Evaluating the Treatment Patterns Among Patients With Non-valvular Atrial Fibrillation (NVAF) Treated With Apixaban or Warfarin by Race/Ethnicity in Commercial Patients Using Komodo Healthcare Map Data

Poster Number

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Background

- Non-valvular atrial fibrillation (NVAF) comprises over 50% of atrial fibrillation (AF) cases and increases ischemic stroke risk,[1,2] emphasizing the importance of stroke prevention. Oral anticoagulants are well demonstrated to be safe and effective for stroke risk reduction; however, studies reveal inconsistent utilization of oral anticoagulants and outcomes associated with their use among NVAF patients in the United States (US).
- A recent retrospective study using AF registry data found that eligible Black NVAF patients were less likely than White patients to be discharged on any anticoagulant.[3]
- Another study using Medicare data revealed that Black NVAF patients had a lower rate of oral anticoagulant treatment compared to White patients.[4]
- Despite differences being acknowledged, data on disparities in oral anticoagulant treatment patterns among different racial and ethnic groups remain limited.

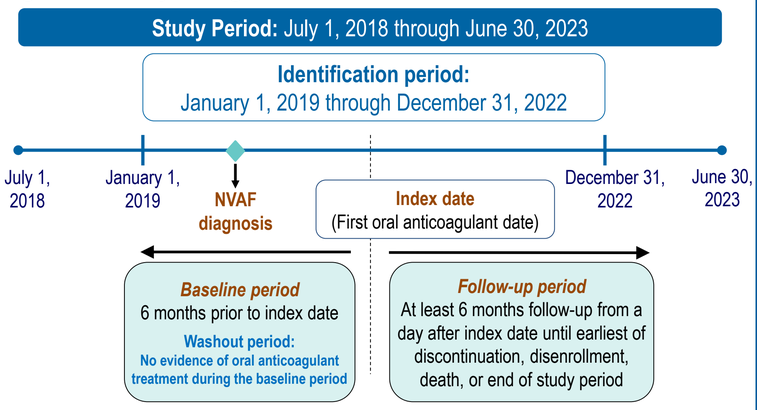
Objective

- This study aimed to compare treatment patterns between apixaban and warfarin among commercially insured NVAF patients who initiated treatment in the US, stratified by race/ethnicity (White, Black, and Hispanic).

Methods

- This retrospective cohort analysis utilized closed claims data from the Komodo Healthcare Map database.
- The study period was from July 1, 2018 through June 30, 2023 (**Figure 1**).
- NVAF patients aged 18 years and older who initiated apixaban or warfarin following their first NVAF diagnosis were identified from January 1, 2019 to December 31, 2022.
- **Inclusion Criteria:** Patients had continuous enrollment with medical and pharmacy benefits for at least 6 months prior to the index date and for at least 6 months following the index date, including the index date.
- **Exclusion Criteria:**
  - Patients were excluded if they had evidence of valvular heart disease, venous thromboembolism, transient AF, heart valve replacement or transplant, or cardiac surgery during the baseline period, evidence of hip or knee replacement surgery within 6 weeks prior to or on the index date, or evidence of pregnancy anytime during the study period.
  - Patients were also excluded if they had evidence of any oral anticoagulant treatment (apixaban, dabigatran, rivaroxaban, or warfarin) during the baseline period, or evidence of both apixaban and warfarin on the index date.
  - Patients with a death date before the index date and patients with zero days' supply were excluded.

Figure 1. Study Design



Key: NVAF – non-valvular atrial fibrillation.

- Demographic variables and baseline clinical variables were captured on the index date and during the baseline period, respectively.
- The endpoints were time to discontinuation and time to switch.
  - **Discontinuation** was defined as no evidence of a prescription for the index oral anticoagulant for 60 days from the last day of days' supply of the last filled prescription.
    - The discontinuation date was the 60th day following the last date of the days' supply of the last filled prescription for the index treatment.
    - Time to discontinuation was defined in days from a day after the index date to the date of the index oral anticoagulant discontinuation date.
  - **Switch** was defined as the first evidence of a prescription for a different oral anticoagulant other than the index medication after the discontinuation date or before study end.
    - Time to switch was defined in days from one day after the index date to the observed date of a new oral anticoagulant prescription other than the index medication.
- Inverse-probability treatment weighting (IPTW) balanced the treatment groups on relevant demographic and clinical characteristics. The incidence rate (IR) for endpoints was calculated per 100 person-years. Cox proportional hazard models were used to evaluate the adjusted risk for the endpoints, reported as hazard ratios (HRs) with a 95% confidence interval (CI).

