



Early and Long-Term Outcomes After DOAC Initiation in Hospitalized Patients With Newly Diagnosed Atrial Fibrillation

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New-onset atrial fibrillation (AF) is common among acutely hospitalized patients and is associated with increased risks of stroke and mortality. However, anticoagulation in this setting involves a temporal tradeoff between early bleeding during recovery and potential long-term stroke prevention, and data guiding direct oral anticoagulant (DOAC) initiation at discharge remain limited. We conducted a retrospective cohort study of adults with newly diagnosed AF identified between 3 days before hospital admission and hospital discharge within the Baylor Scott & White Health system (July 2020 to June 2024), comparing patients initiated on DOAC therapy at discharge with those who were not. Outcomes included major adverse cardiovascular events (MACE: all-cause death, nonfatal myocardial infarction, or ischemic stroke/transient ischemic attack) and net adverse clinical events (NACE: MACE or major bleeding) at 30 days and 3 years. Cox proportional hazards models were used to estimate hazard ratios (HRs) with 95% confidence intervals (CIs), and landmark cumulative incidence analyses assessed temporal trends after discharge. Among 16,641 patients (mean age 75.1 years; 41.8% women), 7,181 (43.2%) were discharged on a DOAC. In adjusted analyses, DOAC use was associated with lower risk of 3-year MACE (HR 0.61, 95% CI 0.58 to 0.65, $p < 0.001$) and NACE (HR 0.64, 95% CI 0.61 to 0.68, $p < 0.001$) compared with those not receiving DOAC therapy. Landmark analyses showed consistent reductions in MACE at both 30 days (HR 0.61, 95% CI 0.57 to 0.65) and 3 years (HR 0.68, 95% CI 0.62 to 0.74). Patients treated with DOACs had a lower risk of NACE at both 30 days (HR 0.65, 95% CI 0.61 to 0.69) and 3 years (HR 0.67, 95% CI 0.62 to 0.73). Overall, DOAC initiation at discharge in patients with newly diagnosed AF identified between 3 days before hospital admission and hospital discharge was associated with lower early and long-term ischemic risk, with lower rates of both MACE and NACE observed at 30 days and 3 years, underscoring the need for individualized decision-making regarding anticoagulation during acute hospitalization.

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Atrial fibrillation (AF) is the most common sustained cardiac arrhythmia and is associated with substantial morbidity and mortality, including increased risks of stroke, systemic embolism, heart failure, and death.^{1–3} Its global burden continues to rise, driven by population aging and the growing prevalence of cardiovascular risk factors.⁴ Risk stratification tools such as the CHA₂DS₂-VASc score are routinely used to identify patients at elevated thromboembolic risk who may benefit from anticoagulation.¹ Direct oral anticoagulants

(DOACs) have become central to ischemic stroke prevention in AF, offering predictable pharmacokinetics, fixed dosing, and favorable safety profiles.^{1,5} Evidence consistently shows reductions in stroke and systemic embolism, along with lower rates of intracranial hemorrhage.¹

Despite this robust evidence base, AF often first presents during acute hospitalization, frequently in the context of infection, surgery, or other physiologic stressors.⁵ New-onset AF in hospitalized patients is a distinct and understudied clinical entity, marked by a high comorbidity burden and uncertain long-term rhythm trajectories. Management in this setting is particularly challenging, as clinicians must balance thromboembolic and bleeding risks while determining whether the arrhythmia is transient or marks the onset of chronic AF.^{1,6}

Evidence to guide anticoagulation decisions in this population remains limited, and prescribing practices at hospital discharge vary

