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Neurosurgical Interdisciplinary Model of Care

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DNP Project: Neurosurgical Interdisciplinary Model of Care

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Abstract

Background: Communication failures within the healthcare team are the leading cause of inadvertent patient harm. Interdisciplinary Model of Care (IMOC) rounds have been found to increase positive patient outcomes through improved communication between healthcare team members.

Aims/Objectives: The purpose of this Quality Improvement (QI) project was to develop, implement, and evaluate IMOC rounds daily for non-critical care neurosurgical patient. This project has three aims: 1) decrease neurosurgical patient safety events, (PSEs) 2) increase utilization of IMOC rounds on the neurosurgery service, and 3) increase advance practice provider (APP) and registered nurse (RN) communication on patient plan of care by utilizing IMOC rounds**.**

Methods: This was a quality improvement (QI) project designed and implemented for neurosurgical IMC/Floor patients over 8-weeks. IMOC rounds were held daily, Monday-Friday, with the neurosurgery APP and RN utilizing an IMOC Checklist. To evaluate Aim 1, a report of PSEs three-months pre-intervention was compared to a three-month report of PSEs post-intervention using chi-square. For Aim 2, weekly reports were generated on IMOC Rounds and checklists were completed for each primary neurosurgical patient on the IMC/Floor. Percentages of IMOC usage over the implementation period was calculated using Excel. For Aim 3, Communication, Collaboration, and Critical Thinking surveys were conducted to obtain baseline data of APP/RN perceptions of communication/collaboration. Surveys were redistributed and analyzed for changes post-intervention using t-test.

Results: IMOC participation percentages were reported ranging from 35-77% over the implementation period. A t-test was conducted for APP/RN responses revealed two questions/statements as statistically significant for each survey. A chi-square test analysis

revealed the difference between pre-post intervention PSEs on the neurosurgical floor, results were not significant.

Conclusions: Implementing IMOC Rounds was found to improve communication/collaboration between RN and APPs. A longer implementation period or continued unit practice is needed to further assess the changes in PSEs documented.

Introduction

Neurosurgery is a field in which there has been a growth of research focusing on surgical outcomes, reducing unnecessary costs, and improving the quality of care. Inpatient services offered by the neurosurgical team are some of the most expensive in hospitals nationwide (Karhade, et al., 2018). Neurosurgical patients present with a wide range of demographics and diseases requiring surgical intervention. Neurosurgical patients include but are not exclusive to, those with ischemic or hemorrhagic strokes, cranial or spinal tumors, cerebral vascular abnormalities, and spinal diseases. The inpatient continuum of care starts in the emergency department (ED) or trauma bay and continues after a patient's discharge with, at times, rehabilitation services and/or home care as well as a follow-up in the outpatient clinic. As with other specialties, neurosurgeons practice evidence-based medicine providing interventions to improve quality of life and decrease disability (Karhade et al., 2018). A main goal of the service is to improve patient outcomes and eliminate unnecessary costs (Karhade et al., 2018).

Background and Significance

The Institute of Medicine (IOM) includes six domains for high-quality patient care: safe, effective, patient-centered, timely, efficient, and equitable (IOM, 2001). The IOM states that care must be seamless, supporting interdependent people and technologies to deliver care as a unified whole. Patient safety continues to be a concern within the healthcare system and delivery of care within the hospital with multiple teams involved can be difficult to coordinate (Franklin et al., 2020). Communication failures within a healthcare team have been found to be a leading cause of inadvertent patient harm (Dittman & Hughes, 2018). Care within the hospital can be delivered in fragments if healthcare teams fail to communicate with one another throughout the patient’s hospital stay. To help improve communication within

the healthcare team and increase patient safety, it is important to include all healthcare team members when discussing the plan of care for the patient.

IMOC allows a healthcare team to work together, sharing expertise, to achieve the goal of improving the quality and safety of patient care (Kroning et al., 2019). Interdisciplinary or multidisciplinary rounds (IDR/MDR) have been found to increase positive patient outcomes through improved communication between the healthcare team, leading to better patient care and improved staff satisfaction (Kroning et al., 2019). The ability to round daily with the primary team provider, registered nurse (RN), case manager, physical and occupational therapists, pharmacist, as well as other healthcare team members allows for open collaboration of the care for the patient. With multidisciplinary rounding, the healthcare team members will be able to deliver the same information to patients and their families, increasing patient and family satisfaction (Dittman & Hughes, 2018). Healthcare organizations have utilized IDR/MDR with toolkits and/or how-to guides from the Agency for Healthcare Research and Quality (AHRQ), the Institute for Healthcare Improvement (IHI), and the U.S. Department of Veteran Affairs.

Needs Assessment

This Doctor of Nursing Practice project endeavored to decrease the occurrence of patient safety events in the neurosurgical patient population. A full needs assessment was completed to assess the strengths, weaknesses, opportunities, and threats of the organization (Appendix A: SWOT Analysis Figure). There are many strengths of the organization including the neurosurgical staff, access to interdisciplinary services, and resources of a level-one trauma teaching hospital. Within the inpatient setting, the continuity of care starts from consultation to signoff or discharge. In the neurosurgical intensive care unit (ICU), MDRs are conducted daily with a neurosurgery team member, a surgical ICU team member, a social worker, a physical & occupational therapist, as well as the charge nurse for the unit. When

available the Surgical ICU team, RN, respiratory therapist, and pharmacist round on the patient to discuss the plan of care. A weakness that has been identified in the practice setting is that in contrast to the neurosurgical ICU, patients in the neurosurgical intermediate care (IMC) and floor do not have dedicated rounds with the RN taking care of the patient for the day. This allows for a break in communication between the patient's primary team and the registered nurse regarding the plan of care, thus leaving room for error in the care of the patient.

For the 2021-2022 Fiscal Year, there were 121 reported Patient Safety Events (PSEs) on the neurosurgical IMC & floor. The neurosurgical service has a dedicated team including APPs and RNs that are supportive of implementing IMOC rounds to decrease patient safety events. There was an opportunity to implement IMOC rounds on the neurosurgical IMC and floor. IMOC rounds will be held with the neurosurgical APP and RN for all neurosurgical patients on the neurosurgical IMC & floor following rounds with the neurosurgical APP, charge nurse, social worker, and physical & occupational therapist. Studies have shown that the implementation of IMOC rounds decreases the number of patient safety events.

Being able to build on the strengths of the group, by implementing IMOC rounds can help improve patient care and outcomes and is capable of being implemented due to full neurosurgical staff. The weaknesses of the specialty include expansion of knowledge and training for those new to the neurosurgical patient population as well as those who work outside of designated neurosurgical units to help improve and optimize consistent care within the organization and deliver discharge instructions. When assessing external opportunities and threats, the main theme is to expand, improve, and specialize care to compete with other organizations within the Mid-Atlantic Region to provide comprehensive neurosurgical care. Overall, after reviewing the strengths, weaknesses, opportunities, and threats, the

implementation of the project will help optimize patient outcomes within the neurosurgical service with a potential decrease in patient safety events.

Problem Statement

The inpatient neurosurgical team at a 912-bed acute care setting in the Mid-Atlantic region of the United States focuses on SPIRIT values: service, patient-first, integrity, respect, innovation, and teamwork. The neurosurgical team works closely with the RNs to provide care for the IMC/floor patients. Unfortunately, there are times when the providers and RNs do not have streamlined communication and understanding of the patient's plan of care, which may lead to patient safety events on the unit.

Evidence-Based Practice Question

For non-critical care, neurosurgical service patients (P), does the implementation of an Interdisciplinary Model of Care Rounding (I) as opposed to no rounds (C) decrease patient safety events (O) within an 8-week period (T)?

Aims /Objectives

Aim #1

Decrease the occurrence of patient safety events on the neurosurgical unit.

Objective

- There will be a 25% decrease in patient safety events reported after the 8-week implementation of IMOC rounds.

Aim #2

Increase the utilization of IMOC rounds on the neurosurgery service.

Objectives

- Providers and registered nurses will participate in IMOC rounds at least 80% of the time during the implementation period.

- RNs will utilize IMOC Rounding Checklist at least 80% of the time during the implementation period.

Aim #3

Increase provider and registered nurse communication on patient plan of care by utilizing IMOC rounds.

Objective

- Providers will have a reported increased perception of communication post-intervention as measured by the Communication, Collaboration, and Critical Thinking: Quality Patient Outcomes Physician Survey Tool.
- Nurses will have a reported increased perception of communication post-intervention as measured by the Communication, Collaboration, and Critical Thinking: Quality Patient Outcomes Nurses Survey Tool.

Review of Literature

A literature search was conducted to gather evidence of the stated PICOT question. The search was conducted March 6 - March 12, 2023, using four databases to perform the search: PubMed, Medline, CINAHL, and SCOPUS. The PRISMA Flow Diagram (Appendix B) shows this process and its results. A total of eleven articles were appraised using the Johns Hopkins Nursing Evidence-Based Practice (JHNEPB) model and guidelines as outlined by Dang and Dearholt (2018). The eleven articles were evaluated for their evidence level and quality: five articles were of evidence level II with good quality, six articles were of evidence level III, and one with good quality (Appendix C: Evidence Table). Regarding methodology, one pilot study, two quasi-experimental studies, two retrospective analysis studies, two mixed-methods studies, three non-experimental studies, and one prospective cohort study.

All studies were conducted in an acute care setting with inpatient populations. Seven of the studies included an intervention involving IMOC rounding. Four articles assessed evaluated the use of daily rounding checklists with an introduction to IMOC rounding. Studies implementing IMOC rounding observed various measures including patient length of stay, perception of teamwork, communication, education, patient safety, patient satisfaction, patient readmission, and Foley compliance. Based on the needs of the neurosurgical service and the AIMS and objectives of this project, it was determined that patient length of stay, patient satisfaction, patient readmission, and Foley compliance would not be a focus of the DNP project.

Patient safety was explored and measured in seven of the studies (Banfield et al., 2017; Dunn et al., 2014; Gausvik et al., 2015; Gunter et al., 2019; Guzinski et al., 2019; Maniaci et al., 2020; O'Leary et al., 2015). Failures in teamwork and communication are factors that lead to medical errors, adverse events, and reduced quality of care (Guzinski et al, 2019). Thus, improving teamwork and communication will ultimately lead to improved quality of care as well as decreased medical errors and/or adverse events. Whether it was perceptions of patient safety or measured outcomes of patient safety, these studies found that with the implementation of IMOC or a rounding checklist, an improvement was seen within their patient population.

