The Effect of Medication Reconciliation Timeout on Patient Safety: An Evidence-Based Project

Renante Dizon, MSN, RN

School of Nursing, University of St. Augustine for Health Sciences

This Manuscript Partially Fulfills the Requirements for the

Doctor of Nursing Practice Program and is Approved by:

Dr. Douglas M. Turner, PhD, DNP, RN, CNE, NE-BC, NEA-BC

Dr. Andrya Rivera-Burciaga, DNP, APRN, FNP-BC, ACHPN

Dr. Pamela Gobina, PharmD, MBA

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University of St. Augustine for Health Sciences
DNP Scholarly Project
Signature Form

Student Last Name: Dizon	**First Name:** Renante	**Middle Initial:** B

E-mail:
r.dizon@usa.edu

Title of DNP Project:

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I have reviewed and approved this final written DNP Project. My typed name below serves as my electronic signature.

Faculty/Preceptor Typed Name	Electronic Signature	Email Address	Date
DNP Project Primary Faculty: Douglas M. Turner, PhD, DNP	Douglas Turner	dturner@usa.edu	08/05/2020
DNP Project Preceptor: Pamela Gobina	P. Gobina	pamela.lawani@gmail.com	8/4/2020
DNP Project Preceptor: Andrya R. Rivera-Burciaga	Andrya R. Rivera-Burciaga	aburciaga76@gmail.com	8/5/2020

Abstract

Practice Problem: There was a report of a high rate of medication errors from inaccurate medication reconciliation during admission to a local hospital in South Texas. The medication error rate was 14.88% on 20 reviewed charts, and 85% of all evaluated charts contained at least one medication discrepancy.

PICOT: This evidence-based, system-change project was guided by the following PICOT question: For nurses administering medication in a long-term acute care hospital, does the implementation of Medication Reconciliation Timeout Process (MRTP) decrease the medication errors, compared to the usual medication practice, in one month?

Evidence: Thirteen pertinent studies recommended the use of a combination of checklists and the timeout process to see a reduction in the number of medical errors and improvements in performance and safety.

Intervention: The evidence-based intervention utilized MRTP with a checklist while performing medication reconciliation during admission. Two nurses checked the medication reconciliation for accuracy and completeness by comparing the medication list against transferring facility to physician's admission orders.

Outcome: The outcome of the project after the evidence-based intervention was a medication error rate of 3.77%, which was a significant reduction from 14.88%.

Conclusion: The implementation of MRTP resulted in an 11.11% decrease in medication errors within four weeks in a long-term acute care facility.

The Effect of Medication Reconciliation Timeout on Patient Safety

Medication safety was at the core of the Joint Commission's National Patient Safety Goals (Joint Commission, 2015). Numerous studies support the concept that improved medication reconciliation reduces medication errors and adverse drug events. Poor communication of medical information can result in medication errors, especially when patients move frequently from diverse health care settings (Frydenberg & Brekke, 2012). The transition of care leaves an avenue for medication discrepancies when incomplete and inaccurate information is relayed between the health care team and patients which are errors that could be prevented with better communication among health care workers.

The purpose of this Doctor of Nursing (DNP) project was to improve communication among the healthcare team by implementing best-practice principles in medication reconciliation. This paper includes the discussion of the significance of practice problems, the Population Intervention Comparison Time (PICOT) question, theoretical framework, synthesis of the reviewed literature, practice recommendation, and project settings. It also outlines the project mission, vision, project plan, evaluation, dissemination. The paper ends with a conclusion that demonstrated the reduction of the medication error rates after implementing the evidence-based intervention.

Significance of the Practice Problem

Medication errors can result in severe patient injury or death (Aldhafeeri & Alamatrouk, 2019). The different types of medication errors and the frequency of such errors vary substantially, depending on the care settings (Bates & Slight, 2014). Medication errors have rarely been a problem in areas like obstetrics, where medications have been generally avoided (Bates & Slight, 2014). However, errors have been much more frequent in intensive care units,

where patients received an average of 25 medications daily (Bates & Slight, 2014). When medication errors result in harm, it is called an adverse drug event (Bates & Slight, 2014).

Medication errors have had significant health and economic consequences (Chen et al., 2019). The errors affected the essential aspects of morbidity, mortality, and health care costs (Hughes, & Blegen, 2008). About 7,000 to 9,000 people have died from medication errors every year in the United States (Tariq & Scherbak, 2019). Worldwide, the costs of medication errors have been estimated at $42 billion a year (World Health Organization, 2017). Since medication errors have occurred globally, national and international safety campaigns were and continue to be necessary (Dellabarca, 2019).

The instances of medication error incidents, and variation of such accidents, increased over the past several months in the chosen facility (Cornerstone Healthcare Group, 2019). The facility's medication error rate was 0.30%, with a total of 115 occurrences for 2019. The rate for adverse drug reaction was 0.2%, which consisted of one occurrence in June 2019 (Cornerstone Healthcare Group, 2019). During the initial interview, the director of the pharmacy verbalized that evidence-based project was needed in the area of medication reconciliation and said that improper medication reconciliation would result in increased medication errors and variances (P. Gobina, personal communication, September 27, 2019).

Framework of the Problem

Rogers's Diffusion of Innovations Theory (Kaminski, 2011) was the theoretical framework that drove the reduction of medication errors in the chosen facility with the implementation of a Medication Reconciliation Timeout Process (MRTP). Rogers's Diffusion of Innovation Theory described the process as something that occurred when people adopted a new intervention, idea, practice, product, and philosophy (Kaminski, 2011). A person must recognize

the idea, behavior, or intervention as new or innovative to facilitate diffusion (LaMorte, 2019). Rogers differentiated five categories of innovation adopters: innovators, early adopters, early majority, late majority, and laggards (Kaminski, 2011). Over time, the person adopts the new idea, intervention, or practice. Adoption signified that a person had executed something differently from what had previously been practiced (LaMorte, 2019).

Rogers's Theory of Diffusion of Innovation (Kaminski, 2011) applied to the project in two key areas. First, the intervention of MRTP needed to be communicated to the staff nurses as a new practice along with its purpose: to reduce medication errors. In addition, Rogers's categories of innovation adopters were used to identify the nurses on staff who would serve as facilitators and barriers to adoption of the intervention and to move them to achieve desired project outcomes.

Rogers's Theory of Diffusion of Innovation connected the process of adopting change to the individual's perception of a new practice (Tariq, 2019). The initiation and implementation of "timeout" during medication reconciliation was a new best practice in the facility, and the decision to adopt it defined innovation. The goal was to utilize new best practice principles to ultimately reduce medication errors. This project applied the checklist tool created explicitly for optimal medication reconciliation.

Scholarly Question

The PICOT question for the change project was: For nurses administering medication in long-term acute care hospital (P), does the implementation of Medication Reconciliation Time out Process (I) compared to the usual medication practice (C) decrease the medication errors (O) in one month (T)? The population of the project was nurses who administered medications at the hospital. The nurses provided specialized care to the patients in intensive care, telemetry, and

medical-surgical units. The facility's nurses categorized their professional backgrounds as licensed vocational nurses and registered nurses.

The intervention proposed in this paper demonstrated medication reconciliation by utilizing MRTP. Inaccurate medication reconciliation had led to medication errors that consequently caused increased morbidity, mortality, and healthcare costs (Kraus, Murphy, & Pontiggia, 2017). Proper medication reconciliation reduced medication errors. The desired outcome of the project was a 10% or more reduction in the medication errors, along with an 80% or higher staff compliance rate with the MRTP.

Literature Search Strategy

The purpose of the search process was to conduct a comprehensive review of the literature regarding the implementation of the MRTP to reduce medication errors in a long-term acute care hospital. A systematic literature search utilized the following University of St. Augustine Library databases: The Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed, and ProQuest COMPLETE. The search strings /keywords were *timeout* OR *medication reconciliation checklist*. The literature search was limited to "full text only" articles published from 2014 to 2019.

Literature Search Results and Evaluation

The CINAHL database search yielded 54 articles, PubMed 100 articles, and ProQuest COMPLETE 116,290 citations. After limiting the search to range from 2014 to 2019 to include the most current data on current best- practice, 116,444 articles remained. Inclusion and exclusion criteria were applied to narrow the search. Exclusion criteria were *non-human,* and *pediatric population*. Furthermore, the inclusions criteria were English language articles, scholarly journals, articles with abstracts, full text, peer-reviewed articles and those addressing

patient *safety*. An inspection of the abstracts and titles resulted in the elimination of 16,251 articles not suited for the PICOT question. The resulting 193 articles were scrutinized, which resulted in 173 citations. Articles were manually sorted and underwent a full text screening. Additional exclusion was based on duplication of seven articles, which were informational, rather than being study-based reports, and articles not related to the PICOT question. After conducting the search strategy and utilizing the PRISMA model, 13 articles were included in the proposed project. See Figure 1 for the PRISMA Diagram.

