

# Update on a Novel Outpatient Approach to Atrial Fibrillation

Lorraine Buck, VP; Jori Richardson, COO, RN; Lina Luzinski, CCC, CEMC, CPB, PACS

The COVID-19 pandemic had a major impact on health care systems in the United States. Nationally, the United States has fewer than 1 million total hospital beds, which was far below the 36,000 additional beds predicted to be needed during the height of the pandemic.<sup>1</sup> This lack of hospital beds was due in part to more than 680 hospital mergers over the past decade. This shortage is anticipated to accelerate as more care is shifted to the outpatient setting.<sup>1</sup>

The Centers for Medicare & Medicaid Services have continued to review and approve various procedures that can be performed safely in the outpatient setting, including cardiac procedures such as percutaneous coronary interventions.<sup>2</sup> This trend has contributed to the decrease in the number of inpatient hospital beds needed. In addition, treating conditions such as atrial fibrillation (AF) in the outpatient setting can alleviate the need for emergency department (ED) visits and subsequent inpatient hospital admissions. AF remains one of the most common arrhythmias diagnosed in clinical practice.

Several risk factors, including hypertension, obesity, diabetes, heart failure, and chronic kidney disease, all contribute to the risk of AF. However, age in particular increases a person's estimated lifetime risk of AF to 1 in 3.<sup>3</sup> With the influx of aging baby boomers, AF is predicted to affect 6-16 million people by 2050.<sup>3</sup> This is concerning, as AF carries a significant risk of morbidity and mortality by impairing cardiac function and increasing the risk of stroke. For instance, the risk of stroke increases from 1.5% in ages 50-59 to 23.5% in ages 80-89.<sup>4</sup> This has a significant impact on the overall costs of a health care system. For Medicare beneficiaries with new-onset AF, there was an adjusted mean incremental treatment cost of over \$14K per patient per year.<sup>5,6</sup> The annual national incremental cost of AF is estimated to be \$26 million, with hospitalizations as the primary driver.<sup>5,7</sup>

Recently, the Naples Heart Rhythm Specialists (NHRS) introduced the concept of an "AF emergency room," a unique approach to treating the arrhythmia in an outpatient setting, helping to avoid the need for ED visits with subsequent hospital admissions. Before describing this approach, we'll first address the importance of early identification, anticoagulation, and challenges encountered by providers.

## Early Identification and Anticoagulation

About one-third of patients with AF are asymptomatic and typically identified while being assessed for other conditions: 63.2% by primary care, 13.2% by office-based cardiologists, and 23.9% by hospital-based physicians.<sup>8,9</sup> Approximately one-third of patients will present to

the ED with symptoms, with 64% being admitted, representing 3%-6% of total medical admissions.<sup>8,10,11</sup>

Conventional treatment such as antithrombotic therapy typically begins with primary care physicians, who are usually the first point of contact. Risk stratification tools such as the CHA<sub>2</sub>DS<sub>2</sub>-VASc score can also be used to determine the risk of a thromboembolic event in AF.

Recommended therapies such as aspirin or warfarin can be used in patients stratified with low, moderate, or substantial risk. Decisions about the use of warfarin, aspirin, or direct oral anticoagulants (DOACs) can be challenging, especially in older patients with a risk of bleeding. The Outpatient Bleeding Risk Index (OBRI) is one of several tools developed to assist with predicting the risk of bleeding on warfarin.<sup>12</sup> The OBRI includes 4 risk factors, each counting as 1 point: (1) age older than 65 years; (2) history of stroke; (3) history of gastrointestinal bleeding; and (4) one or more other variables (eg, recent myocardial infarction, severe anemia, diabetes, or renal impairment). A score of 0 is considered low risk, a score of 1 or 2 is considered an intermediate risk, and a score of 3 or more is considered high risk.<sup>12</sup> HAS-BLED is the preferred bleeding risk scoring tool, along with CHA<sub>2</sub>DS<sub>2</sub>-VASc, used by NHRS.<sup>13-16</sup>

Tools such as OBRI or HAS-BLED can help clinicians guide therapy with oral anticoagulation (warfarin, aspirin, or DOACs), as previous studies have demonstrated that only 61% of AF patients receive oral anticoagulants.<sup>8</sup> Anticoagulation control, as measured by the international normalized ratio (INR), has also typically been poor, with suboptimal time in the therapeutic range of 35%-56%.<sup>8</sup> In another study, it was revealed that in stroke patients with a history of AF and previous transient ischemic attack or ischemic stroke, 15% were not on any anticoagulation and only 18% of patients were on warfarin and had a therapeutic INR.<sup>8,12,17</sup>

