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Effectiveness of a Medication Administration Protocol on Medication Errors and Inpatient Falls

Avril Dolly
Walden University

Walden University

College of Health Sciences

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Avril Dolly

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Review Committee
Dr. Janice Long, Committee Chairperson, Nursing Faculty
Dr. Cheryl McGinnis, Committee Member, Nursing Faculty
Dr. Oscar Lee, University Reviewer, Nursing Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University

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Abstract

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Project Submitted in Partial Fulfillment

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Abstract

Adverse events such as medication errors and inpatient falls have been reported as the leading cause of safety incidences at the acute care facility in Trinidad and Tobago where this project was conducted. These mishaps aroused concerns about patient safety and led to a quality improvement (QI) initiative at the hospital. The QI project included establishing an evidence-based medication administration protocol in one unit in the hospital and a plan to examine the medication errors and the patient fall rates at the site. While multiple factors were noted to affect the risk for patient falls, this project was recognized as a starting point for a health system QI initiative that was to continue beyond the student's project. The purpose of this project was to evaluate the effectiveness of the medication administration protocol and determine if a corresponding change in the hospital patient fall rates occurred. An outcome impact evaluation model was used to examine both the medication error rate and the patient fall rates 3 months prior to and 3 months after implementation of the QI initiative. Results of a 2-tailed paired *t* test show significant reductions in medication errors ($p = .039$) and patient fall rates ($p = .033$). While the results are statistically significant, the findings must be interpreted cautiously in view of the variables that could not be considered in this QI initiative. The findings of this project offer a beginning to a much-needed surveillance of patient fall rates and an ongoing promotion of safety through medication administration protocol use. The project offers an opportunity to promote positive social change by raising awareness of the need for a culture of patient safety.

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Section 1: Introduction

Introduction

Inpatient falls in acute care settings are among the highest incidences of adverse events (Williams et al., 2016). Williams et al. (2016) reported that over 30% of inpatient falls result in some physical injury that may lead to fractures, long hospital stays, and excessive cost to the hospital. In fact, between 700,000 to 1,000,000 patients fall yearly (Aydin et al. 2015; Cox et al., 2015), and these falls can be attributed to several factors. Williams et al. (2016) reported that one of the main causes of patient fall was cognitive impairment due to effects of medication. Wang et al. (2015) found that one factor that led to inpatient falls was the inappropriate administration of drugs. Wang et al. (2015) defined inappropriate administration of drugs as the act of making errors in any phase of the administrative process of medication management. Medication management includes prescribing, transcribing, prescription auditing, preparing, dispensing, administration, and monitoring.

Evidence has shown that the effects of drugs, in some cases multiple medications, result in impaired cognition and patient falls (Neto et al., 2015). Ruxton et al. (2015) also confirmed that drugs with anticholinergic affect the cognition of older adults increasing the risk of patient fall. Neto et al. (2015) defined a patient fall as an unplanned descent to the floor that can be prevented through appropriate nursing practice using evidence-based guidelines such as protocols. A medication administration protocol was developed and implemented by the project team in June 2016 at the hospital in Trinidad and Tobago that

served as my project site. This protocol guides medication administration, helps nurses to avoid mistakes, and assists them in monitoring patients carefully.

According to Lin et al. (2014) and Kim and Bates (2013), nurses are trained to use the *5 rights* to administer medication: the right drug, right dose, right route, right time, and right patient. Over the years, instructors have observed that nurses make life-threatening mistakes due to the omission of critical steps in nursing practices such as accurately documenting medication orders or signing the prescription sheet after the administration of the drug. As a result, additional *rights* were included such as the right documentation, the right history or assessment, the right to refuse, the right evaluation, and the right education to improve the safety and management of medication administration (Lin et al., 2013).

However, evidence has shown that nurses may neglect to use all 10 steps to administer drugs because they may be distracted during practice and are sometimes overworked (Raban and Westbrook, 2013). Distracted and overworked nurses may omit certain steps in dispensing drugs, leading to adverse events such as medication errors and patient falls. Establishing safe management of drug administration for nursing practice is critical to developing a safety culture to help reduce medication errors and inpatient falls. The development and implementation of a safety culture at the acute care site where I conducted this project study will improve nursing practice, enhance patient safety, decrease the length of hospital stay, and prevent the organization from additional financial expenses.

Problem Statement

Local Nursing Practice Problem

Inpatient falls are the highest of the adverse events reported by the local health system where I conducted this project. The organization's 2015-2016 adverse events report indicated that inadequate management of medication administration was the leading cause of patient falls. Wilson (2016) highlighted that falls at the site ranged from 5 to 7 per 100 beds per day, and approximately 4% of those falls account for unnecessary injury. Falls may be preventable if nurses follow the medication administration protocol focusing on the *10 rights* of administration. The omission of drugs accounted for the highest rate of patient falls (60%) since nurses withhold drugs based on their belief that the patient does not need the drug, followed by dosing time error (15.7%). Nurses indicated that they are short-staffed and overworked. As a result, they cannot always meet the patient requests for pain medication which leaves the patients in pain and discomfort for prolonged periods. French et al. (2016) suggested that persistent pain can lead to poor vision, muscle weakness, or cognitive impairment resulting in impaired balance causing the patient to fall. Duplication of dosing is also significant as nurses sometimes neglect to sign medication sheets (12.5%). Olin (2011) reminded nurses that work not documented is work not done. Lack of patient education (10.2%) and improperly handling of physician orders (1.6%) were also responsible for some adverse incidents (Wilson, 2016). Olin (2011) claimed that all of the factors above are responsible for creating negative conditions for patients that cause adverse events such as falls.

Local Strategies for Addressing the Problem

Observational studies of nursing practice and the reported evidence of patient fall in the 2015 – 2016 adverse events reports for the organization led organizational leaders to develop and implement a medication administration protocol. The organization's reported rate of 5 to 7 patient falls per 100 patient days is higher than the international rates in acute care settings, which range from 1.3 to 8.9 falls per1,000 patient days. My project site's incident reports have indicated that the incidence of inpatient falls are higher than the national benchmark and therefore need to be addressed to reduce the rate of falls at the site. Concerns about patients' safety and the methods of nursing practice were raised because of these high levels. As a result, managers evaluated nursing practice related to prevention of patient falls to help address the increased incidence of patient falls. The evaluation showed that elderly patients who were on multiple drugs had a prevalence of impaired cognition and falling. Additionally, nurses who did not adhere to the *10 rights* of medication administration increased the risk of errors, which result in certain clinical characteristics such as confusion, dizziness, and patient falls (Milos et al., 2014). Kim and Bates (2013) emphasized that nurses need to adhere to the guidelines of medication administration to improve patients' safety and the quality of nursing practice, including fall prevention.

