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Integrating Technology in Improving Communication to Reduce Discharge Cycle Time

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University
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Abstract

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Julieta Fajardo

MS, Walden University, 2013

BS, University of Bohol, 1992

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Abstract

One of the most important milestones during a patient's transition to care is discharge from hospital. Consequently, delays in the discharge process can lead to patient dissatisfaction and affect outcomes in intensive care and emergency rooms. The purpose of the project was to evaluate the tools built into the electronic system to improve communication and reduce the discharge cycle time. The focus of the project is to enter the expected date of discharge (EDD) and identify discharge barriers within 24-48 hours of admission to reduce this time. Evidence was from the project site's discharge initiative dashboard. Analysis of the problem was structured using a flow chart, SWOT analysis, and fishbone diagram. The evaluation of the project was completed by comparing use rates of the EDD field within 24-48 hours after admission and identifying discharge barriers 24 hours before discharge 6 months before and 6 weeks after reeducation of the members of the healthcare team. Data analysis 6 weeks after reeducation showed a slight increase in EDD field use, but the use of the discharge barrier field and discharge cycle time did not improve. This is an unanticipated outcome that might have been related to the implementation of the project in the middle of the COVID-19 pandemic. Education interventions should consider stakeholder engagement through virtual learning strategies with mobile and online tools. The results of the project provided an opportunity for the discharge team to collaborate with pharmacy and ancillary services to expedite discharges. A well-coordinated and safe discharge process implies a positive social change that can potentially minimize unnecessary readmissions and leads to cost-effective and satisfactory patient experiences.

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Section 1: Nature of the Project

Introduction

Several U.S. healthcare organizations in the past decade have implemented discharge processes to increase bed efficiency and patient throughput related to the pressure of cutting costs. National health expenditures in 2003 have amounted to $2.9 trillion, wherein 32.1% was attributed to hospital care (Parikh, Ballester, Ramsey, Kong, & Pook, 2017). To maximize the hospital's resources and improve patient satisfaction, it is imperative to establish an efficient flow throughout the system. Inefficient throughput resulting from discharge delays and increase length of stay is a problem that distracts healthcare administrators, providers, and other professionals from delivering quality of care related to managing the mismatch between demand for beds and capacity. However, delays often occur due to high volume, creating a backlog in the system that results in boarding patients in the emergency center (EC) and post anesthesia care unit (PACU).

Health inequities and costly and disjointed care are issues in the U.S. healthcare system. Hence, improving discharge processes mainly to reduce the discharge cycle time will have an impact on social change. Early discharges through a well-coordinated discharge planning reduces hospital LOS and readmission rates (Hesselink et al., 2014). This project will improve nursing practice by raising awareness of the issue, collaborate with other disciplines, change processes and policies within the organization, and commitment to promoting the good of others.

Problem Statement

Healthcare organizations have adopted strategies for improving hospital throughput for the past 3 decades related to the pressure of cutting costs. However, the sole driver for improving hospital throughput is not only related to cost-effectiveness. Quality and safety have become concerns mainly for emergency room patients who are impacted by insufficient inpatient beds, which prompted the Joint Commission to implement a leadership standard to manage patient flow throughout the hospital. Delayed discharges are problems that hospitals worldwide have been dealing with for the past 20 years.

Getting discharged from the hospital is an essential milestone in a patient's transition of care. Mismatches between bed availability and demand have led to increased emergency department waiting times and overflow, affecting transfers from intensive care units (ICU) and PACU, elective admissions, and poor financial performance (Ragavan, Svec, & Shieh, 2017). Therefore, the focus of the DNP project is to reduce the discharge cycle time by identifying discharge barriers and entering the expected date of discharge (EDD) within 24-48 hours of admission. Nurses play an important role in the discharge process that begins during hospital admission and ends with patients leaving the hospital. This project is significant in the field of nursing particularly in terms of the coordination and transition of patient care.

Purpose

The purpose of this quality improvement (QI) project is to evaluate the tools built within the electronic system to improve communication in terms of reducing the

discharge cycle time. The long-standing and common problem of delayed discharge has impacted the hospital's ability to reduce waiting lists and delivery of efficient and effective patient care. One of the primary sources of inefficiency cited by the Joint Commission is inadequate communication among providers within the healthcare system. Hospitals are forced to review their discharge processes related to current healthcare form changes that stipulate financial benefits to those with lower readmission rates (Rose & Haugen, 2010). Delayed discharge is a problem that needs to be addressed to improve capacity that will result in lower costs, quality patient care, reduced avoidable harm, and improved patient and staff satisfaction. The guiding practice-focused question is: Will entering the EDD and identifying discharge barriers within 24-48 hours of admission reduce the discharge cycle time? Healthcare systems need new strategies in terms of meeting the needs of the aging population since life expectancy continues to rise and more patients are expected to seek care in hospital settings. Patient throughput will continue to be an issue and should remain a hospital priority. A large body of evidence supports the need to address the issue.

Nature of the Doctoral Project

The proliferation of technology in the healthcare setting has brought many benefits, particularly in terms of delivering safe quality patient care. The EHR enables the healthcare team to coordinate care through appointment scheduling, clinical care documentation, and advanced care planning (Kopel, Hier, & Thomas, 2019). In this QI project, tools like the discharge status board and care conference navigator (CCN) within the electronic system of the project site were used to to enter data related to discharge

cycle time and barriers to a timely patient discharge. The CCN within the electronic system of the project site was built to provide the healthcare team a central location to document patients' discharge needs assessments during admission involving EDD, equipment, teachings, and discharge barriers. All information entered from the CCN is shown on the discharge status board which is displayed on a 24-inch monitor placed in each nursing station in inpatient units. This is to ensure that patients' discharge needs and potential discharge barriers are communicated and visible to the healthcare team throughout the day, particularly during rounding.

The CCN and discharge status board were built to provide the healthcare team a real time communication that would reflect delays that may occur due to changes in patients' conditions and treatment plans or other barriers to care. However, current discharge metrics reflects poor use of the tools. To have a better understanding of the discharge process and underuse of the technology in the electronic system, procedural steps and possible strategies will begin with the application of a strength, weakness, opportunities, and threats (SWOT) analysis of the CCN, a fishbone chart to describe the scale, causes, and consequences of not entering a patient's EDD 24-48 hours after admission, and process flowchart showing daily discharge huddle. Interventions to address the problem were formulated from the SWOT analysis, daily discharge huddle workflow, and fishbone chart. These interventions will be submitted to the institution's Discharge Management Initiative Committee for approval. Once approved by the committee, project planning of interventions, implementation strategies, and evaluation will commence. Hence, the expected long-term outcome of this DNP project is the

improvement of the discharge cycle time to 2 hours or under by the end of the fiscal year 2020. The first short-term outcome involves increasing the use rate of EDD within 24-48 hours of admission by 20% 6 weeks postintervention implementation. The second short-term outcome is to increase the use rate of discharge barriers on the day of discharge 6 weeks postintervention implementation.

