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Patient Safety: Improving Medication Reconciliation Accuracy for Long-Term Care Residents

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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,
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Walden University
2016

Abstract

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MSN, Southern University, 2008

BSN, Our Lady of the Lake College, 2005

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Abstract

During transition of care, inaccurate medication reconciliation is associated with increased risk of adverse events for patients. Older adults are the population most often affected by medication errors, and long-term care facilities struggle to accurately document medication reconciliation. Errors are more common at hospital discharge, but the critical moment for detecting and resolving them is during hospital or long-term care admission. Guided by Rosswurm and Larrabee's model for change, Rogers' diffusion of innovation, and the Multi-Center Medication Reconciliation Quality Improvement toolkit, a 6-member interdisciplinary team composed of nurses, pharmacists, and institutional stakeholders was mobilized to develop policy and practice guidelines as well as secondary documentation necessary to implement and evaluate a quality improvement initiative to address medication reconciliation. Current evidence was explored and used to develop policy and practice guidelines for medication reconciliation, then submitted to 4 scholars, including 2 practice experts, a nurse administrator, and a specialist in pharmacy, to validate content. Scholarly validation supported the premise that the developed products would be beneficial in the accurate documentation of medication reconciliation. Scholarly feedback was evaluated by comparing to current best practices for medication reconciliation. Implementation, education, and evaluation plans were developed to guide operationalization of policy and practice guidelines. This project may positively affect social change by fostering a new practice policy, practice guidelines, and supporting documents to manage medication reconciliation of long-term care residents transitioning to acute care settings, thereby improving medication safety at transitions of care for vulnerable populations.

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Dedication

This doctoral project is dedicated to the rising older population. May this project's initiative aid in the improvement of quality care delivered to this population.

Acknowledgments

First I would like to thank God; through him all things are possible. To my husband, children, immediate family, and Dr. Sandra Brown: Thank you for your encouraging words and patience as I completed this project. To Dr. Wanda Hughes, my preceptor: Thank you for lending your knowledge and expertise. To the faculty and staff of Walden University: Your relentless support and positive feedback have made the dream of obtaining a doctoral degree a reality.

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Introduction

Medication reconciliation is a process to reduce errors and harm associated with loss of medication information as the patient enters and moves through the health care system (The Joint Commission [TJC], 2015). Medication reconciliation was initially named as 2005 National Patient Safety Goal 8 by TJC (TJC, 2006). TJC's announcement called on organizations to "accurately and completely reconcile medications across the continuum of care" (TJC, 2006, p. 2). As of July 2011, medication reconciliation has been incorporated into National Patient Safety Goal 3, "Improving the Safety of Using Medications" (TJC, 2015). This National Patient Safety Goal requires that organizations "maintain and communicate accurate medication information" and "compare the medication information the patient brought to the hospital with the medications ordered for the patient by the hospital in order to identify and resolve discrepancies" (TJC, 2015, p. 5). Many long-term care facilities struggle with accurately documenting medication reconciliations (Institute for Safe Medication Practices [ISMP], 2013). Long-term care nurses are faced with the difficult task of reconciling potential conflicting medication information after residents are admitted or discharged from acute care hospitals (ISMP, 2013). According to ISMP "studies have demonstrated that information on discharge summaries and transfer referral forms do not match for more than 50% of long-term care admissions, with at least one medication discrepancy in 70% of all admissions" (2013, p. 1). It is imperative that long-term care facilities establish safe practices for improving the accurate communication of medication reconciliations.

Background

How often are patients unintentionally harmed secondary to inaccurate medication reconciliation? According to Maanen et al. (2011), the most severe consequences of medication omission or inaccuracy have led to elevated blood pressures, chest pain, and reoccurrence of psychiatric symptoms. It is estimated that on average, at least one medication error occurs per hospital patient per day, with at least 1.5 million preventable errors committed annually (National Academy of Sciences, 2006).

Medication clarifications are often required when residents return from acute care hospitalizations. Medication dosages are incorrect or previous medications are missing from the discharge reconciliation form. Routine medications are not reconciled, and the rationale is not provided if they were discontinued. Long-term care providers may not have access to acute hospitalization records and must rely on the accuracy of the medication reconciliation to resume resident care. Inaccurate medication reconciliations at transitions of care can lead to the continuation or discontinuation of medications, possibly causing resident harm. Health care facilities must establish structured documents to assist in communicating accurate medication reconciliations (ISMP, 2013).

Problem Statement

The problem addressed in this quality improvement project was the inaccuracy of medication reconciliation across transitions of care for long-term care residents. Transitions in care create an atmosphere for inaccurate reconciliation of medications, leading to medication errors. As long-term care patients move throughout the health care system, the responsibility of their care changes many hands; these changes in care management can often lead to uncertainty regarding medication regimens (Emergency

Care Research Institute [ECRI], 2007). Unclear medication regimens may lead to medication errors. According to ECRI (2007) "a medication error is a result of medication being prescribed, monitored, dispensed, or administered incorrectly (wrong patient, wrong dose, wrong time, wrong route, wrong medication, or for which information has been gathered incorrectly) that may or may not result in patient harm" (p. 6). Many long-term care facilities struggle with compiling accurate medication reconciliations (ISMP, 2013). ISMP noted studies that have proven that more than half of the information on discharge summaries and transfer forms do not match long-term care documents; they report at least one medication error in 70% of all admissions.

Sentinel event databases monitored by TJC includes more than 300 medication errors resulting in patients suffering major injuries or death. Of those more than 300 medication error cases, 63% where noted to be secondary to breakdowns in communication (ECRI, 2007). More than half of sentinel events secondary to unclear medication regimes could be avoided if effective medication reconciliation practices at transitions of care are established (ECRI, 2007).

Long-term care facilities must establish evidence-based safe practices to improve the communication of resident medications (ISMP, 2013). The medication reconciliation process aims to reduce medication errors and consists of four steps. The first step is verification: The list of medications currently used is assembled. The second step is clarification and evaluation: Each medication including formulation and dosage is checked for appropriateness. The third step is reconciliation: comparison of newly prescribed medications to the old ones and the documentation of the changes. The final

step is transmission, in which the updated list is communicated to the next care provider (Maanen et al., 2011).

Purpose Statement

The purpose of this project was to develop a policy, practice guideline, and supporting documents to manage medication reconciliation procedures as long-term care residents' transition to acute care settings. Care transitions from admission to discharge, including in between patient care units, are associated with an increased risk of adverse events (medication errors, medical errors, and even death) for patients (Kirwin et al., 2012). National Priorities Partnership (2010) estimated that nearly 3 million patient encounters incur serious medication errors each year. The Institute of Medicine reported that approximately 7,000 deaths occur each year due to medication errors (National Priorities Partnership, 2010).

Health care professionals play an important role in ensuring that medication errors and adverse events are minimized during these transitions, largely through the reconciliation of medications and assurance of continuity of care (Kirwin et al., 2012). According to Daley (2010), continual identification of systems and communication gaps post discharge helps to improve the continuum of care. As patients transition through patient care settings the medication reconciliation process has proved to be an important element in improving medication safety (Steeb & Webster, 2012). Wortman (2008) noted that the implementation of multidisciplinary medication reconciliation programs (programs that include physicians, nurses, and pharmacists to improve the documenting and transfer of patients active medications) decreases medication errors and improves patient care.

Goals and Outcomes

The goal of this quality improvement project was to create an awareness of the importance of accurate medication reconciliation, while developing policy and practice guidelines to improve accuracy of the medication reconciliation process. The new practice policy introduces supporting documents to capture an accurate active medication list when residents are transferred to an acute care facility. The accuracy of the medication reconciliation process will be measured by comparing current pharmacy statements with those medications listed on the supporting documents. The outcome anticipated after implementation of the developed primary and secondary products is the improvement of accuracy of the medication reconciliation process at transitions of care. This improvement in medication accuracy at time of transfer to an acute care setting will stimulate a decrease in the occurrence of medication errors upon resident readmission to the long-term care setting.

Conceptual Models and Theoretical Frameworks

This quality initiative project was guided by Rosswurm and Larrabee's (1999) Model for Change, Rogers Diffusion of Innovation Theory (1995), and the Multi-center Medication Reconciliation Quality Improvement (MARQUIS) toolkit. Application of all three theories provided a rich contextual foundation to support the need for policy and practice guidelines that focus on the improvement in accuracy of the medication reconciliation process. A more detailed explanation of each theory used will be provided in Section 2.

Significance of the Project

Medication reconciliation errors occur across transitions in patient care (Durán-García, Fernandez-Llamazares, & Calleja-Hernández, 2012). According to Santell (2006), "twenty-two percent of preventable medication reconciliation errors occur during admissions, 66 percent during transitions in care, and 12 percent during discharge" (p. 225). National Priorities Partnership (2010) estimated that medication errors total nearly $16 billion each year in the United States. As of January 1, 2006, TJC required all hospitals to have a procedure in place for reconciling patient medications across the continuum of care (Wortman, 2008). Of all medication errors in a hospital, 25% in hospitalized patients are caused by a failure to reconcile new prescriptions with ongoing home treatments (Durán-García et al., 2012). These errors are more common at discharge, but the critical moment for detecting and resolving them is at the time of admission (Durán-García et al., 2012). Steeb and Webster (2012) noted that medication reconciliation research has been increasing, but more studies are needed on the implementation and adoption of effective medication reconciliation processes, with emphasis on the identification of current best practices for medication reconciliation.

Implications for Social Change in Practice

The implications for positive social change from this quality improvement project include fostering a new policy and procedure guideline for addressing the issue of inaccurate medication reconciliation at the time of discharge from an acute care hospital to a long-term care setting. The undertaking of this project promoted a positive change in practice for health care providers by addressing methods to improve the medication reconciliation process. Implementing policies to assist in improving the accuracy of the

medication reconciliation process will positively affect health care by improving patient safety and quality of care across transitions of care. The findings of this quality improvement project may be implemented in other long-term care facilities that transition resident care to acute care hospitals, leading to new best practices for improving medication safety among long-term care residents. The project findings can also support the need for a mandate to instill evidence-based medication reconciliation practices within long-term care facilities.

Definitions of Terms

Acute care hospital admission: Any transfer to a hospital for acute care services including the emergency room (Bulletin of the World Health Organization, 2013).

Care transitions: For the purpose of the project, *care transitions* included transfers from a long-term care facility with admission to an inpatient acute care setting or emergency room. Transfer of patient care between different levels of care within the acute care setting and discharge (Health Affairs, 2012).

Medication list accuracy: For the purpose of the project, *medication list accuracy* was defined as correct medication name, strength, route, frequency and last time of administration. Operational definition for the purpose of the project, *improvement in the accuracy of medication reconciliation* was defined by 100% accurate documentation of medications being reconciled upon readmission from an acute care hospital stay to the long-term acute care setting (Institute for Healthcare Improvement, 2016).

