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Abstract 14012: Opportunities to Improve the Efficacy and Safety of Oral Anticoagulant Therapy in Atrial Fibrillation—Insights From a Multistate Healthcare System

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Background

- Vitamin K antagonists (VKAs) effectively reduce thromboembolic risk in atrial fibrillation (AF), but are limited by a narrow therapeutic window^{1,2}.
- Patients on VKAs with reduced time in the therapeutic range (TTR) face an increased risk of bleeding and ischemic events².
- Based in part on this, current guidelines give preference to direct-acting oral anticoagulants (DOACs) over VKAs in AF³.

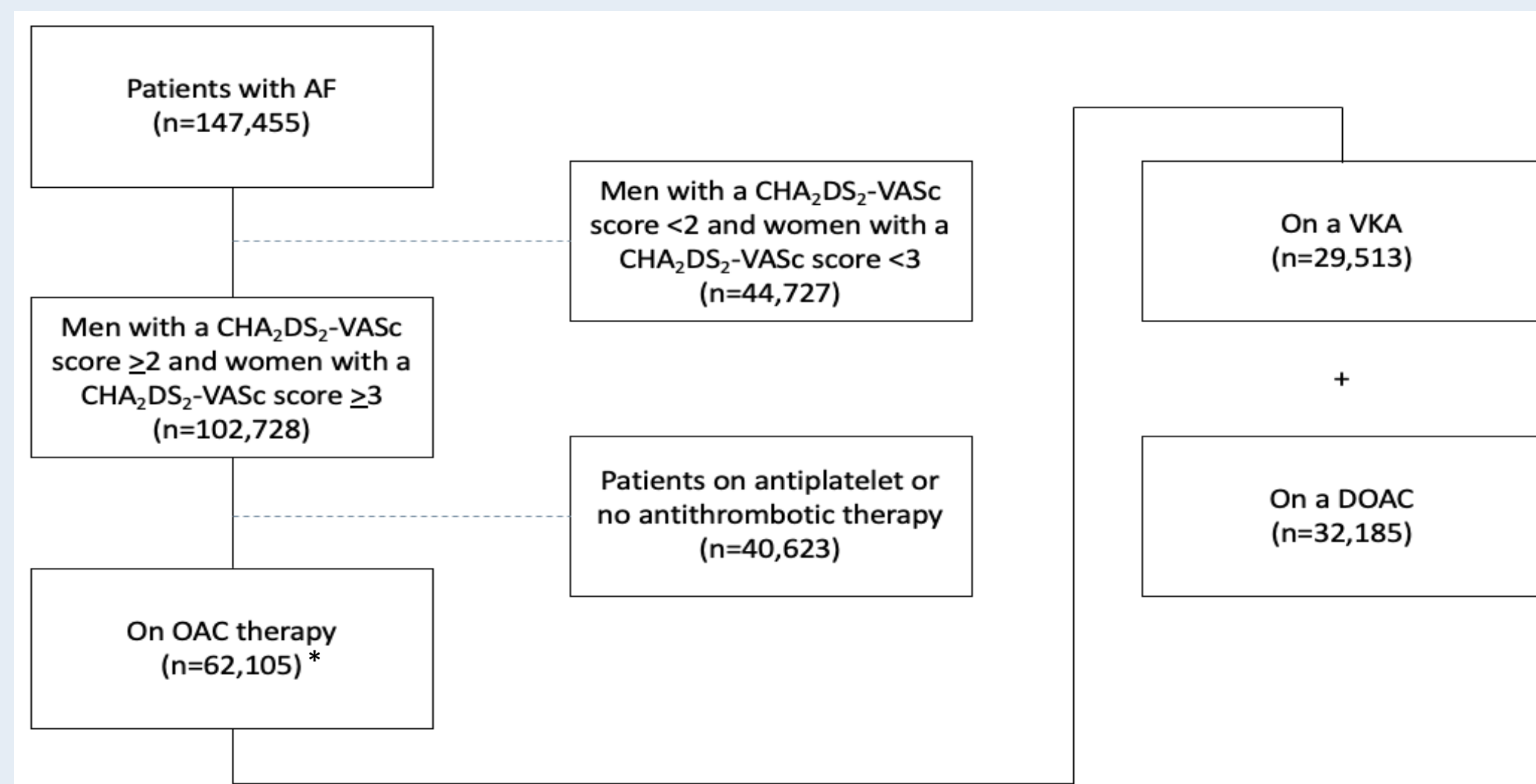
Objective

- Using real-world data from a large multistate health care system, we sought to evaluate a) the breakdown of OAC type and b) TTR for those on VKAs in an ambulatory population of at-risk AF patients.

