list-style-type: none"> <li>• Foley Needed?</li> <li>• Bowel Regimen Needed?</li> </ul> <b>INTEGUMENTARY</b> <ul style="list-style-type: none"> <li>• Pressure Ulcer?</li> <li>• WOCN Order Needed?</li> </ul> <b>IV Access</b> Additional IV Access Needed? CVAD Needed?	D: Delirium    Drips    CAM-ICU:  <b>RASS @ goal?</b>  <b>Sleep Quality?</b>  <b>VASOPRESSORS?</b>  <b>OTHER GTTS?</b>
B: Breathing    C: Choice of Pain Management	Oxygen amt appropriate for the MPCU?  SBT performed?  Additional orders needed?	E: Early Mobility and Exercise  Nutrition F: Family Engagement and Empowerment  PT/OT: Order Needed?  Diet needed? Speech needed?  Updated in the last 24 hours? Issues relevant to POC?
<b>MISCELLANEOUS</b>		
<i>VTE Prophylaxis Needed?</i>  <i>Diet:</i>  <i>Procedure/Test Pending?</i> Off Tele Order Needed?  <i>Consent Needed?</i> Restraint Order Needed?		Consider if the patient still needs to be on the MPCU  Deterioration Index Increasing?  Case Management Needs?

Primary Team Contact Name Known (circle):    YES    NO

Preferred method of contact: \_\_\_\_\_

Rounding performed (circle):    YES    NO

As the nurse, were you able to attend bedside rounds (circle):    YES    NO

As the nurse, were you asked to attend bedside rounds (circle):    YES    NO

Barriers to attending rounding: \_\_\_\_\_

DATE: \_\_\_\_\_ TEAM: \_\_\_\_\_ ROOM #: \_\_\_\_\_

*Note.* Rounding tool was revised based on feedback obtained in PDCA cycles.

**Appendix D**  
**Staff Satisfaction Survey**

Question	Scale					
	Nurse			Physician		
1. Role						
2. Nursing input is well received on the MPCU by physician colleagues	Disagree Strongly	Disagree Slightly	Neutral	Agree Slightly	Agree Strongly	Not Applicable
3. On the MPCU, it is difficult to speak up if I perceive a problem with patient care	Disagree Strongly	Disagree Slightly	Neutral	Agree Slightly	Agree Strongly	Not Applicable
4. Disagreements in this clinical area are resolved appropriately	Disagree Strongly	Disagree Slightly	Neutral	Agree Slightly	Agree Strongly	Not Applicable
5. I have the support I need from other personnel here to ask questions when there is something they do not understand	Disagree Strongly	Disagree Slightly	Neutral	Agree Slightly	Agree Strongly	Not Applicable
6. It is easy for personnel here to ask questions when there is something they do not understand	Disagree Strongly	Disagree Slightly	Neutral	Agree Slightly	Agree Strongly	Not Applicable
7. The physicians and nurses on the MPCU work together as a well-coordinated team	Disagree Strongly	Disagree Slightly	Neutral	Agree Slightly	Agree Strongly	Not Applicable
8. I would feel safe being treated as a patient on the MPCU	Disagree Strongly	Disagree Slightly	Neutral	Agree Slightly	Agree Strongly	Not Applicable
9. Medical errors are handled appropriately on the MPCU	Disagree Strongly	Disagree Slightly	Neutral	Agree Slightly	Agree Strongly	Not Applicable
10. I know the proper channels to direct questions regarding patient safety on the MPCU	Disagree Strongly	Disagree Slightly	Neutral	Agree Slightly	Agree Strongly	Not Applicable