Medication reconciliation: A formal process for creating the most complete and accurate list possible of a patient's current medications and comparing the list to those in the patient record or medication orders (The Joint Commission, 2006).

Nursing home/long-term care facility: Facility for care (usually long-term) of patients who are not sick enough to need hospital care but are not able to remain at home (Merriam-Webster, 2013).

Supporting documentation: A researcher-designed single-page form to document current medications with accompanying diagnosis of long-term care residents prior to hospitalization (Business Dictionary, 2016).

Assumptions

1. Requiring the use of the supporting documents would be perceived by nursing staff as an important medication safety practice.

2. Clinical staff members would advocate the use of this supporting document as promoting a positive change in practice.

3. The nursing home nurse would accurately complete the supporting documentation prior to resident transfer to an acute care setting.

4. The supporting documentation would follow the resident from the nursing home to an acute care facility upon transfer.

5. The supporting documentation would be a reference for accurately identifying and documenting the resident's current medications.

6. The hospital discharging provider would update and complete the supporting documentation to accompany the resident back to the long-term care setting.

Scope and Delimitations

This projects focus was developed after countless inaccurate medication reconciliation forms accompanying long-term care residents after an acute hospitalization were recognized. The quality improvement project's developed policy, practice

guidelines, supporting documents, implementation, and evaluation plans are a direct reflection of the patients, staff, and health care providers of a local long-term care facility. The transferability of this quality project can extend to various health care settings; seeking to improve the accuracy of the medication reconciliation process and the promotion of patient safety.

Limitations

1. The quality improvement project developed primary and secondary products based on interactions between two facilities: one local nursing home and one local hospital.

2. The time frame for the project occurred within two academic quarters.

3. Evaluation of the project's end products will yield a small sample size, as this project will be based solely on those residents who are transferred to an acute care hospital.

4. The researcher was employed at both facilities where the project was conducted, which may have created bias in the project's final product development.

5. The project met some resistance with the development of paper documents as medical facilities strive to implement computer-based systems.

6. The project added another form of written documentation to the daily task list of nursing staff.

7. The project introduced paper documents that may be misplaced or lost during resident transfer.

Summary

This chapter presented a brief overview of the problem of inaccurate medication reconciliation and its role in medication errors. Care transitions from admission to discharge, including in between patient care units, are associated with an increased risk of adverse events (medication errors, medical errors, and even death) for patients (Kirwin et al., 2012). Medication reconciliation errors occur across transitions in patient care (Durán-García et al., 2012). More than 20% of medication reconciliation errors occur while patients are still in the admissions process (Santell, 2006); the remainder of medication reconciliation errors occur during transitions of care and at discharge (Santell, 2006). The goal of this project was to develop a policy, practice guidelines, and supporting documents to assist in the improvement of accuracy during the medication reconciliation process as nursing home residents' transition to acute care settings. It is hypothesized that after the implementation of the developed policy and supporting documents to assist in accurate documentation of medications for nursing home residents prior to transfer to an acute care hospital, a decrease in the occurrence of medication errors upon readmission to the long-term care setting will occur. For this purpose, a full review of evidence-based literature was conducted.

Section 2: Background, Context, and Literature

Introduction

This quality improvement project addressed the problem of inaccurate medication reconciliation during transitions of care. The purpose of the project was to develop a policy, along with practice guidelines, including supporting documents to manage medication reconciliation procedures. This section will present current literature detailing the practice problem of inaccurate medication reconciliation at transitions of care, and the need for further development of policy and procedures to address this issue.

Literature Search Strategy

Review of the literature was conducted using several nursing internet databases. Databases searched consisted of EBSCO, CINHAL, and PubMed. Review of the literature was focused on years 2009–2014. Key search terms included *medication reconciliation*, *improving medication reconciliation accuracy*, *long term care residents and medication reconciliation accuracy*, and *safety in medication reconciliation*. Search of the literature revealed limited data and published peer-related articles pertaining to medication accuracy or improving the medication reconciliation process in long-term care settings. The doctor of nursing practice (DNP) project was based solely on the available internet literature within described nursing databases. This limitation warrants further research in the area of medication reconciliation accuracy and interventions to facilitate improvement in long-term settings.

Concepts, Models, and Theories

This project was guided by the 1999 Model for Change developed by Rosswurm and Larrabee and Rogers Diffusion of Innovation Theory (1995). Rosswurm and

Larrabee's (1999) model uses a theoretical and research literature related to evidence-based practice approach. Model components also include change theory, research utilization, and standardized language. The model consists of six steps: "(a) Assess—the need for change in practice; (b) Ask—an answerable research question; (c) Synthesize—best evidence stimulating inquiry; (d) Design—change in practice; (e) Implement—practice change; and (f) Evaluate—practice" (Rosswurm & Larrabee, 1999, p. 318).

This model guides practitioners through the evidence-based practice change process step by step from development to integration (Rosswurm & Larrabee, 1999).The model serves as a basis for evidence based change projects stemming from qualitative and quantitative data incorporating contextual and clinical evidence and expertise (Rosswurm & Larrabee, 1999).

The Diffusion of Innovations Theory (Rogers 1995) suggests innovated progression or new ideas are successfully propelled forward when practice change is greater than processes currently in place (Gale & Schaffer, 2009). Innovators must also take into account end-user values and experiences before practice change can occur (Gale & Schaffer, 2009). Gale and Schaffer defined *diffusion* as "a social process that involves interpersonal communication and relationships" (p. 92). Diffusion can be viewed as an innovative decision process which includes five basic steps: knowledge, persuasion, decision, implementation, and confirmation (Gale & Schaffer, 2009). Use of the diffusion theory allows the facilitator to oversee communication flow of the proposed innovation to the end user, creating an atmosphere for developing trust worthy innovator to end user relationships (Gale & Schaffer, 2009).

Frameworks

Derived from a Brown and Lilford model that evaluated patient safety interventions, the MARQUIS conceptual framework mimics the Donabedian's "structure-process-outcome" model (Salanitro et al., 2013). Donabedian's model demonstrates differences between managerial processes that focus on provider training from clinical processes that focus on supporting documentation, such as medication lists that are compared across transitions of care. Goals of the multicenter medication reconciliation quality improvement study were to operationalize best practices for inpatient medication reconciliation, test their effect on potentially harmful unintentional medication discrepancies, and understand barriers and facilitators of successful implementation (Salanitro et al., 2013). The MARQUIS toolkit is designed to

> synthesize best practices in medication reconciliation and provide aids to facilitate their implementation. The toolkit components were informed by a systematic review of medication reconciliation interventions, the AHRQ-funded conference of stakeholders, and the work of the MARQUIS investigators and advisory board. Each toolkit component is framed as a standardized functional goal (e.g., "Improve access to pre-admission medication sources"). This approach is ideal for complex QI interventions, allowing sites too: (a) Integrate intervention components with their baseline medication reconciliation efforts, information system capabilities, and organizational structures; and
>
> (b) Add, customize, and iteratively refine the toolkit components and their implementation over time. This approach also improves generalizability, allowing

other organizations to apply the lessons learned regardless of their culture or unique circumstances. (Salanitro et al., 2013, p. 3)

See Figure 1.

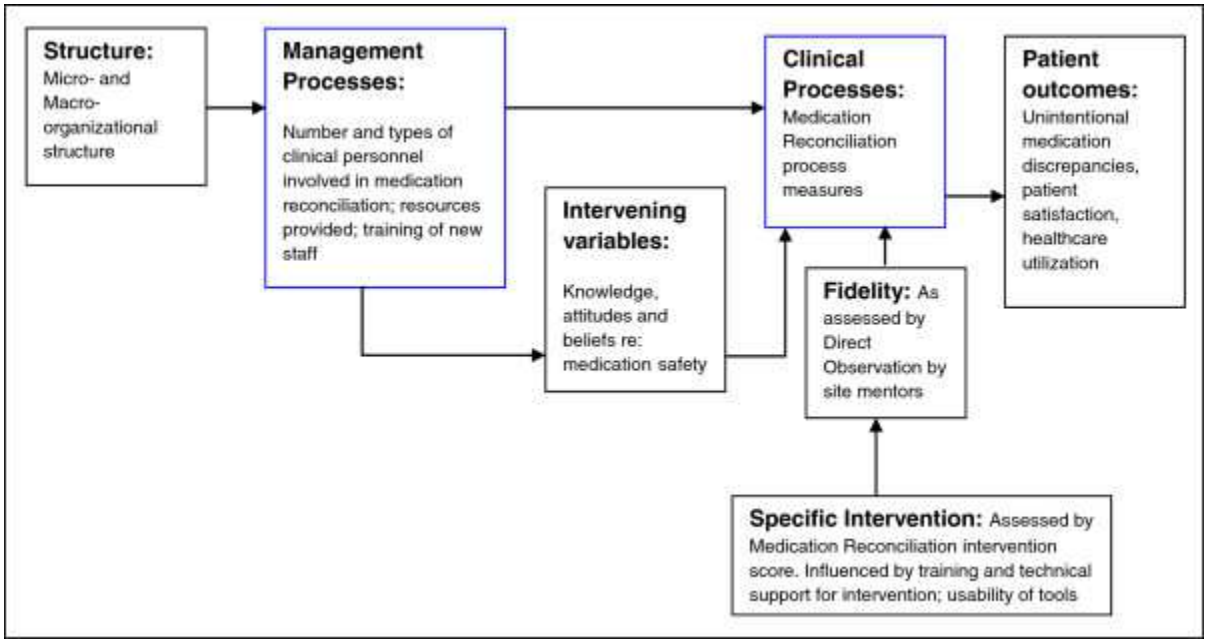

Figure 1. Conceptual framework for MARQUIS. Adapted from BMC Health Services Research (p. 3), by Salanitro et al. (2013). CC 2013 by BioMed Central Ltd.

Background and Context

The facilities chosen for this quality initiative project were located in an urban inner-city setting providing care to a diverse population. The hospital is a full-service community hospital with 590 licensed beds between two campuses. For this project, the midcity campus was used as it houses the skilled nursing and rehabilitation units most often used by long-term care residents. The midcity location also houses the only burn unit within a 100-mile radius and hyperbaric wound care services.

The long-term care facility is a 184-licensed-bed facility. Patient demographics were diverse with regard to race, age, and gender. Patient diagnoses and comorbidities were most often multiple and complexed. The facility was staffed with nurses and other ancillary health care workers 24 hours per day. The facility also offered skilled and rehabilitative services for those residents who require a shorter length of stay prior to returning to their home setting.

