

Factors Influencing Primary Care Physicians' Prescribing Behavior of Anticoagulant Therapy for the Management of Patients With Non-valvular Atrial Fibrillation in the Community: a Qualitative Research Study

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Abstract

Background: Oral anticoagulant therapy use in patients with atrial fibrillation (AF) remains suboptimal despite the availability of both warfarin and non-vitamin K antagonist oral anticoagulants (NOACs). Primary care physicians' (PCP) decision-making to initiate and select appropriate anticoagulant medication is pivotal in reducing complications among patients with AF.

Aim: This study explored the factors influencing PCPs' decision-making in anticoagulant initiation and adjustment for patients with non-valvular AF.

Design of study: Qualitative research based on the theoretical framework of the Generalist Wheel of Knowledge, Understanding and Inquiry.

Method: In-depth interviews or focus group discussions were conducted with 27 PCPs in general practice in urban Singapore. The audio-recordings were transcribed, audited and coded to identify themes, which are framed according to the "clinician", "patient", "medical condition and treatment" and "healthcare system and policy" domains.

Results: Personal training and experience with anticoagulant therapy; understanding patient risk-stratification; AF detection during clinical practice; medication cost; clinical support services for anticoagulation monitoring and constraints in existing care model influenced PCPs in their anticoagulant prescription. PCPs preferred to seek guidance from cardiologists in managing patients with newly diagnosed AF and attempted to engage their patients in decision-making regarding anticoagulant therapy. They perceived sub-specialized primary care clinics focusing on AF co-management with cardiologists as an ideal setting for initiation and maintenance of anticoagulant therapy.

Conclusion: PCPs' decisions on anticoagulant therapy is influenced by personal attributes, patients, clinical presentations, anticoagulant properties and healthcare system. Their proposed care model to address the barriers awaits feasibility and acceptance assessment in future research.

Background

Atrial fibrillation (AF) is the most common arrhythmia in clinical practice. It is associated with a five-fold increase in stroke (1). The prevalence of AF increases with age, ranging from 0.2% in those aged 45–54 to 8.0% in those aged 75 and older (2). Scoring systems such as CHA₂DS₂-VASc have allowed risk stratification of patients with AF and guide physicians on the use of anticoagulants in patients with higher risk of stroke (3). Anticoagulants such as warfarin significantly reduce the risk of stroke in patients with AF by 64%, compared to only 22% with antiplatelet drug therapy (4).

Hitherto, warfarin was the only anticoagulant effective in the prevention of stroke in AF. In the past decade, non-vitamin K oral anticoagulants (NOACs) such as Rivaroxaban, Apixaban and Dabigatran (5) have been approved for treatment of non-valvular AF. NOACs are at least as effective as warfarin in

preventing ischemic stroke in patients with AF (6–8). In addition, NOACs offer several advantages over warfarin, such as fewer drug interactions and without the need for international normalized ratio (INR) monitoring (9). However, NOACs are considerably more expensive than warfarin and are not recommended for patients with metallic heart valves or patients with certain types of chronic kidney diseases (10).

Despite the availability of both warfarin and NOACs, oral anticoagulant therapy use in patients with known AF remains suboptimal (11). Previous studies in USA, UK and Canada have identified physician self-reported comfort level, clinical benefits and risks, patient convenience and preferences and drug cost as factors influencing physicians' decision to use anticoagulants in AF management (12–14). A qualitative systematic review of physicians' warfarin prescription in AF alluded to the challenges in care coordination across primary and tertiary care interface (15). This has implications on the AF management by primary care physicians (PCPs). Patients may be first identified with AF in primary care. They may also either decline or default follow up by specialists. PCPs' perspectives specifically on NOACs become critical in the management of these patients with AF but little is known of their prescribing behavior of this class of medications (16).

In Singapore, there has been a move to strengthen the primary healthcare services where PCPs assume expanding roles in managing the greying population in the community. To reduce the burden and cost of tertiary care, stable patients from hospitals are right-sited to primary care for further management. Thus, PCPs increasingly shoulder greater responsibilities in managing such patients, who are previously managed in hospitals. They include those with AF. PCPs, especially those working in public primary care clinics (polyclinics) are already managing a significant segment of the population with non-communicable diseases. These polyclinics have in-house laboratories to assess INR with immediate results. Invariably, these PCPs encounter patients with newly diagnosed AF and face the imperative to initiate anticoagulants or to switch anticoagulants between warfarin and NOACs for patients with unstable anticoagulation status (17).

