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A QUALITY IMPROVEMENT PROJECT FOR MEDICATION RECONCILIATION

A Scholarly Project Submitted to the Graduate School in Partial Fulfillment of the
Requirements for the Degree of Doctor of Nursing Practice

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A QUALITY IMPROVEMENT PROJECT FOR MEDICATION RECONCILIATION

An Abstract of the Scholarly Project by
Crystal Garcia

The purpose of this study was to implement a quality improvement project for medication reconciliation in the Intensive Care Unit (ICU) of a Midwestern hospital. This project was conducted by surveying the twenty-two nurses, four pharmacists, and one medication reconciliation technician regarding their view of barriers to why medication reconciliations are not always done at admission to this unit. Data was collected that revealed the number of patients admitted to this ICU prior to the implementation of the project. Then a quality improvement project was initiated. The first step was to re-educate the staff on the proper steps of entering the medication reconciliation into the patient's chart through the electronic medical record on admission. A step-by-step guide was printed and left at each workstation for later reference. Two admission tasks were added to the EMR to serve as a reminder for the nurses to complete the medication reconciliation at admission and to notify the admitting provider that the reconciliation was complete. Three months passed and then data was again collected for the number of patients admitted and the number of medication reconciliations completed at admission. After the quality improvement project, the percentage of medication reconciliations actually decreased. This ICU experienced a surge of pandemic patients during this project.

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Chapter I

Introduction/Purpose

Medication reconciliations are a daily part of caring for a patient in the hospital world. This document is a vital part of patient's care and a wrong step or key stroke can lead to one or numerous medication errors. A patient's medication reconciliation is complex, multi-factorial, ever evolving, and somewhat of a mystery for patients, caregivers, and the professionals who impact them. The accuracy of a medication reconciliation can have a serious consequence on the outcomes of the patient during a hospitalization. If a medication is not correctly identified (name, strength, frequency, etc.) upon assigning it to a list, the patient at the other end of that reconciliation will be the one who pays for the error.

Description of the Problem

According to the Institute of Medicine's 2000 report entitled *To Err Is Human: Building a Safer Health System*, it is not uncommon for medication errors to occur, and these errors have financial, personal, and professional ramifications. Imagine if a medication is not properly listed for the patient, and the error is not caught. The patient may be given the wrong medication, dose, or route for an unknown amount of time, until

the mistake is caught by anyone involved in the process. Each of these “mistakes” count as one error, so on any given patient the tally can add up quickly.

There are many points in which a medication error could be prevented. There is not a set standard or policy in place to guide medical professionals in preventing medication errors. Processes often differ from facility to facility, and often those policies differ from unit to unit within the same facility. Upon researching standard practices for compiling medication reconciliations, there are some similarities for all facilities, but consistency is problematic. Throughout the literature, implementation of a standardized process is recognized as the key to decreasing medication reconciliation related errors.

Significance to Nursing

Medication reconciliations can often dominate a registered nurse’s shift. Medications are administered at bedside based off of what is listed by the provider and verified by the pharmacy. The actual steps of the process of putting the medication reconciliation into the electronic health record varies by facility. Administering a medication incorrectly due to a medication reconciliation error can seriously change a nurse’s professional life. These errors can cause an array of adverse events that range from minimal to severe and can include up to death. For example, if a nurse administers the wrong dose of a blood pressure medication because it was entered into the medication reconciliation incorrectly, the patient could have serious consequences such as low blood pressure which may become serious enough to alter tissue perfusion to organs including but not limited to the heart and brain. If the blood pressure is low enough to not be able to sustain proper perfusion, the organ(s) can malfunction and be detrimental to the patient’s health. This type of error can occur with the medication reconciliation at multiple levels

and at any given step in the process. In order to prevent such errors and reactions, it is imperative to develop a system that greatly reduces medication errors. This project will look at ways to improve the process in one facility to allow for increased accuracy and compliance with medication reconciliations.

This project will also impact advanced practice registered nurses (APRNs). Prescribing medications is a significant part of an APRN's job. When a patient is admitted to an inpatient facility, it is beneficial to the patient and the prescriber for the patient to receive the medications they have been previously prescribed during their stay. When a patient has established care with an APRN and a medication regimen has been established, a patient and their body become accustomed to the medications and its effects. APRNs are affected by medication reconciliations because their patients and their licenses are affected by medication reconciliations. If a medication reconciliation is not complete or accurate, the patient can become increasingly ill and the APRN will then have to treat the patient for their decline in health due to not being given previously prescribed medications. If a process is established and followed for medication reconciliations, APRNs will benefit because their patients will continue to receive proper medication and doses during their acute illness.

Specific Aims/Purpose

The purpose of this project was to examine medication reconciliation compliance in an intensive care unit (ICU) at a Midwestern hospital and implement a pilot quality improvement (QI) project. If the pilot project is successful, there is potential for implementation of the QI project agency wide.

Theoretical Framework

Sister Callista Roy's Adaptation Model of Nursing was founded when she was developing curriculum for a nursing school where she taught (Nursing Theory, 2018). Roy states in her theory that people adapt constantly to their situation and environment as it changes, and they can use innate or learned behaviors to acclimate to change. Along the continuum of life, adaptation occurs during times of health and illness. In order to have a positive adaptation process when facing change, the individual has to address physiological needs, self-concept needs, role function needs, and interdependence needs (Nursing Theory, 2018). Part of a nurse's responsibility is to assist the patient with transformation through positive adaptation, utilizing the patient's beliefs and abilities while still caring for the individual. Roy points out in her theory that if a person is able to easily and successfully adapt to changes, they can free up energy to focus on other situations.

The major assumptions and theoretical statements Roy used for the Adaptation Model of Nursing include the following (Nursing Theory, 2018):

- People are biological and physiological beings that have to adapt to many changes
- Individuals learn coping mechanisms to change and adapt through innate and acquired methods
- Coping mechanisms learned are based off of social interactions, biological makeup, and physiological abilities

- Personal adaptations allow for positive changes to occur within the individual's life

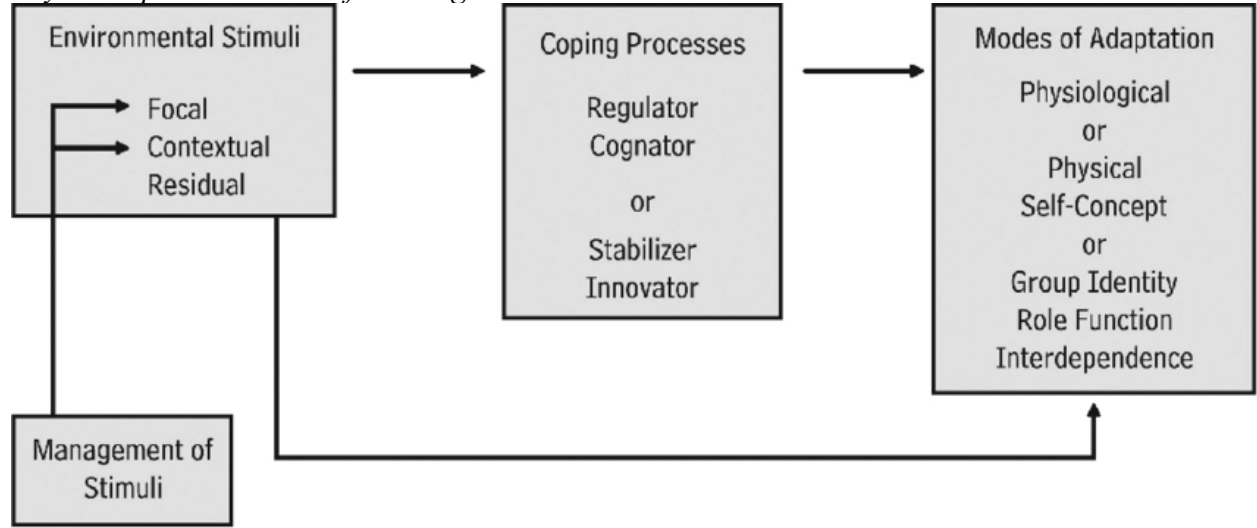
In nursing, it is crucial and natural to work with a person's opinions and beliefs to develop and interpersonal relationship that encourages a humanistic approach to healing and adaptation to whatever change needs to be made.