The quality initiative project's interdisciplinary team was assembled within the long-term care facility. I previously served as the primary care provider for the long-term care facility and on many occasions noted inaccurate medication reconciliations. The long-term care facility had no policy in place to assist with accurate documentation of medication reconciliation. Common errors found on reconciliation forms of residents returning from acute care hospitals included listing of medications that had been previously discontinued, wrong medication dosages, administration times, routes, and addition of medications for which the resident had a stated allergy. Transfer medication reconciliation documents also included new medications without a documented corresponding diagnosis. The long-term care facility's current practice for acute care transfers is to send a copy of the nurse's monthly medication administration record with residents who were being transferred to acute and other health facilities. These medication administration records served as documentation of medication given to patients throughout the day for a 30-day period and often could become messy and illegible. The review of relevant literature section details TJC's requirements for this important national safety goal.

Review of Relevant Literature

As health care providers, we are responsible for delivering quality patient care; improving the medication reconciliation process for long-term care residents is only one small step in the process. Documenting accurate up-to-date medication reconciliations at transitions of care for long-term care residents is important for resident safety. Accurate reconciliation also provides the next provider with the necessary information to adequately care for the resident and continue the process of accurately reconciling the resident's medications (ISMP, 2012).

Evidence exists that medication discrepancies can negatively affect patient outcomes (TJC, 2012). This evidence has drawn national attention to improving the medication reconciliation process. Effective January 1, 2013, TJC has implemented updated National Patient Safety Goals, Goal 03.06.01, to address accurate patient medication information.

> This National Patient Safety Goal (NPSG) focuses on the risk points of medication reconciliation. The elements of performance in this NPSG are designed to help organizations reduce negative patient outcomes associated with medication discrepancies. Some aspects of the care process that involve the management of medications are addressed in the standards rather than in this goal. These include coordinating information during transitions in care both within and outside of the organization. (TJC, 2012, p. 5)

Review of the literature revealed several studies that support the importance of accurate medication reconciliation and their effectiveness at improving patient safety. Salanitro et al. (2012) noted that having a paper or electronic list provides evidence of

prior medication management by the health care provider. Having a previously assembled medication list provides a starting place to perform medication reconciliation on admission. The Salanitro et al. (2012) study underscores the importance of taking an accurate medication history on admission, because most medication errors originate from this step and can be perpetuated.

Dalton et al. (2010) conducted a study at OSF St. Joseph Medical Center after implementing an improved medication reconciliation document a reduction in discharge medication reconciliation errors was noted from 5% to less than 1% using a Six Sigma methodology for process improvement. A total of 377 patients were enrolled in a study conducted by Ziaeian, Araujo, Van Ness, and Horwitz (2012); findings noted that of a total of 22.3% of admission medications were redosed or stopped at discharge. Of these, 24.2% were classified as suspected provider errors. Excluding suspected errors, patients had no understanding of 69.3% of redosed medications, 81.6% of stopped medications, and 62.0% of new medications. Altogether, 307 patients 81.4% either experienced a provider error or had no understanding of at least one intended medication change. Providers were significantly more likely to make an error on a medication unrelated to the primary diagnosis than on medication related to the primary diagnosis odds ratio, with a 95% confidence interval of 2.65.

Sullivan et al. (2005) created and implemented a process of reconciliation that compared documented medications in several pertinent sections of patient's medical records: physician's history and physical, nursing admission profile, medication orders, and pharmacist interview. The study revealed discrepancies between medication histories and documented orders on more than half of the patients. Medications omitted by the

prescriber accounted for more than 40% of the discrepancies requiring intervention. Frequency, dosing, and route of medications accounted for more than 30% of discrepancies (Sullivan et al., 2005). Sullivan et al. noted when medication discrepancies were found, health care providers stepped in to fix the error. Sullivan et al.'s study used the National Coordinating Council for Medication Error Reporting and Prevention Index to measure the level of proposed harm that could have taken place without this type of intervention. The researchers noted that patient harm during hospitalization could have occurred in more than 20% of discrepancy cases. These unresolved discrepancies could have also accounted for more than 50% of patient harm if they had been continued after hospital discharge (Sullivan et al., 2005).

In health care there is the potential for many safety errors but medication errors remain the most common. Almost half of medication errors are a result of inadequate medication reconciliation practices (Barnsteiner, 2008). Barnsteiner further reveals studies that denote transitions of care as the major setting for inadequate reconciliation of patient medications for long-term care residents. One study of medication changes conducted during transfer from a long-term care facility to an acute care facility found inaccurate and incomplete reconciliation of medication regimens

> The mean number of medication orders altered per patient on admission to the hospital from a nursing home was 3.1, and from the hospital to the nursing home was 1.4. Sixty-five percent of the medication changes were discontinuations, 19 percent were dose changes, and 10 percent were substitutions for medications with the same indications. The investigators estimated that 20 percent of the medication changes led to an adverse drug event. (Barnsteiner, 2008, p. 463)

In a pharmacy led study evaluating discrepancies and the types of medications involved for patients transitioning from the hospital to the long-term care setting, researchers found that almost 75% of admissions and 21% of medications had medication discrepancies (Martin, 2012). In this study, pharmacists compared medication list generated from primary care providers, hospitals, and long-term care facilities during transitions of care (Martin, 2012). During the piloted project 1,107 medication reconciliations were performed on admissions to five different nursing facilities. The researchers identified 1,009 discrepancies in 409 charts. Of those discrepancies, an average of 12.64% was considered to be high risk discrepancies with the potential to cause patient harm or significant discomfort (Martin, 2012).

Residents taking multiple medications and the complexity of managing those medications make medication reconciliation an important safety issue (TJC, 2012). Medication reconciliation is intended to identify and resolve discrepancies, but how are medication reconciliations effective if they are not accurate? Steeb and Webster (2012) noted that medication reconciliation research has been increasing, but more studies are needed on the implementation and adoption of effective medication reconciliation processes, with emphasis on identification of current best practices for medication reconciliation.

Summary

Medication errors continue to exist across all transitions of patient care (Durán-García et al., 2012). It was made apparent to me how prevalent medication errors are occurring in one of health care's most fragile populations: long-term care settings. Improving patient safety through medication reconciliation is only a small component of

endeavors needed to improve the quality of care in this population. The precise prehospitalization documentation of current medication regimes will not only assist acute care providers during the residents care but provide a framework for accurate documentation of medications upon return to the long-term care setting. The development and future implementation of this project's final products will help to improve the accuracy of medication reconciliation process, improving patient medication safety. Section 3 details the development and approach taken to conduct this quality initiative project.

Section 3: Approach

Introduction

The purpose of this quality initiative project was to develop a policy, along with practice guidelines, including supporting documentation to manage medication reconciliation procedures. This section outlines the developmental stages of the practice policy and supporting documentation to manage medication reconciliation processes. This section also includes the process necessary to implement and evaluate the developed practice policy and supporting documentation. Steps that were taken to develop this quality initiative project include:

1. Obtaining approval to conduct the project from the Walden IRB.
2. Assembling of the interdisciplinary team.
3. Conducted and disseminated a review of relevant evidence with interdisciplinary team members.
4. Developed primary products:
    a. Policy for medication reconciliation process.
    b. Supporting documents for medication reconciliation.
    c. Practice guideline for medication reconciliation process.
5. Validated and revised primary products using feedback from external scholars.
6. Developed secondary products:
    a. Implementation plan.
    b. Evaluation plan.
    c. Evaluation document.

d. Education plan.

Overall Approach/Rationale

I the DNP student served as the projects nurse scholar consultant and facilitator. I led an interdisciplinary team within the host long-term care facility, to develop, and promote the new practice policy, procedure guidelines, and supporting documents. This quality improvement project did not require data collection or analysis. The project's team members of the host facility were responsible for assisting in the development and promotion of the new practice policy. The project team will lead the facility in implementation, data collection, analysis, and evaluation of the quality improvement initiative.

The process of reconciling medications is an important part of patient care during transitions of care. Collaborative efforts among health care professionals should seek to improve medication safety throughout the reconciliation process (Steeb & Webster, 2012). Wortman (2008) noted that implementation of multidisciplinary medication reconciliation programs (programs that include physicians, nurses, and pharmacists to improve the documenting and transfer of patients active medications) decreases medication errors and improves patient care.

Project Team

The project team was assembled by the DNP student. Team members were selected based on their knowledge and interest in implementing the project within the host facility. Project and policy development occurred during a 5-week period. Interdisciplinary team members were given 1 week to review and provide feedback on the project's supporting evidence. The DNP student served in the role of nurse scholar

consultant and project facilitator. The DNP student presented the practice problem to the interdisciplinary project team, served as the primary investigator for establishing a current literature review and presented the project team with and overview of current practices and trends to improve the medication reconciliation process. The remainder of the project's team consisted of active employees of a local long-term care facility that included:

1. Nurse Practitioner of the host facility where project was conducted. Responsible for prescribing medications to residents and benefits from accurate medication reconciliation. Collaborated with other team members to promote and implement QI project.
2. Director of Nurses of the host facility. Responsibilities included promoting the QI project among nursing staff. Responsible for future project implementation to record data and evaluate the effectiveness of the developed products.
3. LPN (Dayshift): Responsibilities included constructive feedback pre, during and post project implementation.
4. LPN (Nightshift): Responsibilities included constructive feedback before, during, and after project implementation.
5. Administrator: Responsibilities included assisting the Director of Nurses in promoting the QI project and obtaining corporate level approval of project.
6. Pharmacist: Assigned to host facility. Responsibilities included constructive feedback before, during, and after project implementation. Pharmacist will supply current medication lists of patients and participate in the promotion of the QI project in collaboration with the nurse practitioner and director of nurses.

Products of the DNP Project

The purpose of the quality initiative project was to develop a policy, along with practice guidelines, including supporting documents to manage medication reconciliation procedures. The project's interdisciplinary team had some knowledge of the current medication reconciliation process and latest research and trends on improving medication reconciliation accuracy. The project's team members assembled at a local 180 bed long-term care facility in Baton Rouge, Louisiana. The local long term-care facility served as the setting for piloting the project.

The MARQUIS conceptual framework, a derivative of Brown and Lilford's model for the evaluation of patient safety interventions, adapted from Donabedian's "structure-process-outcome" model, served as the basis for the project (Salanitro et al., 2013). The MARQUIS toolkit synthesizes best practices in medication reconciliation and provides aids to facilitate their implementation. (See Figure 1.) Interdisciplinary team members reviewed existing medication reconciliation policies and standards. Project team members discussed and developed a new documentation tool, policy, and standards for implementation of the project. After implementation of the developed primary and secondary products the nurse practitioner, the director of nurses and pharmacist will evaluate the effectiveness of the project by comparing current pharmacy statements with those medications listed on the supporting documents.

Content Validation

Primary and secondary products developed during the undertaking of this quality initiative project were validated using external scholars with expertise in the content area. Four scholars, including two practice experts, a nurse administrator, and a specialist in

pharmacy, reviewed primary and secondary products. Feedback was used to revise the products. Final documents were judged to be of scholarly merit and to have significant potential to effectively address the practice problem.

