Stroke Prophylaxis for Atrial Fibrillation? To Prescribe or Not to Prescribe—A Qualitative Study on the Decisionmaking Process of Emergency Department Providers

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Study objective: Although clinical guidelines recommend oral anticoagulation for atrial fibrillation patients at high risk of stroke, emergency physicians inconsistently prescribe it to patients with newly diagnosed atrial fibrillation. We interview emergency physicians to gain insight into themes influencing prescribing of oral anticoagulation for patients discharged from the ED with new-onset atrial fibrillation.

Methods: From September 2015 to January 2017, we conducted semistructured qualitative interviews with a purposeful sampling of 18 ED attending physicians who had evaluated a patient with new-onset atrial fibrillation within the past 30 days. Interview prompts examined physicians' attitudes toward prescription of oral anticoagulation therapy and current clinical guidelines. We used a constructivist grounded theory approach to analyze data and develop a theory on prescribing practices among emergency physicians.

Results: Three broad domains emerged from our analyses. (1) Oral anticoagulation prescribing practice: underlying themes affecting oral anticoagulation prescribing from the ED included physician practice patterns, beliefs, and barriers (including experience, comfort, and insurance coverage), and patient factors (including comorbidities, bleeding risk, and social concerns). Ultimately, these themes indicated physician discomfort and a sense of futility in prescribing oral anticoagulation for atrial fibrillation. (2) Guideline usage for oral anticoagulation prescribing: regardless of experience, most emergency physicians did not report using clinical guidelines when treating patients. (3) Recommendations for improved prescribing: physicians recommended the development of a validated, reliable, simple, accessible, and population-specific guideline that considers patient social factors.

Conclusion: The decision to prescribe oral anticoagulation in the ED is complex. Improving guideline adherence will require a multifaceted approach inclusive of system-level improvements, physician education, and the development of ED-specific tools and guidelines. [Ann Emerg Med. 2019;74:759-771.]

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INTRODUCTION

Background

Atrial fibrillation affects more than 2 million people in the United States and is the most common arrhythmia evaluated in the emergency department (ED),[1,2] and its prevalence is increasing in tandem with the aging of the US population.[2] Patients with atrial fibrillation are at increased risk of stroke and resulting disability and death compared with their counterparts who have no atrial fibrillation.[3] Clinical guidelines by the American Heart Association, Heart Rhythm Society, and European Cardiology Society all strongly recommend oral anticoagulation treatment to prevent stroke.[4-6] Despite being an important modifiable factor in improving outcomes in atrial fibrillation patients, stroke prophylaxis (oral anticoagulation treatment) remains underprescribed in multiple clinical settings, including the ED.[7]

Importance

Up to 25% of new diagnoses of atrial fibrillation are made in the ED[8]; however, prescribing of oral anticoagulation for ED patients is inconsistent, ranging from 20% to 60% for high-stroke-risk patients.[9-12] Furthermore, more than one-third of ED patients receiving a diagnosis of new-onset atrial fibrillation do not follow up within 30 days, delaying

Editor's Capsule Summary

What is already known on this topic

Emergency physicians infrequently prescribe oral anticoagulation for eligible patients being discharged with atrial fibrillation.

What question this study addressed

What are the decisionmaking factors that influence emergency physicians' oral anticoagulation prescribing?

What this study adds to our knowledge

This qualitative study explored the opinions of 18 practicing emergency physicians in regard to their rationale for prescribing or not prescribing oral anticoagulation, their use of guidelines, and their recommendations for improved prescribing. The physicians identified concerns about lack of follow-up care, belief that the prescription would not be continued, lack of insurance, and high bleeding risk. Current guidelines were considered to be of limited value.

How this is relevant to clinical practice

This has no direct effect on practice but outlines issues in the emergency department prescribing of oral anticoagulation for atrial fibrillation.

potentially life-saving treatment. Thus, therapy management at ED discharge could determine the trajectory of care and influence critical clinical outcomes.

Currently, little is known about how emergency physicians view their role in oral anticoagulation prescribing; do they have a role, and, if so, what are the potential barriers and facilitators to oral anticoagulation prescribing? Are emergency physicians aware of guidelines for oral anticoagulation prescribing, and do they perceive that these guidelines apply to their patients? Other than editorials, there have been no studies to our knowledge that directly investigate physician thought processes about prescribing oral anticoagulation.[13-16] A more nuanced understanding of decisionmaking factors can aid in the development of sustainable interventions.

Goals of This Investigation

We sought to understand better the factors influencing prescribing stroke prophylaxis for patients with atrial fibrillation, including guideline adoption and applicability, and perceived responsibilities of an emergency physician. Quantitative methods do not often reveal underlying fears, biases, or factors in decisionmaking. Similar to that of other studies that have used qualitative methods to understand physician decisionmaking,[17-23] our goal was to use a qualitative approach to examine emergency physician thought processes and identify themes that prevent or support oral anticoagulation prescribing for new-onset atrial fibrillation.