## Challenges in AF Management: The Need for Change

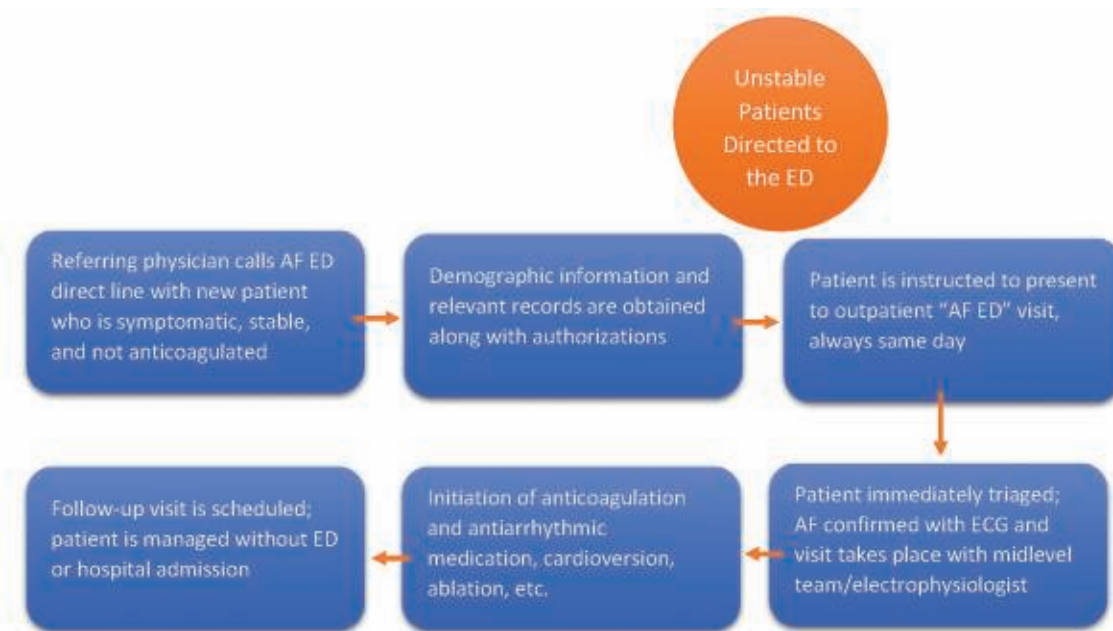
Therapeutically, even the most sophisticated practitioner can be challenged in the overall management of AF. This can be due to:

- Rate vs rhythm as primary management control
  - o Many trials have resulted in common themes. For example, there is no survival benefit to a strategy of rhythm control using therapeutic approaches.<sup>18</sup> For patients on warfarin, the risk of embolism is not sufficiently reduced by the attainment of sinus rhythm such that anticoagulation can be discontinued. Therefore, referrals for both cardioversion and antiarrhythmic therapy have decreased.

- Methods of rate and/or rhythm control
  - o The use of an antiarrhythmic strategy can be challenging, as there are several first- and second-line choices with a lack of guidance on how to select the right therapeutic option. There is also difficulty in physician compliance regarding the use of sanctioned AF guidelines.
- Definitions of therapeutic success
  - o Some practitioners believe that therapeutic success is the elimination of any recurrence of the condition, and this is not entirely accurate. Rather, successful rhythm control therapy is the reduction in the frequency, duration, and severity of events such that a patient's quality of life is adequate. The challenge is being able to change the perception of providers from the pursuit of perfection to the pursuit of realistic goals.
- Anticoagulation
  - o This is the biggest challenge in the management of AF. Physicians underutilize this therapy in 40%-60% of AF patients.<sup>18</sup> Reasons cited include fear of bleeding on warfarin, difficulties in regulating dose, overenthusiasm for aspirin, and the substantial unreimbursed, time-consuming efforts required for anticoagulation management.<sup>18</sup>