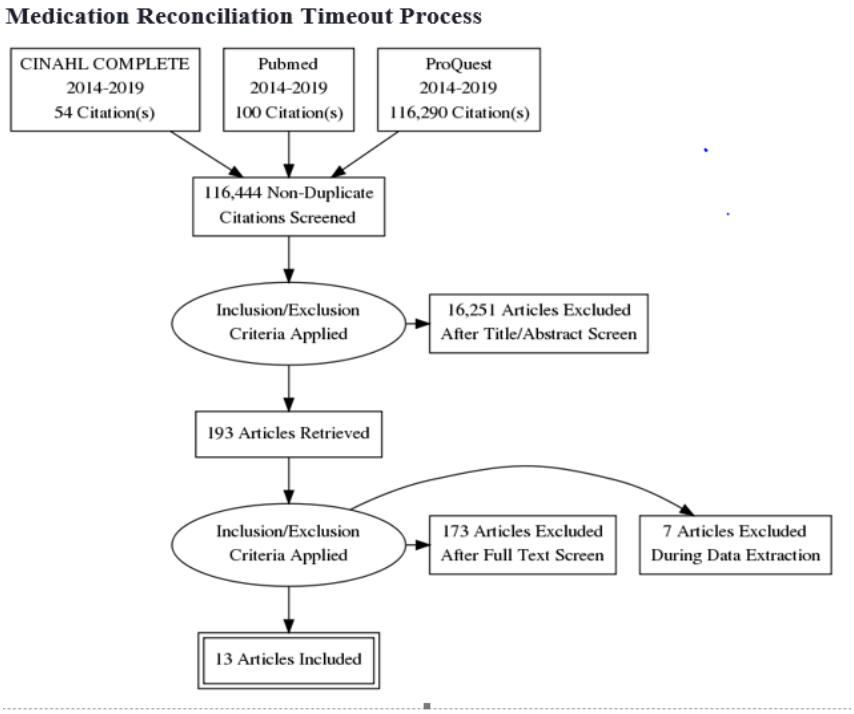

Figure 1. Flow chart of PRISMA model for literature review search.

The 13 articles retrieved from the literature review were evaluated using the Strength of Recommendation Taxonomy (SORT) to determine the quality of individual study and the strength of the recommendation based on the body of evidence. The A-level recommendation was reserved for articles that had good-quality patient-oriented evidence, while B-level was used for articles that were irregular or of limited-quality, patient-oriented evidence (Ebell et al., 2004).

Finally, the C-level was reserved for articles based on consensus, standard practice, and opinion (Ebell et al., 2004). The 13 articles included in the DNP project were all rated A-level. Following the in-depth evaluation of the literature and using the algorithm recommended by the Strength of Recommendation Taxonomy SORT (Ebell et al., 2004), eight articles with Level 1 evidence were included. There were two articles selected for Level 2 due to limited quality evidence. Finally, there were three articles rated in Level 3 due to consensus guidelines and usual methods.

Themes from the Literature

Synthesizing the literature review involved the process of combining ideas or emerging elements needed in the project or to answer the PICOT question (Fries-Gaither, 2010). Literature reviews were organized sequentially, by topic, theme, method, results, theory, or argument to generate categories that were meaningful and relevant to the research question (Fries-Gaither, 2010).

The first step of the literature review was reading over study reports that had used checklist for patient safety. Seven studies employed checklists to provide accurate and complete data, prevent errors, and improve performance (Gillespie, Withers, Lavin, Gardiner, & Marshall, 2016; Huber et.al., 2017; Kozusko, Elkwood, Gaynor, & Chagares, 2016; Lea et al., 2016; Ruggiero, Smith, Copeland, & Boxer, 2015; Shear et al., 2018; Westmore, 2016). Checklists were used in a variety of settings, such as operating rooms, intensive care, outpatient, and inpatient areas. The utilization of a checklist, regardless of its purpose and intent, exhibited a Level 1A: evidence of good to high-quality SORT criteria. See Appendix C for a summary of primary research evidence, and Appendix D for a summary of systematic reviews.

The second theme exhibited in the review was implementing "timeout" in medication reconciliation. “Timeout” intervention yielded Level 1-3, quality grade A using SORT criteria.

The timeout on medication reconciliation was modeled after the operative timeout process. In four articles, the application of "timeout" was used as a as part of the intervention in medication reconciliation and produced positive outcomes (Lai, Anderson, Weinberg, & Rosenblatt, 2015; Shear et al., 2018; Singh, & Zughaib, 2019; Tainter et al., 2018). Refer to Appendices C and D for more information.

The third theme identified was that the collaborative effort between the pharmacists and the healthcare team significantly reduced medication variances. The results of studies examining collaborative interventions among staff displayed good quality evidence 1-2, A Level from SORT criteria (Hazelton et al., 2015; Weingessel et al., 2017). See Appendices C and D for more results.

Practice Recommendations

After conducting the review of literature directed by the PICOT question, and grading the evidence of the results, the synthesized recommendation for reducing medication errors was the application of the MRTP. The scientific evidence of the reviewed articles supported the use of a checklist. The utilization of a checklist in the medication reconciliation, in addition to a “timeout" process, synergized the reduction of medication errors. The intervention was a good fit for the particular hospital setting, particularly given limited electronic health record (EHR) availability.

The Institute of Healthcare Improvement (IHI) recommended that accuracy should be present in every step in the medication reconciliation process (IHI, 2019). A structured approach to patient care can improved compliance through the use of checklists. The MRTP was modified from a surgical checklist used in operations for the prevention of medical errors. (Tainter et al., 2018). At admission, the patient underwent a timeout process during which a nurse completed a

checklist to identify discrepancies such as medication omission, duplication, change in frequency, change in doses, and adjustment. A second nurse used the checklist for accuracy before transmitting information to the pharmacist. As suggested by the Institute of Healthcare Improvement (IHI, 2019), the checklist contained the data needed to collect and maintain an updated medication list. It was used to verify, clarify, reconcile, and transmit the correct medication information. See Appendix G for the MRTP checklist.

Project Setting

The setting of the project was a small, 50-bed, long-term acute care hospital in South Texas. The facility was a specialty care institution for patients who needed a bridge for a continuum of care and required immediate and long-term care treatment (Cornerstone Healthcare Group, 2019). The chosen facility, which carried the mission of providing exceptional patient care and assistance to inpatient adults in intensive care, telemetry, and medical-surgical units (Cornerstone Healthcare Group, 2019). To achieve this mission, the stakeholders, primarily the hospital leadership, verbalized a need to reduce the incidence of medication errors. The director of pharmacy and the director of quality stated the importance of conducting a targeted evidence-based project to increase compliance in medication reconciliation and to decrease medication errors. An organizational assessment was thus completed using a Strength Weakness Opportunity Threat (SWOT) analysis. Results can be found in Appendix B.

Project Overview

The vision of the proposed project was to reduce the medication error incidence by 10% of the current rate, and the mission was to implement MRTP among nurses to do so. The congruence of the project's vision and mission with those of the hospital supported the implementation. The short-term goal of the project was to see collaboration among the

stakeholders in the implementation of the MRTP intervention. The long-term goals of the project were for it to be sustained for three years or more in the chosen hospital, and to achieve a 50% to 75% reduction of medication errors over a three-year period.

Project Description

Lewin's Change Management Theory was the change model used for the project. The model explained human behavioral experience when facing any pattern of change and resistance (Sutherland, 2013). Lewin's theory was appropriate for the facility due to the new intervention of the timeout process in medication reconciliation for organizational change. Lewin's model featured three distinct stages: unfreezing, moving, and refreezing (Bosak, 2003). The objective of the model was to identify factors that hinder change from happening. The initial stage of unfreezing required identifying the key players that affected by the change of implementation of the MRTP, such as the frontline nurses, administration, and pharmacists. In this stage, the team had to opened communication to identify the factors that would have made the project succeed or fail. The second stage was the moving stage, during which the actual change process occurred. The timeline, workflow and education training were essential in this stage to finish the project (Spetz, Burgess, & Phibbs, 2012). Refreezing was the last stage of the theory and implementation of the MRTP checklist. This was when the stability and sustainability of the project were evaluated to determine any possible problems that occurred during the implementation stage.

