Supplementary Online Content

Walkey AJ, Quinn EK, Winter MR, McManus DD, Benjamin EJ. Practice patterns and outcomes associated with use of anticoagulation among patients with atrial fibrillation during sepsis. *JAMA Cardiol*. Published online August 3, 2016. doi:10.1001/jamacardio.2016.2181.

This supplementary material has been provided by the authors to give readers additional information about their work.

Supplemental Methods

Sepsis cohort

As described previously,[1] we identified a cohort of adult patients (aged 18 years and older) hospitalized with sepsis (1992 Consensus[2] definition) present on admission from an administrative database enhanced with a date-stamped, detailed log of all medications, laboratory, diagnostic and therapeutic services (Premier, Inc.), during the years 2010-2013. Premier, Inc. data represent approximately 20% of hospitalized patients in nonfederal United States hospitals.[3] Patients admitted with sepsis present on admission were selected through use of high positive predictive value (>90%)[20] sepsis *ICD-9-CM* codes (038.x) combined with receipt of an antibiotic. AF was identified via *ICD-9-CM* 427.31 (positive predictive value 70-96%, median 89%)[4] and patients with AF were sub-classified as having 'pre-existing AF' (e.g., diagnosed prevalent AF that was present on admission) or 'newly-diagnosed AF' (e.g., incident AF that was not present on admission).[5] We excluded patients with other potential indications for anticoagulation, including patients with prosthetic heart valves (*ICD-9-CM* V42.2, V43.3), acute myocardial infarction (*ICD-9-CM* 410) or venous thromboembolic disease (*ICD-9-CM* 415.1, 453.x, 459.1, 673, V12.51). In order to maximize positive predictive value of our primary AF cohort we included patients with 'clinically-significant' AF during sepsis as our primary analysis cohort,[1] defined by receipt of intravenous rate or rhythm control agents concomitant with antibiotics. However, sensitivity analyses broadened inclusion criteria to include patients with an AF *ICD-9-CM* code, without necessitating receipt of rate or rhythm-control medications.

Anticoagulation

Anticoagulation use during sepsis was defined as anticoagulants given on the same day as an antibiotic during the first 14 days of a hospital admission for sepsis. Anticoagulation data were extracted from pharmacy billing files and included hospital day of administration, quantity, route, and dosing. In order to attenuate strong unmeasured confounding by illness severity due to patients' ability to take oral anticoagulants medications during sepsis,[6] we restricted our definition of "anticoagulant exposure" in the primary analysis to initial use of parenteral intravenous or subcutaneous administration (IV/SQ)

anticoagulation in doses greater than venous thromboembolism prophylactic doses. We allowed for oral anticoagulants (e.g., warfarin) later during hospitalization among patients who received initial IV/SQ anticoagulant, but excluded patients who received oral anticoagulants as their initial anticoagulant in primary analysis. Anticoagulant medications doses greater than venous thromboembolism prophylactic doses were as follows: intravenous heparin dose >20,000 units daily, subcutaneous enoxaparin twice daily dosing (with daily dose greater than 80mg), subcutaneous dalteparin >5000 IU daily, and fondaparinux >2.5mg daily. Given the clinical importance of understanding risks and benefits to continuing oral anticoagulation among patients with pre-existing AF and sepsis, we performed exploratory analysis evaluating oral anticoagulants as the initial anticoagulant during hospitalization (warfarin, dabigatran, rivaroxaban, apixaban) among patients with pre-existing AF.

Covariates and Subgroups

We included year of hospitalization, patient demographics, comorbid conditions, present on admission acute organ failures, organ supportive therapies (first hospital day), sepsis source, provider, and hospital characteristics as covariates (**Supplemental eTable 1**). Based on the potential for treatment effect modification, we performed subgroup analysis and explored interaction between outcomes and anticoagulation status based on whether AF was “newly-diagnosed” vs. “pre-existing”. Because we could not reliably identify sub-clinical AF, we used the term “newly-diagnosed” as an analog for “incident” and ‘pre-existing” as an analog for “prevalent” AF.