Significance for Nursing Practice

According to Sammer and James (2011), creating a culture of safety involves changes in nurses' attitudes and behaviors that foster responsibility and accountability for

safe practice in the organization. A safety culture shift requires evidence-based practice, teamwork, and practical leadership skills. A strong safety culture resulted from evidence-based framework, such as, the medication administration protocol that included the *10 rights*. This protocol is a framework that drives nurses' clinical practice by delineating actions to follow including assessing safety measures and identifying errors to help prevent adverse events such as medication errors and patient falls.

Purpose

Gaps in Practice

Patient falls can have long-term effects on individuals because of complications, disability, death, or prolonged stay at the institution for medical management that increases cost and causes stress to the patient (Quigley & White, 2013). A senior member of staff from the Quality Department (personal communication, December 8, 2015) claims that patient falls at the practicum site are partially due to the non-existence of policies and protocols to guide nursing practice. The evidence-based protocol the study site implemented provides a framework that directs nurses to safely administer medication to the patients, which will eventually reduce the incidence of errors and falls, and encouraging patient safety. In an evaluation of nursing practice, I identified the non-existence of medication administration protocols that would improve the quality of nursing skills, lead to better care of patients, and contribute to the safety culture of the organization. Therefore, the project improvement team designed and implemented the

medication administration protocol in June 2016 to address the high-levels of adverse events reported at the project site.

Practice-Focused Question

The practice-focused question for the project was to evaluate the effectiveness of the evidence-based guidelines used by nurses to reduce medication errors and inpatient falls. The AACN (2006) takes the position that nursing practice is transformed through the use of scientific knowledge that allows nurses to improve their practice and provide safe care for patients. Therefore, I worked to understand whether nurses' use of the medication administration protocol reduces medication errors and inpatient fall, and improves nursing medication administration practice. Therefore, the practice-focused question seeks to determine "Would the use of the medication administration protocol by nurses decrease the rate of medication errors and reduce the frequency of patient falls at the institution?"

Addressing the GAP in Practice

In conversation with a senior member of staff at the quality department of the institution, the staff pointed out that there was insufficient evidence-based structures to guide nursing practice at the clinical site where I conducted this project. Hills (2010) argued that nurses need to practice using their knowledge and skills to provide care that is not based on expert clinical competencies, but on sound evidence-based knowledge. As a result of non-expertise in clinical practice, nurses make mistakes and put patients' lives at risk. Quigley and White (2013) contended that for nurses to successfully practice and maintain

safety, there is a need for a systematic, evidence-based approach such as a medication administration protocol to guide the nurses' skills and maintain safety throughout practice. Developing and using rules and establishing structures provide standards for nursing practice to improve and lessen the rate of errors. The medication administration protocol is a framework that explains the purpose of drugs to patients, gives a step-by-step method of distributing medicines, and provides measures for adhering to the guidelines of the nursing practice (Kim & Bates, 2013). However, implementing the protocol alone is not enough; it is also necessary to determine the effectiveness of the program.

Nature of the Doctoral Project

Sources of Evidence

I used Walden University Library and Google Scholar to search for peer reviewed articles on patient fall prevention in acute care settings, effects of medication management of patient falls, and management of falls in acute care hospitals. I access the following databases via the Walden library: Science Database, Nursing and Allied Health Database, and ProQuest Central. I also conducted journal-specific searches for primary and secondary articles on the issues of fall prevention in acute care hospitals with a focus on medication management. The journals I reviewed included the *Online Journal of Issues in Nursing (OJIN), Journal of Nursing Care Quality, Journal of the American Medical Association, The Journal of Clinical Pharmacology,* and *The British Medical Journal Quality and Safety*.

In the literature review, I worked to assess the local and international scope of practice for nurses in the acute care areas in order to develop a broad understanding of workplace ethics and occupational health and safety in nursing practice. I also searched for pertinent information on fall rate statistics, international best practice, methods for identifying and assessing the risk for falls, strategies for preventing falls, and the implementation and evaluation of fall prevention programs.

Approach Used to Organize and Analyze the Evidence

For the quality improvement program I conducted several searches using Google Scholar, Walden Library, and other online databases to gather information for designing the medication administration protocol. I limited the searches to articles published in the last 5 years to ensure I was using the most recent data. Search terms included *evidence-based medication administration protocol, medication error management, medication error protocol, and medication management*. Prescription audit tools and guideline principles of medication management were also searched and audit tools were scrutinized for clinical relevance. Once I collected the data from these relevant documents, I reviewed the data for relevance and then compiled them for possible use by the quality improvement (QI) team that was I established during the DNP practicum experience. The multidisciplinary team of five (5) people comprised a nurse, physician, accreditation coordinator, medical records staff, and pharmacist. The QI team analyzed the collected data for validity and reliability, and ensured the information utilized for the protocol remained faithful to the practice of administering medication to patients.

The QI team and I developed the protocol for medication management to be used by nurses at the site and implemented it in June 2016. A prescription audit tool in the form of a checklist was used during the implementation phase of the protocol to ensure completeness of the step-by-step method of administering drugs. I used this audit tool to assess whether nurses were accurately practicing when administering medication. This checklist allowed for accurate assessment, pointing out the strengths and the weaknesses of the practice. Included in the audit tool was the *10 rights* used to guide nurses when administering medication. The *10 rights* include the (a) right drug,(b) right patient, (c) right dose, (d) right route, (e) right time and frequency, (f) right documentation, (g) right history or assessment, (h) right drug approach, (i) right to refuse, (j) and right education and information. The auditing tool also accounted for incidences of near-misses and other adverse events. The marking scheme of the review tool ranged from 0-1, with 0 indicating that the particular right was not used at all and 1 referring to use. The areas were totaled and if the score was 0, the findings were considered for actions of improvement.

Evaluation of the QI Program

To evaluate the effectiveness of the protocol, I used a pretest-posttest single group design, and compared results from the audit tool administered 3 months before and 3 months after implementation.