## Outpatient AF Approach

In 2020, we described the efforts by electrophysiologists Kenneth Plunkitt, MD, FACC, FHRS, and Andrew Yin, MD, to initiate a progressive outpatient approach to managing AF.<sup>19</sup> With buy-in from referring practitioners, Drs Plunkitt and Yin focused on patient selection and eligibility, ease of access, provider and patient satisfaction, and overall savings to their health care facility. Traditionally, patients were sent directly to the ED for evaluation, and oftentimes, hospitalization. Now, a toll-free number connects patients with one of their experts for high-priority, new-onset AF consults. With the use of their patient management system, NHRS color codes the outpatient appointment type, which alerts the team about the reason for the visit. AF patients are prioritized as urgent, thus alerting the office staff to ensure that the referring physician practice sends over the relevant demographic, insurance, and clinical data before the patient's arrival. If at any point during the process, the patient becomes hemodynamically unstable, they are sent directly to the ED (Figure). While office hours are Monday through Friday, 8 AM to 4:30 PM, if a patient needs same-day attention via the AF ED, extended hours are offered. Cardioversions are coordinated through the office and performed at the hospital (located across the street) as an outpatient admission. Management of anticoagulants and antiarrhythmics as well as referrals to ablation all occur through the office visit.



**Figure. Workflow concept.** ECG = electrocardiogram.

Since the creation of the outpatient AF ED, referrals into NHRS have grown from 46 to more than 100 patients, with an increase in revenue from \$6400 to \$20,000 annually. These numbers reflect only new patients' initial and ongoing office visits who were referred to the practice and not those who were previously established. Although these numbers may appear small, keep in mind that there has been no increased expense to the practice to offer this service, nor have there been additional expenditures that were needed to make this financially viable. It is an additional service provided by our electrophysiologists to manage AF in the outpatient setting rather than sending patients to the hospital for unnecessary admissions. Any subsequent costs are incurred by the hospital and health care system, not NRHS. Additional long-term practice benefits have included increased referrals, practice growth, AF management (antiarrhythmic initiation and follow-up), and additional procedures (eg, cardioversions, ablations, device implants).

Developing this outpatient approach can be accomplished with a physician champion willing to oversee the process. Other staff includes advanced practice providers, office supervisor, preauthorization specialist, billing and coding staff, and medical assistants. While this approach can benefit the hospital, practice, and referring providers, there are theoretical benefits to the health care system as well. For example, if each of the approximate 2960 electrophysiologists in the United States<sup>13</sup> managed 100 AF patients in an outpatient setting per year, this would equate to 296,000 patients being free from ED visits and potential hospitalizations. It is estimated that one-third of AF patients will present to the ED at some point due to symptoms, with a 64% admission rate; of 296,000 patients, this would equal 189,440 being hospitalized.<sup>8</sup> Each hospitalized AF patient typically has an incremental cost of \$14K, resulting in \$2.65M in potential health care costs that could be avoided if they were able to be treated in an outpatient setting vs hospital admission.<sup>5</sup>

### Future Goals

NHRS plans to continue marketing to existing and new physician groups. They also plan to explore opportunities for referrals from urgent care clinics and ambulatory surgery centers. Self-referrals will be another focus, especially with more patients using wearable digital health technologies. As patients take a more active role in their health, the hope is to provide a direct referral for quicker evaluation of possible AF. ■

**Lorraine Buck, VP<sup>1</sup>; Jori Richardson, COO, RN<sup>2</sup>; Lina Luzinski, CCC, CEMC, CPB, PACS<sup>2</sup>**

<sup>1</sup>Corazon, Inc, Pittsburgh, Pennsylvania;

<sup>2</sup>Naples Heart Rhythm Specialists, PA, Naples, Florida

*Disclosures: The authors have completed and returned the ICMJE Form for Disclosure of Potential Conflicts of Interest. They have no conflicts of interest to report regarding the content herein.*

### References

1. Flynn A, Knox R. We're short on hospital beds because Washington let too many hospitals merge. *The Washington Post*. April 8, 2020. Accessed April 20, 2022. <https://www.washingtonpost.com/outlook/2020/04/08/were-short-hospital-beds-because-washington-let-too-many-hospitals-merge/>
2. Cardinal Health. 3 things ASCs need to know about outpatient cardiovascular procedures. *Becker's ASC Review*. December 6, 2021. Accessed April 20, 2022. <https://www.beckersasc.com/supply-chain/3-things-asc-need-to-know-about-outpatient-cardiovascular-procedures.html>
3. Kornej J, Borschel CS, Benjamin EJ, Schnabel RB. Epidemiology of atrial fibrillation in the 21st century: novel methods and new insights. *Circ Res*. 2020;127(1):4-20. doi:10.1161/CIRCRESAHA.120.316340
4. Wolf PA, Abbott RD, Kannel WB. Atrial fibrillation as an independent risk factor for stroke: the Framingham Study. *Stroke*. 1991;22(8):983-988. doi:10.1161/01.str.22.8.983
5. Amin A, Keshishian A, Trocio J, et al. A real-world observational study of hospitalization and health care costs among nonvalvular atrial fibrillation patients prescribed oral anticoagulants in the U.S. Medicare population. *J Manag Care Spec Pharm*. 2020;26(5):639-651. doi:10.18553/jmcp.2020.26.5.639