Methods

- Cross-sectional analysis (August 1, 2018) of patients with AF from a multistate health care system.
- Electronic health record and coding (ICD-10) data was used to identify patients with AF, calculate their CHA₂DS₂-VASc score, and define their current antithrombotic regimen.
- Men with a CHA₂DS₂-VASc score <2 and women with a CHA₂DS₂-VASc score <3 were excluded from the analysis.
- Demographics and comorbidities for 61,698 unique patients with AF on an OAC were assessed to allow for comparison between those receiving a VKA compared to a DOAC.
- The Rosendaal method was used to calculate TTR for 8,807 unique patients for whom sufficient INR values were available.
- Categorical variables were expressed as counts with percentages. Proportions of categorical variables were compared between groups by chi-square test or Fisher exact test, as appropriate. All significance tests were two tailed and a p value less than 0.05 was considered statistically significant. Tukey method was used for post-hoc multiple comparisons testing when needed.
- SAS version 9.4 (SAS Institute Inc.) was used for all analyses.

Figure 1 – Cohort selection flow diagram



*407 patients on both a VKA and DOAC were excluded from the analysis

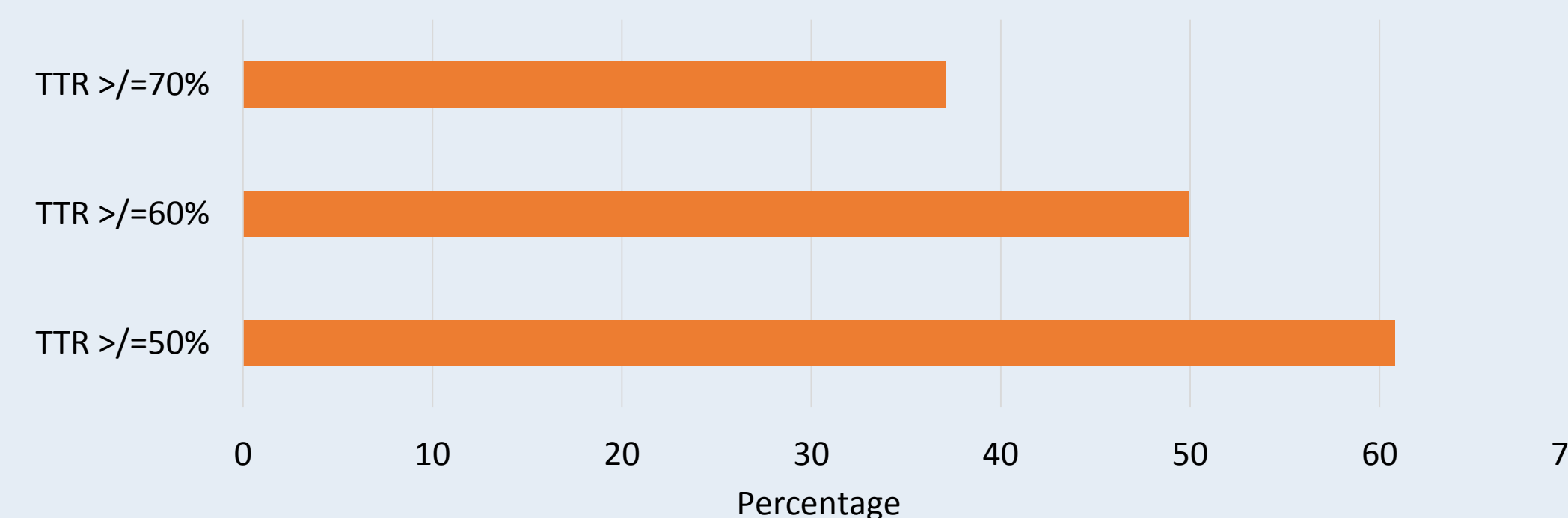
Results

Table 1 – Demographics. Counts with percentages of patients with AF overall, on a VKA or a DOAC with corresponding p values.

Variable	Overall (n=61698)	VKA (n=29513)	DOAC (n=32185)	p value
Age ≥65 years	58185 (94.3)	27903 (94.5)	30282 (94.1)	0.0143
Gender (n, % of male)	32730 (53.1)	16063 (54.4)	16667 (51.8)	0.0001
Race (n, %)				0.0001
American Indian or Alaska Native	377 (0.6)	173 (0.6)	204 (0.7)	
Asian	1796 (3.0)	799 (2.8)	997 (3.2)	
Black or African American	926 (1.5)	407 (1.4)	519 (1.7)	
Native Hawaiian or Other Pacific Islander	199 (0.3)	110 (0.4)	89 (0.3)	
Other	2320 (3.9)	960 (3.3)	1360 (4.3)	
White or Caucasian	54565 (90.7)	26324 (91.5)	28241 (89.9)	
Ethnicity (n, % Hispanic)	1807 (3.0)	720 (2.5)	1087 (3.4)	0.0001
Insurance				0.0001
Commercial	3486 (5.7)	1376 (4.7)	2110 (6.6)	
Medicaid	800 (1.3)	350 (1.2)	450 (1.4)	
Medicare	54581 (89.4)	26542 (90.9)	28039 (88.0)	
Other	2180 (3.6)	919 (3.2)	1261 (4.0)	
Hypertension (n, %)	38270 (62.0)	18552 (62.9)	19718 (61.3)	0.0001
Diabetes (n, %)	13324 (21.6)	7017 (23.8)	6307 (19.6)	0.0001
Coronary artery disease (n, %)	13234 (21.5)	6931 (23.5)	6303 (19.6)	0.0001
Myocardial infarction (n, %)	1896 (3.1)	943 (3.2)	953 (3.0)	0.09
Stroke or TIA (n, %)	7912 (12.8)	3830 (13.0)	4082 (12.7)	0.27
Peripheral vascular disease (n, %)	3953 (6.4)	2149 (7.3)	1804 (5.6)	0.0001
Heart failure (n, %)	11286 (18.3)	6477 (22.0)	4809 (14.9)	0.0001
Renal disease (n, %)	11373 (18.4)	6457 (21.9)	4916 (15.3)	0.0001
Liver disease (n, %)	982 (1.6)	515 (1.7)	467 (1.5)	0.0036