Significance

The Centers for Medicare and Medicaid Services (CMS) defined a set of minimum health and safety standards for hospitals to provide discharge planning services to help manage transitions from the hospital to postdischarge settings. It is a process that involves determining appropriate post-hospital discharge destinations for patients, identifying what patients require for a smooth and safe transition to their out-of-hospital setting, as well as meeting patient's identified postdischarge needs (CMS, 2013). The hospital is required to provide a discharge plan to inpatients who are likely to suffer adverse health consequences due to discharge, and the hospital must complete discharge evaluations on a timely basis so that appropriate arrangements for posthospital care are made before discharge to avoid unnecessary delays. Additionally, the CMS recommended this process begin when the patient is admitted as an inpatient. Hence, a process is needed for stakeholders like primary physicians, patients and caregivers, nurses, case managers, and other members of the clinical care team to identify the EDD within 24-48 hours of admission, as well as potential discharge barriers to effectively begin the discharge planning process.

Potential contributions of the DNP project to nursing practice involve nurses' interprofessional collaboration related the discharge process. Effective hospital discharge planning requires collaboration between nurses, case managers, social work, providers, and other healthcare professionals. As a nurse, it is important to ensure that patients have a seamless transition throughout the continuum of care. Achieving safe, timely, and effective discharges can be accomplished through communication and collaboration between an engaged healthcare team. Appropriate and timely discharge from the hospital is a continued challenge for healthcare systems trying to improve. However, opportunities for improvement continue to be reevaluated. A well-organized patient discharge plan begins with knowing the EDD and could have a significant impact on patient flow as well as patients' perceptions of their hospital experience. In order for the project site to provide an inpatient experience that demonstrates a seamless approach to discharge care coordination across all disciplines involved in caring for the patient, EDD and discharge barrier information should be used by all members of the clinical care team to facilitate effective discharge planning.

Summary

The project site built a tool in EHR to better address the standards set by the Joint Commission in managing the flow of patients through the EC while providing a safe provision of care simultaneously. The purpose of the tool is to communicate patients' discharge needs, potential discharge barriers, and updates to the EDD in real time. Having the EDD entered in EHR within 24-48 hours of admission has a significant impact on patient throughput. Entering the EDD the day before the discharge helps

identify capacity constraints on the day of discharge. However, it may be too late to adequately plan to address the barriers that hinder the discharge process. Hence, mismatches between bed capacity and demand occur. Every hour that a mismatch between capacity and demand occurs, it creates a backlog in the hospital system that can result in boarding patients in the EC or PACU. This mismatch also results in delays for patients transferring from outside hospitals or not being able to accept new patients. All information entered in the CCN in the EHR is viewable to the healthcare team include nurses, social workers, physical therapists, case managers, advance practice nurses, physicians, and admissions department employees.

Concepts, models, and theories are explained in Section 2, which includes the rationale of the DNP project. In this section, terms and sources of information used are defined and cited. Section 2 also addresses the project's relevance to the nursing practice, local background and context, and the role of the DNP student.

Section 2: Background and Context

Introduction

Discharge delays have continued to be a problem in the healthcare setting for several years resulting in an inefficient patient throughput and causing mismatches between demand for beds and capacity. This has led to longer EC wait times and is a contributing factor in hospital diversions, transfers from ICU and PACU, and financial performance. The purpose of this QI project is to evaluate the efficacy of technology in improving communication to reduce the discharge cycle time by entering the EDD within 24-48 hours of admission, as well as identify discharge barriers 24 hours before discharge. The practice-focused question is: Will entering the EDD and identifying discharge barriers within 24-48 hours of admission reduce the discharge cycle time? As a first step in this QI project, it is imperative to understand the reasons behind the lack of use of tools built in the electronic system. Hence, this section will describe concepts, models, and theories, relevance to nursing practice, local background and context, and the role of the DNP student in the QI project.

Concepts, Models, and Theories

SWOT

SWOT analysis is a process in strategic management that most organizations have used to identify threats and opportunities in competitive environments as well as internal factors that include organizational strengths and weaknesses (Gurel & Tat, 2017). SWOT analysis is also a model that involves development of a strategic plan by assessing an organization, business activity, or project's strengths and weaknesses as well as

opportunities and threats. In this QI project, SWOT analysis was used to identify strengths, weaknesses, opportunities, and threats of CCN. Strengths were identified by considering what the healthcare team perceived as helpful information or data in CCN in terms of facilitating timely patient discharge. Weaknesses refer to missing information from the CCN. Understanding weaknesses of the CCN is important in order to formulate potential interventions. Opportunities affect the healthcare team in a positive way and can be taken advantage of to facilitate discharge planning. Threats refer to what might be perceived by the healthcare team in a negative way resulting in the underuse of the tool. Examination of negative trends is helpful in the identification of opportunities to improve discharge needs communication and reduce discharge cycle time.

Process Flowchart

One of the seven basic quality tools in conducting healthcare QI projects is the process flowchart. The process flowchart is a generic tool that can be used to explain sequences of actions of a process to develop understanding of what is being done. In this project, understanding daily discharge huddle is vital in terms of understanding technology built to improve communication in reducing discharge cycle time. It is during the daily discharge huddle that the EDD and potential discharge barriers will be entered in the CCN by the nurse manager, provider, or case manager.

Fishbone Analysis

The fishbone diagram was created in the research field of management by Ishikawa in 1990. This tool is used to provide a visual representation of the cause and effect analysis of a complex interplay of causes of a specific event or phenomenon. The

fishbone diagram was used in this project as a graphical representation to identify, explore, and analyze root causes of the source of lack of use of the EDD and discharge barrie in the CCN by the the healthcare team. Additionally, the fishbone diagram includes a summary of potential causes by sorting the causes into categories.

Relevance to Nursing Practice

Discharge planning is a complex process that involves identification of patient needs and resources, and interdiscisplinary inteventions are coordinated to meet these identified needs (Nordmark, Zingmark, & Lindberg, 2016). Additionally, an important aspect of discharge planning is preventing avoidable readmissions and safeguarding the financial wellbeing of healthcare systems through timely and appropriate patient discharge (Patel et al., 2017). However, poor communication and collaboration between healthcare teams has led to serious breakdown in the continuity of care which resulted in delayed discharge, readmission and inadequate post-discharge care (Nordmark et al., 2016). Delayed discharge is as an important systems-level problem for healthcare providers internationally requiring effective team work and collaboration. In England, healthcare costs related to delayed discharge are estimated at 100 million pounds annually with a resulting 1.2 million lost in bed days between 2013 and 2014 (Rojas-Garcia, et al., 2018). In Canada, delayed patients occupied between 8% and 10% of acute hospital beds (Rojas-Garcia, et al., 2018). In the U.S., many organizations have adopted strategies to improve discharge delays related to the CMS.