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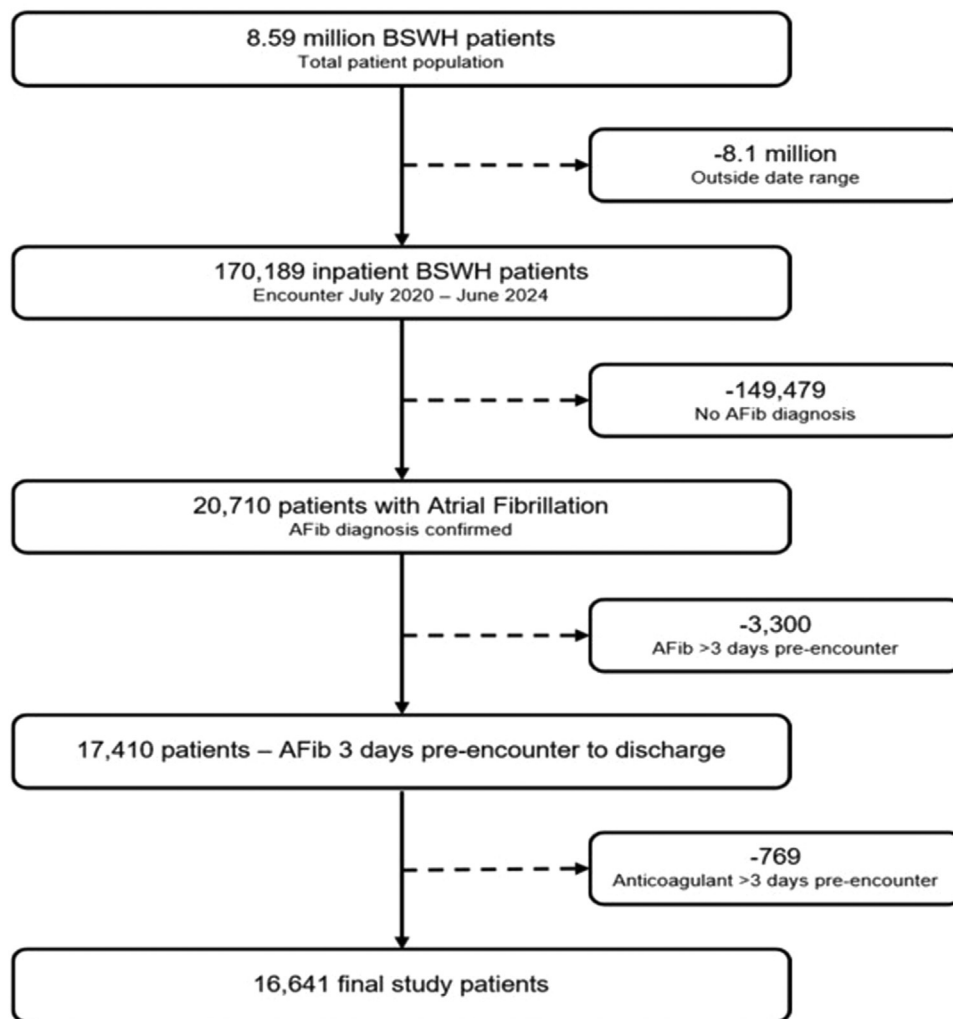


Figure 1. Study cohort selection flow diagram. This figure illustrates the stepwise selection of the study cohort from the initial population to the final analytic sample, with inclusion and exclusion criteria applied at each stage.

widely.^{1,7} Hospitalized patients often face competing risks, including acute illness severity, procedural considerations, and dynamic changes in renal function, all of which may influence anticoagulation strategies and long-term outcomes. Consequently, a critical gap remains in understanding the impact of initiating DOAC therapy at discharge for patients with newly diagnosed AF during hospitalization. Accordingly, the present study aimed to evaluate the association between discharge DOAC prescription and long-term clinical outcomes among patients with newly diagnosed AF identified during the index hospitalization. We hypothesized that DOAC initiation at discharge would be associated with improved ischemic outcomes over both early and long-term follow-up despite competing bleeding risk considerations during acute hospitalization.

Methods

We conducted a retrospective cohort study of adults hospitalized within the Baylor Scott & White Health system from July 1, 2020 to June 30, 2024. Patients were included if they had newly diagnosed AF, defined as a first documented AF diagnosis occurring between 3 days before hospital admission and hospital discharge, with no prior AF diagnosis recorded in the electronic health record. This cohort included both patients presenting with newly diagnosed AF and those who developed newly diagnosed AF during the index

hospitalization. To minimize misclassification of previously undiagnosed AF, patients with evidence of anticoagulant use were excluded (Figure 1). Patients were classified as receiving DOAC during hospitalization or at discharge, forming DOAC and non-DOAC groups.

Covariates included demographic variables, comorbidities, and CHA₂DS₂-VASc scores. Comorbidities comprised congestive heart failure, hypertension, diabetes mellitus, chronic kidney disease, peripheral artery disease, prior myocardial infarction, prior stroke or transient ischemic attack, hyperlipidemia, prior major bleeding events, and major bleeding events during the index hospitalization. Laboratory parameters included estimated glomerular filtration rate (eGFR) and hemoglobin levels.