Outcomes

We investigated patient and hospital factors associated with use of parental anticoagulation among patients with AF during sepsis and evaluated in-hospital stroke incidence and bleeding risk associated with use of anticoagulation. Stroke was defined in primary analysis as *ICD-9-CM* code for stroke (433.x1, 434.x1, 436)[7] that was not present on admission. Bleeding not present on admission was defined as per previously validated algorithms developed by Arnason et al. (**Supplemental eTable 2)**.[8]

Statistical analyses

We used conventional hypothesis testing Chi square or t-test, as appropriate, as well as standardized differences to assess balance in baseline characteristics between patients receiving or not receiving parenteral anticoagulation. Standardized differences (the ratio of between group difference to standard deviation) identify potentially important imbalances in covariates, and avoid problems of conventional statistical significance with small between-group differences in the context of large sample sizes.[9] Consistent with prior reports, a standardized difference threshold of 0.1 or greater was chosen to denote potentially important differences between treatment groups.[9]

The ability of CHA_2DS_2-VASc[10] scores to predict ischemic stroke associated with AF has not previously been evaluated in patients with sepsis. The ability to risk stratify patients with sepsis and AF for near-term stroke risk using existing risk scores may better enable targeting of arterial thromboembolism prophylaxis and may inform mechanisms of stroke occurring with AF during sepsis. We used c-statistics generated from a logistic regression model to summarize the ability of the CHA_2DS_2-VASc score to discriminate ischemic stroke risk in our cohort with sepsis.

A propensity score approach was used to adjust for measured confounding in the selection of patients who received parenteral anticoagulation during hospitalization with AF during sepsis. Non-parsimonious propensity scores were calculated using generalized estimating equations with robust standard error calculations accounting for within-hospital clustering[11] to determine the probability that each patient would receive parenteral anticoagulation, conditional on measured variables. Propensity score models included independent variables representing hospital characteristics, patient demographics, comorbid conditions, use of intensive care, measures of acute organ dysfunction, source of infection, and year of hospitalization (see variable definitions in **Supplemental eTable 1).** Our primary analysis used the propensity score to match patients (within a caliper of 0.1) who did and did not receive parenteral anticoagulation with AF during sepsis based on each patient's predicted probability of receiving anticoagulation. Performance of the propensity score to balance covariates was evaluated through analysis of the distribution of propensity scores among treated and untreated patients and by assessment of standardized differences between treated and untreated patients after matching. We determined risk-

standardized, between-hospital variation in use of parenteral anticoagulation for AF during sepsis using the hospital random effects output from hierarchical logistic regression models.

Sensitivity analyses

We performed sensitivity analyses to evaluate the robustness of our findings to different specifications of our cohort definition for AF during sepsis, stroke and bleeding outcomes, and analytic methods to adjust for confounding. 1) Because some clinicians may choose to hold anti-arrhythmic and atrioventricular nodal blocking agents in the setting of sepsis, we performed a sensitivity analysis including all patients with AF *ICD-9* codes during sepsis, regardless of whether they received rate or rhythm control treatments for AF. 2) To potentially increase the accuracy of the timing of stroke or bleeding events as representing comorbidities as opposed to outcomes we performed a sensitivity analysis using the timing of head computed tomography scans (for stroke) and blood product transfusion (for bleeding) before or after the anticoagulation start date. 3) Rather than restrict the study sample to the subgroup of patients from our primary analysis cohort who could be matched by propensity scores, we also conducted a sensitivity analysis using inverse probability of treatment weighting among all eligible patients.[12] To conduct inverse probability of treatment weighted analysis, we used generalized estimating equations with robust standard error calculations accounting for within-hospital clustering and weighted each patient in the analysis by the inverse of the propensity score for anticoagulation. 4) In order to attenuate unmeasured confounding by indication, we performed a two-level analysis using hospital-level rates of parenteral anticoagulation among patients with AF during sepsis as an ecological-level exposure instrument in logistic regression (with robust standard errors), using patient-level outcomes and covariates.[13, 14]

Exploratory analyses of initial oral anticoagulants

We explored practice patterns associated with oral anticoagulants as initial anticoagulants during hospitalization among patients with pre-existing AF. Stroke and bleeding outcomes associated with initial use of oral anticoagulants during sepsis were examined using a propensity score matching approach as well as an ecological exposure instrument approach using hospital-level rates of oral anticoagulation among patients with pre-existing AF during sepsis.

