

# Oral Anticoagulant Use in a Racial and Ethnically Diverse Population with Atrial Fibrillation



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## INTRODUCTION

Warfarin is an established therapy to prevent ischemic stroke in patients with atrial fibrillation.<sup>1</sup> Direct oral anticoagulants (DOACs) have emerged as alternative therapies due to favorable risk-benefit profiles compared with warfarin.<sup>1</sup> Many patients with atrial fibrillation that meet guideline recommended criteria, especially Black and Hispanic patients, are not treated with anticoagulants.<sup>2</sup> Several investigators have noted differences in oral anticoagulant treatment for atrial fibrillation in Black and Hispanic patients compared with their white counterparts.<sup>2, 3</sup> However, a major shortcoming of these studies is the limited representation of patients of color.

We aimed to investigate oral anticoagulant use in a diverse population with atrial fibrillation.

## METHODS

This is a retrospective epidemiological study of patients with non-valvular atrial fibrillation diagnosed at the Montefiore Medical Center (Bronx, New York) between January 1, 2015, and January 1, 2019 ( $n = 1674$ ) in an outpatient setting. Patients older than 18 were included if they were prescribed anticoagulation, as per the 2019 ACC-AHA-HRS guidelines, with warfarin, apixaban, rivaroxaban, edoxaban, or dabigatran.<sup>1</sup> Patients with valvular atrial fibrillation and stroke within 1 month of diagnosis were excluded. This study protocol was approved by the Montefiore Medical Center IRB.

Statistical analysis was performed with SPSS Version 25 (IBM SPSS Statistics for Windows). Differences in continuous and discrete variables were assessed using ANOVA test with Tukey's post hoc analysis and chi-squared test, respectively. The relationship between race and anticoagulation use was analyzed using a logistic regression model, which controlled for prescriber, insurance status, baseline creatinine, and CHADSVASC score. A  $p$  value of  $< 0.05$  was considered statistically significant.

## RESULTS

A total of 1674 patients were included in the study. White, Black, Hispanic, and other racial/ethnic identifying subjects comprised 47.1%, 18%, 28.5%, and 6.5% of the patient population, respectively (Table 1). Overall, 62.4% of patients were Medicare recipients. Baseline creatinine was significantly higher among Black patients ( $1.4 \pm 1.4$ ) as compared with white patients ( $1.1 \pm 1.1$ ) ( $p = 0.001$ ).

Overall, 73.3% of the patient cohort was prescribed DOAC for atrial fibrillation, whereas only 26.7% of patients were prescribed warfarin (Table 1). White patients were prescribed DOACs less often than Hispanic patients (70.2% vs. 78.8%  $p = 0.001$ , unadjusted OR 0.6, 95% CI 0.5–0.8; adjusted OR 0.6, 95% CI 0.4–0.8,  $p = 0.002$ ) (Table 2).

There was no significant difference in the unadjusted and adjusted odds ratio comparing treatment differences between Hispanic and Black patients (unadjusted OR 0.7, 95% CI 0.5–1.0,  $p = 0.052$ ; adjusted OR 0.8, 95% CI 0.6–1.2,  $p = 0.251$ ) (Table 2).

Of all the prescriptions written by cardiologists, 74.8% were for DOACs, whereas all other physicians prescribed DOACs 67.7% of the time (Table 2) (unadjusted OR 1.4, 95% CI 1.1–1.8,  $p = 0.007$ ; adjusted OR 1.6, 95% CI 1.2–2.2,  $p = 0.001$ ).

## DISCUSSION

Hispanic patients received DOACs more frequently than their white peers (Table 2). This is the largest study detailing initial anticoagulant treatment in a multiracial/ethnic cohort. It runs counter to findings of other investigators that demonstrated less frequent use of DOACs in patients of minority backgrounds as compared with white patients.<sup>2–4</sup>

In a study by Bhave et al., anticoagulant use was investigated in a population of 517,941 patients, comprised of 87% white patients, in which Black and Hispanic patients were less likely to receive oral anticoagulants.<sup>2</sup> In contrast, patients of color made up more than half of our patient cohort. Our group previously demonstrated that ICD referral rates at the Montefiore Medical Center were not influenced by race, gender, or primary language.<sup>5</sup>

Of note, the majority of patients in our cohort were enrolled in Medicare. This differs from patient populations in other studies.<sup>3, 4</sup> Dayoub et al. found that Medicare formularies have increased DOAC coverage as guidelines for anticoagulant use have been updated.<sup>6</sup> Even though DOACs have become

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Table 1 Patient Cohort Demographic Information