MATERIALS AND METHODS

Study Design and Setting

This was a qualitative study using semistructured interviews with emergency physicians from a single, urban, tertiary care, academic hospital with an annual ED volume of 50,000 patients. We used purposeful sampling to identify all patients treated in the ED who had a discharge diagnosis of new-onset atrial fibrillation and the attending physicians who evaluated and treated at least one of these patients. The research team consisted of 4 women (B.K., T.A., C.R, and J.L.) and 1 man (B.C.S.). The interviewer (J.L.) was a resident physician skilled in qualitative interviewing techniques who trained and practiced in Australia for 6 years before returning to the United States. At study initiation, the interviewer was a volunteer research assistant and had limited previous interaction with participants. We applied a modified, constructivist grounded theory approach to both data collection and analysis.[24] The Oregon Health & Science University institutional review board approved the study protocol. We used the Consolidated Criteria for Reporting Qualitative Research to guide reporting of interview data.[25]

Selection of Participants

Study participants were selected through purposeful sampling. They were board-prepared or board-certified attending physicians who had treated and discharged at least one patient with a primary diagnosis of new-onset atrial fibrillation within the previous 30 days. Sampling was designed to identify all cases of new-onset atrial fibrillation regardless of the physician. Between September 2015 and December 2016, research assistants screened records of adult patients ($\geq$18 years) treated in the ED who had a discharge diagnosis of new-onset atrial fibrillation. Research assistants received a 1-hour initial protocol training in inclusion and exclusion criteria and used a uniform data collection tool on all screened charts. Investigators (B.K. and T.A.) verified the records for study inclusion criteria. Once research assistants identified a patient with new-onset atrial fibrillation, they approached the diagnosing physician to obtain in-person consent for study participation. The interviewer e-mailed each physician to schedule a telephone

interview. Physicians expressed a preference for telephone interviewing because of campus logistics and ED shift scheduling. Each physician was interviewed once regardless of how many subsequent patients he or she treated for new-onset atrial fibrillation during the study period and whether other patients were admitted or discharged. Interviews with attending physicians were conducted from September 2015 to January 2017. Patients who agreed to participate in the study were interviewed concurrently. Results from patient interviews will be analyzed and reported separately.

We interviewed a total of 18 emergency physicians with postresidency experience ranging from 1 to 30 years. Approximately 75% of the ED attending physicians at our facility participated in this study, and all physicians eligible to participate agreed to be interviewed. One-on-one interviews were conducted by telephone to increase participant recruitment. The interviewer conducted the interviews from her home and workspace; the physicians participated from their offices or homes according to convenience. Our sample was predominantly white and men, as illustrated in the physician characteristics described in Table 1, and was comparable to the demographics of emergency physicians at our institution.

Data Collection and Processing

Investigators developed a semistructured interview guide based on their knowledge of the literature and what our clinical experience indicated would be most relevant. Three of 5 investigators (B.K., T.A., and B.C.S.) had knowledge of oral anticoagulation prescribing patterns in the ED, gained by both clinical experience and extensive literature reviews, which sensitized them to potential important topics for exploration. We developed and piloted the interview guide with an internal advisory group consisting of 3 emergency attending physicians, a Ph.D. professor of family medicine specializing in qualitative research, and the non-clinician (T.A.) and nonemergency medicine members of the research team (C.R. and J.L.). The guide was iteratively refined during the study (see Appendixes E1 and E2 [available online at http://www.annemergmed.com] for initial and final guides, respectively). The interviewer asked questions in the guide of each physician and then used further open-ended probing questions to foster more discussion. Each physician participated once; there were no repeated interviews. Interviews were digitally audio-recorded, transcribed verbatim, and uploaded into Atlas.ti (version 7; Atlas.ti Scientific Software Development GmbH, Berlin, Germany) for coding and analysis. We documented decisions and thoughts that influenced the research process.

As part of the constructivist grounded theory process, we revised interview questions to better answer our developing hypotheses; early participants may have answered differently if they were asked these questions. We conducted transcription, coding, and analysis simultaneously and iteratively until no new concepts were identified (data saturation).[16,17] Methods to ensure rigor included the use of a multidisciplinary investigative team to foster reflexivity. The interviewer conducted member checks throughout each interview. Audio recordings and transcripts were compared by multiple investigators (B.K., T.A., and C.R.) to ensure accuracy.

Table 1. Characteristics of the sample (N=18).

Characteristic	No. (%)
Sex	
Men	14 (78)
Ethnicity	
White	15 (83)
Asian	2 (11)
Other	1 (5.5)
Years of practice after residency	
≤10	9 (50)
>10	9 (50)

Primary Data Analysis

First, investigators developed a coding scheme from a subsample of initial interview data using open-coding techniques to identify, describe, and categorize the transcribed ideas. The core categories derived from open coding were used to develop the initial coding dictionary. Two analysts, a licensed nurse and a researcher with a graduate degree in qualitative research and coding (C.R.) and an emergency physician with postdoctoral training in qualitative coding (B.K.), independently coded a subset of 6 transcripts. Coded transcripts were compared side by side to identify any discrepancies and achieve consensus in coding. Once consensus was achieved, transcripts were coded line by line, with constant comparative analysis,[15] using and revising the code dictionary as appropriate. Initial themes were considered in advance but primarily emerged from the data analysis. Codes were organized into major themes and subsequently identified subthemes. For clarity, the major themes were further organized into domains. Representative quotations were selected for each theme and subthemes from deidentified interview participants.

RESULTS

Interview length averaged 30 minutes (range 20 to 40 minutes). The major themes were organized into three domains: beliefs and considerations leading to oral

anticoagulation prescribing practices, the use of current clinical guidelines and decisionmaking tools for atrial fibrillation and barriers to use, and recommendations for improved oral anticoagulation prescribing in the ED. The key subthemes and representative quotes within each of the themes and domains are described in Tables 2 to 4.