Ethical Considerations

Prior to the undertaking of this quality initiative project a resident had their monthly medication administration report, which is a paper document, accompany them to all hospital transfers. This project developed primary and secondary products to assist in facilitating the capturing of accurate medication reconciliation. The developed products once fully implemented will use a similar paper document approach proposing no harm to human subjects. The implementing facility will use methods in accordance with the HIPAA Privacy Rules for deidentification and data management of resident documents. Documentation of participant's medication regime will be analyzed using the supporting document developed by the DNP student and interdisciplinary team members along with pharmacy records. Institutional review board (IRB) approval was obtained to ensure protection of human subjects. Walden IRB approval record number 09-16-15-0314358. The Walden University IRB committee was responsible for reviewing the study with regards to the ethical protection of human subjects. The DNP student submitted the necessary paperwork to obtain IRB approval from Walden University prior to project start. Permission to use any figures including but not limited to the MARQUIS framework were requested as necessary.

Development of Implementation Plan

Development of a plan to implement the project was undertaken by the nurse scholar-consultant in collaboration with the interdisciplinary project team. The project's

development timeframe occurred within a 5-week period. The projected cost to complete this project was $0.00 with a budget consisting of $0.00; however, the project's team member's salaries for six 2-hour sessions were taken into account. The facility incurred a cost of $2,040.00 in salary payment for time spent on the development of this project. The final products developed during the project will be implemented and evaluated by the institution in accordance with the plan at the institution's discretion.

Development of Evaluation Plan

An evaluation plan for this quality improvement project was established during the final stage of this DNP Project. A basic tentative plan for evaluation was presented to the interdisciplinary team for further discussion and development in accordance with institutional context and needs. Discussion and development of the evaluation plan began with the following suggestions:

Data consisting of completed medication reconciliations using the developed documentation tool may be compared to printed pharmacy statements. Accuracy of data input to the developed documentation tool will be measured using a four-item binary scale addressing 4 factors: (a) accuracy in documentation of all previously prescribed medications; (b) correct medication dosages; (c) correct medication routes; and (d) rationale for medication use. The scale has 2 points: (a) yes, present = 1; and (b) no, not present = 0. Long-term evaluation plans will be developed based on the facility's ability to implement and analyze results of the developed project products throughout the facility.

Summary

The increasing complexity of the delivery of health care has exacerbated the potential for medication errors (Sullivan et al., 2005). More than 55% of medication errors occur during transition of patients between different levels of care (Sullivan et al., 2005). Sullivan et al.'s study revealed nurses spend a large amount of their time attempting to reconcile patient medications at transitions of care. It is estimated that on average, there is at least one medication error per hospital patient per day, with at least 1.5 million preventable errors committed annually (National Academy of Sciences, 2006). The Joint Commission's sentinel event database

> includes more than 350 medication errors that resulted in death or major injury. Of those, 63% related, at least in part, to breakdowns in communication, and Joint Commission estimates approximately half of those would have been avoided through effective medication reconciliation, a multi-step process of clarifying medications at transition points. (ECRI Institute, 2007, p. 6)

This section addressed how the quality initiative primary and secondary products were developed, and will later be implemented and evaluated.

Section 4: Findings, Discussion, and Implications

This project addressed the problem of inaccurate medication reconciliation documentation when long-term care residents are transferred to acute care settings. Medication errors remain one of the most costly medical errors, often resulting in patient death (TJC, 2012). The purpose of the project was to develop a new policy, practice guidelines, and supporting documents to assist in the medication reconciliation process. The goal of this project was to improve the accuracy of medications reconciled prior to acute care transfers. Project outcomes were to facilitate patient medication safety by reducing medication errors. The project was carried out within a 5-week period with six total meetings of 2 hours each. The DNP student presented the practice problem to the interdisciplinary project team and served as the primary investigator for establishing a current literature review addressing the practice problem. The nurse scholar presented the project team with and overview of current practices and trends to improve the medication reconciliation process and collaborated with the project team to develop the new policy, practice guidelines, and supporting documents.

Section 4 further discusses the three developed primary products: the Resident Acute Care Transfer Medication Reconciliation Policy (see Appendix A), the Acute Care Medication Reconciliation Transfer documentation tool (see Appendix B), and the Acute Care Medication Reconciliation Practice Guidelines (see Appendix C). Also discussed are the four secondary products: the Resident Acute Care Transfer Medication Reconciliation Implementation Plan (see Appendix D), the Resident Acute Care Transfer Medication Reconciliation Evaluation Plan (see Appendix E), the Acute Transfer Medication Reconciliation Evaluation Tool (see Appendix F), and the Acute Transfer

Medication Reconciliation Education Plan (see Appendix G). All primary and secondary products were developed thorough a multidisciplinary collaborative effort during the undertaking of this quality improvement initiative.

Resident Acute Care Transfer Medication Reconciliation Policy

Primary Product 1 entailed the development of a new practice policy (see Appendix A) that will be used to guide medical staff in the execution of the acute care medication reconciliation transfer documentation tool (see Appendix B). This tool will accompany residents of long-term care facilities as they transfer to acute care settings. Policy development was guided by the MARQUIS conceptual framework. The development of Primary Product 1 the new practice policy consisted of a collaborative effort with full participation of all project team members. Important information to include in each section of the policy was discussed in detail among team members. Old facility policies as well as project team member experiences were used to assist in the development of the new policy. In instances when team members could not agree on whether to include information within the policy, I served as project lead and I made appropriate suggestions and finalized the decision based on supporting literature and current best practice guidelines.

The new practice policy document include the headings target audience, policy procedure, rationale, and policy goal. The practice policy's target audience was based on those staff members that are a necessary component during resident transfers from the facility to acute care settings.

Nursing and pharmacy staff must have full understanding of the policy and practice guidelines to effectively execute the new documentation tool. The most time consuming task of developing Primary Product 1, was the inclusion of the policy procedure section. The policy procedure section clearly lists each step necessary for staff members to complete the process of accurate documentation of residents' medication reconciliation prior to acute care transfers. Number of document copies and time frames for completion were solely the decision of facility project team staff members. Policy procedure time frames where based on current facility practices that have generated effective staff compliance. The policy's rational and goal statements were adopted from literature supporting the need to develop and implement policies and procedures to improve the medication reconciliation process; fostering medication safety.

Acute Care Medication Reconciliation Transfer Document

Primary Product 2 (see Appendix B) is the developed document that nursing staff will be required to complete prior to resident facility transfers. Pharmacy project team members played an important part in the development of the document. The goal during the development of this document was to keep it simple and clutter free. This concept was adapted in hopes of not producing a cumbersome, time-consuming document. TJC (2006) noted within their sentinel data base that most medication errors that stemmed from medication reconciliation were due to illegible forms that had medical staff guessing at the identity of the patient, medications, dosage, and route. These key factors were taken into consideration during the development of the document.

The document begins with a section that denotes key resident identifiers. It has five columns with clear headings of the necessary information to obtain for each

medication a resident is currently prescribed and/or taking. Rows are separated by lines to capture documentation of one medication per line. The document is to be duplicated if more rows are needed to complete a resident's medication profile.

Acute Care Medication Reconciliation Practice Guidelines

For Primary Product 3 (see Appendix C), the acute care medication reconciliation practice guidelines give a compact overview of the new medication reconciliation process with supporting literature evidence. The document is to be used in conjunction and to support the Resident Acute Care Transfer Medication Reconciliation Policy (see Appendix A).The document begins with identifying the target audience for the medication reconciliation practice policy. Initially identifying your target audience informs staff members of who is responsible for understanding the appropriate guidelines of a process (Lake, 2014). The document is comprised of five steps with those of most importance in bold print. Step 1 states the practice problem of inaccurate medication reconciliation at times of resident transfers. It gives the rationale for adopting the new practice policy. Step 2 gives the rationale for implementing a document to assist in accurately capturing medication to be reconciled. Step 2 includes supporting literature from The Joint Commission's published safety goals. Step 3 supported by Maanen et al. (2011) details the first and most important step in the process of obtaining an accurate medication reconciliation; review and documentation of the current medication list. Medications must be reviewed and initially documented accurately prior to transfers to acute care facilities. Step 4 overviews the rationale for duplicating the original documents. This step gives other team members the ability to further review and update the medication reconciliation prior to transfers. Step 5 concludes with supporting

literature from Maanen et al. that noted the need to compare new and old documented medication reconciliations upon residents return to their respective facilities.

Resident Acute Care Transfer Medication Reconciliation Implementation Plan

Phase 2 of the DNP quality initiative project focused on the development of secondary products to assist facilities in implementing and evaluating the effectiveness of the developed practice policy, guidelines and documentation tool. All secondary products will be initiated at a later date at the institutions discretion.

Secondary Product 1 the implementation plan (see Appendix D) was led by the DNP student/ nurse scholar with full participation of all project members. It was estimated that the total time needed to implement this practice policy change is 6 weeks. This estimate was determined by current practice trends and previous experiences of project team members. The implementation plan includes a non inclusive list of resources necessary to initiate the practice change project. The communication plan is an outline of how the projects objectives will be communicated to staff members. These lists will vary by each facilities size, structure and accessibility to resources. Each discipline represented within the project's team discussed the amount of time necessary to complete each assigned task within the communication plan and implementation steps (see Appendix D). The estimated number of hours per project team member was based on ideal timeframes for project participation taking into account other work responsibilities. Other facilities wishing to implement this quality initiative should take into account that team member hours will vary depending on the size of the institution, other work responsibilities and the number of project team members.

The implementation process was divided into eight processes and implemented during a 6-week period (see Appendix D). Each week multidisciplinary team members were assigned tasks to complete. The tasks included corporate or stakeholder approval, updating of current policy guidelines, staff orientation and training and updating of the institutions record keeping system. The tasks were designed as a step by step approach that once all tasks had been completed project implementation would occur.

Resident Acute Care Transfer Medication Reconciliation Evaluation Plan

The project's evaluation method uses an outcomes based approach. The final evaluation after implementation of the project should answer the question "Does the use of a dedicated documentation tool increase the percentage of accurate medication reconciliations"? Initial evaluation will include a comparison of historical medical records and pharmacy records for one quarter while the practice policy and guidelines are being implemented. Data collection will occur after project implementation spanning over a 4 month period, charting progress. Evaluation of the implemented policy and practice guideline will use data collected from the evaluation tool (see Appendix F). After careful consideration the project team adopted the Spearman's Rank Correlation as its method to compare statistical differences among the variables. The use of Spearman's Rank Correlation is further detailed in the evaluation plan (see Appendix E). Tools needed during the evaluation phase include: printed pharmacy statements, medication reconciliation documents, a completed evaluation tool (see Appendix F) and the Spearman Rank Correlation formula. To limit bias the evaluation process should be conducted quarterly by an external evaluator. If one is unavailable, department heads such as the Director of Nurses should complete the evaluation process. Final evaluation

should convey a successfully implemented project. Success of the project is denoted by a 10% increase in accurate medication reconciliation from the previous quarter.

