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## Improving Knowledge of the Importance of Adhering to Anticoagulation Therapy among Patients with Atrial fibrillation to Reduce Stroke Risk: A Quality Improvement Project.

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Improving Knowledge of the Importance of Adhering to Anticoagulation Therapy among  
Patients with Atrial fibrillation to Reduce Stroke Risk: A Quality Improvement Project.

A Scholarly Project Presented to the Faculty of the  
Nicole Wertheim College of Nursing and Health Sciences

Florida International University

In partial fulfillment of the requirements for the Degree of Doctor of Nursing Practice

For the Degree of Doctor of Nursing Practice

By

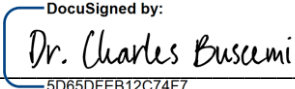
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## **Acknowledgment**

*This is the LORD'S doing; it is marvelous in our eyes. Psalm 118:23*

I want to express my appreciation for Dr. Fenkl and Dr. Totfalusi, who have guided, mentored, and supported me throughout my study. I thank God for his mercy and grace, my father, Mr. Jeyasingh, who wanted to see me as a doctor, my family, and my friends. I thank the administrative staff, cardiology nurse practitioners, and cardiologists at the hospital for their support and also for the patients who agreed to participate in this study. Thank you all for helping me during the completion of my quality improvement project. Their support and motivation are valued, and I am grateful for having you all brighten me during this time.

## Abstract

**Background:** It is reported that more than 795,000 people in the United States suffer from stroke, and almost 87% suffer from ischemic strokes. Stroke impacts the patient's condition causing adverse effects such as paralysis, weakness, lack of proper balancing, excessive fatigue, and pain, affecting the quality of life. Atrial fibrillation is the leading cause of strokes, and they are usually provided with anticoagulant therapy, which helps prevent blood clots. However, the patient faces difficulty adhering to the treatment process, resulting in stroke and recurrent hospitalization. This quality improvement project (QIP) aimed to improve the Knowledge of Patients with Atrial Fibrillation to help Adherence to Use Anticoagulation to Reduce Stroke Risk in the inpatient setting.

**Methods:** A survey was designed for the pre-and post-intervention. The survey consisted of 4 demographic and 21 knowledge questions on knowledge and treatment of atrial fibrillation and patient knowledge about the importance of anticoagulation. Fourteen participants completed the pre-survey, the educational session, and the post-survey. A 15-minute evidence-based educational session was conducted in the inpatient setting. The survey results indicated improvement in the knowledge question responses after the 15-minute educational session. Knowledge scores from the pre-and post-survey were compared, which were statistically significant. It is reinforced that an educational intervention can improve the knowledge of the importance of anticoagulation in stroke prevention in patients with atrial fibrillation can be improved.

**Results:** Knowledge scores from the pre- and post-surveys were compared, which were statistically significant based on the p-value.

**Conclusion:** These findings indicated that educating patients with atrial fibrillation on the importance of anticoagulation in healthcare can decrease their stroke risk.

## Table of Contents

<b>Abstract.....</b>	<b>2</b>
<b>Table of Content.....</b>	<b>4</b>
<b>I. Introduction.....</b>	<b>7</b>
• <b>Problem Statement.....</b>	<b>7</b>
• <b>Background.....</b>	<b>8</b>
• <b>Scope of the Problem.....</b>	<b>9</b>
• <b>Consequences of the Problem.....</b>	<b>10</b>
• <b>Knowledge Gaps.....</b>	<b>10</b>
• <b>Proposal Proposal.....</b>	<b>11</b>
<b>II. Summary of the Literature.....</b>	<b>13</b>
• <b>Search Strategies.....</b>	<b>14</b>
• <b>Introduction to Atrial fibrillation.....</b>	<b>15</b>
• <b>Anticoagulation.....</b>	<b>16</b>
• <b>Patient education and anticoagulant drug.....</b>	<b>18</b>
• <b>Reasons for non-adherence toward anticoagulant drug.....</b>	<b>19</b>
• <b>Patient assessment for anticoagulant knowledge.....</b>	<b>21</b>
• <b>Treatment options.....</b>	<b>22</b>
• <b>Vitamin K antagonists- Treatment option.....</b>	<b>25</b>
<b>Motivational interview for improving anticoagulant consumption.....</b>	<b>27</b>
<b>Technologies for improving the adherence to drugs.....</b>	<b>29</b>
<b>Interventions.....</b>	<b>30</b>
<b>Patient education.....</b>	<b>34</b>

<b>III. Purpose/ PICO Clinical Question/ Objectives.....</b>	<b>36</b>
• Purpose.....	36
• PICO Clinical Question.....	37
• Objectives.....	38
• SWOT Analysis.....	38
<b>IV Definition of Terms.....</b>	<b>41</b>
<b>V. Conceptual Underpinning and Theoretical Framework of the Project.....</b>	<b>43</b>
<b>VI.Methodology.....</b>	<b>45</b>
• Study Design.....	45
• Setting.....	45
• Sample.....	46
• Intervention.....	46
• Instruments.....	46
• Data Collection Procedures.....	47
• Data Analysis.....	48
• Protection of Human Subjects.....	48
<b>VII.Results.....</b>	<b>50</b>
• Demographics.....	51
• Pre-and Post-Survey Analysis.....	52
<b>VIII.Discussion.....</b>	<b>61</b>
• Demographics.....	61
• Knowledge.....	65
<b>IX.Limitations.....</b>	<b>65</b>
<b>X. Implication for Advance Practice Nursing.....</b>	<b>66</b>
<b>XI. Conclusion.....</b>	<b>68</b>

<b>XII.References.....</b>	<b>69</b>
• <b>Table of Evidence.....</b>	<b>82</b>
<b>XIII.Appendices.....</b>	<b>85</b>
• <b>Appendix A: Supporting Letter.....</b>	<b>85</b>
• <b>Appendix B: IRB Approval Letter.....</b>	<b>86</b>
• <b>Appendix C: Recruitment Letter.....</b>	<b>87</b>
• <b>Appendix D: Informational Letter.....</b>	<b>88</b>
• <b>Appendix E: Pre-and Post-Test.....</b>	<b>91</b>

## Chapter I

### Introduction

#### Problem Statement

Stroke prevention is of the principal significance in managing patients with atrial fibrillation, and oral anticoagulation is related to a substantial decrease in stroke/systemic embolism and mortality. It is reported that more than 795,000 people in the United States suffer from stroke, and almost 87% suffer from ischemic strokes, which block the blood flow into the brain. The condition impacts the patient's condition by enhancing the chance of adverse effects such as paralysis, weakness, lack of proper balancing, excessive fatigue, and pain, affecting the quality of life (Boehme et al., 2017). The patient suffering from stroke is usually provided with anticoagulant therapy, which helps in preventing blood clots. However, the patient faces difficulty adhering to the treatment process, reducing long-term adherence to the treatment plan (Ramphul et al., 2021). The following paper will suggest an educational intervention that can be used to commit anti-coagulate drugs and reduce the chance of developing stroke. The patient faces difficulty maintaining long-term adherence to the anti-coagulate drugs, which increases the likelihood of developing further complications or re-occurrence of stroke.

Similarly, recurrent stroke is also higher, almost 25% of the total cases. It is also reported that the period between the first-ever and recurrent stroke is mainly from a lack of proper knowledge, fear of long-term adherence to the treatment process, and enhanced mortality risk. Long-term nonadherence to drugs also develops due to unfavorable long-term side effects, the long-term burden of the treatment, and patient refusal to adhere to the medicines (Patel et al., 2021). The other issues resulting in nonadherence to the treatment process include medication cost, cost of traveling to avail of the drug, and reimbursement. The patient also has psychological factors that reduce long-term adherence (Foley et al., 2021).



The psychological factors are cognitive impairment, psychiatric illness, and depression. The other issues are age, fear of falls, and bleeding. Hence, a good information and care plan assessment must be implemented to enhance adherence (Ibrahim et al., 2021).

## **Background**

Osamu et al. (2021) studied the clinician's and patients' perceptions of oral anticoagulants and those suffering from atrial fibrillation. The study highlighted that atrial fibrillation increases the risk of developing the Incidence of stroke by 20%, and it also increases the risk of developing morbidity. However, it is also determined that initially, the patients are recommended warfarin. After consuming the same, the patients shift towards other oral anticoagulants. It is also determined that novel anticoagulants are much easier to use than warfarin, and it is also found to provide fewer challenges for both healthcare professionals and patients. The study's result highlighted that the clinician considers older age as the risk factor that increases the risk of developing nonadherence to drugs (Kularni et al., 2021). The study also highlighted that patients' health and lack of proper medication beliefs affect adherence. The study also highlighted that lack of appropriate patient support is vital in enhancing safety, and it is one of the most effective Anticoagulation. The patient also faces adherence difficulties due to a lack of confidence and experience in safe Anticoagulation: other medical comorbidities and poor understanding of atrial fibrillation influence the patient's belief. Hence, adequate self-management is essential, provided by patient education in improving adherence to anticoagulation drugs and lowering the risk of developing stroke (Kvarnstrom et al., 2018). Pandya et al. (2017) performed a study to determine the factors which affect the patient's perception and adherence to anticoagulant therapy. The study highlighted that the role of oral anticoagulants had been extensively altered and adhered to by the patient's perspective. The efficiency and safety of utilization of anticoagulants are highly reliant on the patient's capability to achieve and take these

multifaceted, speculative drugs. The study's result highlighted that various factors affect adherence to anticoagulant therapy, including patient-related issues, condition-related issues, social-economic issues, and health system issues. The elements found to have adverse effects include a lack of proper monitoring, a lack of appropriate dose adjustments, and a lack of knowledge, which creates a barrier to long-term adherence to the treatment process. The other challenges are twice-daily dosing, high cost, and adverse gastrointestinal disorder. Hence, proper patient education with a mandatory monitoring system can improve patient safety and long-term adherence to the treatment plan.

### **Scope of the problem**

The prevalence and frequency of Atrial fibrillation are rising equally in developed and developing countries. It is, therefore, the most important cause of hospitalization, morbidity, and mortality. The rate and occurrence of atrial fibrillation will increase exponentially in the upcoming years (Foo). Atrial fibrillation is the most frequently experienced cardiac dysrhythmia in the United States and is the main reason for hospitalization, stroke, disability, and death. The precipitously rising occurrence of atrial fibrillation is primarily attributable to the maturing of the population. Because atrial fibrillation may be infrequent and asymptomatic or slightly symptomatic initially, its incidence is hard to determine (Desphande et al., 2014). It is reported that the occurrence of stroke is increasing daily, is almost 11.2% and 11.4%, and the event is frequent 12 months. The risk of recurrence was also between 11% and 15% within the cerebral insult. 87% of the patient is found to be suffering from ischemic strokes, which also increases the cost of treatment. The condition also increases the death rate, which is higher in the Hispanic community. The recurrent stroke rate is also higher, with almost 25% of strokes in the United States. The recovery rate is also lower due to the lack of suitable treatment options and education (Anghel et al., 2019). The NOACs (Novel Oral Anticoagulants) do not need anticoagulation watching. Still, given

that these drugs have a short half-life, it turns out that attempts had to be addressed to enhance patient adherence and perseverance with therapy (Lip et al. 2018).

### **Consequences of the problem**

A significant degree of medication adherence is of utmost significance for the effectiveness of anticoagulant treatment. Nonadherence to anticoagulant therapy is precisely related to cardioembolic issues. The primary benefits of Novel oral anticoagulants over Vitamin K antagonists are the fast beginning of the action, balanced fixed-dose pattern, and the lack of the need for checking. Of these elements of Novel oral anticoagulants, outpatient follow-up visits are low. Due to their short half-life, the effectiveness of Novel oral anticoagulants may vanish immediately if the dose is skipped. Hence, drug observance is crucial for Novel oral anticoagulants (Emren et al., 2017). Adherence to anticoagulation is weak in routine and may be somewhat better with Novel oral anticoagulants (Yao et al., 2016). The issue can be resolved by providing the patient with proper education in appropriate awareness. The total cost of providing adequate health education is \$100, and the patient needs to be monitored effectively, which will be required a total cost of \$275 to \$ 7963. The telecare system can also be addressed (Raghupathi & Raghupathi, 2020).

### **Knowledge Gaps**

Knowledge about oral anticoagulant therapy can affect therapy results in patients with atrial fibrillation, and various reasons can restrict the ideal use of oral anticoagulants. Oral anticoagulants are categorized into the following groups: direct-acting oral anticoagulants (DOACs), such as dabigatran, apixaban, rivaroxaban, and edoxaban, and vitamin K antagonists (VKAs), such as warfarin. Data suggests that collective determination-making with patients is essential in managing atrial fibrillation. Likewise, patients with atrial fibrillation should be appropriately advised regarding their disease and

the advantage of oral anticoagulants. Oral anticoagulants are risk-prone drugs, and patient knowledge is necessary for supporting the sensible use of oral anticoagulants.

Additionally, understanding oral anticoagulant therapy can change therapy results in patients with atrial fibrillation. Patients with improved knowledge of the danger and use of oral anticoagulant therapy demonstrate superior loyalty to persons with insufficient knowledge. Also, patients' perception of their disease and oral anticoagulant therapy has been defined to impact anticoagulation control. Reasons that increased results in patients taking oral anticoagulants consist of improved adherence to dosing schedules, understanding of the international normalized ratio (INR), management of diet to avoid interfaces, and checking the side effects of oral anticoagulants (Alajami et al., 2021). There is a lack of proper information about the effectiveness of patient education, and hence, adequate assessment before providing education must be done by the healthcare professionals in providing care. Prevention of stroke will be involved in the study.

### **Proposal Solution**

The patient must be provided with proper knowledge, which will help reduce the false belief in long-term adherence to the treatment process. The healthcare professionals, in this case, must assess the patient's knowledge and involve them in a proper awareness program, which helps improve adherence. The patient's condition must be monitored, and the health care providers must provide appropriate medication information in the patient information form. The older adult can be involved in various patient groups, which will also help alter their behavior and act as peer support (Arruzza & Chau, 2021). Hawes (2018) stated that proper education must be provided based on the patient's condition and fear of drug adherence. The patient can also be delivered with a motivational interview and correct information about precautions while consuming the medication. Emergency support needs to be provided to the patients, which will help overcome the fear, and the patient will be confident in adhering

to the drug. Information about complications and cost-effective treatment needs to be provided as well.

## Chapter II

### Summary of the Literature

It is reported that more than 795,000 people in the United States suffer from stroke, and almost 87% suffer from ischemic strokes, which block the blood flow into the brain. It is reported that cardiovascular disease development is increasing in the United States. Almost 610,00 new cases of strokes are reported. Nearly 185,000 individuals developed strokes for the second time, which indicates that the reoccurrence of stroke incidence is one of the significant issues which needs to be resolved through proper public health intervention. The condition impacts the patient's condition by enhancing the chance of adverse effects such as paralysis, weakness, lack of adequate balancing, excessive fatigue, and pain which affects the quality of life (Boehme et al., 2017). The development of stroke is one of the leading causes of death in the United States, common among disabled adults. The development of stroke results in long-term disability. Almost 7 million stroke survivors reside in the United States, and 25% of the patients recover from their first stroke within the last 5 years. The report also highlights that almost 87% of individuals suffer from ischemic strokes blocking blood flow into the brain. The long-term development of the stroke condition negatively impacts the population's health, including fatigue, paralysis, depression, increased treatment cost, and reduced quality of life. The patient suffering from stroke is usually provided with anticoagulant therapy, which helps in preventing blood clots. However, the patient faces difficulty adhering to the treatment process, reducing long-term adherence to the treatment plan (Ramphul et al., 2021). Atrial fibrillation is a persistent arrhythmia in clinical practice; atrial fibrillation is an independent risk factor for stroke, bestowing an additional five-fold risk in Atrial fibrillation patients linked to those in sinus rhythm and accounts for almost 10-15% of all ischaemic strokes and about one in four strokes in those aged over 80 years. Additionally, when a stroke happens in connection with

Atrial fibrillation, patients have significantly larger death, morbidity, disability, and extended hospital stays (Smith et al., 2009).

The patients are provided with anticoagulant therapy as it helps in reducing blood clotting. Still, there is a difficulty in long-term adherence to the drugs, which increases the Incidence of stroke reoccurrence (Patel et al., 2021). The following paper will discuss the importance of patient educational intervention for improving the patient's adherence to anticoagulant drugs. The following article will suggest educational interventions which can be used for long-term adherence to anti-coagulant medicines and to reduce the chance of developing stroke. To a lesser extent, oral anticoagulation is used in patients with atrial fibrillation. Most excellent patients with atrial fibrillation must get long-term oral anticoagulation to reduce the danger of ischemic stroke and other embolic results. For the most excellent patients, the advantage of anticoagulation overshadows the related rise in the possibility of bleeding.

