Anticoagulation for Emergency Department Patients With Atrial Fibrillation: Is Our Duty to Inform or Prescribe?

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In this issue of *Annals*, Scheuermeyer[1] investigated how often emergency physicians at 2 Canadian centers follow the Canadian Cardiovascular Society anticoagulation treatment recommendations when discharging patients with atrial fibrillation. His findings suggest that up to 50% of atrial fibrillation patients who are not correctly anticoagulated at their emergency department (ED) evaluation are discharged home without the recommended anticoagulant initiated or a documented justification for not initiating anticoagulation. Scheuermeyer[1] concludes that emergency physicians have the opportunity to start anticoagulant therapy and improve patient care and outcomes.

Scheuermeyer[1] performed a retrospective cohort study using well-defined methodology and a robust database that included 4 years of ED visits at 2 hospitals. The investigator searched the ED medical records for the physician's reasoning for either initiating or withholding warfarin in eligible patients [ie, CHADS2 score >0 (Congestive heart failure (1 point), Hypertension (1 point), Age >75y (1 point), Diabetes (1 point), prior Stroke/transient ischemic attack (2 points))]. Among the 360 patients with calculated CHADS2 scores greater than 0, the authors retrospectively calculated that the treating emergency physician had an opportunity to consider initiating anticoagulation in 151 patients. Of the 151 eligible patients, 41 (27.2%) began receiving aspirin or warfarin and 21 (13.9%) additional patients had documented reasons for not receiving anticoagulants. Although in the study Scheuermeyer[1] considered a discussion with the patient about increased risk of thromboembolic events and a recommendation to consult a primary care physician to consider anticoagulation as "appropriate" management, the author noted that this may be "suboptimal care."

The article by Scheuermeyer[1] is another example of the significant variation in the ED management of patients with atrial fibrillation and the need for an ED-focused clinical practice guideline.[1-5] Emergency physicians rely on adjusting cardiology guidelines and clinical experience to guide management of acutely symptomatic atrial fibrillation patients. How should the emergency physician interpret a chronic disease management guideline's recommendation for thromboembolism prevention? Should a 55-year-old woman with hypertension who is incidentally found to have newly diagnosed asymptomatic atrial fibrillation during a preoperative evaluation begin receiving warfarin from the ED? Her CHADS2 score would be 1 and her CHA2DS2-VASc score [Congestive heart failure (1 point), Hypertension (1 point), Age >75y (2 points), Diabetes (1 point), prior Stroke/transient ischemic attack (2 points)-Vascular disease [prior myocardial infarction, peripheral artery disease, or aortic plaque] (1 point), Age 65-74y (1 point), Sex category [ie, female gender](1 point)] would be 2, thus making her a candidate for warfarin or one of the alternative approved anticoagulants. Is a 1- to 2-week wait for an outpatient appointment a clinically significant delay in starting anticoagulant therapy? What if this same patient is uninsured and has difficulty accessing the health care system? Should that encourage the emergency physician to initiate warfarin or one of the alternative approved anticoagulants? There are now 5 primary options for thromboembolism prevention. Do emergency physicians need to be experts in selecting the best agent for individual patients? These are questions that need to be addressed as the prevalence of atrial fibrillation continues to increase, resulting in more frequent ED visits.[5,6]

Scheuermeyer[1] contends that the emergency physician should prescribe anticoagulation for eligible patients with atrial fibrillation before discharge. Atrial fibrillation accounts for nearly 1 in 7 strokes[7]; therefore, the prominent international guidelines list thromboembolism prevention as one of the 3 main objectives in managing patients with atrial fibrillation.[8-10] However, these guidelines do not define the emergency physician's role in initiating long-term anticoagulation. Selecting the optimal antithrombotic agent requires that the clinician estimate each patient's risks of stroke and bleeding.[11-15] The conversation needed to assess long-term anticoagulation's benefits, harms, and patient preferences is a long one—a conversation that is not necessarily best conducted in the ED and one about which a patient's internist or cardiologist may be able to provide knowledge (eg, fall history, ulcer history, substance abuse) that may be unknown or not disclosed to the emergency physician. We contend that emergency physicians should not be obligated to ensure that patients begin receiving long-term anticoagulation. Rather, emergency physicians should feel comfortable deferring the ultimate decision on chronic

anticoagulation medication to the patient's internist or cardiologist.

