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A PRE AND POST SURVEY OF HOW TEACHING INTERVENTIONS OF ANTICOAGULANT/ANTIPLATELET MEDICATIONS AFFECT PATIENT OUTCOMES IN THE PRIMARY CARE SETTING

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A PRE AND POST SURVEY OF HOW TEACHING INTERVENTIONS OF ANTICOAGULANT/ANTIPLATELET MEDICATIONS AFFECT PATIENT OUTCOMES IN THE PRIMARY CARE SETTING

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An Abstract of the Scholarly Project by
Renee Roth

With the elderly population expanding in the United States, primary care providers are having to place more emphasis on managing multiple disease etiologies and medication modalities in the outpatient clinic setting. Patients and providers struggle to overcome educational communication barriers that facilitate proper medication adherence and monitoring. The specific aim of this project was to evaluate whether antiplatelet management education increased the patients' knowledge of medication understanding and possible adverse outcomes. Evaluation of antiplatelet knowledge was conducted in a rural health clinic in Southeast Kansas. The project utilized an individual pretest-posttest design to patients who received self-management and monitoring education in a Southeast Kansas rural primary care clinic. The population included in the survey were individuals ages 21-85 on antiplatelet medications that were current patients of the rural health clinic. A paired t-test was calculated on a sample of 22 education participants to determine whether there was a statistically significant difference between the pre-test and post-test scores before and after educational intervention.

Keywords: Anticoagulant, antiplatelet, medication adherence, medication monitoring.

TABLE OF CONTENTS

TABLES

FIGURES

FIGURE PAGE

Chapter I

Introduction

Both prescription anticoagulant and over-the-counter (OTC) medications have been used in the treatment and prevention of thromboembolism in at-risk patient populations for decades. Vinogradova et al. (2018) list the heart dysthymia atrial fibrillation as the "most common condition requiring anticoagulants" (p. 1). Warfarin has commonly been the anticoagulant medication of choice for the treatment of atrial fibrillation but medications such as apixaban and dabigatran have also been prescribed. In the United States, 1% of the general population has been diagnosed with atrial fibrillation, with an incidence rate of 9% in individuals 80 years old or greater (Abraham et al., 2015, p. 1).

However, this is not the only common condition requiring anticoagulant treatment that must be considered. Patients also have access to OTC medications such as aspirin, ibuprofen, and naproxen which can, and do, have detrimental effects on the GI system as well. Aspirin is one of the most commonly used medications in the United States that can be used to treat common ailments such as pain and fever (Baron et al., 2013, p. 1). It is common for individuals across the country to reach for these types of medications for acute treatment. Unfortunately, most people do not understand the harmful effects and risk they may be placing themselves in with the chronic use of aspirin and nonsteroidal

anti-inflammatory medications (NSAIDs). Adverse effects related to the gastrointestinal system can include upper gastrointestinal bleeds and lower gastrointestinal bleeds. According to Feagins and Weideman (2018), “the most common culprit lesions identified were gastroduodenal ulcers or erosions (20%), colonic diverticula (9%), occult malignancy (8%), and angioectasias (6%)” (p. 1675). According to this literature, the prevalence of upper gastrointestinal bleeds related to anticoagulant therapies is more than twice the risk of lower gastrointestinal bleeds. Aging populations are at a greater risk of disability due to gastrointestinal bleeds. In patients 75 and older, major gastrointestinal bleeds were found to be “disabling or fatal (62% vs 25% of patients younger than 75 years)” (Diener, 2017, p. 435). With an increasing number of elderly patients, this makes patient education and monitoring much more important for clinicians.

Problem Statement

Management and proper understanding of anticoagulant/antiplatelet medications and their use in the outpatient clinical setting is an under-addressed problem that has become costly for the healthcare system. There is substantial evidence to support adverse effects of improper monitoring and use of anticoagulants and antiplatelet medications; however, few studies address improved outcomes based on proper education and patient monitoring, especially related to gastrointestinal issues. By implementing an educational process in primary care offices, patients and health care providers can more diligently work as a team to understand and check their medication adverse effects. This educational program's purpose was to improve patient outcomes, decrease healthcare spending on emergent and urgent endoscopic procedures and increase pharmacology knowledge in patients.

Significance

One of the most significant burdens of acute gastrointestinal bleeding on both the healthcare system and patients is the treatment cost both during the event and following to prevent further gastrointestinal events from happening. Ramagopalan et al. (2019) provide a cost analysis of gastrointestinal bleeding from the year of the incidence clear to three years post-bleed. They provide an extensive amount of quantitative data in a chart breakdown of primary care visit costs, inpatient care, prescriptions, and outpatient hospital care. Based upon their findings, the average cost attributed to gastrointestinal bleeding in the year of the event was €3,989 ($4,710) and the average cost was €1,816 ($2,144) in the year following the bleed (p. 367). They also found a significant amount of healthcare costs associated with GI bleeds up to two years following the initial bleed (p. 367). This information was helpful for implementation of this educational plan to patients as it proved the costs evaluation gastrointestinal bleeds can have.

Patient age also remains a factor in the treatment and prophylactic prescribing of anticoagulant and antiplatelet therapies that providers should monitor and reassess throughout. With an increase in life expectancy and number of geriatric patients, providers should begin to focus on the aging patient population and how pharmacological therapies may hinder more than help these individuals. According to Diener (2017), patients aged 75 years old and above were at a higher risk of "major bleeding and fatal bleeding" (p. 435). This project looks at finding the benefits of dual therapy treatment and monotherapy for patients with atrial fibrillation who qualified for antiplatelet and anticoagulant therapy. It was noted that patients over the age of 75 years old with atrial fibrillation were at a similar risk for major bleeding with aspirin therapy as they were for

warfarin (p. 436). Finally, Diener (2017) concluded that the benefit-risk association with long term anticoagulant therapies needs to be evaluated by an advanced provider every 3-5 years to avoid adverse consequences (p. 436).

Specific Aims/Purpose

The specific aims of this project included the following:

(1) Explore patient understanding of what antiplatelet medication they are taking and knowledge level of proper use before and after the teaching intervention.

(2) Identify how much knowledge patients have of common and life-threatening reactions to their medications and when they should report to the emergency room for treatment.

(3) Improve patient involvement in their own health care decision making.

The statement of purpose for this project was as follows:

To increase patient knowledge regarding their understanding of their antiplatelet medication regimen in a clinical setting upon initiation of therapy or upon follow-up in the clinical setting. By increasing patient knowledge and involving them in their care, patients will experience an increase in therapeutic outcomes and a decrease in adverse effects and consequences related to their gastrointestinal tract.

Theoretical Framework

The theoretical framework that most closely related to this project is the theory of symptom management. This theory looks at the relationship between symptom assessment and intervention, and it guides nursing practice by helping to suggest questions and hypotheses for research (Smith & Liehr, 2014, p. 141). The three main concepts of this theory are symptom experience, symptom management strategies, and

symptom status outcomes. This was an excellent theory for a project such as this because all aspects of the theory are interrelated and have a direct influence upon each other as demonstrated in the figure below.

Figure 1

Symptom Management Theory

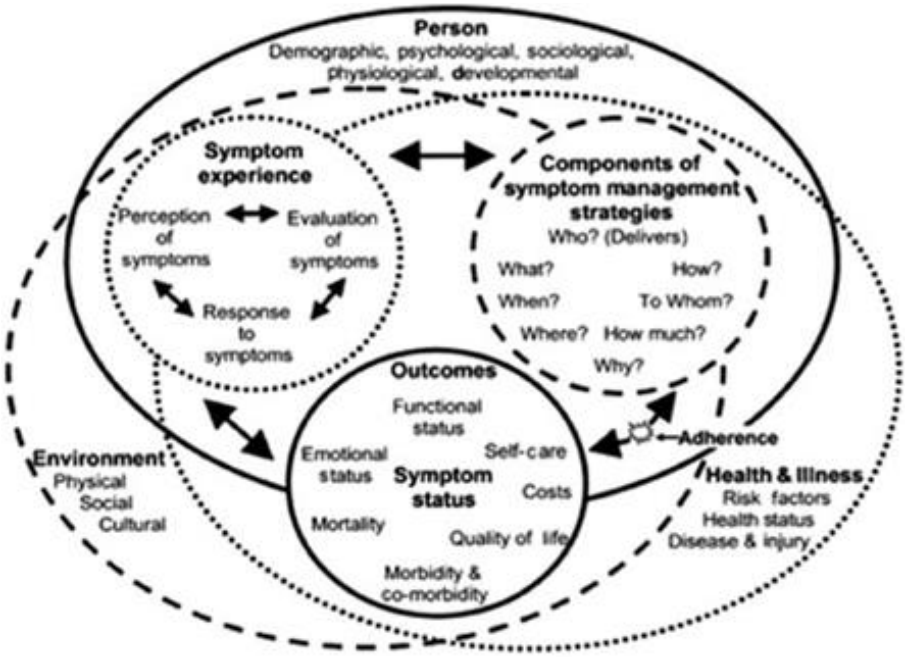

Figure 1: Symptom Management Theory

Note: Symptom Management Theory. Reprinted from *Middle Range Theories for Nursing* (p. 143), by J.S. Smith & P.R. Liehr, 2014, Springer Publishing Company. Copyright 2014 Springer Publishing Company, LLC.

With this project, symptom outcomes were directly influenced by the patient's symptom experience and symptom management. For example, the patient would be more likely to experience better outcomes and less adverse effects if they have good symptom

experience and good symptom management. Symptom experience can include their understanding and response to the symptoms they are having. Symptom management includes how the intervention is done, along with who, what, when, where, and how questions.

Key variables of this research project included common antiplatelet medications and education intervention. The research studies included information on aspirin, a common OTC antiplatelet medication identified to have detrimental effects on the GI system. The educational intervention throughout the project included both verbal and visual teaching models.

