A Quality Improvement Plan for Safe Medication Administration by Unlicensed Personnel at a Type "A" Assisted Living Facility

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Abstract

Background: In studying a Type "A" Assisted Living Facility (ALF) in the state of Texas, it was noted that unlicensed personnel were administering medications to residents in an unsafe manner. Subsequently, the problem is that the unlicensed personnel have inadequate training on medication administration that could potentially cause harm to residents. The selected facility did not comply with the Texas Administrative Code of Federal Regulations (CFR) as regulated by the Texas Department of Aging Services and Disability Services (2015), requiring an established medication administration plan implementation process for unlicensed personnel in regards to: medication administration, documentation record, storage, and labeling.

Problem: To improve medication safety for residents at a Type "A" ALF and address the clinical problem, this clinical project focused on the significance in developing a Quality Improvement (QI) plan for safe medication administration by unlicensed personnel that would improve safety for residents.

Methods: The focus of this clinical project was to create a QI plan that addressed training modules for unlicensed personnel that include training on medication administration, storage and documentation record, and labeling that comply with state guidelines for a licensed Type "A" Assisted Living Facility. The Iowa Model was used as the framework and the PDSA Improvement Cycle was used as a tool that measured a need for a change process. A quantitative statistical

analysis evaluated the impact of a formulated QI process for unlicensed personnel administering medication through data collection from pre- and post-testing, direct observation, and training modules.

Results: The unlicensed personnel's knowledge on medication administration prior to the intervention of the QI plan ranged from 64.3-92.86 with 50% of participants not achieving a competency score of 80percent. After the intervention of the QI plan, the scores increased to 100percent. The results from the direct observation knowledge scores prior to the QI intervention ranged from 66.8-83.4 and after the QI intervention plan, the scores were 100% with a 50% increase. These scores indicated the QI plan was successful in meeting the goal of improving safe medication administration by unlicensed personnel.

Conclusion: The Doctorate of Nursing Practice (DNP) clinical project was limited due to the small number of participants and time constraints of two months. Based on the DNP clinical project findings, there was an increase in overall knowledge of medication administration, which indicated validity of the QI plan. The facility owner agreed to incorporate training modules for on-going utilization of staff training and documentation for state inspection.

Keywords: *Quality Improvement, Assisted Living Facility (ALF), Unlicensed Personnel, Medication Administration, Medication Errors, State Policies, and Quality Monitoring.*

A Quality Improvement Plan for Safe Medication Administration by Unlicensed Personnel at a Type "A" Assisted Living Facility

There is an increase in Assisted Living Facilities (ALF's) throughout the United States that has been coupled with residents that have increasingly complex conditions leading to unanticipated problems related to poor medication management (Woods, Guifang, Hawsook, & Phillips, 2010). The Texas Department of and Aging and Disability Services (DADS) provides the best practice guidelines for licensed Type "A" ALF in Texas and for this clinical project. DADS is the state agency that mandates and provides licensure to ALF in Texas. Once a Type "A" ALF is approved for licensure, the facility can accept state funds for residents and increase revenue. The issue for this clinical project was to develop a QI plan that would improve medication safety for unlicensed personnel administering medication at a 13-bed private pay unlicensed ALF in Texas. This clinical site is seeking Type "A" ALF licensure from the State of Texas. However, it has significant deficits in meeting compliance for state licensure due to a lack of staff training procedures for unlicensed personnel administering medication. Per DADS (2016), a Type "A" ALF is defined as a facility that assists residents with activities of daily living, medication administration, and safety monitoring. An Unlicensed Personnel is any person performing a job without a state licensure. At the clinical site, there are ten

unlicensed personnel administering medication without training based on state requirements.

In order for this ALF to meet the Texas state requirements for licensure, a medication administration a plan, module training, and protocol development was established through a QI initiative. Quality Improvement is defined as a systematic effort to improve the safety of a healthcare system conducted at the system level (Squire, 2015).

As part of the QI plan, the identified clinical issue addressed training modules for unlicensed personnel that included training on medication administration, documentation record, storage and labeling based on the state of Texas regulations for a licensed Type "A" ALF (DADS, 2016). Before the implementation of the QI plan, there was no medication training process being utilized at the clinical ALF site as mandated by the state requirements for medication administration by unlicensed personnel. The facility also needed to implement an ongoing process to ensure that the facility remained in compliance for state licensure of a Type "A" ALF, as stipulated by DADS. Medication administration in ALF's have created notable controversy, due partially to limited training provided to unlicensed personnel, subsequently they represent many ALF staff members (Zimmerman, Love, Sloane, Cohen, Reed, & Carder, 2011).

The significance of this QI plan was to have unlicensed personnel working in an ALF adhere to state regulations with the implementation of a QI plan that

would improve medication safety for residents residing in a Type "A" Assisted Living Facility. Administrating medications requires specialized training on various topics that provide structure and knowledge enhancement (Jennings, Mark, & Sandelowiski, 2011). This QI plan targeted various medication safety concerns and will shift the ALF in the proper direction for applying for state licensure.

Project Goal

The goal of this clinical project was to improve safe medication administration at an ALF, with the primary focus on the improvement of resident safety with the incorporation of a QI plan. There are numerous studies aimed to improve resident care and safety measures on medication administration at an Assisted Living Facility. Often, the focus of many studies emphasizes training of staff members to decrease medication errors with incorporating new technology (Briggs, 2003). Many ALF's are not equipped with high-end technology (due to high expense) equipment to capture medication errors with much of documentation conducted via paper charting. This QI plan included the development of a Medication Administration Record (MAR) to improve documentation and record keeping of all medication administered by unlicensed personnel (See Table 2).