Many considerations and beliefs affect oral anticoagulation prescribing practices (Table 2). Among them are the physician's own beliefs, confidence, and practice patterns; continuity of care; and patient factors. Patient factors affecting prescribing practices and disposition, as perceived by the physician, included the ability to follow up with a long-term physician, social support, insurance status, and comorbidities and risk factors (eg, bleeding risk and/or stroke risk using $CHADS_2$ or CHA_2DS_2-VASc; risk stratification scores composed of congestive heart failure, hypertension, age, diabetes mellitus, or prior stroke, vascular disease, and sex).

We found an association between physician confidence and their years of experience. Physicians with less than 10 years of experience more commonly indicated that they would consult a cardiologist to gain concordance of opinion ("I tend to not get into the world of anticoagulation unless [patients] have a very high CHADS score, in which case usually a cardiologist [is] consulted, and then we discuss whether we want to send [the patients] out on an anticoagulation strategy"), whereas those with greater than 10 years of experience reported more comfort with prescribing oral anticoagulation absent a cardiology consultation.

Participants discussed decisionmaking in their practice surrounding oral anticoagulation. Physicians frequently reported that they consulted with cardiology when deciding to prescribe oral anticoagulation or discharge a new-onset atrial fibrillation patient from the ED. This self-reported practice of consulting with cardiology corresponded to the physicians' years of experience postresidency, with those with less than 10 years of experience more likely to state this as their approach.

Participants expressed beliefs influencing their prescribing practices related to the burden of oral anticoagulation on the patient and a lack of ability to communicate with primary care physicians to establish continuity of care for their patients. Despite these concerns, physicians considered oral anticoagulation prescribing for new-onset atrial fibrillation at ED discharge important for adherence to stroke prevention therapy.

Several physicians voiced concerns about the burden that oral anticoagulation prescribing places on their patients. They described the difficulties of educating patients about enoxaparin/heparin bridging and concern about the frequent drawing of serum, increased risk of bleeding, and dietary restrictions that come with prescribing warfarin. ("Taking something like warfarin is incredibly taxing on people…with weekly or at least biweekly INR [international normalized ratio] checks…."). Some physicians believed that non–vitamin K oral anticoagulation (novel oral anticoagulation, eg, apixaban, dabigatran, rivaroxaban) reduces these burdens and may be a desirable alternative to traditional oral anticoagulation; however, they described individual insurance and prescription coverage for novel oral anticoagulation as a significant barrier for many patients.

Interviewees commonly expressed concern about a lack of communication and continuity between emergency and primary care physicians. They thought that if the primary care physician was not of the same mindset, developing a treatment plan or prescribing oral anticoagulation was a futile activity ("One of the biggest problems we have is a lack of communication, too many chefs in the kitchen…. [I]t's a waste of my time to do all the research…[and] then to send [patients] to somebody who feels uncomfortable with my plan"). Physicians frequently cited barriers within the health care system, such as the ability to electronically share patient charts, insurance coverage, and availability of follow-up as contributors to this belief.

Although some physicians did not think oral anticoagulation initiation was an emergency physician's responsibility, there were others who thought the ED could influence clinical outcomes: "…[T]here is a potentially real impact from [initiating oral anticoagulation]."

Participants considered patient characteristics as heavily influencing their prescribing practice, including comorbidities, bleeding risk, social factors such as family support systems and ability to pay for medications, access to follow-up care, and patient preference.

Multiple physicians were concerned about the risk of bleeding and distinguished between the ability to reverse with warfarin versus novel oral anticoagulation. They also acknowledged that novel oral anticoagulation may be more effective and safer.

Participants often expressed concern about patient social support in how they would manage anticoagulation, with one physician indicating that "…you have to [be] a fairly organized person or at least have a strong family system plus a good primary care physician who can manage all that stuff for you." Furthermore, physicians were concerned about the affordability of the medications and whether patients' insurance would cover their medications.

Emergency physicians expressed a concern that patients would not receive ongoing care for the management of atrial fibrillation and oral anticoagulation. Moreover, the ability of a patient to follow up with a specialist or primary care physician after being discharged from the ED was a

Table 2. Domain 1: themes, subthemes, and representative quotations from emergency physicians about their beliefs and considerations leading to oral anticoagulation prescribing practices for new-onset atrial fibrillation at ED discharge.