	All (n = 1674)	White (n = 788)	Black (n = 301)	Hispanic (n = 477)	Other (n = 108)	p value
Age	71.9 ± 11.7	74.0 ± 11.6	68.7 ± 12.2	70.7 ± 10.9	70.4 ± 11.6	<i>0.001</i>
Female	46.4%	43.5%	52.5%	49.3%	37.0%	<i>0.006</i>
Anticoagulation						
Warfarin	26.7%	29.8%	27.2%	21.2%	28.7%	
DOAC	73.3%	70.2%	72.8%	78.8%	71.3%	
Apixaban	36.7%	37.3%	35.5%	36.7%	35.2%	
Insurance						<i>0.0001</i>
Private	22.6%	22.7%	25.9%	18.7%	30.6%	
Medicare	62.4%	68.7%	56.5%	57.0%	56.5%	
Medicaid	11.0%	5.7%	13.3%	18.4%	10.2%	
None	4.0%	2.9%	4.3%	5.9%	2.8%	
Prescriber						<i>0.0001</i>
Cardiologist	77.4%	83.5%	64.1%	75.9%	76.9%	
CHADSVASC	2.1 ± 1.2	2.0 ± 1.1	2.13 ± 1.7	2.14 ± 1.2	1.80 ± 1.2	<i>0.027</i>
PMH						
HTN	28.0%	19.2%	36.2%	37.9%	25.9%	<i>0.0001</i>
DM	6.3%	3.3%	12.3%	8.0%	4.6%	<i>0.0001</i>
Stroke/TIA	2.4%	1.6%	4.0%	2.7%	1.9%	0.138
ESRD	2.2%	0.3%	5.3%	3.6%	2.8%	<i>0.0001</i>
Baseline Cr	1.2 ± 1.0	1.1 ± 1.1	1.4 ± 1.4	1.2 ± 1.1	1.2 ± 0.7	<i>0.001</i>
HLD/statin	57.8%	57.0%	57.5%	59.5%	57.4%	0.843
Smoking Hx	44.2%	47.1%	44.9%	39.6%	41.7%	0.067
Heart failure	2.2%	1.5%	4.0%	2.1%	1.9%	<i>0.0001</i>
PVD	2.3%	0.6%	3.3%	2.9%	0.9%	0.195

*Italicized p values are significant*

Demographic information for the 1674 patient cohort by race with significant past medical history. Significant findings include black patients are younger than other patients. Patients are enrolled in Medicaid at significantly higher rates. White patients were prescribed medication by a cardiologist significantly more. Black patients have significantly higher baseline creatinine. DOAC direct oral anticoagulant, PMH past medical history, HTN hypertension, DM diabetes, TIA transient ischemic attack, Cr creatinine, ESRD end-stage renal disease, PVD peripheral vascular disease

Table 2 Logistic Regression Results

		Unadjusted OR		Adjusted OR for baseline medical and socioeconomic characteristics	
		OR (95% CI)	p value	OR (95% CI)	p value
White (n = 788)	% patients on DOACs	70.2%	0.6 (0.5–0.8)	0.6 (0.4–0.8)	<i>0.002</i>
	Black (n = 301)	72.8%	0.7 (0.5–1.0)	0.8 (0.6–1.2)	0.251
	Hispanic (n = 477)	78.8%	1 [Reference]	1 [Reference]	NA
	Other (n = 108)	71.3%	0.7 (0.4–1.1)	0.7 (0.4–1.3)	0.236
Provider			Unadjusted OR	Adjusted OR	
	% prescriptions of DOACs		OR (95% CI)	OR (95% CI)	p value
	Cardiologist (n = 1296)	74.8%	1.4 (1.1–1.8)	1.6 (1.2–2.1)	<i>0.001</i>
Other providers (n = 378)	67.72%	1 [Reference]	1 [Reference]	NA	

*Italicized p values are significant*

Logistic regression results for prescription of DOAC versus warfarin with unadjusted and adjusted odds ratios and corresponding p values. Odds ratios were adjusted for insurance status, prescribing provider, baseline creatinine, and CHADSVASC score. DOAC direct oral anticoagulant

increasingly covered under Medicare prescription plans, they are available with restrictions such as patient cost sharing.<sup>6</sup> As medical professionals continue to prescribe DOACs for atrial fibrillation, accessibility will remain an important issue for patients.

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**Authors' Contribution** All authors had access to the data and had a role in writing the manuscript.

**Compliance with Ethical Standards:**

This study protocol was approved by the Montefiore Medical Center IRB.

**Conflict of Interest:** The authors declare that they do not have a conflict of interest.

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