Research Questions

1. Do patients who have been educated on their health diagnosis have an increased knowledge of how to recognize adverse events related to their health concerns?

2. Are patients correctly able to identify what their antiplatelet therapy medication is?

3. Are patients able to correctly identify the frequency with which they should be taking their antiplatelet medication?

4. Are patients able to recognize common adverse effects of antiplatelet medications?

5. Are patients able to recognize emergency situations from their antiplatelet medications that they should seek emergency care for?

6. Can patients recognize which over-the-counter medications they should not take with their antiplatelet therapy?

7. Can patients recognize what they are supposed to do if they miss a dose of their antiplatelet medication therapy?

8. Are patients able to identify what disease process antiplatelet therapy helps prevent them from having?

Definition of Key Terms/Variables

These definitions were used throughout the project. Key terms for this project were upper gastrointestinal bleed, lower gastrointestinal bleed, ligament of Treitz, anticoagulant, antiplatelet, primary care provider, rapport, and communication. The following definitions were used to avoid misunderstanding throughout the project.

Variables

Anticoagulant: "An agent that is used to prevent the formation of blood clots. Anticoagulants have various uses. Some are used for the prevention or treatment of disorders characterized by abnormal blood clots and emboli." The different classes of drugs include vitamin K antagonists, low molecular weight heparins, direct thrombin inhibitors, and factor Xa inhibitors. (Shiel, 2017).

Antiplatelet: "medicines that stop cells in the blood (platelets) from sticking together and forming a clot" (Heart Foundation, 2021).

Aspirin: “A drug that reduces pain, fever, inflammation, and blood clotting. Aspirin belongs to the family of drugs called nonsteroidal anti-inflammatory agents. It is also being studied in cancer prevention.” (National Cancer Institute, 2021).

Ligament of Treitz: "a band of smooth muscle extending from the junction of the duodenum and jejunum to the left crus of the diaphragm and functioning as a suspensory ligament" (Merriam-Webster, n.d.).

Lower Gastrointestinal Bleed: "The ligament of Treitz is commonly used as the point to differentiate the two... distal bleeds are lower GI bleeds" (Amin & Antunes, 2020, p. 1).

Primary Care Provider: "A physician (M.D. – Medical Doctor or D.O. – Doctor of Osteopathic Medicine), nurse practitioner, clinical nurse specialist or physician assistant, as allowed under state law, who provides, coordinates, or helps a patient access a range of health care services" (*Healthcare.gov*, 2021).

Upper Gastrointestinal Bleed: "The ligament of Treitz is commonly used as the point to differentiate the two. Bleeds proximal to the ligament are upper GI bleeds" (Amin & Antunes, 2020, p. 1).

Terms

Communication: "a process by which information is exchanged between individuals through a common system of symbols, signs, or behavior" (Merriam-Webster, n.d.).

Rapport: "a friendly, harmonious relationship especially: a relationship characterized by agreement, mutual understanding, or empathy that makes communication possible or easy" (Merriam-Webster, n.d.).

Logic Model

Inputs

For this project, several different resources were utilized. One of the biggest inputs and assets to the project included the committee appointed by Pittsburg State University IRBSON. Besides the scholarly committee, other individuals included project participants in Southeast Kansas and/or the Southwest Missouri region, staff at the

participating rural Southeast Kansas clinic, and advanced practice providers in primary care. This project was able to engage in a partnership with different clinics to gather information for the project through patient interviews and the EMR system. This project required no funding and relied solely on time and participation with a clinician and clinic system as applicable to collect subjective and objective data.

Activities

For this project, research was based mainly on pre-test and post-test survey outcomes and quantitative data collection. There was an internal chart audit to find patients in the primary care setting who qualified for participation in the research project. There were identical pre-test and post-test surveys for participants to identify their understanding of disease etiology and patient monitoring. Since the project was based on the prevention of gastrointestinal bleeding events from antiplatelet therapies, there were evaluations of disease knowledge before and after education had been provided to the patient. The most important activity of this project was providing the actual teaching intervention to the patients. A video recorded educational presentation was provided to the patients via secure email link along with their pre-test and post-test surveys. Follow-up clarification was made available to provide supplementary teaching if there were misunderstandings or discrepancies at the participant's request.

Outputs

Since the project relied on quantitative data collection, it was predicted that between 20-30 participants would be included in the research project. There would be a lot of time invested in internal chart auditing to find qualifying participants for the research project and making individualized phone calls to recruit those interested. The

participants would participate in one recruiting phone call with the primary investigator and be sent two separate emails to complete the pre-test and post-test surveys. Participants may also email the primary investigator or call the rural health primary care clinic if they seek further clarification on teaching interventions or research project outcomes.

Results

The intended outcome(s) of this project were directed at avoiding gastrointestinal bleeding events by educating them about the use of their medications. The short-term outcome of the teaching intervention involved getting patients interested in their health care diagnosis and thinking about their role in care. The intermediate outcomes included the patient asking the clinician about their medication and reporting the symptoms they have been monitoring for. Finally, the ultimate long-term goal of this project is to reduce morbidity and mortality by preventing patients from having gastrointestinal bleeding.

Summary

Different incidences of gastrointestinal bleeding related to both antiplatelet and anticoagulant medications have been identified in previous research findings. Individuals on these medication therapies, especially elderly patients, are at an increased risk for these adverse events. It is not entirely clear what barriers in communication exist between the provider and patients that have made patient understanding of medication monitoring ineffective in the past. The aim of this project was to identify and educate patients on their medication therapies and health history. By doing so, this project hoped to decrease the strain of healthcare costs and hospitalizations associated with acute and chronic gastrointestinal bleeding. Hopefully, symptom management and intervention can be

improved between the provider and their patient to increase the quality and sustainability of life while on anticoagulant therapies.

Chapter II

Integrated Review of Literature

Relevant studies and descriptive literature were all identified by searching different databases, which include PubMed, UpToDate, Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Cochrane Database of Systematic Reviews. Search criteria included published literature between the dates of 1995 and 2021. Most references are cited within the past five years, but sources throughout the paper that provide data older than five years will be considered more relevant than a current source. Literature pieces used for the literature review are a combination of both quantitative and qualitative peer-reviewed articles which include case control, meta-analysis, and retrospective studies. Different keywords were used when searching for relevant literature within the previously listed databases including gastrointestinal bleeding, anticoagulants, antiplatelets, aspirin, warfarin, direct acting oral anticoagulants, adverse bleeding events, adverse events, upper gastrointestinal bleeding, lower gastrointestinal bleeding, endoscopy, heparin, lovenox, coumadin, proton-pump inhibitors and *Helicobacter pylori*.

A total of 14 references including clinical practice guidelines from *The American Journal of Gastroenterology* were included in this integrative literature review. The review was divided into four major topics(a) the use of warfarin versus direct acting oral

anticoagulants, (b) the effect of aspirin on gastrointestinal bleeding, (c) impact of anticoagulants on the aging population, and (d) educational initiatives related to anticoagulant therapy. The first topic compared bleeding outcomes and rates from different studies in patients on warfarin therapy versus DOACs. The second topic identified bleeding risks and rates while on aspirin therapy. The third topic identified populations at risk and preventative factors that advanced practice providers can implement to place their patients at less risk for a bleeding event. The final topic reviewed educational initiatives trialed by different organizations and pharmacies to teach patients on antiplatelet and anticoagulant therapies for monitoring and avoiding adverse outcomes.

The Use of Warfarin Versus Direct Oral Anticoagulants

Part of the literature findings included comparative information on the use of warfarin anticoagulants versus direct oral anticoagulants (DOACs) which included dabigatran, rivaroxaban and apixaban. The literature findings for which of these medication therapies was associated with a decreased risk were controversial. There were a variety of implications that the authors provided that theorize the difference in these outcomes.

In two research articles by Nagata et al. (2017) and Vinogradova et al. (2018), warfarin was found to have a higher risk of gastrointestinal bleeding than its DOAC counterparts. In one research study, apixaban was found to be the safest drug out of them all with a decreased incidence of both intercranial and gastrointestinal bleeding (Vinogradova et al., 2018, p. 1). Nagata et al. (2017) found that their study participants had a decreased risk of gastrointestinal bleeding with the use of DOACs as anticoagulant

therapy before endoscopic procedures compared to patients on long-term warfarin therapy with heparin bridging pre-procedure (p.1805). Nagata et al. (2017) hypothesize their research findings have a connection with the half-life of warfarin in relation to the procedural time. It is often difficult for the physician to decide the optimal time for endoscopic procedures due to the half-life of warfarin being "40 hours with an average duration of anticoagulant activity ranging from 2 to 5 days" (p. 1807). Vinogradova et al. concluded that DOACs were considered a safe alternative to warfarin based on their general population study in the primary care clinic area (2018, p. 15).

Controversially, there were two research articles that found the risk of gastrointestinal bleeds related to the use of DOACs compared to warfarin remarkably similar and even higher. In a research article by Feagins & Weideman (2018), the rate of GI bleeding was higher in patients on treatment with dabigatran and rivaroxaban than those being treated with heparin (p. 1675). The authors also claim in their meta-analysis that dabigatran had a higher incidence of life-threatening GI bleeding than warfarin (p. 1676). In a retrospective study by Abraham et al. (2015), DOACs were found to have a comparative rate of gastrointestinal bleeding in those among patients on warfarin (p. 6). The incidence rates provided through the study demonstrated a 2.29% incidence of GI bleed with patients on dabigatran and a 2.87% incidence in patients treated with warfarin (Abraham et al., 2015, p. 1). However, both articles cited a weakness in their research findings that may have contributed to the outcomes. Abraham et al. (2015) stated that the patient population receiving DOAC anticoagulants may differ from those that were enrolled in their drug trial and that there has been minimal "real world assessment of the safety of novel anticoagulants" (p. 6). Feagins and Weideman (2018) note that ""real

world" studies also found that the rates of GI bleeding were lower for patients treated with DOAC than with warfarin" (p. 1676).