Power and Sample Size

Presuming a 1.5% baseline stroke risk[5] for patients with AF during sepsis, a study alpha threshold of 0.05, with parenteral anticoagulation used among 33% of patients, would require approximately 12,000 patients with AF and sepsis to show a 50% relative reduction in stroke with 90% power.

We used SAS version 9.3 (Cary, North Carolina) for all analyses and selected a two-sided alpha level of 0.05 for statistical significance. Boston University Medical Center Institutional Review Board approved all study procedures.

eTable 1. Definitions and International Classification of Diseases, 9th Edition, Clinical Modification (ICD-9-CM) codes for identifying clinical variables.

Variable	Definition / Assessment
Year of sepsis hospitalization	Code in Premier
Demographics	
Age	Continuous
Sex	M/F
Race/ethnicity	White, black, Hispanic, other
Hospital Geographic location	Northeast, South, Midwest, West
Hospital teaching status	From Premier, Inc definition
Specialty of ordering physician	Critical care/pulmonary, cardiology, Internal medicine, surgery from attending physician
Atrial Fibrillation, Newly-diagnosed	427.31 NOT Present on Admission
Atrial fibrillation, Pre-existing	427.31 Present on Admission
Other Comorbidity	**ICD-9 Diagnosis code +Present on admission:**
Heart failure	398.91, 402.01, 402.11, 402.91, 404.01, 404.03, 404.11, 404.13, 404.91, 404.93, 425.4–425.9, 428.x
Diabetes Mellitus	250.x
Hypertension	401-405, 437.2x
Prior ischemic stroke	433.x1 434.x1 435.x 436 437.1x 437.9x 438.x
Coronary artery disease	412–414.x 429.2 V45.81
Renal insufficiency	403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582.x, 583.0–583.7, 585.x, 586.x, 588.0, V42.0, V45.1, V56.x
Chronic lung disease	416.8, 416.9, 490.x–505.x, 506.4, 508.1, 508.8
Valvular heart disease	394.x–397.x 398.9; 424.x; V42.2 V43.3
Peripheral vascular disease	093.0, 437.3, 440.x, 441.x, 443.1–443.9, 47.1, 557.1, 557.9, V43.4
Cancer	140.x–172.x, 174.x–195.8, 200.x–208.x, 238.6, 196.x–199.x
Dementia	290, 331.0
Chronic liver disease	571.x
CHADS2VASc score	Calculated from above diagnosis codes CHA2DS2VASc Score [Lip GY. *Chest*;137(2):263-72.]

	C= congestive heart failure (1 point)
	H = hypertension (1 point)
	A2 = age 75 or greater (2 point)
	D = diabetes (1 point)
	S2 = prior stroke or transient ischemic attack (2 points)
	V = Vascular disease including prior myocardial infarction, aortic plaque, or peripheral vascular disease (1 point)
	A = age 65-74 (1 point)
	Sc = sex category (1 point if female)
Sepsis-Associated Baseline Factors	
Type of acute organ failure[15, 16, 16, 16, 16]	**ICD-9 and present on admission**
Acute Respiratory Failure	518.81,518.82, 518.84,786.09,799.1, procedure 96.7x on hospital day 0 or 1
Acute Circulatory Failure	458.0, 458.8, 458.9, 785.5, 785.51, 785.52, 785.59, 796.3 and Use of vasopressor medication (from pharmacy data: norepinephrine, epinephrine, phenylephrine, vasopressin) on hospital day 0 or 1
Acute Renal	584, 585
Acute Neurologic	348.3, 293, 348.1, 780.01, 780.09, procedure 89.14 on hD 0 or 1
Acute Hematologic failure	287.3, 287.4, 287.5, 286.9, 286.6, 286.2
Acute Metabolic	276.2
Acute Hepatic	570, 572.2, 573.3, 573.4
Total # of organ failures	Ordinal, from above ICD-9 codes
Mechanical ventilation	96.7x
Type of infection	
Pneumonia	481,482, 483, 484, 485, 486, 487
Primary Bacteremia or fungemia	038, 790.7, 117.9, 112.5 without code for other infection
Gastrointestinal infection	540, 541, 562.1, 574, 575 ,557, 569.83

Urinary tract infection	599, 590
Skin or soft tissue infection	680, 681, 682, 683, 684, 686, 035
Exclusion, Other reason for anticoagulation	
Venous thromboembolic disease	415.1, 453.x, 459.1, 673, V12.51
Acute myocardial infarction	410.x

eTable 2. International Classification of Diseases, 9th Edition, Clinical Modification (ICD-9-CM) Algorithm used to identify bleeding events.

