

# Oral Anticoagulation among Patients Initiating Dialysis with Existing Atrial Fibrillation/Flutter: Association with Outcomes and Risk Score

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#### Introduction

- In the general population, systemic oral anticoagulation may reduce ischemic stroke risk among patients with atrial fibrillation/flutter (Afib).
- Patients with a CHA<sub>2</sub>DS<sub>2</sub>-VASc risk score of ≥2 are considered to be of moderate-high stroke risk, and are considered candidates for oral anticoagulation.<sup>1</sup>
- Use of oral anticoagulants among dialysis patients with Afib is complicated by the higher prevalence of comorbidities and higher bleeding risk than the general population.<sup>2</sup>
- Guidance for use of oral anticoagulation among patients who initiate hemodialysis with pre-existing Afib is scant.
- The utility of the CHA<sub>2</sub>DS<sub>2</sub>-VASc score in this population is unclear.

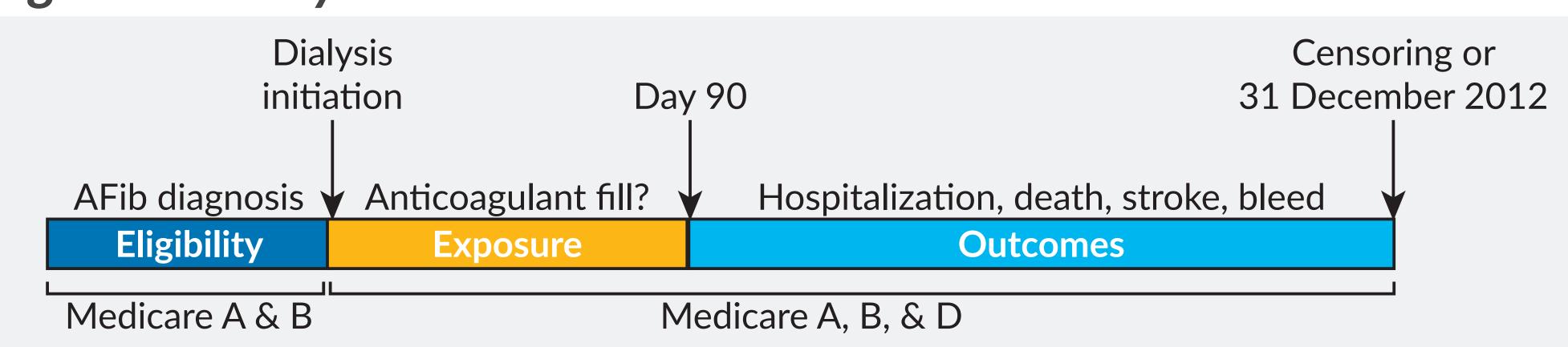
## Objective

Among patients initiating hemodialysis with pre-existing Afib:

- Assess how early choice to use oral anticoagulation vs. not use oral anticoagulation is associated with key clinical outcomes
- Examine how the association between early choice to use oral anticoagulation and outcomes is modified by the CHA<sub>2</sub>DS<sub>2</sub>-VASc risk score

#### Methods

Figure 1: Study Schematic



- Patients were adult, non-Veterans Affairs beneficiaries who initiated hemodialysis at a large dialysis organization (LDO) in 2010 or 2011; were enrolled in Medicare Parts A, B, and D as of dialysis initiation; had an existing Afib diagnosis as of dialysis initiation based on Medicare A and B claims; and continued hemodialysis at the LDO for at least 90 days.
- Exposure status was ascribed based on the presence of at least one Medicare Part D claim for a prescription fill for an oral anticoagulant between dialysis initiation and day 90.
- Outcomes, ascertained based on claims data, were considered from day 91 until the earliest of study end (31 December 2012) or loss to follow-up.
- Comparisons between exposure groups were made using intention-to-treat principles and negative binomial and Cox proportional hazard models that were adjusted for age, sex, race, vascular access, body mass index, institutional living, diabetes, congestive heart failure, cerebrovascular disease, and CHA<sub>2</sub>DS<sub>2</sub>-VASc score.

#### Results

- Among patients initiating dialysis with a pre-existing diagnosis of Afib, approximately 30% received systemic oral anticoagulation in the early dialysis period (Table 1).
- Patients with an anticoagulant fill in the first 90 days were, on average, younger, more likely to be male, of higher BMI, less likely to have diabetes, more likely to have congestive heart failure or cerebrovascular disease, and were less likely to live in an institution.
- Approximately 80% of ESRD patients initiating dialysis with an existing diagnosis of Afib had a CHA₂DS₂-VASc score of ≥ 3.
- There was no association between CHA<sub>2</sub>DS<sub>2</sub>-VASc score and the likelihood that a patient had filled a prescription for oral anticoagulant.