11. I receive appropriate feedback about my performance	Disagree Strongly	Disagree Slightly	Neutral	Agree Slightly	Agree Strongly	Not Applicable
12. On the MPCU, it is difficult to discuss errors	Disagree Strongly	Disagree Slightly	Neutral	Agree Slightly	Agree Strongly	Not Applicable
13. I am encouraged by my colleagues to report any patient safety concerns I may have	Disagree Strongly	Disagree Slightly	Neutral	Agree Slightly	Agree Strongly	Not Applicable
14. The culture on the MPCU makes it easy to learn from the errors of others	Disagree Strongly	Disagree Slightly	Neutral	Agree Slightly	Agree Strongly	Not Applicable
15. I experience good collaboration with nurses on the MPCU	Disagree Strongly	Disagree Slightly	Neutral	Agree Slightly	Agree Strongly	Not Applicable
16. I experience good collaboration with physicians who care for patients on the MPCU	Disagree Strongly	Disagree Slightly	Neutral	Agree Slightly	Agree Strongly	Not Applicable
17. It is easy for team members to ask questions during bedside rounding on the MPCU if there is something that is not understood	Disagree Strongly	Disagree Slightly	Neutral	Agree Slightly	Agree Strongly	Not Applicable

*Note.* This survey was adapted from The Safety Attitudes Questionnaire published by Sexton et al. (2006).

## Appendix E

### Survey Permission

Re: Safety Attitudes Questionnaire Survey Permission



Thomas, Eric <Eric.Thomas@uth.tmc.edu>

Mon 12/21/2020, 5:10 PM

Faulkenbury, Carly; utpatientsafety@gmail.com ✕

🔄 Reply all | ▾

Inbox

External Email: If this message seems suspicious in any way, exercise caution before opening attachments or clicking on links. Hi,

I think that link is not working. You have permission to use the survey. Thank you for your interest in the survey.

Eric Thomas

\*\*\*\* EXTERNAL EMAIL \*\*\*\*

To whom it may concern,

I have reached out several times concerning the use of the Safety Attitudes Questionnaire. However, I have not heard back. I am concerned the response email may be going to my spam account or yours. I plan on using the short form of your survey and would love to have permission to do so in writing.

Best,

Carly Faulkenbury

**Appendix F****Length of Stay Metric**

Month	LOS Index	Medical Team
Month	Number of days	Example: MED U

**Appendix G**  
**Rapid/Code Metric**

Month	Number of Rapids and Codes	Medical Team
Month	#	Example: MED U

**Appendix H**  
**Rounding Tool Utilization**

Week	Date	# Of forms collected/census x 100
Week 1	Day/Month/Year	4 forms collected and 12 patients on the unit.  -Equal a form utilization rate of 33.3%

**Appendix I****Rounding Tool Compliance**

<b>Week</b>	<b>Medical Team</b>	<b>Rounding Tool Compliance</b>
Week 1	Example: MED I	Example: 100%

**Appendix J**

**Data Collection Tool**

Week	Date	Month	Medical Team	Resident Contact Known	Rounding Performed	Preferred method of contact	Nurse Involved in rounding	Did the medical team round at bedside?
Week 1	Day/Month/Year	Month	Example: MED U	Yes or No	Yes/No/Unknown	Page/Epic Chat	Yes or No	Yes or No

**Appendix K**  
**Project Timeline**

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Date	Event
9/25/2020	Project Partner Meeting
10/1/2020	Finalize Project Tools
10/21/2020	NRC Application Due
11/8/2020	Formal Letter of Support
11/18/2020	Project site clearance
1/25/2021	Educational video sent by email
	Survey #1 (open two weeks)
	Faculty meeting
	Project site champion meeting
2/1/2021	Standardization tool deployed
	Implementation begins
2/8/2021	Faculty meeting
	Project site champion meeting
	Length of stay data collected
2/15/2021	PDCA #1
2/22/2021	Faculty meeting
	Project site champion meeting
3/1/2021	PDCA #2
3/8/2021	Survey #2 sent (open two weeks)
	Faculty meeting
	Project site champion meeting
	Length of stay data collected
3/15/2021	PDCA #3