PCPs' decision-making about anticoagulant initiation and anticoagulant switch for AF is complex and has significant impact on patients in reducing their risk of complications. However, there is a dearth of studies looking at anticoagulant prescribing behavior by PCPs in Singapore and Southeast Asia, despite the prevalent problem of suboptimal anticoagulation in AF in this region (18,19). Hence, the study aimed to explore the factors which influenced PCPs' decision-making in selecting anticoagulant therapy for the management of patients with AF. Identifying and addressing these factors will enable PCPs to optimally manage patients with AF and ensure their safety in the community.

Method

A qualitative research method is adopted in this study to uncover complex issues influencing clinical decision-making by PCPs in selecting anticoagulant therapy for AF treatment.

Study site

The study site was SingHealth Polyclinics-Bukit Merah. It is located in southern Singapore serving an estate with a significantly proportion of older population. About 40% of the 800 daily attendances at this polyclinic comprise of patients aged 65 years and older.

Participants

PCPs practicing in ambulatory primary care settings such as polyclinics and private general practitioner (GP) clinics were invited to participate in this study. The participants self-declared to be in active clinical practice and had managed patients with AF. PCPs who were exclusively practicing in community hospitals and tertiary care settings were excluded as they had access to different healthcare resources. Purposive sampling of the participants was carried out to maximize the range of views based on their different practice settings, training background, qualifications and experience in AF management.

Recruitment procedure

Letters of invitation were sent out by the principal investigator to eligible participants to participate in either a focus group discussion (FGD) or an in-depth interview (IDI) between December 2019 and November 2020. FGDs were arranged for a mixed group of PCPs comprising medical officers, resident physicians and family physicians from a single polyclinic to allow exchange of ideas and examine views contextualized to the same practice setting. In-depth interviews (IDIs) were conducted for a medical officer and several senior PCPs to surface issues related to different clusters of public polyclinics. IDIs and one FGD were arranged for private GPs and a locum doctor to identify unique challenges due their practice setting.

Theoretical Framework

A review of existing theoretical models on prescribing decisions showed that they mainly examined the relationship between marketing efforts and physician prescribing (20). The Generalist Wheel of Knowledge, Understanding and Inquiry was eventually selected and adopted as the theoretical framework in this study for its contextualization to general and primary care practice. (21). The framework encompasses the “clinician”, “disease”, “patient” and “healthcare system & policy” domains and their inter-domain relationships. It enables the investigators to deep-dive into the PCPs’ prescribing behavior under the “clinician” domain in relations to their personal attributes, their understanding of AF and mastery of its treatment, their interactions with patients with AF when such therapy is indicated and the influences by the structure and processes in the local healthcare system and policies. “Integration” at the center of the framework allows a succinct and relational presentation of the themes across the domains.

Topic Guide

The semi-structured topic guide (Appendix 1) included questions about PCPs’ management of patients with AF, their experience with warfarin and NOACs, their clinical practice consideration, interactions with patients while choosing anticoagulants and opinions of using a patient decision-aid. These broad, open-

ended questions allowed participants to cover the four major domains of the Generalist Wheel theoretical framework.

Composition and profile of the study team

The study team comprised of 5 PCPs, an advanced practitioner nurse and 2 pharmacists practicing in SingHealth Polyclinics, a public primary care institution in Singapore. All members of the study team are involved in the care of patients and have special interest in improving anticoagulation therapy in AF.

Data collection

Each FGD or IDI lasted about 30 to 40 minutes. The moderator for both FGDs and IDIs was a PCP. Another co-investigator assisted the moderator during the focus group discussions. Written informed consent was taken prior to each FGD or IDI. Each participant was assigned a study identification number and transcripts were therefore anonymized. Before each session, participants completed a standardised questionnaire to record their demographics, practice setting, qualifications and experience. The same set of questions from the topic guide was used in the IDIs and FGDs, although the sequence could vary. Probes, prompts and follow-on questions were used during the IDIs and FGDs to facilitate discussion.