Perceptions in communication between the healthcare team were studied in seven of the studies implementing IMOC rounding (Centofani et al., 2014; Dunn et a., 2017; Gausvik et al., 2015; Gunter et al., 2019; Guzinski et al., 2019; O'Leary et al., 2015; Wickersham et al., 2021). All seven of the studies found that there was an increased rating in communication between the healthcare team with the implementation of IMOC rounds. Improved communication between the healthcare team is one Aim of this DNP project and successful implementation of IMOC rounds with the bedside nurse will demonstrate similar results.

One study measured the perception of increased education with the implementation of IMOC rounding, which found that utilizing Daily Goal Checklists were a quick and simple tool to help impact education in the intensive care unit (ICU) (Centofani et al., 2014). Incorporating an IMOC checklist will assist in improved communication as well as improved education in addition to IMOC rounds.

Four studies interviewed healthcare team members after the implementation of IMOC rounding to determine the perception level of teamwork (Dunn et al., 2017; Gausvik et al., 2015; O'Leary et al., 2015; Wickersham et al., 2021). Baseline surveys were obtained as well as post-intervention surveys or interviews, with all four studies showing an increase in the level of perceived teamwork. For the purpose of this study, a pre- and post-intervention survey will be obtained and used to measure perceptions of teamwork within the neurosurgical intermediate care and floor.

Four of the studies measured patient length of stay (LOS) as a measurable outcome (Dunn et al., 2017; Guzinski et al., 2019; Maniaci et al., 2020; Wickersham et al., 2021). The studies did not show significant improvements in decreasing the patient length of stay with the utilization of interdisciplinary rounds nor rounding checklists. Therefore, for the purpose of this DNP project, the patient length of stay was briefly considered as an aim/objective but ultimately was decided against due to the neurosurgical patient population and patient demographics, as many are uninsured and have prolonged disposition in addition to the studies lack of statistical significance.

Based on the literature review, there is evidence for further research on the impact of the interdisciplinary model of care rounding to decrease patient safety events. The implementation of interdisciplinary models and the use of rounding checklists were found to be useful and sustainable interventions within the units and proved to be one that should be

utilized in the neurosurgical intermediate and floor units to help reach the DNP project aims and objectives.

Iowa Model for Evidence-Based Practice

The Iowa Model for Evidence-Based Practice (EBP) is used at the facility in which the DNP project will take place. Based on Roger's (1983) theory, this model has proven to be adaptable for all users, from novice to expert, in a variety of settings, asking important clinical questions to improve quality via a systematic use of evidence (Buckwalter et al., 2017).

Step 1: Identify the trigger where an EBP change is warranted. This can be either a knowledge-focus trigger or a problem-focus trigger.

Communication failures have been found to be the leading cause of inadvertent patient harm within the healthcare team. Multidisciplinary rounds have been found to increase positive patient outcomes through improved communication between the healthcare team.

Step 2: Determine if the problem at hand is a priority for the organization, practice, department, or unit.

Yes, a decrease in patient safety events is a priority for the organization. There were 121 PSEs for the 2021-2022 fiscal year. One of the organization's spirit values is "Patient First", focusing on delivering the best care to our patients.

Step 3: Form a team that will develop, evaluate, and implement the EBP change. The team should be made up of representatives both in and out of the nursing unit. This allows for interdisciplinary stakeholders in the team for better evaluation and implementation of the change.

Nurse practitioners & physician assistants, nurses, neurosurgeons, patients & families, nursing managers

Step 4: Gather and analyze research related to the desired practice change. This includes formulating a good research question using the PICO(T) method and conducting a literature search looking for related research studies.

For non-critical care, neurosurgical service patients (P), does the implementation of an Interdisciplinary Model of Care Rounding (I) as opposed to no rounds (C) decrease patient safety events (O) within an 8-week period (T)?

Step 5: Critique and synthesize the research discovered during the literature search. This includes reviewing the research to determine if the change is scientifically sound.

See review of literature.

Step 6: STOP and **DECIDE** if there is sufficient research to implement a practice change:

- **NO -** Review the research and**:**
  - Determine if there is a need and resources available to conduct an actual research study. If so, conduct the study and then go back to Step 5.
  - Review and base practice on other types of evidence: Case Reports, Expert Opinions, Scientific Principles, and Theory, and then move to Step 7.
- ***Yes*** *- Move to Step 7.*

Step 7: Implement Change into a Pilot Program. DO NOT conduct a full practice change. Rather, change one or two smaller areas/units first for evaluation.

Implement an Interdisciplinary Model of Care Rounds (IMOC) to increase communication within the healthcare team and decrease reported patient safety events.

Step 8: Evaluate results. Is the change feasible and does it result in improved outcomes? Is the change appropriate for full adoption within the department/practice/organization?

NO - Continue to evaluate the care and new research to be able to revisit the issue in the future with new information.

YES *- Introduce the change across the department/unit/practice/organization. After the introduction of the change, continue to observe, evaluate, and analyze the results. As technology and research change, this could be an issue that will once again need evaluation.*

Methods

Study Design

This was a quality improvement (QI) project designed to evaluate the implementation of an IMOC rounds for neurosurgical IMC and floor patient populations. The primary outcome of this study compared the reported number of PSEs in neurosurgical patients prior to the implementation of the IMOC rounds with the number of PSEs reported after the implementation of IMOC daily rounds. Patient safety data collected prior to the implementation of the IMOC rounds will include the category of the PSE and if patient harm occurred. This project also compared the RNs' reported perception of communication with providers as well as the provider's reported perception of communication with RNs prior to the implementation of IMOC rounds and after the implementation of IMOC rounds. The reported perceptions of nurses and providers were obtained through the Communication, Collaboration, and Critical Thinking: Quality Patient Outcomes Nurses Survey Tool before and after the implementation of IMOC rounds. The percentage of participation of providers and RNs were measured, along with the percentage of utilization of IMOC Rounding Checklist throughout the implementation period.

Setting

This project occurred in a 912-bed, level-one trauma, not-for-profit academic and research center hospital in the Mid-Atlantic Region of the United States. The hospital has an inpatient neurosurgical service including a dedicated 25-bed neurosurgery ICU, 16- bed neurosurgery IMC, and a 10-bed neurosurgery floor unit. There are six neurosurgeons, 21 neurosurgery APPs, and 22 staffed RNs that treat neurosurgical patients on the neurosurgical IMC and floor. The pilot project was implemented during October-December of 2023.

Project participants

Inclusion criteria

- Adult patients between the ages of 18 and 100
- Patients admitted to and/or consulted by the neurosurgical service.
- RNs, full-time, part-time, or travel, working on the neurosurgical unit.
- Neurosurgery APPs, full-time or part-time.

Exclusion Criteria

- Patients under the age of 18 or over the age of 100
- Patients located on the neurosurgical IMC and/or floor admitted to another hospital service.

Recruitment

For the pre-intervention phase of the project, a retrospective data review was conducted using the PSE Reporting System, SafetyNet. Patient demographics will be collected and deidentified including the patient safety general event type of the PSE, file ID, event date, outcomes and actions taken (ie. review event with parties involved, education provided), severity level (reported), severity level (actual) entered by, entered date, attending physician, attending physician service, and admission date for the neurosurgical patient population for the months of June through August 2022 using aggregate data reports after

institutional review boards (IRB) were approved. Full-time and part-time Neurosurgical APPs, as well as full-time, part-time, and travel nurses staffed during the pre- and post-implementation, were recruited for participation in the project.

For the intervention phase of the project, patients admitted to the neurosurgical service between October and December of 2023 were included in the implementation of IMOC rounds. IMOC rounds were carried out by the neurosurgery APP(s) on service for the day and the RN of the patient for the shift.

Costs and Compensation

Hours spent on the project were logged and documented. Hours were logged for record-keeping purposes but were not monetarily compensated. Reports were generated and recorded by the DNP student for consistency with current CITI training certifications, who was a current neurosurgical nurse practitioner at the study site. Printed reports, surveys, and/or worklists were absorbed by the neurosurgical department. Paper documents were stored in a locked drawer in a locked office within the hospital.

Intervention

The intervention included IMOC rounds for admitted neurosurgical service patients on the neuro IMC and floor. The neurosurgery APPs participated in discharge rounds as currently practiced with the neurosurgery APP(s), case management workers, physical therapist, and charge nurse. The implementation included additional rounding with the RN for each neurosurgical patient after completing discharge rounds on the unit. The neurosurgery APP communicated the information gathered from discharge rounds to the registered nurse to facilitate IMOC rounds. In addition to the IMOC rounds with the Neurosurgery APP and RN, the RN completed Nursing IMOC Rounds Checklist and completed the IMOC Worklist via EHR for each neurosurgical patient to present during IMOC rounds.

Tools/Instruments

IMOC rounds were conducted Monday through Friday on the neurosurgical IMC and floor. Neurosurgery APPs and RNs were educated on the purpose of IMOC rounds by the DNP student and nursing management prior to intervention implementation using the PowerPoint created by nursing educators (Appendix D: IMOC Rounding Job Aid). The DNP student delivered and obtained a pre-and post-intervention survey completed by RNs (Appendix E: Communication, Collaboration, and Critical Thinking: Quality Patient Outcomes Nurses Survey Tool) and Neurosurgery APPs (Appendix F: Communication, Collaboration, and Critical Thinking: Quality Patient Outcomes Physician Survey Tool). The RNs utilized the Nursing IMOC Goal Sheet (Appendix G) to help facilitate IMOC rounds and complete the IMOC Rounding Checklist (Appendix H) in the EHR. The DNP student generated the IMOC Checklist Data Report via EHR for the registered nurse's documentation of IMOC completed on neurosurgical patients Monday through Friday, which was generated weekly.

Outcomes

This project’s primary outcome measure was assessing PSE rates for neurosurgical patients pre- and post-intervention. PSEs are reported via SafetyNet and categorized based on the type of event. To obtain baseline PSE data, a 3-month period in 2023 (June-August 2023), was reviewed using aggregate data report generated via SafetyNet. The number of PSEs was generated via the same methodology and evaluated post-implementation of IMOC rounding. Baseline data was assessed on neurosurgery APP and RN communication the Neurosurgery APP and RNs via the Communication, Collaboration and Critical Thinking Survey Tool two weeks prior to implementation of IMOC rounds with responses documented via Excel spreadsheet and evaluated. The same survey was given post-implementation with responses recorded and evaluated and analyzed in the same manner. Finally, this project also measured

the utilization of daily IMOC rounds being held, as well as the IMOC checklist via the IMOC Checklist Data Report within the EHR.