The development of a QI plan transitioned the targeted ALF into a facility that complies with the state of Texas requirements for a licensed Type "A" ALF for

safe medication administration, an Employee Training Log (See Table 1), and a medication documentation record (See Table 2), have been incorporated for state inspection. The scope of this DNP clinical project was to decrease the potential for medication errors through the implementation of a QI plan that is incorporated into the clinical site's training and protocol procedures with an emphasis on the application of the Iowa Model and evidenced-based data.

Problem Description

The local problem for the clinical project reflects a lack of training for safe medication administration by unlicensed personnel as required by the state of Texas for licensure of a Type "A" Assisted Living Facility. The ALF does not comply with the Texas Administrative CFR as regulated by the Texas DADS. To be up to code, the ALF requires an established safe medication administration training process for unlicensed personnel. Code standards include resident medication administration, a documentation record, storage, and proper labeling process that identify resident's medication. The owner of the ALF has verbalized concern that there is a lack of an effective tracking system to monitor medication safety, medication administration training, and medication side effects. Furthermore, there was no training process in place for continued compliance based on the state of Texas guidelines for licensure of the Assisted Living Facility.

Clinical Question

Would creating a quality improvement plan about proper medication administration for unlicensed personnel working in a Type "A" Assisted Living Facility improve medication administration safety for residents over a two-month period?

The clinical question focused on a process with the development of a QI plan that adheres to the Texas state regulation for safe medication administration by unlicensed personnel to safeguard all ALF residents. A quantitative analysis was conducted based on the findings from pre- and posttest and direct observation that examined the knowledge gained from participants.

Review of Literature

A comprehensive systematic literature review was conducted on medication errors, state requirements for mandates for ALF's, quality improvement, and change process methods. The following databases were searched as part of the literature review process: Cumulative Index to Nursing and Allied Health Complete, ProQuest Medical Library, the Agency for Healthcare Research and Quality (AHRQ), the State of Texas DADS, and the Cochrane Library. Each database was searched for critical information on evidenced-based studies, peer-reviewed articles, and research data to support the clinical project. The databases mentioned contained full-text journals, systematic reviews, evidence-based methods, and studies on assisted living facilities and medications safety.

The keywords searched to assist with supporting data for the clinical project included: state policy, quality monitoring, medication errors, quality improvement process for assisted living facility, and medication management. Each search consisted of a single word to two-word combination searches that produced key topics to support the clinical project.

Key concepts for the clinical project were paraphrasing and word searches on staff training for ALF's and medication errors. Keyword searches provided over 2,000+ matches of journals, peer-review articles that addressed medication errors, and quality improvement processes. However, only 20 articles were specific and met the objective for the clinical project. The 20 articles selected supported all aspects of the clinical project that included four descriptive design studies, two non-experimental studies, and 14 studies that were systematic reviews.

Inclusion criteria applied to research included: research, guidelines, clinical relevance, articles dated after 2002 were used due to limited resources that were content relevant, medication disparities for disabled and elder patients, quality improvement plans, and state mandates. Exclusion criteria included guidelines on research data were specifically based on assisted living facilities, medication administration, with some states lacking medication administration guidelines, little validity, and poor data quality.

The research on safe medication administration was reviewed for an ALF's with a range of 4 to 200 residents, over 65 years of age, staff that demonstrated

the need for staff training with a process to ensure safe medication administration. Unlicensed personnel require adequate training on medication administration for the safety of residents at ALF's (Sikma & Young, 2014). To decrease medication administration discrepancies, staff should be knowledgeable of medication administration procedures per state regulatory compliance (Henriquess, Costa, & Carita, 2012; Sikma & Young, 2014). Thirty-two states allow unlicensed personnel to administer medications to AL residents (NCAL, 2016).

Research information based on documentation for medication administration and discrepancies as well as a medication discrepancy tool system to track and decrease medication errors was reviewed as part of the extensive research (Corbett, Setter, Daratha, Neumiller, & Wood, 2010; Fore, Sculli, Albee & Neily, 2013; Foust, Naylor, Bixby, & Ratcliffer, 2012). A review of state inspections on medication administration for discrepancies and administration error by unlicensed personnel that would enhance medication safety (Woods & Guifang, et al., 2010). Effective communication and enhanced technology systems were essential methods identified to decrease medication administration errors in the Assisted Living Facility (Ellenbecker, Frazier, & Verney, 2004).

Documentation and medication profile system reviews illustrate a need for medication administration education and training of unlicensed personnel to improve resident's safety (Fitzgibbon, Lorenz, & Lach, 2013). The timing of the medication administration was found to decrease medication errors dramatically

(by 20%) when unlicensed personnel were trained to administer medications within a two-hour prescribed window (Zimmerman, Love, Sloane, Cohen, Reed, & Carder, 2011). Key findings were noted in some states that lacked clear and adequate provisions for unlicensed personnel training to administer medication (Carder & O'Keeffe, 2016).

