

Use of Evidence-based Cardiac Prevention Therapy Among Outpatients with Atrial Fibrillation

Paul L. Hess, MD,^a Sunghee Kim, PhD,^a Jonathan P. Piccini, MD, MHS,^a Larry A. Allen, MD, MHS,^b Jack E. Ansell, MD,^c Paul Chang, MD,^d James V. Freeman, MD, MPH,^e Bernard J. Gersh, MB, ChB, DPhil,^f Peter R. Kowey, MD,^g Kenneth W. Mahaffey, MD,^a Laine Thomas, PhD,^a Eric D. Peterson, MD, MPH,^a Gregg C. Fonarow, MD^h

^aDuke Clinical Research Institute, Durham, NC; ^bUniversity of Colorado, Denver; ^cLenox Hill Hospital, New York, NY;

^dJanssen Pharmaceuticals, Raritan, NJ; ^eStanford University School of Medicine, Palo Alto, Calif; ^fMayo Clinic, Rochester, Minn;

^gJefferson Medical College, Wynnewood, Pa; ^hAhmanson-UCLA Cardiomyopathy Center, Los Angeles, Calif.

ABSTRACT

BACKGROUND: Patients with atrial fibrillation often have cardiovascular risk factors or known comorbid disease, yet the use of evidence-based primary and secondary prevention cardiac therapy among atrial fibrillation outpatients is unknown.

METHODS: Using baseline data collected between June 2010 and August 2011 from 174 sites participating in ORBIT-AF, a US national registry of patients with atrial fibrillation coordinated from Durham, NC, we examined professional guideline-recommended evidence-based therapy use for cardiovascular comorbid conditions and risk factors. Multivariable logistic regression was used to identify factors associated with receipt of all indicated evidence-based therapy.

RESULTS: Among 10,096 enrolled patients, 93.5% were eligible for one or more evidence-based therapies. Among those eligible, 46.6% received all indicated therapies: 62.3% received an antiplatelet agent, 72.3% received a beta-blocker, 59.5% received an angiotensin-converting enzyme or angiotensin receptor blocker, 15.3% received an aldosterone antagonist, 65.7% received a statin, and 58.8% received an implantable cardioverter-defibrillator. A minority of patients with coronary artery disease, diabetes mellitus, heart failure, and peripheral vascular disease received all indicated therapies (25.1%, 43.2%, 42.5%, and 43.4%, respectively). A total of 52.4% of patients had controlled hypertension and 74.6% of patients with hyperlipidemia received a statin. Factors associated with nonreceipt of all indicated therapies included frailty, comorbid illness, geographic region, and antiarrhythmic drug therapy.

CONCLUSIONS: The majority of eligible atrial fibrillation outpatients did not receive all guideline-recommended therapies for cardiovascular comorbid conditions and risk factors. This represents a potential opportunity to improve atrial fibrillation patients' quality of care and outcomes.

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Atrial fibrillation is a growing public health concern.^{1,2} The lifetime risk of developing atrial fibrillation is approximately 1 in 4 among US individuals ≥ 40 years of age.³ Approximately 2.66 million US adults have been diagnosed with atrial fibrillation.⁴ By the year 2050, the number of patients

with diagnosed atrial fibrillation will exceed 5.6 million.⁵ Outcomes related to atrial fibrillation, including stroke⁶ and death,⁷ may likewise increase over time.

Cardiovascular comorbidities and risk factors are common among atrial fibrillation patients and elevate the risk of atrial fibrillation-related morbidity such as stroke.^{8,9} In fact, coexisting conditions and risk factors account for a substantial portion¹⁰ if not the entirety¹¹ of atrial fibrillation-related mortality. Thus, modification of cardiovascular risk in atrial fibrillation patients and treatment of comorbid conditions via the use of proven primary and secondary

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Requests for reprints should be addressed to Paul L. Hess, MD, Duke Clinical Research Institute, PO Box 17969, Durham, NC 27715.

E-mail address: p.hess@duke.edu

prevention therapeutic interventions is highly desired. However, rates of evidence-based primary and secondary cardiac prevention therapy use among atrial fibrillation outpatients are unknown. Data regarding contemporary care of these patients may provide important insights into their clinical characteristics and associated treatment patterns and thus inform future quality improvement initiatives. Using baseline data from the Outcomes Registry for Better Informed Treatment of Atrial Fibrillation (ORBIT-AF), the goals of this analysis were to quantify the proportion of eligible atrial fibrillation outpatients receiving guideline-directed evidence-based therapy for coronary artery disease, diabetes mellitus, heart failure, hyperlipidemia, hypertension, and peripheral vascular disease; and to identify factors associated with receipt of all indicated evidence-based therapy.