Project Timeline

This project was be completed from October through December 2023. The Gantt chart (Appendix I) outlines the steps of the project and the timeline for each phase. Phase 1: the planning phase occurred in May through June 2023. After IRB approval was secured, there was a retrospective report review conducted that obtained the pre-intervention phase data in the charts noted in the months of June through August 2023. The pre-intervention phase was followed by the implementation phase of the IMOC rounding conducted between October and December 2023. Finally, the post-intervention phase started in December 2023 with all data collected by the beginning of January 2024. Data analysis and evaluation of the DNP project outcomes occurred during January with final dissemination in February - April 2024.

Resources Needed

For the IMOC rounds, minimal resources were needed for implementation. Participation between the neurosurgical APPs and RNs was imperative for the success of the project. Access to aggregate data reports from the EHR and SafetyNet was needed to conduct this project for data collection. A secure internal hospital server was also required to collect and store data with Microsoft Office Suite. Access to hospital computers and printers was necessary to print handouts (Appendix E, F, & G).

Evaluation Plan

A driver diagram was used as part of the evaluation plan for the evidence-based project represented in Appendix J. The driver diagram illustrates the main goal of the project

and the multiple drivers linked to the overall goal and how the project contributes to those drivers.

Data Analysis, Maintenance & Security

Collection of data

Pre-intervention PSE data was collected from June-August of 2022 via aggregate data reports after IRB approval. PSE data post-implementation was collected and stored on the secure hospital server using an Excel database. Pre-intervention neurosurgery APP and RN surveys was collected 2-4 weeks pre-intervention implementation, as well as 2-4 weeks post-implementation. The DNP student reviewed the neurosurgery APP and RN pre-and post-implementation surveys and store the responses on the secure hospital server using an Excel database. The RNs recorded IMOC rounds via the EHR IMOC Rounding Checklist to document neurosurgery APP & RN participation daily. Data was generated and transferred from the EHR via IMOC Checklist Data Report and recorded to the Excel database for further analysis.

Data analysis

The aims data were tracked using Excel and analyzed via run charts to determine the success of the implementation of the project measures. PSE rates was assessed pre-intervention (June-August 2023), as well as post-intervention (October-December 2023). The type of PSE was also analyzed. Survey responses of neurosurgery APPs and RNs were tracked and analyzed pre-and post-intervention. Completion of IMOC rounds with the neurosurgery APP(s) and registered nurse as well as utilization of the IMOC Rounding Checklist were analyzed pre-and post-intervention. Because there are two groups, pre-intervention, and post-intervention, an independent Chi-square test was used to compare the PSE rates before and after the implementation of the IMOC rounds.

Neurosurgery APP and RN surveys assessing the perception of communication and collaboration documented by “always,” “sometimes,” “rarely,” “never”; “all of the time,” “most of the time,” “some of the time,” “rarely,” “never”; or “strongly agree,” “agree,” “neutral,” “disagree,” or “strongly disagree”. Data was coded as outlined in the data table for outcome measures. For missing data recorded of IMOC rounds or utilization of IMOC Rounding Checklist, the DNP student marked as incomplete. The sample and effect size will require a minimum of 20 participants; therefore, data was tracked over 8 weeks to obtain this minimum number.

Results

Data Analysis

To evaluate Aim 1, a generated report of PSEs during the months of June through August 2023, pre-intervention, was compared to a generated report of PSEs for the months of October through December, post-intervention. A total of 9 PSEs were documented June through August and 10 PSEs documented for the months of October through December. Appendix K Table 2 illustrates the types of PSEs pre- and post-implementation that occurred. A chi-square test was conducted to analyse the difference between the pre-post intervention PSEs on the neurosurgical floor, the results were not significant. When looking at types of PSEs documented, the category of Medication/Fluids was predominately pharmacy errors in preparation or delivery which does not directly correlate with RN nor APP communication or collaboration. There was an increase in these types of PSEs during the post-implementation period. To determine statistical significance after removing medication/fluid errors from PSE reports, a longer period of data collection is recommended.

For Aim 2, the number of neurosurgical patients were recorded daily, and weekly reports were generated whether IMOC Rounds and the IMOC Checklist were completed for each primary neurosurgical patient on the IMC/Floor. Initially, IMOC Checklists were completed

via paper, but this was difficult to record/track, and was transitioned to the use of the IMOC checklist. At the end of each week the IMOC Checklist Data Report was generated to determine the number of neurosurgery patients had completed IMOC rounds each day. A weekly percentage of participation was used to track participation of IMOC over the implementation period. See Appendix K Figure 1 for percentages of IMOC completed for neurosurgical patients each week.

Lastly, for Aim 3, a survey was distributed prior to the implementation of the DNP project to obtain baseline data of APP and RN perceptions of communication and collaboration on the unit. The survey was distributed two weeks prior to the implementation and responses recorded. The survey was distributed post-implementation for two weeks to obtain post-intervention perceptions of communication and collaboration on the unit. The survey responses were collected in Microsoft Excel, and SPSS was used to analyze the data. A t-test was conducted for RN responses to the survey with two questions/statements being statistically significant: “Do nurses and physicians cooperate in decisions?” (t=1.913, df=33, p=0.03, CI=0.022 – 0.695) and “I have good communication with physicians.” (t=1.775, df=33, p=0.04, CI=0.779 – 0.055), with a Cohen’s d medium effect size (d=0.495; d=0.640). A t-test was conducted for APP responses to the survey with two questions/statements being statistically significant: “I receive complete information from nurses.” (t=1.718, df=21, p=0.05, CI=1.230 – 0.130) and “I feel certain about accuracy of information from nurses.” (t=-1.699, df=21, p=0.05, CI=1.487 – 0.153), with a Cohen’s d large effect size (d=0.753; d=1.008). See Appendix K for data tables.

Discussion

After analysing the data obtained, daily IMOC rounds are recommended to continue with EHR IMOC Checklist utilization to continue to improve communication and collaboration with APP and RNs as well as monitor PSE occurrences. A unit policy for

patients on the neurosurgical intermediate care and floor should be implemented for continued improvements in communication and collaborations within the healthcare team. A continued implementation of IMOC will better determine the impact of IMOC rounds on PSEs as well as APP and RN communication and collaboration.

Executive leadership learned of the DNP project and reached out to discuss best practices as well as barriers learned during the implantation of IMOC rounds. Discussions of implementing IMOC rounds into hospital policy and the implications of rounds continue to occur with possible changes to the EHR IMOC Checklist.

One limitation of the project was initially a paper checklist was utilized to mitigate IMOC Rounds, but the paper checklist was often missing or undocumented. An IMOC Checklist via EHR was then utilized and documented without the use of the paper checklist. Another limitation was fluctuations of IMOC Rounds completed over the 8-week period limits the APP & RN survey responses post-implementation as well as PSEs reported. A decrease in post-implementation survey responses limited the accuracy of data obtained.

Plans for Sustainability and Future Scholarship

After the completion of the DNP project, the first-year residency registered nurses planned to continue the implementation of IMOC rounds, utilizing the same RN/APP surveys and monitoring PSEs for the unit. Nursing management plan to include patient length of stay into the data collected and analyzed with the goal to decrease with the utilization of IMOC rounds.

Conclusion

IMOC rounds were held on the Neurosurgery IMC and floor for patients admitted under the neurosurgical service. The patient plan of care was reviewed and the IMOC Checklist was utilized to aid in the IMOC rounds. This QI project compared and analyzed data prior to the implementation of IMOC rounds and post-intervention data evaluating

reported PSEs, utilization of IMOC rounds on the neurosurgery service as well as APP and RN communication and collaboration on the unit. After 8-weeks of implementation of IMOC rounds, there was no statistical significance in PSEs documented. There was statistical significance in some APP and RN survey responses. It is recommended that IMOC rounds continue to be utilized for further data analysis on the impact.

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Appendices

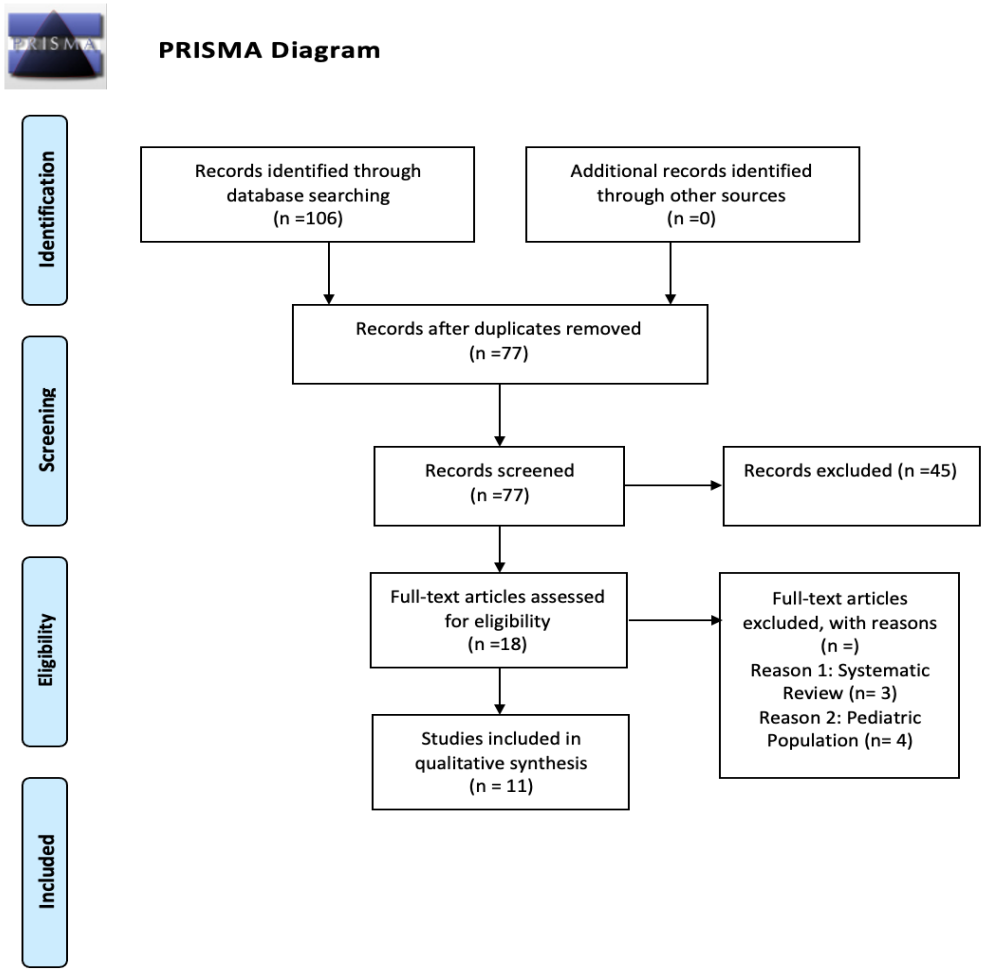
Appendix A

SWOT Analysis Figure

	Helpful To achieving the objective	**Harmful** To achieving the objective
Internal Origin {Attributes of the organization}	**Strengths** • Designated neurosurgical units within the hospitals, critical care, intermediate, and floor, as well as an outpatient clinic. • Neuroscience center clinic hours and coverage with attendings, fellows and APPs to compensate for neurosurgical surge in volume. • Multidisciplinary approach for neurosurgical patients • Large organization with access to abundant/necessary resources	**Weaknesses** • PSEs on IMC/Floor • Lack of formal rounds with RN on IMC/Floor • Overflow of neurosurgical patients to units who are not neuro trained. • Lack of formal training process for APPs during onboarding. • No established follow-up post-discharge prior to suggested neurosurgical clinic visit.
External Origin {Attributes of the organization}	**Opportunities** • Additional training for non-neurosurgical floors when caring for neurosurgical patients. • Expansion of neurosurgical units/bed available for patient overflow • Daily rounds with APP/RN on IMC/Floor Unit • Continued implementation of innovation and research of EBP	**Threats** • Surrounding are facilities that provide comprehensive neurosurgical services • Supply chain demands. • High turnover in healthcare • Poor media/press coverage