The primary outcomes were major adverse cardiovascular events (MACE), defined as a composite of all-cause death, nonfatal myocardial infarction, and ischemic stroke or transient ischemic attack, and net adverse clinical events (NACE), defined as MACE plus major bleeding. Secondary outcomes included the individual components of these composite endpoints. Follow-up was truncated at 3 years, and patients with incomplete follow-up were censored at their last recorded encounter.

Continuous variables were summarized as means $\pm$ standard deviations or as medians with interquartile ranges and compared using the Wilcoxon rank-sum test. Categorical variables were summarized as counts and percentages and compared using the Chi-

Table 1
Baseline characteristics of patients with new-onset atrial fibrillation, stratified by DOAC exposure

Characteristic	Overall N = 16,641*	No DOAC N = 9,460*	DOAC N = 7,181*	p Value [†]
Age, mean (SD)	75.12 (13.72)	74.57 (14.57)	75.84 (12.49)	<0.001
Gender				0.6
Female	6,953 (41.8%)	3,936 (41.6%)	3,017 (42%)	
Male	9,684 (58.2%)	5,520 (58.4%)	4,164 (58%)	
Race				0.059
American Indian or Alaska Native	57 (0.4%)	41 (0.4%)	16 (0.2%)	
Asian	431 (2.7%)	260 (2.8%)	171 (2.5%)	
Black or African American	2,169 (13.5%)	1,243 (13.6%)	926 (13.3%)	
Native Hawaiian or other Pacific Islander	30 (0.2%)	13 (0.1%)	17 (0.2%)	
Other race	198 (1.2%)	116 (1.3%)	82 (1.2%)	
White	13,207 (82.1%)	7,463 (81.7%)	5,744 (82.6%)	
Ethnic group				<0.001
Hispanic or Latino	1,828 (11.2%)	1,118 (12.1%)	710 (10.1%)	
Not Hispanic or Latino	14,448 (88.8%)	8,134 (87.9%)	6,314 (89.9%)	
CHA ₂ DS ₂ -VAsC, mean (SD)	4.11 (1.66)	4.06 (1.71)	4.18 (1.58)	<0.001
CHF history	4,066 (24.4%)	1,879 (19.9%)	2,187 (30.5%)	<0.001
HTN history	7,425 (44.6%)	4,165 (44%)	3,260 (45.4%)	0.078
DM2 history	2,608 (15.7%)	1,502 (15.9%)	1,106 (15.4%)	0.4
CKD history	912 (5.5%)	580 (6.1%)	332 (4.6%)	<0.001
PAD history	535 (3.2%)	310 (3.3%)	225 (3.1%)	0.6
Aortic plaque history	115 (0.7%)	76 (0.8%)	39 (0.5%)	0.045
Hyperlipidemia history	3,546 (21.3%)	2,123 (22.4%)	1,423 (19.8%)	<0.001
MI history	1,527 (9.2%)	993 (10.5%)	534 (7.4%)	<0.001
Stroke TIA history	1,363 (8.2%)	782 (8.3%)	581 (8.1%)	0.7
Major bleeding history	921 (5.5%)	580 (6.1%)	341 (4.7%)	<0.001
Major bleeding events during index hospitalization	1,080 (6.5%)	678 (7.2%)	402 (5.6%)	<0.001
Hemoglobin (mg/dl), mean (SD)	11.20 (2.45)	10.96 (2.42)	11.54 (2.44)	<0.001
eGFR (ml/min/1.73 m ²), mean (SD)	68.64 (28.24)	69.09 (29.99)	68.14 (26.16)	0.069

Notes: *Values are n (%), unless otherwise noted.

[†] Wilcoxon rank sum test; Pearson's Chi-squared test.