### **Search strategies**

Search strategies of the paper targeted finding reliable resources that discussed atrial fibrillation and the importance of adherence to anticoagulation in preventing stroke. To reach the goal, several sources were examined and created into a literature review. A search strategy to find appropriate proof on the subject was recognized to encourage this intervention as a means to focus on the clinical question. Regulators ensured that the findings required the most timely and thorough proof to help the practice change over. The search strategies used for collecting articles are- "Stroke," "Anticoagulant," "Patient education," "Intervention," "Fear of reoccurrence," and "mortality." The Boolean operators AND and OR are used for collecting articles which include- "Stroke AND Cardiovascular disease," "Stroke AND United States," "Anticoagulant OR Warfarin," "Usual Care AND Patient education," "Patient education AND Anticoagulant drug," "Prevention AND Patient

education,” “Recurrent Ischemic Stroke AND Anticoagulant drug,” “Interview OR Anti-coagulant recommendation.” The Boolean operations AND and OR are used for collecting relevant articles from the search database. The search databases which were used for collecting relevant articles include- “NCBI,” “Google Scholar,” “PubMed,” “Medline,” and “CINAHL.” The papers published between 2016 to 2022 and the articles published in English were included in the study. A total number of 7 papers are included in the study.

### **Introduction to Atrial fibrillation**

Atrial fibrillation (AF) is the prevalent arrhythmia and accounts for one-third of hospital admissions for rhythm conditions in the United States. The incidence of AF is around 1% and increases in intensity with age, such that 10% of people over the age of 80 has AF, and roughly 70% of cases of AF are in patients between 65 and 85 years of age. With the aging of the population, the amount of patients with AF is likely to rise by 150% by 2050, with more than 50% of AF patients standing over the age of 80. This growing problem of AF will lead to a greater prevalence of stroke, as the affected role with AF have a five- to sevenfold more significant risk of stroke than the overall population. Strokes due to AF have a more authoritarian prediction than in patients without AF.

Furthermore, AF is an individual risk factor for mortality, as seen in the Framingham population, with an odds ratio of 1.5 in men and 1.9 in women. Vitamin K antagonists (e.g., warfarin), direct thrombin inhibitors (dabigatran), and factor Xa inhibitors (rivaroxaban and apixaban) are all oral anticoagulants that have been FDA accepted for the prevention of stroke in AF. The CHADS2 and CHA2DS2-VASc scores are the primary tools presently used to determine the probability of stroke in patients with AF to determine who has the adequate risk to warrant oral anticoagulation. (Rao et al., 2014b).



## Anticoagulation

The patient faces difficulty maintaining long-term adherence to the consumption of anticoagulant drugs. The main reasons which increase the chance of nonadherence include lack of proper medication, lack of appropriate understanding of the drugs, increased risk of side effects, lack of knowledge and ability to determine the importance of medication adherence, and fear of the cost of treatment (Hawking et al., 2020). The patient's certainty is predisposed by a lack of relevant comorbidities and deprived information in considering the disorder of atrial fibrillation. Hence, proper self-assessment and self-management plans must be provided to the patient, which will help lower the reoccurrence of stroke. The cost of providing health education in the United States will be \$100, and proper monitoring of the patient's condition needs to be done to reduce the long-term cost of treatment. The most common contradictions to anticoagulants include uncontrolled hypertension, frequent falls or blackouts, and the inability to comply with the treatment process (Oliveira-Kumakura et al., 2019). The patient must be adequately educated about contraindications, thrombocytopenia, and hypersensitivity. It is also stated that the stroke recurrence rate of stroke is controversial. It is reported that the rate is found to increase from 7.0% to 20.6% in the first year and from 16.2% to 35.3% in the next five years, and finally, the rate is found to increase from 14% to 51.3% in next 10 years after the initial period of stroke development. Stahmeyer et al., (2019) performed a study to determine the frequency and timing of the recurrent stroke. The study highlighted that stroke is one of the significant causes of death, increasing the risk of disability. The risk factors that increase the risk of developing stroke include diabetes, hypertension, and metabolic disorders. The study's result highlighted that in 2010/2011, the incidence rate was 292 per 100,000-person years, and the standardized prevalence was 336 per 100,000 per person. The risk of occurrence was 3.4% in 90 days, 1.2% in 30 days, 7.4% in 1 year, and 19.4% in 5 years. The reoccurrence of stroke also increased

the rate from 6.8% to 45%. The study also stated that the patients must receive proper treatment to lower the stroke unit. Osau et al. (2021) studied the clinician's and patient's perceptions of oral anticoagulants and those suffering from atrial fibrillation. The study highlighted that atrial fibrillation increases the risk of developing the Incidence of stroke by 20%, and it also increases the risk of developing morbidity. However, it is also determined that initially, the patients are recommended warfarin. After consuming the same, the patients shift towards direct oral anticoagulants (DOACs). It is also determined that oral anticoagulants are much safer than warfarin, and it is also found to provide fewer challenges for both healthcare professionals and patients. The study's result highlighted that the clinician considers older age as the risk factor that increases the risk of developing non-adherence to drugs (Kularni et al., 2021). The study also highlighted that patients' health and lack of proper medication beliefs affect adherence. The study also highlighted that lack of appropriate patient support is essential in enhancing safety and is one of the most effective anticoagulation. The patient also faces adherence difficulties due to a lack of proper confidence and experience in safe anticoagulation. A lack of proper comorbidities and poor knowledge of understanding atrial fibrillation condition influences the patient's belief. Hence, adequate self-management is essential, provided by patient education, to improve adherence to anticoagulation drugs and lower the risk of developing stroke (Kvarnstrom et al., 2018). Pandya et al. (2017) performed a study to determine the factors which affect the patient's perception and adherence to anticoagulant therapy. The study highlighted that the role of oral anticoagulants had been extensively altered and adhered to by the patient's perspective. The efficiency and safety of utilization of anticoagulants are highly reliant on the patient's capability to achieve and take these multifaceted, speculative drugs. The study's result highlighted that various factors affect adherence to anticoagulant therapy, including patient-related issues, condition-related issues, social-economic issues, and health system

issues. The negative effects include a lack of proper monitoring, lack of proper dose adjustments, and lack of knowledge, which creates a barrier to long-term adherence to the treatment process. The other challenges are twice-daily dosing, high cost, and adverse gastrointestinal disorder. Hence, proper patient education with a mandatory monitoring system can be implemented to improve patient safety and long-term adherence to the treatment plan.

### **Patient education and anticoagulant drug**

Pandya & Bajorek (2017) performed a study to determine the role of oral anticoagulants and extensive consideration from the perspective of clinicians. The study highlighted that the effectiveness and safety of using anticoagulants depend upon the patient's ability to manage the patient's condition and take drugs correctly and at the right time, which will help lower the chance of developing complications. The study also highlighted the patient's responsibility to manage high-risk medicines by taking challenges in managing complex situations. For that, effective patient education is highly essential. The study's result highlighted that it is necessary to consider five interacting dimensions for providing proper patient education related to long-term adherence to anticoagulant therapy among patients suffering from chronic disorders such as stroke. The factors that need to be considered include therapy-related, condition-related, patient-related, socioeconomic, and health factors (Bennaghmouch et ., 2019). The study also highlighted that these factors negatively affect the patient's daily life, including regular therapeutic drug monitoring, dietary consideration, and dose monitoring systems. It is also stressed that the patient who consumes warfarin is reported to have long-term nonadherence to a drug. The study also highlighted that nonadherence to an anticoagulant medication includes patient perception and knowledge about the purpose of anticoagulation, lack of proper understanding of the risk and benefits of the treatment, excessive expectations from care or healthcare providers,

and socioeconomic status. The study determined that adequate patient education must be provided to cardiovascular disease patients to reduce the prevalence of stroke by lowering barriers such as recommending the patient. The patient education must comprises information about regular monitoring of the patient's condition, frequent dosing, information about dietary considerations, understanding of the proper gastrointestinal condition, and the importance of determining the side effect, which will help in managing the patient's condition and making effective decisions related to the adherence towards and anticoagulant selection.

### **Reasons for non-adherence toward anticoagulant drug**

Park & Jang (2021) highlighted that nonadherence is one of the main contributors to adverse events that negatively impact the clinical outcome of patients treated with warfarin. The researcher, in this case, performs the multiple regression analysis to understand the factors influencing medication adherence among the patient taking anticoagulation drugs. This study highlighted that the factors that influence adherence include consumption of the drug for more than three to five years, awareness about the consumption of drugs, including the side effects and the complications, knowledge about the medication uptakes, and depression for long-term adherence to drugs. The study also highlighted that self-efficacy and belief do not influence medication adherence. Still, the patient's most common medication awareness and commitment are associated with mechanical heart valve knowledge and depression with the long-term consumption of warfarin. The study also highlighted that it is essential to provide proper education to the patient to maintain appropriate continuous management of anticoagulation drugs and deliver the patient with accurate guidance related to the specific diet which needs to be consumed while taking the anticoagulant medicine and understanding the red flag areas such as contradiction of diet and medication with anticoagulation as it is one of the significant factors for increasing the

self-management strategies among the patient suffering from cardiovascular disease. Yao et al. (2016) performed a study to determine the effect of adherence to oral anticoagulants on the risk of stroke and the development of major bleeding among patients suffering from atrial fibrillation. The study highlighted that compared to warfarin, the consumption of nonvitamin K antagonist oral anticoagulant is more beneficial as the drug dose, drug interaction, and monitoring of the patient's condition are much more accessible. The result of the study highlighted that the rate of nonadherence is higher among patients suffering from heart failure, transient ischemic attack, diabetes mellitus, vascular disease, and older adults. Nonadherence is also higher for stroke, intracranial hemorrhage, and bleeding.

Mayet (2016) highlighted that warfarin is a commonly prescribed oral anticoagulant, but patient nonadherence is also high. The result of the study highlighted the fact that no such association is evident between the warfarin therapy and the time of dose, and it was also found that 46% of the patients have higher adherence to this drug. The rate of nonadherence is most elevated among female patients. Occupational status, such as employment status, is also found to impact the patient's condition, which increases the chance of nonadherence. Due to poor education, older adults have lowered adherence, which needs to be addressed through proper patient education intervention to improve the anticoagulant drug's likelihood. Ti Chen et al. (2019) aimed to investigate the adherents to the anticoagulant drug and the factor found to lower adherence. The researcher, in this case, addresses the aspect which includes clinical variables, demographics, atrial fibrillation, knowledge, satisfaction with the provided service, severity, perceived barriers, benefits, and self-efficacy of the patient in adhering to the medication. The result of the study highlighted that the difference between adherence to the anticoagulation drug warfarin is insignificant, and the linear regression analysis identified that passive behavior creates a barrier that is significantly associated with the predictor of anticoagulation adherence. The study also

highlighted that with every unit increase in the barrier, nonadherence is 0.48. Still, good self-efficacy and patient education must be provided to the patient, which will help increase adherence to anticoagulation therapy.

Hence, the patient's education must consist of better self-efficacy, and it will, in turn, lower the chance of developing stroke recurrence. Salmasi et al. (2019) highlighted that medication could not be provided without proper patient education. It is essential to deliver the appropriate care and education related to the medicine usually prescribed to the patient suffering from cardiovascular disease atrial fibrillation. The study also highlighted that nonadherence occurs within 1 year to 1.6year. The nonadherence is mostly for certain drugs such as apixaban, rivaroxaban, and dabigatran. The study also highlighted that inadequate warfarin increases the risk of nonadherence. Matalqah (2019) stated that patient information and therapy understanding are essential factors that increase the risk of drug non-adherence. The study also highlighted that the factors that need to be considered include the patient's understanding of the drug, side effects, noncompliance with medication, and cost of treatment. The study also highlighted that medication counseling and education help better understand and increase the patient's acceptance of consuming drugs as it will help lower the chance of drug overdosing (Mansukhani et al., 2021).

### **Patient assessment for anticoagulant knowledge**

Praxedes et al. (2020) performed the study to assess the patient's knowledge of oral anticoagulation, determining their adherence and expertise. The research, in this case, was found to develop response item theory to evaluate the ability with the help of an oral anticoagulation knowledge test item and to determine the patient's understanding of using adherence to anticoagulation drugs. The result of the study highlighted that the patient showed positive knowledge of consuming oral anticoagulation drugs. Still, there were issues

in understanding the pharmaceutical and drug-food interaction, affecting medication adherence. The result of the study highlighted that a proper patient assessment, including patient knowledge, must be done to structure the health educational activity for delivery of individualized education for the patient recommended with warfarin. Rakhshan et al. (2019) highlighted that cardiovascular disease increases the death rate among the population, which needs proper investigation of self-management, including knowledge among patients suffering from atrial fibrillation. The study's result highlighted that implementing a good sales management plan helps enhance the treatment and lifestyle in managing atrial fibrillation. It is the responsibility of the health care professional to assess the patient knowledge related to various factors such as psychological and social, including the negative outcome which impacts the lifestyle and enhances the chance of developing atrial fibrillation.

### **Treatment options**

Vinereanu & Matei (2017) performed a randomized control trial study to determine the multifaceted intervention to improve the treatment among patients suffering from atrial fibrillation and consuming oral anticoagulants. It has been determined that atrial fibrillation is considered irregular and very rapid heart rhythm, also known as arrhythmia, which ultimately results in blood clotting in the heart and enhances the risk of developing heart failure, stroke, and heart-related complications. Similarly, anticoagulant medication is recommended for cardiac arrhythmia patients, which helps prevent blood clots and lowers the chance of developing serious complications, including heart attack and stroke. The researcher, in this case, conducted a randomized control trial study and a cluster that was randomized in the ratio of 1:1 to provide proper quality improvement intervention and usual care. The intervention group received proper education with frequent feedback and monitoring, which helped understand the changes among the patients related to the treatment

of oral anticoagulants from the baseline till the evaluation of the patient's condition after one year. The result of the study highlighted that 2281 patients from 5 different countries were included in the study. It was determined that implementing the oral anticoagulant drug helped increase adherence to the treatment process in the intervention group up to 80%, which was 68% at the baseline. In the control group, the increase was 64% concerning 67%. Hence, the study determined that implementing multifaceted and multilevel educational interventions helps improve adherence to oral anticoagulation among patients suffering from atrial fibrillation. It also increases the risk of developing stroke with a significant increase in treatment adherence. Raparelli et al. (2017) performed a study to determine the importance of adhering to oral anticoagulant therapy among patients suffering from atrial fibrillation. The study highlighted that oral anticoagulation is one of the most effective interventions that help reduce the thromboembolic risk among patients with nonvalvular atrial fibrillation. The study highlighted that effective anticoagulation helps avoid major side effects and adherence to anticoagulation helps provide proper anticoagulation effect among the patient by reducing the chance of blood clotting. The study highlighted that recommending the patient with nonvitamin K antagonist oral anticoagulants is effective and safe. The study highlighted that a proper multilevel approach which includes patient preferences, variability in adherence, and persistent needs to be considered, and clear support must be provided to the patient by the health care professional, which will improve the adherence to the anticoagulation and initiation of adherence can be done through effective monitoring. The study highlighted that educational programs are one of the easiest tools to change the patient's behavior. It will also help long-term adherence to the treatment process by understanding the patient's concerns and recommending proper strategies to increase oral anticoagulation consumption. Gebreyohannes et al. (2021) performed the study to determine the effectiveness of implementing proper guidelines to increase adherence to



anticoagulants among patients suffering from atrial fibrillation. The study highlighted that clinical guidelines related to atrial fibrillation would help optimize the behavior toward using proper anticoagulants. It will also help lower the issue of non-adherence to anticoagulant drugs within the primary health care setting. The researcher, in this case, conducted a systematic review, and a total of 33 studies were included. All the studies which were eligible with the search strategy helped in understanding the fact that it is essential to implement the proper guideline related to the adherence and consumption of anticoagulant drugs among the patient, which will help in improving the address by the patient and the involvement of pharmacist in the prescription of drug and providing patient education will be effective in lowering the incident of stroke. The study also highlighted that collaborative care, including the exceptional support and pharmacist and understanding of the proper international guidelines related to medication adherence, will help improve the quality of care and enhance long-term adherence towards the anticoagulant drug for preventing the risk of developing stroke. Desteghe et al. (2018) performed the study to determine the importance of daily monitoring-based feedback to improve adherence to nonvitamin K antagonist oral anticoagulants among patients suffering from atrial fibrillation and prevent the risk of developing a heart attack or stroke. The study's result highlighted that the telemonitoring system's persistent adherence to proper medication was high. The study also determined that daily monitoring led to patient education helps increase long-term adherence to the treatment process, and direct feedback further improved the consumption of anticoagulants. The study also highlighted that the intake of medication was also significantly higher. The feedback process helped reduce the treatment cost to prevent stroke, which helped increase trust and long-term adherence towards the anticoagulant medication system by the patient. Hence, the telemonitoring system is one of the effective

processes for improving the treatment plan, and it also helps lower the risk of developing adverse health outcomes.