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3/22/2021	Faculty meeting
	Project site champion meeting
3/29/2021	PDCA #4
4/5/2021	Faculty meeting
	Project site champion meeting
4/12/2021	PDCA #5
4/19/2021	Final staff satisfaction survey sent
	Length of stay data collected
	Faculty meeting
	Project site champion meeting
4/26/2021	Implementation ended
5/2021-7/2021	Project finalization
	Dissemination

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**Appendix L**

**Satisfaction Survey Scores**

	Nurses Responses			Physicians Responses		
	Initial n=13 (28.89%)	Week 7 n=7 (17.95%)	Final n=5 (13.16%)	Initial n=3 (37.5%)	Week 7 n=6 (30%)	Final n=7 (23.33%)
<b>Team Work Climate</b>						
Nursing input is well received on the MPCU by physician colleagues	4.15	3.86	3.8	4.66	4.5	5
On the MPCU, it is difficult to speak up if I perceive a problem with patient care	3.54	4.42	3.4	4.67	4	4.86
Disagreements in this clinical area are resolved appropriately	3.23	3.86	3.5	4.67	4.67	4.29
I have the support I need from other personnel here to ask questions when there is something they do not understand	4.46	4.71	4	5	5	4.86
It is easy for personnel here to ask questions when there is something they do not understand	4.46	4	4	4.33	3.8	4.71
The physicians and nurses on the MPCU work together as a well-coordinated team	3.85	4.29	4	5	4.67	5
<b>Safety Climate</b>						
I would feel safe being treated as a	3.77	4	4	5	4.83	5

patient on the MPCU						
Medical errors are handled appropriately on the MPCU	4.15	4.43	3.6	3.5	4	4.83
I know the proper channels to direct questions regarding patient safety on the MPCU	4.07	4.28	4.4	3	3.16	3.71
I receive appropriate feedback about my performance	2.92	2.86	4.2	3.67	4	3.71
On the MPCU, it is difficult to discuss errors	3.42	3.42	2.8	3.67	3.83	4.14
I am encouraged by my colleagues to report any patient safety concerns I may have	4.69	4.71	4.2	4	4.67	4.57
The culture on the MPCU makes it easy to learn from the errors of others	3.85	4.14	3.6	4	4.33	3.28
Additional Questions						
I experience good collaboration with nurses on the MPCU	4.31	4.86	4.6	5	5	4.86
I experience good collaboration with physicians who care for patients on the MPCU	4.08	4.14	4.2	4.66	4	4.29
It is easy for team members to ask questions during bedside rounding on the MPCU if there is something	4.23	4.43	3.6	5	4.83	4.86

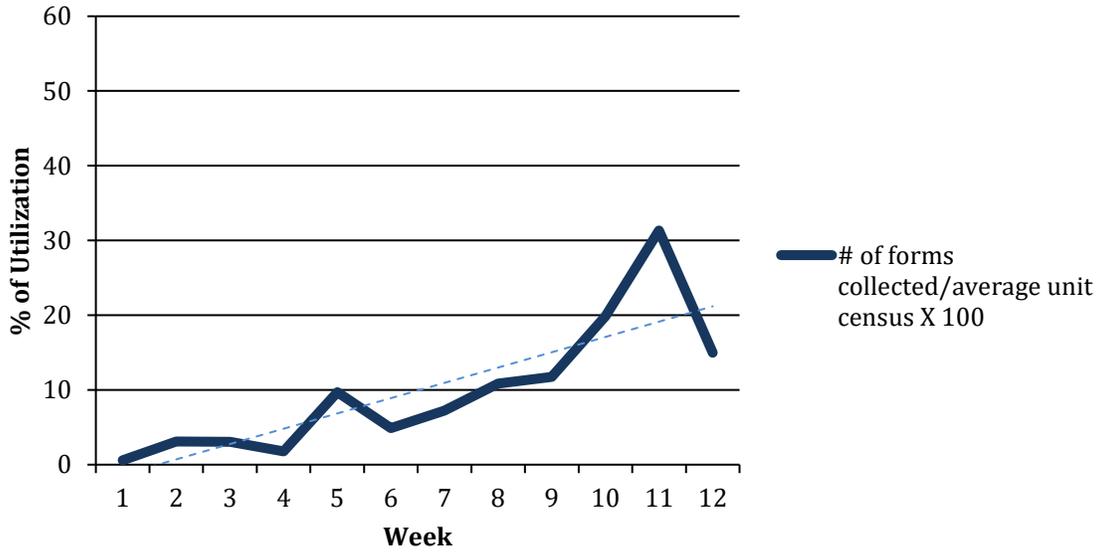
that is not understood						
Total Satisfaction Scores						
Satisfaction by role	3.94	4.196	3.80	4.29	4.15	4.518

