

CLINICAL EFFICACY OF NURSE BASED INR MONITORING
WHEN USING WARFARIN IN THE
LONG-TERM CARE SETTING

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Dedication

I would like to dedicate my DNP paper to my family, my mother Patricia, my three children Kelsea, Kendrick and Keenan and my two grandchildren Carson and Reignna. They have supported me through-out this process and always gives me the energy to keep pushing. I thank GOD for them daily.

Abstract

Background: 1.6 million Americans reside in the long-term care setting/nursing homes. About 12% of these patients receive Warfarin for various medical conditions such as A Fib, PE's and DVT's. Warfarin remains the leader in anticoagulation therapy in the long-term care setting. Medication errors when using Warfarin can range from double dosing, late dosing, or missed dosing, and poor INR monitoring. For patients these errors have potential injury and/or death implications from subtherapeutic/supratherapeutic INR's. Some require ED visits, treatment with VT K or holding medication. **Purpose:** To standardize the monitoring of INR levels for patients on Warfarin in the long-term care setting. Also decrease the incidence of incorrectly monitored INR levels, which can lead to incorrect or untimely dosing of Warfarin and adverse outcomes or effects. **Method:** This project used the **PDSA model**. The **Plan** included notifying nursing staff of upcoming changes to the process. The **Do** included collecting 2 months of retrospective data and 2 months of prospective data. The **Study** included analyzing the collected data and the **Act** was the implementation and preparing for the next phase. **Results:** Results showed overall decrease in non-therapeutic INR's, decrease in people requiring various forms of treatment for non-therapeutic INR's and a decrease in dosing errors as reasons for non-therapeutic INR. Positive outcomes in relation to Warfarin use in long term care at the intervention site. Number of therapeutic INR's were increased substantially in comparison to non-therapeutic INR's. Potential adverse effects were prevented with new process. **Conclusion:** Utilizing one RN working alongside the principal investigator allowed for a clearer and more precise model to identify any problems within the INR monitoring system. This included the collection of INRs' along with the timely logging of INR's and proper NP dosing of Warfarin.

Background and Significance

Concerns relating to the risks of anticoagulants therapy has intensified in the long-term care setting, because elderly residents of nursing homes are among the most-frail patients in the geriatric population. Given that more than 1.6 million Americans currently reside in nursing homes and the prevalence of medical conditions for which Warfarin is indicated increases with advancing age, issues surrounding the management of anticoagulation therapy in this population require particular attention (Clinical Forum, 2016). Factors such as aging, co-morbidities, diet and medications can affect the pharmacodynamics of Warfarin, thus making dosing and managing more challenging with advancing age. Gunwitz (2016) stated that as many as 12% of nursing home residents receive Warfarin for various reasons, such as Atrial Fibrillation (A-Fib), Pulmonary Embolism (PE), Deep Vein Thrombosis (DVT); and others, but the quality of anticoagulation care in this particular setting is suboptimal at best.

Although other oral anticoagulant medication therapy such as Xarelto and Eliquis are a bit less complicated and INR monitoring is not required, they seem to hold little promise for use in the long-term care setting for treating medical conditions such as A-Fib, DVT's and PE's, Warfarin remains the leader in usage among oral anticoagulation therapy especially in the nursing homes where there is a group of patients that have remained stable and maintained on Warfarin therapy for the treatment of these medical conditions such as DVT;s, PE's and Atrial Fibrillation for many, many years. At the project implementation site, there has been a problem with medication errors related to nurses giving Warfarin for a variety of medical conditions, including Atrial Fibrillation, PE's, DVT's and Mechanical Heart valves and several medication errors. Examples of medication errors include doubling doses or missing a dose of Warfarin, overall poor International Normalized Ratio (INR) monitoring for drug/effect/adequacy,

supratherapeutic INR's requiring vitamin K treatment and even a few patients requiring ER visits with INR's >10. These errors have potential for legal implications for the facility and loss of income as these ER visits were deemed as unnecessary in the quarterly QI/QA meetings. The facility's parent company PEC serves as the sole medical provider in long-term care facilities, assisted living facilities, independent living facilities and other clinics across most of North Carolina. The PI manages the medical care of residents in three long-term care facilities and one assisted living facility, including total management of Warfarin use for patients with A-Fib, PE's, DVT's, history of Cerebral Vascular Accident (CVA) or Stroke, and Mechanical Heart Valves. Close monitoring of INR's is necessary to ensure the proper dose of Warfarin is given and adequate drug effect is obtained. Three of the facilities the PI manages use of outside contractors such as Lab Corp to run their INR's for their buildings. However, one facility utilizes nurse usage of handheld INR machines for in house INR monitoring.