### **Vitamin K antagonists- Treatment option**

Durand et al. (2020) highlighted that direct anticoagulant is found to be replaced among patients suffering from stroke or atrial fibrillation. Warfarin consumption is returned to prevent stroke among patients suffering from atrial fibrillation. The study aims to compare the safety and efficacy of various anticoagulant drugs, such as apixaban, dabigatran, and rivaroxaban, versus warfarin for treating stroke patients and preventing atrial fibrillation. The researcher, in this case, was found to perform a population-based observational study where the patient suffering from atrial fibrillation initiated with anticoagulant therapy was included in the study. The researcher, in this case, assessed the primary outcome for understanding the prevalence of stroke among the included patient. The secondary outcome that was found to be analyzed in the patient consists of the primary cause of bleeding and understanding of the mortality and morbidity rate. Lastly, the study also aimed at investigating systemic embolization. The survey result highlighted that a total number of 128273 patients were initiated with anticoagulant drugs, and almost 128 273 patients were also found to start warfarin drugs. The study's result highlighted that the patient with direct oral anticoagulant consumption was reported with a lower level of major bleeding cause. The mortality rate was also found to decrease among the patient. Hence, in this case, it can be stated that proper educational intervention must be provided to the patient in consuming direct oral anticoagulant medication, which will help prevent the chance of developing atrial fibrillation incidents. Patti et al. (2017) highlighted that the patient suffering from atrial fibrillation could be provided with nonvitamin K antagonist oral anticoagulation to prevent the chance of developing various complications, which is often observed among the patient adhering to warfarin drug.

The researcher measured the primary outcome of the development of stroke or systemic embolism, development of major bleeding, intracranial bleeding, and vascular death. The study highlighted that the Incidence of complications was higher among diabetic patients than in non-diabetic patients. In this case, proper education and recommendation must be provided to improve the advent and prevent the chance of developing complications. The result of the study highlighted that no such interaction between the benefit of nonvitamin K antagonist oral anticoagulant drugs was found with the occurrence of major bleeding, stroke, and ischemic stroke. The study results highlighted that the patient adhering to the nonvitamin K antagonist oral anticoagulation drug was reported to have a lower death rate than the patient adhering to the warfarin drug. Silverio et al. (2019) evaluated the safety and efficacy of nonvitamin K oral antagonist drugs versus vitamin K antagonist drugs among patients suffering from atrial fibrillation. The researcher, in this case, aimed to assess the primary outcome as the safety and efficacy of the drug and the development of ischemic embolism and stroke, including significant bleeding in the patient. The study determined that the risk of developing systemic embolism and stroke was lowered among patients consuming nonvitamin K antagonist oral anticoagulation compared to vitamin K antagonists. The study also highlighted that no significant difference in the group's significant bleeding was evident. The study also highlighted that the nonvitamin K antagonist oral medication helps reduce the various complications, including fatal bleeding, intracranial bleeding, and the development of hemorrhage stroke. The study's result also highlighted that the Incidence of gastrointestinal bleeding was found to be higher in the group. Hence, proper education about the complications needs to be provided to older patients suffering from stroke or atrial fibrillation and consuming anticoagulant drugs.

### **Motivational interview for improving the anticoagulant consumption**

Tzikas et al. (2020) aimed to assess the impact of any educational, motivational interview in increasing adherence to oral anticoagulation drugs among patients suffering from atrial fibrillation. The researcher, in this case, was found to provide an educational intervention with the help of randomized control trial study when the primary outcome was to understand the effect of Motivational interviewing in improving the overall consumption of anticoagulant drugs among the patient after one year. The secondary outcome that the researcher analyzed includes the rate of persistence towards anticoagulant consumption, the development of various clinical events due to lack of proper drug consumption, and the treatment gap present among the patient in the one year of follow-up. The attendance rate in the treatment group was 55% compared to the control group, within a confidence interval of 95%. The adherence rate seen in the treatment group was 55% compared to the control group within a confidence interval of 95%. The result of the study highlighted that the Implementation of a proper motivational interview for the patient suffering from atrial fibrillation and recommended with the anticoagulant drug is effective in improving adherence to the drug and reducing the chance of developing complications and development of significant clinical events, including the treatment gap. The result of the study also highlighted that the story of clinical events was the same in 2 year median period, which determined that providing the patient with a proper motivational interview helps improve adherence to anticoagulant drugs.

Tzikas et al. (2020) highlighted that oral anticoagulation is one of the drugs that help deliver effective thromboprophylaxis. There is limited evidence of adherence to anticoagulant drugs among patients suffering from atrial fibrillation. The researcher, in this case, aimed to assess the impact of the educational, motivational interview in increasing adherence to oral anticoagulant drugs among patients suffering from atrial fibrillation. The researcher, in this

case, performed a randomized control trial study. The primary outcome was to understand the adherence to the anticoagulant drug in 1 year. The secondary outcome highlighted the gap in the treatment and understanding of the clinical event that developed in the follow-up period. The result of the study highlighted that out of the 1009 patients included in the study, 500 participants were involved in the intervention group, whereas 509 patients were found to be involved in the control group. The study's result highlighted that after one year, 77.2 percent of the patients were found to have greater adherence to anticoagulant drugs after receiving proper motivational interviews compared to the control group, which was 55%. The patient in the intervention group of motivational interviews was found to have greater adherence and persistence after one year than the control group acquiring regular medication care. Hence, in this case, the study addresses the fact that patient adherence and educational intervention, including motivational interviews, will help increase compliance with the drug and prevent the chance of developing an adverse effect such as atrial fibrillation among the patient-recommended anticoagulant medication. Jingjing et al. (2019) aimed to investigate the impact of motivational interviews on patients suffering from atrial fibrillation and recommended anticoagulant drugs such as warfarin. The researcher, in this case, was found to conduct an observational study by providing proper education to increase adherence to warfarin in therapy. The result of the survey highlighted the fact that the Incidence of self-management among the patient was found to be increased after discharge, including 1, 3, and 6 months and the optimal condition was also found to be higher in the treatment group, which was 76.6 5% in comparison to the observational group which was 68.97%. Hence, in this case, it can be identified that improving self-awareness by delivering proper motivational interviews for the patient suffering from atrial fibrillation helps improve adherence to anticoagulant drugs and prevent the recurrence of atrial fibrillation.

## **Technologies for improving the adherence to drugs**

Guo et al. (2017) performed the study to determine the impact of mobile health technology on improving the management of patients suffering from atrial fibrillation by involving the patient in the care of the process, providing practical education, and implementing an integrated decision support system. The study highlighted that mobile health technology is increasing in today's world, especially in healthcare technology, and it is also proposed for improving the condition of cardiovascular disease. It is noted that the feasibility of mobile health technology is found to be limited in providing care to patients suffering from atrial fibrillation. Then effective intervention can be implemented after conducting advanced research, which will also help increase the use of anticoagulants to a satisfactory level for improving the quality of life and reducing the long-term cost of developing the disease. The study highlighted that atrial fibrillation is one of the most common cardiac arrhythmias, increasing the global health burden. Almost 33.5 million individuals suffer from atrial fibrillation worldwide. The condition can be controlled by successful adherence to the anticoagulant drug by the patient. The result of the study highlighted that 113 patients were randomly assigned to the two groups, while 96 patients were randomly assigned to the usual care group. The study's result highlighted that 90% of the patient saw the Implementation of mobile health applications for understanding the patient preference, providing collaborative care, and providing patient education is found to be higher and more significant in terms of usual care. The result of the study also determines that the quality-of-life score was significantly increased in the intervention group. The level of depression and anxiety was higher among the control group patients, highlighting that patient education with proper adherence to patient wishes helps improve adherence to medication, especially anticoagulant drugs, and lowers the long-term treatment cost.

## Interventions

Clarkesmith et al. (2017) performed the study to understand the importance of educational and behavioral intervention for anticoagulants. The study highlighted the importance of oral anticoagulation therapy for atrial fibrillation patients as it increases the risk of developing stroke. The study highlighted that nonadherence to medication increases the risk of developing stroke or cardiovascular disease, enhancing patient treatment costs and death rates. The survey result highlighted that a total number of 2246 patients were included in the study. The study, which focused on self-monitoring, education, and decision-making, improved the educational intervention among patients suffering from atrial fibrillation and recommended anticoagulation therapy. The study stated that educational intervention helped reduce anxiety and depression among patients by increasing their understanding of the medication's application and effectiveness. Hence, in this case, a proper educational intervention needs to be implemented for the patient to improve medication adherence and lower medication costs. Zhao et al. (2017) performed a study to determine the factors which influence the medication beliefs and knowledge of warfarin towards adherence to the medication. The study highlighted that warfarin is one of the medications that help prevent ischemic stroke among patients suffering from atrial fibrillation. The study highlighted that medication adherence is an effective intervention for preventing the chance of developing complications and patients suffering from atrial fibrillation. The study highlighted that addressing warfarin adherence is essential for improving poor medication adherence and increases the death rate among the individual. Warfarin non-adherence includes a lack of proper knowledge about the medication prescribed, clinical knowledge, demographics, and behavioral factors.

The result of the study highlighted those 188 patients who completed the survey and the significant risk of the element which resulted in non-adherence to medication, including

the patient's age, development of cardiovascular disease, and lack of true belief in adherence towards medicine that negative effect which increases the harmful consequences. Chen et al. (2019) performed the study to investigate anticoagulant adherence and associated factors such as clinical variables, demography, atrial fibrillation, and other factors such as satisfaction with the service, the severity of the symptom, and perceived associated barriers with the atrial fibrillation. The researcher, in this case, collected data using the questionnaire as the study aims at collecting the evidence and perception of the patient adhering to the medication and suffering from atrial fibrillation. The survey result highlighted that 151 patients suffering from atrial fibrillation were included in the study and were recommended warfarin. The other 98 patients were found to be treated with an oral anticoagulant. The study highlighted that the difference between the two drugs was significant. The barrier associated with the non-adherence to medication is self-efficacy in assessing the drug, and perceived barriers such as the negative belief of developing complications increase the risk of developing the severe condition. Hence, patient education must be implemented to enhance self-efficacy and reduce barriers.

Lip et al. (2018) highlighted the innovative strategies to improve adherence to non-vitamin k antagonist oral anticoagulant drugs for preventing stroke among patients suffering from atrial fibrillation. The study highlighted that stroke prevention is one of the principal priorities among patients suffering from atrial fibrillation. The recommendation of oral anticoagulation is associated with a significant reduction in the development of systemic embolism and helps prevent the mortality rate by reducing the disease. The study highlighted that vitamin K antagonist is marked as interpatient and interpatient variability. The therapeutic effect gained through the drug helps lower the chance of atrial fibrillation. The study highlighted that patient counseling and education help in better management of anticoagulation, and the Implementation of smartphone technology will act as a reminder



system for the patient, which will help in delivering education such as drug management and associated side effects and thereby decreasing the fear among the patient and enhancing the adherence towards the treatment process. Geary & Euler (2020) performed the study to determine the importance of feedback and audit intervention for patients suffering from atrial fibrillation and improve the use of anticoagulants to reduce the chance of complications such as development stroke and heart attack. The study highlighted that improving the use of anticoagulants among the patient is challenging, increasing the long-term risk. The suboptimal anticoagulant used is partly due to physician non-prescription. In this case, it is essential to control the behavior and improve the patient's education to enhance adherence to anticoagulant drugs through proper feedback and audit. The study's result highlighted that 94 centers received the intervention, and a total number of 31477 patients were included in the study. The audit and feedback intervention successfully increased adherence to the treatment process. The compliance rate increased from 76% to 82% after implementing the intervention. Hence, the feedback and audit intervention is one of the practical patient education interventions for improving knowledge and adherence to the drug.

Contreras et al. (2018) performed the study to understand the strategies to improve dabigatran adherence to prevent stroke among patients suffering from nonvalvular atrial fibrillation. The study highlighted that it is essential to assess the importance of educational and reminder calendar systems for improving therapeutic adherence among patients suffering from nonvalvular atrial fibrillation. The researcher, in this case, divided the participants into two groups, with the control group providing usual care and the intervention group giving support such as healthcare education and using a calendar to provide reminders for consuming the anticoagulant medication. The study results highlighted that almost 659 patients completed the survey, and the rate of daily compliance was 91.97% for six months

and 90.01 % after 12 months of providing the intervention. The medication adherence was also found to be increased in this case, and the patient had improved knowledge about the medication adherence related to the time of drug and the doses, which helped in preventing the chance of developing complications and helped in changing the behavior by facilitating the evidence towards medication for controlling the likelihood of developing stroke. Yao et al. (2016) performed a study to determine the effectiveness of nonvitamin K antagonists and warfarin in easy dosing, drug interactions, and lack of a proper monitoring system. The result of the study stated that patient suffering from congestive heart failure, diabetes mellitus, and hypertension has the highest risk of complications among the patient, and the non-adherence to medication increases the risk of developing intracranial hemorrhage can be increased by proper patient education. The study also stated that adherence to anticoagulant drugs is poor, which needs to be raised by appropriate patient education.

Bartolazzi et al. (2021) highlighted that oral anticoagulation therapy is one of the most effective interventions and can be recommended to the aging population due to the higher prevalence of atrial fibrillation. It has been evident that medication adherence is one of the main issues among older patients suffering from atrial fibrillation. It requires adequate health literacy to increase commitment to drugs. The highest prevalence of non-adherence is among patients with poor socioeconomic status and limited knowledge about drug adherence. Implementing patient education and improving health literacy will enhance adherence to medication by understanding the drug's effectiveness in preventing complications and lowering the long-term treatment cost among the patient.

## **Patient education**

The patient must be provided with proper knowledge, which will help reduce the false belief in long-term adherence to the treatment process. The healthcare professionals, in this case, must assess the patient's knowledge and involve them in a proper awareness program, which helps improve adherence. The patient's condition must be monitored, and the nurse must provide appropriate medication information in the patient information form. The older adult can be involved in various patient groups, which will also help alter their behavior and act as peer support (Arruzza & Chau, 2021). Hawes (2018) stated that proper education must be provided based on the patient's condition and fear of drug adherence. The patient can also be delivered with a motivational interview and correct information about precautions to consider while consuming the medication. Emergency support needs to be provided to the patients, which will help overcome the fear, and the patient will be confident in adhering to the drug. Information about complications and cost-effective treatment needs to be provided as well.

Psychological impediments to adherence include incorrect opinions of illness and insufficient knowledge of the effect, outcomes, and timeframe of Atrial fibrillation or attitudes about drugs. By growing the providing of info to patients to assist them in conveying precise beliefs and insights neighboring Atrial Fibrillation and anticoagulation, patients may be further able and eager to adhere, in the long period, to treatment endorsements over-improved kind of the disorder and its' treatment Clarkesmith et al. (2017).

The above paper discussed the importance of patient education in increasing adherence to anticoagulation—the development of stroke results in long-term disability. The patient suffering from stroke is usually provided with anticoagulant therapy, which helps in

preventing blood clots. Oral anticoagulation drastically decreases the danger of stroke in atrial fibrillation patients. Almost 7 million stroke survivors reside in the United States, and 25% of the patients recover from their first stroke within the last 5 years. The reoccurrence of stroke also increased the rate from 6.8% to 45%. It is also highlighted that the patient who consumes warfarin is reported to have long-term nonadherence to a drug. Occupational status, such as employment status, is also found to impact the patient's condition, which increases the chance of nonadherence. Due to poor education, older adults have lowered adherence, which needs to be addressed through proper patient education intervention to improve the anticoagulant drug's likelihood. Poor patient-knowledge adjoining Atrial Fibrillation and its therapy may be a factor in the patient's readiness to stick to suggestions. Lastly, the paper highlighted the intervention that can be provided to improve adherence.

## Chapter III

### Purpose/PICO Clinical Questions/Objective

#### Purpose

The study's primary aim is to determine the effectiveness of anti-coagulant drug-related patient education in preventing the issue of stroke, avoiding long-term hospital costs, and lowering the chance of developing a stroke reoccurrence.

It has been reported that almost 795,000 individuals residing in the United States are suffering from a stroke. It is also said that the patient faces difficulty maintaining long-term adherence to the drug, which increases the re-occurrence of the stroke, and the incidence is higher among Hispanic men (Boehme et al., 2017). The psychological factors that impact long-term drug adherence include psychiatric illness, cognitive impairment, and depression. It has been reported that the average age of non-Hispanic white is 80, and the rate of various diseases such as obesity, high blood pressure, and diabetes is higher among the Hispanic population (Ramphul et al., 2021).