Coding

The IDIs and FGDs were audio-recorded, transcribed verbatim and audited. The rectified transcripts were coded by two investigators to derive a first coding frame independently. Meetings were held regularly to discuss, modify and generate a final coding frame for data analysis based on the research questions and emerging themes. The final coding frame was subsequently applied to the remaining transcripts. Any discrepancies in coding were resolved after discussions with a third investigator. Representative quotes were selected after mutual agreement among the investigators to illustrate the study findings.

Data analysis

The codes were used to identify emerging themes, which were then categorized according to the four key domains in the Generalist Wheel theoretical framework. The codes were also grouped under “relationship”, “information mastery” and “prioritization” at the clinician-patient, clinician-disease and disease-system interfaces respectively.

Results

A total of 35 PCPs were invited to participate in this study, of which 8 of them declined to take part due to their busy schedules. 9 IDIs and 4 FGDs were conducted with 27 participants until idea saturation was reached, with no new code emerging from the data.

The demographic characteristics and practice profiles of the 27 PCPs are shown in Table 1.

Table 1
Characteristics of participating PCPs

| Characteristic | <i>n</i> |
|--|-----------------|
| Gender | |
| Male | 10 |
| Female | 17 |
| Age (in years) | |
| Age ≤ 35 | 7 |
| Age > 35–50 | 17 |
| Age > 50 | 3 |
| Highest postgraduate qualification | |
| Bachelor of Medicine, Bachelor of Surgery (MBBS) | 5 |
| Doctor of Medicine (MD) | 1 |
| Graduate Diploma in Family Medicine (GDFM) | 6 |
| Master of Medicine in Family Medicine (MMed) | 11 |
| Fellowship (FCFPS) | 4 |
| Clinical practice setting | |
| Polyclinic | 21 |
| General practitioner clinic | 5 |
| Locum | 1 |
| Years of practice | |
| < 10 | 9 |
| 10–19 | 13 |
| > 19 | 5 |

The findings are summarized and presented in Fig. 1 according to the Generalist Wheel theoretical framework, focusing on the clinician domain and its interface with the “patient”, the “disease and treatment” and the “healthcare system and policy” domains.

Clinician personal attributes

Formal and informal training

PCPs attributed their higher confidence in anticoagulant initiation and switch to specialized training courses and on-the-job learning from experienced senior physicians.

“I think that postgraduate training or specialized family physician training courses would empower primary care doctors to accept and increasingly perform the role of initiation of anticoagulation.” P25, GP.

“I feel that training is also helpful in the sense that if a senior is starting a patient on NOAC and calls one or two colleagues to watch the consult, just for 10 minutes and see how they go about making that decision” P24, polyclinic PCP.

Prior experience in managing atrial fibrillation

Many PCPs, including those with postgraduate training, lacked personal experience in managing AF, which led to their uncertainty in anticoagulant therapy.

“Whenever the primary care doctors have not done it very much, there’s some hesitancy to it because we are not too sure what to do and we don’t have that kind of experience behind us.” P3, polyclinic PCP with Family Medicine postgraduate qualification.

“I do start on Aspirin, but for anticoagulants, I think the main factor that I won’t start is just I am not so comfortable with it yet.” P10, polyclinic PCP with Family Medicine postgraduate qualification.

Some PCPs highlighted the clinical challenges in picking up mitral stenosis, a condition which is a contraindication for NOACs. A few PCPs indicated that continuing medical education (CME) would help build their confidence in switching anticoagulants.

“I don’t think my clinical skills are so good in picking up mitral stenosis; a diastolic murmur. So, I’m not confident...I mean for novel oral anticoagulants.” P19, polyclinic PCP.

“if you ask me to start anticoagulants, I’m not so comfortable in starting, but if I’m asked to follow up on a patient who is on anticoagulants, or having to switch the patient from warfarin to NOAC, I think with CME and teaching, for me, I think I’m still okay with doing that.” P15, polyclinic PCP.

Patient clinical risk-stratification and engagement

Clinical assessment and risk-stratification

The patient profile, co-morbid conditions and demographics were taken into consideration by PCPs while making decisions about anticoagulants. PCPs relied on the CHA₂DS₂-VASc score and the HASBLED score to calculate the risk of stroke and bleeding, which also influenced their decision-making in initiating anticoagulants.