Acute Transfer Medication Reconciliation Evaluation Document

The Acute Transfer Medication Reconciliation Evaluation Document (see Appendix F) initially proposed included a five item binary scale. After project team meetings and debate the tool was changed to a four item binary scale. These four items will be measured using a 2 point scale 1= yes/present or 0= no/not present; during the evaluation of completed medication reconciliation documents. The document designed to be user friendly requires only a check mark in the appropriate box. After the appropriate boxes are completed the evaluator will tally the final score. A total score of 4 equals accuracy and will be the basis for determining an accurate medication reconciliation document. The data collected from completed evaluation documents will be used in the Spearman's Rank Correlation formula noted in the evaluation plan (see Appendix E).

Acute Transfer Medication Reconciliation Education Plan

The project's education plan (see Appendix G) developed during the last week of the project outlines the orientation schedule for staff members by discipline. The plan also includes project content to be discussed. The use of PowerPoint and oral presentation will be the main mode of content transfer. Orientation sessions will be limited to approximately 1.5 hour sessions. Timeframe for orientation sessions was determined at the sole discretion of facility project team members. Project team members took into account each disciplines current work responsibilities and the ability to be relived from those duties to attend orientation sessions. Institutions implementing this or similar projects should base educational timeframes on their facilities ability to relive staff

members from normal duties to attend orientation sessions. Project team members felt it was imperative to also include a make up orientation session for those staff members who are unable to attend their regular scheduled time due to unforeseen circumstances. The education plan also outlines staff training sessions which will occur after orientation sessions are completed. These training sessions will be limited to 2 hours. The goal of the training session is to give a step by step overview for completion of the new documentation tool. The training sessions will also allow staff members the opportunity to work collaboratively to simulate use of the new practice policy and supporting documents.

Implications

Policy

This DNP capstone project developed a practice policy that addressed improving the medication reconciliation process for long-term care residents. According to (Maanen et al., (2011) practice policy development to improve the medication reconciliation process aims to reduce medication errors and promote medication safety. The culmination of this project promotes further policy development that can be implemented in any institution or health care system who seeks to improve the medication reconciliation process or promote patient medication safety. The project influences the development and endorsement of policies that address the practice problem at the local, state and national levels. Should the project be judged a success after evaluation, there exist several possible areas in which the policy might be further developed based on that success. For example: new policy development at the local and state levels could address the practice problem by requiring long-term care facilities to adopt, implement and

adhere to similar practice guidelines. Successful project evaluation might also lead to implementation of the project within other health care settings such as ambulatory, outpatient, and acute care facilities.

Practice

This QI project addressed the accuracy of the medication reconciliation process in long-term care settings at transitions of care. Millions of medication errors occur each year due to inaccurate medication reconciliation processes (National Priorities Partnership, 2010). The completion of this project received great reception from nursing staff and stakeholders. Implementation of the final products will make a positive impact on nursing practice; improving patient medication safety. Health institutions can use the results of this project to create and support evidence based nursing practice guidelines that promote medication safety. The results of this project can also be used to steer nursing practice as practitioners seek quality outcomes. Successful evaluation of this project could lead to the development and implementation of new practice guidelines addressing the medication reconciliation process and medication safety. For example: A new policy on medication reconciliation practices in a different age population (children) could be addressed using similar principles and methods to those employed here. The project's evaluation success could also promote the need for change of current best practices by serving as a guide to develop new practice methods that facilitate accurate medication reconciliation.

Research

Project completion focused on primary and secondary product development. Future research is needed after implementation to determine the effectiveness of the

developed products on improving the accuracy of the medication reconciliation process. This project also supports further development of computer based systems that will integrate existing tools to improve the medication reconciliation process; as we seek to become a paperless health care system. The completion of this project serves as a reference for nursing scholars in the development of new programs, projects and nursing theories that address the practice problem. Future research of improving medication reconciliation processes may benefit patients and health care systems; decreasing medication errors, improving medication safety and reducing hospital costs (Wortman, 2008).

A successful evaluation of this quality initiative project will serve as a foundation for further research exploring methods to improve the medication reconciliation process in long-term care and other health care settings. Future research that stem from this project could include: implementation and evaluation of the developed primary and secondary products in other health care populations such as pediatrics and behavioral health settings. Future research could also focus on improving the design and usability of developed products. As the medication reconciliation process continues to evolve adding new components to the developed products will be necessary. Upon a successful evaluation of this project researchers could also explore, develop and implement methods to convert the developed paper products to computer based systems.

Social Change

Implications for positive social change after the completion of this project fostered the adoption of new policies that promote medication safety. The completed project promotes positive social change within the nursing community; creating policies

and guidelines to improve patient medication safety. The project focuses on the long-term care community which includes one of our most delicate populations; the elderly. The final project creates awareness in the long-term care community of medication errors and their impact on the delivery of safe health care.

Strength and Limitations of the Project

Serving as nurse scholar- project facilitator over a successful quality project has been an exciting role. The projects success was enhanced by the project team member's knowledge of the practice problem being addressed. Project team members were excited to be involved in improving the medication reconciliation process and medication safety for their residents. The completion of the project was also empowered by project team member's ability to search and find supporting evidence of best practices addressing the practice problem.

Leading a quality research project is often met with many obstacles. I am truly grateful that this project had limited setbacks; due in part to the strong leadership qualities of all project team members. The project was limited by one team member having a change in roles within the facility. This role change created a vacancy on the project team. This vacancy created some discouragement among team members as we decided who would be a good candidate to fill the vacancy. The project was place back on track after the vacancy was filled with another qualified person. The project was further limited by exceeding the proposed time frame for project completion. Additional project team meetings were required to address and revise the developed primary and secondary products. After implementation and evaluation of the developed products future limitations to this project may include resistance of staff to completing additional

paper documents and the possibility of the information completed on the supporting documents being illegible or transcribed inaccurately. Limitations may also include paper documents being misfiled or misplaced.

Future recommendations for nursing scholars or other research scholars who will be addressing a similar topic or using a similar method to develop programs and projects include: choose reliable, knowledgeable committee members; allow for setbacks within your proposed timeline for project completion, stay organized and stick to the proposed agenda and complete a thorough investigation of all research methods and delivery systems before initiating your project.

Analysis of Self

The completion of this DNP project has provided my first opportunity to serve as sole nurse scholar- project facilitator. Leading an innovative evidence based practice project has proven to be quite challenging; and has revealed many facets about my inner strength I did not know existed. Perseverance, patience, active listener, investigative skills, and the role of expert organizer have all prevailed. The culmination of this project although welcomed with shear excitement does leave a desire to continue to seek out research opportunities where I can continue to develop in my new role as nurse scholar-project facilitator.

Leading this project has enhanced my speaking, writing, and organizational skills which I will use during my participation in future scholarly activities. Future scholarly activities will include oral and poster presentations at conferences, serving as contributing faculty at colleges and universities and submission of peer reviewed publications. This scholarly journey has been rewarding and has afforded me a solid foundation in the

clinical research process that I will share with my nursing colleagues and students. I also look forward to leading programs and projects promoting social change within my community; as well as serving as an advocate for the advancement of the nursing profession and health care policy.

Summary

This scholarly journey focused on improving the accuracy of the medication reconciliation process across transitions of care. The quality initiative project developed primary and secondary products which included a new policy, practice guideline and supporting documents to assist in the implementation of evidence based practice programs to improve the accuracy of the medication reconciliation process. Medication reconciliation accuracy continues to be an important component of the admission and discharge processes as patients move throughout the health care network (Kirwin et al., 2012). Accurate and effective communication of patient medications is an important goal in the improvement of the medication reconciliation process (TJC, 2006). Developing programs and projects designed to promote accuracy in medication reconciliation practices keeps patients safe, improve patient outcomes and reduces health care costs (Wortman, 2008). Researching complex practice issues can be difficult however the challenge can create an atmosphere for a rewarding scholarly experience. The culmination and publication of this project will assist other nursing scholars in developing programs and projects geared to improve the medication reconciliation process or enhance medication safety practices.

This scholarly journey would not be complete without sharing gained knowledge as well as project findings concerning an important patient medication safety topic. As a

result of this quality initiative project the DNP student has developed a scholarly product; abstract and conference proceedings to be delivered in a visual and oral presentation. The developed scholarly product's target audience includes multidisciplinary health care teams seeking to improve medication safety practices in any health care setting.

Section 5: Scholarly Product: Abstract Submission for Conference Presentation

Abstract

During transition of care, inaccurate medication reconciliation is associated with increased risk of adverse events for patients. Older adults are the population most often affected by medication errors, and long-term care facilities struggle to accurately document medication reconciliation. Errors are more common at hospital discharge, but the critical moment for detecting and resolving them is during hospital or long-term care admission. Guided by Rosswurm and Larrabee's model for change, Rogers' diffusion of innovation, and the Multi-Center Medication Reconciliation Quality Improvement toolkit, a 6-member interdisciplinary team composed of nurses, pharmacists, and institutional stakeholders was mobilized to develop policy and practice guidelines as well as secondary documentation necessary to implement and evaluate a quality improvement initiative to address medication reconciliation. Current evidence was explored and used to develop policy and practice guidelines for medication reconciliation, then submitted to 4 scholars, including 2 practice experts, a nurse administrator, and a specialist in pharmacy, to validate content. Scholarly validation supported the premise that the developed products would be beneficial in the accurate documentation of medication reconciliation. Scholarly feedback was evaluated by comparing to current best practices for medication reconciliation. Implementation, education, and evaluation plans were developed to guide operationalization of policy and practice guidelines. This project may positively affect social change by fostering a new practice policy, practice guidelines, and supporting documents to manage medication reconciliation of long-term care residents transitioning

to acute care settings, thereby improving medication safety at transitions of care for vulnerable populations.

Introduction

The medication reconciliation process is used throughout health care systems to aid in reducing medication errors and resident harm (The Joint Commission, [TJC], 2015). Medication reconciliation is one of several 2005 National Patient Safety Goals. TJC has required all health organizations to "accurately and completely reconcile medications across the continuum of care" (TJC, 2006, p. 2). With this safety goal requirement mandated by TJC organizations must "maintain and communicate accurate medication information" and "compare the medication information the patient brought to the hospital with the medications ordered for the patient by the hospital in order to identify and resolve discrepancies" (TJC, 2006, p. 2).