State Level

An extensive literature review was conducted on ALF's and regulation standards through the State of Texas DADS compliance system, which is the state agency that mandates and monitors ALF's for compliance and licensure (DADS, 2016). The State of Texas has regulatory guidelines that mandate procedures for licensed ALF operation and to ensure staff are trained on topics such as resident safety. For this clinical project, the regulatory guidelines were extensively reviewed. According to DADS regulatory guidelines for the State of Texas Administrative Code, Title 40, Part I, Chapter 92: Licensing Standards for Assisted Living Facilities, Sub-Chapter C (A) specify licensure standards, that a Type A ALF must develop and implement staff policies. Section 4 of these guidelines stress documentation of training and the verification of staff competency with skills related to the care of the ALF resident (State of Texas Handbook, Code of Federal Regulations, 2015).

The National Center for Assisted Living (NCAL) each year publish information on each state's regulatory review that summarizes requirements for ALF licensure. According to the National Center for Assisted Living State Regulatory Review (2016), staffs that are not licensed can assist and administer medications to residents under regulatory guidelines which allow staff to administer medication under the direction of a licensed nurse.

Federal Level

This clinical project on ALF required research on federal agencies that monitors ALF throughout the country. The Agency for Healthcare Research and Quality (AHRQ) is a federal agency that works towards improving the quality of healthcare (Agency for Healthcare Research and Quality, 2014). The AHRQ has several levels of services that provide research information on improvement processes for ALF's and healthcare services. The focus of the AHRQ is to improve safety, effectiveness, quality, and cost-effectiveness of healthcare for all Americans' (Agency for Healthcare Research and Quality, 2016). The AHRQ has conducted numerous studies to improve healthcare quality and medication safety. Once such study conducted on medication safety research projects concluded evidence that feedback from stakeholders, best practices and improved practice can be identified and translated back to practice. Additional information

in the study provided increased awareness and outcomes for medication safety (Kuo, Steinbauer, & Spann, 2008).

Framework

The framework utilized was the evidenced-based Iowa Model and the Plan-Do-Study-Act (PDSA) Improvement Cycle. The Iowa Model highlights the importance of considering the entire healthcare system from the provider, patient, the infrastructure while utilizing research that direct and guide practice decisions (Manojlovich & DeCicco, 2007). For the purposes of this QI plan, the clinical site infrastructure and the current training procedures were reviewed using the guidelines of the Iowa Model framework. The review illustrated a need for the development of a safe medication plan.

The Iowa Model focuses on identification of a clinical issue that requires change. The clinical issue identified at the ALF site is the lack of training modules on medication administration by unlicensed staff. Through an exhaustive literature review, there was sufficient data to support a QI plan to address the current clinical issue to decrease the potential for medication errors. The approval to use the Iowa Model's content was provided via email from the author in December 2015.

In developing the QI plan, the PDSA improvement cycle was used as a guide and tool for documenting the change process. The plan (P) was to develop a QI plan to test for change. The do (D), was carrying out the change. Observing and

learning from the consequences based on the study (S), and determining what modifications should be made based on the QI plan was the act (A). Efforts to improve the QI plan should measure (a) if a change process would lead to desired direction, (b) contribute to unintended results in different parts of the system, and (c) require additional efforts to bring a process back into acceptable ranges (Hughes, 2008). Additionally, the QI plan consisted of pre-and post-testing, direct observation for assessment of the effectiveness of the QI plan.

Methods

Context

The PDSA method of quality improvement was used as a method for this clinical project. Baseline assessment included the data collection and evaluation of unlicensed personnel knowledge on medication prior to the QI implementation process. Unlicensed personnel at a Type "A" ALF based the contextual elements that were considered for the QI plan on the development of a QI plan with training modules that adhered to the Texas state regulation for safe medication administration. The QI plan included training modules on medication administration, medication documentation records, storage, labeling and an employee-training tool for the facility owner to incorporate into policy. The desired outcome for the clinical project ALF site was to remain in compliance with the This QI plan included practice change, which was initiated at the clinical

project site that was formulated to meet the needs for training for unlicensed personnel to follow the state of Texas guidelines on medication administration.

Intervention

The planned intervention included the development of a QI plan with training modules that adhered to the state regulation for safe medication administration by unlicensed personnel at a Type "A" ALF. The desired outcome for the clinical project ALF site was to remain in compliance with the state code of federal regulation as stipulated by the DADS for the licensure of a Type "A" ALF. Additionally, the DNP clinical project plan created training modules for unlicensed personnel that comply with state guidelines for a Type "A" ALF to improve medication administration by unlicensed personnel.

The QI plan consisted of a quantitative analysis with 10 unlicensed participants, a range of scores from pre- and posttests, and data analysis from the direct observation of medication administration process by unlicensed personnel. Measuring of a QI plan reflects good performance, improved quality of practice, and encourages better organizational performance for providers (Hughes, 2008). The method for evaluation of statistical data, included pre- and post-testing, direct observation of medication administration, interviews of unlicensed personnel, and the administration of a competency skills test that focused on medication safety and medication error prevention. Part of the desired outcome for the clinical project was for the ALF to adhere to the standards and regulation to operate as a

licensure Type "A" ALF through a medication administration training process. The unique contribution the DNP clinical project offered was a QI plan that focused on the implementation process for safe medication administration through pre-and post-testing, direct observation of unlicensed personnel, and one sample t-test. The quantitative analysis measured the QI plan effectiveness based on all data and scores compiled.

Setting

The setting for this QI project was conducted at a 13 bed ALF that employs ten unlicensed personnel. The small ALF is currently in the process of applying for state licensure through the state of Texas. If licensed, the facility could accept Medicare and Medicaid residents with a higher reimbursement rate. Part of the licensing criteria is for the facility to have an active medication administration system for unlicensed personnel administering medication. The method used to access the QI plan effectiveness are pre- and posttest and direct observation on medication administration. All data were added to SPSS Statistic Software (Cronk, 2014) and Wolfram Alpha Knowledge (2016) for test reliability and calculations.