Part of the barriers that can be faced when gathering information for a medication reconciliation is due to patients not being assertive and taking responsibility for their own healthcare. Patients come to the hospital and expect the hospital staff and their providers to know all of their medications, including dosages and what time of day they take each medication. With Roy's framework being used within this project, patient adaptation will prevail due to a safer and better operating guideline regarding medication reconciliations. Roy also has implicit assumptions within this theory that state that the person can be cared for in parts or as a whole. There are determining factors that steer the art of nursing, including: a nurse should value and respect a patient's beliefs and opinions, and the individual should be able to react to other situations that may be present if positive adaptation occurs.

Developing a QI project regarding medication reconciliations has the potential to change the current state of the process, improving patient outcomes by allowing easier access to already prescribed medications and easier transition for the patient once they are admitted to the hospital. This project will bring changes for patients, nurses, pharmacists, and providers. This project is tied to Roy's Adaptation Model of Nursing because patients are constantly adapting to changes that occur in their environment, people need to be interdependent and fulfill self-concept needs, individuals adapting to

challenges with health and illness, and people positively adapting to the process and freeing up their energy to focus on other situations. Patients and their families often worry about resuming home medications after admission. If the medication reconciliation is not correct, or often times not done at all, this distracts the patient's focus from overcoming their illness. If there was a process or policy that alleviated this worry along with putting some of the power/responsibility into the patients' hands, it could make medication reconciliation a collaborative effort. Also, if the nurse is able have the medication complete and accurate in a timely manner once a patient is admitted, the patient can utilize self-care concepts to decrease anxiety and potentially improve health outcomes.

Figure 1
Roy's Adaptation Model of Nursing



Project Questions

- At a Midwestern hospital, who is completing medication reconciliations?
- At a Midwestern hospital, what is the process for verification of medication reconciliations?
- At a Midwestern hospital, what percentage of patients' home medications were continued upon admission to the ICU in the three months prior to the QI initiative?
- What barriers to medication reconciliation are perceived by nurses, pharmacists, and pharmacy technicians at a Midwestern hospital?
- What are the attitudes, perceptions and beliefs of the nurses regarding completion of medication reconciliation in the ICU at a Midwestern hospital?
- Prior to a medication reconciliation quality improvement project, what was the rate of medication reconciliations completed at admission in the ICU at this Midwestern hospital?
- After a medication reconciliation quality improvement project, what was the rate of medication reconciliations completed at admission in the ICU at this Midwestern hospital?

Definition of Key Terms/Variables

The following is a list of key terms/variables used throughout this paper:

- Adverse drug event: "A reaction to taking a medication that occurs which is not expected" (Institute for Healthcare Improvement, 2019, para. 1)

- Medication errors: “An error that occurs through omission or commission that involves administering a medication. This can happen anytime from the point at which it is prescribed up to the point to which the patient ingests the medication” (U.S. Department of Health & Human Services, 2019, para. 1)
- Patient outcomes: “Changes that occur based off of healthcare delivered” (Liu, Y., Avant, K., Aunguroch, Y., Zhang, X., & Jiang, P., 2014, pg. 71)
- Medication reconciliations: list of patient medications compiled into an electronic health record utilized at admission, transfer, or discharge. This list includes the medication name, route, dose, and frequency. It often will include the time of day the patient typically takes it (Institute for Healthcare Improvement, 2019, para. 2)
- Pharmacy technician: “trained individual who works under the direction of a licensed pharmacist” (Indeed, 2019b, para. 1)
- Medication reconciliation technician: “individual who compiles the medication reconciliation based off of lists from patients, pharmacies, and providers” (Indeed, 2019a, para 1)
- Electronic health system: “electronic system in which patient charts and records are kept as a whole” (The Office of the National Coordinator for Health Information Technology, 2019, para. 2)
- Electronic health record: “patient’s chart in an electronic version” (The Office of the National Coordinator for Health Information Technology, 2019, para. 1)
- Quality improvement – “Analytical approach to increasing effectiveness of a process in effort to improve performance” (American Academy of Family Physicians, 2019, para. 1).

Logic Model

The Logic Model components of this project are outlined in Table 1. The inputs from this Logic Model were derived from the facility in which the QI project was completed. The inputs needed to complete this project included time, planning, faculty advisement on the project, and obtaining the pharmacists' and nurses' viewpoint. The outputs for this project include examining the current medication reconciliation process, finding barriers to the current process, discovering attitudes toward medication reconciliations, and researching other facilities' processes to obtain medication reconciliations.

The short-term, medium-term, and long-term goals were personalized to meet the needs of this specific facility and tailored based off of what resources were available. The short-term goals are examining barriers to compliance, examining attitudes toward the project, increasing usage of the current process, and researching other facilities' processes for medication reconciliation. The medium-term goals include developing a new process for medication reconciliation; educating nursing staff, providers, and pharmacy staff on the process; and implementing the new QI project. The long-term goals are to compare compliance from the old process to the new process, to compare the accuracy of medication reconciliations from the old process to the new one, and to share new projects with other facilities to increase medication reconciliation accuracy for more patients.

The assumptions made in the Logic Model were done out of knowledge about the facility gained by the author previously, and the expectations were made with reasonable

understanding of the innerworkings. This Logic Model allows a brief synopsis and silhouette of the project to give more insight as to the participants and steps involved.