The MRTP was implemented across all of the admissions in the facility. The MRTP patterned in the surgical best practice used a "Timeout" and checklist to review essential safety elements before surgery. In this project, two nurses checked the medication reconciliation before faxing required medication to the pharmacist with a completed timeout checklist. In the previous

practice, two professionals (the pharmacist and a nurse) had checked the medication reconciliation. The implementation of MRTP included review by two nurses simultaneously and then by the pharmacist. The collaborative effort of the pharmacist, nurses, and provider resulted in the reduction of medication errors in the facility.

The utilization of the impact/risk formula in assessing risk factors for the success of the Medication Reconciliation Timeout Process project exposed two risks: inadequate education, and leadership disengagement. The lack of education and training reduced the impact of the project, and the probability of failure was elevated because no full-time educator was currently assigned to the hospital. The training/education was a shared responsibility with the chief nurse officer (CNO). Creating Medication Reconciliation Champions alleviated the CNO's burden. The medication reconciliation champions assisted in the educational MRTP training, which was done consistently during new nurse orientation, yearly competency, and on every shift if needed. The second risk identified was leadership disengagement. An interview with the frontline staff and other leaders showed that previous programs had not been successful due to minimal involvement of the facility's leaders. To combat this issue, weekly huddles were conducted within the leadership team to discuss medication errors. The huddles were led by the pharmacist or the medication reconciliation leadership champion.

The approval letter for the project was submitted and received from the University of St. Augustine for Health Sciences (USAHS) Evidence-Based Practice Review Council (see Appendix J). This approval letter was followed by the submission to the facility's leadership team (see Appendix K for facility approval letter). The next step was the one-week education training for the nurses on the MRTP. The total duration of the project, from implementation to completion was four weeks. See Appendix E for a detailed project timeline.

The project budget was small. The main costs of the project, $350, were printing educational materials, handouts, and flyers to promote the new MRTP initiative. A minimal budget of $200 was allocated to the Kaizen event. The total project costs were approximately $550. See Appendix F for more detailed budgetary breakdown.

Project Evaluation

The evaluation of the project was completed by determining the medication error rate at pre and post-project intervention through chart review audits of 20 patients. The data came from components of proper medication reconciliation, such as the documentation of allergies, omitted medications, error in transcription, or any elements considered as medication errors. The goal was to review 20 charts for four weeks before the implementation of MRTP to determine the current medication error before the intervention. After four weeks of implementation of the MRTP, designated Champions conducted a 20-chart audit to determine the improvement of medication errors.

Another outcome measure included was the compliance of the nurses to the new intervention, with a goal of 80% and above for the adherence rate. The purpose of the project was to reduce medication errors by implementing MRTP. The population, all of whom were nurses played a critical role in the reduction of medication errors. It was essential to address the nurses' years of experience and their education, as the literature review findings suggested these factors had a significant association with medication errors. The article of Sears, O'Brien-Pallas, Stevens, & Murphy (2016) cited that a higher level of nursing experience-reported in less severe medication errors. The variables included in the project were years of experience, education background, and job title. See Appendix H for the data analysis.

Project Evaluation Results

A collaborative effort with statisticians assisted the data analysis and interpretation. The raw data was recorded and analyzed, utilizing the SPSS software, version 23. Descriptive statistics were included in the analysis of the data and evaluated to answer if any statistical relationship existed between medication error rate and admission medication reconciliation pre- and post-intervention. Statistical analyses included calculation of frequencies, means, standard deviation, and change percentage. See Appendix H for the complete list of variables presented for the project.

Participants' Demographic Data

The project's participants were 20 house supervisors and 20 primary nurses. The participants were directly involved with medication reconciliation during admission at the hospital. Participants' demographic information was obtained from the CNO, which included gender, job title, years of experience, and educational background. The aggregated results for these demographics are included in Figures 2 through 5.

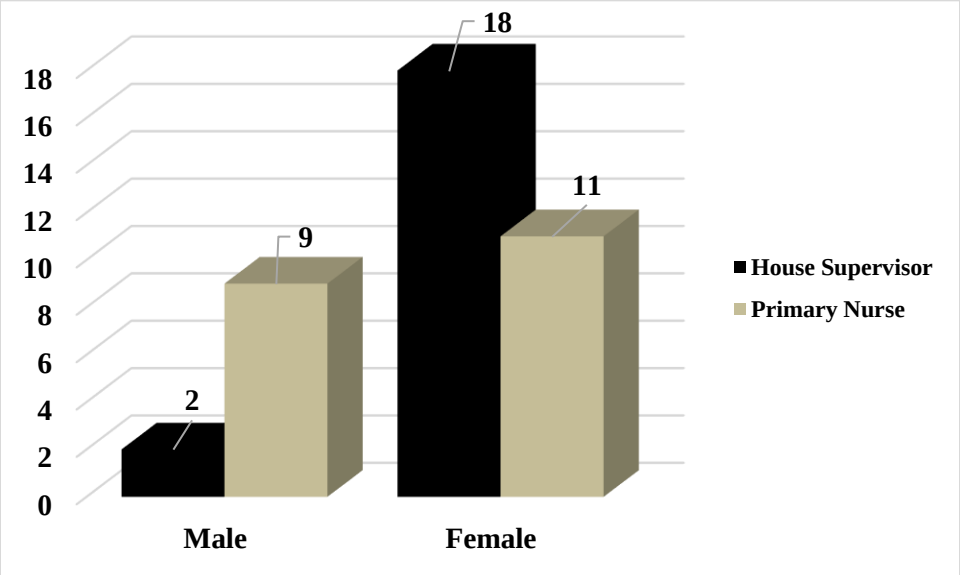

Figure 2. Gender of participants.

The ratio of female to male participants was 29 to 11, respectively: 10% were male, and *n*=18 or 90% were female. The gender of the house supervisor was attributed as *n*=2. Of the primary nurses, *n*=9 or 45% were male, and *n*=11 or 55% were female.

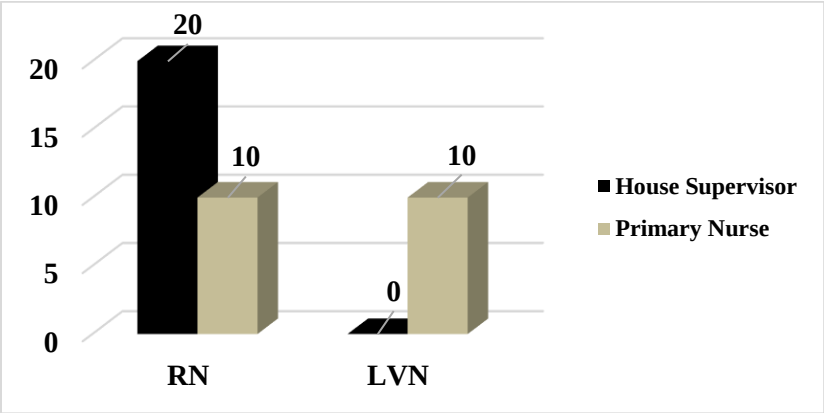

Figure 3. Job title of participants.

The ratio of License Vocational Nurses (LVN) to Registered Nurses (RN) participants was 10 to 30, respectively. The program included both RNs and LVNs. All of the house supervisors (*n*=20, or 100%) were RNs. The primary nurses were divided into *n*=10 or 50%, who were RNs, and the other *n*=10 or 50%, who were LVNs.

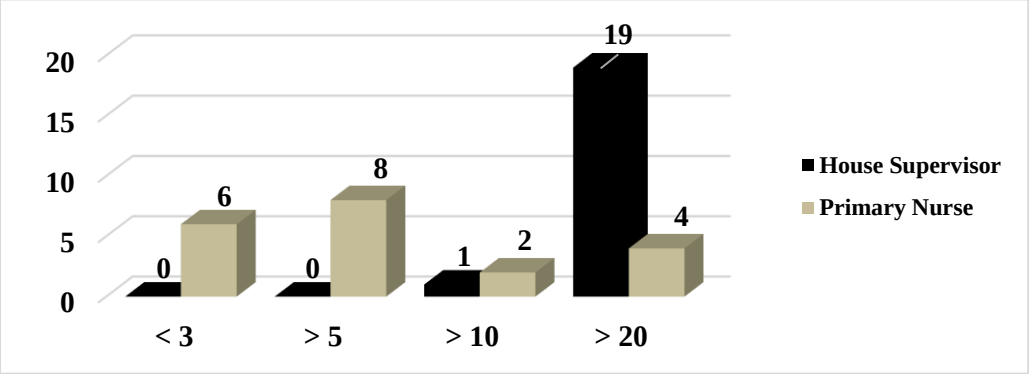

Figure 4. Years of experience of participants.