"I guess the current quality of life of the patient, ... also the demography will also be of some importance. If the patient is extremely old, even if they are still cognitively intact, sometimes, the benefit may not outweigh the risk." P2, GP.

"I think the CHA₂DS₂-VASc score is the most important factor. So, the risk of stroke would determine how much I want to push for the patient to be started. HASBLED score, I guess has some impact on my decision making, but we do know that HASBLED score is not really a contraindication for atrial fibrillation." P23, polyclinic PCP.

Patient and family engagement

Most PCPs sought to involve their patients in shared decision-making regarding anticoagulants. Some PCPs also engaged patient's family members to help the patient in this decision-making process.

"good to have a shared decision-making process, where the patient himself also participates in this decision to start the medication. Also, because the population may be changing, we also start to realize that the patient, they themselves want to be able to be given a choice to decide." P20, private GP.

"if it's the typical elderly individual, when it comes to such major decisions.... I usually ask them to come together with one or two of their children....at least they can get some assurance that one, you know they are doing the right decisions two, you know, sometimes if they do not understand what the physician says, their family may be able to put it in simpler terms for them." P21, GP.

Patient rapport

Some PCPs acknowledged that their rapport with the patient would enable them to convince patients to follow their recommendation regarding anticoagulants.

"if the doctor has good rapport, I think there's a higher chance that they can convince patients to go on, because the patient trusts you and your decision-making skills." P3, polyclinic PCP.

Identification of AF and issues on the commencement of anticoagulant therapy

Detection of AF

PCPs occasionally detect AF incidentally during physical examination. They would refer symptomatic patients with giddiness or breathlessness to the hospital Accident and Emergency (A&E) department for further management.

"the first thing is whether it's incidental finding or not, for example usually it's incidental finding when we check blood pressure we found that there's irregular pulse. So, the patient is otherwise well." P4, polyclinic PCP.

“if the patient is unstable or symptomatic....and you find out it’s because of AF, I will refer to A&E department.” P13, polyclinic PCP.

Cost

Almost all PCPs mentioned cost as a significant factor influencing their anticoagulant prescription for NOACs. Moreover, the cost of NOACs is substantially higher than warfarin as illustrated in the quote below from P2. However, some PCPs acknowledged that patients on warfarin also incurred additional costs for the periodic INR monitoring at the laboratories.

“I would say cost is a very big factorin our clinic we are selling 1 tablet of NOAC at around \$4 to \$5. That would be approximately S\$2000 a year, just for one medication. So, if they were to be taking warfarin, maybe it will be even less than S\$100.” P2, GP.

“a big part would be money you see, because the NOACs tend to be more expensive. Warfarin tends to be cheaper, however, you know coming to do blood tests every 3-monthly might be quite costly as well.” P21, GP.

Concerns about NOACs

PCPs had concerns about NOACs, such as the lack of monitoring and the lack of antidotes.

“it takes 24 hours for the drug to wear off and there is no real antidote, except for dabigatran ... The second would be...we don’t really know how anticoagulated they really are.... because there is no way to measure” P2, GP.

Contraindications to NOACs

While most PCPs were aware of contraindications to NOACs, such as renal impairment and liver disease, they were concerned about missing the diagnosis of mitral stenosis. Some of them would rely on echocardiogram to identify mitral stenosis.

“we do know that if they have any abnormal liver or kidney function, they shouldn’t be on certain medications like the NOACs.” P20, GP.

“I must admit that I myself have not converted anyone from warfarin to NOACs. The first things that I would be concerned with is to find out whether there has been a history of 2D Echo done. To see whether there is any significant mitral stenosis.” P17, polyclinic PCP.

Issues with warfarin as the alternative

Multiple issues with warfarin such as labile INR, diet and drug interactions were raised by PCPs. These issues may trigger PCPs to switch to NOACs.

“if the patient is taking a number of medications and there is drug interactions, and also, the patient doesn’t tend to come back regularly for follow up... In those cases, I may actually switch the patient to

NOAC, if they don't have any contraindications." P15, polyclinic PCP.

Supporting healthcare services and proposed model of care delivery

Allied health personnel

PCPs practising in public polyclinics suggested enlisting the services of the Medical Social Workers (MSWs) in financial counselling and the pharmacists in medication counselling. MSWs also counsel patients on their eligibility based on their socioeconomic background and render assistance those who are unable to afford the more expensive NOACs.