Theme	Subtheme	Representative Quotation
Practice patterns	Cardiology consultation	Interviewer: Do you discharge patients receiving warfarin from the ED? Physician: Not without a specialty consultation. [If] they feel that they can see the [patient] to complete their workup and discharge and arrange post follow-up, I would, but only after getting that specialty consultation on a new-onset AF. In terms of anticoagulation, usually, I talk to the cardiologist who will be involved with the patient to try and figure what kind of anticoagulation to do for the patient. Whether they need an echocardiogram prior to starting the anticoagulation or [anticoagulation] prior if they wanted to cardiovert them or something. I tend to not get into the world of anticoagulation unless [patients] have a very high CHADS score, in which case usually a cardiologist has been consulted, and then we discuss whether we want to send them out on an anticoagulation strategy.
Beliefs	Burden of OAC on the patient	Taking something like warfarin is incredibly taxing on people. They have to have weekly or at least biweekly INR checks, and they have to follow a strict diet, and they have to take medicines that don't interact with their warfarin. I mean, you're really comparing [warfarin] versus the [NOACs] and it's sort of a no-brainer for compliance. I mean [warfarin] is very difficult to take because it's very sensitive to diet [and] other medications, it can go up or down, [and] it needs to be monitored very carefully. You have none of these issues with the new medications, so it's pretty easy.
	Lack of treatment continuity/ communication with PCP	I think one of the biggest problems we have is a lack of communication, too many chefs in the kitchen. I also think it's a waste of my time to do all the research and try to do the right thing and then to send [patients] to somebody who feels uncomfortable with my plan. Anticoagulation—I leave [it] entirely up to the consultants because they'll be the ones who are managing it long term, and once we get someone stabilized, well, anticoagulation is good, [but] it's not like if we don't give it the next hour or two, they get progressively worse.
	Initiating OAC in the ED can be beneficial to medication adherence	I think we make an impact after discharge if we start the anticoagulation. I think that there is a potentially real impact from that and a number of patients that are going to take the medication and continue to take the medication.
Barriers	Experience and comfort	Lack of [a] reversal agent for GI bleed and intracranial hemorrhage is a major downside. With the elderly population, who often have atrial fibrillation—I think that's the biggest consideration, for me at least—just the risks of falls and the fact that the novel anticoagulants don't have a reversal agent [are deterrents]. So that's my sort of uncomfortableness with that. I'm more comfortable with [warfarin] but I am becoming comfortable with the novel anticoagulants. I've prescribed them before. I feel that I have a lot more comfort with [warfarin]; and the new ones you can't really monitor…too much, unless you [measure] a factor Xa. I think I'm more open to start a novel anticoagulant in AF for stroke prevention, clot prevention, whatever, than I am for someone who has an actual clot. So I think that that would be my ideal patient because, like I had mentioned before, I'm not as familiar or comfortable with initiating those medications. [A]t this point in my practice, I'm sticking with aspirin or [warfarin], depending on [patients'] CHADS score.
	Insurance coverage	The problem is that, you know, [NOACs] are really costly. Some insurance companies will not cover that. So it really depends on what you know about their insurance status. I'd rather know one way or the other [about their insurance coverage],…[rather] than just write someone a [prescription] and then have them find out the next morning, "Oh, I can't fill this," and then days would go by without [receipt of any medication], right? [For example]…, the conversation really revolved around whether or not her insurance would cover rivaroxaban [a NOAC] because I've had the personal experience of seeing other patients bounce back that had been given a prescription for rivaroxaban, but then they came back saying, "My insurance doesn't pay for this" and "Can you put me on another drug?" If insurance was not an issue, I would just go to rivaroxaban or the [other] [NOACs] because the risk of dangerous bleeding is less and you don't have the monitoring issues that you have with [warfarin], but this whole issue of coverage is really important because it makes no sense to give a prescription to a patient when they can't—if they're not covered and they can't afford it.
Patient factors	Comorbidities	So if they have CHF, high blood pressure, end-stage diabetes, [or]…history of stroke,… then you'll [consider] whether or not you're going to [put] somebody on aspirin vs [using] some more aggressive anticoagulation.

Table 2. Continued.

Theme	Subtheme	Representative Quotation
	Bleeding risk	The thing I like about warfarin is that there are ways to reverse it. If you start bleeding on warfarin, there are certainly good ways to reverse it. [With] other newer [NOACs], there aren't great reversal agents. With a lot of the new [anticoagulants] or [NOACs], or NOAC medications, they're thought to be, at least in some trials, a little bit more effective and a little bit safer. [If] somebody is at high risk of falling, then [we] maybe just want to do aspirin because the risk of them having a major bleeding episode after a fall may be too high. But at that point, it's much more of a discussion with the patient and their family regarding…what they feel is acceptable for them, given the risks and benefits of their current situation.
	Follow-up care	[I]t's not practical to start people on stuff that needs chronic follow-up. That's not what the ED typically does. I feel like we do tend to admit a lot of these people because we're uncomfortable with them because they don't have good follow-up. I definitely need to have somebody follow [a patient] up if I'm going to discharge them home, you know, for [AF]. I won't discharge them if they don't have a primary care [physician] in general. [There must be] [v]ery good follow-up first and foremost because warfarin necessitates INR measurements, and [a] regular physician, or at least access to [an] anticoagulation clinic to do those measurements and to kind of follow [and] make recommendations about dosage adjustments. We are not very well equipped in the ED to deal with chronic disease, so a lot of the barriers have to do with ongoing medical management and its dynamic situation. So there really is a crucial need for follow-up with these patients in an appropriate setting.
	Social status and support	You have to [be] a fairly organized person or at least have a strong family system plus a good PCP who can manage all that stuff for you. [I]f we're going to send them out on [enoxaparin sodium] and [warfarin], are they going to be able to administer those medications, do they have insurance that is going to be able to cover it, or can they afford those medications? [T]here are some patients that might have an elevated [CHADS] score but have another reason that we might not want to anticoagulate them, and there is also sometimes a follow-up issue; that is that they don't have [a PCP], [they do not have] the ability to pay for certain medications, [and] there are some social insurance and follow-up issues that differ [from] patient to patient.
	Preferences	I think a decision aid could be [helpful]…if it proposed an oral anticoagulant that is not cost prohibitive,…could help in a shared decision making discussion on patient preferences, [and] increased compliance with an oral anticoagulant, and if the inclusion criteria included the study group. [I] always have [a] shared-decisionmaking conversation, but I think I would say that more often than not,…patients are okay with [NOACs] and they prefer not having to have their INR checked.