The Effect of Aspirin Related to Gastrointestinal Bleeds

Prescription anticoagulants were not the only medications that presented a risk to patients and predisposed them to GI bleeds. OTC medications such as aspirin, have been known to "cause adverse gastrointestinal events including bleeding and perforation" (Slattery et al., 1995, p. 509). The literature supported that aspirin increased the likelihood of minor gastrointestinal bleeding, but patients are not at an increased risk of fatality from taking low dose aspirin. One case control study done to research aspirin evaluated the difference in effect of low dose (81mg) aspirin in upper gastrointestinal bleeds (UGIB) and lower gastrointestinal bleeds (LGIB). According to Rodriguez et al. (2019) "low dose aspirin was associated with a 60% increased risk of both non-fatal UGIB and non-fatal LGIB, but no significantly increased risk of fatal cases of UGIB and LGIB" (p. 190). Another meta-analysis evaluated the risk of serious and minor adverse gastrointestinal issues in patients on short term aspirin therapy. Baron et al. (2013) reported that serious adverse events were not noted in the short-term use of aspirin but that a higher risk of minor gastrointestinal complaints existed (p. 15). Based upon these studies, aspirin can be a safer alternative to other antiplatelet therapies in applicable patients.

Impact of Anticoagulants on the Aging Population

Especially in the primary care setting, advanced practice providers are looking at treating a higher rate of elderly patients as the average age of living continues to increase with the oldest-old age group (85+) being the fastest growing age group in the United

States. In a study by Diener (2017), it was noted that patients over the age of 75 years old with atrial fibrillation were at a similar risk for major bleeding with aspirin therapy as they were for warfarin (p. 436). It was also concluded that the benefit-risk association with long term anticoagulant therapies needs to be evaluated by an advanced provider every 3-5 years to avoid adverse consequences and that there is an increased need for patients 75+ to be on proton pump inhibitors as "PPIs are underused in patients on antiplatelet therapy" (Diener, 2017, p. 436). It is important for individuals both with and without a history of peptic or duodenal ulcer disease to be on PPI therapy if on any anticoagulant or antiplatelet therapy.

Many older individuals also have multiple different disease etiologies that they are being treated for at the same time which can lead to polypharmacy and decreased drug monitoring and an increased rate of adverse events and particularly gastrointestinal bleeding. In an article by Pezzulo et al. (2014) patients were four times as likely to bleed from the upper gastrointestinal tract as they were from the lower gastrointestinal tract, and UGIB were a major cause of death in individuals with multiple morbidities (p. 19). Another study believed that the exclusion of patients with peptic ulcer disease would have reduced the incidence of upper gastrointestinal bleeding and altered the results of their study (Slattery, 1995, p. 511). There was a large correlation between peptic ulcer disease and patients who chronically used NSAID medications and tested positive for the bacteria *Helicobacter* pylori. Peptic ulcer disease was estimated to be the cause of 40 to 50% of UBIB (Pezzulo, 2014, p. 21). Most of the literature supported that patients on different types of therapies such as aspirin, warfarin, and DOAC anticoagulants should have been evaluated and started on a proton pump inhibitor such as omeprazole or

lansoprazole before and throughout therapy. In the research article by Maruyama et al. (2018), most cases of upper gastrointestinal bleed "developed from peptic ulcer diseases in patients not taking PPI concomitantly," which identifies a great area for teaching and intervention in the primary care setting (p. 4).

Educational Initiatives Related to Anticoagulant Therapy

The design behind this project was based around educational interventions and communication between providers and patients. The trust that patients have in their providers assumed that their physician is both honest and competent in their work (Fiscella, 2004, p. 1049). According to Hawes (2018) in order for patient and provider to engage in effective anticoagulation education, face-to-face communication should take place between a trained professional who verbalizes risks involved, precautions the patient should take, and need regular INR monitoring (p. 2). Asking open-ended questions and allowing the patient to guide the conversation in the direction they have questions or concerns in allows for their concerns to be answered by the clinician. Many factors impacted the relationship and trust that a patient had with their provider besides the communication level. For example, provider age, length of provider-patient relationship, practice specialty, visit length, and time spent exploring patient illness all positively influence patient trust (Fiscella, 2004, p. 1051). There were some studies that were suggestive that patients were more satisfied with visits with female advanced practice providers as they allowed for lengthier visits and more participatory decision making than some of their male counterparts (Fiscella, 2004, p. 1054). Regarding specific teaching interventions regarding anticoagulant and antiplatelet therapies, many of these medications are considered high alert medications. One study by Hawes (2018)

demonstrated that an anticoagulation management service (AMS) conducted by pharmacists led to increased patient compliance and significantly better INR ratios compared to patients who received normal discharge instructions from both inpatient and outpatient care (2018, p. 1). Once patients started some of these new medications, there were multiple concerns about their therapy and interactions that interfered with their medication regime that they must be taught to know the signs of. Patients who are on coumadin should make sure to eat a consistent amount of vitamin K in their diet as changing the amount you eat can alter the levels of circulating coumadin in your system and cause complications (University of Michigan Health, 2020). According to Hawes (2018), the following information should be provided in written format to patients upon discharge from inpatient hospitalization or when beginning a new therapy from an outpatient clinic setting:

- The drug's brand, generic name, and class.
- The drug's purpose and how it forms a thrombus.
- The drug's anticipated onset.
- The drug's route, dosage form, dose, frequency, and duration of treatment.
- Directions for preparing and using the drug.
- Management for missed doses.
- Precautions while on this drug and measures to decrease bleeding risk and trauma.
- Common side effects that may occur along w/ signs and symptoms, interventions for those side effects, reportable events, adverse events, and emergency events.

- Potential drug-drug interactions, drug-herb interactions, drug-food interactions, and drug-disease interactions Need to inform the provider if you become pregnant.
- Need to inform the provider if you have a procedure or hospitalization.
- Need to inform healthcare providers of use.
- Need to inform all healthcare providers of medication changes.
- Need to wear a medical identification device/bracelet.
- Need to consult healthcare providers before starting new medications.
- Importance of taking medication exactly as prescribed.
- Proper storage and disposal of medication.
- Any other information that is patient specific and helpful. (pp. 4-5)

In a study by Makowski et al. (2013), 1694 patients were provided surveys regarding their pharmacist-directed anticoagulation service (PDAS). During their inpatient hospitalization, patients received education from a pharmacist regarding their new medications at bedside. Patients were required to respond to one survey for their participation to be recorded. Survey items were scored on a 5-point Likert-type, items and 1 forced choice "yes or no" question to score responses (Makowski et al., 2013, p. 806). In their post discharge survey, response and satisfaction rates increased in all areas. According to the authors, "amount of information increased by 37.2%, clarity of information increased by 35.2%, answer quality increased by 29.5%, and satisfaction increased by 10.6%" (Makowski et al., 2013, p. 807). However, the authors did identify that one barrier that existed was that many patients either did not remember or were not

aware in their survey response that they had talked to a pharmacist about their medication education before discharge.

The American College of Gastroenterology Clinical Guidelines: Upper Gastrointestinal and Ulcer Bleeding

According to Laine et al. (2021) gastrointestinal bleeding is the most common GI diagnosis requiring hospitalization in the United States resulting in over 500,000 admissions annually (p. 899). The research team for this project was composed of physicians throughout the United States and Canada who specialize in gastroenterology, digestive diseases, and digestive health research. They used systematic review of previous literature and predefined questions to develop clinical practice guideline recommendations in the clinical management of gastrointestinal and ulcer bleeding events and management. Their questions were focused using the PICO system which includes population the questions wish to address, interventions being addressed, the comparator the intervention is being compared to and the outcome of interest (Laine et al., 2020, p. 899). Based on the research, the team formed 16 clinical practice guidelines for clinicians to follow in practice for the management of UGIB, some of which will be outlined in this literature summary and others listed in Table 1.

The first CPG was the identification of risk stratification to the patient upon presentation to the emergency department. Clinicians calculate a Glasgow-Blatchford score that includes factors such as blood urea nitrogen, hemoglobin, systolic blood pressure, heart rate, bloody stool presence, syncope, and previous health history of either heart disease or cardiac failure. Patients who had a score equal to 0 or 1 were perceived as very low risk (p. 901) and were often managed as outpatients rather than being

admitted to the hospital. However, patients who scored greater than a 1 on the score chart should have had follow-up testing done while at the hospital before discharge to avoid any adverse events happening and any further harm coming to them.

The second CPG centered around the use of red blood cell (RBC) transfusion in patients whose hemoglobin falls below 7 g/dL. RBC transfusion policies have been seen in some clinical studies to reduce further bleeding and death in cases where the patient in suffering from active UGIB (p. 903). The authors provided that this statement is a conditional recommendation as low-quality evidence existed to support the statement.

Timing for undergoing endoscopic procedure upon admission was also seen in CPG five as having impacted patient outcomes. According to the researchers, benefits of early endoscopic procedures included "more accurate prognosis to guide management and earlier provision of endoscopic or medical therapy based on endoscopic findings" (Laine et al., 2021, p. 905). In patients with high-risk disease etiologies such as cirrhosis or hemodynamic instability, endoscopic procedure within 12 hours was necessary. However, the research team suggested for most individuals admitted under observation for UGIB whether they are at an elevated risk or minimal risk for rebleed, should have an upper endoscopy procedure performed within 24 hours of admittance as there has been evidence of potential economic benefit in decreased stay length (p. 906).