Registered nurses and case managers are mandated to develop a discharge plan at the start of admission, implement timely discharges, and evaluate tools and processes to

improve discharge outcomes. However, a consensus still needs to be reached regarding how discharge planning is performed related to poor communication and lack of collaboration. Any time there are delays in the discharge process can lead to patient dissatisfaction and can adversely impact admissions of other patients as well as efficient use of resources. The leadership standard set forth by the Joint Commission has resulted in hospitals adopting policies for early discharge.

Local Background and Context

The project setting is one of the world's largest and most respected centers devoted exclusively to cancer patient care, research, education, and prevention. The institution had 616 inpatient beds and employs more than 21,100 people, including 1,700 faculty members. It also continues to set standards for cancer prevention, research, and the translation of new knowledge into innovative and multidisciplinary care. The institution discharges approximately 100 patients daily. For over a decade, the project setting has been trying to improve the discharge process and launched several initiatives to improve patient throughput and reduce the discharge cycle time. However, LOS and the discharge cycle time did not show any improvement. In an effort to solve the problem, the project site launched a new discharge management initiative in 2018. However, the average LOS remains at 7 days, and the average discharge time of day is 3:15 p.m. The average time at which discharge orders are written is 12:19 p.m. Improving the discharge cycle time is an institutional imperative because:

- A patient may spend 5 to 6 hours in a hallway bed waiting for an inpatient bed
- Results in a poor patient experience with little privacy.

- Patients are transferred to the floor between 6 p.m. and midnight.
- There are transfer delays from PACU and ICU to inpatient units.
- There are increased costs and inefficient use of resources.

Internal analysis of the discharge process has shown that increase discharge cycle time is correlated with patient LOS and the primary barrier is poor communication among providers, nurses, case management, social work, and other ancillary staff.

In recent years, improving patient experience has become the focus of the US federal government by launching programs like performance on patient-reported satisfaction with hospital care. Improved patient experience correlates with fast recovery from illness, adherence to treatment regimens, and closer care engagement. However, patients have reported dissatisfaction in their hospital care related to miscommunication particularly in the transfer of information between care levels during discharge planning and actual hospital discharge (Christiansen, Fagerstrom, & Nilsson, 2017). Additionally, a recent national survey reveals that a third of discharged patients reported a gap in communication in the delivery of timely access to services, avoidance of unnecessary or duplicate diagnostic testing between health care team and other health care professionals (Morton, Shib, Winther, Tinoco, & Scholle, 2015). Hence, discharge planning is a vital in the care process to manage information related to transition of care from the hospital to the community at the time of discharge (Christiansen, Fagerstrom, & Nilsson, 2017).

Role of the DNP Student

As a nurse leader and a nurse informaticist, I am able to support frontline clinical nurses by providing them the tools within the electronic system necessary to document

the quality, safe, and efficient patient care they have provided. I manage the nursing super users of the electronic system by training and giving them the education materials related to important workflow updates and reminders. In this role, I regularly rounds in the clinical areas wherein I am able to observe and listen to the nurses' challenges in discharging their patient's in a timely and safely manner. Hence, I decided to focus my DNP project on this issue. Furthermore, this DNP QI project addressed the impetus of integrating technology in improving communication to reduce the discharge cycle time. This QI project aligns with DNP Essentials II, IV, and VI, which focused on quality improvement and patient-centered care, patient care technology, and interprofessional collaboration for improving patient care and population health respectively (Zaccagnini & White, 2011).

As one of the nurse leader in the department of nursing informatics, I am supporting the institution's care coordination committee by providing them with the necessary tools in the electronic system to monitor the patient throughput like coordinating the build of the discharge dashboard and the CCN. The DNP project aligns with the institution's patient care coordination initiative. The committee recognizes the importance of entering the EDD and for the healthcare team to utilize the CCN to improve communication in an effort to reduce the discharge cycle time. My main role in this DNP project is to assist the providers and the nursing super users for each nursing units related to the use of the electronic system. I will be their informatics direct resource if they need assistance in the electronic system. My motivation in this DNP project is mainly to enhance the nurses' workflow by making them efficient in using the

technology afforded to them in an effort to provide quality and safe patient care. One of the feedback that I received during my rounds in the clinical areas was the nurses' challenges in using and navigating the electronic system particularly in locating information related to patient's discharge needs. As a nurse informaticist, this is a challenge and a responsibility to educate the nurses and the healthcare team on how to integrate the technology in their workflow to ensure an efficient and safe delivery of quality patient care. Since it has only been three years that the electronic sytem went live in the institution, I do not believe that I have a potential bias that needs to be addressed. As a liaison between information technology and nursing, it is my responsibility to provide education if staff verbalized challenges in using the technology to provide quality patient care and improve patient experience.

Summary

Discharge delays have been attributed to increased discharge cycle time, LOS, and poor patient experiences at the project site. Despite several QI projects related to discharge planning, the institution failed to reduce the discharge cycle time and LOS, and only slightly improved the patient experience. Using the SWOT, process flowchart, and fishbone analysis will help in examining root causes of discharge delays and challenges in terms of using the tools in the electronic system. The SWOT analysis was used to analyze the CCN. The daily discharge huddle was described using the process flowchart. The fishbone analysis was used to understand causes and effects of lack of use of the EDD and discharge barriers in the CCN. Procedural steps involving how to conduct the collection and analysis of evidence are discussed in Section 3.

Section 3: Collection and Analysis of Evidence

Introduction

The discharge process begins when the patient is admitted to the hospital and ends when the patient leaves the hospital. Therefore, being discharged is essential during transition of care. However, delayed discharges have been a problem for over 20 years for hospitals worldwide that led to concerns regarding quality and safety for patients boarding in EC who are impacted by insufficient inpatient beds. Although the Joint Commission has prompted hospital leaders to have standards in the management of patient throughput, discharges still happen in the afternoon. This has resulted in mismatches between bed availability and demand which increase EC wait times, delay transfer of ICU and PACU patients, and contribute to hospital diversions. The purpose of the DNP project is to evaluate the care conference navigator and discharge status board built within OneConnect to improve communication in terms of reducing the discharge cycle time. Inefficient communication among nurses, providers, social work, case manager, pharmacy, physical therapy, and respiratory therapy has been cited as one of the reasons for discharge delays. Constant discharge delays have prompted the hospital to review the discharge process and address the long-standing issue of discharge delays. Despite several QI initiatives to improve the discharge process, the project site's average LOS remains 7 days. The project site has acknowledged insufficient interdisciplinary collaboration during the discharge process as evidenced by the lack of improvement of the institution's discharge metrics like LOS and discharge cycle time. In this section, the

purpose of the project is discussed as well as how it aligns with the practice-focused question. This section also examines sources of evidence.