AF, Atrial fibrillation; *NOAC*, novel oral anticoagulation; *OAC*, oral anticoagulation; *PCP*, primary care physician; *GI*, gastrointestinal; *CHF*, congestive heart failure.

primary consideration in prescribing oral anticoagulation ("We are not…equipped in the ED to deal with chronic disease, so there are a lot of barriers that have to do with ongoing medical management and its dynamic situation. So there really is a crucial need for follow-up with these patients in an appropriate setting").

Participants described barriers to prescribing oral anticoagulation at ED discharge that related to their personal experience in and comfort with prescribing and systems-level concerns in regard to patient insurance coverage and the associated treatment costs if insurance coverage proved to be inadequate.

Additionally, the extent of a physician's experience with prescribing novel medications and his or her comfort with discharging a patient who was receiving an anticoagulant was found to be a primary barrier. Some physicians had not used novel oral anticoagulation in their practice and were hesitant to do so because they were not well versed in the literature in regard to use and reversal mechanisms ("…I'm not as familiar or comfortable with initiating those medications [novel oral anticoagulation]. [A]t this point in my practice, I'm sticking with aspirin or [warfarin], depending on [patients'] CHADS score"), whereas others were confident in prescribing novel oral anticoagulation but felt limited by insurers.

Physician characteristics associated with differences in prescribing practices and guideline use included years of practice postresidency, familiarity with clinical guidelines, and familiarity with various oral anticoagulant options.

Physicians expressed the desire to prescribe novel oral anticoagulation for patients, citing fewer treatment-associated

Table 3. Domain 2: guideline usage for oral anticoagulation prescribing for new-onset atrial fibrillation at ED discharge.

Theme	Subthemes	Representative Quotation
Use of guidelines and decisionmaking tools		I use the $CHADS_2$ score for starting people on anticoagulation if they're going to be discharged home. That's a definitely major one that I use, and other than that, I don't use any other scoring system. I base [anticoagulation] on the CHADS score on whether or not they need to be anticoagulated, and oftentimes, they can just go home on an ASA [aspirin]. [My decision is] based on my reading of the literature and, in part, some of the guidelines from the American Heart [Association].
Barriers to use	Lack of consistency in information and recommendations	I feel like there's a lot of different information out there from a lot of different sources; [for example], the [emergency medicine] literature and the cardiology literature. I almost feel like the 2 aren't necessarily aligned with each other. I think if there was consensus of the American [College] of Emergency Physicians with the cardiologists that said,… "We support [emergency physicians] who feel that a patient falls under this category, then that is standard of care."
	Difficult to use/lengthy	I find…[that when] the decision tools [are]…very lengthy, and there is a lot to remember, I don't use those as much. I don't think a lot of people use those as much. Sometimes institutional protocols can be helpful, although I think some see them as a bit of [a] hindrance.
	Not Emergency Department (ED)-specific	I think the [challenge] remains that…if you ask a cardiologist to manage it, their approach is very different than [that of] an emergency physician because they look at the long-term follow-up piece. Our issue is short term and the question is in the short term, is there data to support what we do and is it safe? …When you start to put all those things together, I think the challenge becomes creating a rule which is actually ED pertinent. So the CHADS score is really not ED pertinent and that's the problem with the CHADS score: it's a cardiologist score.
	Lack of consideration of comorbidities and individualized treatment	[W]e're using protocols, but nobody is thinking outside of the box and when you don't think outside the box, you are not giving good care. I mean we were taught to think. [T]here are usually a fair number of exclusions when they're deriving and validating decision tools, but by that I mean that every patient is a unique event, and so your patient that is in front of you may or may not fit the population from which the assistant tool was derived. So you have to use some judgment; it's not a universally applicable one-size-fits-all decision tool, usually. I'll use research or use a guideline, depending on the patient, because every patient is different. So I don't believe in cookie cutter guidelines for everybody because I think that's robotic care and I think that takes away the art of medicine.
	Awareness	I don't use guidelines…probably due to a lack of awareness. I don't feel that the patients that I have deviated significantly from the care that I'm used to or am already delivering. A barrier? It would be my education: not knowing…, my lack of knowing, my lack of reading about it.

inconveniences to patients and lower bleeding risk, but felt restricted by a patient's health insurance status and coverage ("…[A]nother issue is the ability to pay for certain medications due to insurance issues"). Many physicians discovered that their patients could not fill their prescriptions because their insurance did not cover novel oral anticoagulation (because they would return to the ED for a new prescription or leave a telephone message for the physician in the ED).

Physicians cited the use of various clinical guidelines and decisionmaking tools, or none when prescribing oral anticoagulation for new-onset atrial fibrillation at ED discharge (Table 3). Additionally, respondents described multiple barriers to using them or a lack of awareness of the guidelines altogether.

When stratified by years of experience, the more experienced emergency physicians cited CHADS, $CHADS_2$, and CHA_2DS_2-VASc in their decisionmaking process ("I base [anticoagulation need] on the CHADS score…, and oftentimes, [patients] can just go home on an aspirin"). Less experienced physicians more often cited American Heart Association recommendations, MEDLINE, UpToDate, and peer-reviewed literature as their resources for clinical decisionmaking for atrial fibrillation.

Physicians discussed multiple barriers to the currently available tools and guidelines, including that they are perceived as lacking consistent recommendations, are lengthy and challenging to use, are not ED-specific, and do

Table 4. Domain 3: recommendations for guidelines and decisionmaking tools in the treatment of atrial fibrillation.