METHODS

Data Source

Outcomes Registry for Better Informed Treatment of Atrial Fibrillation (ORBIT-AF) is a national, observational, community-based, ongoing registry of outpatients with atrial fibrillation. The ORBIT-AF program has been described previously.¹² Baseline data collected between June 2010 and August 2011 from 174 sites were the primary dataset for this analysis. Trained personnel at participating outpatient practices, including internal medicine, cardiology, and electrophysiology clinics, abstracted data on consecutive eligible atrial fibrillation patients and submitted them to the ORBIT-AF registry via Web-enabled case report forms.

Using standard definitions, data include demographic and clinical characteristics, medical history and prior treatments, type of atrial fibrillation, pharmacologic treatment strategy, and antithrombotic therapy and monitoring. The specialties of the enrolling physician and co-treating physicians (internal medicine, neurology, cardiology, electrophysiology) in the patient's atrial fibrillation-related care also were captured.

Study Population

Patients ≥ 18 years of age with electrocardiographically documented atrial fibrillation were enrolled. For the current analysis, 2 records with incomplete information about the use of evidence-based therapy and 653 records of patients

not eligible for at least one evidence-based therapy were excluded.

Outcome Measures

The principal outcome measure was the use of evidence-based therapy among eligible patients. Eligibility for evidence-based therapy was defined according to current professional guidelines endorsed by the American College of Cardiology Foundation/American Heart Association,¹³⁻¹⁵ the American Diabetes Association,¹⁶ the National Cholesterol Education Program,¹⁷ and the National High Blood Pressure Program.¹⁸ Specifically, patients with coronary artery disease were eligible for antiplatelet therapy, a beta-blocker, an angiotensin-converting enzyme inhibitor (ACEI) or angiotensin receptor blocker (ARB) in the presence of diabetes mellitus or a left ventricular ejection fraction $\leq 40\%$, a statin, and antihypertensive therapy in the presence of previously diagnosed hypertension or elevated blood pressure during their baseline visit (blood pressure $\geq 140/90$ mm Hg or blood pressure $\geq 130/80$ mm Hg among patients with diabetes mellitus or chronic kidney disease). Patients with diabetes mellitus were eligible for an ACEI/ARB if indicated, a statin, and antihypertensive therapy if indicated.

Heart failure patients were eligible for a beta-blocker, an ACEI/ARB if indicated, an aldosterone antagonist in the presence of New York Heart Association (NYHA) Class III-IV symptoms, and creatinine ≤ 2.5 mg/dL among men or ≤ 2.0 mg/dL among women, antihypertensive therapy if indicated, and implantable cardioverter-defibrillator therapy in the presence of a left ventricular ejection fraction $\leq 35\%$ and NYHA Class II-III symptoms. Patients with hyperlipidemia were eligible for statin therapy in the presence of coronary artery disease, diabetes mellitus, or peripheral vascular disease. Hypertension treatment was defined by receipt of an antihypertensive medication, while hypertension control was defined by blood pressure $< 140/90$ mm Hg in the absence of diabetes mellitus or chronic kidney disease or blood pressure $< 130/80$ mm Hg in the presence of one or both of these comorbidities. Patients with peripheral vascular disease were eligible for antiplatelet therapy and a statin. Eligibility criteria for evidence-based therapy according to cardiovascular risk factors and comorbidities are further detailed in [Supplementary Table 1](#) (available online).

CLINICAL SIGNIFICANCE

- Patients with atrial fibrillation frequently have cardiovascular risk factors or known comorbid disease, yet the use of evidence-based primary and secondary prevention cardiac therapy among atrial fibrillation outpatients has not been well studied.
- In ORBIT-AF, a national, ongoing registry of outpatients with atrial fibrillation, half of the atrial fibrillation patients did not receive all indicated primary and secondary prevention therapies.
- Factors associated with nonreceipt of all indicated evidence-based therapy included frailty, comorbid illness, geographic region, and use of antiarrhythmic drug therapy.
- Underuse of guideline-recommended evidence-based therapies represents a potential opportunity to improve atrial fibrillation patients' quality of care and outcomes.

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