Unlike prescribing low-molecular-weight heparin and warfarin for an acute deep venous thrombosis, anticoagulation in atrial fibrillation is treating the potential for a thromboembolism and not an established diagnosis. The CHADS2 and CHA2DS2-VASc scores predict annual stroke risk, not necessarily stroke risk at 5 days or 30 days from the ED evaluation.[11-14] The majority of patients in the study by Scheuermeyer[1] who were eligible for anticoagulation (ie, CHADS2 score >0) had a CHADS2 score of 1. From 3 large stroke prevention trials, Coppens et al[14] selected patients with a CHADS2 score of 1 who were receiving aspirin or aspirin and clopidogrel and reported that the incidence rate for ischemic or unspecified stroke was 1.8 (1.6 to 2.1) per 100 patient-years. Individuals whose calculated CHA2DS2-VASc score was 1 had an even lower incidence of stroke, 0.9 (0.6 to 1.3) per 100 patient-years.[14] Converting those incidence rates to a daily stroke risk would result in an extremely low probability even if we factored in that aspirin reduces stroke risk by 19%.[16]

However, the applicability of chronic thromboembolic risk to a single ED visit may be just as limited as the applicability of chronic guidelines. ED patients with atrial fibrillation do experience thromboembolic events within a month of their ED evaluations.[1,3] Scheuermeyer[1] reported a single case of stroke at 24 days. We recently reported preliminary data from an ongoing prospective cohort of ED patients with atrial fibrillation and flutter in which 13 of 506 patients (3%) experienced a stroke within 30 days, including 4 within 5 days of their ED visit.[17] On discharge, ED patients with atrial fibrillation are at relatively low risk for a potentially highly debilitating event, embolic stroke. Therefore, we offer a novel alternative to the "all or none" approach to anticoagulation: default short-term anticoagulation therapy.

The risk of stroke increases among patients with higher CHADS2 scores and may be particularly elevated in patients after electrical or chemical cardioversion caused by known persistent "atrial stunning."[18] Default short-term anticoagulation therapy means that, barring contraindications such as bleeding disorder, elevated risk of fall or head trauma, or noncompliance, all atrial fibrillation patients with CHADS2 score greater than 0 who are not already anticoagulated could be offered anticoagulation for a limited duration on ED discharge. Emergency medical care does not begin at the ED door, as exemplified by emergency medical services. Similarly, emergency medical care does not end at the ED exit. Default short-term anticoagulation therapy would provide patients with elevated thromboembolic risk with a protective tail until they follow up in the clinic with their internist, cardiologist, or a new physician. At that point, a discussion of the risks and benefits of various chronic therapies and the determination of an optimal individual long-term treatment plan can begin.

Although ED cardioversions for atrial fibrillation in the United States pale in comparison with that of other nations,[3,4,6] recent ED publications advocate ED rhythm control and subsequent discharge home in appropriate patients.[3,4,18-20] ED cardioversion safety may be improved and more patients might benefit from default short-term anticoagulation therapy if the United States adopts this ED cardioversion and discharge management strategy.