CHA₂DS₂-VAsC = Congestive heart failure, Hypertension, Age ≥75 (2 points), Diabetes, prior stroke or transient ischemic attack or thromboembolism (2 points), Vascular disease, Age 65 to 74, Sex category (female); CHF = congestive heart failure; CKD = chronic kidney disease; DM2 = type 2 diabetes mellitus; DOAC = direct oral anticoagulant; eGFR = estimated glomerular filtration rate; HTN = hypertension; MI = myocardial infarction; PAD = peripheral artery disease; SD = standard deviation; TIA = transient ischemic attack.

square test. Time-to-event analyses were performed using Kaplan–Meier methods, and comparisons were assessed by log-rank testing. Multivariable Cox proportional hazards models were used to estimate hazard ratios (HRs) and 95% confidence intervals (CIs) for MACE and NACE. Models were adjusted for DOAC use, CHA₂DS₂-VAsC risk category, chronic kidney disease, and ethnicity. Additional analyses were performed using guideline-based CHA₂DS₂-VAsC risk categories (low vs intermediate/high) and, in sensitivity analyses, further adjusting for eGFR, hemoglobin, and in-hospital major bleeding events to evaluate the robustness of the findings. The proportional hazards assumption was mildly violated for CHA₂DS₂-VAsC; therefore, HRs were interpreted as time-averaged effects. Landmark cumulative incidence analyses were conducted to evaluate temporal patterns of MACE and NACE after discharge. All analyses were performed using R version 4.3.2 (R Foundation for Statistical Computing, Vienna, Austria). A two-sided p value <0.05 was considered statistically significant.

Results

The study cohort comprised 16,641 patients with newly diagnosed AF identified during the index hospitalization, of whom 7,181 (43.2%) were prescribed a DOAC and 9,460 (56.8%) were not (Table 1, Figure 1). Patients receiving DOAC therapy were slightly older and had higher mean CHA₂DS₂-VAsC scores and hemoglobin levels. They also had a higher prevalence of congestive heart failure but a lower prevalence of chronic kidney disease, prior myocardial infarction, prior major bleeding events, and major bleeding events during index hospitalization. Hispanic ethnicity was more common in the non-

DOAC group, whereas non-Hispanic ethnicity was more common among patients receiving DOAC therapy. Sex, racial distributions, and mean eGFR levels were similar between groups (Table 1).

Over a 3-year follow-up, MACE and NACE events were lower in patients receiving DOACs than in those not receiving DOACs (MACE: 28.5% vs 41.3%; NACE: 34.9% vs 48.3%; p < 0.001, for both). In multivariable Cox regression analysis, patients treated with DOACs had a 39% lower risk of MACE (HR 0.61, 95% CI 0.58 to 0.65, p < 0.001) and a 36% lower risk of NACE (HR 0.64, 95% CI 0.61 to 0.68, p < 0.001) than those who did not receive DOAC anticoagulation (Tables 2, 4, and 5). These findings remained consistent in additional analyses using guideline-based CHA₂DS₂-VAsC risk categories (low vs intermediate/high) and in sensitivity analyses further adjusting for eGFR, hemoglobin, and major bleeding events during index hospitalization, with DOAC therapy remaining independently associated with lower risks of MACE and NACE (Supplementary Tables 1–4).

Patients treated with DOACs had lower rates of the individual components of MACE and NACE than those not receiving DOACs over the 3-year follow-up (Table 4). These included nonfatal myocardial infarction (9.5% vs 14.4%), ischemic stroke (10.6% vs 12.2%), major bleeding (11.5% vs 15.1%), and all-cause mortality (12.2% vs 21.8%) (all p < 0.001; Table 3).

Landmark analysis of cumulative incidence curves for MACE and NACE showed early separation that persisted throughout the 3-year follow-up period (Figures 2 and 3). For MACE, cumulative incidence was 17.7% versus 27.5% at 30 days and 14.1% versus 20.3% at 3 years in the DOAC and non-DOAC groups, respectively. Patients treated with DOACs had a lower risk at both 30 days (HR 0.61, 95% CI 0.57 to 0.65) and 3 years (HR 0.68, 95% CI 0.62 to 0.74). For NACE, cumulative