Nurses in this facility were provided a handheld machine that looks and functions like glucometer and per the staff development coordinator were given a day of training that lasted about three hours. It was discovered in a couple of QI meetings at this facility that several nurses were making medication errors surrounding Warfarin use. The medication errors ranged from double dosing Warfarin to several missed doses of Warfarin. In both scenarios of INR monitoring, the nursing staff (RN's & LPN's) are responsible for either obtaining lab results from the outside contracting company via fax or actually using the handheld INR machine and manually checking the patients INR. The nursing staff (RN's & LPN's) are also responsible for the administration of Warfarin once these results have been logged. The medical provider reviews the INR results and make medication adjustments to the Warfarin dose according to the patient disease process/indication for the use of Warfarin i.e. Atrial fibrillation, Mechanical

Heart valve, or PE. INR ranges are different according to the disease. For example, if a patient is taking Warfarin for Atrial Fibrillation, CVA or PE, then the usual range for INR is 2.0-3.0. If the patient has a mechanical heart valve, the INR range is 2.5-3.5. Different substances can alter/affect the efficacy of Warfarin and the INR including antibiotic use and eating certain kinds of foods. It is important that the nursing staff is aware of these, knows what to look for, and knows when to contact the doctor/NP who is managing that patient. It is also important for them to know to contact the physician/NP who is managing the patients Warfarin for INR's that are significantly out of range. It is important that accurate INR monitoring is maintained especially in long-term care settings where there is the chance of nurse turnover and agency use, thus increasing the chance of error and suboptimal treatment.

Purpose

The purpose of this DNP project is to standardize the monitoring of INR levels for patients on Warfarin in the long-term care setting to help decrease the incidence of incorrectly monitored INR levels, which can lead to incorrect or untimely dosing of Warfarin and adverse outcomes or effects. With this process, there should be more therapeutic INR's vs non-therapeutic INR's.

Review of Current Evidence

My literature review started with searching the literature using the search terms: long-term care setting, nurse leaders, nursing homes, Warfarin use, and elderly. Databases searched included PubMed, Medline, and Science Digest. Inclusion criteria included terms like nursing homes and nursing care centers. Exclusion criteria included articles related to hospital stays and inpatient or outpatient stays. All literature that met the inclusion criteria were eligible for the DNP project, regardless of rationale for Warfarin use. The literature search, after filtering for

exclusion criteria, returned a net of 15 articles that were reviewed for this DNP project. Common themes in the literature included proper nursing education on the conditions commonly treated with Warfarin, the recommended INR range for particular medical conditions, different medications and/or drugs that could increase or decrease the value of the INR, different foods that could influence the value of the INR and any adverse drug reaction that could occur such as bleeding, bruising etc. According to Gunwitz (2016) the use of Warfarin in the long-term care setting presents substantial safety concerns for elderly patients receiving Warfarin therapy.

They also spoke of the adverse effects being associated with Warfarin therapy being noted as somewhat common and most often preventable in this setting. Prevention strategies should target the prescribing and monitoring stages of Warfarin use in the managed setting. It is reported by the Foundation of Quality Care (Thriller, 2016) that as many as 12% of the 1.6 million long-term care American receiving some type of anticoagulation therapy. Warfarin is noted among the medications most frequently associated with emergency departments visits or hospitalizations and sometimes death (Thriller, 2016).

The lack of an adequate medication monitoring system and proper nursing education about Warfarin can be a long-term care expensive liability exposure (Williams 2016). According to Williams (Williams, 2016), in this setting it is important to obtain and read all history and physical information about the resident before and during the admission process to the facility, develop anticoagulation therapy interventions, develop policies to monitor for adverse effects such as bleeding and bruising and ensure Physicians and Nurse Practitioners respond to labs and drug monitoring regimens in a timely manner. This can only help improve the knowledge among the medical staff who are on the front line and potentially responsible for monitoring the medication regimen and assessing the patient. There should be a policy and procedure in every

facility to monitor patients that are taking medications such as Warfarin to help decrease the chance of prevent medication errors and adverse effects.