Practice-Focused Question

For over a decade, the project site has launched several QI initiatives in an effort to improve throughput and patient experiences. However, patients continue to spend 5 to 6 hours in a hallway bed waiting for inpatient beds, and transfer delays of patients from PACU and ICU continue to be a daily occurrence. The recent implementation of the electronic system was thought to improve communication among the interdisciplinary team related to the discharge process. Nevertheless, LOS, average length of time during which discharge orders are written, and average time of day did not improve. The practice-focused question is: Will entering EDD and identifying discharge barriers within 24-48 hours of admission in CCN reduce the discharge cycle time? The purpose of the DNP project is to evaluate the efficacy of the CCN in terms of improving communication to reduce the discharge cycle time by entering EDD and discharge barriers within 24-48 hours of admission. Additionally, it will also facilitate communication involving discharge recommendations, allow patients to anticipate their discharge day, and allow the admissions team to manage hospital flow by anticipating discharges accurately and assign beds to patient for admission.

Sources of Evidence

The source of evidence for the project was project site's discharge initiative dashboard. The dashboard includes monthly discharge cycle time, LOS, and number of discharged patients with EDD entered between 24 and 48 hours of admission. The report

also includes numbers of patients with entered discharge barriers. Evidence extracted from the dashboard was used to clarify if the care conference navigator and discharge status board put in place within OneConnect will improve discharge planning communication among providers, nurses, case manager, social work, pharmacy, physical therapy, and respiratory therapy. Knowing the EDD early and communicating this information to the care team will likely prevent discharge delays and improve patient experience. To appropriately address the practice-focused question, providers, nurses, and case managers were reeducated regarding the importance of entering the EDD and identifying discharge barriers in the the CCN within 24-48 hours of admission. If the EDD is not entered by the admitting provider, this information must be addressed during the daily discharge huddle and entered in the CCN. During the daily discharge huddle, potential discharge barriers must also be identified and entered in the CCN. Once the EDD and discharge barriers are entered, this information will be visible to all members of the healthcare team through patients' EHR and the discharge status board located in all nursing stations. Identification of potential discharge barriers will potentially mitigate discharge delays and facilitate early discharge.

Procedures

The planned intervention for this QI project is reeducation of the healthcare team regarding how to use the care conference navigator and discharge status board within OneConnect that will improve communication involving patients' discharge needs that will facilitate early discharge and mitigate discharge delays. To ensure that the planned intervention was appropriate to meet the purpose of the QI project, the first step was to

conduct a SWOT analysis of the CCN, followed by a process flowchart of the daily discharge huddle to understand how EDD and discharge barrier fields in the CCN are currently used. The next step was to identify, explore, and analyze root causes of during the discharge planning process by using the fishbone diagram. Results of the SWOT analysis, process flowchart, fishbone analysis, and planned intervention will be presented to the institution's Discharge Management Committee. Once approved by the committee, implementation of the planned intervention will commence. Reeducation of the healthcare team will be conducted if this intervention is proven to be the right approach through the fishbone analysis. Reeducation methods include an actual demonstrationof how to enter information in the electronic system.

Protections

The QI project involves data from the institution's discharge initiative dashboard and not human subjects. The project will focus on reeducating the healthcare team on using the care conference navigator and discharge status board provided in OneConnect. There is no potential for any ethical issues that may present problems for the completion of this project.

Analysis and Synthesis

The CCN in the electronic system will be used to record the entry of the EDD and discharge barriers from the patient's date of admission. This data will be displayed in the existing discharge initiative dashboard. The dashboard displays daily, weekly, and monthly reports showing the average discharge time with breakdowns by department and service. It will also show metrics and reports for the discharge cycles time, LOS,

discharge barriers and EDD within 24 and 48 hours after admission. The integrity of the evidence is assured related to the data being entered the system electronically. The data is time stamped once entered and cannot be altered. A pre and post intervention analysis of the dashboard data will be used to evaluate the efficacy of the CCN in improving communication to reduce the discharge cycle time. A 6- months pre-intervention data on discharge cycle time, LOS, number of patients with EDD entered within 24-48 hours of admission and number of patients with entered discharge barriers 24-hours befor discharge will be collected from the discharge initiative dashboard will be compared to the data collected at least 6-weeks post-intervention. The results will be presented in tables and graphs. An increase or reduce discharge cycle times post-intervention will address the practice-focused question.

Summary

The results of the SWOT analysis, discharge process flowchart, and fishbone analysis will determine if reeducation is an appropriate intervention for the QI project. Information like EDD and early identification of potential discharge barriers are known to improve the discharge process and facilitate early discharge. Most of the discharge delays are attributed to poor communication and collaboration among the healthcare team in meeting patients' discharge needs. Hence, the purpose of this project is to integrate technology to improve communication in reducing discharge cycles time. Section 4 includes findings, implications, and recommendations.

Section 4: Findings and Recommendations

Introduction

Inpatient care coordination is one of the project setting's operational initiatives in 2019. The goal is to ensure that patients return to cancer care safely and without delay. The CCN was launched as part of the initiative to improve discharge processes. A discharge huddle team was created to conduct a daily discharge huddle using the CCN to update the care team regarding patients' discharge needs in real time. The discharge huddle team includes nurses, case managers, social workers, physical therapists, and providers. The goal of the daily huddle is to identify discharge barriers and follow up on remaining issues for patients scheduled to be discharged. Despite these efforts, the current average LOS is 7 days, and the average discharge cycle time is 3 hours and 15 minutes. The hospital continues to be on diversion 3 times a week, and patients spent 6 to 24 hours in emergency rooms waiting for an inpatient bed due to transfer delays from the PACU and ICU to inpatient units. Hence, the purpose of the QI project is to evaluate the efficacy of the CCN in terms of improving the communication of the care team in reducing the discharge cycle time by entering the EDD within 24-48 hours of admission, as well as identifying discharge barriers 24 hours before discharge. The discharge initiative dashboard used at the project site was used as the source of evidence. To ensure the efficacy of the CCN, a SWOT analysis was conducted and a process flowchart was created to have a better understanding of the daily discharge huddle. Additionally, a fishbone analysis was created to further analyze discharge barrier fields in the CCN. Finally, Section 4 includes findings regarding discharge cycle time, EDD within 24-48

hours of admission, and discharge barriers within 24 hours of patients discharged before and after the planned intervention was implemented. The question guiding this QI project is: Will entering the EDD and identifying discharge barriers within 24-48 hours of admission reduce the discharge cycle time? This section also includes implications to practice and social change, limitations, and recommendations that will potentially address the gap in practice.