The figure shows that *n*=1 or 5% of house supervisors had work experience greater than 10 years, while *n*=19 or 95% had greater than 20 years. Six or 30% of primary nurses had

experience of less than three years, *n*=8 or 40% were greater than five years, *n*=2 or 10% had greater than 10 years, and *n*=4 or 20% had greater than 20 years of experience.

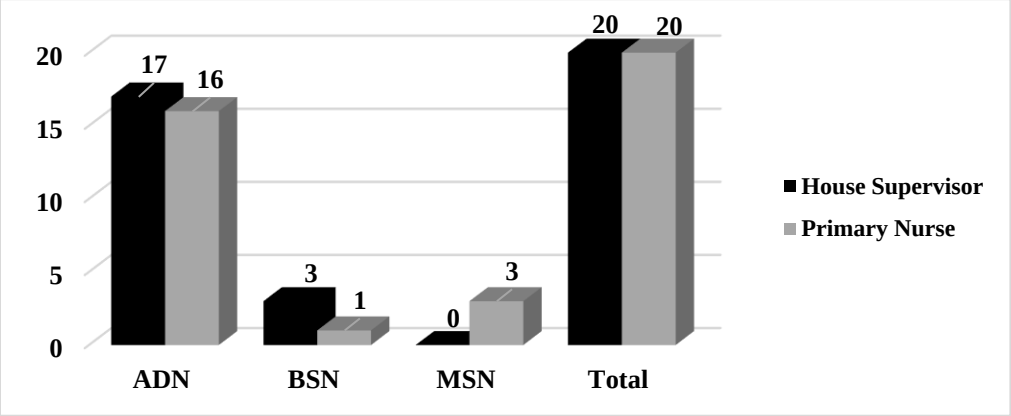

Figure 5. Educational attainment of participants.

This figure shows that *n*=17 or 85% of the house supervisors reached the ADN level of educational attainment, and *n*=3 or 15% attained their BSN. Sixteen or 80% of primary nurses reached an educational attainment of ADN while, *n*=1 or 5% were holders of a BSN, and *n*=3 or 15% had MSN degrees.

Medication Error Rate

The medication error rate was obtained by conducting chart reviews of 20 patients before and after implementation of the MRTP. The medication error rate was measured by dividing the total number of medication errors by the total number of medications ordered. Refer to Table 1 for the computation of medication error rates. The baseline medication error rate was 46, or 14.88%. A month after the implementation of MRTP, the medication error rate had dropped to 10, or 3.88%. See Table 1 for the medication rate data.

Table 1
Medication Error Rate

	Medication Errors	Total Number of Medications	Raw Score	% Medication Error Rate

Pre MRTP	46	309	0.1488	14.88
Post MRTP	10	265	0.0377	3.77

Statistical Analysis

The performance improvement project utilized the SPSS for data analysis of measurement and interpretation. To determine the project's statistical significance, an unpaired t-test was completed to compare the medication error rates before and after the implementation of MRTP. The *p* value = or < 0.05 was the determinant for the evidence-based project's statistical significance. See Table 2 for the pre -and post -Medication Reconciliation unpaired t-test statistics.

Table 2

Pre- and Post-Medication Reconciliation Unpaired T-Test Statistics

Medication	N	Mean	SD	df	t-value	p-value
Pre-Reconciliation	20	2.30	1.75	38	3.847	0.000
Post - Reconciliation	20	0.50	1.15			

Significant at the 0.05 level (2-tailed).

As seen in in Table 2, there was statistically significant difference between the score of pre-(M = 2.30, SD = 1.75) and post (M = 0.50, SD = 1.15) conditions. The t-value was 3.847, which was significant at alpha =.05, resulting in a statistically significant difference between the participants' results of pre- and post-MRTP.

Discussion and Implications

In this project, the utilization of MRTP was clinically significant because it decreased medication errors. When two nurses performed timeout and utilized a checklist on medication reconciliation, they promoted patient safety and reduced medication errors. Accurate and complete information was present when initiating medication reconciliation. This resulted in the reduction of medication discrepancies.

The major outcome of the findings of the project was the reduction of medication errors due to MRTP intervention. Pre-intervention, 20 were reviewed), and 17 (or 85%) charts had at least one medication error. Therefore, only 3 (or 15%) were correct. In one month, the implementation of the MRTP checklist dramatically reduced the medication error rate from 14.88% to 3.88%. See Table 1 for the complete data.

Another outcome measure identified in the project was the nurse compliance with MRTP checklist. It was expected that all admission nurses would utilize the MRTP checklist. While medication error rates improved post-intervention, the nurse compliance rate did not surpass the initial goal of more than 80% compliance. There were 44 admissions for June, and only 23 MRTP checklists submitted to the CNO. Therefore, the nurse compliance rate to the MRTP was only 52%. Refer to Table 3 for nurse compliance rate data. One significant reason for the low nurse compliance rate was the accessibility of the checklist. For the first three weeks of implementation checklist were placed in the house supervisor's folder in the huddle room. After the MRTP Team's evaluation of the problem, the solution was to place the checklist in the admission packet for easy accessibility. Over the last week, there was an increased compliance of nurses utilizing the MRTP checklist.

Table 3

Nurse Compliance Rate

Nurse Compliance to MRTP	Frequency	Percentage
	f	%
Nurse Compliance to MRTP checklist	23	52
Nurse Non-Compliance to MRTP checklist	21	48
Total	**44**	**100**

The CNO conducted MRTP training for all nurses for 1 week. The house supervisors, also serving as the MRTP champions, assisted in educating all the facility's nurses using the prepared PowerPoint presentation. See Appendix I for detailed contents of the training. A total of 40 nurses participated in training: 20 house supervisors and 20 primary nurses (see Figure 6).

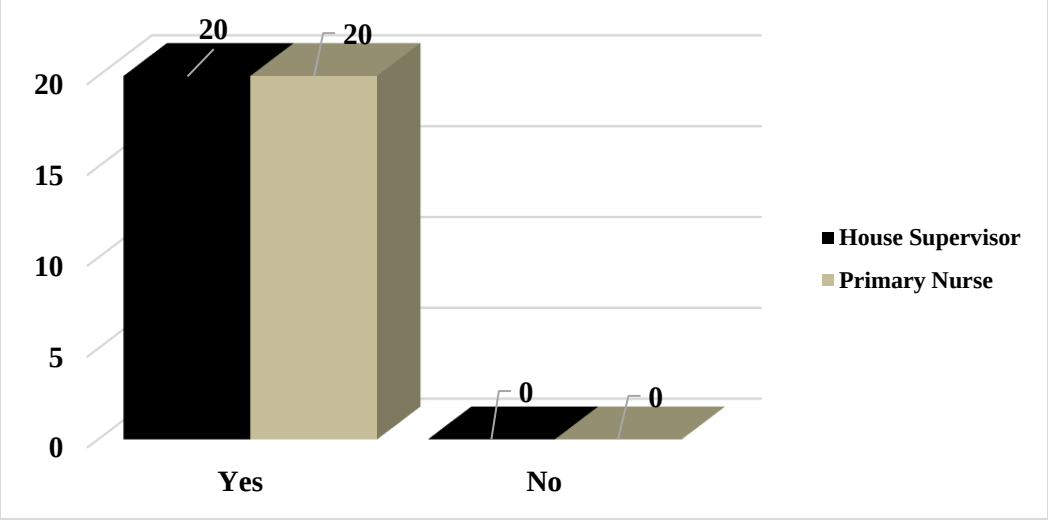

*Figure 6***.** MRTP training.

A few nurses initially resisted the practice change, but with constant education and the CNO's direct involvement, their opposition dissipated. Another factor that helped the nurses transition from the resistance stage into the participative stage was being presented with facts about the pre-intervention medication error rate. Once they knew that there was a practice gap in medication reconciliation, facility's nurses were receptive to improving the current process.

Medication reconciliation was a collaborative effort of the health care team. An accurate medication reconciliation decreased medication discrepancies and medication errors. The MRTP intervention's success was possible when two nurses are simultaneously checked for accuracy, transcription errors, and completeness of medication reconciliation by using a checklist. Incorporating "timeout" during the medication reconciliation process allowed the two nurses to pause immediately to confirm the correct medication information. The utilization of the best practice of MRTP resulted in providing safer and improved quality care in clinical practice.

Dissemination

Matus, Wenke, and Mickan (2019) cited the importance of disseminating the result of a project or toolkit by the leadership team and other interprofessional staff (2019). The collaborative involvement of the whole team increased project buy-in and facilitated clarity of communication. The distribution of evidence-based project should encourage extensive implementation of changes in practice, particularly with patient safety (Berman, Raval, & Goldin, 2018).