Appendix B

PRISMA Diagram



Appendix C

Evidence Table

Article #	Author & Date	Evidence Type	Sample, Size, Setting	Findings	Observable Measures	Limitations	Evidence Level & Quality
1	Banfield et al., 2017	Retrospective Analysis	732- bed General Hospital 19-bed surgical assessment unit PDSA Cycle 1: n=31 PDSA Cycle 2: n=24; n=18 PDSA Cycle 3: n=26, n=20	With the implementation of the "Take 10" checklist there was reported improvement of patient safety, and improved rounding experience.	- Use of checklist during rounds - Questionnaire of experience using checklist	- Sample size - Accessibility of checklist	Level III, B
2	Carlos et al., 2015 "Intensive Care Unit Rounding Checklist Implementation Effect of Accountability Measures on Physician Compliance"	Quasi-experimental Study	Two large academic center hospitals N=902 patients Passive Implementation: 1567 (checklist days) Accountability Phase: 2715 Washout Phase: 1530	Improved compliance rates of rounding checklists lead to decreased foley catheters, centra lines and ventilator use.	- Physician use of daily checklist	- 14 physicians between 2 hospitals - Paper checklists, some unaccounted for.	Level II, B
3	Centofani et al., 2014	Mixed Methods Study	University Affiliated Tertiary Care Hospital	Daily Goals Checklist (DCGs) are a quick and	- Percentage of DCGs completed in observed	- Single center study Variable use of DGC	Level II, B

Article #	Author & Date	Evidence Type	Sample, Size, Setting	Findings	Observable Measures	Limitations	Evidence Level & Quality
	"Use of a Daily Goals Checklist for Morning ICU Rounds: A Mixed-Methods Study"		15- bed Medical-Surgical ICU n=80 ICU patients n= 72 rounds observed n= 56 interviews conducted	simple tool that impact patient care, communication, and education in the ICU.	rounds. - Interviews documented impact on communication, patient care and education.	among interviewees	
4	Dunn et al., 2017	Non-experimental Study	1171-bed tertiary care academic medical center Two units involved: 17-bed Mobile Interdisciplinary care rounds (MICRO) group 14-bed Standard conference room IDR group	AHRQ survey on patient safety demonstrated improved perceptions of teamwork and patient safety. Length of stay was not significantly reduced between the two groups (P=0.17). There was no difference in the clinical deterioration between the two groups (P=0.46).	Length of stay and clinical deterioration pre/post-intervention. Perceptions of teamwork, communication, and patient safety.	Study was implemented on a non-teaching unit at a single academic medical center. Patients were not randomized between the two groups.	Level III, B
5	Gausvik et al., 2015	Mixed Methods Study	555-bed metropolitan community hospital	Implementation of SIBR was associated with	SIBR staff vs Control Staff surveys	- Sample size - 2-week data collection	Level II, B

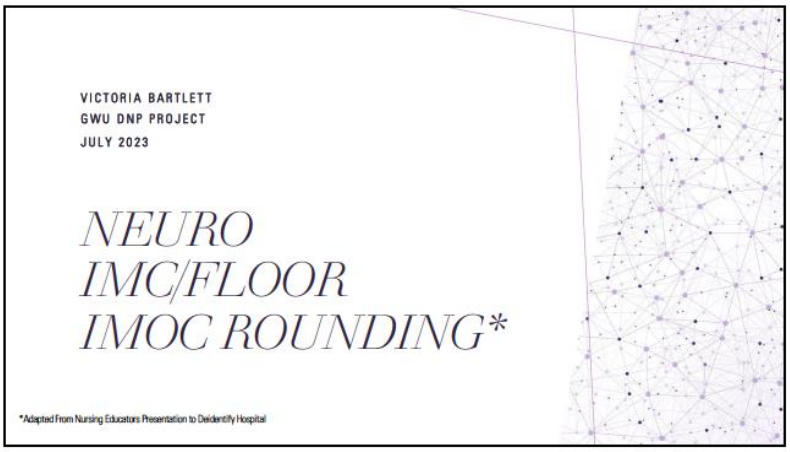
Article #	Author & Date	Evidence Type	Sample, Size, Setting	Findings	Observable Measures	Limitations	Evidence Level & Quality
			10-bed acute care for the elderly unit 24 SIBR Unit Staff (SIBR) 38 Control Unit Staff (physician-centric rounds)	higher ratings in teamwork, communication, and efficacy by staff as well as improvements in patient safety.	- Teamwork - Communication - Patient Safety		
6	Gunter et al., 2019	Retrospective analysis: Pilot study	751 University Teaching Hospital 20-bed neuroscience critical care unit	Implementation of the Electronic MDR improved communication between the healthcare team and reduce medical errors.	Nurse satisfaction of MDR tool. - Communication - Medical Errors	Pilot study; no baseline data collected. Errors in recordkeeping may affect data of electronic MDR, affecting accuracy of tool.	Level III, B
7	Guzinski et al., 2019	Non-Experimental	741-bed public and university institution Adult patients w/ proximal femoral fractures discussed during interdisciplinary rounds n=34	The implementation of interdisciplinary rounds has shown to contribute to communication among team members, improving quality of care, reducing risks/failures, & safer patient care, along with a decreased LOS.	Length of stay, communication of team members, reduction of risks/failures.	Not a controlled study, but evaluation of interdisciplinary round experiences.	Level III, B

Article #	Author & Date	Evidence Type	Sample, Size, Setting	Findings	Observable Measures	Limitations	Evidence Level & Quality
8	Maniaci et al., 2020	Prospective Cohort Study	305- bed tertiary care teaching hospital 10-bed Hospital Internal Medicine unit	Geographically locating patients and structured multidisciplinary rounding had a shorter LOS (P<.001) and lower risk of events (P=.038).	Patient length of stay, number of risk events, code blue events, & 30-day readmissions.	Study located on 1 medical unit of hospital. Population of patients limited to general medical patients. Interdisciplinary rounds not conducted on weekends or holidays.	Level III, B
9	O'Leary et al., 2015	Quasi-Experimental	854-bed tertiary care teaching hospital Four general medical units with 30-beds One 23 bed general medical unit	Implementation of INTERdisciplinary Approaches to Communication and Teamwork (INTERACT) study and Structured Interdisciplinary Rounds (SIDR) increased rating of teamwork. Changes in adverse events were not noted to be significant.	Characteristics of SIDR Safety Attitudes Questionnaire Impact of Intervention on Adverse Reactions Communication Teamwork	Limited to single academic medical center. Teamwork assessed via validated survey vs observed behaviours. Potential adverse events based on available medical records, which may have lacked detail.	Level II, B

Article #	Author & Date	Evidence Type	Sample, Size, Setting	Findings	Observable Measures	Limitations	Evidence Level & Quality
10	Townsend-Gervis et al., 2014	Non-experimental	339-bed, acute care suburban hospital Three 48 bed Medical-Surgical units	SBAR, IDR, and re-admission risk assessment can significantly improve patient outcomes. Foley catheter removal P=< .001 Readmission rate P=<.001 There was no significant change in patient satisfaction.	- Patient satisfaction - Patient readmission rates - Foley removal compliance	- Single facility, with no control group. - Longitudinal study over 3 years leading to variability.	Level III, B
11	Wickersham et al., 2021	Pilot Study	957-bed Academic Medical Centre Two units targeted: 40 bed telemetry unit 36 bed med-surg unit	Implementation of interdisciplinary patient rounds improved physical perception of communication. Hospital length of stay did not decrease with implementation of interdisciplinary patient rounds.	Pre/post intervention interdisciplinary communication, care coordination, teamwork & length of stay (LOS)	The study was implemented on only 2 nursing units. There was no baseline data prior to implementation of initial structured interdisciplinary bedside rounds. Interdisciplinary rounds were suspended during a holiday block with high census.	Level II, B

Tools

Appendix D



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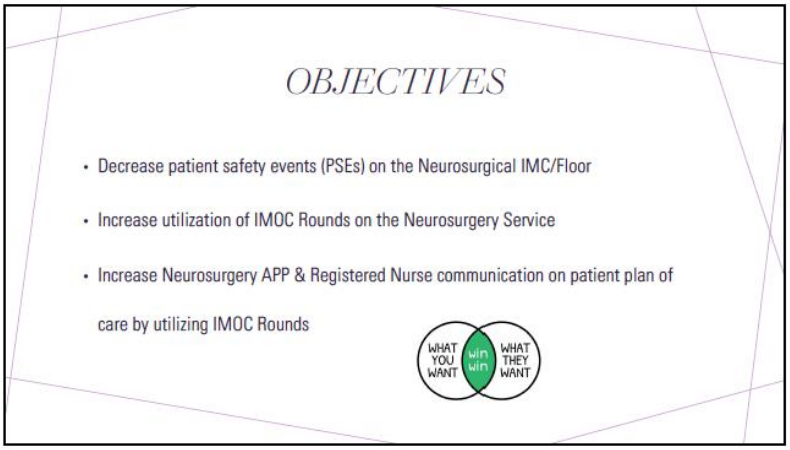


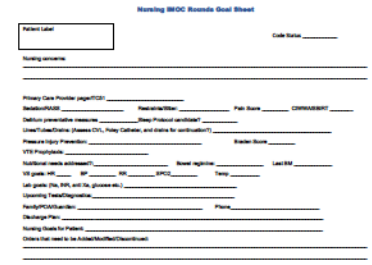
2

IMOC ROUNDING CHECKLIST

- RN will complete **Nursing IMOC Rounds Goal Sheet** overnight to review with APP during rounds
- During IMOC Rounding Goals, the **IMOC Checklist** will be complete via EHR (by RN)