Sample

The focus of the clinical project was to improve medication administration safety for unlicensed personnel. The sample for the clinical project consisted of ten unlicensed personnel (n=10 sample size) with approximately ten residents.

The ten unlicensed personnel have limited medication training. The residents were comprised of males and females with multiple medical and psychological diagnoses consisting of schizophrenia, heart failure, respiratory compromise, diabetes, bipolar disorder, and depression. For the identified sample, the QI plan implementation was utilized to promote resident safety, medication management, and increase the knowledge of staff on medication administration. Inclusion criteria for clinical project consisted of all unlicensed personnel working at the ALF that agreed to participate in the DNP clinical project.

Exclusion criteria consisted of staff members declining to participate in the clinical project. Human subject protection methods (written informed consent) from all participants working with the clinical project were signed and retrieved. Informed consent from the facility owner was obtained for participation in the DNP clinical project.

Project Interventions

The QI plans focus was for the unlicensed Type "A" ALF to improve medication administration safety for unlicensed personnel. The facilities goal was to have staff meet requirements to apply for licensure based on the recommendations and the implementation of the training modules into the facilities future protocols for all employees. The training modules comply with the state code of federal regulation as stipulated by Texas for a Type "A" Assisted Living Facility. The QI plan was implemented from April 29- June 30, 2016, at

an ALF in Texas. Ten unlicensed personnel participated in the clinical project. Each participant signed informed consents prior to implementation of the QI plan. Training of unlicensed personnel consisted of training modules and protocols with a pre- test (14 questions) to ascertain the knowledge of each participant, direct observation of unlicensed personnel while they administer medications (six assessment checklist), and introduction of training modules (six rights of medication administration, documentation, storage, and labeling of medication). Unlicensed personnel completed the post-test (14 questions) after QI implementation, repeating the direct observation checklist on medication administration (if needed). The QI plan included:

I. ADHERE TO STATE REQUIREMENTS FOR ASSISTED LIVING FACILITY

   A. The training modules consisted of the six rights of medication administration (right dose, right route, right patient, right medication, right time, and right documentation) for unlicensed personnel

   B. Proper medication administration, documentation record, storage, and labeling processes.

II. REVIEW STATE OF TEXAS GUIDELINES FOR A LICENSED TYPE "A" ASSISTED LIVING FACILITY

A. The State of Texas regulations (DADS) require a monitoring tool for documentation of medication administration and direct observation of medication administration.

B. Modules that promote resident safety and maintain state compliance.

III. PRE- QUALITY IMPROVEMENT MEDICATION ADMINISTRATION ASSESSMENT

A. Each participant was issued a pre-test (14 questions) to access knowledge base before the implementation of the QI plan.

B. The pre-test consisted of 14 questions on the topic of medication administration, documentation, storage, and labeling. QI plan is based on post-test competency of less than 80% on a 14 questions score scale. Each question is worth 7.14 points.

IV. DIRECT OBSERVATION PRE- QUALITY IMPROVEMENT IMPLEMENTATION

A. Six question checklist for observation of unlicensed personnel process of administering medication and documentation process post-QI implementation.

B. Each question is scored on a scale of 100 worth 16.6 points each—competency of 1 out of 6 was needed to achieve a score of 83 percent.

V. TRAINING MODULES

A. Consisted of training via PowerPoint presentation modules on safe medication administration.
B. Six rights of medication administration, documentation, storage, and labeling.

VI. POST QUALITY IMPROVEMENT IMPLEMENTATION MEDICATION ASSESSMENT

A. Each participant was issued a post-test (14 questions) to access knowledge after implementation of the QI plan.
B. The post-test consisted of 14 questions on the topic of medication administration, documentation, storage, and labeling.
C. Retraining of QI Plan is based on post-test competency of less than 80% on a 14 questions score scale. Each question is worth 7.14 points.

VII. DIRECT OBSERVATION POST QUALITY IMPROVEMENT IMPLEMENTATION

A. Six question checklist for observation of unlicensed personnel process of administering medication and documentation process post QI implementation.
B. Each question scored on a scale of 100 worth 16.6 points each—competency of 1 out of 6 to achieve a score of 83 percent.

The DNP learner served as the facilitator and reviewer for the QI plan to ensure unlicensed personnel covered all areas of the state regulation regarding

proper medication administration. The goal was for the QI plan to be implemented for future use, as part of the facilities annual training for all unlicensed personnel.

Measures

The measured outcomes were based on the interventions that consisted of determining and evaluating the need for a change process for training of unlicensed personnel that meets the state requirements for a licensed facility. Unlicensed personnel based the changes that were incorporated at the clinical project site on the QI plan findings that illustrated a need for training modules that focused on decreasing the potential for medication errors. The QI plan included the development of training modules for safe medication administration that included a review of medications that were prescribed to residents, a description and purpose for each medication prescribed, and a documentation record for each time, route, and dosage of medication administered to all ALF residents.

The QI plan consisted of consulting with the facility administer, unlicensed personnel, and pharmacist to obtain all resident medication profiles at the facility. A listing of residents prescribed medication was also obtained. Resident's medication consists of a plethora of medications that consisted of antidepressants hypnotic, and antipsychotic drugs that unlicensed staff members administer. The development of medication administration training was specific to the facility's needs and addressed proper medication administration by unlicensed personnel.