Theme	Representative Quotation
Validated/reliable and population specific	If [the decision aid] was validated and…easy to use, [I would use it]. I mean, everything has to be practical; it can't be something that—I mean, the time pressures of the business that we live in are sometimes forgotten. You have to do a lot of things in a very short time, and the expectation is that people want everything fast, fast, fast—which all means that if you try to make decisions, they have to be tools that are really easy to use. It depends on how rigorous the decision tool is…[and] if it was proven fully or not, and if it was sponsored by the pharmaceutical industry or not. That would be the 2 things that would influence me. I would still use it if they're fully sponsored by the pharmaceutical industry, but it would need to be shown that it was nonbiased. I think it basically has to be properly derived, properly validated, [and] tested in a large number of the different populations to make sure that it works. If [the decision aid] came from a study with a large derivation set and if it were validated by another group in another setting, as well as validated by the group that derived the set, [I would use it]; in other words, in different settings and in different patient populations like, you know, tertiary center versus a county hospital versus a community setting. I think if it were validated in different settings with a large number of patients, I think we'd be more likely to use it.
Ease of use	It would have to be simple enough to apply the tool in a very [straight] forward manner. …[A]nd again it would have to be based on [a] standard for baseline risk of bleeding and a comparison of what [the] particular [medication] we are going to use for the anticoagulation. If it's going to improve patient care, if it's going to improve efficiency and cost-efficiency? Sign me up. But if you're making me add one more thing in my chart that is going to do nothing but cause more headache, don't put me through that misery. It's about the patient. I think what we can best hope for is a reliable way to identify low-risk patients who would…be appropriate for outpatient management of initial or acute onset of AF and then have guidelines suggestive of "if/then" as far as indications for different medications. Ease of use certainly, since a lot of what we talked about has to do with patient education. I think if there are accompanying documents to physically hand the patients that may answer a lot of their frequently asked questions or provide them with telephone numbers or clinic information about places to get additional information or follow-up, that would be extremely useful.
Accessibility	[Use would depend on] how easily accessible it was. I use most of my calculation through MDCalc, so I guess if it was on MDCalc, then that would make me more likely to do it because it's where I get my other scores. But I think if it was available online easily, that would be fine because [I] usually have access to [the] Internet during my shift. I think ideally, you'd have an EMR [electronic medical record] that…has guidelines built into it, and when the rhythm was identified, there would be the ability to import that guideline and essentially follow it.
Inclusion of social factors and insurance status	I think a barrier is that a lot of the decision is based on social factors and insurance factors. [It] would be helpful to have in a decision tool…all their insurance information at the same time because going through all that work and then talking to [patients] about the medication, and then finding out that their insurance doesn't cover it—it's pretty frustrating.

not consider comorbidities and individualized patient care ("I feel like there's a lot of different information out there from a lot of different sources. [In regard to] [t]he [emergency medicine] literature and the cardiology literature, [for example], I almost feel like the 2 aren't necessarily aligned with each other").

Physicians who reported concerns about the reliability and validity of guidelines attributed their concerns to a conflict between recommendations by the American Heart Association and emergency medicine literature.[26] This concern was reiterated by multiple physicians and has resulted in apparent uncertainty in regard to which guidelines to use. Participants expressed apprehension that guidelines and tools were created for cardiology for the care of chronic illness and not specifically for the acute or ED setting ("…If you ask a cardiologist to manage it, their approach is very different than an emergency physician['s] because they look at the long-term follow-up piece. Our issue is short term…. [I]s there data to support what we do and is it safe?" and "…The challenge becomes creating a rule which is actually ED pertinent. The problem with the CHADS score is that it's not ED pertinent; it's a cardiologist score"). There was no obvious consensus on what they believe works best, nor evidence of consistent use of these resources.

Some physicians expressed difficulty in using current guidelines or decision making tools because of their length. ("I find…[that when] the decision tools [are]…very lengthy, and there is a lot to remember, I don't use those as much. I don't think a lot of people use those as much").

A primary concern of multiple physicians was the issue of guidelines' being created without the ED acute care setting in mind and lacking emergency physicians on the guideline committee ("I think the [challenge] remains that…if you ask a cardiologist to manage it, their approach

is very different than an emergency physician['s] because they look at the long-term follow-up piece. Our issue is short term and the question is in the short term, is there data to support what we do and is it safe? …When you start to put all those things together, I think the challenge becomes creating a rule which is actually ED pertinent. So the CHADS score is really not ED pertinent and that's the problem with the CHADS score: it's a cardiologist score").

Physicians were also concerned that the guidelines and decision tools do not account for the individual patient, such that their patient is unique and that they may cause harm, "…so you have to use some judgment. It's not a universally applicable one-size-fits-all decision tool." Similarly, others expressed that they "don't believe in cookie cutter guidelines for everybody because [they] think that's robotic care and…that takes away the art of medicine."

Multiple participants reported a lack of education about which guidelines or decisionmaking tools are relevant and applicable to the new-onset atrial fibrillation patient population.

A common recommendation was for a tool that was validated, reliable, and population-specific while being simple to use, easily accessible, *and* generalizable to all populations, including those with social vulnerabilities or lack of insurance coverage sufficient to cover a necessary treatment (Table 4) ("The challenge, unfortunately, is medicine isn't a perfect business, so you're going to struggle with rules that should apply to the majority of the population. So it has to be something that doesn't just target the 20- to 40-year-old with a certain type of afib [atrial fibrillation]; it really has to apply globally"). Although physicians expressed wanting a tool that applied to a broad range of patient circumstances, they were certain that it needed to be relevant and specific to the ED.