The improvement of Warfarin use in the long-term care setting depends on whether or not the management of anticoagulation in this setting is noted as being suboptimal at baseline. Also, improvements were not initially seen despite repeated attempts to implement a structured, sequential intervention (Williams, 2016). It is important to ensure that there is consistency when using Warfarin in the long-term care setting. Consistency helps to provide structure and normality to most any situations and in the situation of using Warfarin could prove very valuable

Long-term care facilities maybe unwilling or unable to voluntarily implement known best practices for anticoagulation management (Thriller, 2016). This could be because of the unfortunate nursing shortage causing facilities to have to increase utilization of agency nurses for medication administration. The nursing shortage has also increased utilization of medication aides, who don't have as much education as nurses, to help with medication administration in the long-term care setting.

Conceptual Framework/Theoretical Model

Individuals learn by positive repetition taught by observing the behaviors of others. I chose the Bandura Social Cognitive Theory to explain the why of my DNP project. Bandura asserts that most individuals learn from observing one another. This action allows for performing tasks correctly through observation, imitation and modeling. Bandura spoke of four conditions that were necessary in any form of modeling proper behavior: Attention, retention, reproduction and motivation. Using this theory can help identify potential for error when performing nurse led INR monitoring in long-term care setting thus providing attention to the matter. Retain the most effective way to perform and document the nurse led INR monitoring, reproduce it to help reach

the goal attainment of decreased adverse effects such as supratherapeutic INR's, bleeding risks and decreased ER visits. Positive outcomes usually motivate and encourages individuals to provide proper follow through.

Methods

The purpose of this DNP project is to facilitate the monitoring of INR levels for patients on Warfarin in the long-term care setting to help decrease the incidence of non-therapeutic INR's from dosing errors which can lead to adverse outcomes or effects such as bleeds, CVA'S or unnecessary ED visits.

Design

This DNP project was a Quality Improvement project. There is a need for a new process when collecting INR's in my project site. It is important that we look at how we can improve the INR process for better patient outcomes. My DNP project will include long-term care patients, over the age 65 who are prescribed Warfarin for various medical conditions, who currently are admitted to the site facility. The number of patients receiving Warfarin usually ranges from 6-10 at any given time. The data that will be collected includes the total number of INR checks and of those how many were therapeutic vs non-therapeutic, any dosing errors that lead to adverse effects (such as bleeding, CVA's, ED visits, or hospitalizations), and any dosing errors that occurred. The data will be collected by retrospective chart review and prospective chart review, using deidentified data, in order to allow comparison of outcomes before and after the new program/policy implementation. The data will be collected on a log sheet (see attached). At the end of data collection, the data will be entered into a password protected Excel spreadsheet on a password protected computer for statistical analysis. Digital data will be stored in Box, a 1-click

secure cloud-based storage system with UNCG. Paper logs will be kept medical director office. All data will be destroyed after 5 years, per UNCG policy.

Transitional Framework

The Plan, Study, Do Act (PDSA) can help me summarize this (See Appendix A). Plan-First, the nursing staff will be made aware of the procedure change moving the responsibility for collecting and documenting the INR for patients on warfarin from individual nurses to the nursing supervisor. The Principle Investigator (PI) will complete a 2-month retrospective chart review of all patients who meet inclusion criteria to document the outcome measures as per the attached INR log sheet. The PI will also collect the number of adverse events related to non-therapeutic INR level. Study-Then moving forward, the same information will be collected for each patient on warfarin for the 2-month duration of the study. Do-After study completion, statistics will be completed on the aggregate, de-identified data to determine if the now policy/program has had an impact on the timeliness or INR monitoring, the percentage of therapeutic INRs, the number of dosing errors, and number of adverse outcomes. Then the PI will act once results have been analyzed

Population

My focus population included patients who live in a long-term care facility. Inclusion criteria was age 65 years of age or older, taking Warfarin for any medical condition, and on INR monitoring either weekly or bi-weekly. Patients who met these criteria were included in the DNP project. No specific condition/reason for Warfarin therapy was specifically excluded. No actual patient interactions were involved in the project. Only actual INR values from the record and other datapoints were kept in a separate notebook on a log sheet. There was no specific exclusion.

Setting

My DNP project took place in a long-term care facility in a suburban rural mix area. The long-term care facility encompasses 61 acres of land that includes regular apartments, independent living apartments, short term rehab, assisted living and long-term care residents. The long-term care facility is part of a corporate not for profit organization that is Medicare and Medicaid certified to have up to 114 occupied beds.

Project Implementation

My planned/proposed intervention is to show how important nursing clinical efficacy is when trying to prevent Warfarin dosing errors and promoting therapeutic INR's while using Warfarin in the long-term care setting. We also know that certain foods and/or medications such as antibiotics can alter the results of the INR. Also, late dosing, missed doses and double dosing of Warfarin can alter the results of the INR. Prior to the start of the DNP project, the project facility was utilizing five notebooks (one per hall) for all in-house patients using Warfarin. The chance of dosing errors increased during this period because there were several different nurses responsible for giving the Warfarin, collecting the INR results and logging them and getting the Warfarin logbook to the NP for any dosing changes. If this process was not done timely, dosing errors could be made.

During the planning phase of the DNP project, a meeting was held with facility leadership including the nursing home administrator and nursing supervisor. The project was presented including full explanation of the problem, proposed solution and details on resources required. Once the facility approved the proposal and the IRB approved the DNP project, implementation began. The nursing administrator allowed for the utilization of one registered nurse as my assistant and we compiled a list of all in-house patients who used Warfarin for

whatever the medical condition, into one notebook for medication management. The registered nurse was the sole person responsible for ensuring all INR's checks were completed and logged timely and that these INR results were reported to the NP for management of the Warfarin dosing based on INR results. There was a backup person to fill this role when the assistant was off of work. The NP for this long-term care facility who managed the care for the patients in this long-term care facility was already responsible for the dosing of the Warfarin. The notebook developed for INR result logging had dividers to separate the patients in the notebook by hall. The log sheet had a place for the date, patient name, INR result and current dose of Warfarin the patient is currently receiving. This information allowed for appropriate and timely Warfarin dosage adjustments based on the INR results. (SEE Appendix B for log sheet).

Timeline and Critical Milestones

See Appendix C for GANTT Chart which maps out the timeline and critical milestones.

IRB Approval

With the assistance of my advisor Dr Eric Gill, I submitted my application to IRB on 4/21/22. I received an email on 5/13/22 stating that my project was non-human subject research and I was able to start my DNP project. There was deemed minimal risk for any type of harm including physical, psychological, emotional, social or economic. Data privacy was maintained throughout the DNP project as the only data collected and reviewed was only actual INR values. No identifiable patient information was collected or stored.

Instruments

The notebook developed for INR result logging had dividers to separate the patients in the notebook by hall. The log sheet had/. Place for the date, patient name, INR result and current

dose of Warfarin the patient is currently receiving. This information allowed for appropriate and timely Warfarin dosage adjustment based on the INR results. (See Appendix B for log sheet.)

Data Analysis

Data analysis took place for my DNP project in a look back period (retrospective) and the look forward period (Prospective). We collected INR data from five INR notebooks for the retrospective period. Prospectively we collected INR data from one notebook. The notebook consisted of dividers with individual log sheets that separated each individual patient. Data (INR's) was collected week to week from 10 patients for a total of 9 weeks retrospectively and prospectively for 2-month period. During both periods, the INR's were broken down into 2 categories, therapeutic vs non-therapeutic.

Reasons were looked at for the non-therapeutic INR's and they included various dosing errors, the use of antibiotics and others. The second phase began when we placed our intervention into action with the single nurse responsible for INR results and logging the data into the new log sheet in place and started the look forward period. We again looked at 9-weeks of INR's logged from 10 patients taking Warfarin. We again broke down the INR's into 2 categories, therapeutic vs non-therapeutic. Reasons for non-therapeutics was also analyzed.

The primary investigator (PI) met with statistician Professor Mittal from UNCG on 8/16/22 to review data collected (INR's) for proper data analysis. Data was analyzed using the CHI-SQUARE test method on Microsoft Excel. This allowed comparison of therapeutic vs non-therapeutic INR's retrospectively and prospectively to evaluate for any changes after implementation of the intervention.