It is estimated that on average, at least one medication error occurs per hospital patient per day, with at least 1.5 million preventable errors committed annually (National Academy of Sciences, 2006). According to Maanen et al. (2011), the most severe consequences of medication omission or inaccuracy have led to elevated blood pressures, chest pain, and reoccurrence of psychiatric symptoms. Clarification of resident medications is often required as they transition throughout the health care system. Long-term care residents are often transferred to acute care settings or other health care settings creating the possibility for medication discrepancies. Routine medications are often not reconciled appropriately leading to inaccurate documentation of medication dosages, routes, and indications for use. These discrepancies can lead to implementation of inaccurate medications leading to resident harm. Many long-term care facilities struggle

with accurately documenting medication reconciliations (Institute for Safe Medication Practices [ISMP], 2013). Long-term care nurses are faced with the difficult task of reconciling potential conflicting medication information after residents are admitted or discharged from acute care hospitals (ISMP, 2013). “Studies have demonstrated that information on discharge summaries and transfer referral forms do not match for more than 50% of Long-term care admissions, with at least one medication discrepancy in 70% of all admissions” (ISMP, 2013, p. 1). It is imperative that long-term care facilities establish safe practices for improving the accurate communication of medication reconciliation.

Problem

This quality initiative project addressed the problem of inaccurately documented medication reconciliations at transitions of care for long-term care residents. Residents who transition from the long-term care setting to acute care settings are at risk for inaccurately documented medication reconciliations; leading to medication errors. As long-term care patients move throughout the health care system the responsibility of their care changes many hands; these changes in care management can often lead to uncertainty over medication regimens (Emergency Care Research Institute [ECRI], 2007). Unclear medication regimens have the potential to lead to medication errors. "A medication error is a result of medication being prescribed, monitored, dispensed, or administered incorrectly (wrong patient, wrong dose, wrong time, wrong route, wrong medication, or for which information has been gathered incorrectly) that may or may not result in patient harm" (ECRI, 2007, p. 6). Many long-term care facilities struggle with compiling accurate medication reconciliations (ISMP, 2013). ISMP notes studies that have proven that over half of the information on discharge summaries and transfer forms do not match long-term care documents; they report at least one medication error in 70% of all admissions.

Sentinel event databases monitored by The Joint Commission includes over 300 medication errors resulting in patients suffering major injuries or death. Of those more than 300 medication error cases 63% where noted to be secondary to breakdowns in communication (ECRI, 2007). Over half of sentinel events secondary to unclear medication regimes could be avoided if effective medication reconciliation practices at transitions of care are established (ECRI, 2007). Long-term care facilities must establish

evidence based safe practices to improve the communication of resident medications (ISMP, 2013).

Purpose

The purpose of the quality initiative project was to develop a policy, practice guideline, and supporting documents to manage medication reconciliation procedures as long-term care residents' transition to acute care settings. Care transitions from admission to discharge; including in between patient care units are associated with an increased risk of adverse events (medication errors, medical errors and even death) for patients (Kirwin et al., 2012). National Priorities Partnership (2010) estimates that nearly 3 million patient encounters incur serious medication errors each year.

Health care professionals play an important role in ensuring that medication errors and adverse events are minimized during these transitions, largely through the reconciliation of medications and assurance of continuity of care (Kirwin et al., 2012). According to Daley (2010) continual identification of systems and communication gaps post-discharge, helps to improve the continuum of care. The implementation of multidisciplinary medication reconciliation programs that include physicians, nurses, and pharmacists to improve the documenting and transfer of patient's active medications decreases medication errors and improves patient care (Wortman, 2008).

Goal and Outcomes

The goal of this quality initiative project was to create an awareness of the importance of medication reconciliation accuracy while developing policies and guidelines to improve accuracy of the medication reconciliation process. The developed practice policy introduces supporting documents to capture an accurate active medication

list when residents are transferred to an acute care facility. The accuracy of the medication reconciliation process will be measured by comparing current pharmacy statements with those medications listed on the supporting documents. The outcome anticipated after implementation of the developed primary and secondary products is the improvement of accuracy of the medication reconciliation process at transitions of care. This improvement in medication accuracy will stimulate a decrease in the occurrence of medication errors upon resident readmission to the long-term care setting.

Significance for Future Practice, Research and Social Change

Practice

This quality initiative project sought to improve nursing practice by addressing the inaccurate documentation of medication reconciliations at transitions of care. The project promoted a positive change in practice for health care providers by developing products to improve the medication reconciliation process. Evaluation and implementation of the final products will make a positive impact on nursing practice; improving patient medication safety. Health institutions can use the results of this project to create and support evidence based nursing practice guidelines that promote medication safety. The results of this project can also be used to steer nursing practice as practitioners seek to implement methods to improve health outcomes.

Research

This project serves as a reference for nursing scholars in the development of new programs, projects and nursing theories that address the accuracy of medication reconciliation processes. Future research will be needed after project evaluation to determine the effectiveness of the developed products on improving the accuracy of the

medication reconciliation process. Future research efforts will be necessary to improve product design and usability. Future consideration should be given to adding and updating the current components of the products to address new developing issues in the medication reconciliation process. Research should also focus on methods to convert paper products to computer based systems. This project supports further development of computer based systems that will integrate existing tools to improve the medication reconciliation process; as we seek to become a paperless health care system.

Social Change

Implications for positive social change from this quality initiative project include fostering a new policy and procedure guideline for addressing the issue of inaccurate medication reconciliation at the time of transfer between long-term care facilities and acute care hospitals. This quality initiative project promotes positive social change within the nursing community; creating policies and guidelines to improve patient medication safety. The project focused on the long-term care community which includes one of our most delicate populations; the elderly. The project fostered awareness in the long-term care community of medication errors and their impact on the delivery of safe health care.

The successful evaluation of this quality initiative project can potentially lead to the projects implementation among other long-term care facilities that transition resident care to acute care hospitals; leading to new best practices for improving medication safety among long-term care residents.

Literature and Evidence Informing the Project

Review of the literature was conducted using nursing databases consisting of EBSCO, CINHAL, and PubMed. Key search terms included: “medication

reconciliation," "improving medication reconciliation accuracy," "long-term care residents and medication reconciliation accuracy", and "safety in medication reconciliation." Review of the literature was focused on years 2009–2014.

Review of the literature revealed several studies that support the importance of accurate medication reconciliation and their effectiveness at improving patient safety. Salanitro et al. (2012) notes that having a paper or electronic list provides evidence of prior medication management by the health care provider. Having a previously assembled medication list provides a starting place to perform medication reconciliation on admission. Salanitro et al. (2012) study underscores the importance of taking an accurate medication history on admission, since most medication errors originate from this step and can be perpetuated.

Dalton et al. (2010) conducted a study at OSF St. Joseph Medical Center after implementing an improved medication reconciliation document a reduction in discharge medication reconciliation errors was noted from 5% to less than 1% using a Six Sigma methodology for process improvement. Three hundred seventy-seven patients were enrolled in a study conducted by Ziaeian, Araujo, Van Ness, & Horwitz, (2012); findings noted that of a total of 22.3% of admission medications were redosed or stopped at discharge. Of these, 24.2% were classified as suspected provider errors. Excluding suspected errors, patients had no understanding of 69.3% of redosed medications, 81.6% of stopped medications, and 62.0% of new medications. Altogether, 307 patients 81.4% either experienced a provider error or had no understanding of at least one intended medication change. Providers were significantly more likely to make an error on a

medication unrelated to the primary diagnosis than on medication related to the primary diagnosis odds ratio 95%, confidence interval 2.65.

Medication reconciliation errors occur across transitions in patient care (Durán-García et al., 2012). “Twenty-two percent of preventable medication reconciliation errors occur during admissions, 66 percent during transitions in care, and 12 percent during discharge” (Santell, 2006, p. 225). National Priorities Partnership, (2010) estimates that medication errors total nearly $16 billion each year. As of January 1, 2006 the Joint Commission required all hospitals to have a procedure in place for reconciling patient medications across the continuum of care (Wortman, 2008). Of all medication errors in a hospital, 25% in hospitalized patients are caused by a failure to reconcile new prescriptions with ongoing home treatments (Durán-García et al., 2012).

Frameworks, Models and Theories

Frameworks

This quality initiative project used the MARQUIS conceptual framework which mimics the Donabedian’s “structure-process-outcome” model (Salanitro et al., 2013). Donabedian’s model demonstrates differences between managerial processes that focus on provider training from clinical processes that focus on supporting documentation; such as medication lists that are compared across transitions of care. Goals of the multi-center medication reconciliation quality improvement study were to operationalize best practices for inpatient medication reconciliation, test their effect on potentially harmful unintentional medication discrepancies, and understand barriers and facilitators of successful implementation (Salanitro et al., 2013).

The MARQUIS toolkit synthesizes best practices in medication reconciliation and provides aids to facilitate their implementation. The toolkit components were informed by a systematic review of medication reconciliation interventions, the AHRQ-funded conference of stakeholders, and the work of the MARQUIS investigators and advisory board. Each toolkit component is framed as a standardized functional goal (e.g., "Improve access to pre-admission medication sources"). This approach is ideal for complex QI interventions, allowing sites too: (a) Integrate intervention components with their baseline medication reconciliation efforts, information system capabilities, and organizational structures; and (b) Add, customize, and iteratively refine the toolkit components and their implementation over time. This approach also improves generalizability, allowing other organizations to apply the lessons learned regardless of their culture or unique circumstances (Salanitro et al., 2013, p. 3).

See Figure 1.

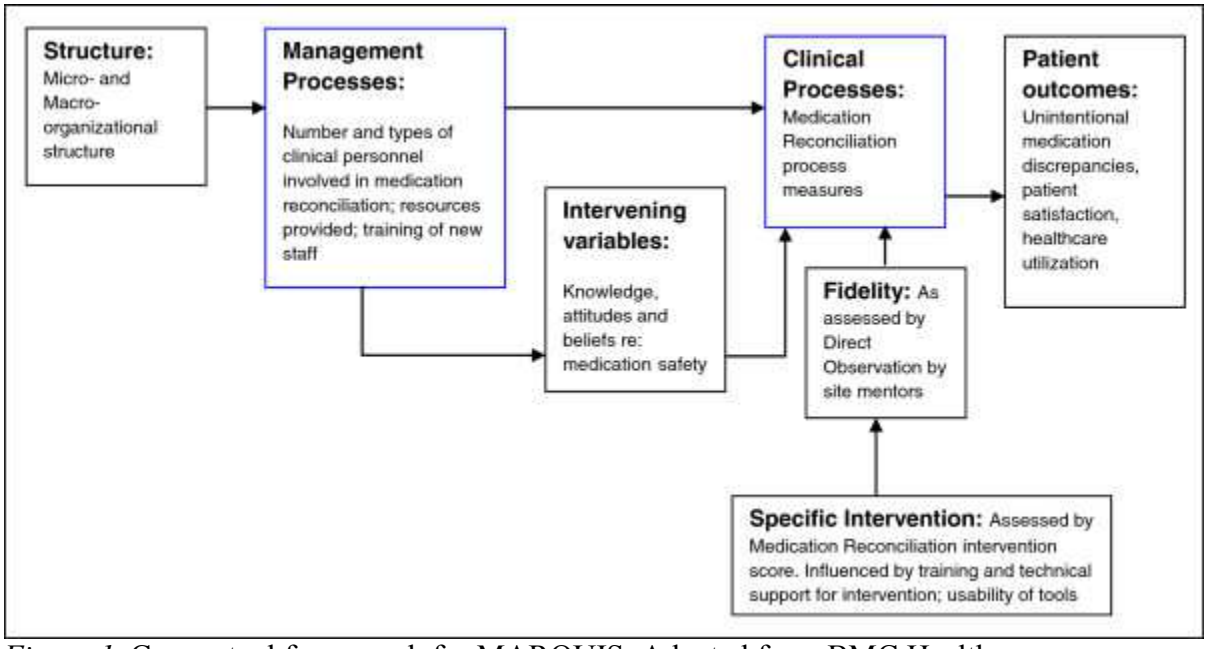

Figure 1. Conceptual framework for MARQUIS. Adapted from BMC Health

Services Research (p.3), by Salanitro et al. 2013.CC 2013 by BioMed Central Ltd.

Models

This quality initiative project was guided by Rosswurm and Larrabee's 1999 Model for Change. The model serves as a basis for evidence based change projects stemming from qualitative and quantitative data incorporating contextual and clinical evidence and expertise (Rosswurm & Larrabee, 1999). The model uses a theoretical and research literature related to evidence-based practice approach. Model components also include: change theory, research utilization and standardized language. The model consists of six steps: "(a) Assess—the need for change in practice; (b) Ask—an answerable research question; (c) Synthesize—best evidence stimulating inquiry; (d) Design—change in practice; (e) Implement—practice change; and (f) Evaluate—practice" (Rosswurm & Larrabee, 1999, p. 318). This model guides practitioners through the evidence based practice change process step by step from development to integration (Rosswurm & Larrabee, 1999).

Theories

This quality initiative project utilized the Diffusion of Innovations Theory (Rogers 1995) which suggests innovated progression or new ideas are successfully propelled forward when practice change is greater than processes currently in place (Gale & Schaffer, 2009). The theory also suggests that innovators must take into account end user values and experiences before practice change can occur (Gale & Schaffer, 2009). Gale & Schaffer define diffusion as "a social process that involves interpersonal communication and relationships" (p. 92). Diffusion can be viewed as an innovative decision process which includes 5 basic steps: knowledge, persuasion, decision,

implementation, and confirmation (Gale & Schaffer, 2009). Use of the Diffusion theory allows the facilitator to oversee communication flow of the proposed innovation to the end user; creating an atmosphere for developing trust worthy innovator to end user relationships (Gale & Schaffer, 2009).

Major Approach to Complete Project

The DNP student served as the project's nurse scholar consultant and facilitator. The DNP student led an interdisciplinary team within the host long-term care facility, to develop, and promote the new practice policy, procedure guidelines and documentation tool. The project occurred during a 5 week period with six total meetings of 2 hours each. Steps that were taken to develop this quality initiative project include: obtaining approval to conduct the project from the Walden IRB, assembling of the interdisciplinary team, conducting and disseminating a review of relevant evidence with interdisciplinary team members, development of primary products (policy for medication reconciliation process, practice guidelines, supporting documentation tool), development of secondary products (implementation plan, evaluation plan, evaluation tool, education plan) and validation of developed products using external scholars feedback with revisions.

This quality improvement project did not require data collection or analysis by the DNP student. The project's team members of the host facility were responsible for assisting in the development, design and promotion of the new practice policy. The project team will lead the facility in implementation, data collection, analysis and evaluation of the quality improvement initiative.

Interdisciplinary Project Team Involved with the Project

The project's interdisciplinary team was assembled by the DNP student. Team members were active employees or an affiliate of the host facility. Team members were selected based on their knowledge and interest in implementing the project within the host facility. The DNP student served in the role of nurse scholar consultant and project facilitator. The remainder of the project's team included:

1. Nurse Practitioner- of the host facility where project was conducted. Responsible for prescribing medications to residents and benefits from accurate medication reconciliation. Collaborated with other team members to promote and implement QI project.
2. Director of Nurses of the host facility. Responsibilities included promoting the QI project among nursing staff. Responsible for future project implementation to record data and evaluate the effectiveness of the developed products.
3. LPN (Dayshift) - Responsibilities included constructive feedback pre, during and post project implementation.
4. LPN (Nightshift) - Responsibilities included constructive feedback pre, during and post project implementation.
5. Administrator- Responsibilities included assisting the Director of Nurses in promoting the QI project and obtaining corporate level approval of the project.
6. Pharmacist- Assigned to host facility. Responsibilities included constructive feedback pre, during and post project implementation. Pharmacist will supply current medication lists of patients and participate in the promotion of the QI project in collaboration with the nurse practitioner and director of nurses.

Major Products, Implementation and Evaluation Plans

Primary Products

Primary Product 1 is the developed practice policy (see Appendix A) that will be used to guide medical staff in the execution of the acute care medication reconciliation transfer supporting document (See Appendix B). This document will accompany residents of long-term care facilities as they transfer to acute care settings. Primary Product 2 (See Appendix B) is the developed supporting document that nursing staff will be required to complete prior to resident facility transfers. Pharmacy project team members played an important part in the development of the document. The goal during the development of this document was to keep it simple and clutter free. This concept was adapted in hopes of not producing a cumbersome, time consuming document. Primary Product 3 (See Appendix C); the acute care medication reconciliation practice guidelines give a compact overview of the new medication reconciliation process with supporting literature evidence. The document is to be used in conjunction and to support the Resident Acute Care Transfer Medication Reconciliation Policy (See Appendix A).

Secondary Products/Implementation Plan/Evaluation Plan

Phase 2 of the DNP quality initiative project focused on the development of secondary products to assist facilities in implementing and evaluating the effectiveness of the developed practice policy, guidelines and supporting documents. All secondary products will be initiated at a later date at the institutions discretion.

Secondary Product 1 the implementation plan (see Appendix D) was led by the DNP student/ nurse scholar with full participation of all project members. It was estimated that the total time needed to implement this practice policy change is 6 weeks.

This estimate was determined by current practice trends and previous experiences of project team members. The implementation plan includes a non inclusive list of resources necessary to initiate the practice change project. The communication plan is an outline of how the projects objectives will be communicated to staff members. These lists will vary by each facilities size, structure and accessibility to resources.

Secondary Product 2 the project's evaluation method uses an outcomes based approach. Initial evaluation will include a comparison of historical medical records and pharmacy records for one quarter while the practice policy and guidelines are being implemented. Data collection will occur after project implementation spanning over a 4 month period, charting progress. Evaluation of the implemented policy and practice guideline will use data collected from the evaluation document (see Appendix F). Statistical differences among variables will be compared using Spearman's Rank Correlation. Secondary Product 3 the medication reconciliation evaluation document consist of a four item binary scale. The 2 point scale will measure 1= yes/present or 0= no/not present; during the evaluation of completed medication reconciliation documents. The tool designed to be user friendly requires only a check mark in the appropriate box. After the appropriate boxes are completed the evaluator will tally the final score. A total score of 4 equals accuracy and will be the bases for determining an accurate medication reconciliation document. Secondary Product 4 it the project's education plan (see Appendix G) developed during the last week of the project. It outlines the orientation schedule for staff members by discipline. The plan also includes project content to be discussed. The use of PowerPoint and oral presentation will be the main mode of content transfer.

Conclusion

This quality initiative project focused on developing a new practice policy, guidelines and supporting documents to address the medication safety issue of inaccurate medication reconciliation. Care transitions from admission to discharge; including in between patient care units are associated with an increased risk of adverse events (medication errors, medical errors and even death) for patients (Kirwin et al., 2012). Medication errors continue to exist across all transitions of patient care (Durán-García et al., 2012). Improving patient safety through medication reconciliation is only a small component of endeavors needed to improve the quality of care delivered in long-term care settings. Developing programs and projects designed to promote accuracy in medication reconciliation practices keeps patients safe, improve patient outcomes and reduces health care costs (Wortman, 2008). The culmination of this quality initiative project will assist other nursing scholars in developing programs and projects geared to improve the medication reconciliation process or enhance medication safety practices.

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Figure

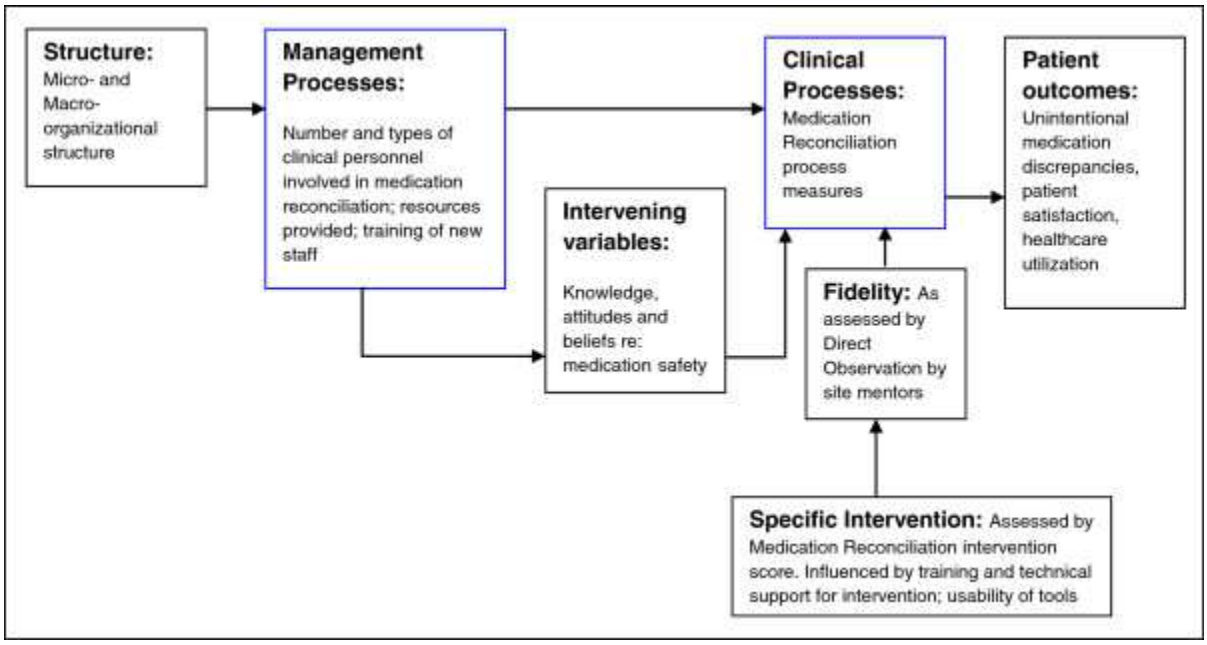

Figure 1. Conceptual framework for MARQUIS. Adapted from BMC Health Services Research (p.3), by Salanitro et al. (2013). CC 2013 by BioMed Central Ltd.

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Appendix A: Medication Reconciliation Policy

Resident Acute Care Transfer Medication Reconciliation Policy

Target Audience

Nurses to include RN's and LPN's employed by the long-term care facility. Facility contracted pharmacy, pharmacist and pharmacy techs.