- Among AF patients on OAC therapy, men (54.4% vs. 51.8%, p=0.0001) and those with diabetes (23.8% vs. 19.6%, p=0.0001), coronary artery disease (23.5% vs. 19.6%, p=0.0001), peripheral vascular disease (7.3% vs 5.6%, p=0.0001) and renal disease (21.9% vs. 15.3%, p=0.0001) were more likely to receive a VKA.

Figure 2 – Frequencies of TTR's ≥50%, ≥60% and ≥70% for those on a VKA.



Results (continued)

- Among AF patients on a VKA, the mean TTR was 56.3%, with 37.1%, 49.9% and 60.8% with TTRs ≥70%, ≥60%, and ≥50%, respectively.

Table 2 – Demographics. Counts with percentages of patients on a VKA with TTRs <70% and ≥70% with corresponding p values.

Variable	Overall (n=8094)	TTR <70% (n=5293)	TTR ≥70% (n=3314)	p value
Age ≥65 years	8094 (94.0)	4937 (93.3)	3157 (95.3)	0.0001
Gender (n, % of male)	4521 (52.5)	2689 (50.8)	1832 (55.3)	0.0001
Race (n, %)				0.208
American Indian or Alaska Native	42 (0.5)	27 (0.5)	15 (0.5)	
Asian	206 (2.4)	118 (2.3)	88 (2.7)	
Black or African American	106 (1.3)	73 (1.4)	33 (1.0)	
Native Hawaiian or Other Pacific Islander	25 (0.3)	15 (0.3)	10 (0.3)	
Other	292 (3.5)	194 (3.7)	98 (3.0)	
White or Caucasian	7791 (92.1)	4783 (91.8)	3008 (92.5)	
Ethnicity (n, % hispanic)	267 (3.1)	174 (3.3)	93 (2.8)	0.2032
Insurance				0.65
Commercial	321 (3.7)	202 (3.8)	119 (3.6)	
Medicaid	92 (1.1)	58 (1.1)	34 (1.0)	
Medicare	7772 (90.6)	4760 (90.3)	3012 (91.1)	
Other	395 (4.6)	253 (4.8)	142 (4.3)	
Hypertension (n, %)	5609 (65.2)	3423 (64.7)	2186 (66.0)	0.2208
Diabetes (n, %)	2181 (25.3)	1401 (26.5)	780 (23.5)	0.0023
Coronary artery disease (n, %)	2074 (24.1)	1311 (24.8)	763 (23.0)	0.0655
Myocardial infarction (n, %)	233 (2.7)	154 (2.9)	79 (2.4)	0.1437
Stroke or TIA (n, %)	1110 (12.9)	693 (13.1)	417 (12.6)	0.49
Peripheral vascular disease (n, %)	685 (8.0)	454 (8.6)	231 (7.0)	0.0074
Heart failure (n, %)	1892 (22.0)	1208 (22.8)	684 (20.6)	0.0173
Renal disease (n, %)	1984 (23.1)	1284 (24.3)	700 (21.1)	0.0008
Liver disease (n, %)	177 (2.1)	115 (2.2)	62 (1.9)	0.337

- Among AF patients on a VKA, women (49.2% vs. 44.7%, p=0.0001) and those with diabetes (26.5% vs. 19.6%, p=0.0001), peripheral vascular disease (8.6% vs. 7.0%, p=0.0074), heart failure (22.8% vs 20.6%, p=0.0173) and renal disease (24.3% vs. 21.1%, p=0.0008) were more likely to have a suboptimal TTR (<70%).

Conclusions

- In a contemporary, non-registry setting, VKAs continue to be used in nearly half of at-risk patients on OAC therapy for AF.
- Among those treated with a VKA, a suboptimal TTR (<70%) is present nearly two thirds of the time.
- Further investigation is needed into tools that facilitate interchange from a VKA to a DOAC, particularly among those with a suboptimal TTR.