Code	Diagnosis	Code	Diagnosis
Gastroduodenal Site		*Lower Gastrointestinal Site*	
		455.2	Internal hemorrhoids with other complication
531.0x	Acute gastric ulcer with hemorrhage	455.5	External hemorrhoids with other complication
531.2x	Acute gastric ulcer with hemorrhage and perforation	455.8	Unspecified hemorrhoids with other complication
531.4x	Chronic or unspecified gastric ulcer with hemorrhage	562.02	Diverticulosis of small intestine with hemorrhage
531.6x	Chronic or unspecified gastric ulcer with hemorrhage and perforation	562.03	Diverticulitis of small intestine with hemorrhage
532.0x	Acute duodenal ulcer with hemorrhage	562.12	Diverticulosis of colon with hemorrhage
532.2x	Acute duodenal ulcer with hemorrhage and perforation	562.13	Diverticulitis of colon with hemorrhage
532.4x	Chronic or unspecified duodenal ulcer with hemorrhage	568.81	Hemoperitoneum
532.6x	Chronic or unspecified duodenal ulcer with hemorrhage and perforation	569.3	Hemorrhage of rectum and anus
533.0x	Acute peptic ulcer, site unspecified, with hemorrhage	569.85	Angiodysplasia of intestine with hemorrhage
533.2x	Acute peptic ulcer, site unspecified, with hemorrhage and perforation	*Unspecified Gastrointestinal Site*	
533.4x	Chronic peptic ulcer, site unspecified, with hemorrhage	578.1	Blood in stool
533.6x	Chronic peptic ulcer, site unspecified, with hemorrhage and perforation	578.9	Hemorrhage of gastrointestinal tract, unspecified
534.0x	Acute gastrojejunal ulcer with hemorrhage		
534.2x	Acute gastrojejunal ulcer w hemorrhage/perforation		
534.4x	Chronic gastrojejunal ulcer with hemorrhage	*Genitourinary Site*	
534.6x	Chronic gastrojejunal ulcer with hemorrhage and perforation	593.81	Vascular disorders of kidney

535.01	Acute gastritis with hemorrhage	599.7	Hematuria
535.11	Atrophic gastritis with hemorrhage	623.8	Other specified noninflammatory disorders of vagina
535.21	Gastric mucosal hypertrophy with hemorrhage	626.2	Excessive/frequent menstruation, with secondary diagnosis indicating acute bleeding: anemia (280.0,285.1,285.9), orthostasis (458.0),syncope (780.2)
535.31	Alcoholic gastritis with hemorrhage		
535.41	Other specified gastritis with hemorrhage	626.6	Metrorrhagia
535.51	Unspecified gastritis and gastroduodenitis with hemorrhage	*Cerebral Site*	
535.61	Duodenitis with hemorrhage	430	Subarachnoid hemorrhage
537.83	Angiodysplasia of stomach and duodenum with hemorrhage	431	Intracerebral hemorrhage
		432.0	Nontraumatic extradural hemorrhage
Esophageal Site		432.1	Subdural hemorrhage
456.0	Esophageal varices with bleeding	432.9	Unspecified intracranial hemorrhage
456.20	Esophageal varices in diseases classified elsewhere with bleed	997.02	Iatrogenic cerebrovascular hemmorhage
530.7	Mallory-Weiss tear (gastroesophageal laceration-hemorrhage syndrome)	*Other Site*	
530.82	Esophageal hemorrhage	423.0	Hemopericardium
		459.0	Hemorrhage, unspecified
		568.81	Hemoperitoneum (nontraumatic)
Upper Gastrointestinal, Unspecified		719.1x	Hemarthrosis
578.0	Hematemesis	784.7	Epistaxis
		784.8	Hemorrhage from throat
		786.3	Hemoptysis
		285.1	Acute posthemorrhagic anemia
		998.1x	Hemorrhage complicating a procedure
		790.01	Precipitous drop in hematocrit

eTable 3. Distribution of initial anticoagulant choice

Anticoagulant*	**N (%)**
Intravenous or Subcutaneous	
Enoxaparin	6991 (50%)
Heparin	5004 (35%)
Dalteparin	1296 (9%)
Fondaparinux	830 (6%)
Oral	
Warfarin	8289 (89%)
Dabigatran	722 (8%)
Rivaroxaban	282 (3%)
Apixaban	1 (0.01%)

* Numbers add up to greater than anticoagulant sample size because some patients received multiple anticoagulants on the same day

eTable 4. Distribution of Covariates after propensity score matching.

Variable	Anticoagulation 13,505 (50%)	No Anticoagulation 13,505 (50%)	p-value	Standardized Difference
Demographics				
Age in years, Mean(SD)	73.3 (11.6)	73.5 (12.5)	0.26	-0.0137
Sex, Woman	6,647 (49.2%)	6,679 (49.5%)	0.70	-0.0047
Race/Ethnicity				
White	10,257 (76.0%)	10,216 (75.6%)	0.31	0.0071
Black	959 (7.1%)	991 (7.3%)		-0.0092
Hispanic	111 (0.8%)	138 (1.0%)		-0.0209
Other	2,178 (16.1%)	2,160 (16.0%)		0.0036
Hospital characteristics				
Geographic location			0.023	
North East	2,080 (15.4%)	2,094 (15.5%)		-0.0029
Midwest	2,709 (20.1%)	2,863 (21.2%)		-0.0282
South	5,850 (43.3%)	5,853 (43.3%)		-0.0004
West	2,866 (21.2%)	2,695 (20.0%)		0.0313
Teaching hospital	5,119 (37.9%)	5,085 (37.7%)	0.67	0.0052
Comorbidities				
Prior bleeding	930 (6.9%)	923 (6.8%)	0.87	0.0021
Prior Ischemic stroke	479 (3.6%)	459 (3.4%)	0.51	0.0081
Pre-existing atrial fibrillation	10,716 (79.3%)	10,709 (79.3%)	0.92	0.0013
Heart failure	5,650 (41.8%)	5,580 (41.3%)	0.39	0.0105
Diabetes mellitus	5,076 (37.6%)	5,068 (37.5%)	0.92	0.0012
Hypertension	9,485 (70.2%)	9,537 (70.6%)	0.49	-0.0084
Coronary Artery Disease/ myocardial infarction	4,490 (33.3%)	4,474 (33.1%)	0.84	0.0025
Chronic lung disease	5,791 (42.9%)	5,724 (42.4%)	0.41	0.0100
Chronic kidney disease	3,964 (29.4%)	4,029 (29.8%)	0.39	-0.0105
Valvular heart disease	1,983 (14.7%)	1,984 (14.7%)	0.99	-0.0002
Peripheral vascular disease	1,826 (13.5%)	1,868 (13.8%)	0.46	-0.0091
Cancer	1,540 (11.4%)	1,574 (11.7%)	0.52	-0.0079

Dementia	776 (5.8%)	764 (5.7%)	0.75	0.0038
CHADS2VASc Score, Mean(SD)	3.5 (1.5)	3.5 (1.5)	0.75	-0.0148
Acute organ failure				
Total number of acute organ failures, Mean(SD)	1.9 (1.4)	1.9 (1.4)	0.93	-0.0010
Acute neurological failure	2,043 (15.1%)	2,044 (15.1%)	0.99	-0.0002
Acute kidney failure	7,591 (56.2%)	7,609 (56.3%)	0.83	-0.0027
Acute respiratory failure	5,255 (38.9%)	5,315 (39.4%)	0.45	-0.0091
Acute circulatory Failure	5,459 (40.4%)	5,426 (40.2%)	0.68	0.0050
Acute hematological failure	1,839 (13.6%)	1,873 (13.9%)	0.55	-0.0073
Metabolic acidosis	3,282 (24.3%)	3,223 (23.9%)	0.40	0.0102
Acute hepatic failure	500 (3.7%)	498 (3.7%)	0.95	0.0008
Intensive care	8,608 (63.7%)	8,665 (64.2%)	0.47	-0.0088
Vasopressor use	5,058 (37.5%)	5,117 (37.9%)	0.46	-0.0090
Site of infection				
Pneumonia	5,469 (40.5%)	5,457 (40.4%)	0.88	0.0018
Gastrointestinal infection	2,031 (15.0%)	2,055 (15.2%)	0.68	-0.0050
Urinary tract infection	4,539 (33.6%)	4,547 (33.7%)	0.92	-0.0013
Skin or soft tissue infection	1,284 (9.5%)	1,280 (9.5%)	0.93	0.0010
Primary Bacteremia or fungemia	152 (1.1%)	150 (1.1%)	0.91	0.0014
Attending Specialty			0.57	
Internal Medicine	11,401 (84.4%)	11,465 (84.9%)		-0.0131
Surgery	772 (5.7%)	765 (5.7%)		0.0022
Pulmonary/Critical Care	1,054 (7.8%)	1024 (7.6%)		0.0083
Cardiology	278 (2.1%)	251 (1.9%)		0.0144
Year of service			0.018	-0.0066
2010	2,059 (15.3%)	2,112 (15.6%)		
2011	4,745 (35.1%)	4,543 (33.6%)		
2012	4,477 (33.2%)	4,678 (34.6%)		
2013	2,224 (16.5%)	2,172 (16.1%)		