Concise Statement of Purpose

Evidence-based structures such as medication administration protocols help to reduce medication errors, prevent inpatient falls, and improve the quality of nursing practice (Kim & Bates, 2012). The purpose of this project was to establish whether the evidence-based medication administration protocol which was implemented in the acute care clinical setting is effective in improving medication management and decreasing patient falls. This protocol was developed to improve nursing practice and reduce medication errors, mistakes that could result in patient falls and injury. By evaluating the effectiveness of the protocol, I sought to determine whether the protocol decreased the rate of medication errors and fall rate in the practice setting.

Significance

Stakeholders' Impact

In a study conducted by Orbaek et al. (2015), the authors highlighted that structured, evidence-based methods of administering drugs impact professional competence and optimal patient safety. Poor medication administration can lead to numerous errors that can cause falls, injury, or death of patients. However, with the guided application of the *10 rights* principles, the medication administration protocol I designed guides nurses in safe and accurate medication administration. This protocol supports the standard of practice that ensures safe delivery of drugs.

Potential Contributions to Nursing Practice

Nurses' use of the protocol has significant potential to serve the healthcare needs of patients in an acute care setting. This framework allows nurses to administer drugs

using a structured format, thereby preventing medical errors in any aspect of the *10 rights* of the principles of medication administration. By evaluating the effectiveness of the medication administration protocol, I sought to identify the gaps in practice and provide strategies for improving the quality of patient care. One of the rights to administering drugs is the right to accurately assess the patient for any risk of adverse side effects of the drug such as confusion, which may lead to self-harm like falling. Nwagwu (2015) argued that patients should be accurately assessed and tested to determine the safety and appropriateness of their medications. The medication administration protocol assists in evaluating the levels of risk for patient security and outlines strategies to keep patients safe.

Potential Transferability to Similar Practice Areas

As a result, efficacy in nursing practice increases, patient falls decreases and cost due to falls and injury reduces (Sammer & James, 2011). The evidence-based medication administration protocol can be utilized throughout the hospital to prevent medication incidences, reduce patient falls, and improve the safety culture at the institution.

Potential Implications for Positive Social Change

The process of creating a safety culture through nurses' use of evidence-based protocols allows nurses to be responsible and accountable in medication administration. Additionally, the reduction of adverse events on medication errors and inpatient falls boosts the integrity of the institution and encourages patients and the larger community to trust the services provided and feel comfortable using the healthcare services.

Summary

Inpatient falls at my practicum site have considerably higher adverse incidence rates as compared to international rates. Several researchers have shown that inpatient falls are caused by numerous factors including the inappropriate administration of medication. However, Williams et.al. (2016) reported that when nurses are provided with the appropriate framework to guide their practice such as using an evidence-based guideline like the medication administration protocol to care for a patient, adverse events and unnecessary expenses to the organization may be avoided or reduced considerably. Consequently, I developed and implemented an evidence-based medication management protocol to reduce medication errors, prevent inpatient falls, and create a safety culture at the site. The medication administration protocol helps to improve nursing practice and reduce medication errors that could result in patient falls and injury. By evaluating the effectiveness of the protocol, I worked to determine whether the protocol reduced the rate of medication errors, and decreased the fall rate in the practice setting. The evaluation of the protocol required a systemic approach. Therefore, I used Lewin's change management model to explore the ways nurses behave when using the protocol, and I sought to make change, where necessary, to their attitudes toward a new way of thinking.

Section 2: Background and Context

Introduction

Inpatient falls, a leading cause of adverse events in acute care facilities including the acute care clinical setting where I conducted this project, is a patient safety concern. An initial assessments of nursing practice at the practicum location, I found that nurses practice without evidence-based guidelines that set a safety standard for medication administration. Twigg and McCullough (2013) suggested that structured nurses' interventions promote accurate and safe quality nursing practices that create a safety culture. In this project, I thus worked to assess nurses' effectiveness in using a medication administration protocol and identify the gaps to allow for improvement in practice.

The Practice Focused Question

Would the use of the medication administration protocol by nurses decrease the rate of medication errors and reduce the frequency of patient falls at the institution?

Purpose of This Doctoral Project

The goal of this project was to evaluate the effectiveness of the evidence-based medication administration protocol on staff nurses' medication management practice and prevention of patient falls. I used a pre-post evaluation design to examine medication errors and fall rates before and after implementation of the QI program. Additionally, I collected and analyzed formative assessment of nurses' adherence to the medication protocol.

The following section includes discussions of the concepts, models, and theories that I used for this doctoral project, the project's relevance to nursing practice, the local background and context, and my role as project leader.

Nurses are a part of the recommended movement for change in nursing practice (Stevens, 2013). Changing nursing practice comes with challenges such as reluctance to change, concerns about time, and fear of moving out of one's comfort zone (Spear, 2016). Stevens argued that improving or promoting patient safety and new knowledge must be translated into clinical practice, and must be implemented and evaluated for the usefulness of the project. Lewin's change management model provides a framework that transforms individual behavior by encouraging change.

Evidence-based practice is critical to standardizing nursing practice and improving the quality of patient outcome (Stevens, 2013). During the practicum experiences, I observed a lack of evidence-based practice that led to inconsistency in practice and numerous medication errors, some of which were detrimental to the patient, and contributed to inpatient falls. Stevens (2013) confirmed that there is a gap between what nurses were taught to be effective healthcare practices and what currently holds. Evidence-based practice aligns practice with the knowledge and skills to improve the desired healthcare outcome of the patient.

During the practicum experiences, I observed nurses delivering inconsistent care, especially during the administration of medicines to patients. There were instances when some nurses did not verify the right drug or the dose with the patient medical records or

with a second nurse. Some nurses educated the patient before administering the medicine, while some withheld information about the drug during its administration. The assessment I conducted to discover the reasons for such inconsistencies in care delivery showed that evidence-based guidelines or protocols were non-existent at the project site and that there was little monitoring of nursing practices. The quality manager at the site shared that incidences of adverse events at the site are high among nursing practice. The 2015-2016 Adverse Events Report from the hospital where I conducted the project indicated that occurrences such as inpatient falls are at a rate of 5 to 7 per 100 beds per day. These falls are reportedly the highest incident of adverse events at the hospital, and they can add to the financial burden on the institution. I thus developed and implemented a medication administration management protocol with a focus on the *10 rights* principles of medication administration. Upon evaluation of this protocol, I found that its proper use improves nursing practice and significantly reduces adverse events such as medication errors and inpatient falls.

According to the American Association of Colleges of Nursing (2006), the DNP is competent to scientifically and routinely evaluate nursing practices and implement the necessary changes to affect improved desired patient and community outcomes. The DNP influences transformational changes in the practicum site through health care policy and protocols to guide nursing practices to excellent quality healthcare. Zaccagnini and White (2011) found that it is critical to gain buy-in from other members of staff to move quality improvement projects forward. An interdisciplinary team brings different expertise and

ideas that provide rich sources to help achieve the goals and objectives of the project. The project team works together to plan and execute the project in the allotted time.

Concepts, Models, and Theories

Twigg and McCullough (2013) argued that nurses do not perform well for several reasons such as staff shortages, job dissatisfaction, and not being able to practice in a structured manner. As a result, nurses adopt alternatives methods for saving time and getting the job done quickly. According to Twiggs and McCullough (2013), these alternative methods create unsafe practices that can result in adverse events. In collaboration with the QI team, I designed and implemented the medication administration protocol as a framework to address some of these safety issues when administering medication. However, during the implementation of this protocol, the process of transformation was met with several challenges. Lewin's change management model offers a framework for understanding individual behavior as it relates to change and resistance to change. I used this model to influence nurses' attitudes in such a way as to ensure successful nursing practice. The model offers a mode to identify and understand the factors that interfere with the process of change. The next step is to create an environment to weaken that opposing element while strengthening the approach that is needed to enhance care. Once the change is accomplished, the evaluation process for stability and effectiveness is implemented. There are three steps in this change model: unfreezing, changing, and refreezing.

Lewin (1951) developed the change theory to understand individuals' behaviors while under the influence of various conditions. White and Dudley-Brown (2012) reported that, according to Lewin, people behave differently according to the challenges between perceptions the self and of the environment.

Stokke et al. (2014) found that if nurses have a positive attitude towards evidence-based practice, they are more accepting of evidence-based structures such as protocols. Stokke et al. argued that it is critical that nurses understand and accept those evidence-based strategies for delivering quality patient care. It is important that nurses are encouraged to practice using evidence-based structures to guide their practice.

Relevance to Nursing Practice

A fall is an unintended descent to the floor that may be caused either by intrinsic or extrinsic factors. According to Neto et al. (2015), natural factors include age, sex, certain drug effects, and clinical conditions such as heart disease, an osteoarticular disorder, neurologic and mental state, gait disorders, sedentary lifestyle, and nutritional deficiency. Extrinsic factors include poor lighting, obstacles, irregular or slippery floors, protection bars without elevation, and the lack of banisters. Several other researchers have confirmed that the risk factors for falls can be multifactor, although in some cases there is just a single reason for the fall (Hartholt, Becker, & van der Cammen, 2016; de Jong, Van der Elst, & Hartholt, 2013). Neto et al. (2015) reported that 85-90% of inpatient falls result from intrinsic factors.

Ruxton, Woodman, and Mangoni (2015) found that one recognizable factor that affects inpatient fall are medications such as anticholinergics that cause cognitive impairment leading to falls, fall injury, and possible death. Ruxton, Woodman, and Mangoni explained that many elderly adults are prone to falls due to the side effects of drugs that they take for existing chronic diseases. However, elder patients are not the only patients to receive multiple drugs, as some hospitalized patients receive drugs for therapeutic purposes that may result in a cogitative impairment that can lead to falls.

Summary of Current Nursing Practice

Ausserhofer et al. (2012) reported that between 2.9% and 16.6% of hospitalized patients are affected by adverse events such as medication errors, healthcare-associated infections, or patient falls. These authors also stated that 37–70% of these adverse events are preventable (Ausserhofer et. al, 2012). Nurses regularly report being overworked and fatigued from the high volumes of work, which adversely affects the quality of care required for excellent patient outcomes. Patient outcomes are considered nurse sensitive (Nantsupawat et al., 2015) and therefore are affected by the quality of nursing care nurses deliver. Nantsupawat, et al. (2015) stated that nurses burnout either through emotional exhaustion, depersonalization, or low personal accomplishment that could reduce the quality of care, contributing to negative patient outcomes such as increased medication errors, falls, and infections.

Results from Nantsupawat et al.'s (2015) study showed that approximately 32% of nurses had high emotional exhaustion, 18% had high depersonalization, and 35% had a

low personal accomplishment that accounted for poor quality of care. Nantsupawat, et al. pointed out that medication administration errors are more likely to result in serious harm and death compared to other medication errors. The evidence also has shown that nurse distraction contributes to mistakes during the management of drugs. Raban and Westbrook (2013) suggested that nurses need to decrease interruptions during the administration of medicines. These authors also suggested that nurses need to work with the physician and the pharmacist to reduce the number of medication errors that are associated with patient falls. The medication administration audit tools and other strategies such as medication administration protocols are intended to help manage the rate of mistakes and patient falls. Therefore, hospitals and clinics should implement these strategies as measures of preventing medication errors and patient falls. Nantsupawat et al. also recommended that managers and policy makers should improve the work environment for nurses, which subsequently will reduce nurse burnout and promote patient safety. Raban and Westbrook (2014) have shown that using evidence-based protocols to change medication administration reduces error rates.

Strategies and Standard Practices to Address

The Agency for Healthcare Research and Quality (AHRQ, 2013) outlined numerous care processes that nurses can use to address inpatient falls in acute care facilities. The following are best practices tailored to help the organization prevent inpatient falls:

- Universal fall precautions that focus on best practices such as scheduled rounding protocols, and algorithms which look at a multifactorial approach to addressing inpatient falls.
- Standardized assessment of fall risk factors on admission.
- Care planning and interventions that address the identified risk factors within the overall care plan for the patient.
- Post-fall procedures, including a clinical review and root-cause analysis.

Flynn et al. (2016) also provided some strategies to prevent medication errors in acute care settings. These include

- Educating and training nurses to improve medication safety and avoid the occurrence of unnecessary medication errors.
- Using ongoing plan-do-study-act cycles to identify the issues and make necessary changes to improve the problem.
- Implementing evidence-based strategies to limit interruptions during medication administration.

Local Background and Context

Summary of Local Evidence

Inpatient falls as reported by the 2015 – 2016 Adverse Events Monthly Reports was significantly the highest incident of patient injury at the project site. The reported rate of falls 5 – 7 patient falls per 100 patient days was significantly higher compared to international rates at acute care hospitals with rates ranging from 1.3 to 8.9 falls per1,000

patient days. Hartholt, Becker and van der Cammen (2016) reported that medication errors which rank second to the incidences of inpatient falls were partly responsible for the high rate of falls. A root-cause analysis on inpatient falls was conducted at the site. Results indicated that approximately 80% of inpatient falls were due to side effects of certain drugs and the poor skills of nurses to protect patients from harm. Hartholt, Becker and van der Cammen (2016) confirmed that several types of drugs increased the risk of inpatient falls in acute care facilities and the role for therapeutic monitoring of the drugs were essential.

As a result, the need to reduce the rate of inpatient falls and medication errors became necessary to improve patient care at the site. The management and prevention of patient falls, medication errors and nursing practices were evaluated to help address the problem of patient safety. The medication administration protocol was subsequently developed and implemented in June 2016. This protocol has been utilized by the nurses at the site since 2016 without assessing the results. The goal of this DNP project was to assess whether the medication protocol has decreased the rate of medication errors and patient fall rates at the site.

Role of the DNP Student

The Clinical Facilitator role has the responsible to ensure that high quality patient care was provided and maintained throughout the institution. This high quality of care and patient safety was fostered through organized workshops, conferences and regular staff updates. As a DNP student, I have evolved in my way of thinking and practice. I

have participated by integrating theory into practice and took the position of engaging nurses to utilize evidence-based practice guidelines to promote high quality, safe patient care.

As a DNP student, I took the lead role of enhancing nursing practices from traditional task oriented practice to meaningful practice that determined the goals and objectives of safe patient care. The gaps in nursing practices were identified and critically analyzed to determine the best evidence for practice. For instance, nurses administered medication without the uses of proper documented guidelines. As a result, several errors due to inappropriate practices were recorded, some of which led to patient falls. Upon identification of these gaps, a QI Team was formed immediately that assist in the development and implementation of evidence-based protocols to improve the healthcare outcomes. As the DNP student, I was the team lead, designating responsibilities to the members of the team, guiding them through the processes to keep them focused, and encouraging them along for the purpose of achieving the goal.

Issel and Bekemeier (2010) reported that patient safety was the foundation of quality nursing care, and as a Clinical Facilitator, it was my responsibility to ensure that nurses practice safely. Therefore, with these reasons in mind, I was determined to improve nursing practice which will eventually reduce the rate of adverse events at the practicum site. The Essentials of Doctoral Education for Advanced Nursing Practice (2006) articulated that the improvement of nursing practice should be ongoing to ensure that there are excellent healthcare and patient safety at all times. Despite the challenges

for changing the practices, I endeavored to reduce the rate of adverse events and keep patients safe. The use of the Medication Administration Protocol aimed to reduce medication errors and decrease patient falls.

Role of the Project Team

The QI Team assisted in the development and implementation of the medication administration protocol and was familiar with the standard requirement for the practice of administering drugs to a patient. Therefore, the QIT assisted in gathering data and analyzing the data for this project. Reiss-Brennan, et al (2016) argued that a team approach to addressing issues brings with it expert knowledge and skills from several individuals and professionals. Members of the project team assisted in gathering data from the Organization's monthly adverse events reports to analyze the rate of incidence of medication errors and inpatient falls over the 6 month period. The pre and post implementation data would be graphically expressed to show either an increase or decrease in the rate of incidences of medication errors and patient falls during a 6 months period.

Summary

This project was conducted to determine whether the practice of using protocols such as Medication Administration Protocol decreased medication errors and reduced the rate of patient falls. The objective was to standardize nursing practice and to improve patient care delivery across the institution. Therefore, evaluation the use of the protocol

identified the gaps and provided the DNP student with the relevant information to improve nursing practice, decrease medication errors, and reduce patient falls.

Section 3: Collection and Analysis of Evidence

Introduction

Inpatient falls are the leading cause of adverse events in the acute care setting where I conducted this project. These falls frequently cause physical injury that can lead to complications such as fractures resulting in prolong hospital stay and additional expenses to the institution. In a research study, Milos et al. (2014) reported that inpatient falls could be caused by the effects of certain drugs. As a result of the high rate of inpatient falls and medication errors at the project site, I developed and implemented an evidence-based medication administration protocol to guide nursing practice. This protocol, which was implemented in June 2016, was intended to improve nursing practice, reduce medication errors, and in turn decrease inpatient falls. The purpose of this project was to evaluate the effectiveness of the evidence-based medication administration protocol, improve nursing practice, decrease medication errors, and eventually reduce the rate of inpatient falls.

I work as the clinical facilitator at the location where this project was conducted. As part of my job, I work to ensure that high-quality standards are provided and maintained throughout the institution. These quality standards are encouraged through workshops, conferences and regular updates that I organize. As the DNP student, I took the position of encouraging nurses to practice using evidence-based structured material for high-quality patient care. I established a QI team to assist in the development and implementation of the medication protocol. As the team leader, I guided the process and

encouraged the team members to achieve project goals. The American Association of Colleges of Nursing (2006) has emphasized that the improvement of nursing practice should be ongoing to ensure that there is excellent healthcare and patient safety at all times. Team members continuously compliment me for the astute way I guided the team to successfully achieving the goals and objectives of the project. Some members reported that I showed dynamism and competence as we worked together to get the job completed. The following sections include the focused practice questions, sources of evidence, analysis and synthesis, and a summary of the section.

Practice-Focused Question

Local Problem and Gap-in-Practice

Inpatient falls have the highest adverse incidence rate at the project site. The quality manager reported that falls at the site range from 5 to 7 per 100 beds per day, and approximately 4% of those falls account for the accidental injuries that are preventable if nurses follow scientifically structured guidelines to care for patients. As a result, the quality manager encourage implementing protocols such as the medication administration protocol to help improve nursing practice, decrease medication errors, and reduce the rate of patient falls at the site.

Practice-Focused Question

Would the utilization of the medication administration protocol by nurses decrease the rate of medication errors and reduce the frequency of patient falls at the institution?