6. Lee WC, Lamas GA, Balu S, et al. Direct treatment cost of atrial fibrillation in the elderly American population: a Medicare perspective. *J Med Econ*. 2008;11(2):281-298. doi:10.3111/13696990802063425
7. Kim MH, Johnston SS, Chu BC, Dalal MR, Schulman KL. Estimation of total incremental health care costs in patients with atrial fibrillation in the United States. *Circ Cardiovasc Qual Outcomes*. 2011;4(3):313-320. doi:10.1161/CIRCOUTCOMES.110.958165
8. Cox JL, Parkash R, Abidi S, et al, for the IMPACT-AF Investigators. Optimizing primary care management of atrial fibrillation: the rationale and methods of the Integrated Management Program Advancing Community Treatment of Atrial Fibrillation (IMPACT-AF) study. *Am Heart J*. 2018;201:149-157. doi:10.1016/j.ahj.2018.04.008
9. Kirchhof P, Schmalowsky J, Pittrow D, et al. Management of patients with atrial fibrillation by primary-care physicians in Germany: 1-year results of the ATRIUM Registry. *Clin Cardiol*. 2014;37(5):277-284. doi:10.1002/clc.22272
10. McDonald AJ, Pelletier AJ, Ellinor PT, Camargo Jr CA. Increasing US emergency department visit rates and subsequent hospital admissions for atrial fibrillation from 1993 to 2004. *Ann Emerg Med*. 2008;51(1):58-65. doi:10.1016/j.annemergmed.2007.03.007
11. Wattigney WA, Mensah GA, Croft JB. Increasing trends in hospitalization for atrial fibrillation in the United States, 1985 through 1999: implications for primary prevention. *Circulation*. 2003;108(6):711-716. doi:10.1161/01.CIR.0000083722.42033.0A
12. Ebell MH. Predicting the risk of bleeding in patients taking warfarin. *Am Fam Physician*. 2010;81(6):780.
13. Gladstone DJ, Bui E, Fang J, et al. Potentially preventable strokes in high-risk patients with atrial fibrillation who are not adequately anticoagulated. *Stroke*. 2009;40(1):235-240. doi:10.1161/STROKEAHA.108.516344
14. Reiffel JA. Confronting the challenges of atrial fibrillation. *US Cardiology*. 2006;3(2):103-107. <https://doi.org/10.15420/usc.2006.3.2.103>
15. Buck L, Richardson J. Confronting atrial fibrillation with a unique "outpatient" approach: the AF ER. *EP Lab Digest*. 2020;20(8):1,13-15.
16. Clinical cardiac electrophysiologists – national directory. Healthgrades. Accessed March 8, 2022. <https://www.healthgrades.com/clinical-cardiac-electrophysiology-directory>
17. Pisters R, Lane DA, Nieuwlaat R, et al. A novel user-friendly score (HAS-BLED) to assess one-year risk of major bleeding in atrial fibrillation patients: the Euro Heart Survey. *Chest*. 2010;138(5):1093-1100. doi:10.1378/chest.10-0134.
18. Lip GYH, Frison L, Halperin JL, Lane DA. Comparative validation of a novel risk score for predicting bleeding risk in anticoagulated patients with atrial fibrillation: the HAS-BLED (Hypertension, Abnormal Renal/Liver Function, Stroke, Bleeding History or Predisposition, Labile INR, Elderly, Drugs/Alcohol Concomitantly) score. *J Am Coll Cardiol*. 2011;57(2):173-180. doi:10.1016/j.jacc.2010.09.024
19. Lip GY. Implications of the CHA(2)DS(2)-VASc and HAS-BLED Scores for thromboprophylaxis in atrial fibrillation. *Am J Med*. 2011;124(2):111-114. doi:10.1016/j.amjmed.2010.05.007

To see the original feature in *EP Lab Digest* on this innovative AF approach, please scan the QR code:

