

Supplemental Online Content

Singer DE, Ziegler PD, Koehler JL, Sarkar S, Passman RS. Temporal association between episodes of atrial fibrillation and risk of ischemic stroke. *JAMA Cardiol*. Published online September 29, 2021. doi:10.1001/jamacardio.2021.3702

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

eTable 1. Current Procedural Terminology (CPT) corroborating a diagnosis of stroke

Procedure	CPT Code
CT/MRI	70400,70450,70460,70470,70480,70481,70482,70486,70487,70488,70490,70491, 70492,70540,70541,70542,70543,70551,70552,70553,70554, 70555,70557,70559
CTA/MRA	70496,70498,70544,70545,70546,70547,70548,70549
Blood Glucose	82962,82948,82947
ECG/Holter	93010,93005,93000,93272,93271,93270,93268,93229,93228,93227,93226,93225, 93224
Coagulation test	85730, 85610
Blood Panel	85027, 85025,80048,80053,80061,80069,80076
Chest Xray	71010, 71020
Echo	93325,93321,93320,93312,93313,93314,93010,93005,93000
TEE	93312,93313,93314
Hospital Critical Care	99285,99291,99292
Injection/Infusion	96372, 96376, 96375,96374,96367,96366,96365
EEG	95951,95822,95819,95816,95813, 95812, 95953
Carotid USG	93880,93886,93882,93888
Carotid Angiogram	36228,36227,36226,36225,36224,36223,36222,36221,75685,75680,75676,75671, 75665,75662, 75660,75650
Thrombectomy	37184,37185,37186,61645,37195

eTable 2. AF patterns in paired 5-day case and control periods prior to an ischemic stroke, matched 1:1 within patients^{1,2}

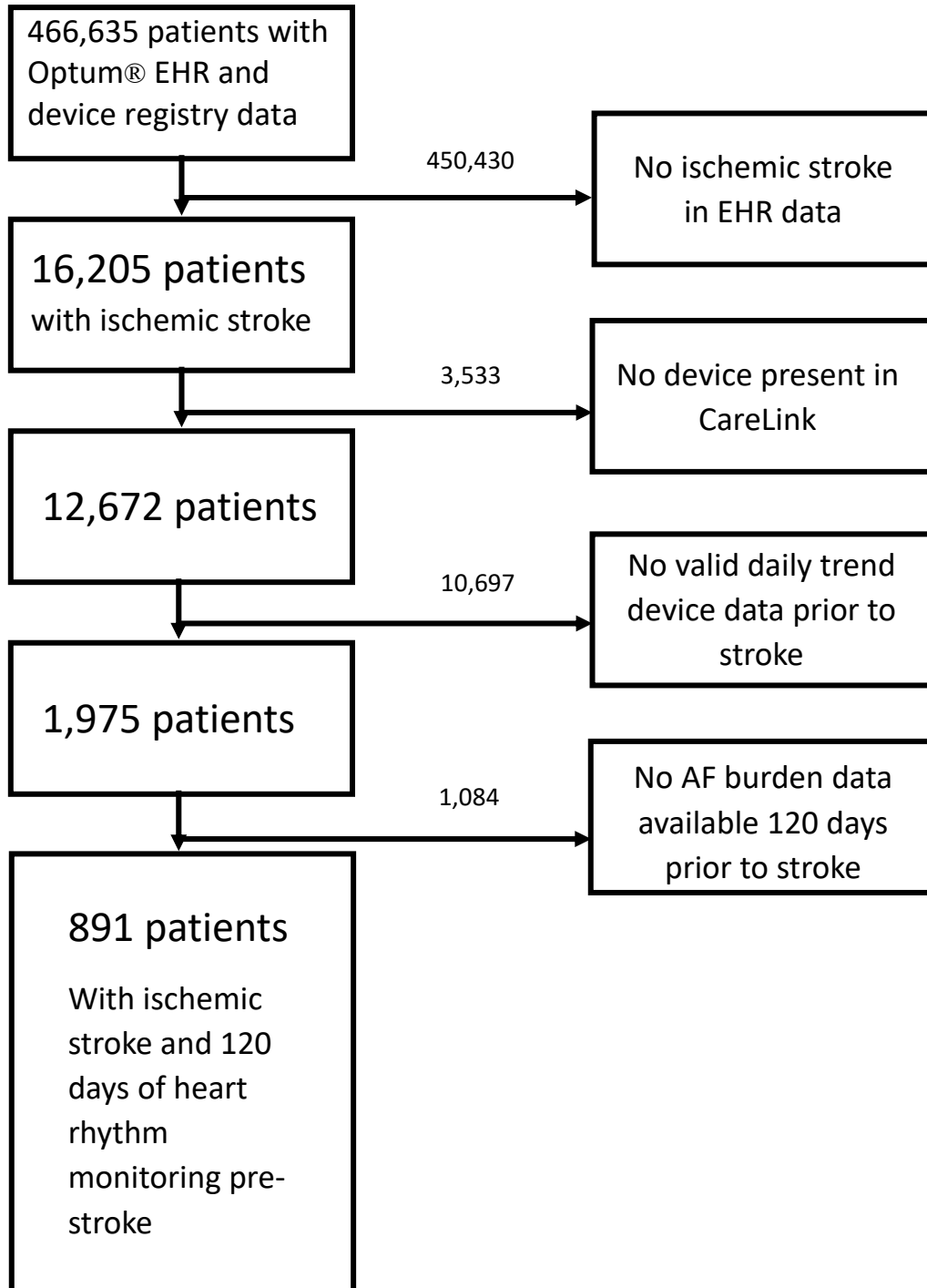
Paired 5-day periods, pre-stroke	AF in paired 5-day periods (within patient), case period/control period				Odds Ratio (95% CI) for stroke ³
	+/-	-/+	+/+	-/-	
1-5/91-95	55	11	116	27	5.0 (2.6-9.6)
6-10/96-100	9	9	0	191	1.0 (0.4-2.5)
11-15/101-105	1	6	0	202	0.2 (0.0-1.4)
16-20/106-110	3	6	0	200	0.5 (0.1-2.0)
21-25/111-115	9	6	0	194	1.5 (0.5-4.2)
26-30/116-120	2	3	0	204	0.7 (0.1-4.0)