Table I

Medication Reconciliation QI Project Logic Model

NAME OF PROGRAM/PROJECT:
Medication Reconciliation Quality Improvement Project

INPUTS	OUTPUTS		OUTCOMES		
	Activities	Participants	Short-term	Medium-term	Long-term
<ul style="list-style-type: none"> - Time - Planning - Faculty experience - Viewpoints of pharmacists and nurses - DNP student 	<ul style="list-style-type: none"> - Examine current medication reconciliation process - Find barriers to current process - Discover attitudes toward medication reconciliations - Research other facilities' processes to obtain medication reconciliations - Implement quality improvement initiative - Evaluate medication reconciliation 	<ul style="list-style-type: none"> - RNs - Pharmacists - Pharmacy technicians - Medication reconciliation technicians - DNP student 	<ul style="list-style-type: none"> - Examine barriers to compliance - Examine attitudes toward project - Increase usage of current process - Research other facilities' processes for medication reconciliation 	<ul style="list-style-type: none"> - Develop a new process for medication reconciliation - Educate nursing staff, providers, and pharmacy staff on process - Implement new QI project 	<ul style="list-style-type: none"> - Compare compliance from old process to new - Compare accuracy of medication reconciliations from old to new process - Implement change agency wide - Share new project with other facilities to increase medication reconciliation accuracy for more patients

INPUTS	OUTPUTS		OUTCOMES		
	Activities	Participants	Short-term	Medium-term	Long-term
	practices after the QI initiative				

ASSUMPTIONS	EXTERNAL FACTORS
<ol style="list-style-type: none"> 1. Pharmacy staff and nursing staff will work together in this project to increase compliance 2. Staff completing medication reconciliation will be trained previously on aspects of data entry 3. Nursing staff is willing to learn and continue to utilize new project 4. Decreasing medication errors by increasing medication reconciliation accuracy is a shared goal 	<ol style="list-style-type: none"> 1. Staffing adequate to complete task 2. Patients with multiple comorbidities and polypharmacy 3. Number of patients admitted to facility 4. Ease of use of HER

EVALUATION PLAN:
Examine compliance and accuracy of medication reconciliations complete upon admission before and after quality improvement project finalized.

Summary of Chapter One

Medication errors are often a preventable problem. These errors can range in severity. The cause of these errors is numerous, but the lack of adequate medication reconciliations plays a role in the numbers that affect patients daily. The daily situations that occur due to a lack of a guideline for the medication reconciliation process include not receiving the proper medication a patient was taking prior to admission, receiving an incorrect dosage of any given medication, receiving medication at a time which is different than how the individual did so when in their home, and so on. There have been steps put into place to attempt to decrease this known problem, but there has not been a

satisfactory solution developed to date. Developing a medication reconciliation plan and applying it consistently is imperative for improving patients' outcomes.

A quality improvement project over improving the current medication reconciliation guideline will be beneficial and have a positive impact on patients' health and outcomes at discharge. Many facilities have a somewhat standardized method of obtaining and placing medication reconciliations within the EMR, however these processes are often riddled with holes and exceptions. This project looked into improving the medication reconciliation process at one healthcare inpatient facility with the goal of increasing compliance, consistency, and accuracy.

This quality improvement project will affect patients and local healthcare professionals. However, this is not a local problem. This problem has been ongoing for countless years and has yet to have a solution evolve. With this QI project, the door will be open to make changes throughout facilities who lack accuracy with medication reconciliations.

Chapter II

Literature Review

To complete a comprehensive review of the literature, Pittsburg State University's Leonard H. Axe Library search engines within the databases of Summon®, Cumulative Index to Nursing and Allied Health Literature (CINAHL) Plus with Full Text, and PubMed were used. Within these databases, relevant articles and journals for this scholarly project that were published within the last ten years were identified. These searches all contained key words or phrases that were pertinent to this scholarly project to produce a QI project for improvement of medication reconciliations. To conduct this literature review search phrases that were utilized included: medication reconciliation, quality improvement in medication pass, quality improvement projects, nurses and medication reconciliations, pharmacists and medication reconciliations, medication errors, and preventative medication errors. The words "and" and "or" were used throughout the previously mentioned phrases in attempt to locate the most appropriate literature for this scholarly project. Initially more than 800 articles were discovered using the above guidelines. However, this number was narrowed down to combing through the titles and abstracts and including literature pieces that were relevant to this project and excluding those which were not. Also, articles that were similar in subject and results to previously used articles were eliminated in order to allow a variety of subtitles to be

examined for this project's purpose. The final number of articles used for the literature review in this project was decreased to ten articles reviewed below.

A large percentage of the research that has been performed regarding medication reconciliations is from the inpatient perspective. However, there is a small amount of evidence in the literature regarding outpatient medication reconciliation. Further, the majority of research on medication reconciliations is focused on pharmacists and pharmacy technicians despite the fact that nurses play a large role in medication reconciliation. Additional research has focused on elements of the discharge process, including electronic versus paper discharge paperwork, a discharge timeout and nurse led discharge

Inpatient Medication Reconciliations

Preadmission Discrepancies

Often, it is the preadmission area of patient care where the medication reconciliation begins for an inpatient stay. Emergency rooms can be the initial point of patient contact where medication reconciliation begins. However, the emergency room is often a busy and chaotic environment and due to the nature of emergencies, healthcare personnel are not able to focus on medication reconciliations and allow the time required to ensure they are precise.

Hias, Van der Linden, Spriet, Vanbrabant, Willems, Tournoy, & De Winter, (2017) wanted to narrow down the top reasons for medication discrepancies on reconciliations from the preadmission status. This study examined 35 cohort reports regarding medication errors and preadmissions status from previous examinations. Errors

investigated were divided into three categories: patient, medication, and setting-related predictors. There were many variables identified in each area. In total they reported identifying 56 potential causes of discrepancies in the three categories listed. Some of these included patient's age, gender, communication barriers, number of preadmission medications, number of high-risk medications, admitting physician experience, and teaching vs hospitalist intake. The conclusion drawn from this research evolved into one which demonstrated the vast areas of potential harm and errors which can occur during the medication reconciliation process without a clear and precise way of compiling and tracking the necessary information.

Admission Reconciliation

One point of discussion regarding medication reconciliations is when they should be completed for a patient being admitted to the hospital. Considerations such as what department is most qualified to perform the medication reconciliation, who has the most time to review and verify the medication reconciliation, and the most reliable patient informant are necessary for policy development. There are numerous suggestions about how to overcome the barriers.

A six-month randomized controlled study was performed at an urban teaching hospital. This study performed by Mendes, Lombardi, Andrzejewski, Frandoloso, Correr, & Carvalho, (2016) looked at the effects of timeliness when completing a medication reconciliation. There was a total of 133 patients in this study, divided into two groups. One group had a medication reconciliation completed within 72 hours of admission and the second group either had one performed after 72 hours from admission time or not at all. The length of stay for these groups varied between nine to sixteen days. The total number

of discrepancies documented by Mendes et al (2016) was 327. Of the discrepancies found, 47.3% were in the group whose medication reconciliations were performed prior to 72 hours and 52.7% of the discrepancies happened in the latter group. This study did not give statistical proof that early medication reconciliation was better at preventing discrepancies.

Nurses or Clinical Pharmacists

Many larger or urban hospital systems have started developing a process to obtain medication reconciliations for patients once they are admitted to the facility. There are several approaches that are being utilized. Pharmacists, pharmacy technicians, nurses, and medication reconciliation technicians are some of the people that are appointed by inpatient systems to perform the medication reconciliation task. In a randomized controlled study by (Aag, Garcia, & Viktil, 2014), the researchers wanted to compare discrepancies from a nurse generated medication reconciliation and a pharmacist generated medication reconciliation. Medication discrepancies can be one of the reasons a patient has a longer than anticipated stay in the hospital. Since no specific profession is designated to perform this task, there are numerous ways to delegate medication reconciliations.

In this non-blinded, two-armed, randomized controlled trial, Aag, Garcia, & Viktil (2014) had 94 patients with medication reconciliation performed by nurses and 99 patients whose medication reconciliations were completed by clinical pharmacists. This study was performed in a large facility that had approximately 50 different patients weekly. This study was performed on a cardiology unit. One unforeseen result of this study was that nurses spent approximately 38 minutes with each patient compiling a

medication reconciliation while pharmacists spent 28 minutes per patient on average. The time difference alone is enough to raise alarm. In a large hospital such as this one, that much time spent with each patient is time taken away from clinical tasks on a unit which is historical understaffed (Aag, Garcia, & Viktil, 2014).