The Agency for Healthcare Research and Quality (AHRQ, 2018) suggested six main elements in the dissemination plan:

- Project findings- What is going to propagate?
- End-user- Who will implement the practice?
- Disseminate partner- What network/affiliation will be used to reach the end-user?
- Communication- What tool will be used to convey the message?
- Evaluation- How did the participants receive the project? What is the feedback?
- Designate work plan- What are the action items, schedule, and the person responsible? (AHRQ, 2018).

Internal Dissemination

The project's results were shared first with hospital leaders. This process was initiated by the pharmacy director, CNO, and quality director during weekly leadership meetings. Furthermore, the CNO will continue to share the project's outcomes with the nursing service through the monthly nursing meeting. Further, the information will be provided to all staff this fall during a competency fair. The quality director will also discuss the success of the project with the Quality Committee and the Medical Executive Board quarterly meetings.

External Dissemination

The facility will share the outcomes of the evidence-based system-change project among the affiliated network of long-term, acute-care hospitals that operate in different localities and states nationwide. A further aspect of external dissemination will include presenting during Philippine Nursing Association (PNA) Conference. The PNA holds two major conferences every year, which are attended by nursing delegates from different regions and localities throughout the United States.

Also, this paper will be disseminated in full text to SOAR@USA to fulfill DNP program requirements. SOAR@USA is an institutional repository that will enhance the availability and discoverability of the DNP scholarly project. Finally, the project will be presented to the Virginia Henderson Global Nursing e-Repository to promote worldwide dissemination of the DNP project information.

Conclusion

The evidence-based project focused on developing an evidence-based practice intervention to address medication safety problems that arose from inaccurate medication reconciliation. The project evaluated the reduction of medication errors after the initiation of the

MRTP in the hospital. The implementation of the MRTP decreased medication errors, thus improving patient outcomes. The project started with an organizational needs assessment and SWOT analysis. The institutional problem was the increasing rate of medication errors from poor medication reconciliation. The medication error rate had risen to115 occurrences in 2019.

Lewin's Change Management Theory was the preferred change model for the project because it supported the utilization of impact/risk assessment. The success of the project was measured by nursing team's use of timeout and the checklist in medication reconciliation. Consistent educational training and purposeful audits propelled the success of the project. The support of multidisciplinary team made up of nurses, providers, patients, and leadership was also the key of the project's accomplishments.

The primary results of the project were the reduction in the medication error rate and incidence, which improved patient healthcare outcomes. The outcome of the project was a significant reduction in the medication error rate, from 14.88% to 3.77%, after implementation of the evidence-based intervention. Implementation of MRTP resulted in an 11.11% decreased in medication errors within four weeks in a long-term acute care facility.

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Appendix A

PRISMA Flow Diagram Generator

Medication Reconciliation Timeout Process

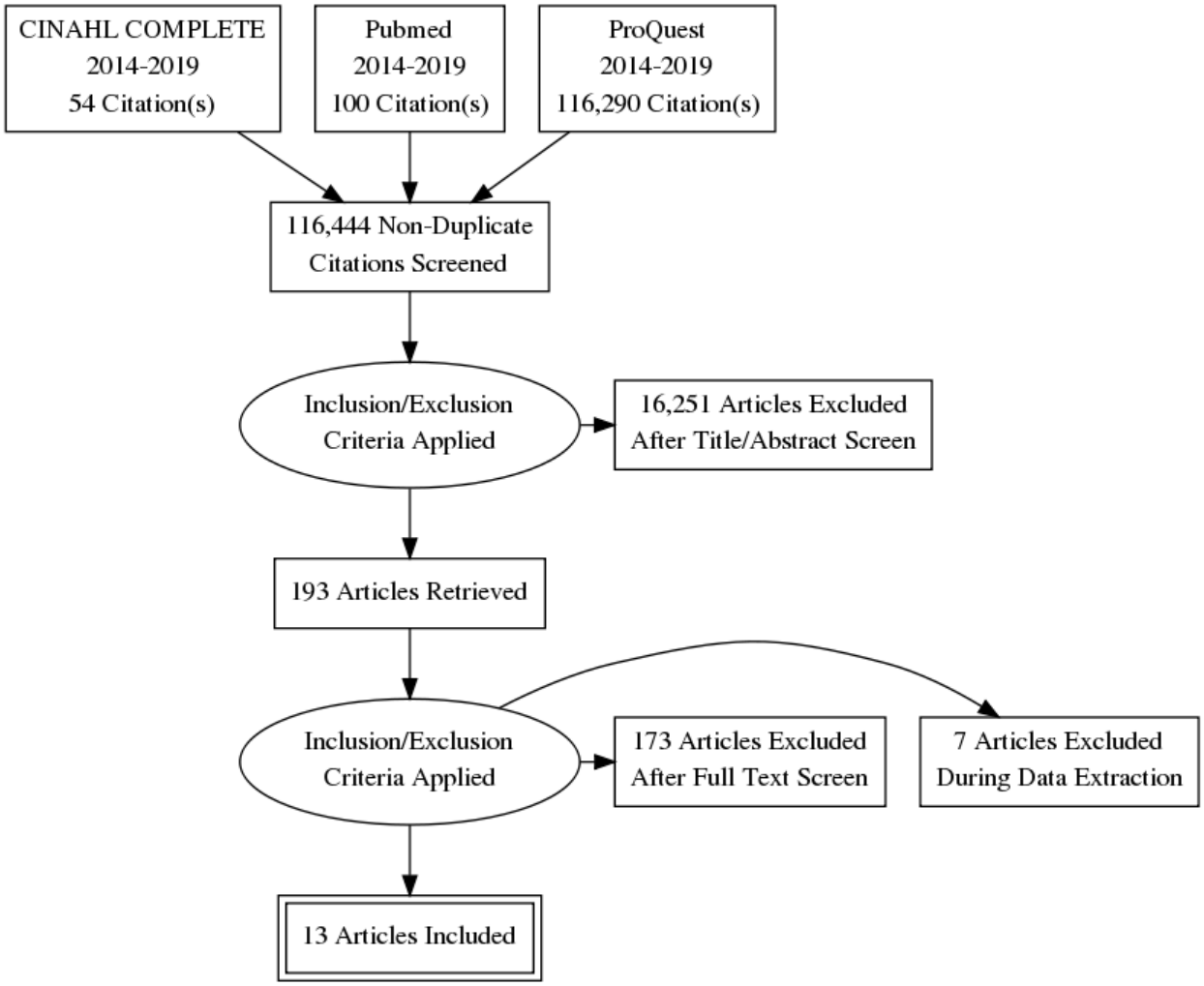


Figure 1 Flow chart of Prisma Model Medication Reconciliation Timeout Process

Appendix B

SWOT Analysis

Internal Forces (Project)	*External Forces (Organizational /Environment)*
Strengths	**Opportunities**
*Evidence-Based Intervention *Short Time-Frame: Attainable Goal to Decrease Medication Error Incidence *Full Administrative Support	*Spot Education Champion *Stream line and Upgrade Medication Reconciliation Process
Weaknesses	**Threats**
*Small Hospital: 50-Bed Capacity *No CNO: Only Acting CNO *No Educator Provided (FTE) Inconsistent Education *Attitude of Resistance to Change by Nurses	*Solara: Partial EHR *Many Newly Hired Nurses with Less Than One-Year of Experience: Need Education

Appendix C

Summary of Primary Research Evidence

Citation	**Design, Level** **Quality Grade**	**Sample** **Sample size**	**Intervention** **Comparison (Definitions should include any specific research tools used along with reliability & validity)**	**Theoretical Foundation**	**Outcome Definition**	**Usefulness** **Results** **Key Findings**
Gao, M. C., Martin, P. B., Motal, J., Gingras, L. F., Chai, C., Maikoff, M. E., ,Ä Eiss, B. M. (2018). A multidisciplinary discharge timeout checklist improves patient education and captures discharge process errors. *Quality Management in Health Care, 27(2),* 63-68. doi:10.1097/QMH.0000000000000168	Quality improvement design SORT Level 1A	N-429	Utilization of timeout and checklist prior to discharge.	Model of Improvement framework	To create and implement a discharge timeout checklist and to evaluate its impacts on patients' understanding as well as the possible effects on preventable medical errors in terms of hospital discharges to home.	Multidisciplinary timeout process significantly reduces errors, enhances patient safety and preventable adverse errors.
Gillespie, B. M., Withers, T. K., Lavin, J., Gardiner, T., & Marshall, A. P. (2016). Factors that drive team participation in surgical safety checks: A prospective study. *Patient Safety in Surgery, 10*	Prospective study SORT level 1 A	N-70	The utilization of checklist specifically	none	Distinguishes and describe factors that drive team	The utilization of checklist enables staff

Retrieved from https://search.proquest.com/docview/1774002401?accountid=158603			the Surgical Safety Checklist (SSC) to enhance communications.		cooperation in safety checks in surgery.	to identify deficits and discrepancies for accuracy of patient information, thus preventing errors.
Hazelton, J.P, Ofe, E.C, Colacion, A.M, Hunter, K, Caprano-Wehrle, L.M, Lachant, M.T.., & Seamon, M.J. (2015). The impact of a multidisciplinary safety checklist on adverse procedural events bedside bronchoscopy-guided percutaneous tracheostomy. *Journal of Trauma Acute Care Surgery*, *79*(1): 111-116. doi:10.1097/TA.0000000000000700	Prospective study design SORT Level 1 A	N-247	The utilization of multidisciplinary safety checklist before bedside bronchoscopy-guided percutaneous tracheostomy insertions (BPTIs).	None	The outcomes recommend that the implementation of a multidisciplinary safety checklist like those utilized in the OR would benefit patients during invasive bedside procedures.	The most important finding of the study is that after the implementation of a multidisciplinary safety checklist for use during a bedside bronchoscopy-guided percutaneous tracheostomy, there is a significant reduction in the incidence of procedural complications.