Results

- The final population included 195,420 NVAF patients, with 62.5% being White, 8.5% being Black, 8.3% being Hispanic, 2.7% being Asian/Pacific Islander, 2.1% being another race/ethnicity, and 16.0% being unknown.
- Post-IPTW, almost all covariates were balanced. Age was adjusted during Cox models for overall, White and Black cohorts (since STD>0.10) (**Table 1**).
- Approximately 62.0% (n=109,162) of patients in the overall cohort discontinued apixaban vs 76.0% (n=15,051) patients who discontinued warfarin therapy during the follow-up period. Time to discontinuation was not significantly different between the 2 treatment groups (282.7 days vs 292.3 days, respectively, standardized difference [STD]=0.04) (**Figure 2, Figure 3**).
- Almost 5.0% (n=8,941) switched from index apixaban vs 31.0% (n=6,121) patients from index warfarin and the time to switch from the index date was significantly lower in apixaban vs warfarin patients (398.9 days vs 429.1 days, STD=0.80) (**Figure 2, Figure 3**).

Results (cont.)

- Overall, the IR for discontinuation and switch were significantly lower for apixaban than warfarin ($IR_{discontinuation}$: 55.7 vs 75.3, *P*<.0001; IR_{switch}: 6.3 vs 31.5, *P*<.0001). The HR for discontinuation and switch were also significantly lower for apixaban than warfarin ($HR_{discontinuation}$: 0.76 [95% CI=0.75-0.77]; HR_{switch}: 0.21 [95% CI=0.20-0.22]) (**Table 2**).
- When stratified by race/ethnicity, the trends were similar for apixaban vs warfarin, but the IR and HR appeared higher among Black patients than White patients.

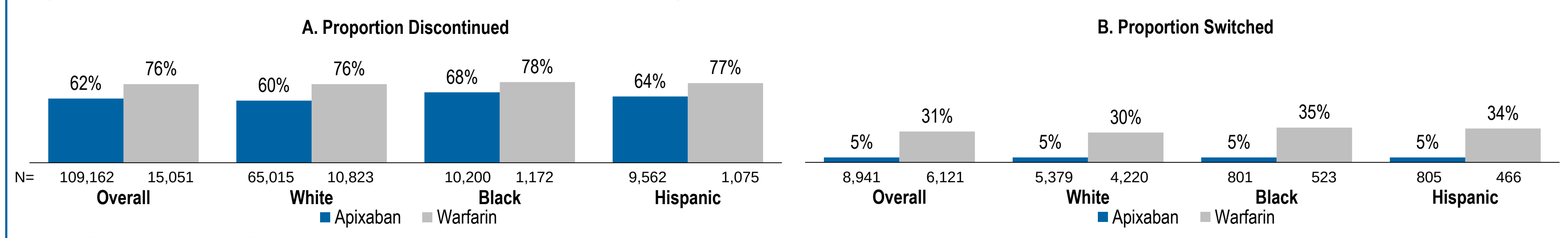
Table 1. Post-IPTW Demographic and Baseline Clinical Characteristics Among Apixaban-Warfarin Cohort