Summary of Findings

A SWOT analysis was conducted and revealed strengths, weaknesses, opportunities, and threats (see Table 1). The weaknesses of the CCN include manual entry of information, accessible only to nurses and providers, and lack of awareness of discharge barrier. Culture and dependence on the clinical staff to update information are threats of the CCN. However, the CCN showed several opportunities, like having one source of truth for discharge planning and assessment needs, accessibility in terms of all disciplines, information that is viewable in the patient list, and ability to build reports. The availability of the CCN in electronic or flowsheet formats can be documented and updated in real time anywhere, which is a strength of the CCN. Findings from the SWOT analysis showed that the electronic format of the tool was its major strength.

Table 1

SWOT Analysis of CCN

Strengths	Weaknesses	Opportunities	Threats
Electronic	Information needs to be entered manually	One source of truth on discharge planning and assessment needs	Culture
Accessible anywhere in the institution	Not available to all discipline	Give access to all disciplines	Dependence on clinical staff to update information
Available in flowsheet template	Insufficient awareness of discharge barriers field	Information can be viewed in patient list	
Real time documentation		Build reports	
Can be updated anytime			

The monthly average of admissions was 10,689, but only 20% had an EDD entered within 24 hours of admission and 29% had an EDD entered within 48 hours of admission. Additionally, the monthly average of admitted patients with an identified discharge barrier entered in the CCN was 11% (see Figure 2). The average discharge cycle time was 3 hours and 15 minutes. A fishbone diagram was created after these data was presented to all inpatient units' discharge huddle teams (see Figure 3).

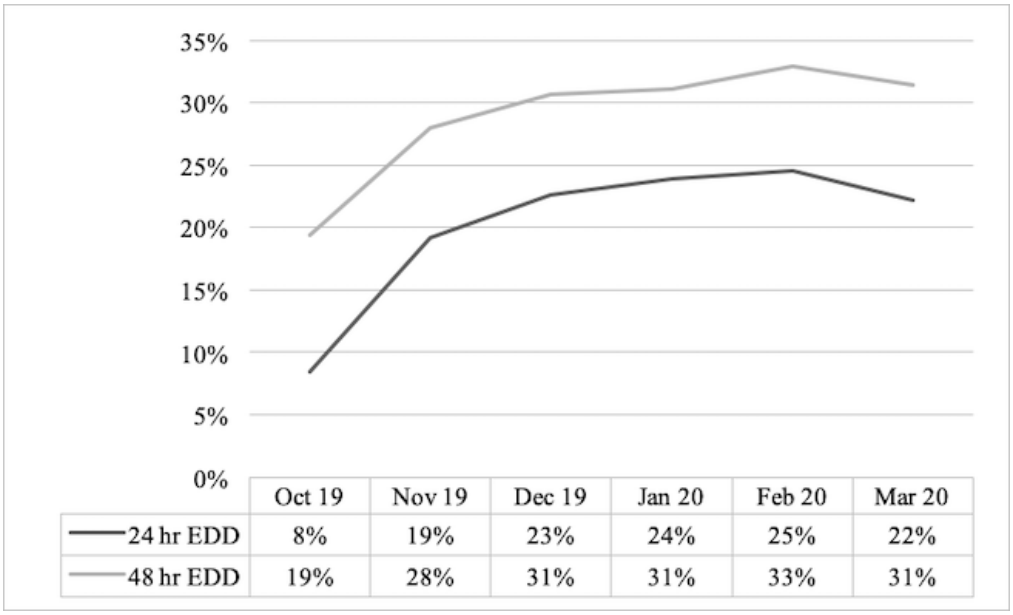

Figure 1. Preintervention monthly average EDD within 24 and 48 hours of admission.

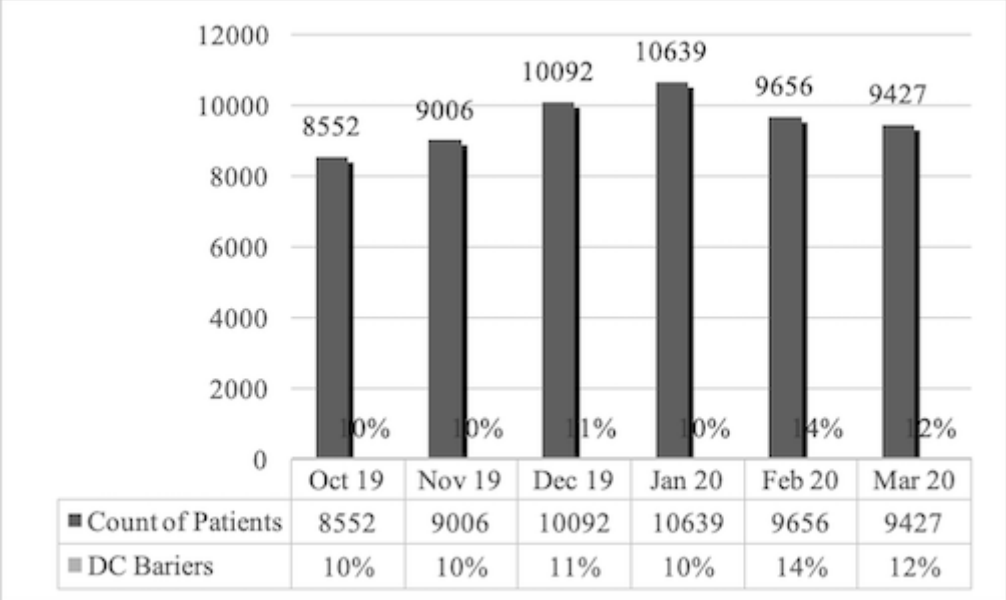

Figure 2. Preintervention monthly identified discharge barriers.

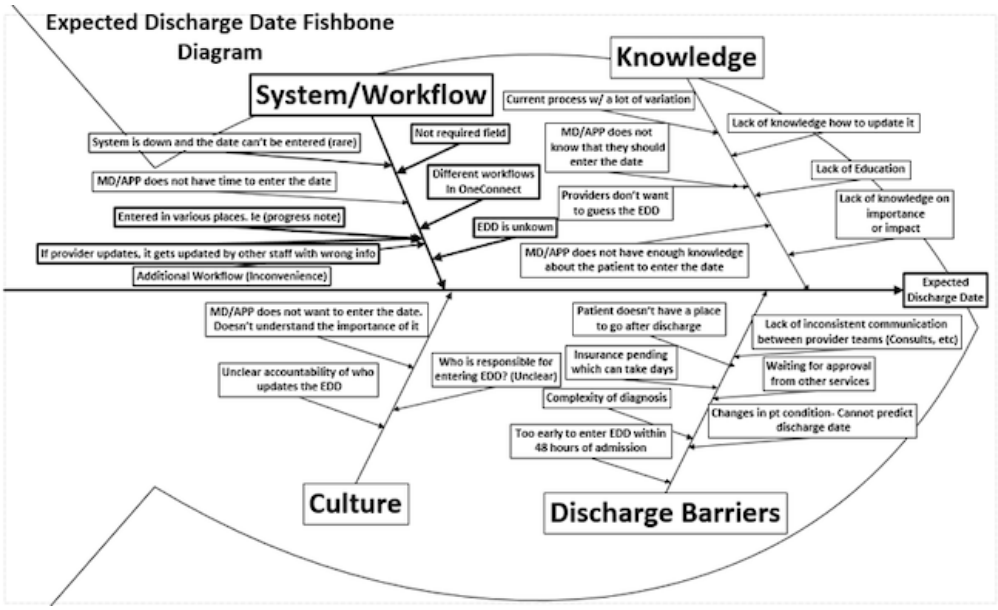

Figure 3. Expected discharge date field fishbone diagram.