It has been reported that the incidence of stroke is increasing daily, and the event is almost 11.4% and 11.2% in 12 months. The rate is 87% of the population, and the Incidence of ischemic stroke is increasing, which enhances the cost of treatment. The mortality rate is also higher among Hispanic men, with 34.2 per 100,000 in 2018. The Incidence highlighted that 60% of death occurs due to Hispanic cardiovascular disease, and the primary cause of developing the Incidence is lack of education and poverty. It is also stated that the countries with the highest Hispanic population have an increased rate of uninsured individuals and have limited access to healthcare settings (Patel et al., 2021).

This purpose offers a groundwork for the building of a clinical PICO (population, intervention, comparison, and outcome) question to lead the expansion of this quality improvement project. Specifically, the following PICO question is suggested:

**PICO Clinical Question**

“Does the implementation of the proper patient education plan, such as providing knowledge with the help of educational materials for patients with atrial fibrillation for increasing the adherence towards anticoagulant drugs, help decrease the risk of stroke and reoccurrence and lower the non-adherence towards the anticoagulant drugs?”

The PICO elements involved in this question can be illustrated as follows:

***P(population)***- The population will involve patients admitted to the hospital with the diagnosis of atrial fibrillation and on an anticoagulant drug. The study will address men and women with atrial fibrillation between 30 to 75 years.

***I(intervention)***- Educational program regarding the importance of anticoagulation to patients admitted to the hospital with atrial fibrillations, assessing patients’s level of knowledge and appreciation for the importance of stroke prevention. Patient education enhances patient safety and increases observance of anticoagulants even after discharge.

***C(comparison)***- Comparing the baseline knowledge of patients undergoing education with the post-education knowledge regarding the importance of anticoagulation in an inpatient unit. Recognizing the importance of Anticoagulation in these patients will improve the quality of care for our patients and community. The usual care process includes a standard recommendation for anticoagulant drug use. The information will be provided in a voice-over PowerPoint presentation.

***O(outcome)***- increased patients' knowledge regarding the importance of anticoagulation in patients with atrial fibrillation and evaluated a strategy to facilitate when appropriate after

education intervention. The intervention outcome includes improving patient understanding, and adherence to the drug will increase related to dose and mechanism. The men and women with atrial fibrillation will have a positive experience after involving in the educational plan. The follow-up process will improve the patient's condition and lower the risk-taking attitude.

### **Objectives**

This quality improvement project's primary objective is to improve atrial fibrillation patients' knowledge of the importance of adherence to anticoagulation to prevent stroke.

### **SWOT Analysis**

A Strength, Weakness, Opportunities, and Threats (SWOT) analysis was used to assist with managing this quality improvement project.

#### ***Strengths***

Strengths of the organization include serving the cardiac population. The inpatient setting is in an area with many atrial fibrillation patients, and the hospital is an academic facility that admits various patients. The inpatient setting and the cardiologist are open to new strategies to improve knowledge of atrial fibrillation patients in stroke prevention. It is also stated that the organization aims to implement an appropriate consideration for the vulnerable population by partnering with other healthcare centers, which helps in implementing affordable care and educational intervention such as providing education based upon the understanding of the patient and in the local language. The hospital staff, physicians, and nurse practitioners are approachable, friendly, welcoming, and open to learning. The clinical and administrative team supported new evidence base practice and were very supportive of conducting the DNP intervention in the hospital. The hospital admits a wide range of cardiac patients.

### ***Weaknesses***

Weaknesses of the organization include how much work the nurse practitioners and physicians do in their day-to-day roles may impede them from completing the pre- and post-survey and not being able to provide the educational session. Each nurse practitioner and physician sees approximately twenty to twenty-five patients daily, and the providers in the health care team have to round on all their assigned patients. If it's a hectic day, the participants may not be able to complete the pre-and post- survey nor attend the educational session on time. On the other hand, as they are in acute care settings, most patients are sick and unable to do pre-test, attend educational interventions, and post-tests.

### ***Opportunities***

Opportunities for this study include educating the healthcare staff in inpatient settings improve atrial fibrillation patients' knowledge of adherence to anticoagulation to prevent stroke. The educational presentation will assist in bringing awareness to health care about the importance of patients' understanding of anticoagulation in stroke prevention. In the medical setting, how this can prevent recurrent hospitalization and morbidity. This educational session will allow participants to learn more about why anticoagulant adherence is essential in the atrial fibrillation population.

### ***Threat***

Possible threats include potential participants unwilling to participate due to their acute clinical conditions. Not having enough participants to attend the educational session. Depending on the severity of the clinical situation, if they are very sick, there might not be many participants attending the academic session



<b>SWOT Analysis of the Acute care Inpatient setting</b>	
<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• The hospital conducts research and is open to new evidence-based practice.</li> <li>• The hospital is a teaching facility.</li> <li>• The hospital cares for majorities of cardiac and neuro patients.</li> <li>• The hospital and administrative staff are very welcoming.</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Healthcare staff's daily routine/workload may hinder them from completing the pre-and post-survey.</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• The healthcare staff will be more aware of the importance of anticoagulation knowledge in stroke prevention in the healthcare setting.</li> <li>• Better understand the importance of HIV screening in this community.</li> <li>• How lack of anticoagulation knowledge in atrial fibrillation can prevent adherence to anticoagulation resulting in a stroke</li> <li>• Participants will get education on anticoagulation medicine.</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Unwilling to participate due to their acute clinical conditions Participants not attending educational sessions due to that day being a busy day with tests and procedures.</li> </ul>

## Chapter IV

### Definition of Terms

Improving Knowledge of Patients with Atrial Fibrillation will Help Adherence in Using Anticoagulation to Reduce Stroke Risk: A Quality Improvement Project. It is essential to determine the meaning of the following terms as it is associated with quality improvement projects such as Anticoagulant drugs, atrial fibrillation, stroke, lack of proper knowledge, and educational plan.

1. ***Atrial fibrillation*** is considered irregular and rapid heart rhythm that results in blood clots and increases the risk of heart failure, stroke, and other heart-related complications. Atrial fibrillation is shared among patients with atherosclerosis and hypertension. Linares et al. (2020) performed a study to determine the prevalence of atrial fibrillation among the Hispanic population in the United States. The study highlighted that the Hispanic population suffers from a higher rate of atrial fibrillation, and the issue is higher among Hispanics, Puerto Rican, and Dominicans. The study also stated that the population with a higher incidence of renal disease, hypertension, diabetes, and left ventricular hypertrophy. Hence, the population requires proper attention and effective health education to improve its quality of life (Morgan et al., 2018).
2. ***Anticoagulant drugs*** are medication that helps in preventing the development of blood clots and lowers the risk of developing heart attacks and strokes. The drugs are found to work by disrupting the blood clots, also known as blood-thinning (Sunkara et al., 2016). These drugs are recommended for patients with blood clotting, aortic valve replacement, atrial fibrillation and thrombophilia, and antiphospholipid syndrome. Oral anticoagulants are categorized into the following groups: direct-acting oral anticoagulants (DOACs), such as dabigatran, apixaban, rivaroxaban, and edoxaban, and vitamin K antagonists (VKAs), such as warfarin.

3. *Ischemic stroke* develops when the blood supply to the various part of the brain is reduced or interrupted, and it also prevents the tissues from getting nutrients and oxygen.
4. *The patient education* plan is needed in this case to help address the predisposing factors and the primary reason for non-adherence. The lack of education related to health outcomes and non-adherence to drugs includes- a lack of proper access to the treatment process, a lack of appropriate care plan, and long-term cost or lack of good follow-up process. The lack of adequate education and knowledge enhances the death rate or increases the chance of stroke reoccurrence (Kuriakose & Xiao, 2020).

## Chapter V

### Conceptual underpinning and theoretical framework of the project

#### *Health belief model*

The theory that can be implemented in this case to address the anticoagulant medication includes the health belief model. The health belief model helps address the individual's beliefs, barriers, and susceptibility, which is essential to implementing proper education. The health belief model has six stages: pre-contemplation, contemplation, preparation, action, and maintenance. The model has four core components: perceived susceptibility, perceived severity, perceived barriers, and perceived benefits. The intervention will help address the patient's need, and thereby the intervention will help improve trust and prevent the chance of developing complications (Heid et al., 2016). The health model will help me in addressing the need of the patient. The health belief model will help address the level of awareness associated with the anticoagulant drug and help determine the effectiveness of the care process. The model, in this case, includes the determination of the patient issue, which is a lack of proper awareness, accessibility, and trust between the patient and the caregiver. Azadbakht et al. (2022) stated that an appropriate health plan promotion helps improve patient care as it helps determine the associated factor with applying the health belief model. The study indicated that health belief meaningfully affects health, encouraging self-care performances. The study determined that the health belief model helps define the educational level, age, associated factors, perceived barriers, perceived severity, and self-efficacy as it is associated with the determinants of behavior. Hence, the issue identified by the health belief model will help implement a proper educational plan. It is also essential to address the patient's condition by understanding the experience and issues. Salmsi & Loewen (2020) stated that it is necessary to determine the experience faced by atrial fibrillation to address the need for anticoagulant therapy. The result of the study highlighted

that the six themes identified in this case include the importance of identifying the reason for discontinuation of the treatment, determining the patient's attitude, and its relationship with changes. These challenges are associated with medication intake, patient limitations due to decision-making, and inadequate education and follow-up. The study highlighted limited knowledge related to medication related to negative attitudes and challenges in understanding the proper drug dosage. Appropriate counseling patient programs and patient education plans must be implemented for the Hispanic patient suffering from stroke related to the consumption of anticoagulant drugs, which will help lower the Incidence of hospital readmission or development of emergency conditions due to re-occurrence of stroke (Melkamu et al., 2021).

## **Chapter V1**

### **Methodology**

The study aims to determine the effectiveness of patient education in improving adherence to the anti-coagulant drug among patients with atrial fibrillation.

#### **Study Design**

This quality improvement (QI) project evaluated patients' knowledge of the importance of adherence to anticoagulation and preventing stroke. Evidence-based literature was used in the creation of the surveys and educational presentations. The pre-and post-survey contained five demographic questions asking participants their gender, age, race, and length of anticoagulation. The knowledge section had fifteen questions based on the literature review articles for this QI project. Participation in this quality improvement project was voluntary, and the data collected was kept confidential and password protected. The questionnaire provided information on the purpose of the QI project, information, and a recruitment letter informing potential participants that completion of the pre-survey questionnaire means that they consent to participate in the QI project.

#### **Setting**

This quality improvement project was conducted in the Inpatient healthcare setting at Florida. The hospital serves a diverse population. The hospital provides superior health care to persons for all the patients accessing the care without considering their race and ethnicity, faith, sexual alignment, and socioeconomic standing. Society strives to deliver care to every patient while encouraging respect, dignity, and truthfulness. Hospital has an extensive cardiology department and currently cares for a wide range of cardiac patients.

#### **Sample**

Pre- and post-survey participants included patients with Atrial Fibrillation at the inpatient settings. More specifically, the pre-survey had a total of atrial fibrillation patients (n=14), Male (n=7), female (n=7), aged above 50 (n=14), and being on an anticoagulant for 0-1 year (n=7), 1-5 year (n=2), > 5 years (n=3), ethnicity white (n=8), black (n=4), Hispanic (n=2). The post-survey included the same population.

### **Intervention**

The DNP candidate delivered an evidence-based educational session in the inpatient setting. The DNP candidate developed an educational PowerPoint presentation for the participants. The presentation contained graphics, text, and charts. Literature review articles were used for the creation of this educational presentation. The educational presentation included information on atrial fibrillation, its causes, symptoms, stroke, types of anticoagulation, CHA2DS2-Vasc score, management of atrial fibrillation, the difference between NOAC and warfarin, features of warfarin vs. NOACs, patient education on oral anticoagulation, practical considerations of oral anticoagulants. The educational PowerPoint was delivered as a 20–30-minute educational session: the clinical site administrator and DNP candidate planned the project. The pre-test, educational session, and post-test were conducted in the patients' room. Before the pre-test, educational session, and post-test, the DNP candidate obtained consent and a recruitment letter from the participating candidate.

### **Instruments**

The pre-and post-survey was provided in person with the participating candidate. Qualtrics is a survey system provided by the DNP candidate academic institution. The demographic section included questions about gender, age, how long they have been on anticoagulation, and ethnicity. The DNP candidate developed the knowledge questions, and Evidence-based literature review articles were used to create all the survey knowledge questions. The first

five questions asked about the knowledge of atrial fibrillation, and the DNP candidate developed these questions. Evidence-based literature review articles were used to create all the survey knowledge questions, the next set of questions focused on knowledge of treatment and the importance of anticoagulation. The DNP candidate in Qualtrics scored the surveys.

### **Data collection procedure**

Student investigators identified patients with atrial fibrillation through record review during the admission process and follow-up. Criteria for inclusion include age, diagnosis, and use of anticoagulation. The student investigator directly approached potential participants during the hospital admissions. Recruitment took place once patients got admitted to the floor. Enrollment in the study was entirely voluntary. The DNP student introduced patients to the study. Once the patient expressed interest, they were provided with a recruitment letter. The only identifiable information collected was the patients' age, gender, ethnicity, use of anticoagulation, and diagnosis. At the start of the study, the patient was asked to complete the Authorization. Participants were informed that they were free to withdraw from the study at any time without penalty. Potential participants were informed in person that completing the pre-survey questionnaire meant they consented to participate in this QI project. Recruitment occurred in person in their hospital room. The participants were told there was no monetary incentive for participating in this QI project. Participants completed the pre-survey questionnaire, and the participant's identities remained confidential. After the pre-test educational session was provided, the post-survey was administered. The DNP candidate used the pre-and post-survey to analyze and measure whether the participants' knowledge improved after the educational session; percentages from 0 to 100 were used to score the surveys.



## **Data Analysis**

Participants were provided ID numbers (Alphabetical letters were used for each participant) Paper-and-pencil surveys were secured in a Locked office in the medical record department at the proposed clinical site. Only investigators will have access to the information collected, and the principal investigator and the project author will be able to access the collected data. For the pre-and post-survey, the DNP candidate scored the data with a percentage from 0 to 100. The DNP candidate calculated the mean and median scores; scores ranged from 0 to 100.

Qualtrics scored the demographic section. Descriptive statistics were used to calculate all statistical variables, and the mean and median score percentages were used to compare the pre-and post-survey. The DNP candidate used the Mann-Whitney U test (Wilcoxon Rank Sum Test) to obtain p-values to evaluate whether there was no statistical significance between the pre-and post-survey. An alpha value of 0.05 was used for the statistical test.

## **Data management**

The recorded data will be protected and confidential, but only the principal investigator and author will have access to the quality improvement project. Identity and information on the participants will not be included in a future publications.

## **Protection of human subjects**

All investigators in this QI project have completed the Collaborative Institutional Training Initiative Program (CITI) training program in protecting human research subjects. Before implementing this QI project, the DNP candidate sought Institutional Review Board (IRB) approval. Once IRB approval was obtained, the immersion site administrative liaison was made aware of the coordinating date and time of the educational session. The participants in person were informed that participation in this QI project is voluntary and

that completing the pre-survey questionnaire it means that they are consenting to participate in this QI project. Consent was obtained in person, explaining the details of the QI project. The participants were informed that it would take 5-10 minutes to complete the pre-survey, 15-20 minutes to complete the educational presentation, and 5-10 minutes to complete the post-survey. The data collected from the pre-and post-survey was kept private and password protected in the medical records department in the hospital. Only the research team members had access to the data gathered from medical records. There will be no identifiable data presented in publications and presentations.

## **Chapter VII.**

### **Results**

This quality improvement project aimed to evaluate the impact of providing an educational session on the importance of adhering to anticoagulation therapy among patients with Atrial fibrillation to reduce Stroke Risk. This will help the patients increase their adherence to the anticoagulants so that risk of stroke can be reduced. The evaluation of educational intervention is done to measure whether the given educational intervention improves the knowledge of patients with Atrial fibrillation. The quality improvement project selected fourteen participants who have Atrial Fibrillation; 14 participants took part in the pretest, and 14 were given educational intervention. These 14 patients participate in the posttest, and the results are compared. The quality improvement project includes 14 participants with Atrial fibrillation, the knowledge of these participants regarding their disease was checked before and after the educational intervention, and the result was compared to evaluate the effectiveness of the educational intervention. It has been observed that the knowledge of the patients has been enhanced after the intervention.