Huber, T., Brinkmann, F., Lim, S., Schröder, C., Stekhoven, D., Marti, W., … Egger, R. R. (2017). Implementation of an IT-guided checklist to improve the quality of medication history records at hospital admission. *International Journal of Clinical Pharmacy*, *39*(6), 1312–1319. doi:10.1007/s11096-017-0545-0	Prospective study Sort Level 2 A	N-228	To decrease the balance of patients with at least one medication discrepancy in the medication history at admission by performing an IT-guided check list.	None	Out of 415 admissions, 228 patients that satisfied the inclusion criteria were enrolled in the study, 113 before and 115 patients after intervention. After intervention, medication discrepancies diminished from 69.9 to 29.6% ($p < 0.0001$) of patients, the average medication discrepancy per patient was reduced from 2.3 to 0.6 ($p < 0.0001$), and the standard error, omission of a regularly used medication, was decreased from 76.4 to 44.1% ($p < 0.001$).	The implementation of the IT-guided checklist is correlated with a significant decrease in medication discrepancies at admission and possibly improves medication safety for the patient.
Kozusko, S. D., Elkwood, L., Gaynor, D., & Chagares, S. A. (2016). An innovative approach to the surgical time out: A patient-focused model: The	Retrospective design	N-998	The usage of checklist that involves	None	The development of unique surgical	Since the utilization of the

official voice of perioperative nursing the official voice of perioperative nursing. *AORN Journal, 103*(6), 617-622. doi:10.1016/j.aorn.2016.04.00	SORT level 1A		patient and surgical team that includes preoperative, pre-incision, and postoperative time outs.		checklist with the intention to include patient or family member on pre-operative timeout process.	checklist, there have been zero errors and zero wrong-site surgeries. Patients verbalized satisfaction with their inclusion in the preoperative time out.
Lai, Y. H., Anderson, M. R., Weinberg, A. D., & Rosenblatt, M. A. (2015). Positive perceptions on safety and satisfaction during a patient-centered timeout before peripheral nerve blockade. *Journal of Clinical Anesthesia, 27*(3), 214-220. doi:10.1016/j.jclinane.2014.10.009	Qualitative/ survey single research study SORT Level 1A	N-200	A postoperative survey assessing patient perception, experience, and satisfaction with the anesthetic ti meout prior to regional anesthesia.	None	Patient perceptions of trust and safety in regional anesthesia providers were intensified by a preprocedural timeout process; thus positive attitudes are associated with an exemplified perioperative experience and patient satisfaction	One hundred seventy-five patients (93% enrollment) completed the study. More than 90% of patients reported agreeing strongly to feeling safe, confident, relaxed, and positive about their participation in the block timeout.

						These sentiments are associated with less reported perioperativ e pain and higher overall satisfaction
Lea, M., Barstad, I., Mathiesen, L., Mowe, M., & Molden, E. (2016). Effect of teaching and checklist implementation on accuracy of medication history recording at hospital admission. *International Journal of Clinical Pharmacy, 38*(1), 20-24. doi:10.1007/s11096-015-0218-9	Prospectiv e and Comparati ve studies SORT Level 1 A	N-175	The utilization of teaching and checklist in reduction medication discrepancies	None	The potential for improved accuracy of history taking on admission for medication reconciliation	Mandatory teaching and utilization of checklist during medication history taking improved medication discrepan-cies.
Ruggiero, J., Smith, J., Copeland, J., & Boxer, B. (2015). Discharge time out: An innovative nurse-driven protocol for medication reconciliation. *Medical Surgical Nursing, 24*(3), 165-172. Retrieved from https://search.proquest.com/docview/1687988777?accountid=158603	Retrospec-tive quality improve-ment design, peer reviewed SORT Level 1 A	N-325	Utilization of discharge timeout by 2 nurses with a checklist	The discharge time-out process was modeled after the operative time-out processes	Reduction of medication discrepancies	Decreased of medication discrepan-cies and sustained reduction for 20 months *Improved discharge

						practice time *Improved collaborative effort among team
Shear, T., Deshur, M., Avram, M. J., Greenberg, S. B., Murphy, G. S., Ujiki, M., ,Ä Wijas, B. (2018). Procedural timeout compliance is improved with real-time clinical decision support. *Journal of Patient Safety, 14*(3), 148-152.doi: 10.1097/PTS.0000000000000185	Prospec-tive, observational blinded design SORT Level 2 A	300	Using a checklist of items, one observer documented compliance with the safety checklist in all 3 phases.	None	Assess compliance with a presurgical safety checklist before and after the institution of a surgical flight board displaying a surgical safety checklist with embedded real-time clinical decision support (CDS).	Using the electronic medical record with real-time CDS improves compliance with presurgical safety check lists**.**
Singh, R., & Zughaib, M. (2019). Timeout for contrast: Using physician behavior modification to reduce contrast in the catheterization laboratory. *Cardiology Research & Practice, 1–6.* doi:10.1155/2019/9238124	Retrospective study SORT level 3A	12118	* Utilization of Timeout and use of checklist for contrast in the catherization * Added preprocedural checklist in September-October	None	The study appraised the impact of a simple physician behavioral modification tool on contrast used in procedures in the	Significant reduction of utilization of radio contrast by provider after the usage of revised timeout process before

			2013 in the form of maximum allowed contrast for the patient.		catheterization laboratory.	catherization .
Tainter, C. R., Nguyen, A. P., Pollock, K. A., O'Brien, E., O., Lee, J., Schmidt, U., . . . Meier, A. (2018). The impact of a daily "medication time out" in the intensive care unit. *Journal of Critical Care, 43*, 366-369. doi: 10.1016/j.jcrc.2017.09.018	Quality Improvement design Level 3 SORT A	347	The disciplinary team will conduct timeout process daily with ICU patient utilizing the medication administration.	none	Structured checklist-style interventions may help prevent errors.	Standard daily medication time out during ICU rounds reduced medication variances and increase medication changes.
Weingessel, B., Haas, M., Vécsei, C., & Vécsei-Marlovits, P. V. (2017). Clinical risk management - a 3-year experience of team timeout in 18 081 ophthalmic patients. *Acta Ophthalmologica*, *95*(2), e89–e94. doi: 10.1111/aos.13155	Quality improvement study SORT Level 2 A	18,081 operative cases	The utilization of team timeout method reduces errors and improves safety by enhancing team communication *Involving the patient during the timepoint	None	Performed eighteen thousand and eighty-one surgeries in the specified period; Noted 53 cases of the wrong side' and 52 cases of wrong intraocular lens. Ninety-six near misses concerned the patients' data	The study resulted in a reduction of near misses after an adaptation phase of 3 months. *The usage of team time out has improved patient safety with little effort

			process when patient is able.		and 38 concerned documentation.	
Wetmore, D., Goldberg, A., Gandhi, N., Spivack, J., McCormick, P., & DeMaria, S. (2016). An embedded checklist in the anesthesia information management system improves pre-anesthetic induction setup: A randomized controlled trial in a simulation setting. *BMJ Quality & Safety*, *25*(10), 739.dx.doi:10.1136/bmjqs-2015-004707	Randomize controlled design study SORT Level 1A	38	Implementation of Pre-anesthetic Induction Patient Safety (PIPS) Checklist	None	To determine the efficiency of the checklist when imbedded in the institutional Anesthesia Information Management system (AIMS) on the resident's performance.	The utilization of a checklist improved resident performance in a simulated environment.