Results

The null hypothesis was that the intervention is not associated with the outcome (Therapeutic INR/Non-therapeutic INR). From pre-to post intervention, results were as follows: nontherapeutic INR's were decreased, there was a decrease in the people requiring various forms of treatment for non-therapeutic INR's and there was a decrease in the number of dosing errors as reason for non-therapeutic INR's. Based on the results described above, I was able to reject the null hypothesis and was able to conclude that the intervention is associated with the outcome. Positive outcomes were concluded in relation to Warfarin use in LTC at the implantation site. The number of therapeutic INR's were increased substantially in comparison to non-therapeutic INR's and with these adverse effects were prevented with this new process. By changing the process of checking INR's, logging INR results and getting these results to the NP for timely dosing helped decrease non-therapeutic INR's thus decreasing the chance of adverse effects when using Warfarin in the long-term care facility. Here we were able to see that the number of therapeutic INR's went up vs non-therapeutic INR's. See tables-

Figure 1

Comparison of therapeutic and non-therapeutic INRs pre- and post-intervention

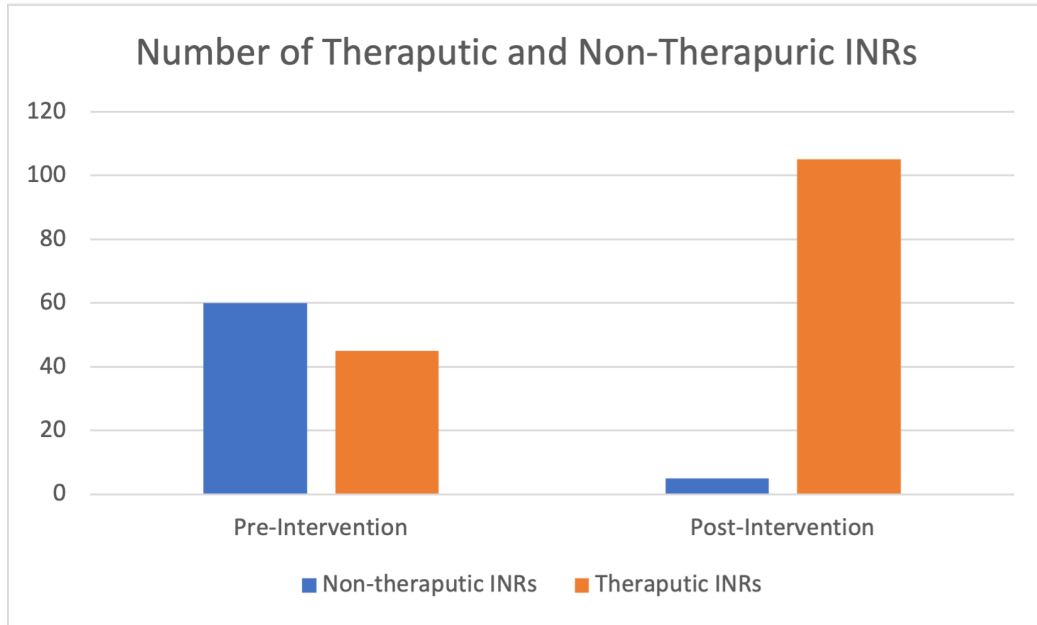


Figure 2

Reasons for non-therapeutic INRs pre- and post-intervention

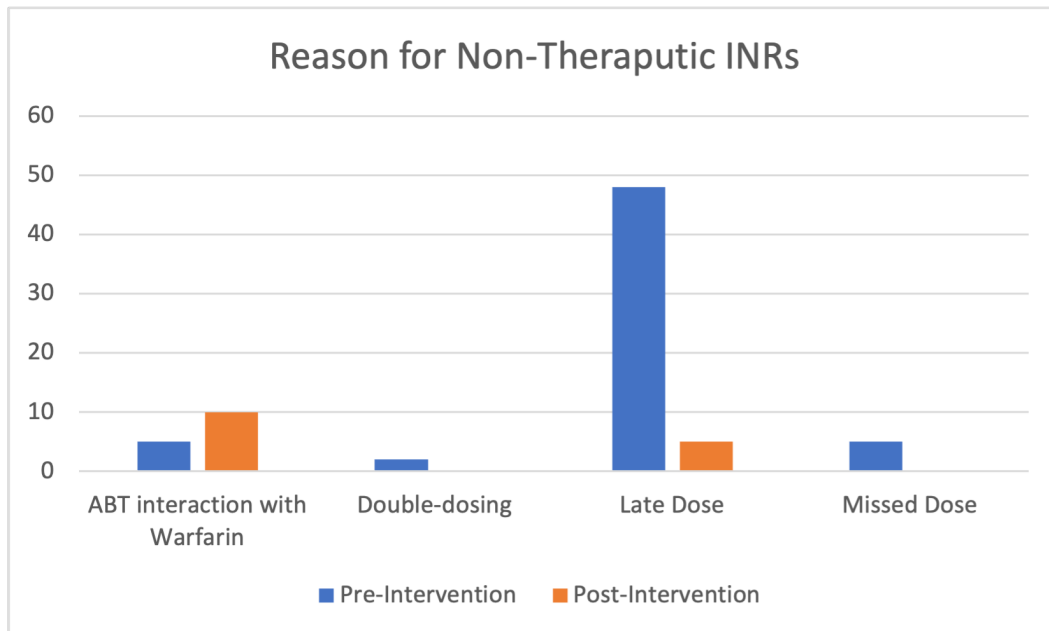