The QI process consisted of informed consent from all staff that participated, current knowledge assessment on medication administration, and a review of state guidelines for medication administration that assisted in the development of a QI plan for resident safety.

The outcomes and implementation of a safe medication administration process for unlicensed personnel were to ensure the QI plan complied with state requirements, and to decrease potential medication errors. The outcomes consisted of ten unlicensed personnel that were observed implementing the QI plan through pre-test, post-test, and direct observation of medication administration knowledge scores. The data was used to evaluate the effectiveness of the QI plan.

ALF's are at risk for high medication errors due to the absence of a system to accurately record and monitor medication administration. The clinical project ALF site is at high risk for medication errors due to a lack of a medication administration documentation record and training procedures. The current system for medication storage consists of a cabinet with each resident's medication in a bin with the resident's individual name attached. The unlicensed personnel lack knowledge on the side effects of each medication or the purpose of each medication being prescribed to the residents, which is a safety concern. There are no resident medication profiles, medication records, signature for staff administering medication via record log, or medication education on the purpose

and medication side effects. Adverse drug events, defined as harm resulting from the use of a drug, has been noted to be the leading cause of mortality in the elderly (Hajjar et al., 2003). An adequate documentation record for medication administration and training for unlicensed personnel is essential in decreasing medication errors. To prevent medication errors, unlicensed personnel administering medication should be trained properly per state requirements for safety reasons.

Data Collection

The data collection occurred over a two-month time frame that consisted of unlicensed personnel's current knowledge base on medication administration through pre-test and post-test, direct observation of medication administration, and identification of deficits to improve medication administration processes. All participants agreed to participate in the DNP project through a written consent form. Each participant was provided with a test on medication administration and provided with no time limit to complete the written pre-and post-test on medication administration. The direct observation portion of the QI plan consisted of each participant visually observed preparing medications for administration to residents. The data collection instrument utilized were pre- and posttest, direct observation on medication administration, and the one sample t-test which was used as a method to view statistical analysis. The one sample

t- test (See Figure 2) was compared to a single mean and a constant and reviewed the difference (average) from the group of participants that was unlikely to have occurred due to the random selection sample.

Analysis

A quantitative statistical analysis evaluated the impact of a formulated QI process for unlicensed personnel administering medication through data collection from pre- and post-testing, direct observation, and training modules. The data collected consisted of score totals from the pre- and posttests and the direct observation checklist. The results indicated the effectiveness of QI plan after implementation. A one-sample t-test was the tool utilized for statistical analysis that gathered data and interpreted into raw scores based on direct observation knowledge and pre-and post-testing. The participant group was administered a pre-test based on their current medication knowledge on medications before the QI plan process. The findings revealed the need for unlicensed personnel education and training through a QI plan for future implementation for all personnel.

This clinical project included a QI plan with modules formulated for unlicensed personnel with information on basic medication safety and administration. The QI plan focused on quantitative analysis to consist of nominal data on findings from pre-and post-testing, direct observation, number of participants that scored greater than or less than 80%, and the number of

participants requiring retraining of QI plan. The quantitative data was collected and analyzed using SPSS Statistics 2014 software that calculates cross tabulation testing. The QI plan established best practices for safe medication administration and implementation with the development of training modules. This clinical project was selected to improve the safety for residents and meet the state requirements for a Type "A" Assisted Living Facility.

Project Variables

Project variables include the measurement of unlicensed personnel knowledge on medication administration before the implementation plan (dependent variable). The next variable (independent) is the varied knowledge during the QI plan. The level of knowledge between each unlicensed personnel may vary. Some unlicensed personnel have moderate medical training and some may have no medical training. The controlled variable is constant. As part of the QI plan, each employee was administered a pre-test, post-test on their current knowledge in regards to medication administration, and visually observed administering medications based on a direct observation checklist.

Ethical Considerations

The ethical considerations consisted of resident and staff privacy information. No privacy information was disseminated without approval from the facility

owner and participants. All project data was maintained in a locked secured cabinet with the facility owner maintaining the key to the cabinet. The following assumptions were prior to the QI implementation process that all participants were capable of signing consent forms, answer the medication administration questionnaire, and provide honest information to the best of their abilities. This project received Institutional Review Board (IRB) approval on April 30, 2016, prior to study being conducted. The material that was submitted to obtain IRB approval consisted of informed consents to insure the rights of participants were protected and documentation to support the project.

Results

The quantitative data analysis consisted ten participants that were administered pre-and post-testing on unlicensed personnel knowledge on medication administration and direct observation of medication observation procedure. All data was imputed into the SPSS Statistics Software and the Wolfram Alpha Knowledgebase Software System. The data was interpreted and the variables were analyzed based on the pre-and post-test scores. The pre-and post-testing consisted of 14 questions on medication administration. Based on the score findings 50% of the participants achieved a score of 80%. However, there were many concerns from participants regarding safe medication administration test prior to the QI implementation plan training module process (See Table 3). The direct observation (See Table 3 & Figure 2) consisted of six questions on

medication administration, documentation, storage, and labeling. Based on findings, ten participants achieved a score of 80% or better (See Table 3). Many participants had questions on methods to improve medication administration, therefore all participants agreed to participate in further post-testing of medication administration and direct observation.