CPG recommendation thirteen involved the treatment of ulcerations and bleeding post-endoscopic procedure. This recommendation was supported by moderate-to-high-quality evidence within the medical research community. The authors recommended giving high dose proton pump inhibitor therapy post endoscopically for three days either continuously or intermittently after successful hemolytic therapy for the treatment of

bleeding ulcers (p. 911). For continuous PPI therapy researchers recommended an initial 80 mg bolus followed by continuous IV dose of at least 8mg/hour (p. 912). The optimal dosage for intermittent therapy is controversial but the CPG suggested an initial 80mg either IV or PO bolus followed by 40mg IV or PO boluses 2-4 times a day (p. 912).

Table 1.

List of Guideline Statements from the American Journal of Gastroenterology

Table 1. List of guideline statements with strength of recommendation and quality of evidence
Risk stratification
1. We suggest that patients presenting to the emergency department with upper gastrointestinal bleeding (UGIB) who are classified as very low risk, defined as a risk assessment score with ≤1% false negative rate for the outcome of hospital-based intervention or death (e.g., Glasgow-Blatchford score = 0–1), be discharged with outpatient follow-up rather than admitted to hospital (conditional recommendation, very-low-quality evidence).
Red blood cell transfusion
2. We suggest a restrictive policy of red blood cell transfusion with a threshold for transfusion at a hemoglobin of 7 g/dL for patients with UGIB (conditional recommendation, low-quality evidence).
Pre-endoscopic medical therapy
Prokinetic therapy with erythromycin
3. We suggest an infusion of erythromycin before endoscopy in patients with UGIB (conditional recommendation, very-low-quality evidence).
Proton pump inhibitor (PPI) therapy
4. We could not reach a recommendation for or against pre-endoscopic PPI therapy for patients with UGIB.
Endoscopy for UGIB
Timing of endoscopy
5. We suggest that patients admitted to or under observation in hospital for UGIB undergo endoscopy within 24 hr of presentation (conditional recommendation, very-low-quality evidence).
Need for endoscopic hemostatic therapy for ulcers with active bleeding or nonbleeding visible cessels
6. We recommend endoscopic therapy in patients with UGIB due to ulcers with active spurting, active oozing, and nonbleeding visible vessels (strong recommendation, moderate-quality evidence).
Need for endoscopic hemostatic therapy for ulcers with adherent clot
7. We could not reach a recommendation for or against endoscopic therapy in patients with UGIB due to ulcers with adherent clot resistant to vigorous irrigation.
Choice of endoscopic hemostatic therapy for bleeding ulcers
8. We recommend endoscopic hemostatic therapy with bipolar electrocoagulation, heater probe, or injection of absolute ethanol for patients with UGIB due to ulcers (strong recommendation, moderate-quality evidence).
9. We suggest endoscopic hemostatic therapy with clips, argon plasma coagulation, or soft monopolar electrocoagulation for patients with UGIB due to ulcers (conditional recommendation, very-low- to low-quality evidence).
10. We recommend that epinephrine injection not be used alone for patients with UGIB due to ulcers but rather in combination with another hemostatic modality (strong recommendation, very-low- to moderate-quality evidence).
11. We suggest endoscopic hemostatic therapy with hemostatic powder spray TC-325 for patients with actively bleeding ulcers (conditional recommendation, very-low-quality evidence).
12. We suggest over-the-scope clips as a hemostatic therapy for patients who develop recurrent bleeding due to ulcers after previous successful endoscopic hemostasis (conditional recommendation, low-quality evidence).
Antisecretory therapy after endoscopic hemostatic therapy for bleeding ulcers
13. We recommend high-dose PPI therapy given continuously or intermittently for 3 d after successful endoscopic hemostatic therapy of a bleeding ulcer (strong recommendation, moderate- to high-quality evidence).
14. We suggest that high-risk patients with UGIB due to ulcers who received endoscopic hemostatic therapy followed by short-term high-dose PPI therapy in hospital continue on twice-daily PPI therapy until 2 wk after index endoscopy (conditional recommendation, low-quality evidence).
Recurrent ulcer bleeding after successful endoscopic hemostatic therapy
15. We suggest that patients with recurrent bleeding after endoscopic therapy for a bleeding ulcer undergo repeat endoscopy and endoscopic therapy rather than undergo surgery or transcatheter arterial embolization (conditional recommendation, low-quality evidence for comparison with surgery, very-low-quality evidence for comparison with transcatheter arterial embolization)
Failure of endoscopic hemostatic therapy for bleeding ulcers
16. We suggest patients with bleeding ulcers who have failed endoscopic therapy next be treated with transcatheter arterial embolization (conditional recommendation, very-low-quality evidence).

Source: Pg. 900, Laine, L., Barkun, A.N., Saltzman, J.R., Martel, M., Leontiadis, G.I. (2021). Clinical Guideline: Upper Gastrointestinal and Ulcer Bleeding. *The American Journal of Gastroenterology, 116*(5), 899-917.

Strengths

Overall, the literature provided a correlation with gastrointestinal bleeds and the concurrent use of warfarin, DOACs, and aspirin in patients. It provided a basis initiating the use of proton pump inhibitor medications with any antiplatelet or anticoagulant therapies to prevent the development of peptic ulcer disease in patients. The research done has helped identify some of the adverse consequences that the patients were educated upon when the project pre-test and post-test were implemented. The clinical practice guidelines provided guidance for management of acute UGIB in an inpatient hospitalization setting which included PPI therapy post-endoscopic procedure. Although the project's purpose was to prevent these events from occurring in patients, knowing the emergent interventions is also helpful clinical information for bedside teaching.

Weaknesses

One of the major weaknesses in gathering data for this project was locating quality qualitative data regarding the impact of anticoagulant medications on the gastrointestinal system. A large amount of quantitative data is available about both UGIBs, LGIBs and medications but it has been much more difficult so far to identify barriers that the patients experience and their perception of the risks and consequences. There also appear to be mixed reviews about whether warfarin or DOAC therapies are safer for the patient and which therapy has a decreased risk of bleeding events. Providers

need to do an in-depth review of patient commitment to monitoring, diet and lifestyle changes to determine which medication therapies may be most beneficial to them.

Summary

Many of the risks and incidences of gastrointestinal bleeding have been identified and summarized in the findings from these research pieces. The selected studies have identified certain populations at risk, as well as conditions such as peptic ulcer disease and the presence of *Helicobacter pylori* as a predisposing condition to gastrointestinal bleeding. Some barriers and teaching implementation strategies regarding effective communication between the provider and patients have been identified, as well as a summarized list provided of topics to review with patients before beginning therapy.

Chapter III

Methodology

The purpose of this project was to provide interventional teaching to patients on the specific selected antiplatelet therapy aspirin, who are at a predisposed risk for the development of adverse bleeding events which included both upper and lower gastrointestinal bleeding. Common conditions that required treatment by anticoagulant and antiplatelet therapies included but were not limited to, atrial fibrillation, history of myocardial infarction, deep vein thrombosis, pulmonary embolism, history of stroke or transient ischemic attack, and artificial heart valves. Consequences of these bleeding events included bruising, anemia, hypotension, organ failure, hypovolemic shock, and death. The target population for this project included adults over 21 years of age. The focus of this research was to provide oral and written education to participants that assisted in the identification of symptoms of adverse bleeding events related to anticoagulant and antiplatelet therapies. This chapter will discuss the methodology implemented to perform this project.

Project Design

For this project, a quantitative multiple choice study design was used to analyze patients' knowledge of their aspirin medication treatment plans. A retrospective chart audit was done to identify patients who may qualify for the project based on their current

medications and health history. Data was collected and recorded using a multiple-choice scoring system on a quantitative level.

Sample

Target Population

Participants were selected from the chart auditing system available at a family practice clinic in rural Southeast Kansas. Sample participants' information was reviewed within the rural clinic's charting system that has already been collected on them. To be chosen for the project, participants at a minimum were current patients of the clinical practice that are regularly seen at the Southeast Kansas office, are current on their yearly visits, overall compliant with their treatment plan according to the primary care provider at that location and prescribed the antiplatelet therapy of aspirin for either an acute or chronic condition. For this project and resource limitation, convenience sampling was used and the population of participants on selected antiplatelet therapy of aspirin in Southeast Kansas was used. The goal of this project was based on the population size of patients seen at the Southeast Kansas clinic who are on aspirin therapy. The goal was to have a sample size of 20-30 participants.

Inclusion & Exclusion Criteria

Participants were included in this project if they are between 21-85 years old, had a current prescription from their primary care provider for anticoagulant or antiplatelet treatment, and had either a chronic or acute condition that requires the previously specified treatment. Individuals who were non-English speaking, had developmental delays, were pregnant, were younger than 21 years old, were older than 85 years old, or

were unable to independently manage their own healthcare and medications were excluded from the research project.

Protection of Human Subjects

All interactions with subjects remained anonymous and the project was done via technology that included telephone and computer services. Pre-test and post-test questionnaires completed by Qualtrics remained at the rural health clinic facility on a locked computer accessible by only the researcher. Telephone encounters to allocate interested participants and shared Qualtrics survey access was done using a secured telephone system through the family practice clinic in Southeast Kansas. Data collection only occurred after proper Pittsburg State University institutional review board (IRB) approval, the Irene Ransom Bradley School of Nursing approval, and Graduate Office approval was given. The patient's privacy was protected as the data was collected and compared anonymously after participants completed the pre-test, teaching intervention, and post-test studies online.