Standardized differences greater than 0.2 are considered clinically important

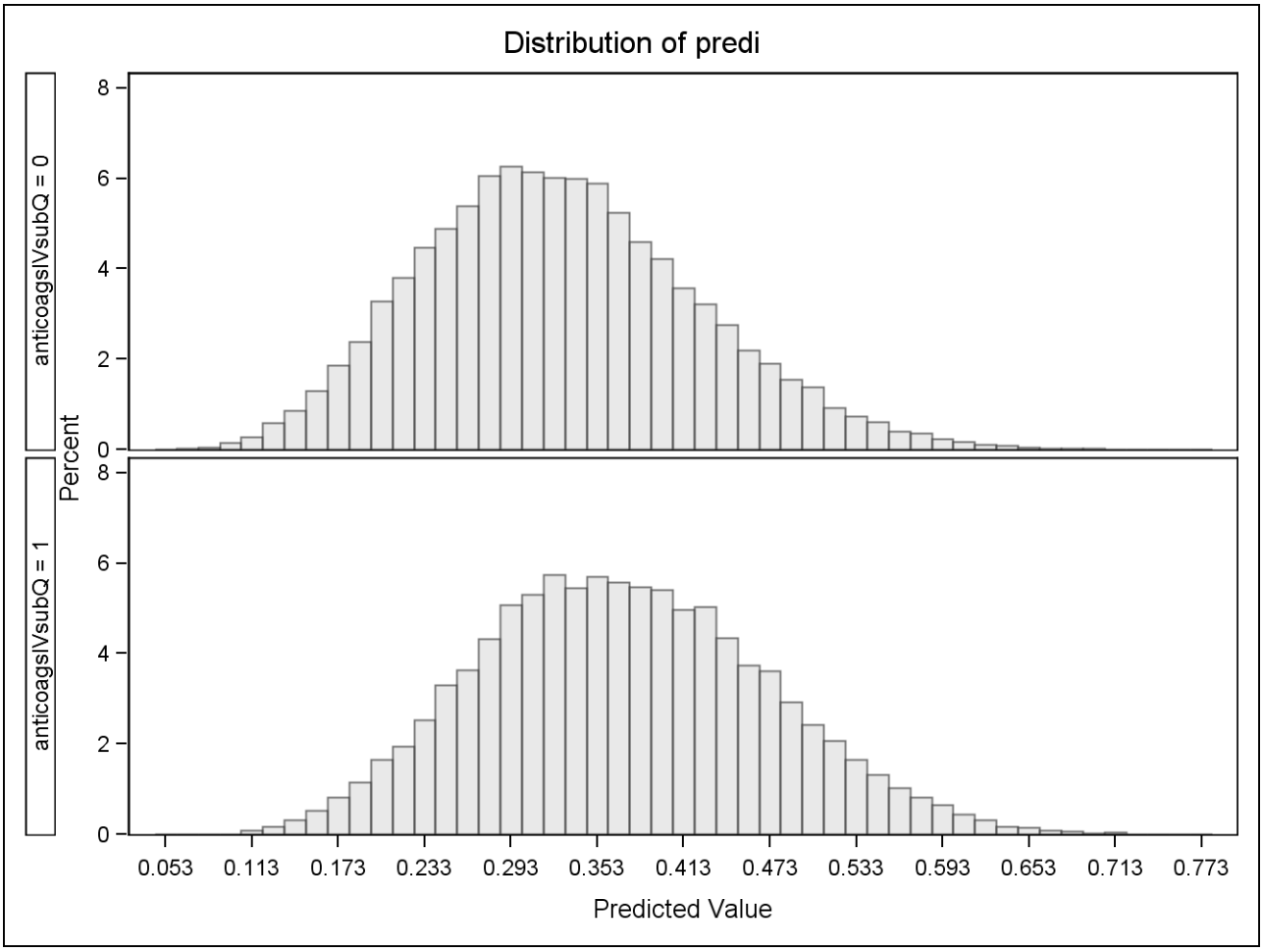
eTable 5. Distribution of covariates among patients who received oral anticoagulants.