The results of this study did not show statistical significance regarding medication discrepancies between the two groups. Nurses and clinical pharmacists documented similar discrepancies and approximately the same number of errors. This study graded the errors based on a significance scale. It was found that of the patients whose medication reconciliation was performed by clinical pharmacists, there was at least one medication discrepancy in 78% of the lists. In the medication reconciliations performed by nurses, 84% had at least one medication discrepancy. Therefore, the researchers did not find this statistically relevant and did not prove which group is more successful at accurately compiling a patient's medication reconciliation.

Pharmacy Technicians

Pharmacy technicians are often employed in hospitals and utilized to help pharmacists with daily tasks in their department. Since the development of the importance of medication reconciliations, pharmacy technicians are often given the task of speaking with patients, caregivers, or pharmacies to compile a medication reconciliation. Often this is more of a rough draft than an accurate description of a patient's daily medication list.

Kraus, Sen, Murphy, & Pontiggia (2017) performed a retrospective chart review of over 200 patients' charts who were admitted to an internal medicine provider. The

medication reconciliations were examined for medication discrepancies made during the technician's process. Upon reviewing the charts, 365 medication discrepancies were found in the 200 patient charts reviewed. Most of the discrepancies were divided into four categories. The discrepancies were found to be made due to omission, non-formulary omission, dose discrepancy, and frequency discrepancy. The researchers stated that the discrepancy reasons were unable to be collected due to this being a retrospective review, so it was not possible to decipher why the discrepancies were made.

Electronic Versus Paper Discharge

With the transition from paper charts to electronic medical records, this is another factor impacting medication reconciliations. Electronic charts allow for medication reconciliation to be collected and updated constantly, not just at admission. At discharge, medication reconciliations are utilized as a guideline for patients to follow when they go home. The medication reconciliation is updated throughout the patient's stay in the hospital and printed out in a discharge packet. This used to be done by hand but now is updated via a computer system and provider entries. Often the medication order changes are sent from the electronic medical record directly to the pharmacy.

Now that a large majority of health systems utilize electronic medical records, upon discharge patients are given information which is mandated by the government and very lengthy. In that paperwork is the medication reconciliation. The aim of the study by Lehnbohm, Raban, Walter, Richardson, & Westbrook (2014) was to evaluate if electronic medication reconciliation at discharge were more effective and precise than paper discharges. This study compared the thoroughness of discharge explanation from paper to electronic. It was found that the dose and route was more likely to be discussed over an

electronic version versus the paper counterpart. However, there was no difference in the category's frequency or regiment changes. This study overall did not offer the hopeful proof that electronic records have improved the medication reconciliation process.

Discharge Time-Out

In order to improve medication reconciliations precision and compliance at discharge from an inpatient status, many techniques have been put into place. Nurses have been involved as well as providers, pharmacists, pharmacy technicians, patients, and patient caregivers. Again, there is not a single way that is universally adopted, and options and ideas are continuing to develop.

Time-outs have long been a pre-surgery procedure. This quick self-check system allows the surgeon and the staff in the operating room to ensure that they have the right patient to operate on, the right procedure is going to be performed, and the correct body part is going to be operated on. This step was put into place after serious mistakes were made during operations and caused serious patient harm. Ruggiero, Smith, Copeland, & Boxer (2015) examined a system led by nurses on medication reconciliations that mimics the surgical time-out. This nurse led idea was thought to help cause a pause in which nurses could elaborate on discharge medication reconciliations and make sure they were being reviewed and were accurate prior to the patient leaving the hospital. This process was initiated by nurses on a 46-bed medical-surgical and cardiology unit. Prior to the implementation of the process, Ruggiero, Smith, Copeland, & Boxer (2015) found 77.8% discrepancy rate on discharge reconciliations. These discrepancies varied in seriousness and potential harm risks. After the implementation of a discharge medication reconciliation time-out, the discrepancy rate was reported to be decreased to below 20%.

This is a procedure that has shown promise and potentially part of the resolution to this issue.

Nurse Led Discharge

Another potential risk for not completing accurate medication reconciliation at discharge is the patient returning to the hospital sicker than when they left due to errors in their medications. If a medication reconciliation is not correct when the patient is discharged, they are going home with misinformation. As previously discussed, improper medication administration, which can occur in the hospital and at a patient's home, can lead to seriously devastating health events.

Siew Ping Lang & Bee Kuan Lim (2017) examined an already high-risk patient group – those with cancer. Due to their diagnosis, the rate in which cancer patients visit the emergency room and are readmitted are already higher than other population groups. Cancer patients are also typically on medications which are a lot more dangerous if taken incorrectly or missed. This would lead one to believe that proper medication reconciliations in this patient population is of utmost importance. Siew Ping Lang & Bee Kuan Lim (2017) developed a nurse-led discharge process which specifically focused on medication reconciliation accuracy and review upon discharge for cancer patients. The group was divided into those who were readmitted within 15 days of discharge and those that were readmitted within 30 days – both after the nurse led discharge process was in place. Unfortunately, the nurse led discharge did not show statistical improvement on keeping these cancer patients from being re-admitted compared to when the nurse-drive protocol was not in use.

Outpatient Medication Reconciliations

Primary Care Reconciliations

Medications reconciliations are a topic to be addressed at all locations where patient care takes place. A patient's primary care provider should be a stakeholder in this matter. The primary care provider is often the individual prescribing most of the medications to the patient and educating them on side effects and changes. Many believe the primary care provider would be a valid central hub for medication reconciliations.

A review of this by Rowan-Robinson (2019) discovered that in 29 community health care provider's offices, medication reconciliations were not an area of immediate concern. Primary care offices did not have a system in place to continually document or track frequent changes made on medication reconciliations unless that patient came to the office and discussed this with the nurse or provider. Therefore, when patients come to the office or present to the hospital, an accurate medication list becomes the sole responsibility of the patient or the caregiver. This report did not have recommendations for how change could or should begin, but simply that primary care currently does not have a system.

Humanistic and Economic Outcomes

Another issue besides discrepancies within medication reconciliation is cost. In order to promote and provide an effective system that accurately produces medication reconciliations, economics is at the forefront. With the costly transition into electronic medical records, facilities are leery about spending extra money for a system in which they believe should be included and produced by their already available electronic

medical record system. Not only are the facilities worried about costs but so are the consumers – the patients. Medical costs are ever increasing along with insurance premiums. Patients are concerned with new services due to the cost which may be associated. However, it has been a topic of discussion that medication reconciliations need to include the patients and place responsibility for their accuracy and upkeep with the patient.

Loh, Cheen, & Wee (2016) performed a systematic approach of multiple databases including MEDLINE, EMBASE, CINAHL, Web of Science and the Cochrane library to find studies that are performed on medication reviews and the cost associated with this. This review did limit their target group to individuals over 65 years old since this population is typically on a fixed income and cannot accommodate unexpected expenses. The specific expense examined was that of a pharmacist driven medication reconciliation from an outpatient status. It was deduced that the cost associated with providing an extra service to cover medication reconciliations outside of the current electronic medical systems was significant and does require further investigation. Loh, Cheen, & Wee (2016) reported further studies are needed.