Data was gathered, and responses divided into a spreadsheet comparing pre-test and post-test scores. According to federal and institutional review board guidelines, data will be stored in a secure location for three years after project completion. Electronic data will be stored on a password protected computer of the project advisor Dr. Tracy Stahl then erased after three years. Other committee members, including Dr. Amanda Alonzo and Dr. Gregory Belcher will also have access to electronic project data. Records and charting systems used from patient access were not used as a source of data outside of the clinical and research setting. There were no techniques used throughout the project that would cause harm or harassment to the participants. The project complied with human

subject research exemption criteria established by Pittsburg State University and ethical guidelines and confidentiality processes maintained by the family practice clinic in Southeast Kansas. There was a signed contract between Pittsburg State University Institutional Review Board and the rural health clinic before project work began.

Instruments

The project focused on antiplatelet therapy of aspirin that participants were prescribed and adhered to therapy through the clinic. The chosen method of data collection yielded information by comparing the difference in pre-test and post-test scores after receiving pre-recorded computerized education using quantifiable multiple-choice answers. Questions for the survey were pulled and altered from the Knowledge of Direct Oral Anticoagulants (KODOA)-test. The KODOA test is a fifteen-question test that examined the participant's knowledge regarding certain things about their anticoagulant medication. The authors of the KODOA describe it as a test that is "brief, valid, and reliable knowledge self-assessment questionnaire that may be used in clinical trials to investigate associations between knowledge increase and patient-related outcome" (Metaxas et al., 2018). For this project's purpose, the DNP student amended the KODOA test questions to facilitate the project's purpose, which was to provide more teaching regarding adverse events and gastrointestinal bleeding than overdose and drug-drug interaction. The questionnaires were used to assess the patients' pre-educational understanding of their medication and symptom monitoring and assess whether the patient understood why they were on these prescribed medications.

The questionnaire was developed using questions from the Knowledge of Direct Oral Anticoagulants (KODOA)-test, gastrointestinal symptoms, and gastrointestinal

reaction prevention. The questionnaire contained 15 questions regarding the previous content. The participants selected the most appropriate of the multiple-choice answers that they believed was the correct answer. Participants needed internet access via computer or cellphone to complete all aspects of the project. If participants did not have computer access from their home or somewhere in the community, they may have completed the pre-test, educational attachment, and post-test portion using a computer and internet access at the family practice clinic in Southeast Kansas. Participants may have altered their responses to the survey until electronic submission via the Qualtrics survey system was done. After that, participants could no longer amend or alter their responses, and submissions were final.

After the pre-test questionnaire was completed, participants were instructed to watch a linked, pre-recorded PowerPoint presentation containing educational information that discussed different educational highlights obtained from The National Heart Foundation of New Zealand (2022) entitled *Antiplatelet agents*. Participants were provided an electronic link to the PowerPoint, and it could be accessed during the post-test electronic survey if participants wished to. Once the pre-recorded PowerPoint had been viewed, participants completed an identical multiple choice scored post-test questionnaire. The completed pre- and post-education surveys were analyzed to evaluate the relationship between patient knowledge and confidence in anticoagulant/antiplatelet management before and after teaching intervention.

Procedure

Statement of Mutual Agreement with Cooperating Agency

Both collaboration and cooperation from multiple parties were necessary for both the design and completion of this research project. Contact was made with the advanced practice provider at the family practice clinic in Southeast Kansas pertaining to project details and obtaining permission for using the clinical location's online EMR database for retrospective research purposes. Other aspects of the clinic were utilized in the project such as the office telephone and computer systems for distributing and collecting survey data and using the location for teaching interventions. No patient specific information was collected for this project and all responses remained anonymous.

Timeline of Project Phases

For this project, the goal for collection of data was to be done within an eight-week period. One week spent at the family practice clinic doing chart auditing to find perspectives of individuals who may qualify for the project based on their background information. After qualified participants were identified, another two weeks were spent contacting these community members via telephone to ask about their interest in participating in the project. If participants wished to participate, they provided the researcher with a valid email and telephone number to be contacted regarding survey access. If the individual wanted to participate but did not have appropriate computer or internet access, they were scheduled to complete the surveys and teaching intervention using the computer resources at the family practice clinic in Southeast KS.

Once all members were scheduled or provided an email stating they had availability to complete the survey at home, pre-test and post-test email began to be

distributed. This left five weeks for selected participants to either complete the surveys and education at home or physically come to the rural health clinic location to complete their surveys and educational intervention within the eight-week timeframe.

Resources Needed

To fulfill this project, there were some resources that were required. It took one personnel to help facilitate scheduling of individuals who wished to complete the in-office educational intervention and surveys. The participants had access to a pre-recorded antiplatelet teaching PowerPoint that provided visual and auditory teaching. If participants wished to complete the surveys and educational intervention at the family practice clinic location in Southeast Kansas, a computer and exam room was made available there for completion of the questionnaires and educational material upon request.

Limitations

This project's sample size was limited to a select population and selective sampling was used to ensure better participant compliance. There was also a difference of participant completion of pre-test and post-test studies, suggesting that using the computer software may have been difficult for some of the participants of the project. The research did not consider previous educational teaching done for the participants or their personal educational background in health care.

Using Qualtrics to send the participant questionnaires and teaching intervention presentations may have improved participant response rates. There also was the possibility that telehealth teaching may not be as effective as face-to-face interactions.

According to Hilty et al. (2013), telehealth visits are seen today as being comparable to in person office visits and complement many other services in the primary care setting.

Evaluation Plan

The project results were used to improve outpatient and inpatient discharge teaching for patients newly prescribed anticoagulant or antiplatelet therapy in rural health. Individuals living in rural communities often lack the resources or means to travel to a provider for wellness visits, let alone for a teaching intervention such as this. The goal of the data collection is to ascertain whether education interventions presented by primary care providers increased knowledge of patient antiplatelet therapies and adverse reactions that should be monitored; when compared to knowledge levels before educational teaching was performed. When comparing the post education rates to the pre-education rates, a rise in rates would indicate effectiveness of patient teaching and the need for improved education systematically upon prescription of anticoagulant or antiplatelet therapies to patients.

The data was entered into an Excel spreadsheet, analyzed via paired t-tests, and presented into comparative tables upon project completion to demonstrate the differences in participant responses regarding teaching intervention. This teaching method can be incorporated into urban and rural clinics nationwide, and patients will manage their treatment, whether chronic or acute, without experiencing adverse bleeding events.

Plan for Sustainability

Throughout the United States, there is a growing number of elderly individuals. According to Rogers and Wilder (2020), the 65 and older age group is the fastest growing age group in the United States which has grown by over a third since 2010. With the

increasing number of elderly patients on multiple medication modalities, it will be even more important for providers to monitor medications and adverse reactions even more closely in these populations. A multidisciplinary approach among healthcare providers will be needed to create a universal education approach that can be implemented across multiple healthcare settings with several types of providers. If the project shows success in Southeast Kansas; the project can be implemented at the other family practice clinic locations in Southeast Kansas and Southwest Missouri using the exact same retrospective chart auditing system and educational implementation. Strategies for sustainability would be for the researcher and provider to remain in contact with these patients twice yearly to review whether the patient is practicing self-management of the medication interactions and monitoring for adverse outcomes especially those related to gastrointestinal bleeding. It will be up to the patients to follow up with their providers in the event of an adverse reaction or whenever they feel their medication therapy is placing them at risk for a bleeding event. The American Heart Association guidelines will be used in this project as a framework for anticoagulant and antiplatelet therapy. Overall, collaboration between primary care providers, patients, and all other interdisciplinary members of the health care team are crucial to provide this population with proper treatment while on anticoagulant and antiplatelet medications.

Summary

This chapter went into detail to discuss the population to be studied including the inclusion criteria, exclusion criteria, and way to identify sample participants. Information on procedures and instruments including pre-teaching and post-teaching questionnaires, quantitative scoring system, and the PowerPoint educational program were described. By

comparing questionnaire responses post-education to those recorded beforehand, we assessed if educational therapy was effective. The data obtained from this section was helpful to determine if additional anticoagulant and antiplatelet therapy teaching would improve patient understanding of treatment and, in turn, decrease the amount and severity of long-term complications.

Chapter IV

Evaluation Results

Purpose

This project's purpose was to determine whether patients using antiplatelet therapy had measurably better understanding of safe and effective use of their antiplatelet therapy after using an educational intervention created by the project author. The project's goal was to increase patient understanding of their care to improve therapeutic outcomes and reduce adverse effects and consequences related to their antiplatelet medication. The specific aims of the project included the following:

(1) Explore patient understanding of what antiplatelet medication they are taking and knowledge level of proper use before and after the teaching intervention.

(2) Identify how much knowledge patients have of common and life-threatening reactions to their medications and when they should report to the emergency room for treatment.

(3) Improve patient involvement in their own health care decision making.

Seventeen survey questions were developed to guide the project:

1. Which of the following is an antiplatelet medication?

2. How often should you take your antiplatelet medication? 3. In which situation should you tell your doctor that you are taking an anticoagulant?

4. You would like to take an over-the-counter medicine, but you do not know if this medicine affects the way your antiplatelet works. With whom do you speak about this with?

5. What should you always carry with you when you are taking an antiplatelet?

6. Which of the following is a common side effect of antiplatelet medications?

7. In which situation should you contact your doctor right away?

8. Which of the following over the counter medications should not be taken with an antiplatelet?

9. Imagine you have forgotten to take the last dose of your medication. What are you going to do?

10. When is it okay to take a double dose of your antiplatelet medication?

11. What does your antiplatelet medication help to prevent you from?

12. In which situation should you call 911 or go to the emergency room immediately?

13. Which of the following activities can affect anticoagulants in a negative way?

14. Imagine you are going to have a scheduled surgical procedure. When do you stop taking your antiplatelet medication?

15. Which of the following medications treats stomach ulcers and can help avoid unintentional side effects while taking antiplatelet medication?