Workflow, culture, entering discharge barriers, and insufficient knowledge of patient EDD were the root causes. To gain a better understanding of the cause, it was decided to examine the daily discharge huddle workflow. A process flowchart was created.

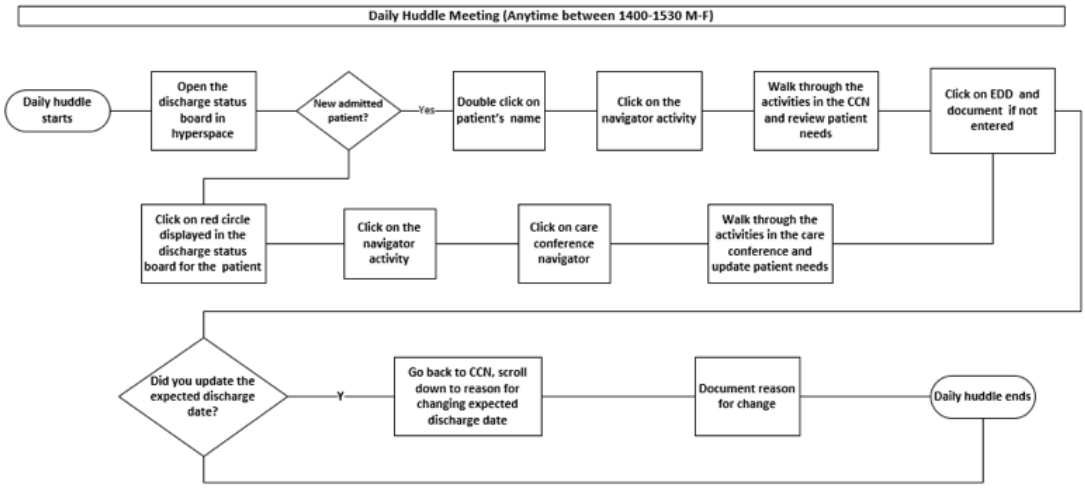

Figure 4. Daily discharge huddle workflow.

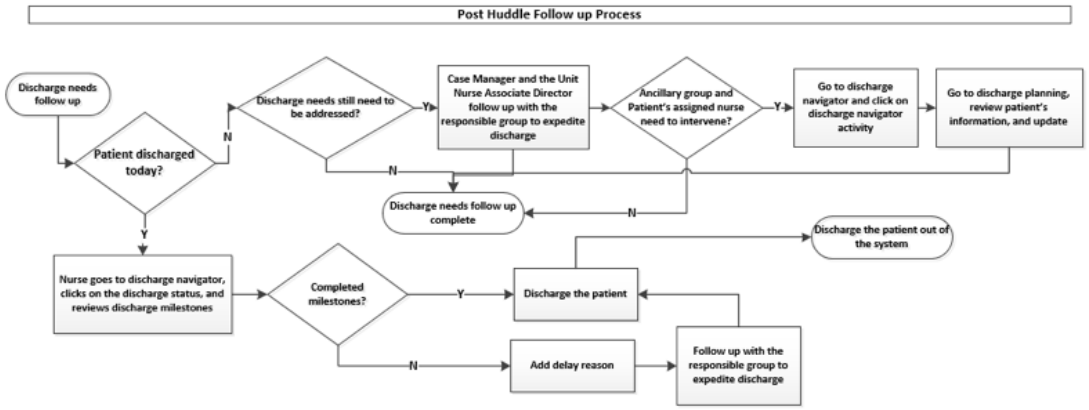

Figure 5. Post huddle followup workflow.

It was clear from the presented pre-intervention data that a re-education on how to use and document the EDD and discharge barriers was needed for the care team involved in the daily discharge huddle. These analyses were presented to the discharge management committee and approved the intervention of re-educating the providers, nursing, and other ancillary services. The intervention was implemented in the week of March 23, 2020 that lasted for 2 weeks. The re-education and demonstration on how to use the CCN was conducted remotely using video conferencing and online meetings. The QI project has identified a long-term and two short-term goals. The two short-term goals were a) Increase the utilization rate of EDD field within 24-48 hours of admission by 20%, six weeks post-intervention implementation, and b) Increase the utilization rate of the discharge barrier field, six weeks post-intervention implementation. The long-term goal was to improve the discharge cycle time to two hours by the end of fiscal year 2020.

Project Short-Term Goal 1

The first goal was to increase the utilization rate of the EDD field within 24-48 hours of admission by 20%, six weeks post intervention. Six weeks after the re-

education, the utilization rate of the EDD showed a slight increase of 20% within 24-hours of admission and 17% within 48-hours of admission (see Figure 6). This data was an unanticipated outcome related to the decrease in hospital census due to the COVID-19 pandemic. The 2019 novel coronavirus is a respiratory disease that originated in Wuhan, Hubei province, China. The World Health Organization declared the COVID-19 as a public health emergency of international concern, which led the organization to follow the highest security guidelines from either government entities related to its immune-compromised patient population. The timing of the implementation had coincided with the country's lockdown and the hospital's limiting admissions and scheduling of surgeries. Staffing was affected and most members of the care team were working remote.