Table 1: Baseline Patient Characteristics by Oral Anticoagulant Fill

	No Anticoagulant Fill	Anticoagulant Fill	Std Diff	P-Value
	N = 1907	N = 835	(%)	
Time at risk, days	356.2 ± 267.7	384.0 ± 271.5		
Age, years, mean ± SD	$73.9 \pm 10.4$	$72.8 \pm 10.0$	-10.3	0.01
Sex, female, n (%)	966 (50.7)	375 (44.9)	-11.5	0.006
<b>Race</b> , n (%)				0.01
White	1244 (65.2)	599 (71.7)	14.0	
Black	369 (19.4)	134 (16.1)	-8.7	
Hispanic	179 (9.4)	58 (7.0)	-8.9	
Other/unknown	115 (6.0)	44 (5.3)	-3.3	
Vascular access, n (%)				0.01
AVF	204 (10.7)	121 (14.5)	11.5	
AVG	58 (3.0)	30 (3.6)	3.1	
CVC	1645 (86.3)	684 (81.9)	-11.9	
Etiology of ESRD, n (%)				0.12
Diabetes	894 (46.9)	356 (42.6)	-8.5	
Hypertension	598 (31.4)	279 (33.4)	4.4	
Other	415 (21.8)	200 (24.0)	5.2	
BMI, kg/m2, mean ± SD	29.1 ± 7.9	$30.3 \pm 9.0$	14.2	< 0.001
Diabetes, n (%)	1336 (70.1)	551 (66.0)	-8.7	0.03
CHF, n (%)	987 (51.8)	486 (58.2)	13.0	0.002
CVD, n (%)	200 (10.5)	109 (13.1)	8.0	0.05
Institutional living, n (%)	343 (18.0)	94 (11.3)	-19.0	< 0.001
CHA <sub>2</sub> DS <sub>2</sub> -VASc score, median [p25, p75]	4 [3, 5]	4 [3, 5]		0.62
CHA <sub>2</sub> DS <sub>2</sub> -VASc score ≥5, n (%)	588 (30.8)	236 (28.3)		0.18

Abbreviations: AVF, arteriovenous fistula; AVG, arteriovenous graft; BMI, body mass index; CHF, congestive heart failure; CVC, central venous catheter; CVD, cerebrovascular disease; p25, 25th percentile; p75, 75th percentile; SD, standard deviation

- Rates of relevant clinical outcomes (hospitalization, mortality, overall stroke, ischemic stroke, stroke or transient ischemic attack [TIA], and bleed) were similar between patients who did and did not receive an oral anticoagulant fill (Table 2).
- After adjusting for differences in baseline characteristics, no differences in outcome rates were observed between patients who did and did not receive oral anticoagulation (Figure 1).
- Association between oral anticoagulation and outcomes were not modified by CHA<sub>2</sub>DS<sub>2</sub>-VASc score (*P*-interaction > 0.1; not shown).