Goals

- Aligned goals/plan of care
- Clear Communication
- Opportunity to share ideas/recommendations
- New learning opportunities
- Build rapport between team members



Nursing IMOC Rounds Goal Sheet

Patient Label

Code Status _____

Nursing concerns:

Primary Care Provider page/TCD: _____

Sedation/RASS: _____ Restraints/Sitter: _____ Fall Score _____ CIWA/ASSIST _____

Delirium preventative measures: _____Sleep Protocol on/Ordered? _____

Lines/Tubes/Drains: (Assess CV), Foley Catheter, and drains for ventilation?) _____

Pressure Injury Prevention: _____ Braden Score _____

VTE Prophylaxis: _____

Nutritional needs addressed?: _____ Bowel regimen: _____ Last BM _____

VS goals: HR_____ BP _____ RR _____ SPO2_____ Temp _____

Lab goals (Na, BUN, and Cr, glucose etc.) _____

Upcoming Tests/Diagnostics: _____

Family/PCA/Guardian: _____ Phone_____

Discharge Plan: _____

Nursing Goals for Patient: _____

Orders that need to be Added/Modified/Discontinued:

3

APP & NURSING COMMUNICATION

- APP & RN Surveys will be distributed 2 weeks prior to implementation to obtain baseline data.
- IMOC Rounds with the Neurosurgical APP & registered nurse will be held Monday-Friday for all Neurosurgical patients in the IMC/Floor for an 8-week period in September/October of 2023.
- APP & RN Surveys will be distributed 2 weeks post-implementation to evaluate APP/RN results.

4

QUESTIONS / COMMENTS / CONCERNS?

5

Appendix E

_____Initials _____ Last four digits of social security

_____AGE _____Years as RN _____Years at GSH _____Highest degree

For coding purposes only. All responses will remain confidential and data will be compiled.

COMMUNICATION, COLLABORATION AND CRITICAL THINKING=QUALITY PATIENT OUTCOMES NURSE SURVEY TOOL

1. Do nurses and physicians share in decision making?	**4 Always**	**3 Sometimes**		**2 Rarely**	**1 Never**
2. Do nurses and physicians cooperate in decisions?	**4 Always**	**3 Sometimes**		**2 Rarely**	**1 Never**
3. Do nurses and physicians plan together before making decisions?	**4 Always**	**3 Sometimes**		**2 Rarely**	**1 Never**
4. Is there open communication between physicians and nurses in making decisions?	**4 Always**	**3 Sometimes**		**2 Rarely**	**1 Never**
5. I get relevant information on the status of patients from physicians.	**5 All of the time**	**4 Most of the time**	**3 Some of the time**	**2 Rarely**	**1 Never**
6. There are no delays in relaying information regarding patient care.	**5 Strongly Agree**	**4 Agree**	**3 Neutral**	**2 Disagree**	**1 Strongly Disagree**
7. Physicians return calls in a timely manner.	**5 Strongly Agree**	**4 Agree**	**3 Neutral**	**2 Disagree**	**1 Strongly Disagree**
8. I receive correct information from physicians.	**5 Strongly Agree**	**4 Agree**	**3 Neutral**	**2 Disagree**	**1 Strongly Disagree**
9. I have good communication with physicians.	**5 Strongly Agree**	**4 Agree**	**3 Neutral**	**2 Disagree**	**1 Strongly Disagree**
10. I feel certain about accuracy of information from physicians.	**5 Strongly Agree**	**4 Agree**	**3 Neutral**	**2 Disagree**	**1 Strongly Disagree**
11. I enjoy collaborating with physicians.	**5 Strongly Agree**	**4 Agree**	**3 Neutral**	**2 Disagree**	**1 Strongly Disagree**
12. It is easy to ask the physicians questions.	**5 Strongly Agree**	**4 Agree**	**3 Neutral**	**2 Disagree**	**1 Strongly Disagree**

Appendix F

_____Years as Practicing MD _____Years at GSH

____Initials _____ Last four digits of social security

For coding purposes only. All responses will remain confidential and data will be compiled.

COMMUNICATION, COLLABORATION AND CRITICAL THINKING=QUALITY PATIENT OUTCOMES PHYSICIAN SURVEY TOOL

13. Do nurses and physicians share in decision making?	**4 Always**	**3 Sometimes**		**2 Rarely**	**1 Never**
14. Do nurses and physicians cooperate in decisions?	**4 Always**	**3 Sometimes**		**2 Rarely**	**1 Never**
15. Do nurses and physicians plan together before making decisions?	**4 Always**	**3 Sometimes**		**2 Rarely**	**1 Never**
16. Is there open communication between physicians and nurses in making decisions?	**4 Always**	**3 Sometimes**		**2 Rarely**	**1 Never**
17. I get relevant information on the status of patients from nurses.	**5 All of the time**	**4 Most of the time**	**3 Some of the time**	**2 Rarely**	**1 Never**
18. There are no delays in relaying information regarding patient care.	**5 Strongly Agree**	**4 Agree**	**3 Neutral**	**2 Disagree**	**1 Strongly Disagree**
19. Nurses call in a timely manner.	**5 Strongly Agree**	**4 Agree**	**3 Neutral**	**2 Disagree**	**1 Strongly Disagree**
20. I receive complete information from nurses.	**5 Strongly Agree**	**4 Agree**	**3 Neutral**	**2 Disagree**	**1 Strongly Disagree**
21. I have good communication with nurses.	**5 Strongly Agree**	**4 Agree**	**3 Neutral**	**2 Disagree**	**1 Strongly Disagree**
22. I feel certain about accuracy of information from nurses.	**5 Strongly Agree**	**4 Agree**	**3 Neutral**	**2 Disagree**	**1 Strongly Disagree**
23. I enjoy collaborating with nurses.	**5 Strongly Agree**	**4 Agree**	**3 Neutral**	**2 Disagree**	**1 Strongly Disagree**
24. I have easy access to high quality nurses.	**5 Strongly Agree**	**4 Agree**	**3 Neutral**	**2 Disagree**	**1 Strongly Disagree**

Adapted from: Vazirani, S., Hays, R., Shapiro, M., & Cowan, M. (2005). Effect of a multidisciplinary intervention on communication and collaboration among physicians and nurses. *American Journal of Critical Care*, 14(1), 71-77.

Appendix G

IMOC Rounding Checklist

Patient Label

Code Status _____

Nursing IMOC Rounds Goal Sheet

Nursing concerns:

Primary Care Provider pager/TC51 _____

Sedation/RASS _____ Restraints/Sitter: _____ Pain Score _____ CIWWA/SBIRT _____

Delirium preventative measures _____ Sleep Protocol candidate? _____

Lines/Tubes/Drains: (Assess CVL, Foley Catheter, and drains for continuation?) _____

Pressure Injury Prevention: _____ Braden Score _____

VTE Prophylaxis: _____

Nutritional needs addressed?: _____ Bowel regimine: _____ Last BM _____

VS goals: HR ____ BP _____ RR _____ SPO2 _____ Temp _____

Lab goals: (Na, INR, anti Xa, glucose etc.) _____

Upcoming Tests/Diagnostics: _____

Family/POA/Guardian: _____ Phone _____

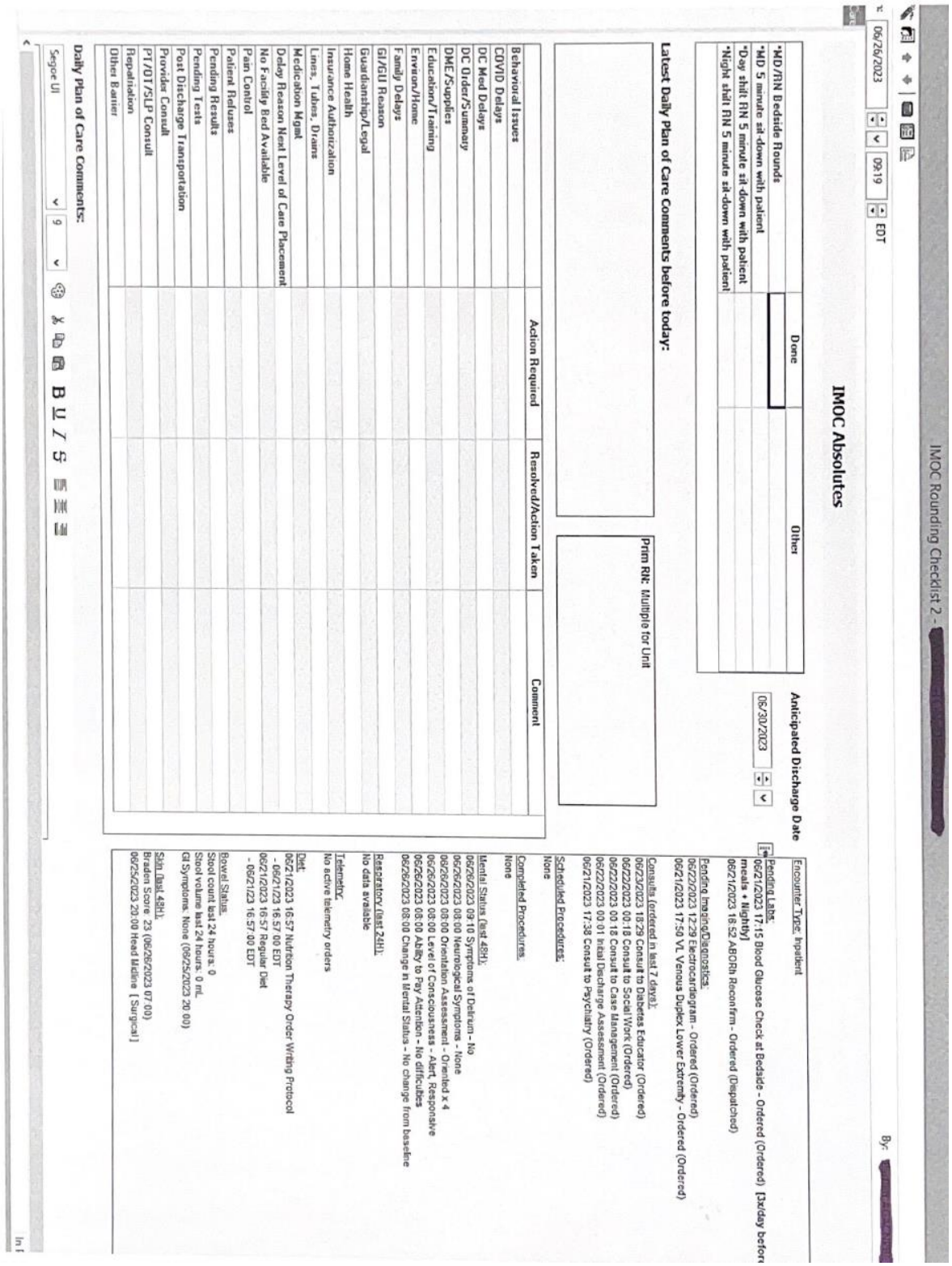
Discharge Plan: _____

Nursing Goals for Patient: _____

Orders that need to be Added/Modified/Discontinued:

_____

_____


IMOC Rounding Checklist 2 -
06/26/2023
09:19
EDT
By:
IMOC Absolutes
Done
Other
*MD/RN Bedside Rounds
*MD 5 minute sit-down with patient
*Day shift RN 5 minute sit-down with patient
*Night shift RN 5 minute sit-down with patient
Anticipated Discharge Date
06/30/2023
Encounter Type: Inpatient
Pending Labs
06/21/2023 17:15 Blood Glucose Check at Bedside - Ordered (Ordered) [3x/day before meals + Nightly]
06/21/2023 16:52 ABO/Rh Reconfirm - Ordered (Dispatched)
Pending Imaging/Diagnostics:
06/23/2023 12:29 Electrocardiogram - Ordered (Ordered)
06/21/2023 17:50 VL Venous Duplex Lower Extremity - Ordered (Ordered)
Latest Daily Plan of Care Comments before today:
Prim Rit: Multiple for Unit
Consults (ordered in last 7 days):
06/23/2023 18:29 Consult to Diabetes Education (Ordered)
06/22/2023 00:18 Consult to Social Work (Ordered)
06/22/2023 00:18 Consult to Case Management (Ordered)
06/22/2023 00:01 Initial Discharge Assessment (Ordered)
06/21/2023 17:38 Consult to Psychiatry (Ordered)
Scheduled Procedures:
None
Completed Procedures:
None
Mental Status (last 48H):
06/26/2023 09:10 Symptoms of Delirium - No
06/26/2023 08:00 Neurological Symptoms - None
06/26/2023 08:00 Orientation Assessment - Oriented x 4
06/26/2023 08:00 Level of Consciousness - Alert, Responsive
06/26/2023 08:00 Ability to Pay Attention - No difficulties
06/26/2023 08:00 Change in Mental Status - No change from baseline
Respiration (last 24H):
No data available
Telemetry:
No active telemetry orders
Diet:
06/21/2023 16:57 Nutrition Therapy Order Writing Protocol
- 06/21/23 16:57:00 EDT
06/21/2023 16:57 Regular Diet
- 06/21/23 16:57:00 EDT
Bowel Status:
Stool count last 24 hours: 0
Stool volume last 24 hours: 0 mL
GI Symptoms: None (06/25/2023 20:00)
Skin (last 48H):
Braden Score: 23 (06/26/2023 07:00)
06/25/2023 20:00 Head Midline [Surgical]
Action Required
Resolved/Action Taken
Comment
Behavioral Issues
COVID Delays
DC Med Delays
DC Order/Summary
DME/Supplies
Education/Training
Environ/Home
Family Delays
GI/GU Reason
Guardianship/Legal
Home Health
Insurance Authorization
Lines, Tubes, Drains
Medication Mgmt
Delay Reason Next Level of Care Placement
No Facility Bed Available
Pain Control
Patient Refuses
Pending Results
Pending Tests
Post Discharge Transportation
Provider Consult
PT/OT/SLP Consult
Repatriation
Other Barrier
Daily Plan of Care Comments:
Segoe UI
9

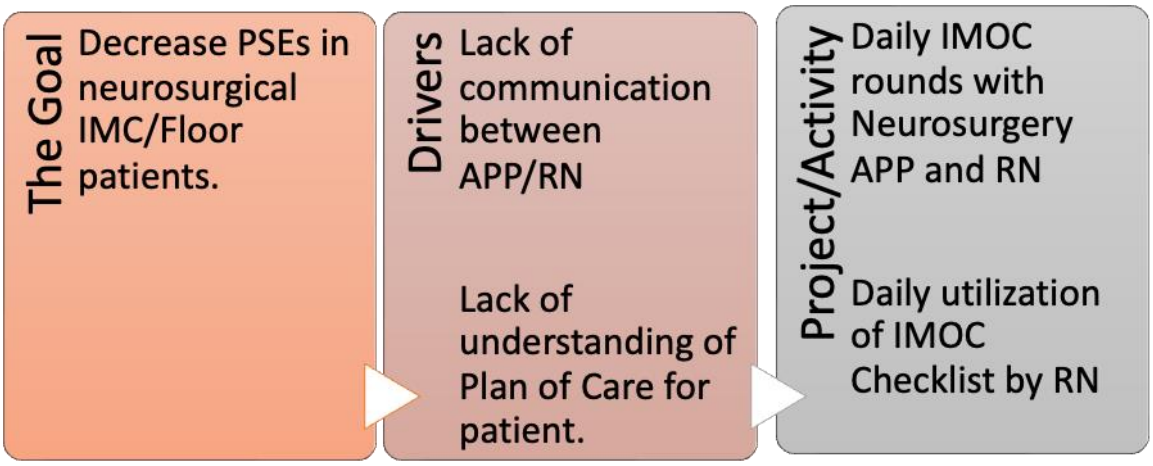
Appendix H

Gantt Chart

	Tasks	Timeline											
		2023								2024			
		May	June	July	August	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April
Phase 1: Planning	Design IMOC Rounds & Meet with Project Team												
	DNP Project Approval (by faculty & advisors)												
	IRB approval												
Phase 2: Pre-Intervention	Pre-intervention data collection												
Phase 3: Implementation	IMOC Rounds intervention implemented												
Phase 4: Post-Intervention	Post-intervention data collected												
	Data Analysis												
	Evaluation of DNP Project Outcomes												
	Dissemination of project results to DNP team and stakeholders												
	Dissemination of results via poster presentation & sustainability												

Appendix I

Driver Diagram



Appendix J

Aim 1: Decrease the occurrence of Patient Safety Events

Data Elements	Variable Name	Definition	Data Type*	Data Values & Coding	Restrictions/ Validation
General Event Type	event	General Event Type	Categorical	1, Blood Bank 2, Diagnosis/Treatment 3, Equipment/Medical Device 4, Fall 5, Infection Prevention 6, Lab/Specimen 7, Lines/Tubes/Drains 8, Medication/Fluid 9, Miscellaneous 10, Patient ID Documentation/Consent 11, Professional Conduct 12, Safety/Security 13, Skin/Tissue	Required
File ID	FID	File ID Number	Continuous	NA	Required
Event Date	E_date	Date of PSE	Continuous	01-01-2023 to 12-31-2023	Required
Outcomes/Actions Taken	ouctome	Outcomes/Action Taken of PSE	Categorical	1, Reviewed event 2, Additional education	
Severity Level (Reported)	rep_severe	Reported Severity Level of Event	Categorial	1, Unsafe Event (non-event) 2, Near Miss- No harm-didn't reach patient/ caught by chance 3, Near Miss, No Harm, didn't reach Patient b/c of Active Recovery by Caregivers 4, No harm reached patient- No monitoring required 5, No Harm Reached Patient- Monitoring required 6, Harm Temporary Harm- intervention needed 7, Death	Required
Severity Level (Actual)	act_severe	Actual Severity Level of Event	Categorial	1, Unsafe Event (non-event) 2, Near Miss- No harm-didn't reach patient/ caught by chance 3, Near Miss, No Harm,	Required

				Didn't reach Patient b/c of Active Recovery by Caregivers 4, No harm reached patient- No monitoring required 5, No Harm Reached Patient- Monitoring required 6, Harm Temporary Harm- intervention needed 7, Death 8, N/A	
Entered By	Enter_by	Entered By	Categorial	1, RN 2, APP 3, Other	
Entered Date	enter_date	Date PSE was entered	Continuous	01-01-2023 to 12-31-2023	Date (M-D-Y)
Attending Physician	attending	Attending Physician	Categorical	1, Aulisi 2, Felbaum 3, Armonda 4, Mason 5,,Mai 6, Tahir	Required
Attending Physician Service	service	Attending Physician Service	Categorical	1 Neurosurgery	Required
Admission Date	ad_date	Date of Admission	Continuous	01-01-2023 to 12-31-2023	Required

Aim 2: Increase the utilization of IMOC Rounds on the Neurosurgery service.

Data Elements	**Variable Name**	**Definition**	**Data Type***	**Data Values & Coding**	**Restrictions/ Validation**
Participant Identifier	Pat#	System generated unique identifier	Continuous	N/A	
Role	role	Participant Role	Dichotomous	1, Neurosurgery APP; 2, Registered Nurse	Required
Date	dIMOC	Date of Rounds	Continuous	01-01-2023 to 12-31-2023	Required
IMOC Rounds	IMOCR	IMOC Rounds Completed for each Patient	Dichotomous	1, Yes, 100%; 2, No, <100%	Required
2E IMOC Rounds Checklist	cklst	2E IMOC Checklist Completed for each Patient	Dichotomous	1, Yes, 100%; 2, No, <100%	Required

Aim 3: Increase provider and registered nurse communication on patient plan of care by utilizing IMOC Rounds.