Table 2
Outcomes by DOAC exposure at 3 years

Characteristic	Overall, N = 16,641*	No DOAC, N = 9,460*	DOAC, N = 7,181*	p Value [†]
MACE	5,953 (35.8%)	3,906 (41.3%)	2,047 (28.5%)	<0.001
NACE	7,075 (42.5%)	4,567 (48.3%)	2,508 (34.9%)	<0.001
MI	2,044 (12.3%)	1,365 (14.4%)	679 (9.5%)	<0.001
Ischemic Stroke	1,916 (11.5%)	1,155 (12.2%)	761 (10.6%)	0.001
Bleeding	2,252 (13.5%)	1,424 (15.1%)	828 (11.5%)	<0.001
Death	2,939 (17.7%)	2,063 (21.8%)	876 (12.2%)	<0.001
MACE days				<0.001
Mean (SD)	134.85 (252.41)	133.76 (254.54)	136.93 (248.35)	
Median (Q1, Q3)	0 (0, 135)	0 (0, 122)	1 (0, 149)	
Min, Max	0, 1,094	0, 1,094	0, 1,091	
NACE days				0.028
Mean (SD)	128.03 (248.04)	131.51 (255.16)	121.68 (234.45)	
Median (Q1, Q3)	0 (0, 115)	0 (0, 117)	0 (0, 112.50)	
Min, Max	0, 1,094	0, 1,094	0, 1,089	
MI days				0.6
Mean (SD)	115.58 (241.99)	118.63 (247.02)	109.43 (231.60)	
Median (Q1, Q3)	0 (0, 57.50)	0 (0, 62)	0 (0, 53)	
Min, Max	0, 1,092	0, 1,092	0, 1,084	
Stroke days				0.057
Mean (SD)	158.13 (268.93)	168.61 (277.10)	142.21 (255.40)	
Median (Q1, Q3)	2 (0, 212)	4 (0, 242)	0 (0, 163)	
Min, Max	0, 1,094	0, 1,094	0, 1,091	
Bleed days				0.3
Mean (SD)	173.52 (282.70)	186.55 (292.71)	151.11 (263.26)	
Median (Q1, Q3)	5 (0, 258)	4 (0, 293.50)	5 (0, 206.50)	
Min, Max	0, 1,090	0, 1,090	0, 1,089	
Death days				<0.001
Mean (SD)	178.32 (282.96)	168.76 (282.36)	200.83 (283.27)	
Median (Q1, Q3)	13 (0, 269)	4 (0, 230)	41 (0, 333)	
Min, Max	0, 1,092	0, 1,092	0, 1,092	

Notes: *Values are n (%), unless otherwise noted.

[†] Pearson's Chi-squared test; Wilcoxon rank sum test.

DOAC = direct oral anticoagulant; MACE = myocardial infarction, ischemic stroke, death; MI = myocardial infarction; NACE = myocardial infarction, ischemic stroke, death, bleeding; Q1 = first quartile; Q3 = third quartile; SD = standard deviation.

Table 3
Outcomes by DOAC exposure at 30 days

Characteristic	Overall, N = 16,641*	No DOAC, N = 9,460*	DOAC, N = 7,181*	p Value [†]
MACE	3,868 (23.2%)	2,597 (27.5%)	1,271 (17.7%)	<0.001
NACE	4,710 (28.3%)	3,082 (32.6%)	1,628 (22.7%)	<0.001
MI	1,466 (8.8%)	984 (10.4%)	482 (6.7%)	<0.001
Ischemic stroke	1,151 (6.9%)	684 (7.2%)	467 (6.5%)	0.067
Bleeding	1,302 (7.8%)	806 (8.5%)	496 (6.9%)	<0.001
Death	1,631 (9.8%)	1,220 (12.9%)	411 (5.7%)	<0.001
MACE days				0.003
Mean (SD)	2.04 (5.82)	1.78 (5.45)	2.57 (6.50)	
Median (Q1, Q3)	0 (0, 0)	0 (0, 0)	0 (0, 0)	
Min, Max	0, 30	0, 30	0, 30	
NACE days				0.002
Mean (SD)	1.90 (5.64)	1.70 (5.39)	2.28 (6.08)	
Median (Q1, Q3)	0 (0, 0)	0 (0, 0)	0 (0, 0)	
Min, Max	0, 30	0, 30	0, 30	
MI days				0.3
Mean (SD)	1.21 (4.57)	1.06 (4.14)	1.53 (5.33)	
Median (Q1, Q3)	0 (0, 0)	0 (0, 0)	0 (0, 0)	
Min, Max	0, 30	0, 30	0, 30	
Stroke days				0.13
Mean (SD)	2.26 (6.10)	2.41 (6.33)	2.06 (5.75)	
Median (Q1, Q3)	0 (0, 0)	0 (0, 0)	0 (0, 0)	
Min, Max	0, 30	0, 30	0, 30	
Bleed days				<0.001
Mean (SD)	2.24 (6.05)	1.89 (5.67)	2.81 (6.60)	
Median (Q1, Q3)	0 (0, 0)	0 (0, 0)	0 (0, 0)	
Min, Max	0, 30	0, 30	0, 30	
Death days				<0.001
Mean (SD)	3.06 (6.80)	2.42 (6.05)	4.99 (8.37)	
Median (Q1, Q3)	0 (0, 1)	0 (0, 0)	0 (0, 8)	
Min, Max	0, 30	0, 30	0, 30	