Patient Perception

Patients being involved in their medication reconciliation often is key to the accuracy and completeness of the list. Since the patient knows which providers they see and when medications are changed, they would be a logical central point to keep medication reconciliation lists up to date. However, often the patient does not feel competent or empowered in order to maintain the medication reconciliation. There have

been identifying factors that can help predict which patients will keep their medication list most current.

Uhl, Muth, Gerlach, Schoch, & Müller (2018) discussed the issues of polypharmacy and the fact that patients often do not know a lot about their medication list. Uhl, Muth, Gerlach, Schoch, & Müller (2018) implemented a medication review by a case manager from a primary care provider's office. This allowed patients to frequently review and update their list. The authors also were hoping to gain understanding as to what barriers prevented patients from maintaining their medication reconciliations. They conducted a qualitative study with 31 patients. There were four main barriers identified. These barriers were: patient participation, involvement of health-care assistant, general practitioner participation, and pharmacist's participant. According to this study, there is no direct group who is stepping up to take responsibility nor is there a group where the barrier can be significantly narrowed down.

Summary and Future Directions

The problem of incorrect medication reconciliation is multi-layered. It is hard to discover where the problem starts, how it intertwines through all the health care patients receive, and there is not a clear solution. The biggest problem seems to be the utter breakdown in communication of who is to keep medication reconciliations accurate. Some believe it is the provider, some say pharmacists, and still others point to the patients.

Studies have been done that specifically point to the problem with medication reconciliations and the discrepancies that are caused due to inaccurate lists. However,

there has not been extensive research or studies on how to rectify the situation. With the technology that is available at almost everyone's fingertips through smart phones and patient portals, it seems there must be a way to simplify and keep medication reconciliations current and accurate. Instead of everyone trying to point fingers or solve the problem in just their environment, the resolution to medication reconciliations is going to require collaboration and dedication from all health care entities.

Chapter III

Method/Plan

Project Design

This scholarly project utilized a quantitative research design. This project examined the percentage of patient's whose medication reconciliation was complete in the ICU, upon admission. This was based off the total number of admissions in the ICU, regardless of status such as observation, inpatient, ICU, cardiac stepdown, or medical-surgical overflow. Data was collected for the three-month period prior to the implementation of the project and for the three-month period after the project was initiated. A Quality Improvement (QI) intervention was implemented and then the percentage of medication reconciliations completed for the three months after was examined and compared to the numbers collected prior to the QI project implementation.

Sample/Target Population

Two populations were sampled for this project. The first population was all the patients admitted to the ICU in a Midwestern hospital during the study timeframe. The patients admitted to this ICU ranged in age from eighteen and up, with no limit on the upper end of age. This ICU admits patients with all diagnoses, and they are not separated based on specialty needs.

The second population was the healthcare personnel who completed the medication reconciliations in an ICU unit in this Midwestern hospital where medication reconciliation chart reviews were performed. This included pharmacists, pharmacy techs and registered nurses. There was no compensation offered for participation in this study.

Inclusion and Exclusion Criteria

The inclusion criteria for the registered nurses, pharmacy techs, and pharmacists for this project included those over the age of eighteen, those employed by the Midwestern hospital in which this project will occur, and those which were involved in completing the medication reconciliation on patients admitted to the ICU. These specific employees were also working on their own and not undergoing an orientation process.

The inclusion criteria for the patient population of the quality improvement project were patients admitted to the ICU for the three months prior to the beginning of this project and the three months after implementation of the quality improvement intervention. The exclusion criteria included patients who were not admitted to the ICU during the time frame of the study.

Protection of Human Subjects

An approval from the Institutional Review Board (IRB) at the Irene Ransom Bradley School of Nursing and from Pittsburg State University was obtained. There was not any protected health information (PHI) obtained through the chart review that would lead to identification of a person or patient. The information looked at for this project was strictly numbers and data for medication reconciliation completion percentages and not patient specifics nor medication specifics that would allow identification of patients or

staff members. All participation and education to the nurses in this ICU was voluntary. Participation in this study did not affect the nurses' evaluation in the ICU. All surveys were de-identified. There were minimal risks associated with this scholarly project.

Ethical Considerations

Due to the nature of the scholarly project in quantitative research, there was not ethical considerations to be discussed . The information obtained was done retrospectively and did not involve any vulnerable populations or risky behaviors that would interfere with privacy or health of the individuals involved. The hospital personnel remained anonymous by not using names, titles, shifts worked, or other identifying factors. Surveys completed were done so using a drop box location in the break room of the ICU with no name or other identifying marks on the paper. These papers have been kept in a locked drawer in the department managers office and will be destroyed after three years. If any specific patient charts are utilized for this project, the name, date of birth, or other identifying information were not given for the purpose of this project. There were no specific charts and medication reconciliations reviewed, only data and numbers of how many were completed during the timeframes of this project.

Instruments

The data examined for this study was the completion percentage rates of medication reconciliations prior to and after the implementation of this quality improvement project. There was a questionnaire given to the registered nurse, the pharmacists, and the pharmacy technicians prior to the quality improvement project implementation. This questionnaire allowed those involved in completing medication

reconciliations to verbalize feelings as to why they believed the percentage of completed medication reconciliations was less than optimal. The questionnaire posed questions to identify barriers, perceived or real, which the participants believed limited their ability to complete medication reconciliations on patients admitted to the ICU. This questionnaire was completed anonymously and collected at the end of the project.

Procedure

The first step in the project was to gather data from the Midwestern hospital pertaining to the percentage of medication reconciliations which were completed for ICU patients at admission over the previous three months. At that time, the registered nurses and the pharmacy technician, who complete medication reconciliations for this ICU, were given a questionnaire asking about barriers which they believed prevented them from completing medication reconciliations at the time of patient admission.

After this information was completed and gathered, a quality improvement project was implemented. The QI intervention included educating or reeducating the nurses regarding why medication reconciliations are pertinent to a patient's health and stay in the ICU. The same nurses were also be educated on the specific steps of how to complete the medication reconciliation process at this hospital. The project included adding an intervention to the standard of care set that is completed at admission. This intervention was designed to be completed by the admitting nurse which served as a reminder to complete the medication reconciliation and to notify the admitting provider that the medication reconciliation is complete and ready to be looked at.

After all staff was retrained and the intervention was added to the standard of care set, three months were allowed to pass. At the end of the three-month mark from the date of the education process completion related to this project, patient medication reconciliation was collected. This data showed what percentage of ICU admissions at this Midwestern hospital had medication reconciliations completed at the time of admission after the QI intervention.

Project Sustainability

If the quality improvement project proved to be beneficial, the intervention could be implemented hospital wide. Education will need to be reiterated frequently to sustain productivity. It would be in the best interest if this information were reviewed with all staff involved in medication reconciliations on a regular basis. An interdisciplinary committee tasked with tracking medication reconciliation rates and ongoing quality improvement is optimal for sustainability of lasting change. After this is established, it would be feasible to offer this project and implementation strategy to hospitals that are network affiliates with this hospital. The sharing of this QI project would allow for the improvement to continue to be sustainable and to continue to enhance the process of medication reconciliation completion.