Data Elements	Variable Name	Definition	Data Type*	Data Values & Coding	Restrictions/ Validation
Participant Identifier	Pat#	System generated unique identifier	Continuous	N/A	
Age	age	Participant Age	Continuous	1-100	Required
Role	role	Participant Role	Dichotomous	1, Neurosurgery APP; 2, Registered Nurse	Required
Years in Role	yrsRole	Years worked in Role	Categorical	1, <1 year; 2, 1-4 years; 3, 5+ years	Required
Years at Hospital	yrsHospital	Years worked at Hospital	Categorical	1, <1 year; 2, 1-4 years; 3, 5+ years	Required
Highest Degree	degree	Highest Degree Earned	Categorical	1, Associate; 2, Bachelor; 3, Master; 4, Doctorate 5, Other	Required
RN Decision Making	rn_dm	Do nurses and physicians share in decision making?	Categorical	1, Never; 2, Rarely; 3, Sometimes; 4, Always	Required
RN Cooperate	rn_coop	Do nurses and physicians cooperate in decision	Categorical	1, Never; 2, Rarely; 3, Sometimes; 4, Always	Required
RN Plan	rn_plan	Do nurses and physicians plan together before making decisions?	Categorical	1, Never; 2, Rarely; 3, Sometimes; 4, Always	Required
RN Open Communication	rn_open	Is there open communications between physicians and nurses in making decisions?	Categorical	1, Never; 2, Rarely; 3, Sometimes; 4, Always	Required
RN Information	rn_info	I get relevant information on the status of patients from physicians?	Categorical	1, Never; 2, Rarely; 3, Some of the time; 4, Most of the time; 5, All of the time	Required
RN Delays	rn_delay	There are no delays in relaying information regarding patient care.	Categorical	1, Strongly disagree; 2, Disagree;	Required

				3, Neutral; 4, Agree; 5, Strongly Agree	
RN Returned Call	rn_call	Physicians return calls in a timely manner.	Categorical	1, Strongly disagree; 2, Disagree; 3, Neutral; 4, Agree; 5, Strongly Agree	Required
RN Correct Info	rn_correct	I received correct information from physicians.	Categorical	1, Strongly disagree; 2, Disagree; 3, Neutral; 4, Agree; 5, Strongly Agree	Required
RN Good Communication	rn_good	I have good communication with physicians.	Categorical	1, Strongly disagree; 2, Disagree; 3, Neutral; 4, Agree; 5, Strongly Agree	Required
RN Info Accuracy	rn_accinfo	I feel certain about accuracy of information from physicians.	Categorical	1, Strongly disagree; 2, Disagree; 3, Neutral; 4, Agree; 5, Strongly Agree	Required
RN Collaboration	rn_collab	I enjoy collaborating with physicians	Categorical	1, Strongly disagree; 2, Disagree; 3, Neutral; 4, Agree; 5, Strongly Agree	Required
RN Questions	rn_ease	It is easy to ask the physician questions.	Categorical	1, Strongly disagree; 2, Disagree; 3, Neutral; 4, Agree; 5, Strongly Agree	Required

Data Elements	**Variable Name**	**Definition**	**Data Type***	**Data Values & Coding**	**Restrictions/ Validation**
Participant Identifier	Pat#	System generated unique identifier	Continuous	N/A	
Age	age	Participant Age	Continuous	1-100	Required

Role	role	Participant Role	Dichotomous	1, Neurosurgery APP; 2, Registered Nurse	Required
Years in Role	yrsRole	Years worked in Role	Categorical	1, <1 year; 2, 1-4 years; 3, 5+ years	Required
Years at Hospital	yrsHospital	Years worked at Hospital	Categorical	1, <1 year; 2, 1-4 years; 3, 5+ years	Required
APP Decision Making	app_dm	Do nurses and physicians share in decision making?	Categorical	1, Never; 2, Rarely; 3, Sometimes; 4, Always	Required
APP Cooperate	app_coop	Do nurses and physicians cooperate in decision	Categorical	1, Never; 2, Rarely; 3, Sometimes; 4, Always	Required
APP Plan	app_plan	Do nurses and physicians plan together before making decisions?	Categorical	1, Never; 2, Rarely; 3, Sometimes; 4, Always	Required
APP Open Communication	app_open	Is there open communications between physicians and nurses in making decisions?	Categorical	1, Never; 2, Rarely; 3, Sometimes; 4, Always	Required
APP Information	app_info	I get relevant information on the status of patients from nurses?	Categorical	1, Never; 2, Rarely; 3, Some of the time; 4, Most of the time; 5, All of the time	Required
APP Delays	app_delay	There are no delays in relaying information regarding patient care.	Categorical	1, Strongly disagree; 2, Disagree; 3, Neutral; 4, Agree; 5, Strongly Agree	Required
APP Calls	app_call	Nurses call in a timely manner.	Categorical	1, Strongly disagree; 2, Disagree; 3, Neutral; 4, Agree; 5, Strongly Agree	Required
APP Complete Info	app_complete	I receive correct information from nurses.	Categorical	1, Strongly disagree; 2, Disagree;	Required

				3, Neutral; 4, Agree; 5, Strongly Agree	
APP Good Communication	app_good	I have good communication with nurses.	Categorical	1, Strongly disagree; 2, Disagree; 3, Neutral; 4, Agree; 5, Strongly Agree	Required
APP Info Accuracy	app_accinfo	I feel certain about accuracy of information from nurses.	Categorical	1, Strongly disagree; 2, Disagree; 3, Neutral; 4, Agree; 5, Strongly Agree	Required
APP Collaboration	app_collab	I enjoy collaborating with nurses.	Categorical	1, Strongly disagree; 2, Disagree; 3, Neutral; 4, Agree; 5, Strongly Agree	Required
APP Quality RN	app_hqrn	I have easy access to high quality nurses.	Categorical	1, Strongly disagree; 2, Disagree; 3, Neutral; 4, Agree; 5, Strongly Agree	Required

Appendix K

Table 1.1

RN Demographics Table (n=23)

Years in Role	**n**	**%**
<1	7	30%
1 to 4	5	22%
5+	11	48%
Years at Hospital		
<1	8	35%
1 to 4	6	26%
5+	9	39%
Highest Degree		
Associate	4	17%
Bachelor	15	65%

Masters	3	13%
Doctorate	1	4%

Table 1.2

APP Demographics Table (n=15)

Years in Role	**n**	**%**
<1	0	0%
1 to 4	4	27%
5+	11	73%
Years at Hospital		
<1	1	7%
1 to 4	5	33%
5+	9	60%
Highest Degree		
Masters	14	93%

Table 2

Patient Safety Events

Blood Bank	0	1
Diagnosis/Treatment	1	0
Falls	4	3
Lab/Specimen	1	0
Lines/Tubes/Drains	0	1
Medication/Fluid	2	4
Miscellaneous	0	1
Safety/Security	1	0
Total	9	10

Table 3.1

RN Survey Results: t-test for Equality of Measures

RN Survey Results: t-test for Equality of Measures				
t	df	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference

			Significance			Lower	Upper
Decision making	0.315	33	0.377	0.043	0.138	-0.237	0.324
Cooperate in decisions	1.913	33	0.032*	0.337	0.176	-0.021	0.695
Plan together	0.641	33	0.263	0.156	0.243	-0.338	0.650
Open communication	-0.727	33	0.236	-0.167	0.229	-0.633	0.300
Relevant info from APP	0.199	33	0.422	0.058	0.292	-0.536	0.651
No delay with info	-0.281	33	0.390	-0.083	0.297	-0.687	0.520
APP returns calls	0.064	33	0.475	0.018	0.281	-0.554	0.590
Correct info from APP	0.307	33	0.380	0.080	0.259	-0.448	0.607
Good communication with APP	-1.775	33	0.043*	-0.362	0.204	-0.779	0.055
Accurate info	-0.490	33	0.314	-0.13768	0.281	-0.709	0.434
Enjoy collaborating	0.487	33	0.315	0.12319	0.253	-0.391	0.637
Ease to ask APP questions	-1.360	33	0.091	-0.366	0.269	-0.913	0.181

*Significant

Table 3.2

RN Survey Group Statistics

PRE_POST		N	Mean	Std. Deviation	Std. Error Mean
Decision making	Pre	23	3.0435	0.36659	0.07644
	Post	12	3.0000	0.42640	0.12309
Cooperate in decisions	Pre	23	3.0870	0.41703	0.08696
	Post	12	2.7500	0.62158	0.17944
Plan together	Pre	23	2.7391	0.68870	0.14360
	Post	12	2.5833	0.66856	0.19300
Open communication	Pre	23	3.0000	0.73855	0.15400
	Post	12	3.1667	0.38925	0.11237
Relevant info from APP	Pre	23	3.3913	0.89133	0.18585
	Post	12	3.3333	0.65134	0.18803
No delay with info	Pre	23	3.0000	0.90453	0.18861
	Post	12	3.0833	0.66856	0.19300
APP returns calls	Pre	23	3.4348	0.84348	0.17588
	Post	12	3.4167	0.66856	0.19300
Correct info from APP	Pre	23	3.9130	0.79275	0.16530
	Post	12	3.8333	0.57735	0.16667
Good communication with APP	Pre	23	3.3043	0.70290	0.14657
	Post	12	3.6667	0.49237	0.14213
Accurate info	Pre	23	3.6957	0.76484	0.15948
	Post	12	3.8333	0.83485	0.24100
Enjoy collaborating	Pre	23	3.9565	0.76742	0.16002
	Post	12	3.8333	0.57735	0.16667
Ease to ask APP questions	Pre	23	3.2174	0.73587	0.15344
	Post	12	3.5833	0.79296	0.22891
Average Score	Pre	23	3.3148	0.47179	0.09838

	Post	12	3.3417	0.35278	0.10184

Table 3.3

RN Survey Effect Sizes

		Standardizer[a]	Point Estimate	95% Confidence Interval	
				Lower	Upper
Decision Making	Cohen's d	0.38755	0.112	-0.587	0.810
	Hedges' correction	0.39665	0.110	-0.574	0.791
	Glass's delta	0.42640	0.102	-0.600	0.799
Cooperate in decisions	Cohen's d	0.49470*	0.681	-0.041	1.393
	Hedges' correction	0.50631	0.666	-0.040	1.361
	Glass's delta	0.62158	0.542	-0.202	1.264
Plan together	Cohen's d	0.68205	0.228	-0.473	0.927
	Hedges' correction	0.69806	0.223	-0.463	0.906
	Glass's delta	0.66856	0.233	-0.477	0.932
Open communication	Cohen's d	0.64354	-0.259	-0.958	0.444
	Hedges' correction	0.65864	-0.253	-0.936	0.434
	Glass's delta	0.38925	-0.428	-1.139	0.301
Relevant info from APP	Cohen's d	0.81918	0.071	-0.628	0.768
	Hedges' correction	0.83841	0.069	-0.614	0.751
	Glass's delta	0.65134	0.089	-0.612	0.786
No delay with info	Cohen's d	0.83333	-0.100	-0.798	0.599
	Hedges' correction	0.85289	-0.098	-0.779	0.585
	Glass's delta	0.66856	-0.125	-0.822	0.578
APP returns calls	Cohen's d	0.78949	0.023	-0.675	0.721

	Hedges' correction	0.80802	0.022	-0.660	0.704
	Glass's delta	0.66856	0.027	-0.672	0.725
Correct info from APP	Cohen's d	0.72807	0.109	-0.590	0.807
	Hedges' correction	0.74515	0.107	-0.576	0.789
	Glass's delta	0.57735	0.138	-0.565	0.835
Good communication with APP	Cohen's d	0.64046*	-0.566	-1.273	0.149
	Hedges' correction	0.65549	-0.553	-1.243	0.146
	Glass's delta	0.49237	-0.736	-1.483	0.039
Accurate info	Cohen's d	0.78887	-0.175	-0.872	0.526
	Hedges' correction	0.80738	-0.171	-0.852	0.514
	Glass's delta	0.83485	-0.165	-0.863	0.540
Enjoy collaborating	Cohen's d	0.70974	0.174	-0.527	0.871
	Hedges' correction	0.72640	0.170	-0.515	0.851
	Glass's delta	0.57735	0.213	-0.495	0.912
Ease to ask APP questions	Cohen's d	0.75538	-0.484	-1.188	0.227
	Hedges' correction	0.77311	-0.473	-1.161	0.222
	Glass's delta	0.79296	-0.461	-1.175	0.272
Average Score	Cohen's d	0.43575	-0.062	-0.759	0.637
	Hedges' correction	0.44598	-0.060	-0.742	0.622
	Glass's delta	0.35278	-0.076	-0.773	0.624