Notes: *Values are n (%), unless otherwise noted.

[†] Pearson's Chi-squared test; Wilcoxon rank sum test.

DOAC = direct oral anticoagulant; MACE = myocardial infarction, ischemic stroke, death; MI = myocardial infarction; NACE = myocardial infarction, ischemic stroke, death, bleeding; Q1 = first quartile; Q3 = third quartile; SD = standard deviation.

Table 4
Multivariable Cox proportional hazards model for 3-year MACE risk

Variable	HR	Lower 95% CI	Upper 95% CI	p Value
DOAC—Yes	0.614	0.582	0.648	<0.001
CHA ₂ DS ₂ -VASC risk—Low	Ref	Ref	Ref	
CHA ₂ DS ₂ -VASC risk—Intermediate	0.993	0.732	1.348	0.966
CHA ₂ DS ₂ -VASC risk—High	2.907	2.249	3.759	<0.001
CKD history	1.108	0.998	1.229	0.054
Ethnicity	1.113	1.028	1.205	0.008

Notes: CHA₂DS₂-VASC risk categories: Low = 0 (male)/1 (female); Intermediate = 1 (male)/2 (female); High ≥2 (male)/≥3 (female). The proportional hazards assumption was mildly violated for CHA₂DS₂-VASC risk; HRs represent average effects over the follow-up period. Reference group for CHA₂DS₂-VASC risk is Low. CHA₂DS₂-VASC = Congestive heart failure, Hypertension, Age ≥75 (2 points), Diabetes, prior stroke or transient ischemic attack or thromboembolism (2 points), Vascular disease, Age 65 to 74, Sex category (female); CI = confidence interval; CKD = chronic kidney disease; DOAC = direct oral anticoagulant; HR = hazard ratio; MACE, major adverse cardiovascular events (defined as death, myocardial infarction, stroke/transient ischemic attack).

Table 5
Multivariable Cox proportional hazards model for 3-year NACE risk

Variable	HR	Lower 95% CI	Upper 95% CI	p Value
DOAC—Yes	0.644	0.613	0.677	<0.001
CHA ₂ DS ₂ -VASC risk—Low	Ref	Ref	Ref	
CHA ₂ DS ₂ -VASC risk—Intermediate	1.189	0.916	1.543	0.194
CHA ₂ DS ₂ -VASC risk—High	2.644	2.111	3.311	<0.001
CKD history	1.156	1.052	1.27	0.003
Hispanic ethnicity	1.091	1.014	1.174	0.019

Notes: CHA₂DS₂-VASC risk categories: Low = 0 (male)/1 (female); Intermediate = 1 (male)/2 (female); High ≥2 (male)/≥3 (female). The proportional hazards assumption was mildly violated for CHA₂DS₂-VASC risk; HRs represent average effects over the follow-up period. Reference group for CHA₂DS₂-VASC risk is Low. CHA₂DS₂-VASC = Congestive heart failure, Hypertension, Age ≥75 (2 points), Diabetes, prior stroke or transient ischemic attack or thromboembolism (2 points), Vascular disease, Age 65 to 74, Sex category (female); CI = confidence interval; CKD = chronic kidney disease; DOAC = direct oral anticoagulant; HR = hazard ratio; MACE, major adverse cardiovascular events (defined as death, myocardial infarction, stroke/transient ischemic attack).

30 days (HR 0.65, 95% CI 0.61 to 0.69) and 3 years (HR 0.67, 95% CI 0.62 to 0.73).