Chapter IV

Evaluation of Results

Description of Sample Population

The sample populations for this project were divided into two time frames. The time frames evaluated were three months prior to implementing the education and admission task assessment and the three months after this occurred. The populations from the Midwestern hospital involved in this project included all patients admitted to the ICU during each time frame, the nurse who worked in the ICU, the pharmacists, and the pharmacy technician.

There was a total of 372 patients admitted to the ICU during this study. Of the 372 admitted, 219 were admitted during the first three months and 153 were admitted during the second three-month time frame. Twenty-two nurses were educated and surveyed (Appendix A). Four pharmacists and one pharmacy technician were surveyed (Appendix B).

When examining the nursing population, this was further broken down into the following categories: day shift or night shift, full time, part time, or as needed, how long the individual had been a nurse, and how long the individual had been employed by this Midwestern hospital. There were twelve day shift nurses and ten night shift nurses. There

were twenty full time nurses, two nurses who were part time and zero who worked on an as needed basis. There were two nurses that had been RNs for less than one year, four nurses who had been a RN for 1-2 years, five nurses who had been RNs for 2-3 years, one nurse who had been a RN for 3-4 years, one nurse who had been a RN for 4-5 years, seven nurses who had been RNs for 6-10 years, and two nurses who had been RNs for 11-15 years. There were no nurses employed by this ICU who had been a RN longer than 15 years (Table II). Of the twenty-two nurses involved there was a variety of time in which the RNs had been employed in the ICU for this Midwestern hospital. The breakdown of the time the RNs had been employed in this ICU was as follows: three RNs were 0-6 months, one RN was 7-12 months, three RNs were 12-18 months, six RNs were 19-24 months, three RNs were 25-30 months, one RN was 37-42 months, two RNs were 43-48 months, two RNs were 49-54 months, and one RN was more than 60 months (Table III).

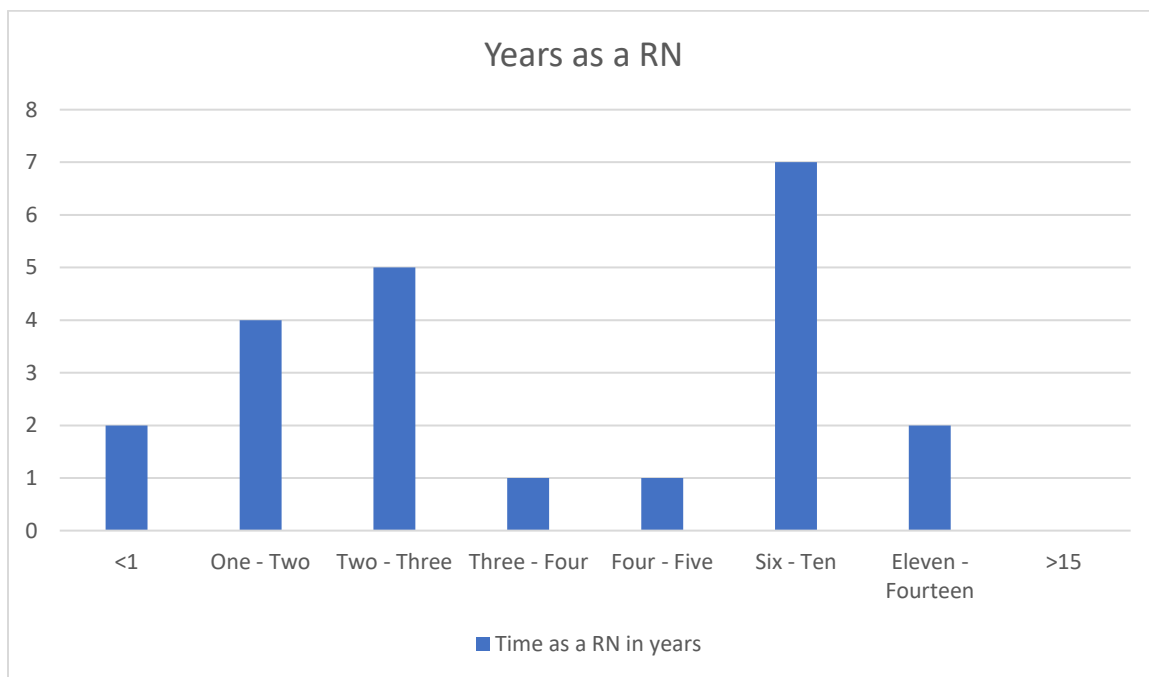
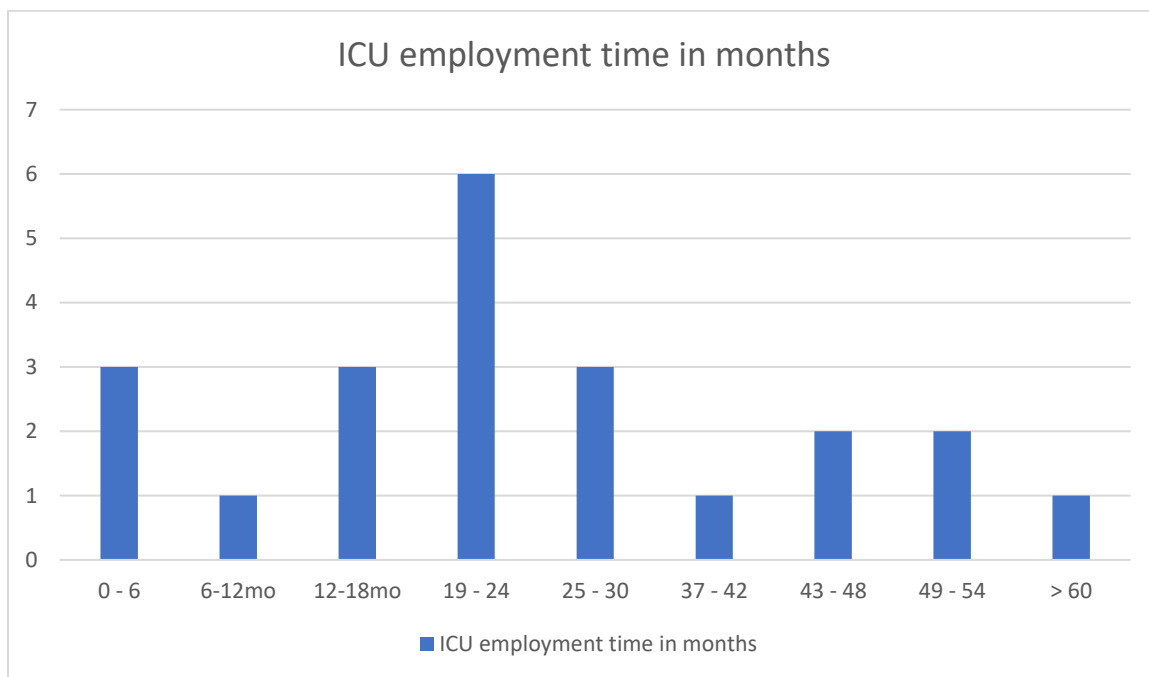
Table II*Years as a Nurse*

Table III*Years of Employment in the ICU***Description of Key Variables**

For this study, there were several key variables. The familiarity of the RN with electronic medical record used in the ICU was a variable. The nurses who are newer to the ICU have less ease of using the system required to input and admission reconciliation. Another variable is the length of time each nurse has been a RN, either in this ICU or elsewhere. As nurses become more comfortable with the tasks of the profession, time management improves and allows for the RN to prioritize more accurately. This also allows more time during a shift to complete admission medication reconciliations. Another variable is the time and day in which the patient was admitted. The pharmacy

technician typically works Monday through Friday from 0800-1600 and is not available after those hours, or on holidays or weekends. There is only one pharmacy technician for the entire hospital, so the task of admission medication reconciliation completion often falls back for the RN to complete, but more so in the evening and during the night.