		OVERALL			WHITE			BLACK			HISPANIC		
		Apixaban	Warfarin	STD[a]	Apixaban	Warfarin	STD[a]	Apixaban	Warfarin	STD[a]	Apixaban	Warfarin	STD[a]
		N= 176,411	N=19,009		N=108,357	N=13,687		N=15,102	N=1,509		N=14,967	N=1,339	
Age in years, mean (SD)		68.7 (12.0)	67.3 (12.6)	0.11	71.5 (11.1)	70.2 (11.7)	0.11	67.2 (12.5)	66.4 (12.1)	0.07	70.2 (12.5)	68.3 (12.2)	0.16
Age-group in years, n (%)	18-34 years	1,195 (0.7%)	239 (1.2%)	0.05	396 (0.4%)	119 (0.8%)	0.06	171 (1.1%)	16 (1.0%)	0.01	125 (0.8%)	7 (0.5%)	0.04
	35-44 years	3,971 (2.3%)	551 (2.8%)	0.03	1,383 (1.3%)	235 (1.7%)	0.03	514 (3.4%)	51 (3.4%)	0.00	364 (2.4%)	47 (3.4%)	0.05
	45-54 years	14,917 (8.5%)	2,012 (10.2%)	0.06	5,600 (5.2%)	878 (6.2%)	0.04	1,612 (10.7%)	182 (12.1%)	0.04	1,198 (8.0%)	116 (8.4%)	0.01
	55-64 years	47,548 (27.0%)	5,533 (28.1%)	0.02	21,469 (19.8%)	3,032 (21.4%)	0.04	3,840 (25.4%)	405 (26.9%)	0.03	3,054 (20.4%)	343 (24.7%)	0.10
	66-74 years	46,576 (26.4%)	5,071 (25.7%)	0.02	32,681 (30.2%)	4,172 (29.4%)	0.02	4,413 (29.2%)	449 (29.8%)	0.01	3,869 (25.9%)	406 (29.2%)	0.07
	≥75 years	62,158 (35.2%)	6,316 (32.0%)	0.07	46,779 (43.2%)	5,736 (40.5%)	0.05	4,555 (30.2%)	404 (26.8%)	0.07	6,357 (42.5%)	471 (33.9%)	0.18
Gender, n (%)	Male	103,135 (58.5%)	11,704 (59.3%)	0.02	61,463 (56.8%)	8,205 (57.9%)	0.02	7,639 (50.6%)	751 (49.8%)	0.02	7,795 (52.1%)	753 (54.2%)	0.04
	Female	73,230 (41.5%)	8,018 (40.7%)	0.02	46,845 (43.3%)	5,966 (42.1%)	0.02	7,466 (49.4%)	757 (50.2%)	0.02	7,172 (47.9%)	636 (45.8%)	0.04
Geographic region, n (%)	Northeast	45,503 (25.8%)	4,953 (25.1%)	0.02	28,231 (26.1%)	3,583 (25.3%)	0.02	3,949 (26.1%)	386 (25.6%)	0.01	3,293 (22.0%)	312 (22.5%)	0.01
	Mid-West	39,869 (22.6%)	4,671 (23.7%)	0.03	27,531 (25.4%)	3,817 (26.9%)	0.03	2,977 (19.7%)	317 (21.0%)	0.03	989 (6.6%)	112 (8.0%)	0.05
	South	55,766 (31.6%)	6,184 (31.4%)	0.01	32,494 (30.0%)	4,150 (29.3%)	0.02	6,413 (42.5%)	654 (43.4%)	0.02	4,637 (31.0%)	433 (31.1%)	0.00
	West	27,843 (15.8%)	3,041 (15.4%)	0.01	15,791 (14.6%)	2,060 (14.5%)	0.00	1,083 (7.2%)	92 (6.1%)	0.04	5,086 (34.0%)	446 (32.1%)	0.04
	Other/Unknown	7,384 (4.2%)	874 (4.4%)	0.01	4,262 (3.9%)	562 (4.0%)	0.00	684 (4.5%)	59 (3.9%)	0.03	961 (6.4%)	87 (6.2%)	0.01
NVAF diagnosis type, n (%)	Paroxysmal AF	68,662 (38.9%)	8,054 (40.8%)	0.04	41,827 (38.6%)	5,782 (40.8%)	0.04	5,526 (36.6%)	566 (37.6%)	0.02	5,661 (37.8%)	563 (40.5%)	0.05
	Persistent AF	7,560 (4.3%)	867 (4.4%)	0.01	4,765 (4.4%)	608 (4.3%)	0.01	505 (3.3%)	50 (3.3%)	0.00	505 (3.4%)	39 (2.8%)	0.03