The premise that default short-term anticoagulation therapy will prevent strokes, as well as the details of treatment, including optimal anticoagulant and duration of default therapy, requires further investigation. The recently approved and pending novel oral anticoagulants broaden the possible forms anticoagulation may take. This includes the availability of a once- or twice-daily medicine that does not require blood monitoring, and more rapid therapeutic onset within hours compared to days with warfarin. The optimal default short-term anticoagulation therapy medication may vary according to the patient but does not necessarily need to be complicated. Aspirin is recommended only for low-risk patients and may not provide sufficient anticoagulation for most patients. Warfarin may not be an ideal default short-term anticoagulation therapy option, given its relatively long and inconsistent time to therapeutic anticoagulation and its complexity of initiation and monitoring. The new thrombin (dabigatran) and factor XA (rivaroxaban, apixaban) inhibitors are likely better alternatives, given their rapid onset and relatively short half-lives, though none has yet been studied in this context, to our knowledge. Likewise, the default duration of default short-term anticoagulation therapy treatment may be a 14-day supply that is extended to 30 days in patients with limited access to the health care system. All patients would require bleeding and head injury warnings. However, the current state of knowledge on the ideal default short-term anticoagulation therapy anticoagulant and optimal duration of therapy is too preliminary for us to recommend that emergency physicians incorporate this potential treatment into their current practice.

ED patients with limited access to the health care system because of lack of medical insurance, cognitive disabilities, or social limitations present additional challenges in ensuring close follow-up; furthermore, these patients may also be at higher risk for medication noncompliance and anticoagulation complications. Some of these high-risk patients may require hospital admission to optimize medical care and social support. However, for the remainder, default short-term anticoagulation therapy would provide protection through one of the most vulnerable periods associated with the episode of ED care. The importance of follow-up is critical for anticoagulation and it is associated with patient survival.[21] If the patient does not follow up for further education, evaluation, and assessment of risks/benefits of long-term anticoagulation, then the duration of treatment is limited and ends.

One could argue that emergency physicians are already overburdened with primary care duties and their role should be limited to acutely treating the arrhythmia, with deferment of thromboembolic risk education and treatment to the patient's internist or cardiologist. Nevertheless, Scheuermeyer[1] raises an

important point and opportunity to improve care. We believe there are acceptable compromises that do not place the onus of deciding long-term anticoagulation on the emergency physician. The default short-term anticoagulation therapy may offer a palatable alternative to emergency physicians who want to minimize the risk of stroke in patients discharged from their EDs while placing a reasonable limit on the responsibility and potential liability associated with prescribing long-term anticoagulation. For those emergency physicians who are not comfortable with the default short-term anticoagulation therapy concept, we recommend that patients be educated about their increased stroke risk and the critical need for close follow-up for final anticoagulation determination.

We are optimistic that the recent surge in investigations into the ED management of atrial fibrillation will lead to a clinical practice policy that will guide emergency physicians treating patients with atrial fibrillation. The promise of new therapies and future research will inform this policy as we optimize care and outcomes for future ED patients with atrial fibrillation.