Variable	Oral Anticoagulation	No Anticoagulation, received oral medication
	8,938 (27.8%)	23,168 (72.2%)
Demographics		
Age in years, Mean(SD)	75.5 (10.6)	75.6 (11.7)
Sex, Women	4,411 (49.4%)	11,946 (51.6%)
Race/Ethnicity		
White	7,006 (78.4%)	17,215 (74.3%)
Black	570 (6.4%)	2,058 (8.9%)
Hispanic	52 (0.6%)	219 (0.9%)
Other	1,310 (14.7%)	3,676 (15.9%)
Hospital characteristics		
Geographic location		
North East	1,828 (20.5%)	4,141 (17.9%)
Midwest	2,036 (22.8%)	4,419 (19.1%)
South	3,321 (37.2%)	9,841 (42.5%)
West	1,753 (19.6%)	4,767 (20.6%)
Teaching hospital	3,314 (37.1%)	8,911 (38.5%)
Comorbidities		
Prior bleeding	538 (6.0%)	2,655 (11.5%)
Prior Ischemic stroke	293 (3.3%)	761 (3.3%)
Pre-existing atrial fibrillation	8,634 (93.6%)	18,661 (80.6%)
Heart failure	4,716 (52.8%)	9,118 (39.4%)
Diabetes mellitus	3,626 (40.6%)	8,195 (35.4%)
Hypertension	6,690 (74.8%)	16,143 (69.7%)
Coronary heart Disease/myocardial infarction	3,522 (39.4%)	7,443 (32.1%)
Chronic lung disease	3,987 (44.6%)	8,667 (37.4%)