	Chronic AF	10,894 (6.2%)	1,135 (5.8%)	0.02	7,182 (6.6%)	867 (6.1%)	0.02	819 (5.4%)	84 (5.6%)	0.01	1,067 (7.1%)	103 (7.4%)	0.01
	Unspecified AF	114,745 (65.1%)	12,838 (65.1%)	0.00	69,376 (64.1%)	9,068 (64.0%)	0.00	10,275 (68.0%)	1,015 (67.4%)	0.01	10,041 (67.1%)	897 (64.6%)	0.05
NVAF diagnosis setting, n (%)	Inpatient only	85,475 (48.5%)	10,359 (52.5%)	0.08	51,082 (47.2%)	7,151 (50.5%)	0.07	8,162 (54.0%)	826 (54.8%)	0.01	7,912 (52.9%)	785 (56.5%)	0.07
	Outpatient only	90,890 (51.5%)	9,363 (47.5%)	0.08	57,226 (52.8%)	7,021 (49.5%)	0.07	6,943 (46.0%)	682 (45.2%)	0.01	7,055 (47.1%)	604 (43.5%)	0.07
Quan-CCI, mean (SD)		2.8 (2.6)	3.0 (2.5)	0.08	2.8 (2.6)	3.1 (2.5)	0.09	3.9 (2.8)	4.1 (2.7)	0.08	3.5 (2.7)	3.8 (2.6)	0.09
CHA_2DS_2-VASc score, mean (SD)		3.5 (1.9)	3.6 (1.7)	0.07	3.7 (1.8)	3.8 (1.7)	0.07	4.1 (1.8)	4.3 (1.6)	0.09	4.2 (1.9)	4.2 (1.8)	0.01
HAS-BLED score,[b] mean (SD)		3.0 (1.3)	2.9 (1.3)	0.09	3.2 (1.3)	3.1 (1.3)	0.08	3.4 (1.3)	3.3 (1.3)	0.07	3.3 (1.3)	3.2 (1.3)	0.11
Baseline comorbidities (top 5)	Renal disease	53,250 (30.2%)	6,622 (33.6%)	0.07	32,584 (30.1%)	4,724 (33.4%)	0.07	7,175 (47.5%)	802 (53.2%)	0.11	5,722 (38.2%)	602 (43.4%)	0.10
	Diabetes	63,137 (35.8%)	8,117 (41.2%)	0.11	36,250 (33.5%)	5,501 (38.9%)	0.11	7,674 (50.8%)	835 (55.4%)	0.09	7,902 (52.8%)	803 (57.8%)	0.10
	Hypertension	144,499 (81.9%)	16,602 (84.2%)	0.06	88,991 (82.2%)	11,945 (84.4%)	0.06	13,954 (92.4%)	1,406 (93.3%)	0.03	13,331 (89.1%)	1,233 (88.7%)	0.01
	Congestive heart failure	57,078 (32.4%)	7,715 (39.1%)	0.14	34,730 (32.1%)	5,300 (37.5%)	0.11	7,034 (46.6%)	854 (56.7%)	0.20	5,889 (39.3%)	627 (45.1%)	0.12
	Coronary artery disease	68,977 (39.1%)	8,433 (42.8%)	0.07	44,168 (40.8%)	6,420 (45.4%)	0.09	6,467 (42.8%)	664 (44.1%)	0.03	6,408 (42.8%)	659 (47.4%)	0.09
Baseline medications (top 5)	ACE/ARB	84,695 (48.0%)	9,722 (49.3%)	0.03	51,463 (47.5%)	6,901 (48.7%)	0.02	7,849 (52.0%)	769 (51.0%)	0.02	8,206 (54.8%)	780 (56.1%)	0.03
	Beta blockers	78,541 (44.5%)	9,027 (45.8%)	0.02	49,113 (45.4%)	6,694 (47.2%)	0.04	5,886 (39.0%)	631 (41.9%)	0.06	6,228 (41.6%)	641 (46.2%)	0.09
	Renin-angiotensin system antagonists	87,701 (49.7%)	10,052 (51.0%)	0.02	53,481 (49.4%)	7,159 (50.5%)	0.02	8,214 (54.4%)	806 (53.4%)	0.02	8,373 (56.0%)	793 (57.1%)	0.02
	Statin	86,665 (49.1%)	9,850 (50.0%)	0.02	54,535 (50.4%)	7,298 (51.5%)	0.02	7,661 (50.7%)	787 (52.2%)	0.03	8,153 (54.5%)	764 (55.0%)	0.01
	Warfarin inhibitors [c]	111,861 (63.4%)	12,931 (65.6%)	0.04	68,784 (63.5%)	9,315 (65.7%)	0.05	10,502 (69.5%)	1,071 (71.0%)	0.03	9,909 (66.2%)	975 (70.1%)	0.08