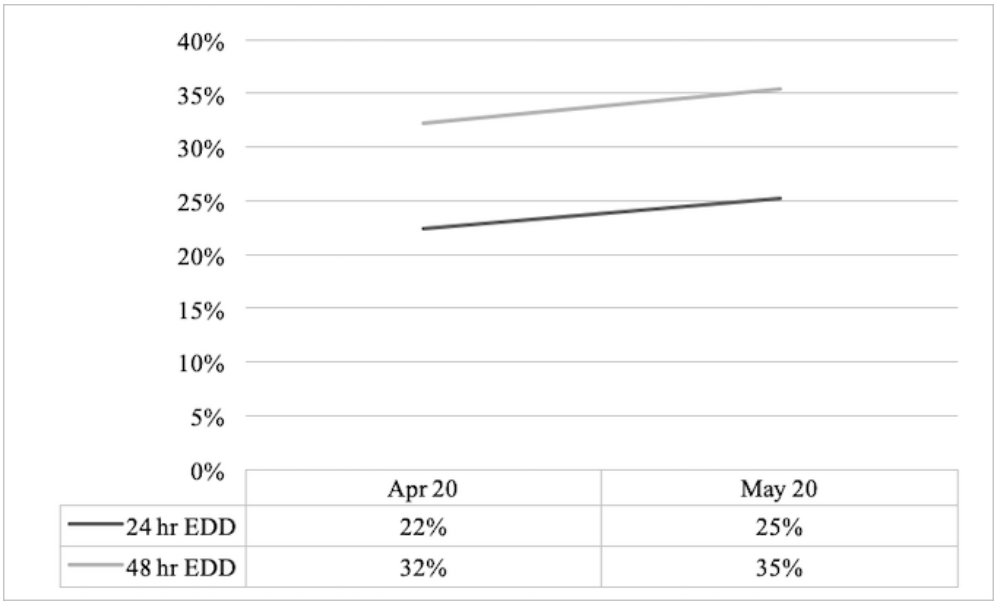

Figure 6. Post-intervention EDD within 24 and 48 hours of admission.

Project Short-term Goal 2

The second short-term goal was to increase the utilization rate of the discharge barrier field, six weeks post-intervention implementation. The utilization of the discharge barrier field in the CCN has decreased six weeks post-intervention implementation (see Figure 7). The monthly average census went down from 9,562 to 5,241, a 55% decrease from pre-intervention implementation. The identified discharge barrier's monthly average decreased from 11% to 7%, a 57% decrease from pre-intervention implementation. The decreased census and the care team working remotely might have contributed with the low compliance, particularly that several beds were available related to the cutdown of scheduled surgeries.

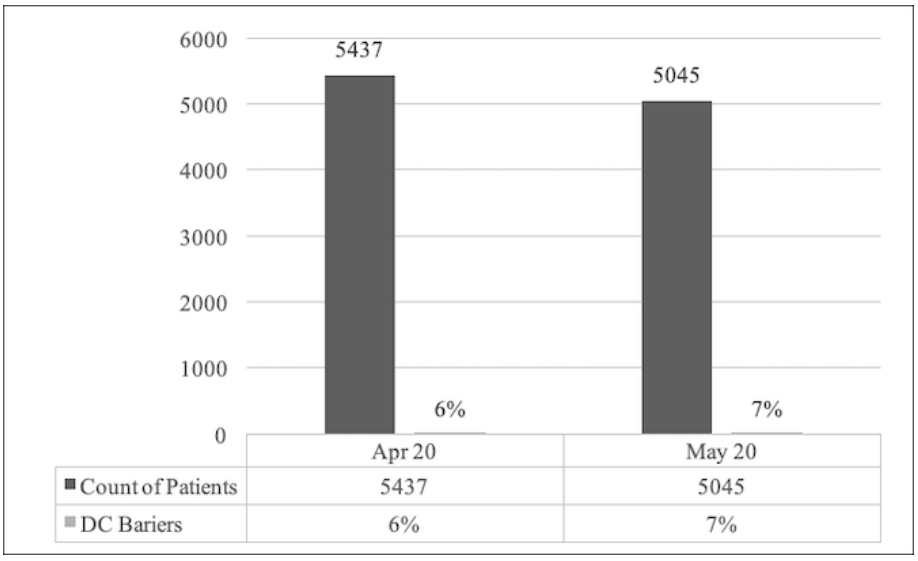

Figure 7. Post-intervention identified monthly discharge barriers.

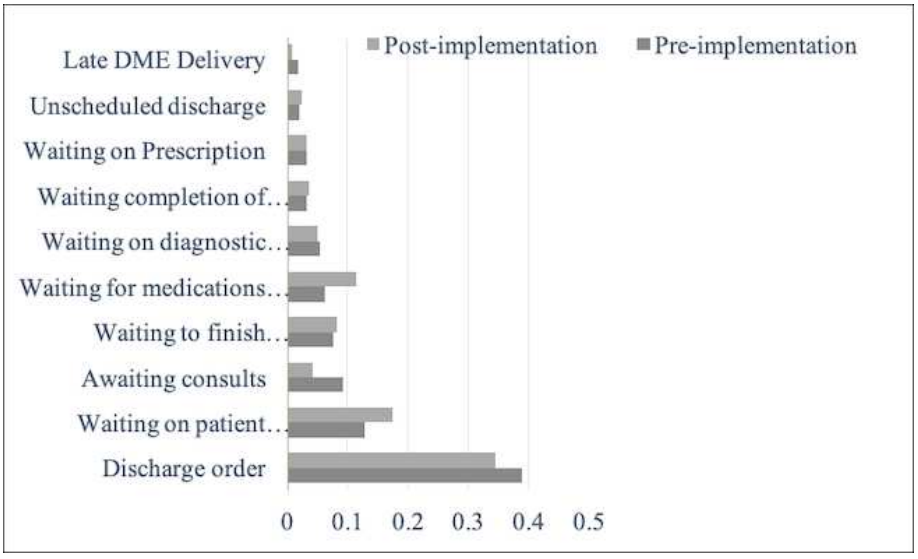

Figure 8. Identified top 10 discharge barriers.

The top identified discharge barrier is the discharge order and followed by waiting on patient transportation.

Long-Term Goal

The long-term goal was to improve the discharge cycle time to 2 hours by the end of fiscal year 2020. The six-week post-intervention implementation, the data showed the discharge cycle time remained at 3 hours and 15 minutes. This result might also be one of the downstream effects of the COVID-19 pandemic related to low census and the imposed restrictions on patient visitors. The organization mandated that only total care patients were allowed to have one visitor. Prescribed medications filled by the hospital pharmacy were picked up by the hospital transportation instead of family members. The discharge order was identified as the top discharge barrier. However, there were many patients with discharge orders written but were not discharged, related to waiting on patient transportation and waiting for medications from pharmacy (see Figure 8). These are factors that might have contributed to the discharge delays. Hence, the discharge cycle time remained at three hours and 15 minutes.

Implications

Although the 6-week post-intervention implementation data was impacted by the COVID-19 pandemic, the results showed that entering the EDD within 24 and 48 hours of admission and identifying the discharge barrier 24 hours before discharge has helped in understanding the gap in nursing practice related to the discharge process. The discharge order and waiting on patient transportation have been identified as the two major contributing factors of an increased discharge cycle time. These results are important because the organization has defined the discharge cycle time as the total time it takes from the discharge order is written to the time the patient is discharged out of the

system. This will enable the discharge huddle team to formulate specific interventions that would examine the nursing workflow after the discharge order is written. Additionally, the results provide an opportunity for the discharge huddle team to collaborate with other disciplines like pharmacy and hospital transportation in expediting the patient's discharge in a timely manner. Anticipating the patient's discharge needs is a social responsibility of the entire care team. A well coordinated and safe discharge process will lead to unnecessary readmission leading to a safer, more efficient, more cost-effective and more satisfactory patient experience.