After the QI implementation, the ten participants demonstrated 100% score on the post-test medication administration test and post direct observation (See Table 3 & Figure 1) which concluded the QI plan was effective. The one sample t-test (See Figure 2) analyzed data collected on ten participants (n=10 sample size) for the direct observation findings. Of the ten participants, five scored less than 80% on the pre-test, with a standard error mean of 0.06325 and an estimated mean of 80. Scores ranged from 64.3-92.86 on the pre-test (See Figure 3 and Table 3). After the QI implementation, there was an increase the participant's knowledge on medication safety.

Change Process

After implementation of the QI plan, this DNP learner provided recommendations to the facility owner. The strengths of this clinical project were to focus on process change and improve healthcare through medication safety. Many of the recommendations that were presented to the facility owner based on the QI plan were adopted into current practice at the Assisted Living Facility. These recommendations included the posting of signs over the locked medication

(storage) cabinet to remind staff of the six rights of medication, utilization of a Medication Administration Record (MAR) (See Table 2) to include labeling with the resident name, allergies, expiration date of medication, time medication administered, signature of unlicensed personnel administering medication, and signature of RN delegating medication administration. Also, the incorporation of an employee record log (See Table 1) with medication administration training for state inspection review. The facility owner has agreed to implement the QI plan for future use with annual employee training for all unlicensed personnel and newly hired staff.

Project Follow-up

A follow-up visit to the clinical project ALF site was conducted after two-months of QI implementation. It was noted, that the facility owner implemented QI plan into facility policy for all current and newly hired unlicensed personnel. Additionally, the facility owner adopted the Employee Record (See Table 1) for all personnel files in-order to indicate training modules were completed by each staff member, the incorporation of signs posted in medication room to remind staff administering medication of six medication rights of administration to improve safety standards for medication administration. The facility owner has secured employee files in a locked area to have readily available for state inspection scheduled for October 2016. The limitations include the financial limitations for high technologically advanced medication administration record

that tracks medication documentation and the small number of staff members that participated in the QI plan. Implications for future medication administration training proved to be vital for unlicensed personnel to improve medication safety.

Conclusion

Unlicensed personnel administering medication in ALF's without knowledge of medication administration process, pose a safety risk for residents. The significance of this clinical project was to create a QI plan on medication administration safety for unlicensed personnel that would decrease the potential for medication errors, and ultimately improve resident safety at a Type "A" ALF through a QI plan for implementation.

This QI plan involved evidence-based literature to support the clinical project on medication administration. The identification and implementation of the PDSA improvement cycle (in accordance with the QI plan) and Iowa Model was used as a guide and a tool for a documenting change process. Based on the PDSA improvement cycle, the plan (P) to develop a QI plan was effective in identifying a need for change to decrease medication errors. The do (D), consisted of direct observation with six questions to evaluate the current medication administration process by unlicensed personnel. The study (S) consisted of evidenced-based research data on medication errors, which substantiated the basis for the QI plan. Finally, the act (A) was the process of implementing the QI plan to include

training modules and assessment of unlicensed personnel knowledge on medication administration process.

The implementation of this QI plan (through pre and post-testing and direct observation tool) showed an increase in staff knowledge on medication administration by 50%, pre-QI plan and 100% post-QI plan. The facility owner employed all the recommendations presented by the DNP learner. The problem for this clinical project were addressed and goals met that included the development of a QI plan to improve medication safety for residents at a Type "A" ALF through training modules that illustrated unlicensed personnel competency scores improved (See Table 3). The goal to incorporate a medication documentation record to improve medication safety that can be used as a tool to track resident medication administration through the six rights of medication administration (right dose, right route, right patient, right medication, right time, and right documentation) for unlicensed personnel per the State of Texas regulations for a ALF was met (See Table 2). Additionally, the goal for the facility to have an employee record that illustrate staff training on medication administration; as required for state licensure for a Type "A" ALF was developed and implemented into practice to present to DADS for state inspection was met (See Table 1).

The DNP clinical project limitations were the small number of participants and time constraints of two months. Due to the small number of participants in

the DNP clinical project, the statistical significance could have been greater. However, based on the results there was a need for continued implementation of a QI plan as part of annual training, new hire orientation for employees, and for continued compliance for the state licensure for a Type "A" Assisted Living Facility. In conclusion, all the goals of the QI plan were met and have been incorporated into practice at the clinical ALF site the facility owner for continued training for unlicensed personnel administering medication and improve safety for residents.

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Learner name	Bridgett Sterling,
and date	*Bridgett Sterling, 10/24/2016*
Mentor name	Jo Ann Runewicz, Ed. D, Capella University *Jo Ann Runewicz,*
and school	*Ed.D*

Capella University (2016)

Table 1

Employee Record (TO BE FILLED OUT BY MANAGER)

Facility: _____Manager Name: _____

I hereby verify that the following topics were covered in Employee Orientation and ongoing training modules in preparation for caring for residents: (please note that there may be additional facility-specific requirements):

☐ Fire Safety ☐ Sexual Harassment ☐ Electrical Safety ☐ Patient Rights

☐ Hazard Communication ☐ Safety ☐ HIPAA

☐ Universal Precautions ☐ Emergency Management ☐ Abuse and Neglect

☐ Medication Administration ☐ Infection Control ☐ Privacy and Security

Printed Name of Employee:	**Signature of Employee:**	**Date of Birth (month and day ONLY):**	**Date of Training:**

Confidentially of this employee record will be maintained for each employee by the facility owner. This documentation record will be maintained in a locked cabinet for seven years or at the time of termination (whichever is greater). The record will be available for state licensure and state inspection. This document was approved by facility owner and preceptor.