Discussion

In this large real-world cohort of patients with newly diagnosed AF identified during the index hospitalization, a DOAC prescription at discharge was associated with significantly improved long-term outcomes, including lower rates of MACE, NACE, and all-cause mortality. These benefits were observed despite the DOAC group's higher baseline thromboembolic risk, suggesting meaningful protection even among clinically complex patients. Notably, patients not treated with DOACs experienced earlier stroke and death, highlighting the immediate postdischarge period as a high-risk window and reinforcing the importance of timely anticoagulation decisions at the transition of care.

The observed reduction in stroke is consistent with the established anticoagulant mechanism for preventing thromboembolism.⁸ Reductions in myocardial infarction and mortality, although less directly explained, may reflect broader cardiovascular risk modification, improved overall care, or residual confounding. The lower observed bleeding rates in the DOAC group likely reflect selection bias, as patients not treated with DOACs had higher baseline bleeding risk, including a greater prevalence of prior bleeding and chronic kidney disease.

Prior studies have largely focused on outpatient populations with established AF, leaving uncertainty regarding the applicability of anticoagulation strategies to hospitalized patients with newly diagnosed or stress-related AF.¹ Our findings help address this gap and suggest that, in appropriately selected patients, prescription of DOAC therapy at discharge was associated with lower long-term ischemic risk despite an initial bleeding risk. A key strength of this study is its use of landmark cumulative incidence analysis to characterize temporal patterns of ischemic and bleeding outcomes in this understudied population. Landmark analyses showed that DOAC therapy at discharge was associated with lower rates of both MACE and NACE at 30 days and 3 years, with sustained separation of cumulative incidence curves over follow-up. However, these findings should be interpreted as observational associations and may, in part, reflect unmeasured clinical decision-making and residual confounding.

Despite these findings, 57% of hospitalized patients with newly diagnosed AF were not discharged on DOAC. This likely reflects a therapeutic gray zone shaped by multiple factors. In the inpatient

incidence was 22.7% versus 32.6% at 30 days and 16.9% versus 24.8% at 3 years for DOAC and non-DOAC groups, respectively. Patients treated with DOACs had a lower risk of NACE at both

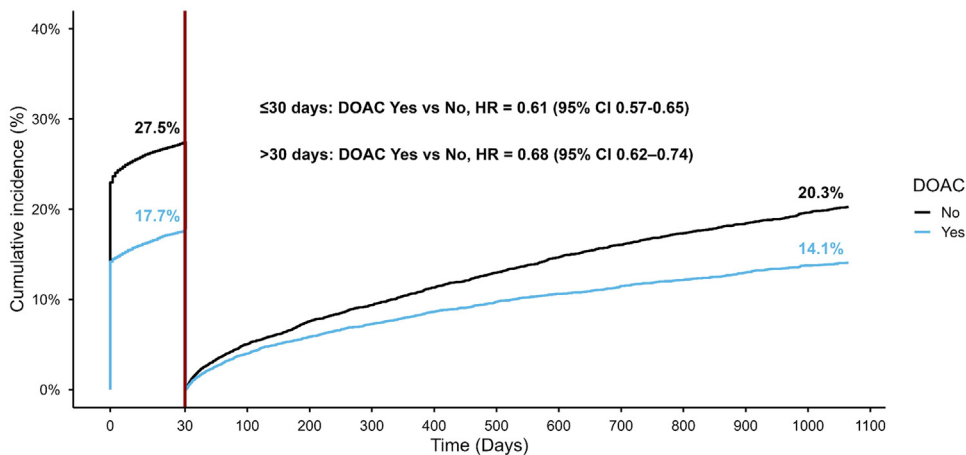


Figure 2. Landmark analysis of cumulative incidence of MACE by DOAC use. Cumulative incidence curves for MACE stratified by DOAC use, with landmark analysis separating early (≤30 days) and later (>30 days to 3 years) follow-up periods.