*Note.* The overall satisfaction scores are included in the narrative and include the average satisfaction score for both physicians and nurses.

Appendix M

Rounding Tool Utilization Data

Rounding Tool Utilization



**Appendix N**

**Rounding Tool Compliance Data**

	Med B	Med G	Med I	Med K	Med U	Med W
Week 1	No data	No data	100 % (1)	No data	No data	No data
Week 2	100% (1)	No data	100 % (2)	No data	No data	No data
Week 3	0% (1)	No data	100 % (1)	No data	No data	100% (2)
Week 4	No data	No data	100 % (3)	No data	No data	No data
Week 5	12.5% (2)	No data	100 % (5)	50% (1)	No data	70% (5)
Week 6	No data	No data	100 % (5)	75% (1)	No data	87.5% (2)
Week 7	25% (2)	No data	No data	87.5% (2)	No data	75% (2)
Week 8	No data	No data	100 % (9)	75% (1)	No data	0% (2)
Week 9	75% (3)	No data	100 % (1)	66.67% (3)	No data	75% (3)
Week 10	81.25% (4)	No data	100 % (11)	87.5% (6)	75% (1)	70% (5)

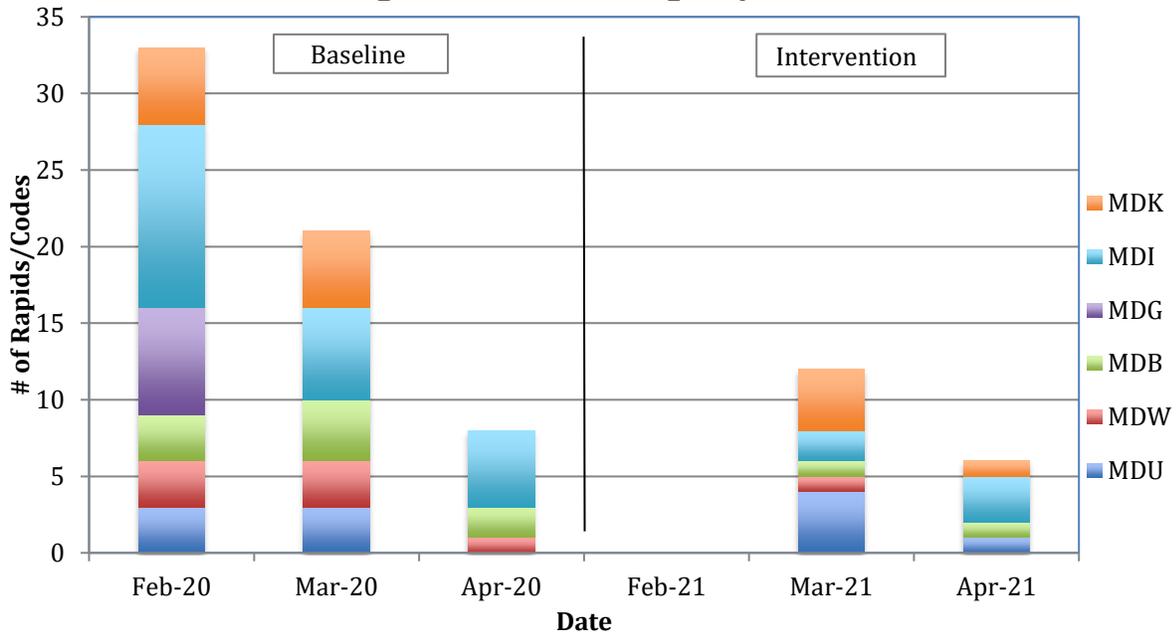
Week 11	95.83% (6)	No data	95.8 % (18)	83.33% (6)	83.33% (6)	88.89% (9)
Week 12	No data	No data	100 % (11)	50% (5)	No data	62.5% (4)