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REFERENCES

1. Scheuermeyer FX. Missed opportunities for appropriate anticoagulation among emergency department patients with uncomplicated atrial fibrillation or flutter. *Ann Emerg Med*. doi: 10.1016/j.annemergmed.2013.04.004.
2. Barrett TW, Martin AR, Storrow AB, et al. A clinical prediction model to estimate risk for 30-day adverse events in emergency department patients with symptomatic atrial fibrillation. *Ann Emerg Med*. 2011;57:1-12.
3. Scheuermeyer FX, Grafstein E, Stenstrom R, et al. Thirty-day and 1-year outcomes of emergency department patients with atrial fibrillation and no acute underlying medical cause. *Ann Emerg Med*. 2012;60:755-765.
4. Stiell IG, Clement CM, Brison RJ, et al. Variation in management of recent-onset atrial fibrillation and flutter among academic hospital emergency departments. *Ann Emerg Med*. 2011;57:13-21.
5. McDonald AJ, Pelletier AJ, Ellinor PT, et al. Increasing US emergency department visit rates and subsequent hospital admissions for atrial fibrillation from 1993 to 2004. *Ann Emerg Med*. 2008;51:58-65.
6. Barrett TW SW, Jenkins CA, Heavrin BS, et al. Emergency department visits for atrial fibrillation between 2006 and 2009: regional variability in hospitalization and cardioversion. *Acad Emerg Med*. 2013;20:S136.
7. Wolf PA, Abbott RD, Kannel WB. Atrial fibrillation: a major contributor to stroke in the elderly. The Framingham Study. *Arch Intern Med*. 1987;147:1561-1564.
8. Anderson JL, Halperin JL, Albert NM, et al. Management of patients with atrial fibrillation (compilation of 2006 ACCF/AHA/ESC and 2011 ACCF/AHA/HRS recommendations): a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol*. http://dx.doi.org/10.1016/j.jacc.2013.02.001.
9. Fuster V, Ryden LE, Cannom DS, et al. ACC/AHA/ESC 2006 guidelines for the management of patients with atrial fibrillation—executive summary: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and the European Society of Cardiology Committee for Practice Guidelines (Writing Committee to Revise the 2001 Guidelines for the Management of Patients With Atrial Fibrillation). *J Am Coll Cardiol*. 2006;48:854-906.
10. Camm AJ, Lip GY, De Caterina R, et al. 2012 focused update of the ESC guidelines for the management of atrial fibrillation: an update of the 2010 ESC guidelines for the management of atrial fibrillation. Developed with the special contribution of the European Heart Rhythm Association. *Eur Heart J*. 2012;33:2719-2747.
11. Gage BF, van Walraven C, Pearce L, et al. Selecting patients with atrial fibrillation for anticoagulation: stroke risk stratification in patients taking aspirin. *Circulation*. 2004;110:2287-2292.
12. Gage BF, Waterman AD, Shannon W, et al. Validation of clinical classification schemes for predicting stroke: results from the National Registry of Atrial Fibrillation. *JAMA*. 2001;285:2864-2870.
13. Hobbs FD, Roalfe AK, Lip GY, et al. Performance of stroke risk scores in older people with atrial fibrillation not taking warfarin: comparative cohort study from BAFTA trial. *BMJ*. 2011;342:d3653.
14. Coppens M, Eikelboom JW, Hart RG, et al. The CHA2DS2-VASc score identifies those patients with atrial fibrillation and a CHADS2 score of 1 who are unlikely to benefit from oral anticoagulant therapy. *Eur Heart J*. 2013;34:170-176.
15. Pisters R, Lane DA, Nieuwlaat R, et al. A novel user-friendly score (HAS-BLED) to assess 1-year risk of major bleeding in patients with atrial fibrillation: the Euro Heart Survey. *Chest*. 2010;138:1093-1100.
16. Hart RG, Pearce LA, Aguilar MI. Meta-analysis: antithrombotic therapy to prevent stroke in patients who have nonvalvular atrial fibrillation. *Ann Intern Med*. 2007;146:857-867.
17. Barrett TW AR, Storrow AB, Jenkins CA, et al. Incidence of 5 and 30 day adverse events in emergency department patients with symptomatic atrial fibrillation and atrial flutter. *Heart Rhythm*. 2013;10:S308.
18. Coll-Vinent B, Fuenzalida C, Garcia A, et al. Management of acute atrial fibrillation in the emergency department: a systematic review of recent studies. *Eur J Emerg Med*. 2013;20:151-159.
19. Rogenstein C, Kelly AM, Mason S, et al. An international view of how recent-onset atrial fibrillation is treated in the emergency department. *Acad Emerg Med*. 2012;19:1255-1260.
20. Cohn BG, Keim SM, Yealy DM. Is emergency department cardioversion of recent-onset atrial fibrillation safe and effective? *J Emerg Med*. http://dx.doi.org/10.1016/j.jemermed.2013.01.027.
21. Atzema CL, Austin PC, Chong AS, et al. Factors associated with 90-day death after emergency department discharge for atrial fibrillation. *Ann Emerg Med*. 2013;61:539-548.e1.