## Demographics

**Table 1**

*Pre-Survey Participant Demographic Data*

	Count (n=14)	Percent (%)
<b><u>Age</u></b>		
20-30 years	0	0%
30-40 years	0	0%
40-50 years	0	0%
Above 50 years	14	100%
<b><u>Gender</u></b>		
Male	7	50%
Female	7	50%
<b><u>How long have you been treated for Atrial fibrillation?</u></b>		
Less than 1 year	9	64.2%
1-5 years	2	14.2%
More than 5 years	3	21.4%
<b><u>Race</u></b>		
White	8	57%
Black	4	28.5%
Hispanic	2	14.2%
Haitian	0	0%
Asian	0	0%
Other	0	0%

The patients' demographics are shown in Table 1. There were a total of 14 patients that have taken part in a protest related to Atrial fibrillation. It has been observed that patients between the ages of 20 to 50 years were not having Atrial fibrillation. All 14 participants were above 50 years. It is because as people grow older, the heart's function is affected, and the diseases like hypertension and coronary artery disease also act as major risk factors for Atrial fibrillation in older adults (Tam, et al. 2019). It is also seen that of 14 participants, there were seven males and seven females, both above 50 years. Generally, it has been observed that females are more affected by the disease, but in this study, the number of males and females was equal. The maximum number of participants receiving treatment for Atrial fibrillation for less than 1 year. Nine patients were receiving treatment in less than a year means they were newly diagnosed with the disease and may not have had enough knowledge about medication adherence. Only two patients had been treated for the disease between 1 to 5 years, and only three had been treated for the disease for more than five years. The patients based on ethnicity have shown that white people are the ones who are most affected by the disease. The data shows that eight patients out of 14 were white people, four were black, and two were Hispanic. There was not any Asian and Haitian patient with Atrial fibrillation.

**Table 2***Post-test demographic data of participants*

	Count (n=14)	Percent (%)
<b><u>Age</u></b>		
20-30 years	0	0%
30-40 years	0	0%
40-50 years	0	0%
Above 50 years	14	100%
<b><u>Gender</u></b>		
Male	7	50%
Female	7	50%
<b><u>How long have you been treated for Atrial fibrillation?</u></b>		
Less than 1 year	9	64.2%
1-5 years	2	14.2%
More than 5 years	3	21.4%
<b><u>Race</u></b>		
White	8	57%
Black	4	28.5%
Hispanic	2	14.2%
Haitian	0	0%
Asian	0	0%
Other	0	0%

The demographics of patients for the post-test have been displayed in table 2. The same 14 patients have taken part in the post-test. The participants were shown great improvement in their knowledge about the medical adherence to anti-coagulations in the treatment of Atrial fibrillation. It has been observed that patients between the ages of 20 to 50 years were not having Atrial fibrillation. All 14 participants were above 50 years. It is due to the fact that as people grow older, the function of the heart is affected, and moreover, the diseases like hypertension and coronary artery disease also act as major risk factors for Atrial fibrillation in elderly people (Tam, et al. 2019). It is also seen that of 14 participants, there were seven males and seven females, both above 50 years. Generally, it has been observed that females are more affected by the disease, but in this study, the number of males and females was equal. The participants that were receiving treatment for Atrial fibrillation for less than 1 year were maximum. There were nine patients who were receiving treatment in less than a year means they were newly diagnosed with the disease and may not have had enough knowledge about medication adherence. There were only two patients who had been treated for the disease between 1 to 5 years and only three patients who had been treated for the disease for more than five years. The patients based on ethnicity have shown that white people are the ones who are most affected by the disease. The data shows that eight patients out of 14 were white people, four were black, and two were Hispanic. There was not any Asian and Haitian patient with Atrial fibrillation.

**Table 3**

*Patients' knowledge about the importance of adherence to anti-coagulation drugs in Atrial fibrillation pre and post-test scores*

Questions	Pre-test (n=14)	Post-test (n=14)

1. What is the name of the Cardiac arrhythmia you are diagnosed with?	4 (28.57%)	14 (100%)
2. What is atrial fibrillation?	12(85%)	14 (100%)
3. What are we trying to prevent when using blood thinners while treating atrial fibrillation?	7(50%)	14 (100%)
4. Atrial fibrillation is the prevalent arrhythmia in clinical practice?	15 (75%)	13 (92.8%)
5. Atrial Fibrillation significantly affects health-related quality of life?	8 (57.14%)	14 (100%)
6. What is the given name of your blood-thinning drug?	12 (85%)	14 (100%)
7. Do you know the difference between Warfarin and NOAC (Novel Oral anticoagulants)?	2 (14.2%)	14 (100%)
8. Why are you on blood thinning medication?	7 (50%)	14 (100%)



9. Patients with Atrial fibrillation can stop blood thinners when they no longer feel the symptoms?	14 (100%)	14 (100%)
10. Does blood thinners stop Atrial fibrillation?	10 (71.4%)	14 (100%)
11. Have you been given enough time during clinical or hospital visits to discuss the importance of Anticoagulation?	7 (50%)	14 (100%)
12. Do you know in addition to the blood-thinning medications, there are additional therapies for Atrial fibrillation?	5 (35%)	13 (92.8%)
13. Have your healthcare provider educated you on the importance of the role of anti-coagulation in Atrial fibrillation?	7 (50%)	14 (100%)
14. Do you agree that minimal adherence to ant-	13 (92.8%)	14 (100%)

coagulation medicines can be associated with the worst outcome and a higher risk of stroke?		
15. When you miss a dose of your Anti-coagulation, is it ok to double the next dose of Anticoagulation?	14 (100%)	14 (100%)
16. Is it acceptable to stop taking Anti-coagulation once you feel well?	14 (100%)	14 (100%)
17. While on Anti-coagulation treatment for Atrial Fibrillation, when you have a dental extraction, what will you do?	14 (100%)	14 (100%)
18. What is the most significant adverse effect of anti-coagulants?	8 (57.14%)	13 (92.8%)
19. Do you know what a stroke is?	9 (64.2%)	13 (92.8%)
20. Have your doctor used the CHAD2DS2-Vasc score	1 (7.14%)	8 (57.14%)

for Atrial fibrillation stroke risk?		
21. Did your healthcare provider talk about therapy in general, about choices (together with medications and other treatment options), symptoms, and risk factors?	3 (21.4%)	14 (100%)

**Table 4**

*The statistically significant difference between Pre and post-test scores with the help of Mann Whitney U test (Wilcoxon Rank Sum Test)*

	<b>Pre-Test</b>	<b>Post-Test</b>	<b>P-Value</b>
<b>Sample Size</b>	14	14	0.00005117
<b>Sample Average</b>	41.25	75.65	
<b>Sample Median</b>	50.75	98.2	
<b>Sample SD</b>	11.75	19.36	

### Figure 1

*The mean knowledge score about the anticoagulation drugs and atrial fibrillation pre and post-test*

Figure 1 shows that the average score of the patient's knowledge about adherence to anticoagulation drugs is low during the pretest. But when educational intervention is given, it helps improve people's knowledge.

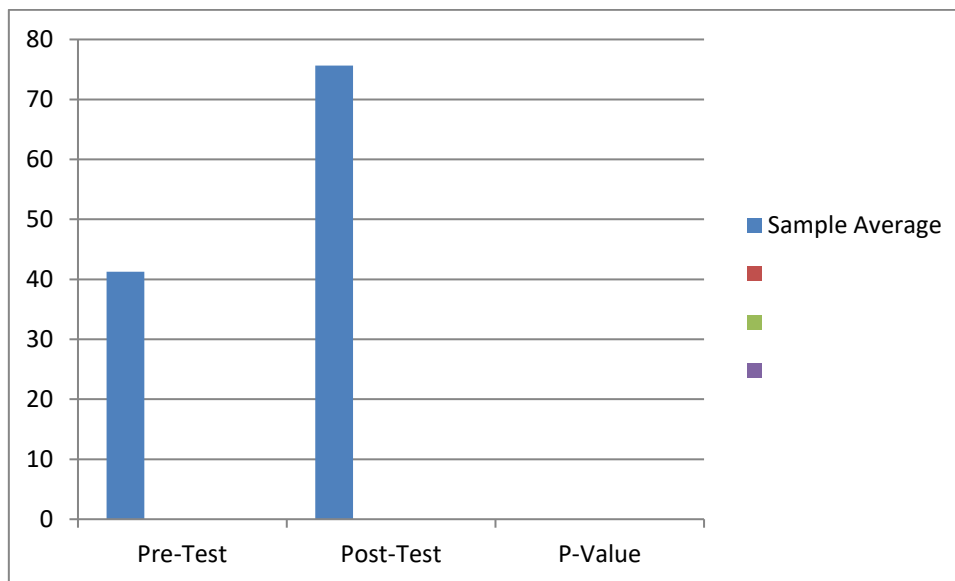


Figure 1 The mean knowledge score

### Figure 2

*The median knowledge score about the anticoagulation drugs and atrial fibrillation pre and post-test.*

In this figure 2, it can be seen that the median score of the patients is low in the pretest compared to the score in the post-test. The educational intervention provided to the patient improved their knowledge.

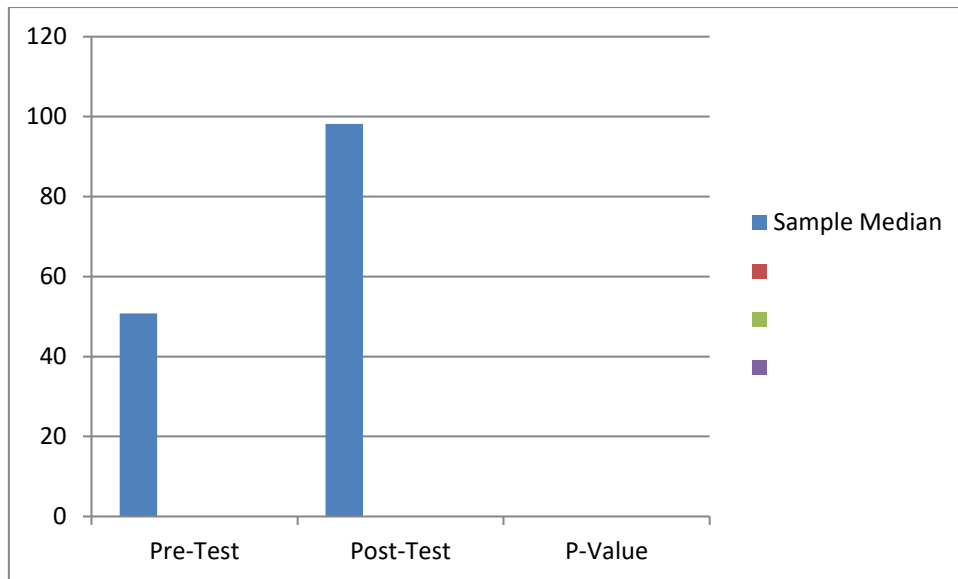


Figure 2 The median knowledge score

Patient's knowledge score about the anticoagulation drugs and atrial fibrillation pre and post-test scores. The scoring of Pre and Post-test was measured on a scale of 100. Table 3 shows the percentages of the patients who answered the twenty-one questions asked. There was an increase in the scores after the educational intervention. Figure 1 compares the pre and post-test mean survey scores in a bar chart. The difference between the pre-test and post-test means is 41.25% to 75.65%. After the education intervention, the average increase from the pre-test was 34.4%. To determine whether there was no significant difference statistically between the pre and post-test before and after the intervention, the Mann-Whitney U test (Wilcoxon Rank Sum Test) was utilized. Based on an alpha value of 0.05, the Mann-Whitney U test result was adequate to be statically significant. Since the p-value is 0.00005117, the null hypothesis can be disregarded. This result implies that the pre and post-tests show a significant statistical difference. The pre-test's median score is lower than the post-test median score and illustrated in figure 2 with the help of a bar chart. This difference shows the effect of the intervention on the patients.

## Chapter VIII

### Discussion

#### Demographics

Atrial fibrillation is a kind of cardiac arrhythmia in which the heart beats rapidly and too fast, resulting in blood clotting and an increased risk of stroke (Seiffge et al. 2019). The absence of knowledge about adherence to anti-coagulation drugs can increase the chances of adverse events related to the disease. It has been observed that the condition generally occurs as people's age increases. People over 50 years of age are mostly affected by this condition, and the disease affects an equal number of females and males. The age factor is the most crucial risk factor associated with the disease. The increasing number of cases in older adults is due to degenerative aging factors like decreased heart function, coronary heart disease, and hypertension (Smet, et al., 2018). The most common clinically relevant arrhythmia is atrial fibrillation (AF), and its prevalence is steadily increasing. The population's aging is, at a minimum, partially responsible for this growth. Much evidence in the literature supports the rise in the prevalence of AF with age, likely due to multiple diseases, cardiovascular risk elements, and other variables, including lifestyle modifications (Smet, et al., 2018). Hypertension and coronary heart diseases are the risk factors for Atrial fibrillation. When the blood pressure is high, it affects the ability of the heart to pump blood. The coordination of the chambers of the heart has also been affected, resulting in abnormal heartbeats (Schwanda, & Gruber, 2019)

The number of patients treated for Atrial fibrillation in less than a year was the most. The patients treated for the disease in the last 1 to 5 years were only two in number, and the patients diagnosed more than five years ago were three. The people recently diagnosed with atrial fibrillation generally do not know much about the disease that causes the lack of

adherence to the medication, which ultimately affects the patient's health. In table 1, the pre-test demographics of the patients are shown. The pretest demographics show that people receiving treatment for less than one year are more. The educational intervention is given to the people so that their quality of life can be improved, but how this intervention will work and what it will be its effects on the knowledge of the people can be measured by doing a post-test. The results can be analyzed (Obamiro, et al. 2018).

In table 2, the demographics of the patient post-test were shown, and 14 patients took part in the post-test. In all, nine patients out of 14 have been diagnosed in the last year. In the post-test, it was observed that people could answer the questions more correctly after the intervention was provided to them. Earlier in the pre-test, only 50% of the patients knew that anti-coagulation medications were given to prevent strokes. The ten patients of 14 in the pre-test did not know the name of the Cardiac arrhythmia they were diagnosed with. In the post-test, all 14 participants could tell the name of the Cardiac arrhythmia they have. That was the effect of the educational intervention.

From the demographic data, it can be seen that white people are more likely to have Atrial fibrillation. There may be genetic factors behind the fact that white people are more likely to have the disease than black people and other Asian people. The researcher explained that the risk factors of the disease are present in black people in an equal amount as for white people. Still, they do not have the illness despite obesity, hypertension, and other comorbidities (Angiolillo, et al. 2018). So, they concluded that genetic factors might be responsible for the disease occurring in white people. The demographic data in table 1 and 2 show that of 14 participants, there were not any Asian patients. 8 of 14 patients were white people, and 4 of 14 were black people having atrial fibrillation. The data also shows the presence of 2 Hispanic people with the disease. The purpose of the pre and post-test was to compare the patients' knowledge about their health condition. In the pre-test, it was observed

that less percentage of people were aware of the basic information regarding Atrial fibrillation, like which blood thinning drug they have been prescribed, other therapies for treating the disease, the reason for providing blood-thinning medications to them, differences between Warfarin and NOAC (Novel Oral Anti-coagulants), function of blood thinners, and adverse effects of anti-coagulators. In post-test, most of the patients have given the correct answers to the same questions asked in the pre-test. This directly shows the effectiveness of the educational intervention.

### **Knowledge**

Scores for the knowledge tests ranged from zero to a hundred. The average score for the pre-and post-test is shown in a bar graph in figure 1. The average pre-test score was 41.25%, whereas the average post-test score was 75.65%. When the p-value is less than 0.05, as shown in Table 4, the rejection of the null hypothesis can occur, and there is a statistically significant difference between the pre-and post-test results. The quantity and percentage of people who correctly responded to the questions on the pre-and post-test are shown in Table 3. There is a noticeable rise in both the quantity and percentage of individuals choosing the correct response after the educational intervention. After the intervention, more people answered correctly to the questions asked. There were 21 questions in total related to atrial fibrillation. It has been observed that people did not know why it is crucial to adhere to anti-coagulation medications in atrial fibrillation (Angiolillo, et al., 2018). The difference in the percentage of correct answers can be seen in table 3. In the pre-test, only a few respondents correctly answered question six; however, after the educational intervention, an increase in the number of correctly answered questions was seen. The same pattern can be seen for question 11, where three individuals correctly responded to the question, and more participants did so after the educational intervention.



The median scores for the pre-and post-test are shown in Figure 2. The median pre-test score was 50.75%, and the post-survey median score was 98.2%. Similar outcomes were found by (Lo, et al. 2022), who studied the effects of knowledge on atrial fibrillation. This study's findings can help improve people's adherence to anti-coagulation medications. Patients' knowledge about their health condition is very important to improve health outcomes. Atrial fibrillation prevails worldwide, and if people are aware of medical adherence, it can be prevented and managed well (Ferguson, et al., 2019). In the post-test, it was observed that people could give answers to the questions more correctly. This was the result of educational intervention provided to them. People should know what risks are associated with atrial fibrillation. This study was conducted to see the effect of educational intervention on patients with atrial fibrillation.