*Note.* No data indicated the medical team did not have patients on the unit that week or the nurse did not complete the rounding tool.

Appendix O

Number of Adult Rapid Responses/Codes Data

Comparison of Rapid/Code Data



Note. The absence of a color block indicated no adult rapid response/code was called.

### Appendix P

#### Length Of Stay Index

Medical Team	Month/FY					
	February 2020	March 2020	April 2020	February 2021	March 2021	April 2021
B	0	0.59	0.7	0	0	0.46
G	1.76	1.61	0	0	0	0
I	0	0.37	0.65	1.33	1.06	0.99
K	1.88	0.45	0.61	0.55	1.41	2.26
W	0.6	0.39	0.64	0	4.09	0.48
U	0.61	0.64	0	0.52	0	1.55

**Appendix Q**

**Budget**

<b>Item</b>	<b>Quantity</b>	<b>Unit Cost</b>	<b>Total</b>
<i>Project Supplies</i>			
Paper	1	\$10.00	\$10.00
Printer Ink	1	\$50.00	\$50.00
Folders	4	\$1.99	\$7.96
Plastic Magazine Holders	4	\$7.00	\$28.00
Staff Incentives	5	\$10.50	\$52.50
<i>Time</i>			
Project Leader	168	\$30.17	\$5,068.56
Project Site Champion	24	\$40.50	\$972.00
Nurse Manager	1.5	\$48.00	\$72.00
Nursing Project Participants	2	\$30.17	\$60.34
Physician Project Participants	1.5	\$30.90	\$46.35
Key Stakeholders	1	\$40.00	\$40.00
<b>TOTAL</b>			<b>\$6,407.71</b>

*Note.* Time calculations were estimated based on feedback from participants on the time it took to complete rounding tools, the survey, and gather data. All salary information except for physician salary information was obtained from Organization X’s salary database ([REDACTED], n.d.b). The physician salary was the average salary between a level four and five year resident physician ([REDACTED], n.d.a).