Table 2

Medication Administration Record (MAR)

Resident Name: _____ Medication Allergies: _____

RN Delegation: _____ Month/Year_____

Medication ordered:	**Date:**	**Time administered:**	**Dosage:**	**Route of administration:**	**Print and Signature of Unlicensed Personnel:**

Confidentially of this MAR will be maintained for each resident in a documentation record keeping book by the facility owner. This MAR will be maintained in a locked cabinet and assessable by staff administering medication and available to the state for licensure and inspection. This document was approved by facility owner and preceptor.

Table 3

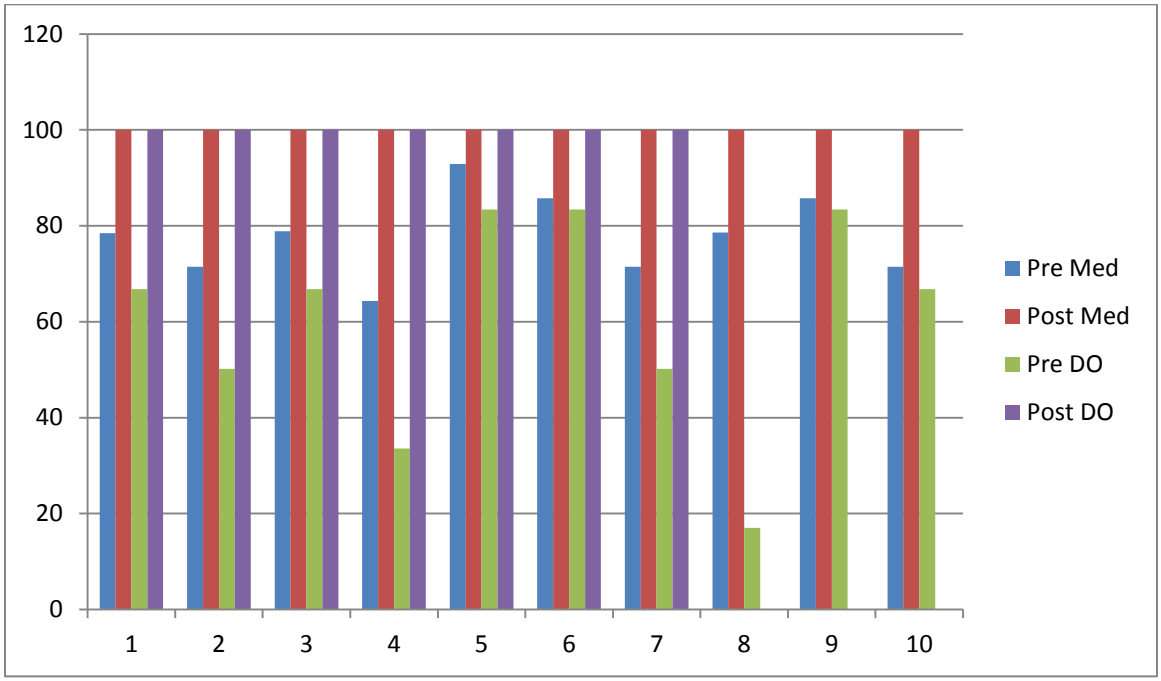
Pre-and Post-Test Quality Improvement Implementation Scores

Unlicensed Personnel (Participants):	**Pre-Test Score 14 questions:**	**Post Test Score 14 questions:**	**Pre- Direct Observation Score 6 questions:**	**Post Direct Observation Score 6 questions:**
1	78.85	100	66.8	100
2	71.44	100	50.2	100
3	78.85	100	66.8	100
4	64.3	100	33.6	100
5	92.86	100	83.4	100
6	85.72	100	83.4	100
7	71.44	100	50.2	100
8	78.58	100	17	100
9	85.72	100	83.4	100
10	71.44	100	66.8	100

Note: Average score on the pre-test was =77.92, Average score on post-test=100, Average score on pre-direct observation was=60.36, Average score on post-direct observation was=100.

Figure 1

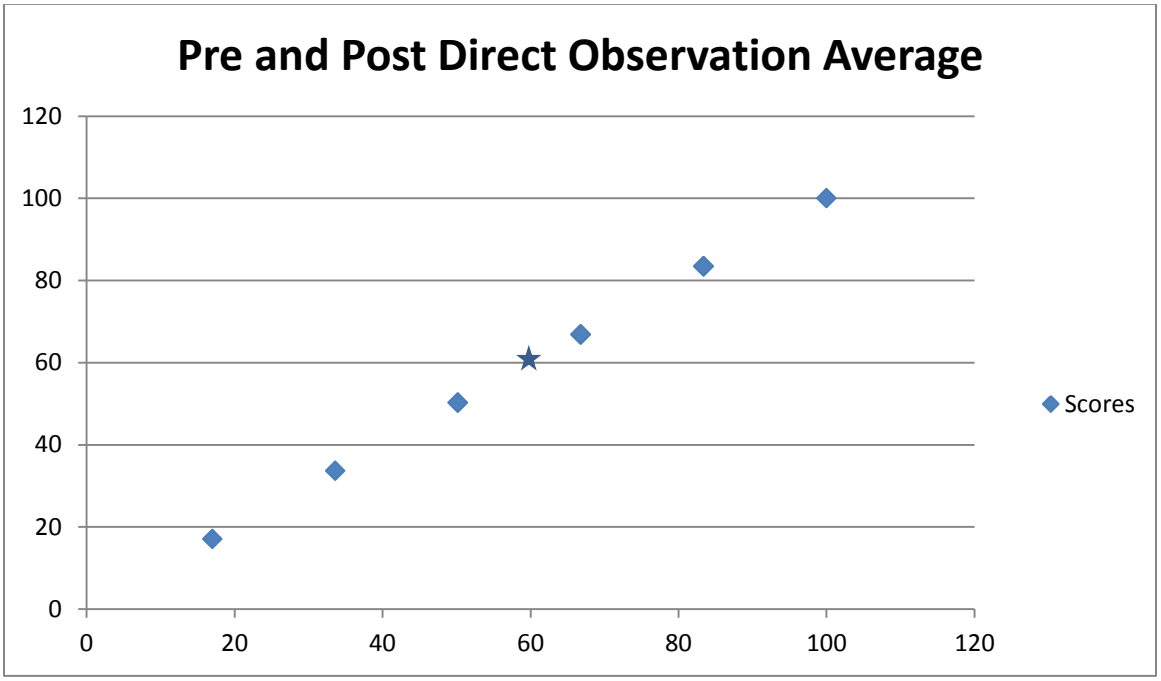
Pre-and Post-Scores for Quality Improvement Implementation