"The other allied services that we can tag on is the social workers.... so that they can counsel the patient and find out whether the patient is eligible for different financial subsidies that are available, so that they can start on the medicine." P6, polyclinic PCP.

"I feel that the allied team will be very useful. I mean the pharmacists can help a lot in terms of counselling because we may not have that much time to counsel the patient and to elicit the patient's other concerns" P8, polyclinic PCP.

Institutional policies

PCPs are guided by their institutional policies regarding starting anticoagulants. They follow the instructions in the electronic doctor training manual provided by the institution for reference.

"We still cannot start warfarin, even if we detect a new AF, because we don't have the policy to manage them here, to reach the adequate INR targets...because it takes time to do this" P6, polyclinic PCP.

Availability of anticoagulant

The PCPs who practice in private GP clinics reported that their prescriptions were influenced by available anticoagulants in the formulary or stock of their practice.

"I work in a group practice, it also depends what my group carries, like we only have Xarelto, for example. Xarelto and like warfarin 5 mg or 3 mg. So, you just have to play around with whatever you have" P21, GP.

Access to the specialists for further evaluation

Most PCPs would seek the guidance of the cardiologist in managing patients with newly diagnosed atrial fibrillation. This is usually in the form of a referral to the cardiology clinic.

"because of the accessibility of tertiary care, specialist care in Singapore, usually upon diagnosis, I would prefer to refer to the tertiary care first, you see. Because sometimes you do need to find the underlying

cause of the AF. Rule out things like whether it's due to a heart problem. So, usually these tests can only be done in the tertiary setting and it can be done pretty fast, sometimes." P21, GP.

However, two PCPs interviewed for this study manage specialized AF clinics in their respective primary care practice in collaboration with cardiologists. They also have access to facilities to perform 2D Echocardiograms. This in turn empowered the PCPs to start anticoagulants in the primary care setting.

"So, we have atrial fibrillation clinic, which is run in conjunction with the cardiologists. We have access to specialist opinion via phone call or message very, very readily if we need some advice. If not, then we have access to order 2D Echo and all these on our own, without referring directly. We can do all these things in the primary care setting and start anticoagulants" P23, polyclinic PCP.

Discussion

This study has highlighted the complex interrelated factors which influence the PCPs' prescribing behavior of anticoagulants in patients with AF. Clinician training and experience, clinical risk-stratification, patient engagement, support services and care model affect both their anticoagulant initiation and switch to the NOACs. They were also influenced by medication specific factors such as the need for anticoagulation monitoring and cost to patients. As illustrated in Fig. 1, these factors span across the clinician, patient, disease and healthcare system domains.

PCPs acknowledge that appropriate training and exposure could equip them with the confidence to initiate or switch anticoagulants in AF. CMEs and special interactive education modules on AF designed for PCPs may potentially increase their literacy of the NOACs. An online training module on diagnosing and managing AF in primary care is already offered by BMJ Learning (22). Case-based training modules, incorporating scenarios such as patients with newly diagnosed AF, anticoagulant switch in chronic AF and use in special circumstances (for example during bridging therapy to carry out outpatient procedures) can be incorporated in the curriculum. PCPs will also benefit from web-based tools for risk stratification of patients with AF to facilitate decisions on the potential benefits and risks of anticoagulation. Such an e-calculator has been validated in an external AF population (23) and is available to PCPs with internet access, but their utility of such resources has yet to be determined.

In the local fee-for-service primary healthcare system, cost was a common theme raised by most PCPs as patients are required to pay for their consultation, laboratory investigations and medications. Government subsidies are available to reduce the healthcare expenditure of patients in the polyclinics and selected GP clinics. The costs of Rivaroxaban and Apixaban remain high for patients compared to Warfarin (24), unless they are eligible for financial assistance after review by the MSW. Hence, the subsidies are dependent on the financial status of the patient. Notwithstanding the cost of NOACs, patients on warfarin also incur additional costs in laboratory INR monitoring and associated consultations. A study on the local PCPs' prescribing behavior of the expensive long acting beta-2 agonist inhalers for patients with persistent asthma showed similar concern on cost when these medications were initially launched (25). However, a subsequent related study revealed that expenditure declined over time due to reductions in

complications and hospitalization (26). The availability of generic brands of NOACs may become more accessible to patients with AF over time and cost-effectiveness of their use may become enhanced.