Appendix D

Summary of Systematic Review

Citation	Quality Grade	Question	Search Strategy	Inclusion and Exclusion	Data Extraction and Analysis	Key findings	Recommendation
Gillespie, B. M., Withers, T. K., Lavin, J., Gardiner, T., & Marshall, A. P. (2016). Factors that drive team participation in surgical safety checks: A prospective study. *Patient Safety in Surgery, 10* Retrieved from https://search.proquest.com/docview/1774002401?accountid=158603	Prospective study SORT Level 1 A	What is importance of checklist in preventing errors?	ProQuest Complete Word use: Medical Errors AND Timeout AND Checklist	Inclusion :2014-2019 Date of journal and Exclusion non-English Non-human samples	Describe factors that drive team cooperation in safety checks in surgery.	The utilization of checklist enables staff to identify deficits and discrepancies for accuracy of patient information, thus prevent errors.	The importance of checklist in preventing errors.
Gao, M. C., Martin, P. B., Motal, J., Gingras, L. F., Chai, C., Maikoff, M. E., ,Ä Eiss, B. M. (2018). A multidisciplinary discharge timeout checklist improves patient education and captures discharge process errors. *Quality Management in Health Care, 27(2),* 63-68. doi:10.1097/QMH.0000000000000168	Quality improvement design SORT Level 1A	Does discharge time out checklist impacts preventable medical errors?	Not Mentioned	Inclusion: Patient discharged from March 1, 2015 to September 16, 2015	Utilizing a PDSA cycle methodology for checklist and timeout process. *Completed discharged timeout checklist forms were collected and	Discharge time out stemmed in 24 changes to discharge notes and documentation and 1 good	Discharge time out stemmed in 24 changes to discharge notes and documentation and 1 good catch potential adverse event. *18 out of 24 changes in discharge plan

					matched to the master discharge log. *Statistics performed using R version3.3. using P value listed as 2 tailed z test independent proportions.	catch potential adverse event. *18 out of 24 changes in discharge plan were medication reconciliation issues. * Five issues caught in follow up appointment. * Average time to complete the discharge time out was 9.9 minutes.	were medication reconciliation issues. * Five issues caught in follow up appointment. * Average time to complete the discharge time out was 9.9 minutes.
Hazelton, J.P, Ofe, E.C, Colacion, A.M, Hunter, K, Caprano-Wehrle, L.M, Lachant, M.T.., & Seamon, M.J. (2015). The impact of a multidisciplinary safety checklist on adverse procedural events bedside bronchoscopy-guided percutaneous	Prospective study design SORT Level 1 A	Is the usage of multidisciplinary safety checklist before	Not identified in the study	*Inclusion Patients with BPTI pre-interventi	*A p< 0.05 was considered significant for the study.	After implementation of the multidisciplinary checklist,	Multidisciplinary safety checklist tool and time out procedure used in OR would benefit during

tracheostomy. Journal of Trauma Acute Care Surgery, 79(1): 111-116. doi:10.1097/TA.000000000000070		bedside bronchoscopy-guided percutaneous tracheostomy insertions (BPTIs) reduce adverse procedural events?		on and post intervention. Patient with difficulty of breathing intervention Exclusion: Patient younger than 16 years old, tracheostomy patients; mandibular fixation or halo cervical stabilization. *Settings ICCU bedside settings		there is significant decrease in procedural complications	invasive bedside procedure.
Huber, T., Brinkmann, F., Lim, S., Schröder, C., Stekhoven, D., Marti, W., … Egger, R. R. (2017). Implementation of an IT-guided checklist to improve the quality of medication history records at hospital admission.	Prospective study Sort Level 2 A	Does applying IT guided checklist reduce medication	Not mentioned	Inclusion: Patient 16 years old and above.	Pharmacist utilized a standard structured questionnaire.	*Medication discrepancies declined from 69.9	The usage of checklist in obtaining history during admission significantly

International Journal of Clinical Pharmacy, *39*(6), 1312–1319. doi:10.1007/s11096-017-0545-		error occurrence by obtaining accurate information on admission?		*Exclusion: Patient who were discharged from the hospital within 48 hours *Settings: Surgical ward	* Significant level for adjusted *p* values was set 0.05 * Exact Fischer test	to 29.9% (p<0.0001).	prevent discrepancies in history taking promote safety.
Kozusko, S. D., Elkwood, L., Gaynor, D., & Chagares, S. A. (2016). An innovative approach to the surgical time out: A patient-focused model: The official voice of perioperative nursing the official voice of perioperative nursing. AORN Journal, 103(6), 617-622. doi: 10.1016/j.aorn.2016.04.00	SORT level 1A	Is the application of presurgical, precision and post-surgical checklist and time out reduce medical errors?	Not mentioned	Not mentioned Setting: operating room-hospital setting.	In 2011, 4453 procedures have used pre-operative, pre-incision timeouts,998 have used all three – there are xero discrepancies and zero wrong site surgeries	Implementing three phases of timeout and checklist pre, during and post-surgery yielded xero discrepancies.	Since the utilization of the checklist, there have been zero errors and zero wrong-site surgeries. Patients verbalized satisfaction with their inclusion in the preoperative time out. *Frequent timeout yields zero medical errors.
Lai, Y. H., Anderson, M. R., Weinberg, A. D., & Rosenblatt, M. A. (2015). Positive perceptions on safety and satisfaction during a patient-centered timeout before peripheral nerve blockade. Journal of Clinical	Qualitative/ survey single research study	Is post-operative survey evaluating patient perception,	Not mentioned	Inclusion: Orthopedic patients who will	Spearman and Pearson correlation statistics. P < 0.05 was considered	One hundred seventy-five patients (93%	Patient perceptions of trust and safety in regional anesthesia providers were

Anesthesia, 27(3), 214-220. doi: 10.1016/j.jclinane.2014.10.009	SORT1 level A	experience and patient satisfaction with anesthetic timeout before regional anesthesia helps with patient confidence and patient perception to safety?		undergo surgery Exclusion: Emergency surgery, patient receiving anxiolytic or narcotic medication within 24 hours of operation; non-speaking English. Setting: Surgical unit	statistically significant	enrollment) completed the study. More than 90% of patients reported agreeing strongly to feeling safe, confident, relaxed, and positive about their participation in the block timeout. These sentiments are associated with less reported perioperative pain and higher overall	intensified by a preprocedural timeout process thus positive attitudes are associated with an exemplified perioperative experience and patient satisfaction

						satisfaction	
Lea, M., Barstad, I., Mathiesen, L., Mowe, M., & Molden, E. (2016). Effect of teaching and checklist implementation on accuracy of medication history recording at hospital admission. *International Journal of Clinical Pharmacy, 38*(1), 20-24. doi:10.1007/s11096-015-0218-9	Prospective and Comparative studies SORT level 1 A	Is checklist necessary to ensure patient safety?	CINAHL Complete: Word use: Patient safety AND medication	Inclusion: patient admitted in internal medicine ward	Fischer's exact test and Mann-Whitney test	The 60 out of 119 patients (50.4%) in p2-the checklist was used and only 8 patients (6.7) stayed during the entire hospital stay.	Patient perceptions of trust and safety in regional anesthesia providers were intensified by a preprocedural timeout process thus positive attitudes are associated with an exemplified perioperative experience and patient satisfaction
Ruggiero, J., Smith, J., Copeland, J., & Boxer, B. (2015). Discharge time out: An innovative nurse-driven protocol for medication reconciliation. *Medical Surgical Nursing, 24*(3), 165-172.	Retrospective quality improvement design, peer reviewed SORT level 1 A	What is the importance of Timeout in medication reconciliation?	Utilized Ovid The Medline, CINAHL PubMed and Cochrane Database of systematic Review from 2005-2012	Inclusion: Adult patients	None mentioned The usage of Timeout reduced medication discrepancies.	medication discrepancies and sustained reduction for 20 months *Improved discharge practice time *Improved collabora	* The usage of Timeout reduced medication discrepancies.