## Chapter IX

### Limitations

Several limitations were found in the QI project findings. Several samples were available, but in acute care settings, many patients were too sick to participate in the research. For example, Patients with atrial fibrillation who were intubated could not participate. Another thing I have noted is due to the acute hospital admission; they were in and out of their room due to acute tests and procedures, which have limited the sampling. This data collection only took place among AF patients in inpatient settings. The DNP candidate developed the survey questions from evidence-based literature articles.

Furthermore, the educational session was time limited. There is a possibility that if more time had been given to provide content on the importance of anticoagulation in atrial fibrillation, more participants might have been able to attend. All these may restrict the concept of our findings. The study can also be done in outpatient settings like cardiology and primary care provider offices, where patients will be more relaxed. Although the rate of participants was low, a strength of the project is that it was participated in by patients diagnosed with atrial fibrillation and on anticoagulation. Regardless of these limitations, these study findings suggest a need for anticoagulation education in atrial fibrillation patients can improve stroke reduction by providing educational sessions on this topic. Healthcare providers can reduce stroke risk by educating on the importance of anticoagulation in atrial fibrillation, enhancing the quality of the care supplied to atrial fibrillation patients.

## Chapter X

### Implications for Advanced Practice Nursing

Advanced practice registered nurses (APRN) today, more than ever before, are health professionals who interact with patients during inpatient and outpatient clinical encounters. Nurse practitioners are necessary to make change happen, allowing them to contribute the best care to their patients. Stroke prevention by applying anticoagulation therapy was suggested in Atrial fibrillation patients. The probability of Atrial fibrillation patients acquiring a stroke is five times inflated compared to non Atrial fibrillation patients.

Knowledge about Atrial fibrillation and stroke prevention is one of the crucial components that can help patients' adherence. Healthcare providers should understand how important it is for patients with atrial fibrillation to adhere to anticoagulation to prevent stroke. Nurse practitioners should educate patients on various prevention measures to reduce the likelihood of stroke and other complications.

The following steps for this QI project are for more educational sessions on anticoagulation adherence in atrial fibrillation patients in healthcare settings. Based on the data gathered, patients are not provided with adequate information about atrial fibrillation and the importance of compliance with anticoagulation in stroke prevention. Healthcare organizations should observe this example in providing patient education. There is a lack of education and the importance of anticoagulation education in the outpatient setting as well. Advanced Practice Registered Nurses (APRNs) should target the inpatient and outpatient settings and evaluate how much education is provided when atrial fibrillation patients are started on anticoagulation.

The atrial fibrillation patients can also be provided with educational materials on the importance of anticoagulation and how it can help prevent stroke. These educational sessions can be valuable, especially for newly diagnosed atrial fibrillation patients who have been started on anticoagulation. Anticoagulation educational sessions can also be included as part of their discharge paperwork in inpatient settings. Making these educational sessions necessary can aid in enduring the practice change in healthcare settings. These educational sessions can help initiate awareness of the importance of anticoagulation in atrial fibrillation patients in the healthcare setting and how this impacts them from preventing stroke. In addition, we need to make patients aware of the sequel and treatment of Atrial fibrillation. Hence, the large gap in knowledge about Atrial fibrillation and stroke prevention be avoided among Atrial fibrillation patients.

## Chapter XI

### Conclusion

Atrial fibrillation is one of the most cardiac arrhythmias spotted in clinical practice, computing for roughly one-third of hospitalizations for cardiac rhythm disturbances. One top management of Atrial fibrillation implies halting thromboembolic events using anticoagulants. Atrial fibrillation-associated strokes are more severe than other kinds of stroke. Atrial fibrillation patients are twofold as likely to become bedridden than patients with stroke for different reasons and are more likely to die from the stroke. This can be referred to in the evidence and literature review table, where several articles mentioned the lack of patient knowledge on the importance of adherence to anticoagulation in stroke prevention. Some healthcare providers may not adequately teach patients with atrial fibrillation to comply with anticoagulants. Furthermore, there is a lack of adequate anticoagulation education in the inpatient and outpatient settings.

This study is helpful because it comes up with a tool that can be used to discover the extent of patients' knowledge about Atrial fibrillation disorder, the importance of anticoagulation, and its relation with the prevention of stroke. To a great extent, additional studies should be equipped on the inpatient and outpatient setting with larger sample sizes to evaluate how much education can improve atrial patient's adherence to anticoagulation in stroke prevention.

## References

- Alajami, H. N., Alshammari, S. A., Al-Dossari, D. S., Alajami, A. N., Alsaikhan, A. S., Alessa, M. S., Alessa, H. S., Alhothali, S. K., Alnami, M. I., Atey, T. M., Alnajrani, R. H., & Ali, S. (2021). Knowledge of anticoagulation among Saudi patients with atrial fibrillation: A cross-sectional study. *Cureus*.  
<https://doi.org/10.7759/cureus.19237>
- Angiolillo, D. J., Goodman, S. G., Bhatt, D. L., Eikelboom, J. W., Price, M. J., Moliterno, D. J., ... & Faxon, D. P. (2018). Antithrombotic therapy in patients with atrial fibrillation treated with oral anticoagulation undergoing percutaneous coronary intervention: a North American perspective—2018 update. *Circulation*, *138*(5), 527-536.
- Bartolazzi, F., Ribeiro, A. L. P., de Sousa, W. J. F. N., Vianna, M. S., da Silva, J. L. P., & Martins, M. A. P. (2021). Relationship of health literacy and adherence to oral anticoagulation therapy in patients with atrial fibrillation: a cross-sectional study. *Journal of thrombosis and thrombolysis*, *52*(4), 1074-1080.  
<https://doi.org/10.1007/s11239-021-02432-4>
- Bennaghmouch, N., de Veer, A., Zivelonghi, C., van Dijk, L., & Ten Berg, J. M. (2019). First report of a comparative patient-oriented perspective on the use of non-vitamin-K oral anticoagulants or vitamin-K antagonists in atrial fibrillation: patients' experiences, side-effects and practical problems leading to non-adherence. *Netherlands heart journal : monthly journal of the Netherlands Society of Cardiology and the Netherlands Heart Foundation*, *27*(12), 596–604.  
<https://doi.org/10.1007/s12471-019-01331-x>

- Bhaskar, S., Bradley, S., Chattu, V. K., Adishes, A., Nurtazina, A., Kyrykbayeva, S., Sakhamuri, S., Moguilner, S., Pandya, S., Schroeder, S., Banach, M., & Ray, D. (2020). Telemedicine as the New Outpatient Clinic Gone Digital: Position Paper From the Pandemic Health System RESilience PROGRAM (REPROGRAM) International Consortium (Part 2). *Frontiers in public health*, 8, 410. <https://doi.org/10.3389/fpubh.2020.00410>
- Boehme, A. K., Esenwa, C., & Elkind, M. S. (2017). Stroke Risk Factors, Genetics, and Prevention. *Circulation research*, 120(3), 472–495. <https://doi.org/10.1161/CIRCRESAHA.116.308398>
- Bohr, A., & Memarzadeh, K. (2020). The rise of artificial intelligence in healthcare applications. *Artificial Intelligence in Healthcare*, 25–60. <https://doi.org/10.1016/B978-0-12-818438-7.00002-2>
- Braithwaite, J., Herkes, J., Ludlow, K., Testa, L., & Lamprell, G. (2017). Association between organisational and workplace cultures, and patient outcomes: systematic review. *BMJ open*, 7(11), e017708. <https://doi.org/10.1136/bmjopen-2017-017708>
- Brega, A. G., Hamer, M. K., Albright, K., Brach, C., Saliba, D., Abbey, D., & Gritz, R. M. (2019). Organizational Health Literacy: Quality Improvement Measures with Expert Consensus. *Health literacy research and practice*, 3(2), e127–e146. <https://doi.org/10.3928/24748307-20190503-01>
- Bucci, S., De Belvis, A. G., Marventano, S., De Leva, A. C., Tanzariello, M., Specchia, M. L., ... & Franceschi, F. (2016). Emergency department crowding and hospital bed shortage: is lean a smart answer? A systematic review. *Eur Rev Med Pharmacol Sci*, 20(20), 4209-19. PMID: 27831655

- Chen, P. T., Wang, T. J., Hsieh, M. H., Liu, J. C., Liu, C. Y., Wang, K. Y., & Laio, W. C. (2019). Anticoagulation adherence and its associated factors in patients with atrial fibrillation: a cross-sectional study. *BMJ open*, 9(9), e029974. <http://dx.doi.org/10.1136/bmjopen-2019-029974>
- Chen, P. T., Wang, T. J., Hsieh, M. H., Liu, J. C., Liu, C. Y., Wang, K. Y., & Laio, W. C. (2019). Anticoagulation adherence and its associated factors in patients with atrial fibrillation: a cross-sectional study. *BMJ open*, 9(9), e029974. doi: 10.1136/bmjopen-2019-029974
- Clarkesmith, D. E., Pattison, H. M., Khaing, P. H., & Lane, D. A. (2017). Educational and behavioural interventions for anticoagulant therapy in patients with atrial fibrillation. *Cochrane Database of Systematic Reviews*, (4). <https://doi.org/10.1002/14651858.CD008600.pub3>
- de Souza Oliveira-Kumakura, A. R., Pacheco, I., de Oliveira, H. C., & Rodrigues, R. C. M. (2019). Relationship between anticoagulant medication adherence and satisfaction in patients with stroke. *Journal of Neuroscience Nursing*, 51(5), 229-234. doi: 10.1097/JNN.0000000000000463
- Davenport, T., & Kalakota, R. (2019). The potential for artificial intelligence in healthcare. *Future healthcare journal*, 6(2), 94–98. <https://doi.org/10.7861/futurehosp.6-2-94>
- Deshpande, S., Catanzaro, J., & Wann, S. (2014). Atrial Fibrillation: Prevalence and Scope of the Problem. *Cardiac electrophysiology clinics*, 6(1), 1–4. <https://doi.org/10.1016/j.ccep.2013.10.006>
- Desteghe, L., Vijgen, J., Koopman, P., Dilling-Boer, D., Schurmans, J., Dendale, P., & Heidbuchel, H. (2018). Telemonitoring-based feedback improves adherence to



nonvitamin K antagonist oral anticoagulants intake in patients with atrial fibrillation. *European heart journal*, 39(16), 1394-1403.

<https://doi.org/10.1093/eurheartj/ehx762>

Durand, M., Schnitzer, M. E., Pang, M., Carney, G., Eltonsy, S., Fillion, K. B., ... & Matteau, A. (2020). Comparative effectiveness and safety of direct oral anticoagulants versus vitamin K antagonists in nonvalvular atrial fibrillation: a Canadian multicentre observational cohort study. *Canadian Medical Association Open Access Journal*, 8(4), E877-E886. DOI: [10.9778/cmajo.20200055](https://doi.org/10.9778/cmajo.20200055)

Ferguson, C., Hickman, L. D., Phillips, J., Newton, P. J., Inglis, S. C., Lam, L., & Bajorek, B. V. (2019). An mHealth intervention to improve nurses' atrial fibrillation and anticoagulation knowledge and practice: the EVICOAG study. *European Journal of Cardiovascular Nursing*, 18(1), 7-15.

Eizaga Rebollar, R., García Palacios, M. V., Fernández Mangas, M., Arroyo Fernández, F. J., Márquez Rodríguez, C. M., Carnota Martín, A. I., Morales Guerrero, J., & Torres Morera, L. M. (2020). Strengths-Weaknesses-Opportunities-Threats Analysis for a Pediatric Anesthesia Program. *Pediatric quality & safety*, 5(1), e254. <https://doi.org/10.1097/pq9.0000000000000254>

Emren, S., Şenöz, O., Bilgin, M., Beton, O., Aslan, A., Taşkin, U., Açıksarı, G., Asarcikli, L., Çakir, H., Bekar, L., Bolat, İ., Yayla, Ç., Çelebi, B., Dalgiç, O., Çelik, O., Şafak, Ö., Akyel, S., Güngör, H., Düzel, B., & Zoghi, M. (2017). Drug adherence in patients with nonvalvular atrial fibrillation taking non-vitamin k antagonist oral anticoagulants in turkey: Noac-tr. *Clinical and Applied Thrombosis/Hemostasis*, 24(3), 525–531. <https://doi.org/10.1177/1076029617693940>

- Fabius, R., Frazee, S. G., Thayer, D., Kirshenbaum, D., & Reynolds, J. (2018). The Correlation of a Corporate Culture of Health Assessment Score and Health Care Cost Trend. *Journal of occupational and environmental medicine*, 60(6), 507–514. <https://doi.org/10.1097/JOM.0000000000001305>
- Fairchild, R. M., Ferng-Kuo, S. F., Laws, S., Rahmouni, H., & Hardesty, D. (2019). Telehealth decreases rural emergency department wait times for behavioral health patients in a group of critical access hospitals. *Telemedicine and e-Health*, 25(12), 1154-1164.
- Farokhzadian, J., Dehghan Nayeri, N., & Borhani, F. (2018). The long way ahead to achieve an effective patient safety culture: challenges perceived by nurses. *BMC health services research*, 18(1), 654. <https://doi.org/10.1186/s12913-018-3467-1>
- Flodgren, G., Rachas, A., Farmer, A. J., Inzitari, M., & Shepperd, S. (2015). Interactive telemedicine: effects on professional practice and health care outcomes. *The Cochrane database of systematic reviews*, 2015(9), CD002098. <https://doi.org/10.1002/14651858.CD002098.pub2>
- Foley, L., Larkin, J., Lombard-Vance, R., Murphy, A. W., & Molloy, G. J. (2021). Prevalence and predictors of medication non-adherence among patients with multimorbidity: A systematic review protocol. *HRB open research*, 2, 29. <https://doi.org/10.12688/hrbopenres.12961.2>
- Geary, L., Hasselström, J., Carlsson, A. C., Schenck-Gustafsson, K., & von Euler, M. (2020). An audit & feedback intervention for improved anticoagulant use in patients with atrial fibrillation in primary care. *International Journal of Cardiology*, 310, 67-72. <https://doi.org/10.1016/j.ijcard.2020.04.027>

- Gebreyohannes, E. A., Mill, D., Salter, S., Chalmers, L., Bereznicki, L., & Lee, K. (2021). Strategies for improving guideline adherence of anticoagulants for patients with atrial fibrillation in primary healthcare: A systematic review. *Thrombosis Research*, 205, 128-136. <https://doi.org/10.1016/j.thromres.2021.07.014>
- Guo, Y., Chen, Y., Lane, D. A., Liu, L., Wang, Y., & Lip, G. Y. (2017). Mobile health technology for atrial fibrillation management integrating decision support, education, and patient involvement: mAF app trial. *The American journal of medicine*, 130(12), 1388-1396. <https://doi.org/10.1016/j.amjmed.2017.07.003>
- Haleem, A., Javaid, M., Singh, R. P., & Suman, R. (2021). Telemedicine for healthcare: Capabilities, features, barriers, and applications. *Sensors international*, 2, 100117. <https://doi.org/10.1016/j.sintl.2021.100117>
- Hawes E. M. (2018). Patient Education on Oral Anticoagulation. *Pharmacy (Basel, Switzerland)*, 6(2), 34. <https://doi.org/10.3390/pharmacy6020034>
- Hawking, M. K., Robson, J., Taylor, S. J., & Swinglehurst, D. (2020). Adherence and the moral construction of the self: a narrative analysis of anticoagulant medication. *Qualitative health research*, 30(14), 2316-2330. <https://doi.org/10.1177/1049732320951772>
- hcafloridahealthcare.com. (2022). Westside Hospital | HCA Florida Westside Hospital. Retrieved March 11 2022, from <https://www.hcafloridahealthcare.com/locations/westside-hospital>
- Ibrahim, K. M., Schommer, J. C., Morisky, D. E., Rodriguez, R., Gaither, C., & Snyder, M. (2021). The Association between Medication Experiences and Beliefs and Low Medication Adherence in Patients with Chronic Disease from Two Different

- Societies: The USA and the Sultanate of Oman. *Pharmacy (Basel, Switzerland)*, 9(1), 31. <https://doi.org/10.3390/pharmacy9010031>
- Jang, I. (2021). A Systematic Review on Mobile Health Applications' Education Program for Patients Taking Oral Anticoagulants. *International Journal of Environmental Research and Public Health*, 18(17), 8902. <https://doi.org/10.3390/ijerph18178902>
- Kulkarni, S., Rao, R., Goodman, J., Connolly, K., & O'Shaughnessy, K. M. (2021). Nonadherence to antihypertensive medications amongst patients with uncontrolled hypertension: A retrospective study. *Medicine*, 100(14), e24654. <https://doi.org/10.1097/MD.00000000000024654>
- Kvarnström, K., Airaksinen, M., & Liira, H. (2018). Barriers and facilitators to medication adherence: a qualitative study with general practitioners. *BMJ open*, 8(1), e015332. <https://doi.org/10.1136/bmjopen-2016-015332>
- Lip, G. Y., Lane, D. A., & Potpara, T. S. (2018). Innovative strategies to improve adherence to nonvitamin K antagonist oral anticoagulants for stroke prevention in atrial fibrillation. *European heart journal*.
- Lo, F. M., Wong, E. M., & Hong, F. K. (2022). The effects of educational programs on knowledge, international normalized ratio, warfarin adherence, and warfarin-related complications in patients receiving warfarin therapy: an integrative review. *Journal of Cardiovascular Nursing*, 37(3), E32-E46.
- Obamiro, K. O., Chalmers, L., Lee, K., Bereznicki, B. J., & Bereznicki, L. R. (2018). Adherence to oral anticoagulants in atrial fibrillation: an Australian survey. *Journal of cardiovascular pharmacology and therapeutics*, 23(4), 337-343.