## Appendix R

## Doctor of Nursing Practice Essentials

	Description	Demonstration of Knowledge
Essential I <i>Scientific Underpinning for Practice</i>	<p><b>Competency</b> – Analyzes and uses information to develop practice</p> <p><b>Competency</b> -Integrates knowledge from humanities and science into context of nursing</p> <p><b>Competency</b> -Translates research to improve practice</p> <p><b>Competency</b> -Integrates research, theory, and practice to develop new approaches toward improved practice and outcomes</p>	<ul style="list-style-type: none"> <li>Analyzed data from the Project Site Champion to research, develop and translate ideas into the project intervention.</li> <li>Conducted a thorough literature review to develop a feasible quality improvement intervention to ameliorate interdisciplinary communication on the Medicine Progressive Care Unit (MPCU)</li> </ul>
Essential II <i>Organizational &amp; Systems Leadership for Quality Improvement &amp; Systems Thinking</i>	<p><b>Competency</b> –Develops and evaluates practice based on science and integrates policy and humanities</p> <p><b>Competency</b> –Assumes and ensures accountability for quality care and patient safety</p> <p><b>Competency</b> -Demonstrates critical and reflective thinking</p> <p><b>Competency</b> -Advocates for improved quality, access, and cost of health care; monitors costs and budgets</p> <p><b>Competency</b> -Develops and implements innovations incorporating principles of change</p> <p><b>Competency</b> - Effectively communicates practice knowledge in writing and orally to improve quality</p> <p><b>Competency</b> - Develops and evaluates strategies to manage ethical dilemmas in patient care and within health care delivery systems</p>	<ul style="list-style-type: none"> <li>Developed a project with integrated communication as the central focus.</li> <li>Served in a leadership role to improve communication on the MPCU thereby positively impacting the quality of healthcare.</li> <li>Developed a cost-benefit-analysis of the project intervention and outcomes.</li> <li>Provided education to staff on why interdisciplinary communication is important.</li> <li>Disseminated project findings including reflecting on project facilitators, limitations, recommendations for other professionals, and recommendations for further study.</li> </ul>
Essential III <i>Clinical Scholarship &amp; Analytical Methods for</i>	<p><b>Competency</b> - Critically analyzes literature to determine best practices</p> <p><b>Competency</b> - Implements evaluation processes to measure process and patient outcomes</p>	<ul style="list-style-type: none"> <li>Conducted a literature review and incorporated relevant findings into the selected intervention for standardizing bedside rounding to improve interdisciplinary communication.</li> </ul>

<p><b>Evidence-Based Practice</b></p>	<p><b>Competency</b> - Designs and implements quality improvement strategies to promote safety, efficiency, and equitable quality care for patients</p> <p><b>Competency</b> - Applies knowledge to develop practice guidelines</p> <p><b>Competency</b> - Uses informatics to identify, analyze, and predict best practice and patient outcomes</p> <p><b>Competency</b> - Collaborate in research and disseminate findings</p>	<ul style="list-style-type: none"> <li>● Developed a way to track utilization and compliance of the rounding tool.</li> <li>● Analyzed all data metrics to evaluate recommendations to further advance interdisciplinary communication.</li> <li>● Worked with other members at the partnering organization to collaborate on ways to improve communication surrounding discharge planning.</li> <li>● Disseminated project findings to the partnering university and partnering organization through an orally and written presentation.</li> </ul>
<p>Essential IV <b>Information Systems – Technology &amp; Patient Care Technology for the Improvement &amp; Transformation of Health Care</b></p>	<p><b>Competency</b> - Design/select and utilize software to analyze practice and consumer information systems that can improve the delivery &amp; quality of care</p> <p><b>Competency</b> - Analyze and operationalize patient care technologies</p> <p><b>Competency</b> - Evaluate technology regarding ethics, efficiency and accuracy</p> <p><b>Competency</b> - Evaluates systems of care using health information technologies</p>	<ul style="list-style-type: none"> <li>● Downloaded staff satisfaction survey data from Qualtrics to analyze the satisfaction rate of physicians and nurses on the MPCU. This was done to improve the quality of care provided on the MPCU.</li> <li>● Ensured the uploaded survey was kept anonymous to correlate with ethical standards.</li> </ul>
	<p><b>Description</b></p>	<p><b>Demonstration of Knowledge</b></p>
<p>Essential V <b>Health Care Policy of Advocacy in Health Care</b></p>	<p><b>Competency</b>- Analyzes health policy from the perspective of patients, nursing and other stakeholders</p> <p><b>Competency</b> – Provides leadership in developing and implementing health policy</p> <p><b>Competency</b> –Influences policymakers, formally and informally, in local and global settings</p> <p><b>Competency</b> – Educates stakeholders regarding policy</p> <p><b>Competency</b> – Advocates for nursing within the policy arena</p> <p><b>Competency</b>- Participates in policy agendas that assist with finance, regulation and health care delivery</p>	<ul style="list-style-type: none"> <li>● Served as project lead in developing, implementing, and analyzing a project to improve interdisciplinary communication on the MPCU</li> <li>● Developed a project aligned with one of the Healthy People 2030 goals by addressing interdisciplinary communication on the MPCU to improve the provider’s knowledge, enhancing patient and provider communication.</li> </ul>