						tive effort among team	
Shear, T., Deshur, M., Avram, M. J., Greenberg, S. B., Murphy, G. S., Ujiki, M., ,Ä Wijas, B. (2018). Procedural timeout compliance is improved with real-time clinical decision support. *Journal of Patient Safety, 14*(3), 148-152. doi:10.1097/PTS.0000000000000185	Prospective, observational blinded design SORT level 2 A	Is embedded presurgical checklist in clinical decision support (CDS)improve compliance?	Not mentioned	Inclusion: Ten surgeons from six surgical specialties Setting: Surgical unit	Friedman Test	Utilizing the electronic medical record with real-time CDS enhance compliance with presurgical safety checklists.	Assess compliance with a presurgical safety checklist before and after the institution of a surgical flight board displaying a surgical safety checklist with embedded real-time clinical decision support (CDS).
	Randomize controlled design study SORT level 1A	Is the embedded checklist in the Anesthesia information Management helps in improving performance among Anesthesiology residents	Non-mentioned	Inclusion: *49 residents offered but only 38 were recruited. *Both male and female residents	SAS system software	The data reflected a statistically significant difference in performance of the residents when a checklist is prompted	The usage of checklist can improve performance.
Singh, R., & Zughaib, M. (2019). Timeout for contrast: Using physician	Retrospective study	Is using timeout for	Non-Mentioned	Inclusion: Patients underwent	None mentioned	Significant	The study appraised the

behavior modification to reduce contrast in the catheterization laboratory. Cardiology Research & Practice, 1–6. doi:10.1155/2019/9238124	SORT level 3A	contrast use before cardiac catherization reduce the usage of radio contrast?		procedure in cardiac Cath erization from January 2013 to August 201y6		reduction of utilization of radio contrast by provider after the usage of revised timeout process before catherization	impact of a simple physician behavioral modification tool on contrast used in procedures in the catheterization laboratory using timeout prior to catherization.
Tainter, C. R., Nguyen, A. P., Pollock, K. A., O'Brien, E., O., Lee, J., Schmidt, U., . Meier, A. (2018). The impact of a daily "medication time out" in the intensive care unit. Journal of Critical Care, 43, 366-369. doi: 10.1016/j.jcrc.2017.09.018	Quality Improvement design Level 3 SORT A	What is the effect of "Time out" in medication reconciliation?		Inclusion: Period; November 2015- February 2016- ICU patients. Settings:12 bed surgical intensive care units	None mentioned	Standard daily medication "time out" during ICU rounds reduced medication variances and increase medication changes.	The utilization of time out on medication reconciliation reduce or prevent errors and promote patient safety.
Weingessel, B., Haas, M., Vécsei, C., & Vécsei-Marlovits, P. V. (2017). Clinical risk management - a 3-year experience of team timeout in 18 081	Quality improvement study SORT level 2 A	Is utilization of team timeout	Non-mentioned	Non-mentioned	Standard Welch t test to compare	Performed Eighteen thousand and eighty-one	The study resulted in a reduction of near misses was noted

ophthalmic patients. Acta Ophthalmologica, 95(2), e89–e94. doi:10.1111/aos.13155		method reducing errors and improve safety by enhancing team communication?			the relative errors rates. The test resulted a significantly difference p value of <0.001.	surgeries in the specified period; Noted 53 cases of the wrong sides and 52 cases of wrong intraocular lens. Ninety-six near misses concerned the patients' data and 38 concerned documentation.	after an adaptation phase of 3 months. *The usage of team time out has improved patient safety.
Wetmore, D., Goldberg, A., Gandhi, N., Spivack, J., McCormick, P., & Demaria, S. (2016). An embedded checklist in the anesthesia information management system improves pre-anesthetic induction setup: A randomized controlled trial in a simulation setting. BMJ Quality & Safety, 25(10), 739.dx.doi:10.1136/bmjqs-2015-004707	Randomize controlled design study SORT level 1A	Is the embedded checklist in the Anesthesia information Management helps in improving performance among Anesthesiology residents	Non - mentioned	Inclusion *49 residents offered but only 38 were recruited. *Both male and female residents	SAS system software	The data reflected a statistically significant difference in performance of the residents when a checklist	The usage of checklist can improve performance.

						is prompted	

Appendix E

Project Schedule

	NUR7801								NUR7802								NUR7803							
Activity	Week 1	Week 3	Week 5	Week 7	Week 9	Week 11	Week 13	Week 15	Week 1	Week 3	Week 4	Week 7	Week 6	Week 9	Week 13	Week 15	Week 1	Week 3	Week 5	Week 7	Week 9	Week 11	Week 13	Week 15
Meet with preceptor	X	X		X		X		X		X			X			X	X			X		X		X
Prepare project proposal		X																						
List the steps for your project. Specifically, and operationally define what you plan to do and when.							X																	
IRB submission to USA									X	X	X	X												
IRB to Solara Hospital												X	X	X	X	X								
Education/Training for all ICCU nurses																	X							
Implementation MRTOP																		X	X	X	X			
Completion of the project																								X

Appendix F

Cost Analysis/Budget

Projected Expenses	**Cost**	**Miscellaneous**
Educational Materials	150.00	MRTOP Brochures
Printing / Handouts	200.00	Posters, Flyers, and Pens
Kaizen Event Meeting 4 hours	200.00	Team Leaders/ Champions and Solara Leaders-Snacks and Supplies Needed in the Event
Total Expenses	$550.00	

Appendix G

Medication Reconciliation Timeout Process Checklist

Solara
Specialty Hospitals

Medication Reconciliation Timeout Process (MRTOP) Checklist

1. **All complete:** ☐
   - **Right Medication**
   - **Right Dose**
   - **Right Unit Measure**
   - **Right Route**
   - **Right Frequency**
   - **Right Indication PRN and Instructions**
2. **All Medications in the transfer form are transcribed in Solara admission order** ☐
3. **Height and weight** ☐

Primary nurse _____

House supervisor _____

PATIENT LABEL

*****NOT A PERMANENT PART OF THE MEDICAL RECORD*****
RETURN TO CNO ONCE COMPLETE

Appendix H

Data Analysis Table

Variables	**Type of Data**	**Statistical Test**
Years of Experience (<3 years, >5 years, >10years, >20)	Ordinal	Frequency, Percentage
Nurse Compliance	Nominal	Frequency, Percentage
Medication Error Pre and Post	Continuous	Mean, Standard Unpaired t-test
Education Background (ADN, BSN, MSN)	Nominal	Frequency, Percentage
Job Title (RN or LVN)	Nominal	Frequency, Percentage
Gender (Female and Male)	Nominal	Frequency, Percentage

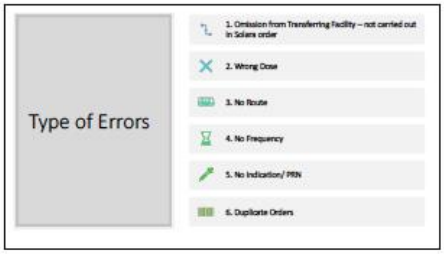
Appendix I

PowerPoint Presentation

1

2

3



4

5

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Appendix J

USAHS Approval Letter

University of St. Augustine for Health Sciences
Doctor of Nursing Practice Program
Evidence-Based Practice Review Council
1 University Blvd.
St. Augustine, FL 32086

2/14/2020

Dear Renante Dizon

Your proposal titled The Effect of Medication Reconciliation Timeout on Patient Safety: A Quality Improvement Project has been reviewed by the University of St. Augustine for Health Sciences Doctor of Nursing Practice Evidence-Based Practice Review Council (EPRC) and determined to:

___ meet the requirements for research as defined in the Federal Register. You must make adjustments to the proposal to reflect the DNP program requirements and resubmit for additional review. Work closely with your faculty member during this process.

_X__ not meet the requirements for research as defined in the Federal Register. Your proposal reflects an evidence-based practice change project. The proposal must be implemented as submitted (changes are not permitted). You may proceed to obtain approvals from the facility where the project will be implemented. Implementation may not begin until you are notified in writing by faculty that you may implement the project.

Questions regarding the USAHS approval process should be addressed to Dr. Douglas Turner at DTurner@usa.edu. Questions regarding the facility approval process should be addressed to course faculty.

Sincerely,

Douglas Turner

Douglas M Turner, PhD, DNP, RN, CNE, NE-BC, NEA-BC

Appendix K

Agency Approval Letter

Solara

February 21, 2020

To whom it may concern,

Please note that Mr. Renante Dizon, Doctor of Nursing Practice graduate student at the University of St. Augustine for Health Sciences, has permission to conduct and implement a quality improvement project at Solara Hospital. The title of the proposed project is the Effect of Medication Reconciliation Timeout on Patient Safety: a quality improvement project.

Mr. Dizon has been working with his preceptor Dr. Pam Gobina since September 2019 for his clinical practicum hours and the initiation of evidence bases proposal that will reduce medication errors and provide quality care to our Solara patients.

Mr. Dizon has provided us a copy of the approval letter from the Evidenced-based Practice Review council (EBPRC) from the University of St Augustine.

If there any questions, please contact our office.

Signed,

[redacted]

David Tupper
CEO

[redacted]

Mike Dillman
CNO

[redacted]

Marlene Balotro
Quality Director

[redacted]

Dr. Pam Gobina
Pharmacy Director

[redacted]

Renante Dizon
DNP student