Although physicians wanted a practical tool, they also wanted it to be properly derived, validated, and unbiased ("It depends on how rigorous the decision tool is…[a]nd if it was sponsored by the pharmaceutical industry or not. That would be the 2 things that would influence me. I would still use it if they're fully sponsored by the pharmaceutical industry, but it would need to be shown that it was nonbiased….").

In addition, the tools must be easy to use and be part of work-flow procedures. Physicians expressed skepticism about the practicality of a new tool, stating, "If it's going to improve patient care, if it's going to improve efficiency and cost-efficiency? Sign me up. But if you're making me add one more thing in my chart that is going to do nothing but cause more headache, don't put me through that misery."

However, if the tool were to be created, they preferred that it be accessible in the electronic medical record, where it could incorporate social factors such as insurance type, an important consideration because it would inform physicians of covered therapies. Additionally, physicians desired an aid that would facilitate support for shared decision making, including patient education and communication with the primary care physician, not just for their clinical decisionmaking.

As with other medical decisionmaking that occurs in the ED, the patient's clinical and social situation and insurance status become factors in a physician's decision. Physicians recommended that such factors be included in guidelines and tools ("…[A] lot of the decision is based on social factors and insurance factors").

Physician interviews indicate a paradigm in which physicians believe that the multifaceted challenges of the health care system, patient social factors, and their own discomfort contribute to a role of *not* prescribing. If the patient has follow-up care, physicians believe they should defer the plan to the outpatient physician and, as a result, will not prescribe. If the patient does not have follow-up care or continuity of care available, many physicians are less likely to prescribe. This paradigm likely signals a sense of futility[27] among physicians and a perspective that EDs do not have a role in oral anticoagulation initiation. When physicians do prescribe, they may receive negative feedback from patients when insurers do not cover their prescriptions or from primary care physicians and cardiologists who disagree with the treatment plan. This cycle of negative feedback results in the decreased likelihood of a future oral anticoagulation prescription.

LIMITATIONS

This study was conducted at a single-site, urban, academic medical center with an average annual volume of ED visits. The participant demographic profile was primarily white men, which may limit the transferability of our findings to practices with different ED volumes and physician demographics. Access to consultation with specialty services, hospital type (community versus academic), ED patient volume, and location (urban, suburban, and rural) are factors that may influence physician decisions in oral anticoagulation prescribing.[28] However, the emergency physicians interviewed were trained nationwide, including at higher-volume and community sites. Many of the themes that arose from this study are likely to apply to other settings. Our sample size was small but sufficient to achieve saturation and for themes to emerge. Physician race (white) and sex (men) were homogenous, whereas the patient population was more variable, which may influence prescribing practices in relation to other sites with more or less diverse patient populations. Finally, in part because of limited study

resources and volumes of discharged patients with new-onset atrial fibrillation at this site, physicians were interviewed only once. Physician practice over time may change according to the number of new-onset atrial fibrillation patients treated. We also did not track the number of new-onset atrial fibrillation patients each attending physician in our study had treated during the previous 30 days, but the frequency, disease severity, or both of atrial fibrillation patients they treated may have influenced their decisions and views on treatment. The interviewer's complex medical training may have introduced bias because attending physicians interviewed after she became a resident physician might have felt compelled to give the "right" answer rather than express their true beliefs. Also, the lack of transcript validation by participants for comment or correction may have affected the reflexivity of the study.

DISCUSSION

To our knowledge, this study is the first that directly interviewed emergency physicians about the factors that influence their decision to prescribe stroke prophylaxis for atrial fibrillation when discharging patients from the ED. Barriers to prescribing are multifactorial and include patient characteristics such as access to follow-up care, health insurance coverage, and perceived social circumstances or support. Physicians also cited uncertainty of the interpretation of multiple and at times conflicting guidelines, and the belief that stroke prophylaxis is an outpatient issue. Ultimately, an overall theme of physician discomfort and sense of futility emerged concerning prescribing of oral anticoagulation at ED discharge for patients with atrial fibrillation.

Physicians with more experience discussed more confidence in prescribing of oral anticoagulation; this evokes many questions, such as if they have had negative feedback, are their biases different from those of less experienced participants, have personal experiences with stroke and disability influenced their prescribing, or does more experience result in a greater sense of responsibility for more comprehensive care? Few ED data exist that correlate physician experience and quality metrics. A recent study showed that hospitalized Medicare patients treated by older general internists had higher mortality compared with those treated by younger physicians, except for physicians with high patient volumes.[29] Thus, among hospitalists, the years of experience and patient treatment volumes can have a meaningful influence on patient outcomes. For our findings, further research is needed to understand how participant years of experience and patient treatment volumes affect ED patient care and physician confidence in oral anticoagulation prescribing.

The ED has traditionally operated as an acute care entity in which the role of the emergency physician ends at discharge or admission. Thus, providing a long-term medication prescription for oral anticoagulation whereby the benefits are measured in years[30-32] is outside of the ED's typical function. However, acute presentations allow for a "teachable moment" when patients are most receptive to medical or behavioral interventions.[33-36] For example, of atrial fibrillation patients prescribed the oral anticoagulant warfarin by an emergency physician, 25 of 34 (73.5%) were still receiving warfarin at 1 year after discharge compared with 34 of 104 (35.6%) among those not receiving a prescription from the ED.[37] Thus, the ED can have an influence on the trajectory of care and important clinical outcomes by potentially decreasing the risk of stroke and mortality with longer-term oral anticoagulation use.