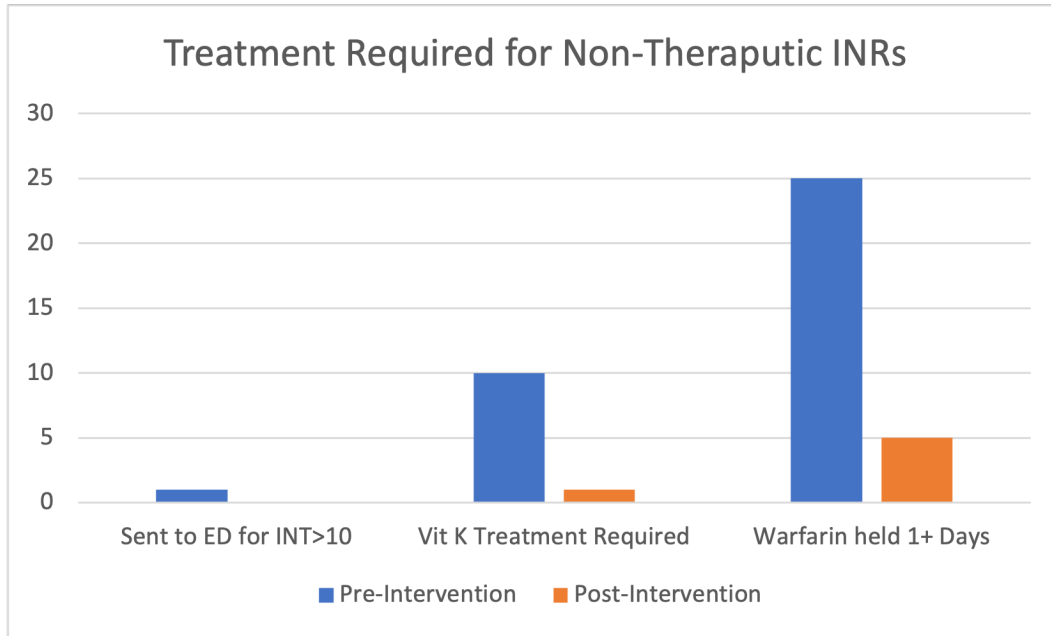


Figure 3

Treatment required for non-therapeutic INRs pre- and post-intervention



Identify barriers to success

The DNP project progressed according to the expected timeline. There were no barriers, expected or unexpected to the timeliness or success of this DNP project.

Identify strengths to overcome the barriers

No modification of implementation strategies was necessary when implementing this DNP project.

Discussion

As I ponder the results of this DNP project, I wasn't surprised that more consistency and follow through actually helped increase the number of therapeutic INR's vs nontherapeutic INR's. We were able to break down the total number of INR's week to week and therapeutic vs nontherapeutic INR's were totaled. We were able to see what could have caused the non-therapeutic INR's once the data was broken down and analyzed. The potential reasons for non-

therapeutic INR's were mainly from antibiotic usage and various dosing errors which ranged from the double dosing of Warfarin, late dosing of Warfarin and missed dosing of Warfarin. We were also able to identify that during the look back period, several different nurses (some being from agency use) were being used in this long-term facility during this time period and they had the responsibility of giving the Warfarin, keeping up with the Warfarin logs, documenting the INR results and getting the Warfarin log to the NP for dosing.