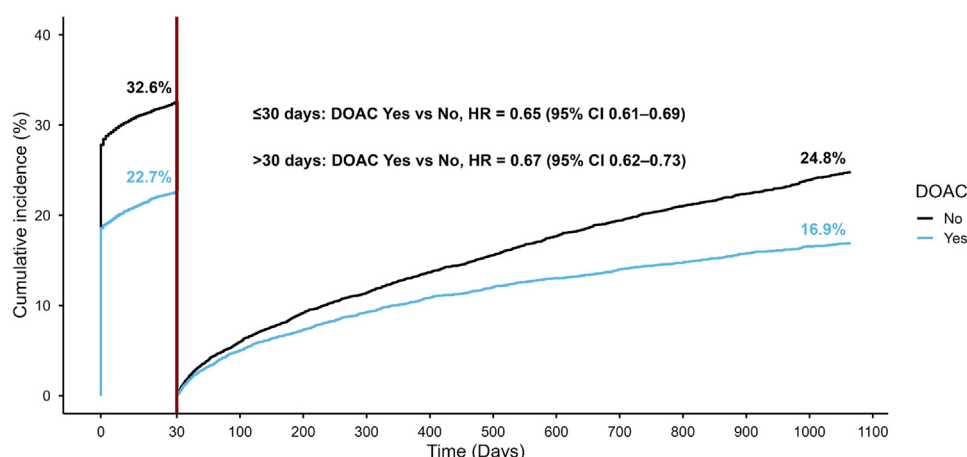


Figure 3. Landmark analysis of cumulative incidence of NACE by DOAC use. Cumulative incidence curves for NACE stratified by DOAC use, with landmark analysis separating early (≤ 30 days) and later (> 30 days to 3 years) follow-up periods.

setting, AF often occurs in the context of acute, potentially reversible stressors,⁹ such as infection, surgery, or critical illness, leading to uncertainty about long-term thromboembolic risk. At the same time, bleeding risk is frequently elevated due to recent procedures, thrombocytopenia, or hemodynamic instability. Additional practical considerations, including medication adherence, cost, care transitions, and planned outpatient reassessment, may further contribute to deferral.¹⁰ In the absence of randomized data in this population, clinicians must extrapolate from chronic AF cohorts, often resulting in conservative decision-making at discharge.

Importantly, risk stratification in this study was based on the CHA₂DS₂-VAsC score, which represented the guideline-recommended framework for stroke risk assessment during cohort accrual.¹ Although the 2024 European Society of Cardiology guidelines introduced the CHA₂DS₂-VA score, which no longer considers female sex an independent stroke risk factor,⁴ CHA₂DS₂-VAsC was used in the present study to reflect the clinical practice under which patients in this cohort were managed. Therefore, the observed associations should be interpreted within the context of the risk stratification framework that guided DOAC anticoagulation prescribing during the study period.

Several limitations should be considered. The observational design precludes causal inference, and residual confounding is likely. Treatment selection was not randomized and may reflect unmeasured factors, such as frailty or contraindications to anticoagulation. The structure of the electronic health record did not permit a reliable distinction between patients hospitalized primarily because of newly diagnosed AF and those who developed AF as a secondary complication during hospitalization. These clinically distinct populations may differ in baseline characteristics, anticoagulation decision-making, and long-term prognosis. Data on medication adherence, dosing, and postdischarge treatment changes were unavailable. Consequently, medication exposure was defined according to the discharge prescription and did not account for subsequent anticoagulation initiation, discontinuation, switching, or dose modification during follow-up, which may have influenced long-term MACE and NACE outcomes. Additionally, the predominantly White study population may limit generalizability.

In conclusion, among patients with newly diagnosed AF identified during the index hospitalization, prescription of DOAC therapy at discharge was associated with lower risks of thromboembolic events and mortality over long-term follow-up. Early initiation was associated with sustained reductions in ischemic and NACE over follow-up. These findings support a careful yet proactive approach to anticoagulation at hospital discharge in appropriately selected patients and underscore the need for

prospective studies to better define optimal management strategies in this population.

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Declaration of competing interest

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CRediT authorship contribution statement

Matthew Cervantes: Writing – review & editing, Writing – original draft, Conceptualization. **Tariq Jamal Siddiqi:** Writing – review & editing, Resources, Methodology, Formal analysis. **Anand Gupta:** Writing – review & editing, Validation. **Minseob Jeong:** Writing – review & editing, Validation. **Sagar S. Mukhida:** Software, Project administration, Investigation, Data curation. **Catherine A. Raver:** Validation, Formal analysis, Data curation. **Michael D. Duncan:** Writing – review & editing, Validation, Supervision. **Byron Cryer:** Writing – review & editing, Supervision, Resources. **Subhash Banerjee:** Writing – review & editing, Validation, Supervision.

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Supplementary materials

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