Purpose and Approach

The goal of this project was to assess whether the evidence-based medication administration protocol that was implemented in the acute care setting where I conducted this project can effectively guide nursing medication administration practice to prevent medication errors and patient falls. The evaluation process aligned with the practice-focused question by providing statistical evidence to indicate the achievement of the intended goals and objectives and to provide information for improving the quality of healthcare. Melnyk et al. (2014) reported that evidence-based performance can drive the healthcare systems to a higher level of quality, reliability, and consistency as well as reduce adverse events and costs.

The evaluation process for this project would take the form of a pre- and posttest single group design that would measure the rate of medication errors and inpatient falls to show whether there was a decline in both areas after the protocol was implemented. I statistically analyzed data from the pretest–posttest evaluation to determine whether the protocol had a significant effect on nursing practice and the safety of the patients. Valente and MacKinnon (2017) claimed that this design has the advantage of having one chosen group under careful examination. Prior to the treatment assignment, in this case, the medication administration protocol, I took baseline measurements to determine the rate of incidence of medication errors and patient falls at the site as before the protocol was

implemented. Subsequently, I took measurements after the application of the treatment as a posttest to determine whether nurses' use of the medication administration protocol had any effects on the rate of medication errors and inpatient falls.

Before I gathered data from the organization's reports, the organization's institutional review board (IRB), also known as an independent ethics committee (IEC), approved my access to the data from the monthly reports. Walden IRB committee also approved the project. The Walden IRB approval number for this study was 07-27-17-0432938. I collected secondary data since the institution where this project took place receives all adverse events and near misses reports, which include medication errors and patient falls, and then compiles them for analysis. Root-cause analysis is done to identify the primary cause of the problem. Then monthly reports reflect the rate of incidence at the institution.

Sources of Evidence to Address the Practice-Focused Question

I used peer-reviewed journal articles and research studies to help me develop the question and understand the scope of the problem. I collected these journal articles and research studies by searching the Walden University online library and Google Scholar for peer-reviewed articles on patient fall prevention in acute care settings, effects of medication management of patient falls, and management of falls in acute care hospitals. I also searched for articles on medication management, the local and global scope of practice for nurses in the acute care areas, statistical data on fall rates, and international best practice methods for identifying and assessing the risk for falls. Further, I searched

for materials related to strategies for preventing falls, implementing and evaluating fall prevention programs, and auditing medication administration protocols.

The evidence collected from sources such as the monthly adverse events reports from the institution would help to establish the effectiveness of the medication administration protocol that the QI team and I developed and implemented in June 2016. This protocol was prepared and implemented to address the high levels of adverse events reported at the institution and to improve nursing practice. The use of a scientific framework such as protocols developed through the use of middle range theories and concepts helps guide nursing practice (AACN, 2006) and improve the delivery of healthcare.

Review Collection and Analysis of Evidence

I used a medication administration audit to assess nurses' compliance with using the medication administration protocol. Evidence collected from the pretest-posttest single group design helped me determine the effectiveness of utilizing the medication administration protocol at the practice site.

Once the data was collected using the pretest-posttest single group method, they were reviewed by the QI team for relevance then compiled for use in this project. The multidisciplinary team of five people assisted in analyzing the data using SPSS to run a paired *t test* to draw inferences and determine whether the medication administration protocol had a positive effect on medication errors and patient falls.

Inpatient falls at the acute care facility where I conducted this project is the most common incident reported, while medication errors are next in line for reported incidents. Interestingly, effects of medication and the improper management of drug administration are reportedly linked to the high incidence of inpatient falls. Given these high rates of medication errors, the QI team and I developed and implemented a medication administration protocol at the site in June 2016. There was thus a need to evaluate the effectiveness of the protocol. Therefore, I conducted an assessment comparing the rates of medication errors and inpatient falls 3 months prior to implementation of the protocol and 3 months post-implementation to ascertain whether there was a positive or negative change in the rate of medication errors and patient falls at the project site.

I collected data from staff reporting of incidents and patient complaints on the rate of medication errors and inpatient falls at the institution. The organization mandates that nurses report all adverse events and near-misses. The quality department investigates these reports for relevance and initiates measures to prevent the incident from re-occurring. These events become part of the statistics for the monthly adverse events report, which served as the secondary data I used in this project.

Patients' medical records and the monthly adverse events reports consist of patients' information that is private and confidential and that should not be readily available to the public. According to De Bord et al. (2013), confidentiality is a vital responsibility of the medical practitioner. To access the evidence, I wrote a letter to the quality department manager requesting permission to gain access to the information for

my doctoral project. The preceptor countersigned the letter for validation and re-enforcement. In addition to the letter, I provided a summary of the doctoral project. The quality manager submitted these documents to the quality committee for approval. The documents were reviewed by the committee, and I was granted permission with the recommendation that the organization uses the completed documented evidence to improve the nurses' practice at the institution.

Evidence Generated for the Doctoral Project

The medication administration protocol was implemented in June 2016 and was, used over a 6-month period. Therefore, I reviewed the monthly adverse events reports for the 6 months (October 2016 to March 2017), I focused on the reported rate of medication errors and inpatient falls for that period. I gathered data from statistical reports using figures before and after the implementation of the protocol and used the SPSS to run a *t*-test that provided a detailed statistical report with a graphical representation to show the results of the findings.

Participants

The Quality Department provided the adverse event reports during the period from October 2016 – March 2017 and answered any questions deemed necessary that gathered the evidence required for this project.