PCPs admit that patients themselves want to be involved in the decision-making process regarding anticoagulant therapy. The medical fraternity is increasingly recognizing the importance of personalized decision-making by patient themselves (15,27). Tools such as patient decision aid (PDA) may be helpful to guide patients and physicians in shared decision-making towards anticoagulant therapy. PDAs have advantages including reducing decisional conflict, increasing patient knowledge, clarifying patients' values and improving decisional quality (28). However, few validated PDAs on AF anticoagulant therapy are accessible for clinical use (29). The results of this study will be valuable in designing a PDA template, including listing the cost of the NOACs to culturally adapt it for local patients with AF.

The two PCPs working in specialized AF clinics in primary care indicated that tele-collaboration with the cardiologists facilitated clinical decisions on anticoagulant therapy in AF. Other care models established in the UK, Netherlands and Spain have shown that cardiologists who serve in integrated primary care clinics effectively deliver oral anticoagulation to high-risk AF patients in the community (30–32). In Singapore, a multidisciplinary collaborative team should be considered to strengthen the AF management in primary care. The team-based care will include pharmacists and MSWs to co-manage patients with AF by providing medication and financial counselling respectively. The limited availability of anticoagulants in private GP clinics may be addressed by allowing patients to refill their prescriptions at polyclinics or public hospitals or through the setting up of centralized national pharmacy at convenient locations.

The results concur with the findings from previous studies five years ago, which elicited the views of physicians in western medical practices on oral anticoagulation therapy in AF (12,14). It shows that the barriers faced by physicians remain unresolved through these years, unless the multi-domain hurdles alluded in this study are addressed. The proposed care model by the PCPs themselves may be a potential solution to the multitude of barriers but its effectiveness must be evaluated through robust health service research and implementation science.

The deployment of the Generalist Wheel framework is a strength in this study. It readily presents the readers a more comprehensive understanding of the complex inter-related issues influencing anticoagulant prescribing behavior specifically for the PCPs. With evolving information and emerging guidelines regarding anticoagulant use in AF, it is likely that their prescribing behavior will change with time. A different model of care will potentially accelerate the change, which ultimately should deliver evidence-based treatment to patients with AF.

The study has its limitations. The results could not be generalized to the anticoagulant prescribing behavior of the entire local PCPs, although the purposive recruitment ensured documentation of the views of PCPs in both public and private healthcare settings. The views of patients are equally critical as they are the recipients of the anticoagulant therapy. Future studies are needed to explore the patients' decision-making in taking such medication and their acceptability to receive treatment in the new care model. The

investigators plan to leverage on the perspectives of the PCPs to create a PDA on anticoagulants and to assess if it helps the patients in their medical decision to use the NOACs.

Conclusion

Clinician training and experience, clinical risk-stratification and patient engagement, detection of AF, anticoagulant cost and monitoring, support services and care model influenced the PCPs in their anticoagulant therapy. PCPs preferred to collaborate with cardiologists in managing patients with newly diagnosed AF. Their proposed PCP-specialist collaborative tele-support care model is a potential solution to optimize AF treatment in the community but such sub-specialized AF clinic in primary care awaits further assessment on its feasibility and acceptance by both PCPs and patients.

List Of Abbreviations

AF atrial fibrillation

CME continuing medical education

FGD focus group discussion

GP General Practitioner

IDI in-depth interview

INR international normalized ratio

MSW Medical Social Worker

NOAC non-vitamin K oral anticoagulants

PCP Primary Care Physician

PDA patient decision aid

Declarations

Ethics approval and consent to participate

The study received approval from the SingHealth Central Institutional Review Board (CIRB 2019-2839). Written informed consent was obtained from each participant prior to the FGD or IDIs. All study procedures were conducted in accordance with relevant ethical guidelines and regulations.

Consent for publication

Not applicable.

Availability of data and materials

The datasets analysed during the study are available from the corresponding author on request.

Competing interests

No competing financial interests exist.