16. How old are you?

17. What is your gender?

Participants and Sample

A pre-test and post-test survey with educational intervention between the surveys were provided via an online surveying system at a rural primary care clinic in Southeast

Kansas. A convenience sampling of participants was selected from the office's electronic medical record system. Selection criteria included that participants were all patients seen at a rural primary care office in Southeast Kansas that were between the ages of 21-85 years old, participants had a current prescription from their primary care provider for the antiplatelet aspirin and had either a chronic or acute condition that requires treatment with aspirin.

Once approval was granted through the rural primary care clinic and Pittsburg State University, data was collected within an eight-week period from the first week of June to the final week of July of 2022. Only patients at the rural primary care clinic in Southeast Kansas were asked to participate. The project did not include vulnerable subjects including mentally disabled individuals, children, or prisoners. Individuals were also excluded from the project if they were non-English speaking, were pregnant, were younger than 21 years old, were older than 85 years old, or were unable to independently manage their own healthcare decisions and medications. The project did not discriminate against specific populations due to race, religion, or ethnicity.

The survey was distributed via secure email link to 43 different participants. Twenty-two individuals completed the pretest questionnaire, and 19 individuals completed the posttest questionnaire. In the pretest survey, five respondents were male, and 17 respondents were female. In the posttest survey, five respondents were male, and 14 respondents were female. In the pretest survey, one respondent was 21-30 years old, one respondent was 30-40 years old, one respondent was 40-50 years old, five respondents were 50-60 years old, and 14 respondents were 60-70 years old. In the

posttest survey, one respondent was 30-40 years old, one respondent was 40-50 years old, five respondents were 50-60 years old, and 12 respondents were 60-70 years old.

Analysis of Project Questions

The research project was performed to answer nine clinical implication questions. Some clinical questions had multiple survey questions that answered the same clinical question. The following are the clinical implication questions with their corresponding survey questions.

The purpose of the following questions in the survey was to see if participants could correctly identify:

A. What is the name of their antiplatelet medication is? Survey Question #1

B. The frequency with which they should be taking their antiplatelet medication. Survey Question # 2

C. Which disease processes antiplatelets can prevent? Survey Question #11

D. What habits can make their intended outcomes while taking antiplatelets possibly worse? Survey Question #13

The purpose of the following questions in the survey was to see if participants were able to recognize:

E. Who and when to notify that they are taking an antiplatelet medication? Survey Questions #3, #4, and #14

F. Common side effects of antiplatelet medications. Survey Question #6

G. Life-threatening situations where participants should seek emergency care and what items to have with them. Survey Questions #5, #7, and #12

H. Medications to avoid while taking antiplatelet therapy and medications to take while on antiplatelet therapy. Survey Questions #8 and #15

I. What are they supposed to do if they forget to take their antiplatelet medication? Survey Questions #9 and #10

To ensure accuracy, individual research questions were reviewed. A summarization of their findings are listed below in the data tables as follows:

Survey Question One

A. What the name of their antiplatelet medication is.

Table 2. Which of the following is an antiplatelet medication?				
	Pre-test		Post-test	
	Frequency	Percent	Frequency	Percent
Aspirin	20	90.9	19	86.4
Ibuprofen	2	9.1		
Missing			3	13.6

The correct response to this survey question was “Aspirin”. The main difference between the pre and post-test is that two (9.1%) of the respondents on the pre-test indicated Ibuprofen.

Survey Question Two

B. The frequency with which they should be taking their antiplatelet medication.

Table 3. How often should you take your antiplatelet medication?				
	Pre-test		Post-test	
	Frequency	Percent	Frequency	Percent
Hourly	1	4.5	2	9.1
Daily	20	90.9	17	77.3
Weekly	1	4.5		

Missing			3	13.6

The correct response to this survey question was “Daily”. The main difference between the pre and post-test score is that in the pre-test, one (4.5%) participant responded hourly and one (4.5%) responded weekly, whereas, in the post-test two (9.1%) participants responded hourly and the remaining 17 (77.3%) responded daily.

Survey Question Three

E. Who and when to notify that you are taking an antiplatelet medication.

Table 4. In which situation should you tell your doctor that you are taking an anticoagulant?

	Pre-test		Post-test	
	Frequency	Percent	Frequency	Percent
Emergencies	4	18.2	2	9.1
During every visit	17	77.3	17	77.3
When I remember	1	4.5		
Missing			3	13.6

The correct response to this survey question was “During Every visit”. The difference between the pre and post-test is that there were four (18.2%) “Emergencies” and one (4.5%) “When I remember” responses which were both incorrect in the pre-test; in the post-test, there were only two (9.1%) incorrect responses. There was an equal percentage in the pre (77.3) and post-test (77.3) of correct responses.

Survey Question Four

E. Who and when to notify that they are taking an antiplatelet medication?

Table 5. You would like to take an over-the-counter medicine, but you do not know if this medicine affects the way your antiplatelet works. With whom do you speak about this with?

	Pre-test		Post-test	
	Frequency	Percent	Frequency	Percent

Health professionals	22	100	19	86.5
Missing			3	13.6

The correct response to this survey question was “Health professionals”. There was minor difference between the pre and post-test score on this question, there were three (13.6%) participants who did not respond to the question in the post-test survey.

Survey Question Five

G. Life-threatening situations where participants should seek emergency care and what items to have with them.

Table 6. What should you always carry with you when you are taking an antiplatelet?

	Pre-test		Post-test	
	Frequency	Percent	Frequency	Percent
Prescription pill bottle	3	13.6	1	4.5
Medical Alert bracelet	18	81.8	18	81.8
Insurance card	1	4.5		
Missing			3	13.6

The correct response to this survey question was “Medical Alert Bracelet”. There was an equal percentage of correct responses in the pre-18 (81.8%) and post-test 18 (81.8%) of Medical Alert Bracelet. There were four (18.1%) of incorrect responses in the pre-test survey and one (4.5%) of incorrect responses in the post-test survey.

Survey Question Six

F. Common side effects of antiplatelet medications.

Table 7. Which of the following is a common side effect of antiplatelet medications?

	Pre-test		Post-test	
	Frequency	Percent	Frequency	Percent
Bruises easily	20	90.9	19	86.4
Sensitivity to sunlight	2	9.1		

Missing			3	13.6

The correct response to this survey question was “Bruises easily”. The main difference between the pre and post-test was that two (9.1%) of the respondents on the pre-test indicated Sensitivity to Sunlight.

Survey Question Seven

G. Life-threatening situations where participants should seek emergency care and what items to have with them.

Table 8. In which situation should you contact your doctor right away?

	Pre-test		Post-test	
	Frequency	Percent	Frequency	Percent
If you have blood in your stool or vomit.	21	95.5	19	86.4
If you lose your medication bottle.	1	4.5		
Missing			3	13.6

The correct response to this survey question was “If you have blood in your stool or vomit.”. There main difference in this question was that 21 (95.5%) of participants answered If you have blood in your stool or vomit compared to only 19 (86.4%) in the post-test.

Survey Question Eight

H. Medications to avoid while taking antiplatelet therapy and medications to take while on antiplatelet therapy.

Table 9. Which of the following over the counter medications should not be taken with an antiplatelet?

	Pre-test		Post-test	
	Frequency	Percent	Frequency	Percent
Pain Relief/NSAIDs: Ibuprofen/Aleve	14	63.6	15	68.2
Cough & Cold Medicines: Mucinex/Robitussin	6	27.3	1	4.5
Allergy Medicines: Claritin/Zyrtec	2	9.1	3	13.6
Missing			3	13.6

The correct response to this survey question was “Pain Relief/NSAIDs: Ibuprofen/Aleve”. In the pre-test, 14 (63.6%) answered correctly and there were eight

(36.4%) incorrect responses. In the post-test, 15 (68.2%) participants answered correctly and four (18.1%) incorrect responses.

Survey Question Nine

I. What are they supposed to do if they forget to take their antiplatelet medication?

Table 10. Imagine you have forgotten to take the last dose of your medication. What are you going to do?

	Pre-test		Post-test	
	Frequency	Percent	Frequency	Percent
If I forget to take a dose, I should take it immediately, then continue as normal the following day. However, if it is almost time for the next dose, skip the missed dose and continue as normal.	14	63.6	18	81.8
Forget about it, everything will be fine.	1	4.5		
Missing	7	31.8	4	18.2

The correct response to this survey question was "If I forget to take a dose, I should take it immediately, then continue as normal the following day. However, if it is almost time for the next dose, skip the missed dose and continue as normal.". This question had the lowest response rate in the entire survey, there were seven (31.87%) missing responses in the pre-test and four (18.2%) missing responses in the post-test.

Survey Question Ten

I. What are they supposed to do if they forget to take their antiplatelet medication?

Table 11. When is it okay to take a double dose of your antiplatelet medication?

	Pre-test		Post-test	
	Frequency	Percent	Frequency	Percent
Never	19	86.4	19	86.4
Sometimes	1	4.5		
I am not sure	2	9.1		
Missing			3	13.6

The correct response to this survey question was "Never". There were an equal number of correct responses in the pre-19 (86.4%) and post-test 19 (86.4%).

Survey Question Eleven

C. Which disease processes antiplatelets can prevent?

Table 12. What does your antiplatelet medication help to prevent you from?				
	Pre-test		Post-test	
	Frequency	Percent	Frequency	Percent
Blood Clots	21	95.5	18	81.8
High Blood Pressure	1	4.5	1	4.5
Missing			3	13.6

The correct response to this survey question was “Blood Clots”. There was minor difference between the pre and post-test scores on this question, there were three (13.6%) participants who did not respond to the question in the post-test survey.

Survey Question Twelve

G. Life-threatening situations where participants should seek emergency care and what items to have with them.

Table 13. In which situation should you call 911 or go to the emergency room immediately?				
	Pre-test		Post-test	
	Frequency	Percent	Frequency	Percent
Swelling of your mouth, lips, or tongue	22	100	19	86.4
Missing			3	13.6

The correct response to this survey question was “Swelling of your mouth, lips, or tongue”. There were no incorrect responses to this survey question, the main difference is three (13.6%) of participants did not respond in the post-test survey.