Key: ACE – angiotensin-converting enzyme inhibitors; AF – atrial fibrillation; ARB – aromatase receptor blockers; CCI – Charlson comorbidity index; CHA_2DS_2-VASc – congestive heart failure, hypertension, age ≥75 years, diabetes mellitus, prior stroke or transient ischemic attack or thromboembolism, vascular disease, aged 65-74 years, sex category; HAS-BLED – hypertension, abnormal renal and liver function, stroke, bleeding, elderly, drugs and alcohol; IPTW – inverse probability treatment weighting; NVAF – non-valvular atrial fibrillation; OAC – oral anticoagulants; SD – standard deviation; STD – standardized difference.

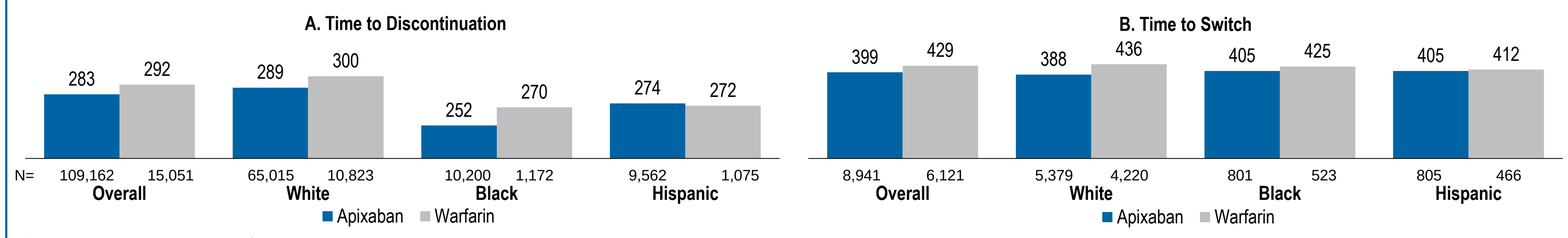
[a] STD >10% was statistically significant (highlighted in green). [b] A modified HAS-BLED score was used without the requirement of labile international normalized ratios (INR) values. [c] Includes therapies classified as CYP2C9 inhibitors, CYP1A2 inhibitors, and CYP3A4 inhibitors.

Figure 2. Proportion of Discontinuation and Switch Among NVAF Patients Who Initiated Apixaban or Warfarin



Key: NVAF – non-valvular atrial fibrillation.

Figure 3. Time to Discontinuation and Switch (in Days) Among NVAF Patients Who Initiated With Apixaban or Warfarin



Key: NVAF – non-valvular atrial fibrillation.

Table 2. IR and HR for Discontinuation and Switch Among NVAF Patients Who Initiated With Apixaban or Warfarin

		IR	*P*-value	HR (95% CI)	*P*-value
OVERALL	Discontinuation	55.7 (Apix) vs 75.3 (Warf)	<.0001	0.76 (0.75-0.77)	<.0001
	Switch	6.3 vs 31.5	<.0001	0.21 (0.20-0.22)	<.0001
WHITE	Discontinuation	52.3 vs 73.5	<.0001	0.73 (0.71-0.74)	<.0001
	Switch	6.0 vs 29.7	<.0001	0.17 (0.17-0.18)	<.0001
BLACK	Discontinuation	69.8 vs 84.7	<.0001	0.85 (0.80-0.90)	<.0001
	Switch	7.2 vs 37.2	<.0001	0.23 (0.21-0.26)	<.0001
HISPANIC	Discontinuation	60.0 vs 83.4	<.0001	0.75 (0.71-0.80)	<.0001
	Switch	6.8 vs 36.0	<.0001	0.16 (0.15-0.18)	<.0001

Key: Apix – Apixaban; CI – confidence interval; IR – incidence rate; NVAF – non-valvular atrial fibrillation; HR – hazard ratio; Warf – Warfarin.

Study limitations

- Residual confounding may have been possible due to unmeasured confounders that were not available in the claims data.
- The presence of a claim for a filled prescription did not indicate proper adherence to the treatment, which may have resulted in an overestimation of oral anticoagulant utilization.
- Unknown race/ethnicity information for almost 16% of the study population in the data may have influenced study results; however, the study did not control for these patients.

Conclusions

In this analysis of adult NVAF patients from a large US administrative claims database who initiated oral anticoagulant treatment, apixaban was associated with a lower risk of discontinuation and switch compared to warfarin among White, Black, and Hispanic patients. Notably, the Black and Hispanic cohorts exhibited higher rates of and shorter times to discontinuation and switching. Further research is needed to evaluate potential factors contributing to these disparities, such as provider characteristics and prescribing patterns.

References: **1.** Alkhouli M, et al. *J Am Coll Cardiol*. 2019;74(24):3050-3065. **2.** Bradley M, et al. *J Gen Intern Med*. 2020;35(12):3597-3604. **3.** Azizi Z, et al. *Heart Rhythm O2*. 2023;4(3):158-168. **4.** Reynolds KR, et al. *JAMA Netw Open*. 2024;7(5):e249465.

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