Yet our results indicate that there is little acceptance by emergency physicians of guidelines that would help them initiate thromboprophylaxis for patients with atrial fibrillation. Current stroke-risk stratification scores[32,38,39] were created from outpatient long-term care populations rather than acute ED populations with episodic care, who tend to be a more ill population with greater comorbidities. Research on this acute care population is needed to fill this critical gap. Furthermore, professional US guidelines[4,6,40-42] that inform thromboprophylaxis of patients with atrial fibrillation were written for and by cardiologists and internists and did not include in the writing committees other specialties involved in potential oral anticoagulation management and treatment. Last, the interpretation of the guidelines is unclear to emergency physicians. Costantino et al[26] showed multiple conflicts in a side-by-side comparison among the major international guidelines. Reconciliations of these issues will require a multidisciplinary committee to gain insight into how management and evaluations should operate in different clinical settings, as well as achieve consensus among the major international and national professional groups on the standards of care for management of atrial fibrillation.

One group often excluded from guideline committees because of a potential for conflict of interest, but which has a significant influence on treatment and management in the United States, is insurers. The lack of clear novel oral anticoagulation coverage by insurers and the need for previous authorization are significant barriers in the time-pressured setting of an ED. Nonetheless, if a novel oral anticoagulation treatment is covered and follow-up is not available, it could be construed as imprudent to provide long-term oral anticoagulation, given the potential for significant adverse effects, contributing to a sense of futility.

An option for providing optimal stroke prophylaxis proposed by Barrett and Marill[13] is a "default short-term

anticoagulation therapy" policy for patients with high stroke risk and without contraindications to anticoagulation, with follow-up with primary care physicians, anticoagulation specialists, or cardiologists. Such a policy would require intrahospital to outpatient stakeholder collaboration, with a willingness to implement guidelines and empower emergency physicians, as well as other specialties, to appropriately prescribe oral anticoagulation with the knowledge that follow-up will be available. For example, one Southern California ED has included an ED pharmacist to provide a shared decisionmaking discussion with patients about stroke prophylaxis, and then an emergency physician prescribes the medications.[43] An agreement with their hospital's cardiology groups allows follow-up for all patients. The creation of such clinical pathways and team-based management may empower emergency physicians to adhere to guidelines.

Additionally, physicians participating in this study offered ways to increase guideline use with simple decision support tools integrated into the electronic medical record system. There are an increasing number of platforms (Web sites/applications) with risk calculators (eg, MDCalc.com), as well as display pictograms of stroke risk versus bleeding risk with stroke prophylaxis recommendations (eg, healthdecision.org). Ensuring that these tools have an ED-specific component or have ED clinicians involved in their development will also be crucial to uptake. Such tools are useful in shared decisionmaking conversations when discussing with patients their disease, prognosis, and risk, as well as recommendations.[44]

To help design these tools and potential interventions to improve appropriate stroke prophylaxis, future steps include a multisite, mixed-method study to understand better the quantitative factors that may also be influencing decisionmaking, such as physician admission rates for atrial fibrillation and treatment volumes, as well as how other health systems and site-specific culture factors affect physician decisionmaking. We will also study how patients perceive oral anticoagulation prescribing for atrial fibrillation from the ED, education about the risks for atrial fibrillation and oral anticoagulation, and barriers to optimal management at and after discharge from the ED.

In summary, the decision to prescribe oral anticoagulation is complex and multifocal and involves the transition of care of patients with a chronic condition from episodic ED care to the outpatient setting. Improving guideline adherence will require a multifaceted approach: educating emergency physicians about the indications, risks, and benefits of anticoagulation; ED-specific guideline development and dissemination, with active engagement with emergency medicine leaders to emphasize the shared responsibility of stroke prophylaxis; improvement of the health care delivery system to ensure that patients receive appropriate follow-up from the ED; and empowerment of physicians to make confident, evidence-based decisions. Such a paradigm shift could result in added value to ED evaluations not only by moving outpatient and inpatient guidelines to ED settings and improving the transition in care of atrial fibrillation patients discharged from the ED but also by making a clinical difference by reducing adverse events.

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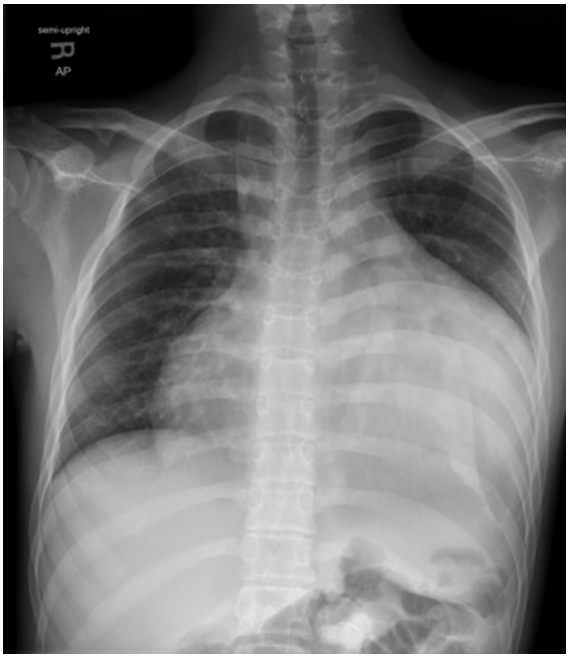

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