	<p><b>Competency</b> – Advocates for equitable and ethical health care</p>	<ul style="list-style-type: none"> <li>Improving the quality of communication affects all target outcome points of the Triple Aim. Communication is involved in every process in the hospital. Effective communication methods affect employee trust, define clear work instruction, define problem-solving skills and build stronger teams.</li> </ul>
<p>Essential VI <i>Interprofessional Collaboration for Improving Patient &amp; Population Health Outcomes</i></p>	<p><b>Competency</b>- Uses effective collaboration and communication to develop and implement practice, policy, standards of care, and scholarship</p> <p><b>Competency</b> – Provide leadership to interprofessional care teams</p> <p><b>Competency</b> – Consult intraprofessionally and interprofessionally to develop systems of care in complex settings</p>	<ul style="list-style-type: none"> <li>Collaborated with both the Project Site Champion and key stakeholders at the project site to develop a project that improved interdisciplinary communication on the MPCU.</li> <li>Served in a leadership role by being the Project Leader thus developing, implementing, and evaluating the project intervention.</li> <li>Worked with physician colleagues, nursing administration, and quality improvement personnel throughout project implementation.</li> </ul>
<p>Essential VII <i>Clinical Prevention &amp; Population Health for Improving the Nation’s Health</i></p>	<p><b>Competency</b>- Integrates epidemiology, biostatistics, and data to facilitate individual and population health care delivery</p> <p><b>Competency</b> – Synthesizes information &amp; cultural competency to develop &amp; use health promotion/disease prevention strategies to address gaps in care</p> <p><b>Competency</b> – Evaluates and implements change strategies of models of health care delivery to improve quality and address diversity</p>	<ul style="list-style-type: none"> <li>Developed this project with the end goal of improving interdisciplinary communication thereby positively impacting patient care. This positive impact was through less waste in communication practices, decreased healthcare cost, and improved patient outcomes.</li> <li>After the project intervention was completed, it was found nursing was not a regular participant in interdisciplinary rounding practices; therefore, a project recommendation includes addressing this gap.</li> </ul>
<p>Essential VIII</p>	<p><b>Competency</b>- Melds diversity &amp; cultural sensitivity to conduct systematic assessment of health parameters in varied settings</p>	<ul style="list-style-type: none"> <li>Served as the Project Leader in designing, implementing, and evaluating project intervention.</li> </ul>

<p><i>Advanced Nursing Practice</i></p>	<p><b>Competency</b> – Design, implement &amp; evaluate nursing interventions to promote quality</p> <p><b>Competency</b> – Develop &amp; maintain patient relationships</p> <p><b>Competency</b> – Demonstrate advanced clinical judgment and systematic thoughts to improve patient outcomes</p> <p><b>Competency</b> – Mentor and support fellow nurses</p> <p><b>Competency</b>- Provide support for individuals and systems experiencing change and transitions</p> <p><b>Competency</b> – Use systems analysis to evaluate practice efficiency, care delivery, fiscal responsibility, ethical responsibility, and quality outcomes measures</p>	<ul style="list-style-type: none"> <li>● Worked through a process of collaborating, gathering data, and completing a literature review to develop the intervention of standardizing interdisciplinary rounding to improve interdisciplinary communication thereby improving patient care and outcomes.</li> <li>● Went to the project site weekly and addressed concerns, interacted with project participants, and gathered project data.</li> <li>● Used descriptive statistics to analyze project data to assess if the intervention improved interdisciplinary communication and thus the quality of healthcare delivery.</li> </ul>
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