- Osasu, Y. M., Cooper, R., & Mitchell, C. (2021). Patients' and clinicians' perceptions of oral anticoagulants in atrial fibrillation: a systematic narrative review and meta-analysis. *BMC family practice*, *22*(1), 1-11. doi: 10.1186/s12875-021-01590-x.
- Pandya, E. Y., & Bajorek, B. (2017). Factors affecting patients' perception on, and adherence to, anticoagulant therapy: anticipating the role of direct oral anticoagulants. *The Patient-Patient-Centered Outcomes Research*, *10*(2), 163-185. doi: 10.1007/s40271-016-0180-1.
- Patel, U. K., Dave, M., Lekshminarayanan, A., Malik, P., DeMasi, M., Chandramohan, S., Pillai, S., Tirupathi, R., Shah, S., Jani, V. B., & Dhamoon, M. S. (2021). Risk Factors and Incidence of Acute Ischemic Stroke: A Comparative Study Between Young Adults and Older Adults. *Cureus*, *13*(4), e14670. <https://doi.org/10.7759/cureus.14670>
- Patti, G., Di Gioia, G., Cavallari, I., & Nenna, A. (2017). Safety and efficacy of nonvitamin K antagonist oral anticoagulants versus warfarin in diabetic patients with atrial fibrillation: A study-level meta-analysis of phase III randomized trials. *Diabetes/Metabolism Research and Reviews*, *33*(3), e2876. DOI: [10.1002/dmrr.2876](https://doi.org/10.1002/dmrr.2876)
- Pepito, J. A., & Locsin, R. (2018). Can nurses remain relevant in a technologically advanced future?. *International journal of nursing sciences*, *6*(1), 106–110. <https://doi.org/10.1016/j.ijnss.2018.09.013>
- Mansukhani, S. G., MacLean, E. A., Manzey, L. L., Possidente, C. J., Cappelleri, J. C., & Deal, L. S. (2021). Development of a New Patient-Reported Medication Adherence Instrument: Concerns Influencing Medication Adherence. *Patient preference and adherence*, *15*, 1991–2007. <https://doi.org/10.2147/PPA.S318030>

- Márquez-Contreras, E., Martell-Claros, N., Márquez-Rivero, S., Hermida-Campa, E., Gracia-Diez, C., Sanchez-López, E., ... & Compliance and Inertia Working Group, Spanish Society of Hypertension (SEH-LELHA). (2018). Strategies for improving dabigatran adherence for stroke prevention in patients with non-valvular atrial fibrillation: education and drug intake reminders (FACILITA study). *Current medical research and opinion*, 34(7), 1301-1308.  
<https://doi.org/10.1080/03007995.2018.1435519>
- Matalqah, L. M. A. (2019). Knowledge, adherence, and quality of life among warfarin therapy users. In *Anticoagulation Drugs-the Current State of the Art*. IntechOpen. DOI: 10.5772/intechopen.86371
- Mayet, A. Y. (2016). Patient adherence to warfarin therapy and its impact on anticoagulation control. *Saudi pharmaceutical journal*, 24(1), 29-34.  
<https://doi.org/10.1016/j.jsps.2015.02.005>
- Osasu, Y. M., Cooper, R., & Mitchell, C. (2021). Patients' and clinicians' perceptions of oral anticoagulants in atrial fibrillation: a systematic narrative review and meta-analysis. *BMC family practice*, 22(1), 1-11. doi: 10.1186/s12875-021-01590-x.
- Pandya, E. Y., & Bajorek, B. (2017). Factors affecting patients' perception on, and adherence to, anticoagulant therapy: anticipating the role of direct oral anticoagulants. *The Patient-Patient-Centered Outcomes Research*, 10(2), 163-185. DOI: [10.1007/s40271-016-0180-1](https://doi.org/10.1007/s40271-016-0180-1)
- Park, S., & Jang, I. (2021). Factors Affecting Medication Adherence in Patients with Mechanical Heart Valves Taking Warfarin: The Role of Knowledge on Warfarin, Medication Belief, Depression, and Self-Efficacy. *International journal of*

*environmental research and public health*, 18(10), 5214.

<https://doi.org/10.3390/ijerph18105214>

Patel, U. K., Dave, M., Lekshminarayanan, A., Malik, P., DeMasi, M., Chandramohan, S., Pillai, S., Tirupathi, R., Shah, S., Jani, V. B., & Dhamoon, M. S. (2021). Risk Factors and Incidence of Acute Ischemic Stroke: A Comparative Study Between Young Adults and Older Adults. *Cureus*, 13(4), e14670.

<https://doi.org/10.7759/cureus.14670>

Praxedes, M. F. D. S., Mambrini, J. V. D. M., Reis, A. M. M., de Abreu, M. H. N. G., & Martins, M. A. P. (2020). Assessment of patient knowledge on warfarin: An item response theory approach. *Journal of Clinical Pharmacy and Therapeutics*, 45(4), 698-706.

<https://doi.org/10.1111/jcpt.13147>

Raghupathi, V., & Raghupathi, W. (2020). Healthcare Expenditure and Economic Performance: Insights From the United States Data. *Frontiers in public health*, 8,

156. <https://doi.org/10.3389/fpubh.2020.00156>

Rakhshan, M., Najafi, H., & Valizadeh, G. A. (2019). Lifestyle of Patients with Atrial Fibrillation Following Self-Management Interventions: a Randomized Clinical Trial. *Journal of caring sciences*, 8(2), 83–88. <https://doi.org/10.15171/jcs.2019.012>

Ramphul, K., Ramphul, Y., Sombans, S., Lohana, P., Verma, R., Kumar, N., & Joynauth, J.

(2021). Incidence and mortality rates of acute ischemic stroke in hospitalized patients in the United States. *Archives of medical sciences. Atherosclerotic diseases*, 6, e132–e134. <https://doi.org/10.5114/amsad.2021.107820>

Rao, M. P., Pokorney, S. D., & Granger, C. B. (2014). Atrial fibrillation: A review of recent studies with a focus on those from the duke clinical research institute.

*Scientifica*, 2014, 1–11. <https://doi.org/10.1155/2014/901586>

- Raparelli, V., Proietti, M., Cangemi, R., Lip, G. Y., Lane, D. A., & Basili, S. (2017). Adherence to oral anticoagulant therapy in patients with atrial fibrillation. *Thrombosis and haemostasis*, *117*(02), 209-218. DOI: 10.1160/TH16-10-0757
- Saade, S., Kobeissy, R., Sandakli, S., Malaeb, D., Lahoud, N., Hallit, S., ... & Salameh, P. (2021). Medication adherence for secondary stroke prevention and its barriers among lebanese survivors: A cross-sectional study. *Clinical Epidemiology and Global Health*, *9*, 338-346. <https://doi.org/10.1016/j.cegh.2020.10.007>
- Salmasi, S., Loewen, P. S., Tandun, R., Andrade, J. G., & De Vera, M. A. (2020). Adherence to oral anticoagulants among patients with atrial fibrillation: a systematic review and meta-analysis of observational studies. *BMJ open*, *10*(4), e034778. <http://dx.doi.org/10.1136/bmjopen-2019-034778>
- Schwanda, M., & Gruber, R. (2019). Increased knowledge of oral anticoagulants and treatment satisfaction leads to better adherence to oral anticoagulants in patients with atrial fibrillation. *Evidence-Based Nursing*, ebnurs-2018.
- Seiffge, D. J., Werring, D. J., Paciaroni, M., Dawson, J., Warach, S., Milling, T. J., ... & Norrving, B. (2019). Timing of anticoagulation after recent ischaemic stroke in patients with atrial fibrillation. *The Lancet Neurology*, *18*(1), 117-126.
- Silverio, A., Di Maio, M., Prota, C., De Angelis, E., Radano, I., Citro, R., ... & Galasso, G. (2021). Safety and efficacy of nonvitamin K antagonist oral anticoagulants in elderly patients with atrial fibrillation: systematic review and meta-analysis of 22 studies and 440 281 patients. *European Heart Journal-Cardiovascular Pharmacotherapy*, *7*(F11), f20-f29. <https://doi.org/10.1093/ehjcvp/pvz073>



- Smet, L., Heggermont, W. A., Goossens, E., Eeckloo, K., Vander Stichele, R., De Potter, T., & De Backer, T. (2018). Adherence, knowledge, and perception about oral anticoagulants in patients with atrial fibrillation at high risk for thromboembolic events after radiofrequency ablation. *Journal of Advanced Nursing*, *74*(11), 2577-2587.
- Smith, D.E., Xuereb, C.B., Pattison, H.M. *et al.* TRial of an Educational intervention on patients' knowledge of Atrial fibrillation and anticoagulant therapy, INR control, and outcome of Treatment with warfarin (TREAT). *BMC Cardiovasc Disord* **10**, 21 (2010). <https://doi.org/10.1186/1471-2261-10-21>
- Stahmeyer, J. T., Stubenrauch, S., Geyer, S., Weissenborn, K., & Eberhard, S. (2019). The Frequency and Timing of Recurrent Stroke: An Analysis of Routine Health Insurance Data. *Deutsches Arzteblatt international*, *116*(42), 711–717. <https://doi.org/10.3238/arztebl.2019.0711>
- Tam, W., Woo, B., & Lim, T. W. (2019). Questionnaires designed to assess knowledge of atrial fibrillation: a systematic review. *Journal of Cardiovascular Nursing*, *34*(3), E14-E21.
- Tzikas, A., Samaras, A., Kartas, A., Vasdeki, D., Fotos, G., Dividis, G., ... & Giannakoulas, G. (2021). Motivational Interviewing to Support Oral AntiCoagulation adherence in patients with non-valvular Atrial Fibrillation (MISOAC-AF): a randomized clinical trial. *European Heart Journal-Cardiovascular Pharmacotherapy*, *7*(F11), f63-f71. <https://doi.org/10.1093/ehjcvp/pvaa039>
- Tzikas, A., Samaras, A., Kartas, A., Vasdeki, D., Fotos, G., Dividis, G., ... & Giannakoulas, G. (2020). Motivational Interviewing to Support Oral AntiCoagulation adherence in patients with non-valvular Atrial Fibrillation (MISOAC-AF): a randomised clinical

trial. *European Heart Journal*, 41(Supplement\_2), ehaa946-0641.

<https://doi.org/10.1093/ehjci/ehaa946.0641>

Vinereanu, D., Lopes, R. D., Bahit, M. C., Xavier, D., Jiang, J., Al-Khalidi, H. R., ... & Fatania, K. (2017). A multifaceted intervention to improve treatment with oral anticoagulants in atrial fibrillation (IMPACT-AF): an international, cluster-randomised trial. *The Lancet*, 390(10104), 1737-1746.

[https://doi.org/10.1016/S0140-6736\(17\)32165-7](https://doi.org/10.1016/S0140-6736(17)32165-7)

Williams, S. J., & Best, S. (2022). What Does a Systems Approach to Quality Improvement Look Like in Practice?. *International journal of environmental research and public health*, 19(2), 747. <https://doi.org/10.3390/ijerph19020747>

Yao, X., Abraham, N. S., Alexander, G. C., Crown, W., Montori, V. M., Sangaralingham, L. R., ... & Noseworthy, P. A. (2016). Effect of adherence to oral anticoagulants on risk of stroke and major bleeding among patients with atrial fibrillation. *Journal of the American Heart Association*, 5(2), e003074.

<https://doi.org/10.1161/JAHA.115.003074>

Zhao, S., Zhao, H., Wang, X., Gao, C., Qin, Y., Cai, H., Chen, B., & Cao, J. (2017). Factors influencing medication knowledge and beliefs on warfarin adherence among patients with atrial fibrillation in China. *Patient preference and adherence*, 11, 213–220. <https://doi.org/10.2147/PPA.S120962>

Table of Evidence

Author(s) / Publication Year	Purpose	Research Methods	Participants' Characteristics; Sampling/Setting	Intervention	Results
<p>Vinereanu, D., Lopes, R. D., Bahit, M. C., Xavier, D., Jiang, J., Al-Khalidi, H. R., ... &amp; Fatania, K. (2017). A multifaceted intervention to improve treatment with oral anticoagulants in atrial fibrillation (IMPACT-AF): an international, cluster-randomised trial. <i>The Lancet</i>, 390(10104), 1737-1746.  <a href="https://doi.org/10.1016/S0140-6736(17)32165-7">https://doi.org/10.1016/S0140-6736(17)32165-7</a></p>	<p>Aimed to determine the intervention for improving the treatment among the AF patient.</p>	<p>RCT</p>	<p>2281 patients from five countries were enrolled from 48 clusters between June 11, 2014, and Nov 13, 2016.</p>	<p>Kaplan-Meier estimates showed a reduction in the secondary outcome of stroke in the intervention versus control groups</p>	<p>The Implementation of multifaceted and multilevel educational intervention helps in improving the adherence to oral anticoagulation among patients suffering from atrial fibrillation.</p>
<p>Desteghe, L., Vijgen, J., Koopman, P., Dilling-Boer, D., Schurmans, J., Dendale, P., &amp; Heidbuchel, H. (2018). Telemonitoring-based feedback improves adherence to nonvitamin K antagonist oral anticoagulants intake in patients with atrial fibrillation. <i>European heart journal</i>, 39(16), 1394-1403.  <a href="https://doi.org/10.1093/eurheartj/ehx762">https://doi.org/10.1093/eurheartj/ehx762</a></p>	<p>To determine the effect of telemonitoring in adhering to nonvitamin K oral anticoagulants among AF patients.</p>	<p>RCT</p>	<p>Fifty-seven AF patients on apixaban or rivaroxaban were invited to participate</p>	<p>To use this intervention during initiation in order to ensure a correct implementation of the regimen.</p>	<p>Telemonitoring helps in increasing the adherence to anticoagulant drugs.</p>
<p>Guo, Y., Chen, Y., Lane, D. A., Liu, L., Wang, Y., &amp; Lip, G. Y. (2017). Mobile health technology for atrial fibrillation management integrating decision support, education, and patient involvement: mAF app trial. <i>The</i></p>	<p>Aimed at determining the impact of mobile health technology on managing the atrial fibrillation patient.</p>	<p>RCT</p>	<p>A total of 113 patients were randomized</p>	<p>Integrating clinical decision support, education, and patient-involvement strategies, significantly improved knowledge,</p>	<p>The adherence and the quality of life are increased</p>