Recommendations

Oncology patients receive treatment in both ambulatory clinics and hospital stays. Hence, it is important that all processes flow smoothly to give patients a positive experience throughout their entire transition of care. The post-intervention results of the DNP QI project showed there is a gap in the nursing practice on the day of the patient's discharge that has contributed to the mismatch between capacity and demand that resulted to patients boarding in EC or PACU related to inpatient bed unavailability. The discharge huddle team could leverage the results from this project to introduce the position of a discharge nurse coordinator for each unit to the Patient Care Flow committee of the hospital. The discharge coordinator should be an experienced nurse who will lead the unit's discharge huddle team, and devotes his or her work time in ensuring effective, coordinated and timely patient discharges. Discharge coordinators improved patient's readiness for home and discharge efficiency (Logsdon & Little, 2020). The discharge coordinator could support the clinical nurse at the bedside by

initiating discharge planning from admission and acting as liaisons with all units, ambulatory clinics, admissions, case managers, social workers, providers and other disciplines in the discharge process. The discharge coordinator could ensure the CCN is used as the source of truth of the patient's discharge, preparation progress, and potential delays on the day of discharge by entering the EDD and discharge barriers each time a change in patient's status occurs and conducting follow-up of the identified barriers in a timely manner. The discharge coordinator could work directly with nursing informatics and EHR analysts in enhancing the CCN and discharge status board to improve communication among the health care team.

Strengths and Limitations of the Project

The DNP QI project has its strengths and limitations. One of the strengths of the project is the goals' alignment to the institution's operational priorities in care planning, specifically the inpatient flow. The care planning assesses the current care delivery systems across the enterprise and identifies opportunities for innovation and transformation in the areas of inpatient and ambulatory care coordination, end-of-life, and survivorship. The project was given the support it needed to be implemented in the inpatient units by being invited to the patient flow committee meetings and EDD sub-committee meetings. The project's suggested intervention became one of the institution's strategies to improve the hospital discharge process, particularly in identifying target discharge date, discharge barriers, and improving discharge communication. The optimization on the usage of the CCN is another strength of the project. The project

helped the discharge huddle team recognize the importance of utilizing CCN in improving discharge communication among the care team.

The implementation of the project in the middle of the COVID-19 pandemic is one of the limitations of the project. The COVID-19 has negatively impacted the implementation of the project's intervention, particularly conducting the education virtually. This could have contributed to the low compliance in entering the EDD and the identified discharge barrier fields in the CCN. The overall rate of the entered EDD and identified discharge barriers whose post intervention was lower than desired could be related to the low hospital census and lower staffing. Additionally, the daily discharge huddle was done virtually and only the unit leader and case manager attending the huddle.

From the limitations of the project, it is recommended for future projects to take into consideration the impact of COVID-19 outbreak. Interventions related to education should focus on remote learning strategies like tutorial videos, FaceTime, Skype, Zoom and other institutionally approved mobile applications. Maintaining the engagement of the stakeholders, particularly the patient's care team, is critical. Interventions must include strategies that will keep the stakeholder's stay connected and engaged related to several staff that are still not use to virtual meetings and using online tools.

Section 5: Dissemination Plan

Improving the discharge cycle time has been the project site's goal for over a decade to help improve patient flow and ensure that patient care is not compromised when the institution experiences surges in patient care activity. The results of this DNP project will be presented to the institution's Quality Assessment and Performance Improvement (QAPI) Council. The council is responsible for ensuring all aspects of care and services provided to patients are measured and reported to executive leaders. After this is presented to the QAPI council, the study will be presented to the discharge and readmission patient flow team for the evaluation of recommendations to improve discharge cycle time. For a larger audience, the project's results will be entered into the QI project registry for a poster presentation during the hospital's education week. The hospital's education week is held every fall to highlight the importance of education in achieving the institution's mission. All employees and educators are invited for an education expo and poster competition. For the broader nursing profession, the project will be presented at the 2021 American Nursing Informatics Association (ANIA) conference. Nurses mostly attend the ANIA conference focusing on informatics. This will be an opportunity to share to the nursing informatics community the results of integrating technology in terms of improving the discharge cycle time. Attending conferences provides an opportunity to broaden one's knowledge and skills. The project is also planned to be presented for publication to the *Journal of Informatics Nursing*, a digital journal of ANIA.

Analysis of Self

I started this project through the recommendation of my preceptor in NURS 8410. The committee needed someone who knew the discharge process and EHR. My preceptor chaired the DMIC at that juncture, and she believed I could help. I started attending meetings regularly. Attending an operational meeting related to patient flow was an educational and exciting simultaneously. Working in this project has helped explain intricacies of decision-making related to patient care and patient experience. It also provided me an opportunity to provide solutions to patient flow challenges using technology that was already built, but hospital leaders were unaware of. It boosted my self-confidence in terms of what I knew as a DNP student and nurse informaticist. My confidence in terms of speaking in front of executive leaders has improved greatly, especially when using different technologies within the electronic system. One of the solutions that I suggested was to convert one of the monitors in each nursing unit which was not used for its intended purpose to a discharge status board. This part of the project has given me the opportunity to understand and appreciate the importance of project timelines. I took it as an opportunity which I believed helped me pass the certification examination for nursing informatics.

Completing the DNP project was extensive and challenging due to the many organizational changes in the project site. Several leadership changes occurred and the DMIC was dissolved. During this time, I was on personal leave from school related to a family emergency. It was a blessing because when I reenrolled for the completion of the DNP project, the project continued to be one of the institution's operational priorities.

Under the new chair, I received an invitation to become a part of the committee and finish my project. As the only member who knew the history of the CCN and discharge status board, I was given full support in terms of implementing my project. However, the month I was given approval to implement and collect the data for my project coincided with the beginning of the COVID-19 pandemic. Although reeducation of the care team was provided using virtual learning and this was not a desired outcome, I would still conclude the project was successfully conducted given the circumstances.

Summary

The DNP QI project was implemented to evaluate the efficacy of the CCN in terms of improving communication to reduce the discharge cycle time. The 6-week post-intervention data showed low compliance in terms of entering the EDD within 24 and 48 hours of admission as well as discharge barriers in the CCN. Although the results were not expected , this cannot be fully attributed to a failed implementation related to the COVID-19 pandemic. Additionally, changes on the census and staff working remotely could have affected the findings. Data obtained from this project could be used by the discharge huddle team to formulate processes using the CCN to reduce the discharge cycle time while taking into account COVID-19.

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