*Medium effect size

Table 4.1

APP Survey: t-test for Equality of Means

APP Survey: t-test for Equality of Means

	t	df	Significance	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Decision making	0.695	21	0.247	0.225	0.324	-0.448	0.898
Cooperate in decisions	-1.288	21	0.106	-0.333	0.259	-0.871	0.205
Plan together	-1.264	21	0.110	-0.358	0.284	-0.948	0.231
Open communication	-0.583	21	0.283	-0.133	0.229	-0.609	0.342
Relevant info from RN	-0.502	21	0.310	-0.133	0.266	-0.686	0.419
No delay with info	-1.007	21	0.163	-0.342	0.339	-1.047	0.364
RNs call in timely manner	0.000	21	0.500	0.000	0.405	-0.843	0.843
Complete info from RN	-1.718	21	0.053*	-0.550	0.320	-1.230	0.130
Good communication with RN	0.327	21	0.374	0.150	0.459	-0.805	1.105
Accuracy of RN info	-1.699	21.000	0.053*	-0.667	0.392	-1.487	0.153
Enjoy collaborating with RN	-0.581	21	0.284	-0.217	0.373	-0.992	0.559
Access to high quality RNs	-0.892	21	0.191	-0.300	0.336	-1.000	0.400
	-0.899	14.726	0.192	-0.300	0.334	-1.013	0.413

*Significant

Table 4.2

APP Survey Group Statistics

PRE_POST		N	Mean	Std. Deviation	Std. Error Mean
Decision making	Pre	15	2.60	0.737	0.190
	Post	8	2.38	0.744	0.263
Cooperate in decisions	Pre	15	2.67	0.617	0.159
	Post	8	3.00	0.535	0.189
Plan together	Pre	15	2.27	0.458	0.118
	Post	8	2.63	0.916	0.324

Open communication	Pre	15	2.87	0.516	0.133
	Post	8	3.00	0.535	0.189
Relevant info from RN	Pre	15	2.87	0.743	0.192
	Post	8	3.00	0.000	0.000
No delay with info	Pre	15	2.53	0.743	0.192
	Post	8	2.88	0.835	0.295
RNs call in timely manner	Pre	15	3.00	1.000	0.258
	Post	8	3.00	0.756	0.267
Complete info from RN	Pre	15	2.20	0.775	0.200
	Post	8	2.75	0.707	0.250
Good communication with RN	Pre	15	3.40	1.121	0.289
	Post	8	3.25	0.886	0.313
Accuracy of RN info	Pre	15	2.33	1.113	0.287
	Post	8	3.00	0.756	0.267
Enjoy collaborating with RN	Pre	15	3.53	0.834	0.215
	Post	8	3.75	0.886	0.313
Access to high quality RNs	Pre	15	2.20	0.775	0.200
	Post	8	2.50	0.756	0.267

Table 4.3

APP Survey Effect Sizes

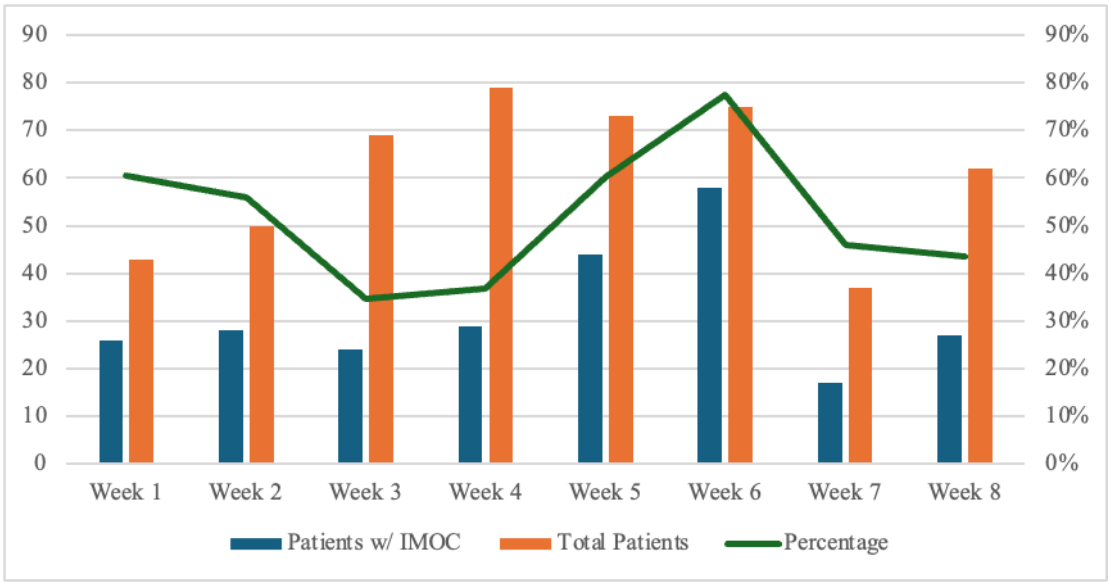
		Standardizer[a]	Point Estimate	95% Confidence Interval	
				Lower	Upper
Decision making	Cohen's d	0.739	0.304	-0.562	1.164
	Hedges' correction	0.767	0.293	-0.542	1.122
	Glass's delta	0.744	0.302	-0.580	1.164
Cooperate in decisions	Cohen's d	0.591	-0.564	-1.432	0.317
	Hedges' correction	0.613	-0.544	-1.380	0.306

	Glass's delta	0.535	-0.624	-1.520	0.311
Plan together	Cohen's d	0.648	-0.553	-1.421	0.327
	Hedges' correction	0.672	-0.533	-1.370	0.315
	Glass's delta	0.916	-0.391	-1.259	0.503
Open communication	Cohen's d	0.523	-0.255	-1.114	0.609
	Hedges' correction	0.542	-0.246	-1.073	0.587
	Glass's delta	0.535	-0.249	-1.109	0.627
Relevant info from RN	Cohen's d	0.607	-0.220	-1.078	0.643
	Hedges' correction	0.630	-0.212	-1.039	0.620
	Glass's delta				
No delay with info	Cohen's d	0.775	-0.441	-1.304	0.432
	Hedges' correction	0.804	-0.425	-1.257	0.417
	Glass's delta	0.835	-0.409	-1.279	0.488
RNs call in timely manner	Cohen's d	0.926	0.000	-0.858	0.858
	Hedges' correction	0.961	0.000	-0.827	0.827
	Glass's delta	0.756	0.000	-0.858	0.858
Complete info from RN	Cohen's d	0.753*	-0.731	-1.608	0.163
	Hedges' correction	0.781	-0.704	-1.550	0.157
	Glass's delta	0.707	-0.778	-1.702	0.191
Good communication with RN	Cohen's d	1.049	0.143	-0.718	1.000
	Hedges' correction	1.088	0.138	-0.692	0.964
	Glass's delta	0.886	0.169	-0.699	1.026
Accuracy of RN info	Cohen's d	1.008*	-0.661	-1.535	0.227
	Hedges' correction	1.046	-0.637	-1.479	0.219
	Glass's delta	0.756	-0.882	-1.828	0.112
Enjoy collaboring with RN	Cohen's d	0.852	-0.254	-1.113	0.610
	Hedges' correction	0.884	-0.245	-1.073	0.588
	Glass's delta	0.886	-0.244	-1.103	0.631
Access to high quality RNs	Cohen's d	0.768	-0.390	-1.252	0.480
	Hedges' correction	0.797	-0.376	-1.207	0.463
	Glass's delta	0.756	-0.397	-1.266	0.498

*Large effect size

Figure 1

Neurosurgery IMOC Rounds Completed



DNP Team Signature Sheet

Appendix 14: Final DNP Project Signature Form

Full Title of DNP Project: _Neurosurgery Interdisciplinary Model of Care_

Name of DNP Project Team Members

Student(s): Victoria Bartlett

DNP Project Primary Advisor: Dr. Karen Kesten

DNP Project Second Advisor: Dr. Patricia McCabe

DNP Project Team Member: Shelley Lindsey-Long

Date of Presentation: April 9, 2024

Date of DNP Project IRB Determination/Approval: August 10, 2023

Final DNP Products

Component **Final DNP Paper**
Cover Page, Table of Contents, Abstract, and general formatting meet APA requirements and GWSON instructions. Earlier components reflect past tense. All revisions and updates from DNP Project Proposal addressed.
Results: - Data is clearly presented - Data analysis is appropriate to the project - Tables and Figures are clearly summarized.
Discussion: Student synthesizes literature, results, and overall summation of findings. Includes Impact and Implications for: - Practice - Healthcare Policy - Quality and Safety - Executive Leadership - Other as related to the DNP project
Plans for Sustainability and Future Scholarship are articulated.
Summary: provides closure to all elements of the DNP Project.
Appendices: expanded to include all relevant tables, figures, and project related materials.
Component **Final DNP Poster**
Required Content is present: Full Title of DNP Project with Student as first author followed by Primary Advisor, Team Members Background Objectives/Aims Methods Results Conclusions Readability

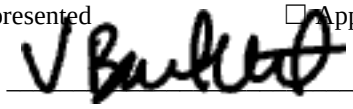
Results: - Data is clearly presented - Data analysis is appropriate to the project - Tables and Figures are clearly summarized.
Component **Final DNP Project Presentation**
Formal Presentation of DNP Project: Presentation is presented on the George Washington-School of Nursing template slides and includes all relevant aspects of the project. The student's appearance and presentation skills meet doctoral expectations.
Student Response to Challenges.
The student responds appropriately to all questions from the DNP Project Team.

Comments: _____

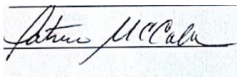
Describe Corrective Actions if Revisions Required
(Use additional paper if necessary)

Select the Outcome of the presentation:

☒ Approved as presented ☐ Approved with minor revisions ☐ Reject project

Student Signature: 

DNP Project Primary Advisor Signature: ___  _____

DNP Project Second Advisor Signature: 

Date: ____04/28/24_____

***Refer to the **FINAL Steps** of the DNP Project Process