Policy Procedure

Upon resident transfer to an acute care facility (Emergency Room/ Direct Hospital Admit) or any other facility for which the resident will or may require acute care services; the primary nurse or charge nurse will be responsible for accurately reviewing and documenting current medications to the adopted acute care transfer medication reconciliation form.

A. Primary nurse/charge nurse will first review current resident Medication Administration Record (MAR) for accuracy.

B. Once accuracy of the MAR has been established, primary nurse or charge nurse will obtain a clean copy of the adopted acute care transfer medication reconciliation form.

C. Primary nurse/charge nurse will accurately complete all fields of the acute care transfer medication reconciliation form.

D. Primary nurse/charge nurse will make 2 copies of the original completed acute care transfer medication reconciliation form.

E. Primary nurse/ charge nurse will place one copy of the completed acute care transfer medication reconciliation form into the resident's chart under the acute transfer tab. The second copy will be placed in the pharmacy outgoing box.

F. Primary nurse/charge nurse will ensure that the original completed acute care transfer medication reconciliation form be placed in the patients copied records for acute care transfer.

G. Upon residents return to the facility the resident's primary nurse/charge nurse will ensure that all acute care medication reconciliation documents are retrieved from the transfer packet.

H. Primary nurse/charge nurse will make 2 copies of the acute care discharge medication reconciliation document.

I. Primary nurse/charge nurse will place the original copy of the acute care discharge medication reconciliation document in the residents chart under the acute transfer tab. One copy will be placed in the pharmacy outgoing box and the second copy will be used by the primary nurse/charge nurse to review, revise and update the residents current MAR.

Rationale

Residents transitioning between different levels of care throughout the healthcare arena are at increase risk for adverse events secondary to inaccurate medication reconciliation processes. This policy has been adopted to improve the accuracy of the medication reconciliation process as our residents' transition from the facility to acute care services.

Policy Goal

To introduce procedures and supporting documents that will effectively improve the accuracy of medication reconciliation as residents are transferred to and from acute care facilities.

Policy No. #1.0
Effective Date: January 1, 2016
Reviewed/Revised: October 8, 2015

Appendix B: Medication Reconciliation Supporting Document

ACUTE CARE MEDICATION RECONCILIATON TRANSFER
Resident Name:_____DOB:_____
Allergies:_____
Long Term Care Facility:_____
Date:_____ RN/LPN Staff:_____

Current Medication	Dosage/Route	Frequency	Last time administered	Medical Indication

Appendix C: Practice Guidelines

Acute Transfer Medication Reconciliation Practice Guidelines

The acute transfer medication reconciliation policies target audience includes those medical staff employees who are actively involved in the transfer of residents from the long term care setting to an acute care setting.

1. Residents transitioning between different levels of care throughout the healthcare arena are at increased risk for adverse events secondary to inaccurate medication reconciliation processes (Kirwin et al., 2012). This policy has been adopted to improve the accuracy of the medication reconciliation process as our residents' transition from the facility to acute care services.
2. Implementation of an acute transfer medication reconciliation is supported by The Joint Commission's Safety Goal #3- This National Patient Safety Goal requires that organizations "maintain and communicate accurate medication information" and "compare the medication information the patient brought to the hospital with the medications ordered for the patient by the hospital in order to identify and resolve discrepancies" (TJC, 2006, p.2).
3. A review of the residents' current medications will be conducted prior to completing the acute transfer medication reconciliation form; to insure accuracy of the medication list prior to an acute transfer. This is the first step in the medication reconciliation process; verification (Maanen et al., (2011).
4. Once an accurate completed medication reconciliation form has been obtained the designated medical staff will proceed to duplicate the form and distribute copies to appropriate staff members. This step in the process not only provides duplicates of the original but allows other members of the medical team to clarify and evaluate the medications that have been recorded on the reconciliation form. Clarification and evaluation of each medication including formulation and dosage are checked for appropriateness; this is the second step in the medication reconciliation process (Maanen et al., (2011).
5. When residents are returning to the long term care setting assigned medical staff will retrieve, review, duplicate and distribute the transfer medication reconciliation form. The third step in the medication reconciliation process is comparison of newly prescribed medications to the old ones and the documentation of the changes (Maanen et al., (2011).

Appendix D: Implementation Plan

Resident Acute Care Transfer Medication Reconciliation Implementation Plan

Estimated implementation time = 6 weeks
Resources needed for implementation:

Forms/ Copier Company
Access to printer/paper supplies
Chart divider tabs labeled: Acute Transfer
Meeting space for orientation, staff development

Estimated number of hours per project team member

Administrator	5 hours
Director of Nursing	16 hours
NP-staff	8 hours
Pharmacy-staff	7 hours
LPN/RN	16 hours
Clerical staff	10 hours
Total team hours	62 hours

Communication Plan

Who needs to know	Information to discuss	Project team member
Administration	Implementation plan, policy, procedure, timelines and expectations	Director of Nursing/ NP staff
NP/Providers	Implementation plan, policy, procedure, timelines and expectations	Director of Nursing/ NP staff
LPN/RN staff	Implementation plan, policy, procedure, timelines and expectations	Director of Nursing/ NP staff
Clerical/support staff	Implementation plan, policy, procedure, timelines and expectations	Director of Nursing/ NP staff

Implementation Steps

Task	Completion Date	Project Team Member
1. Obtain final corporate approval	Week 1	Administrator
2. Update policy/guidelines library	Week 1	Administrator
3. Staff Orientation-New	Week 2	

Policy		
LPN/RN staff		Director of Nursing
NP/Provider staff		NP staff
Pharmacy staff		Pharmacy Lead
Clerical staff		Director of Nursing
4. Provide forms/copy company with new documentation tool for replication	Week 3	Director of Nursing
5. Staff training-Completion of New documentation tool	Week 4, Week 5	
LPN/RN staff		Director of Nursing
NP/Provider staff		NP staff
6. Prepare physical charts for institution of new policy/Including installation of new sections necessary for each chart.	Week 4	Administrator Clerical Staff (appointed by Director of Nursing
7. Review all current resident MAR-update as needed	Week 5, Week 6	LPN/ RN staff
8. Disburse new documentation tool to each nurses station for use	Week 6	Director of Nursing

Appendix E: Evaluation Plan

Resident Acute Care Transfer Medication Reconciliation Evaluation Plan (Outcomes Based)

The evaluation process will address the following question. Does the use of a dedicated supporting document increase the percentage of accurate medication reconciliations? The evaluation plan consists of measuring historical medical/pharmacy records for one quarter while the new practice policy is being instituted. Once instituted measurements using the new supporting documents, policy and procedure guidelines will be conducted over the next four quarters; charting progress. The data obtained is ordinal, non-parametric and comes from independent samples thus statistical significances of any differences can be compared between quarters one, two, three and four using the Spearman Rank Correlation. The Spearman Rank Correlation hypothesizes that: "Spearman correlation coefficient, ρ ("rho"), is 0. A ρ of 0 means that the ranks of one variable do not covary with the ranks of the other variable; in other words, as the ranks of one variable increase, the ranks of the other variable do not increase (or decrease)" (McDonald, 2014, p.209). A p of 0 means: with increase use of the new documentation tool the ranks of inaccurate medication reconciliations decrease. A table can be developed for each quarter to rank data collected from the evaluation tool. The table should include 4 columns one for each quarter and one for each quarter's rankings. The evaluation tool has 4 measurement components creating 4 rows in the rankings table. N= # of acute transfer medication reconciliation forms completed. All tied rankings results should be averaged.

The formula for when there are no tied ranks is:

$$\rho = 1 - \frac{6\sum d_i^2}{n(n^2-1)}$$

(Laerd Statistics, 2013)

The formula to use when there are tied ranks is:

$$\rho = \frac{\sum_i (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_i (x_i - \bar{x})^2 \sum_i (y_i - \bar{y})^2}}$$

(Laerd Statistics, 2013)

Indication	Measurement Documents	Quarterly Review	Project Team Member
Increase in accurate medication reconciliations by 10% from the previous quarter.	Printed pharmacy statements and Medication Reconciliations for medication comparisons	Begin the 1st day of the first month of the quarter	Director of Nurses, NP (staff) or *External evaluator
	Completion of Evaluation Document	End the last day of the first month of the quarter	
	Spearman Rank Correlation		

Evaluation Plan

Appendix F: Evaluation Document

Acute Transfer Medication Reconciliation Evaluation Document

		YES/PRESENT =1		NO/NOT PRESENT =0
Correct Medication Dose				
Correct Medication Route				
Clinical Indication for Medication Use				
Accuracy in Documentation of all Previously Prescribed Medications				
TOTAL SCORE (Accuracy= 4)				

Appendix G: Education Plan

Acute Transfer Medication Reconciliation Education Plan

Staff Orientation

Staff orientation will consist of an oral presentation with a question and answer session lasting approximately 1.5 hours. Staff members required to attend an orientation session includes:

I. All staff LPN's/ RN's (charge nurses). There will be three educational sessions:

1. Day shift Orientation
2. Night shift Orientation
3. Weekend shift Orientation- to be conducted at the change of shift to include both day and night staff.

Nursing staff will be instructed on the new policy, supporting documents, procedure guidelines and nursing responsibilities.

II. NP/Provider staff

NP and or provider staff will be given an overview of the new policy and documentation tool. NP/provider staff will be instructed on procedure guidelines and NP/provider responsibilities.

III. Contracted staff pharmacist and pharmacy techs

Staff pharmacist and pharmacy techs will be given an overview of the new policy and supporting documents. Staff pharmacist and technicians will be instructed on procedure guidelines and Pharmacist/Tech responsibilities.

IV. Clerical staff/unit clerks

Clerical staff will be given an overview of the new policy and supporting documents. Clerical staff/unit clerks will be instructed on procedure guidelines and clerical/unit clerk responsibilities.

Make- up Orientation Session

If necessary a make-up orientation session will be scheduled for any discipline that could not attend their regular scheduled session. Make-up sessions will include an overview of the new policy, supporting documents, procedure guidelines and review of each disciplines responsibilities as indicated.

Staff Training Sessions

Staff training sessions will occur after orientation sessions have been completed. Staff members must attend an orientation session before enrolling in a training session. Each training session will include a maximum of 10 multidisciplinary staff members. Training sessions will last approximately 2 hours. Training sessions will include:

I. Overview of documentation tool/components

1. Staff members will be instructed on the correct procedures for completion of the new supporting documents. (This will be a step-by step approach for each section/line of the document).
2. Staff members will be instructed on the procedures for implementing the supporting documents at the time of resident transfer.

II. Simulation Exercise

Multidisciplinary staff members will participate in a simulated acute resident transfer that requires the use of the new policy, procedure guidelines and supporting documents. Staff members will be divided into two groups of 5 for this simulation exercise.