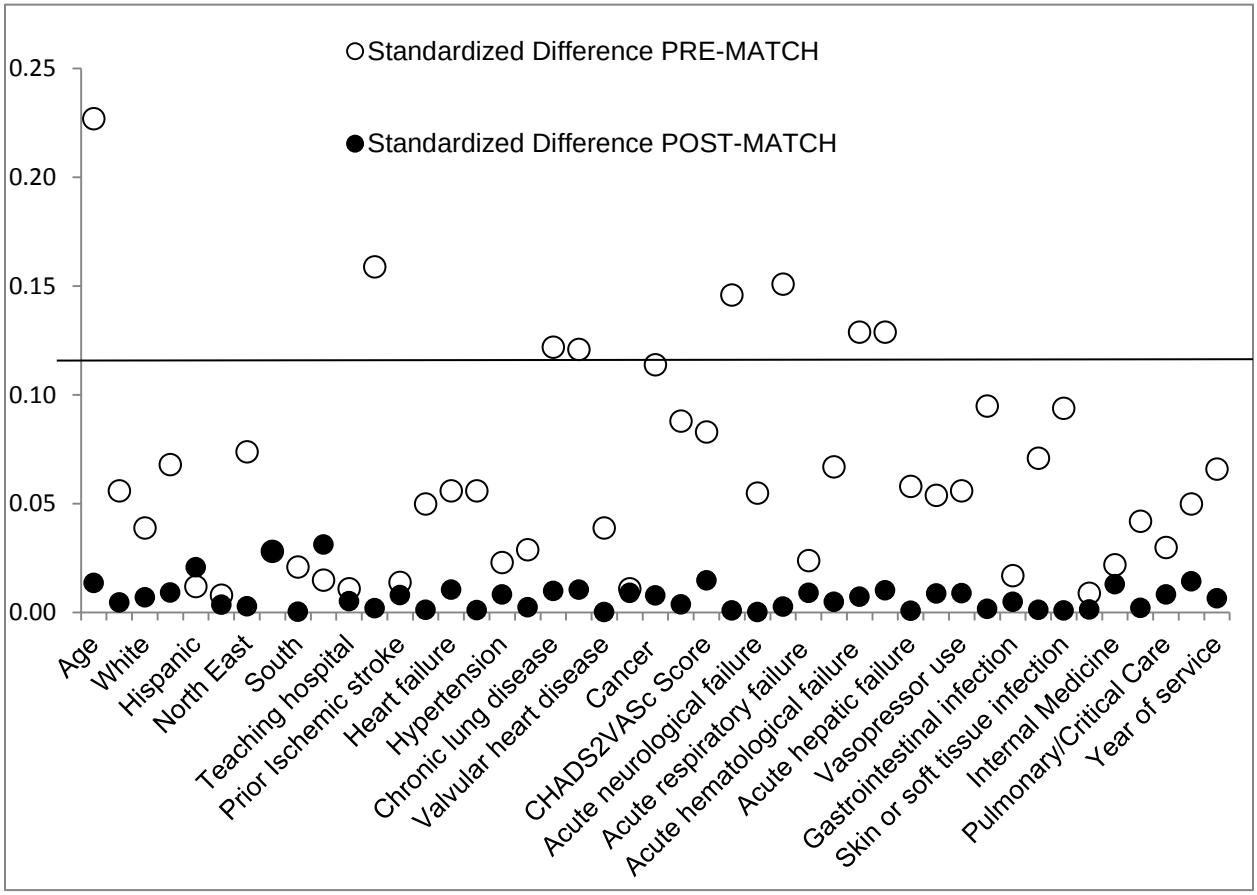
Chronic kidney disease	3,248 (36.3%)	8,180 (35.3%)
Valvular heart disease	1,646 (18.4%)	3,166 (13.7%)
Peripheral vascular disease	1,212 (13.6%)	3,045 (13.1%)
Cancer	748 (8.4%)	3,530 (15.2%)
Dementia	497 (5.6%)	1,776 (7.7%)
CHADS2VASc Score, Mean(SD)	3.8 (1.4)	3.6 (1.5)
Acute organ failure		
Total number of acute organ failures, Mean(SD)	1.6 (1.2)	2.1 (1.4)
Acute neurological failure	1,158 (13.0%)	3,923 (16.9%)
Acute kidney failure	5,039 (56.4%)	14,587 (63.0%)
Acute respiratory failure	2,645 (29.6%)	8,417 (36.3%)
Acute circulatory failure	2,753 (30.8%)	9,836 (42.5%)
Acute hematological failure	1,027 (11.5%)	4,246 (18.3%)
Metabolic acidosis	1,509 (16.9%)	6,105 (26.4%)
Acute hepatic failure	229 (2.6%)	1,089 (4.7%)
Intensive care	4,612 (51.6%)	14,169 (61.2%)
Vasopressor use	5,084 (37.4%)	10,002 (40.1%)
Site of infection		
Pneumonia	3,477 (38.9%)	8,419 (36.3%)
Gastrointestinal infection	1,058 (11.8%)	3,558 (15.4%)
Urinary tract infection	3,378 (37.8%)	8,610 (37.2%)
Skin or soft tissue infection	1,034 (11.6%)	1,690 (7.3%)
Primary bacteremia or fungemia	68 (0.8%)	293 (1.3%)
Attending Specialty		
Internal Medicine	8,012 (89.6%)	19,855 (85.7%)
Surgery	292 (3.3%)	1,096 (4.7%)
Pulmonary/Critical Care	453 (5.1%)	1,883 (8.1%)

Cardiology	181 (2.0%)	334 (1.4%)
Year of service		
2010	1,254 (14.0%)	3,283 (14.2%)
2011	2,801 (31.3%)	7,525 (32.5%)
2012	3,184 (35.6%)	8,228 (35.5%)
2013	1,699 (19.0%)	4,132 (17.8%)

eFigure 1. Histograms of propensity scores for patients who did and did not receive anticoagulation.



eFigure 2. Absolute value of Standardized Differences before and after matching on the propensity score.



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