The look forward period utilized the new procedure of collecting and logging INR data. Additionally, five separate logs were consolidated into one Warfarin log for all in-house patients receiving Warfarin and one nurse, with a back-up, in charge of the new process. The purpose of this DNP project was to standardize the monitoring of INR levels for patients on Warfarin in the long-term care setting to try and decrease the occurrence of incorrectly monitored INR levels to try and increase the amount of therapeutic INR's vs non-therapeutic INR's. This would hopefully reduce poor outcomes such as bleeding, stroke, and ER visits or hospitalization. It was demonstrated that by performing positive repetition of a specific act the chance of new behaviors was prevalent. I was able to identify and confirm that continuity of care does lessen the chance of errors in which could cause adverse effects for the patients in this setting. The impact of this DNP project proved to be positive and provided the long-term care setting with a substantial intervention on how to increase the number of therapeutic INR's and reduce risks as described previously.

Conclusion

My DNP project provided positive outcomes in relation to Warfarin use in the long-term care setting at this implementation site. I was able to identify a way to increase therapeutic INR's vs non-therapeutic INR's to help prevent any potential adverse effects when patients take

Warfarin in the long term-care setting. The evidence-based research spoke a lot about this type of anticoagulation in this particular setting being suboptimal at best, so it is extremely important to ensure proper and safe INR monitoring. It was noted that when performing tasks properly, imitation, observation and modeling proved key for proper follow through. Continuity of care played a vital role in observing more therapeutic iNR readings vs non-therapeutic INR's.

Identifying reasons for improper dosing of Warfarin in this setting helped to provide a more specific plan with this new process. Utilizing one RN working alongside the principal investigator allowed for a clearer and more precise model to identify any problems within the INR monitoring system. This included the collection of INRs' along with the timely logging of INR's and proper NP dosing of Warfarin. These findings will be disseminated during UNCG poster day. The project facility has been made aware of findings results through in person dialogue. The recommendations for future practice based on the results of this DNP project include providing continuity and more precise follow through through evidenced based research.

Reference:

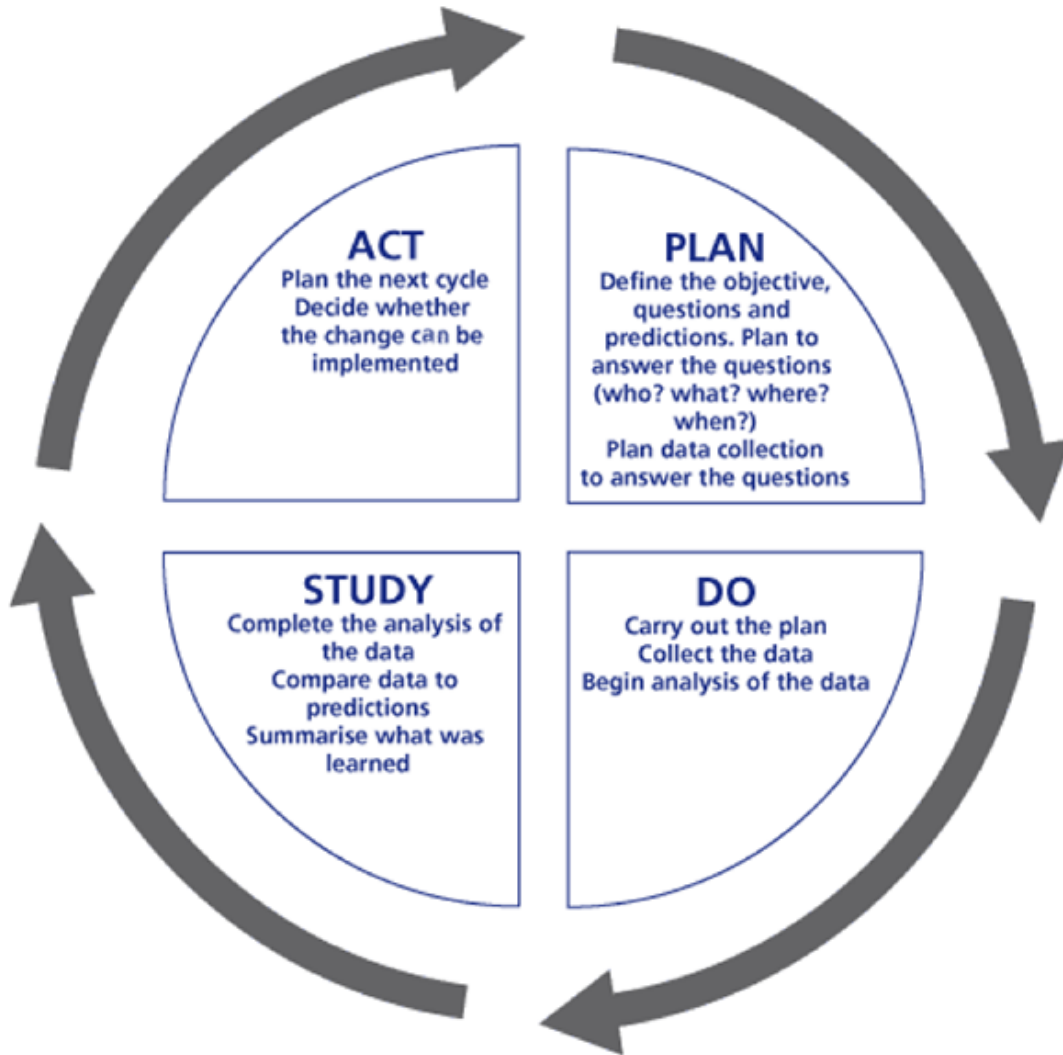
- Alcusky, M., McManus, D. D., Hume, A.L., Fisher, M., Tjia, J., & Lapane, K. L. (2019d). Changes in anticoagulant utilization among United States nursing home residents with Atrial Fibrillation from 2011-2016. *Journal of the American Heart Association*, 8(9). <https://doi.org/10.1161/jaha.119.012023>
- Chen, Qiaoxi; Lapane, Kate; Numes, Anthony; Tjia, Jennifer; Hugunin, Julie & Alcusky, Matthew. Prevalence and the factors associated with oral anticoagulant use among nursing home residents. *Journal of Clinical Pharmacy Therapy*. 2021 Dec;46(6): 1714-1728.
- Gurwitz, J .H; Monette, J., Rochon, P.A; Echer, M.A & Avorn, J. Atrial Fibrillation and stroke prevention with Warfarin in the long-term care setting. *Arch Intern Medicine*. 2017 May 12:157 (9):97-84
- Gurwitz, Jerry; Field, Terry; Radford, Martha; Harrold, Leslie. The safety of Warfarin therapy in the nursing home setting. *American Journal of Medicine*, 2016:10.
- Papaoannou, Alexandra; Kennedy, Courtney & Campbell, Glenda. A team-based approach to Warfarin management in long-term care. *BMC Geriatrics*, 2016.
- Rojas, Fernadez; Goh, Justin & Hockwick, Jennifer. Assessment of oral anticoagulant use in residents of long-term care homes; evidence for contemporary suboptimal use, 2017.
- Vargas, E. R., Sposato, L.A., Lee, S. H.S., Hachinski, V., & Cipriano, L.E. (2018). Anticoagulation Therapy for. Atrial Fibrillation in patients with Alzheimer's Disease. *Stroke*, 49(12), 2844-2850. <https://doi.org/10.1161/strokeaha.118.022596>
- Williams, Kathy., Ledford, Bobbie., & Smith, Bettie. *Clinicians Forum* 2016: A performance

improvement in managed long-term care and improving Warfarin medication management.

Use of Warfarin in long-term care-A systemic review. *BMC Geriatrics*, 2017

Appendix A

PDSA Translational Framework Figure



University of Iowa [UI] Healthcare (2017)

Appendix B

Data Collection Log Sheet

ANTICOAGULANT THERAPY FLOW SHEET

Diagnosis requiring Anticoagulant Therapy: _____

DATE	PT	INR	CURRENT WARFARIN DOSE	PTT	CURRENT HEPARIN DOSE	NEW ORDER	INITIALS

IDENTIFY INITIALS WITH SIGNATURE			
Initials	Signature	Initials	Signature

NAME-Last _____ First _____ Middle _____ Attending Physician _____ Record No. _____ Room/Bed _____

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Appendix C

GANNT Chart of Project Timeline and Critical Milestones

Task	Mar 2022	Apr 2022	May 2022	Jun 2022	Jul 2022	Aug 2022	Sept 2022	Oct 2022	Nov 2022	Dec 2022	Jan 2022	Feb 2022	Mar 2022	Apr 2022	May 2022
Submit IRB		X													
Work with RN Supervisor and Educate nurses on new way to collect INR's			X												
Implement new INR log and implement new data collection procedure			X	X	X										
Review data and analyze data results						X	X	X							
Write DNP report results									X	X	X	X	X		
DNP Graduation														X	X