Analyses of Project Question/Hypothesis

1. At a Midwestern hospital, who is completing medication reconciliations?

In the ICU of the Midwestern hospital where this study occurred, the pharmacy technician completed the medication reconciliation at admission and if this person was not available, the task ultimately was the RN's responsibility.

2. At a Midwestern hospital, what is the process for verification of medication reconciliations?

The medication reconciliation was complete at admission by completing many different steps. In order to ensure the medication reconciliation was completed and accurate information was obtained from the patient, the primary care provider's office, the pharmacy (or in some cases multiple pharmacies), and caregivers. Once an accurate list of home medications was established, this was placed into the electronic medical record. The provider admitting the patient was then notified by the RN and that provider would choose which home medications to resume at admission in this particular ICU.

3. What barriers to medication reconciliation are perceived by nurses, pharmacists, and pharmacy technicians at a Midwestern hospital?

The nurses, pharmacists, and pharmacy technicians answered an anonymous survey which asked about perceived barriers to the completion of medication

recompilations at admission to the ICU. More than 80% of the RNs surveyed listed one of the barriers to being able to complete the admission medication reconciliation was the patient's and caregiver's lack of accurate knowledge to provide a list of home medications. Other barriers which were reported on more than half of the surveys included not feeling comfortable or knowledgeable enough to correctly input the home medications into the reconciliations and the fact that provider's offices and pharmacies are not always open and available to obtain an accurate list. Barriers reported by less than half of the RNs were lack of staff, the fact that critical patients are often unable to verbalize and give such information, lack of time, and lack of training by the facility.

The pharmacists surveyed all listed that the biggest barrier to medication reconciliations completion at admission to the ICU was lack of training and staff for the ICU. The pharmacy technician listed the barrier as lack of time and personnel to complete this time-consuming task of admission home medication reconciliations.

4. What are the attitudes, perceptions and beliefs of the nurses regarding completion of medication reconciliation in the ICU at a Midwestern hospital?

The overwhelming majority of the RNs surveyed in the ICU at this Midwestern hospital (over 75%) put on the survey that they feel there should be a medication reconciliation technician working around the clock, every day of the year.

Approximately 25% of the RNs surveyed expressed the need for the patients or the caregivers to have a current medication list available at the time of admission to allow an easier approach of home medication reconciliations.

5. Prior to a medication reconciliation quality improvement project, what was the rate of medication reconciliations completed at admission in the ICU at this Midwestern hospital?

The three months prior to the quality improvement project, 219 patients were admitted to the ICU of this Midwestern hospital. Of those 219 patients, 158 had medication reconciliations completed during their admission process. This gave the ICU a 72.15% average for medication reconciliation completion at admission during this time.

6. After a medication reconciliation quality improvement project, what was the rate of medication reconciliations completed at admission in the ICU at this Midwestern hospital?

The three months after the quality improvement project was introduced, 153 patients were admitted to the ICU of this Midwestern hospital. Of those 153 patients, 91 had medication reconciliations completed during their admission process. This gave the ICU a 59.48% average for medication reconciliation completion at admission during this time.

Additional Statistical Analyses

Other data that was examined during this project was examining how confident the nurses felt on their ability to complete an admission medication reconciliation and how adequately they felt trained by the facility regarding proper completion of admission medication reconciliations. These two questions were asked based on a Likert scale from one to five with one representing strongly disagree, two was disagree, three was neutral, four was agree, and five was strongly agree. When asked to rate their confidence level of

accurately completing a home medication reconciliation, the twenty-two ICU RNs answered as follows: two scored their self as a one, five self-scored as a two, eleven as a three, three as a four, and one RN scored their self at a five. When answering the question regarding the adequacy of education provided by the facility on medication reconciliations, following the same Likert score as described above the same twenty-two ICU RNs answered as follows: ten scored a one, seven scored a two, three scored a three, and two scored a four. No one scored a five with this statement (Table IV).

Table IV

Confidence and Training of the Nurses



Summary

Despite educating and re-education the ICU nurses at this Midwestern hospital, the rate for medication reconciliation completion decreased in the second three month

period. During this quality improvement project, there were also tasks added to the admission standard of care set which the nurses complete. These were tasks to complete the medication reconciliation and to notify the admitting provider that the medication reconciliation was complete.

Chapter V

Discussion

Relationship of Outcomes to Research

Research previously discussed (Hias, Van der Linden, Spriet et al, 2017) indicates that accurate home medication reconciliations increase patient outcomes and decrease hospitalized days. Several of the researched literature for this project also facilities found during the research appoint the task of completing medication reconciliations to pharmacy technicians or RNs (Aag, Garcia, & Viktil, 2014). These two professions have the most direct patient care in order to complete this task.

The outcome of this research simply indicates how efficient, or lack thereof, the RNs in this Midwestern hospital's ICU are at completing home medication reconciliations at admission. It also demonstrated some barriers which were similarly discussed from articles presented in the literature review of this project. The research indicated barriers such as lack of training, lack of staff, lack of patients' maintaining an accurate medication list, and more. These same problems were discovered and presented in several of the literature review articles such as the review done by the Institute for Healthcare Improvement (2019) and Liu, Avant, Aunguroch, Zhang, & Jiang (2014).

Observations

During this research project, observations were made related to barriers of completing admission medication reconciliations and if additional education and a reminder task on admission would help improve the rate at which the medication reconciliations were complete. It was noted by the surveys and by the individual completing this research the nurses in the ICU of this Midwestern hospital who had less than one year experience either as a nurse or as a nurse in the ICU of this facility were less comfortable with completion of the medication reconciliation. These particular individuals felt they lacked training and time management skills in order to complete the medication reconciliation upon admission. The more experienced nurses in the ICU were the participants who put on their survey that they felt the lack of completion and barriers to medication reconciliation were due to the fact that there was not one individual person, such as a pharmacy technician, available 24 hours a day, seven days a week to complete the task.

When educating and discussing the medication reconciliation process with the staff of the ICU, there were a lot of negative feelings towards the process. The nurses in the ICU often stated, while this is not on the survey, that the patients are often admitted to the ICU in a critical health state, so the home medication reconciliation task does not fall high on the priority list when caring for an unstable patient. There were also individual nurses who vocalized concern about providers not thoroughly looking through the medication reconciliation and just ordering them randomly without awaiting an accurate medication reconciliation. This led to the nurses feeling that completing the medication reconciliation upon admission was not important.

Evaluation of Theoretical Framework

The theoretical framework considered for this project was Callista Roy's Adaptation Model of Nursing. This theoretical framework, as discussed in Chapter I, that adaptation happens constantly related to a situation and environment and as it changes it can help change behaviors innately or by learning new habits to improve outcomes. Medication reconciliation do affect patients' health and outcomes, and nurses can help by adapting and changing the accurateness and timeliness of home medication reconciliations being completed.

