Supplementary Online Content

Nielsen PB, Larsen TB, Skjøth F, Lip GYH. Outcomes associated with resuming warfarin treatment after hemorrhagic stroke or traumatic intracranial hemorrhage in patients with atrial fibrillation. *JAMA Intern Med*. Published online February 20, 2017. doi:10.1001/jamainternmed.2016.9369

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

eTable. Definitions of Comorbidities, Outcomes, and Medications

	International Classification of Diseases 10th revision (ICD-10) code	Anatomical Therapeutic Chemical (ATC) code
Condition		
Congestive heart failure	I11.0; I13.0; I13.2; I42.0; I50	CO3C
Left ventricular dysfunction	I50.1; I50.9	
Hypertension		See specified definition*
Diabetes mellitus	E10.0; E10.1; E10.9; E11.0; E11.1; E11.9	A10
Ischemic stroke	I63; I64	
Systemic embolism	I74	
Transient ischemic disease	G45	
Aortic plaque	I70.0	
Peripheral arterial disease	I70.2-I70.9; I71; I73.9; I74	
Myocardial infarction	I21-I23	
Abnormal renal function	I12; I13; N00-N05; N07; N11; N14; N17-N19; Q61	
Abnormal hepatic function	B15.0; B16.0; B16.2; B19.0; K70.4; K72; K76.6; I85	
Prior Bleeding	I60-I62; D62; J94.2; H11.3; H35.6; H43.1; N02; N95; R04; R31; R58; K25.0; K26.0; K27.0; K28.0; K29.0; S06.3C; S06.4; S06.5; S06.6	
Alcohol intake	E22.4; E52.9A; F10; G31.2; G62.1; G72.1; I42.6; K29.2; K70; K86.0; L27.8A; O35.4M; T51; Z71.4; Z72.1	
Atrial fibrillation	I48	
Intracranial bleeding Traumatic intracranial bleeding Retinal bleeding Sequelae of cerebrovascular disease	I60 I61 I62 S063C S064 S065 S066 H356 I690; I691; I692	

Medication		
Dabigatran		B01AE07
Rivaroxaban		B01AE07
Apixaban		B01AF02
Coumarin derivatives		B01AA
Aspirin		B01AC06
Thienopyridines		B01AC04; B01AC24; B01AC22
Beta-blockers		C07
Calcium channel blockers		C07F; C08; C09BB; C09DB
Renin-angiotensin system inhibitors (ACEi/ARBs)		C09
Loop diuretics		C03C
Statin		C10
Digoxin		C01AA05
Non-steroidal anti-inflammatory drugs		M01A

* We identified subjects with hypertension from combination treatment with at least two of the following classes of antihypertensive Drugs:
I. Alpha adrenergic blockers (C02A, C02B, C02C)
II. Non-loop diuretics (C02DA, C02L, C03A, C03B, C03D, C03E, C03X, C07C, C07D, C08G, C09BA, C09DA, C09XA52)
III. Vasodilators (C02DB, C02DD, C02DG, C04, C05)
IV. Beta blockers (C07)
V. Calcium channel blockers (C07F, C08, C09BB, C09DB)
VI. Renin-angiotensin system inhibitors (C09).

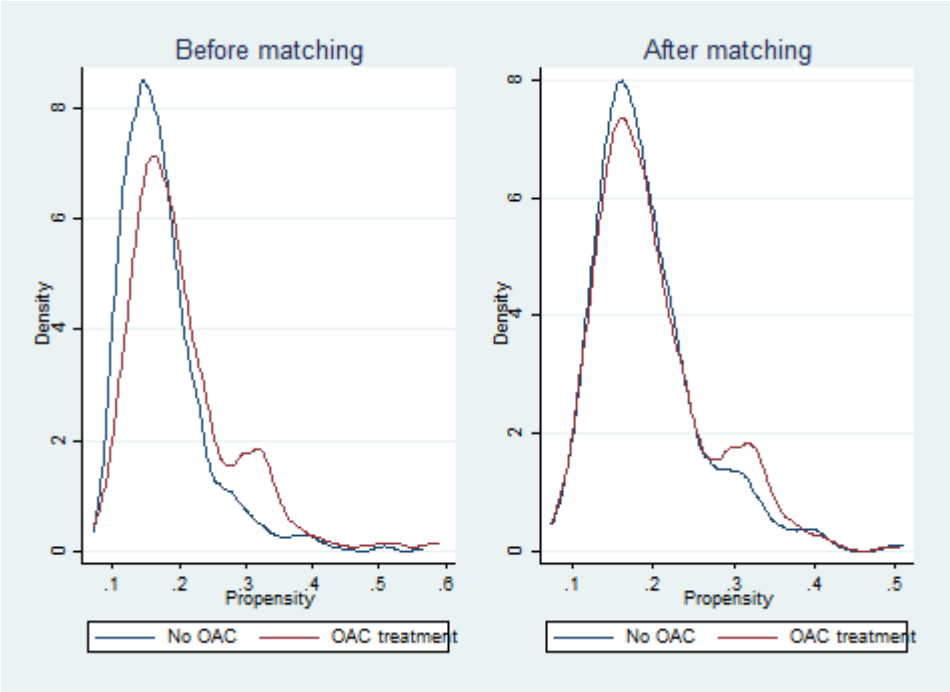
eMethods. Propensity Matching

To address confounding by indication of treatment and obtain average treatment effects of the treated OAC patients, we used propensity matching to select an untreated control population to the OAC patients in the ratio 2:1. The propensity model included indicators of comorbidity and concomitant medical treatment as used in the Cox regression analysis. Matched pairs were selected as nearest neighbours without replacement within a calibre of 0.1 SDs [1] The quality of the matching was done by inspection of the overlap between propensity score estimates for receiving either treatment (see figures below). The process was repeated to assess patients with haemorrhagic stroke and for patients with a traumatic induced intracranial haemorrhage.

Reference

[1] Ho DE, Imai K, King G, Stuart EA. Matching as nonparametric preprocessing for reducing model dependence in parametric causal inference. Polit Anal 2007; 15: 199–236.

eFigure 1. Hemorrhagic Stroke



eFigure 2. Traumatic ICH