Analysis and Synthesis

Systems Used for Analyzing the Evidence

A pre- and posttest single group evaluation was conducted that recorded and tracked the rate of medication errors, and inpatient falls over the last 6 months. This test determined the compliance of nurses that administered medication accurately and appropriately using the Medication Administration Protocol implemented June 2016. A baseline measurement of the incidence of medication errors and inpatient falls was determined and recorded before the introduction of the Medication Administration protocol. The level of nurses' compliance to administering medicines using the *10 Rights* was pre-assessed at the commencement of this project and formed the basis of measurement to compare nursing practice over the past 6 months. A retrospective evaluation of patients' medical records and the monthly adverse events reports provided information that determined the prevalence of medication errors, and inpatient falls at the site. In this pretest-posttest single group design, the baselines were identified through observational study and survey using a checklist to gather the data. A protocol to manage the issues identified was developed and introduced as a project. The posttest was conducted to establish the effectiveness of the protocol in reduce medication errors, and inpatient falls, as well as improve nursing practice. A paired *t*-test was be used to determine if a significant difference was present after implementation of the QI program. The *t*-test is a statistical examination that compared the means of two (2) values to identify the variation of each other (Fu et al., 2013). In this case, the *t*-test established the

rate of medication errors and inpatient falls prior to the implementation of the protocol and subsequently compared the rates of these variables after the implementation of the protocol over a 6 months period to identify whether there was a significant difference between each other. The integrity of the proof is assured by determining whether any of the differences between the means are statistically significant. A *p* value of .05 was used to establish if the post-implementation group fall rates improved over the rates of falls before the implementation of the protocol. Secondly, the medication errors rates was evaluated before and after implementation of the QI project, and a *p*-value of .05 was used to determine if there was a significant improvement in medication errors.

Kettner et al. (2013) argued that analysis procedures in a doctoral project may take on several forms. The process chosen should be based on a realistic assessment of the practice-focused question(s). An input-output table gave an inclusive process which invariably identified different sets of information that can be compared with at a glance. Data display can include cross-sectional analysis for comparison with other data. Terry (2015) delineated that line graph is a useful analytical tool used in doctoral projects to address the practice-focused question(s). Terry (2015) explained that line graphs can measure changes during the period under study, in this case, over the 6 months period.

Summary

As a result of the high rate of medication errors and inpatient falls at the site where this project was conducted, a medication administration protocol was developed and implemented in June 2016. There was a need to evaluate the effectiveness of the

protocol to establish whether there was a reduction in medication errors and inpatient falls at the site. A pretest-posttest single design was used to gather data over the past 6 months utilizing data from the monthly adverse events reports of the organization stored at the quality department. The *t*-test was used to analyze and determine the positive or negative changes in the rate of medication errors and inpatient falls at the site. In the following chapter are the findings, recommendations, strengths and limitations of the project.

Section 4: Findings and Recommendations

Introduction

Inpatient falls were the leading cause of adverse events at the acute care facility where I conducted this project. As a result, patient safety was a concern. Initial assessments of nursing practice at the facility showed that nurses practice without evidence-based guidelines that set safety standards, thereby causing inadequate patient care and unsafe medication administration practices. Without these guidelines to help direct nursing practice, a nurse can make several errors administering medications to patients and in monitoring patients to prevent them from falling. Twigg and McCullough (2013) suggested that structured nurses' interventions promote accurate and safe quality nursing practice, thereby creating a safety culture.

Practice-Focused Question

Would the utilization of the medication administration protocol by nurses decrease the rate of medication errors and reduce the frequency of patient falls at the institution?

Purpose of the Doctoral Project

The goal of this project was to assess whether the evidence-based medication administration protocol that was implemented in the acute care setting where I conducted this project can effectively guide nursing medication administration practice to prevent medication errors and patient falls. This evidence-based medication administration protocol is a step-by-step guide including the 10 principles of right administration medication procedures. These rights include: (a) the right drug, (b) the right patient, (c)

the right dose, (d) the right route, (e) the right time and frequency, (f) the right documentation, (g) the right history and assessment, (h) the right to refuse, (i) the right drug interaction and evaluation, and (j) the right information.

I hypothesized that if nurses use this framework to administer medicine to the patients, there will be an improvement in the way nurses practice, which will decrease medication errors and prevent patients from falling. Smeulers et al. (2015) reported that medication administration protocol acts as a checklist to ensure accuracy and motivate safety in nursing practice. Therefore, I sought to determine whether nurse use of the medication administration protocol decreased medication errors and reduced the rate of patient falls in the acute care site where I conducted this project.

Evidence and Analysis

I obtained the evidence for this project from secondary data collected by the quality department on medication errors and patient falls over a 6-month period. This period included 3 months before the intervention of the evidence-based medication administration protocol and 3 months post-intervention of the protocol. The secondary data were records that the quality department had already collected and analyzed for a different purpose. Phillips et al. (2014) referred to secondary data as pre-existing qualitative information that is ready for use in other studies.

At the acute care facility, all adverse incidences are reported and logged at the quality department. The quality department conducts a root-cause-analysis to determine the real cause of the incident, and then categorizes the incident for easy reference. For

instance, a patient was given analgesia for pain, and the nurse failed to monitor the patient for side effects of the drugs. Sometime later the patient attempts to come off the bed without assistance and falls. This incident resulted from the nurse not following the principle of the *10 rights* of medication administration and was categorized as fall due to medication error. At the end of each month, these reported incidences are total to reflect the rate of adverse events.

I was granted ethical approval by the Walden University IRB before accessing information from the quality department at the site. Subsequently, I submitted my IRB approval from Walden University to the acute care facility's quality department, requesting permission to conduct the study. After receiving permission from the quality ethics committee, I collected and analyzed the data using the Statistical Package for the Social Sciences (SPSS) to determine the difference between the rate of medication errors and patient falls before and after the intervention of the evidence-based medication administration protocol. I conducted a *t*-test analysis on the secondary data making use of a pair sample analysis to determine the differences. The pair sample *t*-test provided a detailed statistical report that I used to identify a statistically significant difference between the means of the two groups of patient falls and medication errors over a 6-month period.

Findings and Implications

I conducted a two-tailed paired *t*-test analysis to establish whether there was a significant difference in medication errors and patient falls after the implementation of

the medication administration protocol. The findings indicated that there was a statistically significant difference in the scores for medication errors after the implementation of the protocol. The findings showed ($t=3.0$, $df = 4$, $p = 0.039$) which is less than the p-value of 0.05 selected for determining significance. The findings also showed a significant difference between patient falls after the implementation of the protocol ($t=3.207$, $df = 4$, $p = 0.033$) which is also less than the p-value of 0.05. These results show that there was a statistically significant reduction of medication errors and patient falls at the institution where this project was conducted. However, the secondary data used for analysis were not specific to the unit/ward but was the sum of the institution's medication errors and patient falls. The findings also suggest that other factors could be the cause of the reduction of medication errors and patient falls.