Following Roy's framework, the nurses involved in this research project and quality improvement project were asked to make adaptations to allow for positive changes to occur within the work environment and within the patient's hospital stay. Although the staff is not fond of completing medication reconciliation, when the barriers are faced and at least potentially partially illuminated, staff can take responsibility of the medication reconciliation and can improve the outcome of their patients and the care that they deliver.

This quality improvement project based off of admission medication reconciliation can change the way in which the task is done by educating the nurses further than what they currently are in by the developed reminder task at admission. Roy's Adaptation Model of Nursing allows the nurses to adapt to the constant change that happens in an environment such as the ICU and the change in which the patient delivers when arriving for admission. If the medication reconciliation process is complete and accurate in a timely manner, the patient can go on to further Roy's Adaptation Model but

utilizing self-care concepts and help decrease their hospital stay by improving their outcome.

Evaluation of Logic Model

When examining the Logic Model which was discussed in Chapter I, the majority of the short-term and medium-term goals have been met with this project. The logic model was designed with longer-term goals in mind than time allowed for this project. A new process was not developed to complete the medication reconciliation process. However, education was provided for all the nurses in the ICU to help educate them on the completion process. Also, a task was added to the admission standard of care set which is serving as a reminder for the ICU nurses to complete the medication reconciliation when admission arrives to the ICU.

The goals listed in the Logic Model as long-term still have the potential of being met after the study is completed. If the education and added admission task continues to prove to be helpful and successful, then this project can be adapted to other departments and other facilities owned by the same corporation.

Limitations

The biggest limitation of this project was related to the SARS-CoV-2 pandemic which started after the inception of this project and was continuing at the close of this project. The ICU in this Midwestern hospital began to have high numbers of patients diagnosed with COVID during September 2020. The percent of patients who were critically ill and intubated increased dramatically for this ICU during that time frame and continued through February 2021. The patient load increased for this ICU, but the

number of staff members did not increase. The need for close monitoring and acuity was much higher than other typical time periods.

Due to the nature of this project, it was very difficult to obtain medication reconciliation for several reasons. Patients were not allowed to have visitors which decreased the ability to obtain medication list from caregivers and other household members. Also, pharmacies and providers offices were working with limited hours. The nurses caring for patients spent their time in isolation rooms throughout the entire shift and obtaining a medication reconciliation was not a high priority task during the pandemic.

This Midwestern hospital, due to the ongoing pandemic, decreased the requirements of charting for the RNs. This did interrupt the ability to continuously assess and educate the nurses regarding the importance of completing home medication reconciliations. It is a belief of this author, that if the pandemic was not ongoing this project would have had better outcomes.

Implications for Future Projects/Research

This quality improvement project does allow room for future projects that are similarly based. Due to the known facts and literature review that discusses the importance of home medication reconciliations being performed on admission, combined with the survey performed with this project, it would be safe to push forward a project similar to this with other departments in the same facility in other facilities within the same corporation.

Home medications are such a vital part of the continuation of care that occurs within a hospital stay, that improving the ratio in which they are performed and done so in accurate and timely manner, will improve patient outcomes which is the goal for all those who care for patients. It would be beneficial to prolong any additional education for other departments until after the surge of pandemic patients to allow for proper focus on such a project. The biggest implication from this project to continue some form of improvement on the current model is the facts given in the surveys by the RNs in the ICU. The data that shows the confidence level of the RNs leaves room for improvement.

Implications for Practice/Health Policy/Education

Similar to the implications for continuation of the project, implications for policy and education related to the medication reconciliation process at this Midwestern Hospital are shown by the expression from the RNs that they do not feel as if they were properly educated by the facility on completion of home medication reconciliation prior to this quality improvement project. It would be beneficial and appear to be diligent if the facility at this Midwestern hospital decided to examine their education process for nurses on the completion of medication reconciliation and do a hospital wide reeducation process. Also, considering adding the task on admission under the standard of care order set to help remind the nurses to ensure that the medication reconciliation is completed, and the provider is notified would be beneficial.

Conclusion

Medication reconciliations are a vital part of a patient's admission process to any healthcare facility. During an admission to the ICU, the patient can be critically ill, and

the nurse can be overwhelmed with the patient's condition and the task at hand. However, the importance of medication reconciliation cannot be overlooked.

In order to ensure that medication reconciliation's are completed an accurate admission, a quality improvement project is required to improve the process that was already in place. This project had a lot of valuable core ideas behind it, but it was hampered by the current pandemic. The results that were produced by this project demonstrate that it is beneficial to have a process such as this in place.

Continuing education and repeating educational material in healthcare facilities is a task that occurs. Completing medication reconciliations is vital to a patient's outcome and should be added to the list of topics discussed at annual educational events. Repetition helps cement tasks in place and completing medication reconciliations is a task that should not be overlooked.

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APPENDIX

APPENDIX A**Pre Quality Improvement Project Medication Reconciliation Questionnaire**

Thank you for participating in this project to improve the quality of care provided in ICU at Via Christi Hospital. I am asking for your responses to a few questions. Your responses will help us understand the challenges faced in completing medication reconciliation and to create useful solutions for the issue. Please note – all answers are anonymous.

1. How long have you been a nurse?

- | | | |
|--------------|---------------|---------------|
| a. < 1 year | d. 3-4 years | g. 11-15yrs |
| b. 1-2 years | e. 4-5 years | h. 16-20 yrs |
| c. 2-3 years | f. 6-10 years | i. > 20 years |

2. How long have you worked in ICU at this hospital?

- | | | |
|-------------|-------------|-------------|
| a. 0-6 mo | e. 25-30 mo | i. 49-54 mo |
| b. 7- 12 mo | f. 31-36 mo | j. 55-60 mo |
| c. 12-18 mo | g. 37-42 mo | k. >60 mo |
| d. 19-24 mo | h. 43-48 mo | |

3. Which shift do you work?

- | | |
|--------------|----------------|
| a. Day Shift | b. Night Shift |
|--------------|----------------|

4. What is your role on the unit?

- | | |
|----------|------------------|
| a. Nurse | b. Pharmacy Tech |
|----------|------------------|

5. What is your position status?

- a. Full time
- b. Part time
- c. PRN

Please rate your agreement with the following items based on this scale:

1 – Strongly disagree 2 – Disagree 3 – Neutral 4 – Agree 5 – Strongly Agree

Item	1	2	3	4	5
I am confident in my ability to complete a medication reconciliation upon patient admission.	1	2	3	4	5
I was adequately educated by this hospital on how to complete medication reconciliations.	1	2	3	4	5

1. What barriers do you experience that prevent medication reconciliations being completed upon patient admissions?

2. What do you feel would help you complete medication reconciliations consistently with every admission?

3. Do you have any other thoughts or feelings pertinent to medication reconciliations being completed on admission to the ICU?

APPENDIX B**Pre Quality Improvement Project Medication Reconciliation Questionnaire****Pharmacy Survey**

Thank you for participating in this project to improve the quality of care provided in ICU at Via Christi Hospital. I am asking for your responses to a few questions. Your responses will help us understand the challenges faced in completing medication reconciliation and to create useful solutions for the issue. Please note – all answers are anonymous.

1. What barriers have you identified that prevent medication reconciliations being completed upon patient admissions to the ICU?
2. What do you feel would help staff complete medication reconciliations consistently with every admission?
3. Do you have any other thoughts or feelings pertinent to medication reconciliations being completed on admission to the ICU?