Survey Question Thirteen

D. What habits can make their intended outcomes while taking antiplatelets possibly

worse?

Table 14. Which of the following activities can affect anticoagulants in a negative way?				
	Pre-test		Post-test	
	Frequency	Percent	Frequency	Percent
Smoking ½ pack of cigarettes daily	22	100	19	86.4
Missing			3	13.6

The correct response to this survey question was "Smoking ½ pack of cigarettes daily". On both the pre and post-test score, all participants who responded answered "Smoking ½ pack of cigarettes daily". There were three (13.6%) participants who did not respond to the question in the post-test survey.

Survey Question Fourteen

E. Who and when to notify that they are taking an antiplatelet medication?

Table 15. Imagine you are going to have a scheduled surgical procedure. When do you stop taking your antiplatelet medication?				
	Pre-test		Post-test	
	Frequency	Percent	Frequency	Percent
Talk to your primary care provider first before you stop taking your antiplatelet therapy to get their recommendation on treatment.	19	86.4	19	86.4
The morning of the surgery	1	4.5		
Missing	2	9.1	3	13.6

The correct response to this survey question was "Talk to your primary care provider first before you stop taking your antiplatelet therapy to get their recommendation on treatment.". There was an equal percentage in the pre (86.4%) and post-test (86.4%) of correct responses. There were two (9.1%) participants who did not respond to the question in the pre-test survey and three (13.6%) participants did not respond to the question in the post-test survey.

Survey Question Fifteen

H. Medications to avoid while taking antiplatelet therapy and medications to take while on antiplatelet therapy.

Table 16. Which of the following medications treats stomach ulcers and can help avoid unintentional side effects while taking antiplatelet medication?				
	Pre-test		Post-test	
	Frequency	Percent	Frequency	Percent
Prednisone			1	4.5
Prilosec	18	81.8	18	87.8
Amoxicillin	2	9.1		
Lisinopril	2	9.1		
Missing			3	13.6

The correct response to this survey question was “Prilosec” This was the only question in the project in which participants provided answers for all four response options. There were 18 (81.8%) of participants who responded correctly in the pre-test and 18 (87.8%) of participants who responded correctly in the post-test.

Paired Samples Statistics

Table 17. Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Post-test	14.3684	19	0.89508	0.20535
	Pre-test	13.000	19	2.38048	0.54612

Paired Samples Test

Table 18. Paired Samples Test							
					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean			
Pair 1	Posttest - Pretest	1.36842	2.45426	0.56305	2.430	18	0.026

There was a statistical difference between the pre and post-test (t=2.43, p=0.026). The respondents did better on the post-test. The difference between the two means is 1.36.

Additional Statistical Analysis

After answering the fifteen research questions, additional statistical analyses were performed to support the statistical evidence. A paired samples test was performed to compare the pre and post-test questionnaire results comparing patient knowledge levels of antiplatelet therapy use before and after educational intervention. The results of the individual pre-test and post-test questions were displayed above. A paired test was used to determine if the confidence levels were elevated after educational interventions about antiplatelet therapy uses, risks, and adverse reactions were presented to participants in the questionnaire. According to the paired t-test, the p-value is equal to 0.026, meaning that the findings were statistically significant.

Demographic Survey Results

Table 19. Gender Results of Pre-test and Post-test Surveys

	Male	Female	Missing	Total
Gender	5 (22.7%)	17 (77.3%)	0	22
	5 (22.7%)	14 (63.6%)	3 (13.6%)	22

Table 20. Age Results of Pre-test and Post-test Surveys

	Pre-test		Post-test	
	Frequency	Percent	Frequency	Percent
21-30 years old	1	4.5	0	
30-40 years old	1	4.5	1	4.5
40-50 years old	1	4.5	1	4.5
50-60 years old	5	22.7	5	22.7
60-70 years old	14	63.6	12	54.5
70-85 years old	0		0	
None of the age groups listed above	0		0	
Missing	0		3	13.6

There were 22 participants in the pre-test survey and 19 in the post-test survey demographic results. In both the pre-test and post-test surveys, females were the larger

gender demographic for survey responses. In both the pre-test and post-test surveys, “60-70 years old” was the largest age demographic for survey responses.

Summary

Data analysis results after evaluating the pre and post-test survey results revealed findings relevant to the research project's purpose. Identical pre and post-test questionnaires were utilized to gather quantitative data from participants before and after education offering. The following information summarizes the findings of the research project.

Forty-three participants agreed to participate in the research project, 22 individuals completed the pre-test questionnaire, and 19 completed the post-test questionnaire. None of the participants had to be removed from the project due to being non-English speaking, having developmental delays, being pregnant, being younger than 21 years old, being older than 85 years old, or were unable to independently manage their own healthcare needs. The participants who completed the pre-test and post-test surveys were evaluated on their antiplatelet knowledge and medication management prior to and after educational video presentation.

Data frequency was completed on the demographic data of age and gender. The largest group of participants were between the ages of 60-70 on both the pre 14 (63.6%) and post-test 12 (54.5%). The participant gender ratio was five (22.7%) males and 17(77.3%) females in the pre-test survey. The participant gender ratio was five (22.7%) males and 14 (63.6%) females in the post-test survey with three (13.6%) responses missing. There were no participants in the survey who were less than 21 years old or greater than 85 years old, which would have been a disqualifying demographic.

A paired t-test was used to determine whether there was a statistically significant mean difference between pre-test and post-test scores of antiplatelet knowledge and medication management before and after educational intervention. The pre-test mean score was 13, and the post-test mean score was 14.36, which is a mean gain of 1.36 (see Tables 17 and 18). A repeated-measures t-test found this difference to be significant, $t=2.43$, $p=0.026$. Analysis of the data demonstrated that the participants' antiplatelet therapy knowledge levels were significantly higher upon completion of the educational session. This suggests that the educational intervention video presented between the pre-test and post-test surveys may affect antiplatelet therapy knowledge level.

Chapter V

Discussion

Purpose

This project's purpose was to evaluate whether patient knowledge of their antiplatelet medication management and adverse effect monitoring increased after completing the teaching intervention. Evaluation of the difference in pre-test and post-test scores was necessary to determine the significance of change and patient understanding of information received during the educational presentation. With the data presented in Chapter IV, changes in bedside teaching in the primary care setting of anticoagulant and antiplatelet medications can be improved to help patients better understand how to manage and monitor their medications.

Relationship of Outcomes to Research

The outcomes of this project relate to current advanced nursing and primary care practice. This research and the outcomes of this project can be studied further and implemented in practice to improve patient outcomes and advanced practitioner practice roles within the primary care setting in both rural and urban care settings to decrease the adverse effects of antiplatelet and anticoagulant medications and gastrointestinal bleeding outcomes. The improvement outcomes between the pre-test and post-test results demonstrate that with increased quality of care with bedside teaching, there will be a

decreased likelihood of adverse gastrointestinal bleeding events relating to these medications and increased satisfaction between provider and patient communication.

Evaluation of Theoretical Framework

This project utilized Orem's Self-Care Deficit Theory as a model for the theoretical framework to guide this project and aid in the creation of the educational intervention and evaluation of future implications. Overall, the research results of this project support Orem's Self-Care Deficit Theory. Orem's theory focuses on major assumptions that: people are self-reliant, individuals are distinct, nursing is a form of action between two or more people, and a person's knowledge or potential health problems is necessary for promoting self-care behaviors (Nursing Theory.org, 2023). All aspects of this theory coincide with the primary prevention goal of this research project the emphasizes the need for providers to provide individualized educational interventions to their patients. This is to increase knowledge levels about their anticoagulant and antiplatelet medications and avoid adverse and potentially lethal outcomes related to improper use and monitoring of these medications. Early intervention allows patients and their families the opportunity to define their goals of treatment with their provider and ask pertinent questions. Participants from this research were given education and resources to improve their knowledge and management of antiplatelet medication monitoring.

Evaluation of Logic Model

After data was collected, the primary researcher also evaluated the parts of the logic model outlined in Chapter I. The inputs were appropriately utilized and included the scholarly committee, personnel at the clinic, technology, and advanced practice

providers. The short-term outcome of the logic model involved getting patients involved in their care and interested in learning more about their diagnosis. This goal was met by every participant who completed the pre-test survey, teaching intervention, and post-test survey. Knowledge amongst the participants was significantly improved after receiving the educational intervention.

Unfortunately, due to the limited length of time, the second two assumptions of the logic model were not proven by this project. These assumptions included the intermediate goal of patients asking the clinician about their medication and reporting the symptoms they have been monitoring for; and the long-term goal of preventing patients from having gastrointestinal bleeding. Due to limited time constraints, these measures must be evaluated by a more extensive research project.

Limitations

There were several limitations to this research project. The first limitation was that it was a single-site study, and convenience sampling was used, not allowing for generalizability. There was a small sample size of participants used for the project and a disproportionate number of respondents to each survey. There were 22 participants who completed the pre-test survey and 19 participants who completed the post-test survey. There was also a grossly larger number of female than male participants for both studies. For the pre-test survey, the ratio was 77.3% females versus 22.7% males. In the post-test survey the ratio was 63.6% females versus 22.7% males with 13.6% of responses missing.

The project also only utilized participants recruited from a chain of rural clinic locations and was not applied to an entire hospital system or large group of clinic

locations in the Southeast Kansas or Southwest Missouri region. Utilizing this same research design within a larger clinical setting could have the potential for a larger sample size. There were no funding opportunities for this research project as well. With more sponsorship or grant opportunities, a larger sample size could be recruited, thus expanding the respondent population to include a larger variety of participants.