Never the less, I found that when I evaluated the nursing practice using the medication audit tool, the result showed that the nurses were adhering to the medication administration protocol that led to a reduction in medication errors and patient falls. This positive outcome of the project highlights the need for managers to encourage the use of structured, evidence-based practice throughout the institution. The adherence of nurses to the protocol leads to an overall decline in unplanned hospitalization due to medication errors and patient falls, thereby positively influencing economic outcomes as well. Consequently, these changes help build trust and confidence in the people of the community. According to Shaw et al. (2014), nurses who manage patient care by using a structured framework experience consistently positive effects on patients' outcomes.

Positive Social Change

As a result of the implementation of the medication administration protocol, the community will gain a sense of confidence from reduced adverse events such as falls and medication errors at the health institution. Vahdat et al. (2014) claimed that patients are a key influence on the development of health care systems and can encourage positive changes to those systems. Nurses' chronic shortage of time for patients and low staff motivation are significant obstacles to providing adequate patient care. When nurses provide care within a framework such as the medication administration protocol, they involve the input of the patients, thereby allowing them to make informed decisions about the management of their health care.

Recommendations

At the acute care facility where I conducted this project, I observed nurses providing health care without using a standardized structure. This resulted in several adverse events such as medication errors and patient falls. As a result, the QI team and I developed and implemented an evidence-based medication administration protocol to help guide nursing practice. I conducted a *t*-test analysis to identify the effects of the protocol. The findings of the *t*-test analysis indicated that there was a significant improvement in nursing practice as medication errors and patient falls decreased tremendously over a 3-month period. Implementing an evidence-based structured framework into nursing practice is imperative for the changing context of healthcare services. According to Stevens (2013), evidence-based nursing frameworks are developed

to help transform nursing practice through a standardized approach that is relevant to clinical decisions.

Strengths and Limitations of the Project

The Strengths

The strength of this project could be attributed to the framework for developing a safety culture at the site. As the nurses used the protocol, they become more experience in following its steps while checking and double-checking the procedure to ensure accuracy in the process. Frieden et al. (2014) confirmed that the guidelines of a framework promote safety and prevent potential adverse events. These guidelines improve nurses' activities through a step-by-step design that includes patient involvement, critical appraisal of medication management, and rigorous assessment of patient risk for safety. Frieden, et al. (2014) noted that protocols reduce variability in practice while helping to contain cost to the patients and the institution.

The Limitations

There are several limitations to this project. The project was conducted on one ward/unit of an acute care hospital. Upon assessment, I recognized that there were limitations to nursing practice, such as the limited existence of protocols to guide the nursing practice. Nurses were not scientifically guided as they practice. Errors were made as nurses practiced, and the recording of such errors were pooled as an institution and not categorized under the different unit/ward. As a result, the statistics I used were not unique to the ward/unit or apportioned to the particular ward/unit.

The findings of this project indicated that implementing a structured framework into nursing practice provides improved patient safety, quality, and reliability in healthcare. This reliability of nursing practice improves patients trust and confidence. Quigley and White (2013) noted that highly reliable health facilities are achieved through high levels of safety practice. Therefore, additional nursing protocols to guide nursing practice must be implemented to avoid preventable nurse incidences such as hospital-acquired infections, inaccurate documentation, and falls. Prevention protocols can help safe practice and improve the safety of patients and the community.

Summary

At the project site, adverse events occurred as a result of the lack of established guidelines for nurses. I implemented the project to prevent errors and falls, and conducted it over a 6-month period using secondary evidence from the facility. The *t*-test findings showed that there was improvement after the implementation of the protocol. The results also showed a positive social change in the community, which became more confident as a result of improved healthcare practices by the nurses. The strengths of this project are the experiences gained by the nurses during the transition to using an evidence-based framework to provide care.

Section 5: Dissemination Plan

Nurses scarcely used the evidence-based structured practice in their nursing practice at the acute care facility where I conducted this project. As a result, there were regular mistakes such as medication errors and patient falls, which made the services unreliable and unsafe. After recognizing the gap in nursing practice, the QI team and I developed and implemented the medication administration protocol to help address these issues. Three months after implementing the protocol in nursing practice, there was the need to determine whether the protocol made a significant difference in decreasing the rate of medication errors and patient falls. I conducted an analysis to determine whether the protocol made a difference with these adverse events. The findings of the study showed that the implementation of the evidence-based medication administration protocol made a significant difference in the way nurses administer nursing care before, during, and after drugs are given to a patient. Additionally, medication errors and patient falls were significantly reduced over the 3-month period. Stevens (2013) has argued that sharing scientific knowledge such as the findings from this project could ensure that quality improvement efforts continue and that there is support from management to implement best practice. My intent of sharing this information with the institution is to convince management about the effects of nurses using the evidence-based structured framework to change practice and encourage a safe culture. Therefore, I will prepare an executive summary of this project and submit it to the institution.

Analysis of Self

Prior to conducting this project, I believed that individuals could change, and so I set forth by adopting Lewin's three-stage model of change (unfreezing-change-refreeze) to gain nurses' interest in the project. The challenges were overwhelming at times, but as a DNP student, I developed skills that allowed me to be at the highest level of leadership (AACN, 2009) using different styles of management to influence my colleagues and managers to participate in the project actively. Often my feelings were mixed. For example, I felt excited when the staff began showing interest and working with me to bring the project to fusion. Other times I became disappointed when nurses protested about time consumption and wanting to reject the project. Nurses understood the purpose of the project but felt the burden of overcrowding and short staffing at the site, and they reacted negatively if not frequently encouraged.

As this project unfolded and the findings showed the protocol's positive impact on nursing practice, I developed an eagerness to go on and move nursing practice to another level at the acute care facility. It is my professional duty as a DNP to work in a team with other professionals such as nurse managers, physicians, the chief executive officer, the board of directors, and the nursing council to bring nursing practice at the facility and in the country to the highest level of service.

Summary

In this DNP project, I have identified the importance of using an evidence-based structured framework to provide Findings also showed a significant difference between patients falls prior effective nursing care. This project has demonstrated that with the implementation of the evidence-based medication administration protocol, medication errors and patient falls decreased at the acute care facility where I conducted this project. As a result of using this protocol, nurses were able to engage patients in their care and build a trusting and safe environment for them. Thus, emphasizing an evidence-based structured framework in practice helps reduce the rate of adverse events and improve patient care service. The development and implementation of such protocols should be encouraged and applied to nursing practice throughout the facility to improve health care services, thereby establishing a safety culture that will increase patients' confidence.

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