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Authors' contributions

SC and NCT conceptualized the study. SC was the moderator for the IDIs and FGDs. SC transcribed and coded the interviews and wrote the first draft of the manuscript. LGL, KDL, YSL, WY-MS and NCT assisted SC during the interviews. LGL also coded the interviews and drafted the methods section of the manuscript with SC. Discrepancies in coding between SC and LGL were resolved through discussions with NCT. LTY and CL audited the interview transcripts. KDL worked on Figure 1 with SC. YSL and WY-MS formatted the manuscript for submission to the journal. SC and NCT revised the draft. All authors reviewed and approved the final draft prior to journal submission.

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Figures

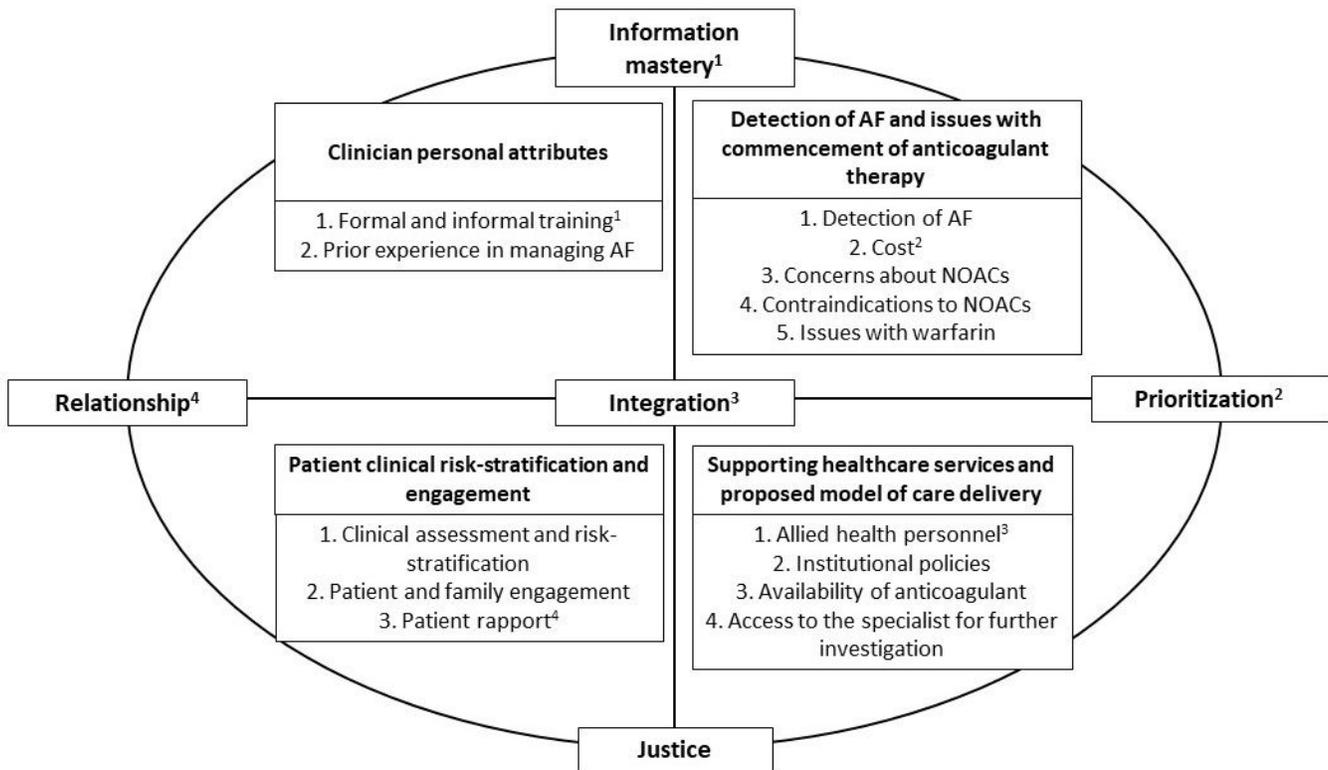


Figure 1

Title: Factors influencing primary care physicians' prescribing behavior of anticoagulant therapy for atrial fibrillation. Legend: Factors which influence anticoagulant therapy use by primary care physicians in atrial fibrillation presented according to the Generalist Wheel theoretical framework. Formal and informal training, cost, allied health personnel and patient rapport may also be categorized under information mastery, prioritization, integration and relationship, respectively.

Supplementary Files

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