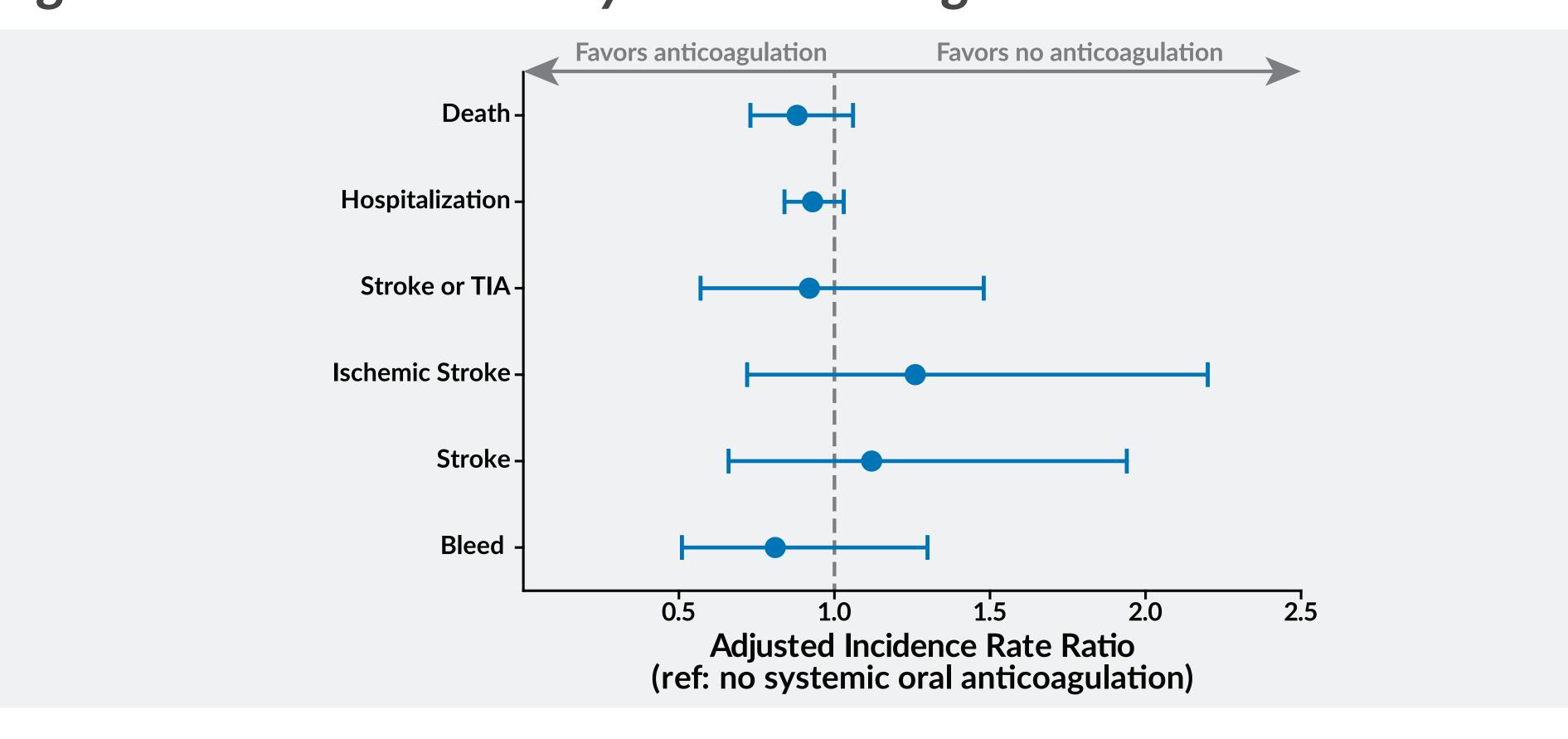
Table 2: Outcomes by Oral Anticoagulant Fill Status

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	No Anticoagulant Fill N = 1907	Anticoagulant Fill N = 835		
Time at risk, pt-yrs	1861	878		
Hospitalization events crude rate (per 100 pt-yrs)	4373 235	1927 219		
Mortality events crude rate (per 100 pt-yrs)	604 32.5	259 29.5		
Overall Stroke events crude rate (per 100 pt-yrs)	57 3.1	28 3.2		
Ischemic Stroke events crude rate (per 100 pt-yrs)	48 2.6	25 2.8		
Stroke or TIA events crude rate (per 100 pt-yrs)	81 4.4	33 3.8		
Bleed events crude rate (per 100 pt-yrs)	110 5.9	53 6.0		

Hemorrhagic stroke could not be considered as an outcome due to a paucity of events.

Abbreviations: TIA, transient ischemic attack

Figure 1: Outcome Risk by Oral Anticoagulant Fill Status



### Summary and Conclusions

- Approximately 30% of patients initiating dialysis with a preexisting diagnosis of Afib receive oral anticoagulation.
- We observed no evidence of benefit of systemic oral anticoagulation with respect to any relevant clinical outcome examined.
- We found no evidence that the CHA<sub>2</sub>DS<sub>2</sub>-VASc risk score is an effective tool to guide the decision to use systemic oral anticoagulation in this population.
- Further research, including thoughtfully designed prospective clinical trials, is required to further guide use of anticoagulant therapy among incident dialysis patients with preexisting Afib.

#### References

- 1. Lip, GY, et al. *Chest* 2010 Feb; 137(2):263-72
- 2. Van Der Meersch H, et al. Am Heart J 2017 184:37-46

## Acknowledgments

We extend our sincere appreciation to the teammates in more than 2,000 DaVita clinics who work every day to take care of patients and also to ensure the extensive data collection on which our work is based. We thank DaVita Clinical Research® (DCR®) and particularly members of the Healthcare Analytics and Insights team for helpful discussions. Some of the data reported here were supplied by the United States Renal Data System (USRDS). The interpretation and reporting of these data are the responsibility of the author(s) and in no way should be seen as an official policy or interpretation of the U.S. government.

This study was funded by DaVita, Inc.

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American Society of Nephrology Kidney Week, October 31 - November 5, 2017; New Orleans, LA