Implications for Future Research

The results of this project properly demonstrated the effectiveness of including medication education to patients on antiplatelet medications prescribed from the primary care setting. This project aimed to evaluate whether the inclusion of teaching in the primary care setting resulted in a decreased incidence of gastrointestinal bleeding. However, time limitations of the project left the primary researcher unable to draw this conclusion. This project's research focused more on whether teaching interventions were effective in the primary care setting among the population chosen for the project. Therefore, due to the limitations stated above, research studies of the same topic should be addressed in the future.

Implementation for Practice

The primary nurse researcher should consider how to enforce this training in practice in the primary care setting in the future. Based on the significance of improvement amongst this project's population, it would be beneficial to implement similar teaching approaches in different practices to improve their patient outcomes. If current providers are unwilling or unable to accept changes in their current practice, facilities should consider adding patient medication reconciliation and anticoagulant/antiplatelet teaching educational interventions to their onboarding or new

hire process. The goal for healthcare professionals is to improve patient outcomes and provide less need for medical interventions. If more advanced practice providers work together to increase patient knowledge of medication use and monitoring, the higher the chances of successful outcomes.

Conclusion

This project provided evidence-based research regarding anticoagulant/antiplatelet medications and adverse health outcomes related to their use. Current research studies show there is lack of information that contributes to preventative education techniques in the primary care setting. The knowledge gained in this project increased awareness of medication monitoring and adverse medical outcomes related to the antiplatelet medication aspirin. It is likely many of these participants will have better health outcomes and will be less likely to experience adverse effects with ongoing education. As evidenced by the results of this project, more education is needed in the primary care setting among individuals prescribed antiplatelet medications. This can help prevent serious, adverse drug reactions, such as gastrointestinal bleeding. To stop these outcomes evidence-based teaching interventions of antiplatelet and anticoagulant medications should be provided to patients in all clinical settings, especially primary care.

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APPENDIX

Appendix A: Pre-test Survey

For each of the following questions, please select the best answer choice. Only one answer is permitted per question.

1**. Which of the following is an antiplatelet medication?**

Aleve
Aspirin
Ibuprofen
Tylenol

2. How often should you take your antiplatelet medication?

Hourly
Daily
Weekly
Monthly

3. In which situation should you tell your doctor that you are taking an anticoagulant?

Emergencies
When I remember
During every visit
When I go to Urgent Care

4. You would like to take an over-the-counter medicine, but you do not know if this medicine affects the way your antiplatelet works. With whom do you speak about this with?

Health professionals
Journalists
Lawyers
Mechanics

5. What should you always carry with you when you are taking an antiplatelet?

Cellphone
Prescription pill bottle
Insurance card
Medical Alert bracelet

6. Which of the following is a common side effect of antiplatelet medications

Hives
Bruises easily
Sensitivity to sunlight
Dry mouth

7. In which situation should you contact your doctor right away?

If you forget to take your medication.
If you forget the name of your medication.
If you have blood in your stool or vomit.
If you lose your medication bottle.

8. Which of the following over the counter medications should not be taken with an antiplatelet?

Pain Relief/NSAIDs: Ibuprofen/Aleve
Cough & Cold Medicines: Mucinex/Robitussin
Upset Stomach: Pepto Bismol
Allergy Medicines: Claritin/Zyrtec

9. Imagine you have forgotten to take the last dose of your medication. What are you going to do?

Forget about it, everything will be fine.
Take a double dose of medication just to be sure.
Go to the Emergency Room or call 911.
If I forget to take a dose, I should take it immediately, then continue as normal the following day. However, if it is almost time for the next dose, skip the missed dose and continue as normal.

10. When is it okay to take a double dose of your antiplatelet medication?

Always
Sometimes
I am not sure
Never

11. What does your antiplatelet medication help to prevent you from?

Blood clots
Depression
High blood pressure
Kidney disease

12. In which situation should you call 911 or go to the emergency room immediately?

headache
swelling of your mouth, lips, or tongue
sinus congestion
cough

13. Which of the following activities can affect anticoagulants in a negative way?

30 minutes of exercise daily
Smoking ½ pack of cigarettes daily

Eating 4 serving of fruits & vegetables daily
Getting 8 hours of sleep daily

14. Imagine you are going to have a scheduled surgical procedure. When do you stop taking your antiplatelet medication?

Whenever you want to
The morning of the surgery
Continue to take your antiplatelet medication
Talk to your primary care provider first before you stop taking your antiplatelet therapy to get their recommendation on treatment.

15. Which of the following medications treats stomach ulcers and can help avoid unintentional side effects while taking antiplatelet medication?

Prednisone
Prilosec
Amoxicillin
Lisinopril

16. How old are you?

21-30 years old
30-40 years old
40-50 years old
50-60 years old
60-70 years old
70-85 years old
None of the age groups listed above

17. What is your gender?

Male
Female
Prefer Not to Answer

1**8. Please create a specific 5 digit identification number to be entered on both your pretest and posttest surveys. Please be sure to make the code original and avoid common identification codes such as 12345 or 11111 to ensure that your pretest and posttest surveys will be correctly identified and matched to review results. To keep your identity anonymous, do not include a numerical code that contains identifying characteristics such as your driver's license number, birthdate, social security number, or patient identification number. Please write down the 5-digit identification number you have selected after entering it into the pretest survey so that you will have it available at the end of your posttest survey.**

Appendix B: Post-test Survey

Please enter your 5-digit identification number:

For each of the following questions, please select the best answer choice. Only one answer is permitted per question.

1**. Which of the following is an antiplatelet medication?**

Aleve
Aspirin
Ibuprofen
Tylenol

2. How often should you take your antiplatelet medication?

Hourly
Daily
Weekly
Monthly

3. In which situation should you tell your doctor that you are taking an anticoagulant?

Emergencies
When I remember
During every visit
When I go to Urgent Care

4. You would like to take an over-the-counter medicine, but you do not know if this medicine affects the way your antiplatelet works. With whom do you speak about this with?

Health professionals
Journalists
Lawyers
Mechanics

5. What should you always carry with you when you are taking an antiplatelet?

Cellphone
Prescription pill bottle
Insurance card
Medical Alert bracelet

6. Which of the following is a common side effect of antiplatelet medications

Hives
Bruises easily
Sensitivity to sunlight
Dry mouth

7. In which situation should you contact your doctor

right away?

If you forget to take your medication.
If you forget the name of your medication.
If you have blood in your stool or vomit.
If you lose your medication bottle.

8. Which of the following over the counter medications should not be taken with an antiplatelet?

Pain Relief/NSAIDs: Ibuprofen/Aleve
Cough & Cold Medicines: Mucinex/Robitussin
Upset Stomach: Pepto Bismol
Allergy Medicines: Claritin/Zyrtec

9. Imagine you have forgotten to take the last dose of your medication. What are you going to do?

Forget about it, everything will be fine.
Take a double dose of medication just to be sure.
Go to the Emergency Room or call 911.
If I forget to take a dose, I should take it immediately, then continue as normal the following day. However, if it is almost time for the next dose, skip the missed dose and continue as normal.

10. When is it okay to take a double dose of your antiplatelet medication?

Always
Sometimes
I am not sure
Never

11. What does your antiplatelet medication help to prevent you from?

Blood clots
Depression
High blood pressure
Kidney disease

12. In which situation should you call 911 or go to the emergency room immediately?

headache
swelling of your mouth, lips, or tongue
sinus congestion
cough

13. Which of the following activities can affect anticoagulants in a negative way?

30 minutes of exercise daily Smoking ½ pack of cigarettes daily

Eating 4 serving of fruits & vegetables daily
Getting 8 hours of sleep daily

14. Imagine you are going to have a scheduled surgical procedure. When do you stop taking your antiplatelet medication?

Whenever you want to
The morning of the surgery
Continue to take your antiplatelet medication
Talk to your primary care provider first before you stop taking your antiplatelet therapy to get their recommendation on treatment.

15. Which of the following medications treats stomach ulcers and can help avoid unintentional side effects while taking antiplatelet medication?

Prednisone
Prilosec
Amoxicillin
Lisinopril

16. How old are you?

21-30 years old
30-40 years old
40-50 years old
50-60 years old
60-70 years old
70-85 years old
None of the age groups listed above

17. What is your gender?

Male
Female
Prefer Not to Answer

Appendix C: Invitation to Participate

Invitation to participate in Research Study

You are receiving this invitation to participate in a scholarly project research study developed for partial fulfillment of the requirements for the degree of Doctor of Nursing Practice from Pittsburg State University by the principal investigator of the project Renee Roth, BSN-DNP student.

Project Title: A PRE AND POST SURVEY OF HOW TEACHING INTERVENTIONS OF ANTICOAGULANT/ANTIPLATELET MEDICATIONS AFFECT PATIENT OUTCOMES IN THE PRIMARY CARE SETTING

Project Approval: This project received approval from the rural health practice clinic and the Pittsburg State University Institutional Review Board.

Purpose of the Research: The purpose of this study is to evaluate whether teaching interventions of antiplatelet therapy have an impact on patient education outcomes when compared to pre-education knowledge.

Confidentiality: Your participation in this research study is completely voluntary. No compensation will be provided to you for participating in this study. No identifying information will be collected during this project. Only this principal investigator and her project committee will have access to any data collected through this study.

Participation is completely voluntary. If you decide to participate in this study, you may withdraw your participation at any time throughout the study without penalty.

For any questions, please contact:
Principal Investigator: Renee Roth, BSN-DNP student, Pittsburg State University
Email: rroth@gus.pittstate.edu

Faculty Sponsor: Dr. Tracy Stahl, DNP, APRN, FNP-C
Email: tstahl@pittstate.edu

Appendix D: Educational Video Tool Slides