<p><i>American journal of medicine</i>, 130(12), 1388-1396.  <a href="https://doi.org/10.1016/j.amjmed.2017.07.003">https://doi.org/10.1016/j.amjmed.2017.07.003</a></p>				<p>drug adherence, quality of life, and anticoagulation satisfaction</p>	
<p>Lip, G. Y., Lane, D. A., &amp; Potpara, T. S. (2018). Innovative strategies to improve adherence to nonvitamin K antagonist oral anticoagulants for stroke prevention in atrial fibrillation. <i>European heart journal</i>.</p>	<p>It is aimed at determining the importance of anticoagulant adherence.</p>	<p>RCT</p>	<p>48 AF patients</p>	<p>Education and counselling improves the adherence</p>	<p>Vitamin K antagonist is noticeable as interpatient and interpatient inconsistency and the therapeutic effect increased over the drug assistances in dropping the coincidental of emerging atrial fibrillation</p>
<p>Geary, L., Hasselström, J., Carlsson, A. C., Schenck-Gustafsson, K., &amp; von Euler, M. (2020). An audit &amp; feedback intervention for improved anticoagulant use in patients with atrial fibrillation in primary care. <i>International Journal of Cardiology</i>, 310, 67-72.  <a href="https://doi.org/10.1016/j.ijcard.2020.04.027">https://doi.org/10.1016/j.ijcard.2020.04.027</a></p>	<p>Aimed at determining the utility of feedback and audit in improving adherence.</p>	<p>RCT</p>	<p>94 centers received the intervention, 31,477 patients. Use of anticoagulants in all primary care centers increased from 76% before to 82% after the intervention.</p>	<p>Providing an intensive educational intervention will determine whether increasing the information available to patients yields both clinical benefit and cost effectiveness.</p>	<p>The intervention of audit and feedback was successful in increasing the adherence to the treatment process, and the rate of compliance was found to increase from 76% to 82% after implementation of the intervention</p>
<p>Clarkesmith, D. E., Pattison, H. M., Khaing, P. H., &amp; Lane, D. A. (2017). Educational and behavioural interventions for anticoagulant therapy in patients with atrial fibrillation. <i>Cochrane Database of Systematic Reviews</i>, (4).  <a href="https://doi.org/10.1002/14651858.CD008600.pub3">https://doi.org/10.1002/14651858.CD008600.pub3</a></p>	<p>Educational intervention in improving the adherence to anticoagulation</p>	<p>RCT</p>	<p>Eleven trials with a total of 2246 AF patients</p>	<p>Interventions focus on behavioural and practical aspects of lifestyle change and treatment. Behavioural interventions aim to modify patients' behaviour towards treatment and symptoms</p>	<p>Increasing patient awareness adjacent Atrial fibrillation, treatment need and stroke risk decline enables informed choices about the management of their situation and treatment and can also make a substantial change to long-term adherence.</p>

<p>Smith, D.E., Xuereb, C.B., Pattison, H.M. <i>et al.</i> TRial of an Educational intervention on patients' knowledge of Atrial fibrillation and anticoagulant therapy, INR control, and outcome of Treatment with warfarin (TREAT). <i>BMC Cardiovasc Disord</i> <b>10</b>, 21 (2010). <a href="https://doi.org/10.1186/1471-2261-10-21">https://doi.org/10.1186/1471-2261-10-21</a></p>	<p>TRial of an Educational intervention on patients' knowledge of Atrial fibrillation and anticoagulant therapy,</p>	<p>RCT</p>	<p>Randomised controlled trial of an intensive educational intervention will consist of group sessions (between 2-8 patients) containing standardised information about the risks and benefits associated with OAC therapy, lifestyle interactions and the importance of monitoring and control of their International Normalised Ratio (INR).</p>		<p>They are providing educational interventions about anticoagulation.</p>
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## Appendix A



June 22, 2022

Eric A. Fenkl, PhD, RN, CNE  
Associate Professor  
Nicole Wertheim College of Nursing & Health Sciences  
Florida International University

Dear Professor Fenkl,

Thank you for inviting HCA Florida Westside Hospital to participate in the Doctor of Nursing Practice (DNP) project of Rebelee Christy Jeyasingh, APRN. It is understood that Ms. Jeyasingh will be conducting this quality improvement project as part of the DNP program requirements at Florida International University (FIU). After reviewing the project titled "Improving Knowledge of Patients with Atrial Fibrillation will Help Adherence in Using Anticoagulation to Reduce Stroke Risk: A Quality Improvement Project", Ms. Jeyasingh has been granted permission to conduct the project at HCA Florida Westside Hospital. Prior to implementing the project, the FIU Institutional Review Board will evaluate and approve the procedures to conduct this project.

The project will be implemented at HCA Florida Westside Hospital during a 16-week timeframe, using a pre and post-test survey to assess if the educational presentation increases the patient's knowledge and adherence to anticoagulation therapy to help prevent stroke. Evidence suggests that improving anticoagulation knowledge on atrial fibrillation patients will provide better compliance, improve patient outcomes, and minimize stroke risk. The hospital will allow the student to access the facility, obtain consent, deliver the pre-survey questionnaire, provide the educational intervention, and give the post-survey to the enrolled participants. HCA Florida Westside Hospital will assist the students in notifying the health care staff of the academic session. The student's preceptor will be present during the research process. This research will be conducted on the progressive care unit, the medical-surgical (second and third) floors, and the telemetry floor.

We're certain that Ms. Jeyasingh will not interfere with the normal hospital work performance, will keep a professional manner, and follow the standards of care. I support the participation of our staff in this project and look forward to working with you.

Sincerely,

Robyn Farrington, RN, BSN, MBA/HCM  
Chief Nursing Officer  
HCA Florida Westside Hospital

RF/mk

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## Appendix B



### MEMORANDUM

**To:** Dr. Eric Finkl  
**CC:** Rebelee Jeyasingh  
**From:** Dr. Adriana Campa *Adriana Campa*  
**Date:** September 15, 2022  
**Protocol Title:** "The role of an educational intervention to improve adherence in using Anticoagulation in patients with Atrial fibrillation to reduce Stroke Risk: A Quality Improvement Project"

The Health Sciences Institutional Review Board of Florida International University has approved your study for the use of human subjects via the **Expedited Review** process. Your study was found to be in compliance with this institution's Federal Wide Assurance (00000060).

**IRB Protocol Approval #:** IRB-22-0432      **IRB Approval Date:** 09/15/22  
**TOPAZ Reference #:** 112118      **IRB Expiration Date:** 09/15/25

As a requirement of IRB Approval you are required to:

- 1) Submit an IRB Amendment Form for all proposed additions or changes in the procedures involving human subjects. All additions and changes must be reviewed and approved by the IRB prior to implementation.
- 2) Promptly submit an IRB Event Report Form for every serious or unusual or unanticipated adverse event, problems with the rights or welfare of the human subjects, and/or deviations from the approved protocol.
- 3) Utilize copies of the date stamped consent document(s) for obtaining consent from subjects (unless waived by the IRB). Signed consent documents must be retained for at least three years after the completion of the study.
- 4) **Obtain continuing review and re-approval of the study prior to the IRB expiration date.** Submit the IRB Renewal Form at least 30 days in advance of the study's expiration date.
- 5) Submit an IRB Project Completion Report Form when the study is finished or discontinued.

Documentation of HIPAA Authorization Waiver/Alteration Determinations:

## Appendix C

### **Recruitment letter for Improving Atrial fibrillation Patients Knowledge on how adherence to Anticoagulation can prevent stroke: A Quality Improvement Project**

To the patients (Name)

My name is Rebelee C Jeyasingh, and I am a student from the Graduate Nursing Department at Florida International University (FIU). I am writing to invite you to participate in my quality improvement project. The goal of this project is to improve atrial fibrillation patients' knowledge of the importance of adherence to anticoagulants to prevent stroke. You are eligible to take part in this project because you have the diagnosis of atrial fibrillation and on oral anticoagulants.

If you decide to participate in this project, you will be asked to complete and sign a consent form for participation. You will complete a pre-test questionnaire, which is expected to take approximately 10-15 minutes. Then, you will be presented with an approximately 20-minute-long educational presentation. After completing the educational presentation, you will be asked to complete the post-test questionnaire, which is expected to take approximately 10-15 minutes. No compensation will be provided.

Remember, this is completely voluntary. You can choose to be a part of the study or not and withdraw at any time. If you would like to participate, please click on the link provided (link for Qualtrics questionnaire). If you have any questions about the study, please contact me via email at [rjeya001@fiu.edu](mailto:rjeya001@fiu.edu) or call at 786-436-4050. Thank you for your time and consideration.

Thank you very much

Sincerely,



## Appendix D

FIU IRB Approval:	09/15/2022
FIU IRB Expiration:	09/15/2025
FIU IRB Number:	IRB-22-0432



### ADULT CONSENT TO PARTICIPATE IN A RESEARCH STUDY

The role of an educational intervention to improve adherence in using Anticoagulation in patients with Atrial fibrillation to reduce Stroke Risk: A Quality Improvement Project

#### SUMMARY INFORMATION

The information provided below is consented to participate in the study above. Participation is completely voluntary. Please read in full below.

Things you should know about this study:

- **Purpose:** The purpose of this quality improvement project is to improve the knowledge of patients with atrial fibrillation on how an educational intervention can improve adherence to Anticoagulation to reduce Stroke risk
- **Procedures:** If you choose to participate, you will be asked to sign a consent form for participation. You will complete a pre-test questionnaire upon admission, which is expected to take approximately 10-15 minutes. Then, you will be presented with an approximately 15-20-minute-long educational presentation. After watching the video, you will be asked to complete the post-test questionnaire upon discharge which is expected to take approximately 10-15 minutes.
- **Duration:** This will take about 30-35 minutes to complete and will be over the hospital course.
- **Risks:** Participants may be at minimal risk of experiencing the physical, psychological, and social discomfort associated with test anxiety.
- **Benefits:** The main benefit to you from this research is improve knowledge on the proposed topic.
- **Alternatives:** There are no known alternatives available to you other than not taking part in this study.
- **Participation:** Taking part in this research project is voluntary.

Please carefully read the entire document before agreeing to participate.

#### PURPOSE OF THE STUDY

The purpose of this study is to provide an educational intervention to improve adherence in using Anticoagulation in patients with Atrial fibrillation to reduce Stroke Risk: A Quality Improvement Project

<b>FIU IRB Approval:</b>	09/15/2022
<b>FIU IRB Expiration:</b>	09/15/2025
<b>FIU IRB Number:</b>	IRB-22-0432

#### **NUMBER OF STUDY PARTICIPANTS**

If you decide to be in this study, you will be one of 15 participants in this research study.

#### **DURATION OF THE STUDY**

This will take about 30-35 minutes to complete and will be over the hospital course.

#### **PROCEDURES**

If you choose to participate, you will be asked to sign a consent form for participation. You will complete a pre-test questionnaire upon admission, which is expected to take approximately 10-15 minutes. Then, you will be presented with an approximately 15-20-minute-long educational presentation. After watching the video, you will be asked to complete the post-test questionnaire upon discharge which is expected to take approximately 10-15 minutes.

#### **RISKS AND/OR DISCOMFORTS**

Participants may be at minimal risk of experiencing the physical, psychological, and social discomfort associated with test anxiety.

#### **BENEFITS**

The study has the following possible benefits to you: Improved knowledge and better assessment and care of targeted population.

#### **ALTERNATIVES**

There are no known alternatives available to you other than not taking part in this study.

#### **CONFIDENTIALITY**

The records of this study will be kept private and will be protected to the fullest extent provided by law. In any sort of report, we might publish, we will not include any information that will make it possible to identify you. Research records will be stored securely, and only the researcher team will have access to the records. However, your records may be inspected by authorized University or other agents who will also keep the information confidential.

#### **USE OF YOUR INFORMATION**

Your information collected as part of the research will not be used or distributed for future research studies even if identifiers are removed.

<b>FIU IRB Approval:</b>	09/15/2022
<b>FIU IRB Expiration:</b>	09/15/2025
<b>FIU IRB Number:</b>	IRB-22-0432

#### **COMPENSATION & COSTS**

You will receive no payment for your participation. There are no costs to you for participating in this study.

#### **RIGHT TO DECLINE OR WITHDRAW**

Your participation in this study is voluntary. You are free to participate in the study or withdraw your consent at any time during the study. You will not lose any benefits if you decide not to participate or if you quit the study early. The investigator reserves the right to remove you without your consent at such time that he/she feels it is in the best interest.

#### **RESEARCHER CONTACT INFORMATION**

If you have any questions about the purpose, procedures, or any other issues relating to this research study you may contact Rebelee Christy Jeyasingh or [rjeya001@fiu.edu](mailto:rjeya001@fiu.edu)

#### **IRB CONTACT INFORMATION**

If you would like to talk with someone about your rights of being a subject in this research study or about ethical issues with this research study, you may contact the FIU Office of Research Integrity by phone at 305-348-2494 or by email at [ori@fiu.edu](mailto:ori@fiu.edu).

#### **PARTICIPANT AGREEMENT**

I have read the information in this consent form and agree to participate in this study. I have had a chance to ask any questions I have about this study, and they have been answered for me. I understand that I will be given a copy of this form for my records.

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name of Participant

\_\_\_\_\_  
Signature of Person Obtaining Consent

\_\_\_\_\_  
Date

Rebelee C Jeyasingh

## Appendix E



### Pre-Test and Post-Test

#### **The role of an educational intervention to improve adherence in using Anticoagulation in patients with Atrial fibrillation to reduce Stroke Risk: A Quality Improvement Project.**

##### **Introduction:**

This questionnaire is a part of a quality improvement project to address the importance of patient education to improve adherence to Anticoagulation to prevent Stroke in Atrial Fibrillation.

Answer to the best of your knowledge. Your response will help to identify knowledge base and improvement opportunities. The questions are designed to assess your understanding, knowledge, attitude, and awareness of the importance of Anticoagulation to prevent Stroke in atrial fibrillation patients.

- *Please do not write down your name or any additional personal info on this questionnaire*
- *Your responses are confidential and will not be shared*
- *Your involvement is voluntary and will not change your treatment plan*

**Demographic:**

Gender: Female\_\_\_\_ Male\_\_\_\_ Other\_\_\_\_ Wish not to disclose\_\_\_\_

Age: 20-30 yrs.\_\_\_\_ 30-40 yrs.\_\_\_\_ 40-50 yrs.\_\_\_\_ >50 yrs.\_\_\_\_

How long are you being treated for atrial fibrillation? \_\_\_\_<1 Year\_\_\_\_1-5 Year\_\_\_\_>5

Year

Race/Ethnicity: White\_\_\_\_ Black\_\_\_\_ Hispanic\_\_\_\_ Haitian\_\_\_\_ Asian\_\_\_\_

Other\_\_\_\_

**Knowledge of Atrial Fibrillation**

1. What is the name of the cardiac arrhythmia you are diagnosed with?

- a) Tachycardia
- b) Atrial Fibrillation
- c) Ventricular Tachycardia
- d) Atrial Tachycardia
- e) I don't know

2. What is Atrial Fibrillation?

- a) Irregular heartbeat
- b) Regular heartbeat
- c) Heart dysfunction
- d) Heart attack

3. What are we trying to prevent when using blood thinners while treating atrial fibrillation?

a) Symptoms associated with Atrial Fibrillation

b) Stroke

c) Heart Attack

d) Hypertension

4. Atrial fibrillation is the prevalent arrhythmia in clinical practice?

a) True

b) False

5. Atrial fibrillation significantly affects health-related quality of life?

a) Disagree

b) Agree

### **Knowledge of Treatment**

6. What is the given name of your blood thinning drug?

a) Eliquis

b) Pradaxa

c) Xarelto

d) Coumadin

e) Lovenox

f) I don't know

7. Do you know the difference between Warfarin and NOAC (Novel Oral Anticoagulants)?

a) Yes

b) No

8. Why are you on a blood thinning medication?

a) It significantly reduces the risk of Stroke

b) Prevent heart attacks

c) Control the heart rate

d) Use to lower Blood pressure

9. Patients with Atrial fibrillation can stop blood thinners when they no longer feel the symptoms?

a) Yes

b) No

10. Does blood thinners stop atrial fibrillation?

a) Yes

b) No

11. Have you been given enough time during clinical or hospital visits to discuss the importance of Anticoagulation?

a) Yes

b) No

12. Do you know in addition to the blood-thinning medications, there are additional therapies for Atrial fibrillation?

a) Yes

b) No

### **Educational Intervention on the importance of Anticoagulation**

13. Have your health care provider educated you on the importance of the role of Anticoagulation in Atrial Fibrillation?

a) Yes

b) No

14. Do you agree that minimal adherence to anticoagulation medicines can be associated with the worst outcome and a higher risk of Stroke?

a) Yes

b) No

15. When you miss a dose of your Anticoagulation, is it okay to double the next dose of Anticoagulation?

a) Yes

b) No

16. Is it acceptable to stop taking Anticoagulation once you feel well?

a) Disagree

b) Agree

17. While on Anticoagulation treatment for Atrial fibrillation, when you have a dental extraction, what will you do

a) I Cannot have the procedure while taking Anticoagulation

b) I should consult cardiology



c) I Can have the procedure done, and there is no need to tell my dentist

18. What is the most significant adverse effect of Anticoagulants?

a) Stroke

b) Bleeding

c) Nausea

19. Do you know what a Stroke is?

a) Yes

b) No

20. Have your doctor used the CHA<sub>2</sub>DS<sub>2</sub>-Vasc Score for Atrial Fibrillation stroke risk?

a) Yes

b) No

21. Did your healthcare provider talk about therapy in general about choices (together with medication and other treatment options), symptoms, and risk factors.

a) Yes

b) No