Note: Average score on the pre-test was =77.92, Average score on post-test=100, Average score on pre-direct observation was=60.36, Average score on post-direct observation was= 100

Figure 2

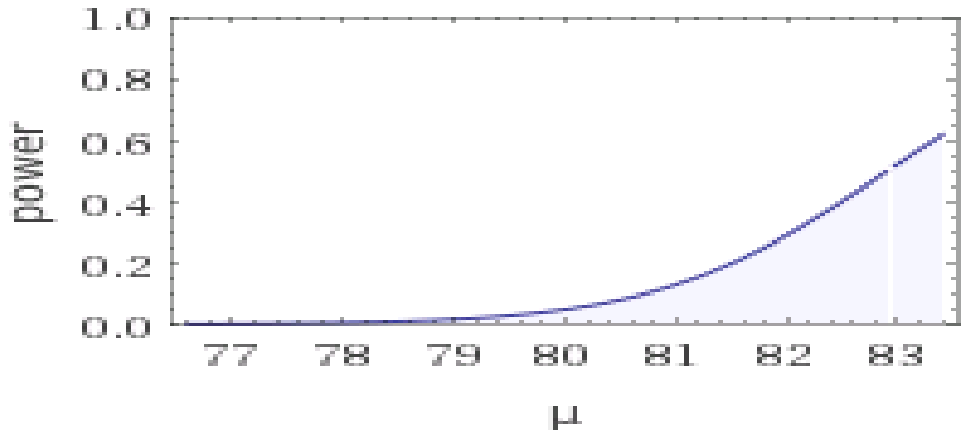
One Sample T Test Direct Observation



Note: Average pre-direct observation score= 60.36, Average post-direct observation score=100The dependent variable (scores) is plotted vertically, independent variable (scores) is plotted horizontally

Figure 3

One Sample t-test



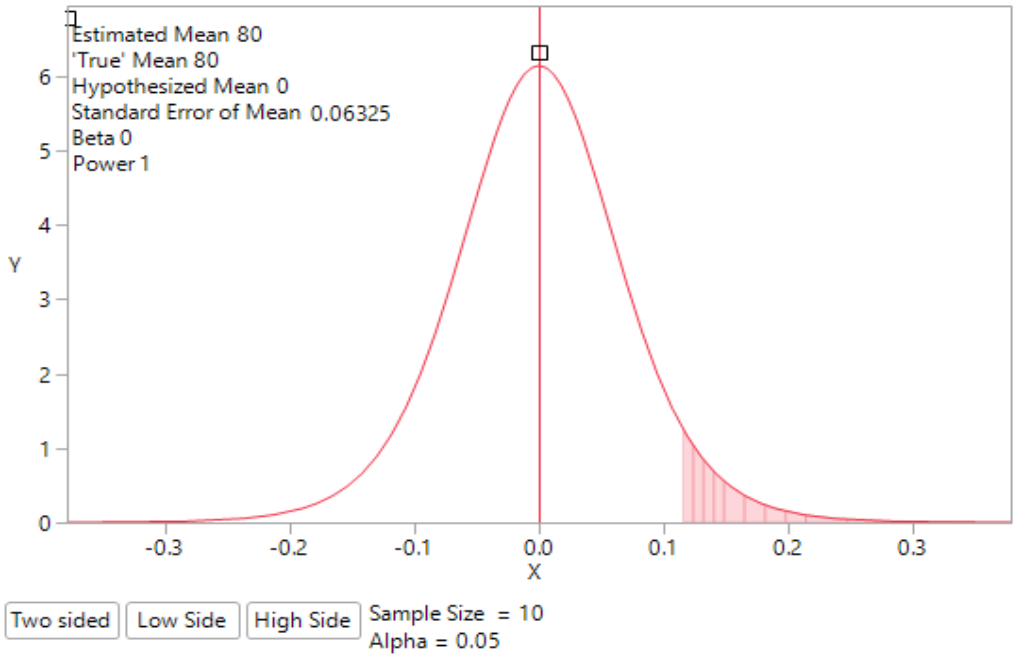
Note:

t-test for a population mean	
hypothesized mean	80
sample mean	100
sample standard deviation	5
sample size	10

Figure 4

One Sample T Test Post- Test

Test Conclusion



Note:

null hypothesis is rejected at 1% significance level
null hypothesis is rejected at 5% significance level
null hypothesis is rejected at 10% significance level