¹“AF” indicates a cumulative period of AF of ≥ 5.5 hours on a given day.

² “+/-” indicates occurrence of AF in the 5-day case period pre-stroke and absence of AF in the corresponding, more distant, 5-day control period. Similarly, “-/+” indicates absence of AF in the case period but presence in the control period; “+/+” indicates AF in both periods; and “-/-” indicates absence of AF in both periods.

³ Odds ratio is calculated as the ratio of discordant pairs, +/- divided by -/+.

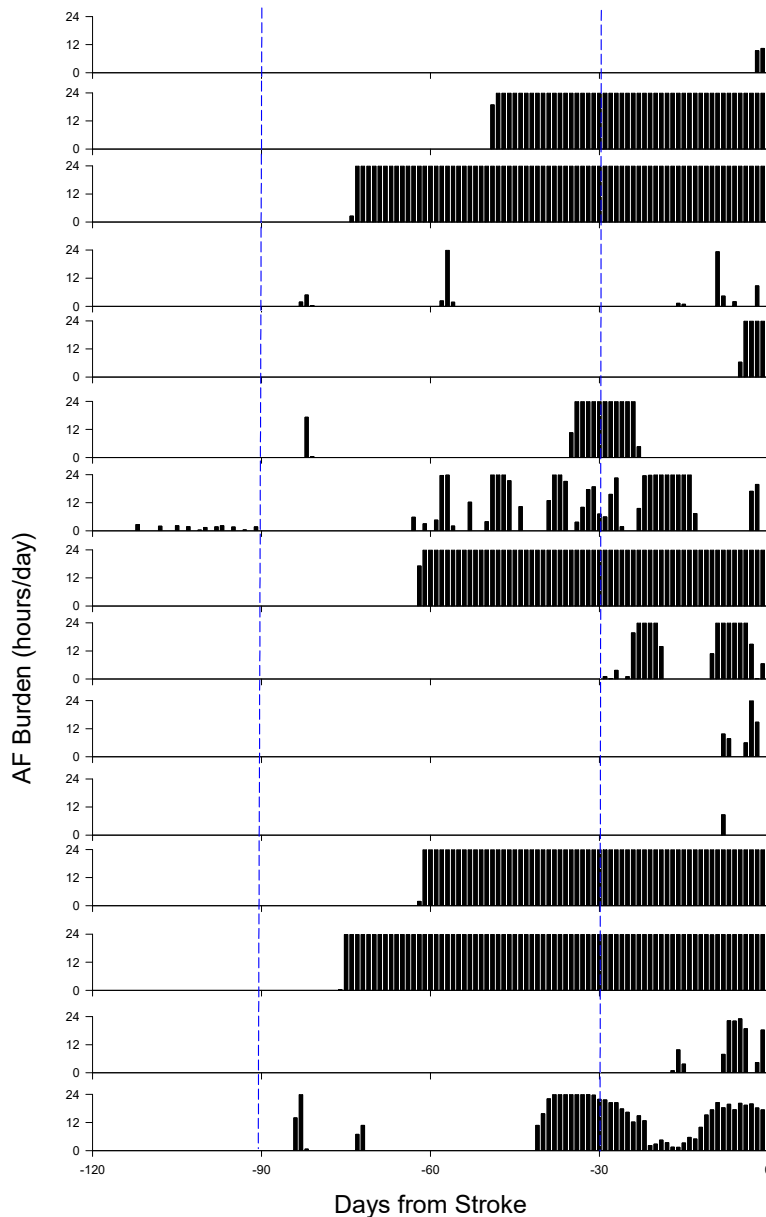
eFigure 1. Assembly of 891 patients with CIEDs who sustained an ischemic stroke and also had 120 days of continuous heart rhythm recording prestroke



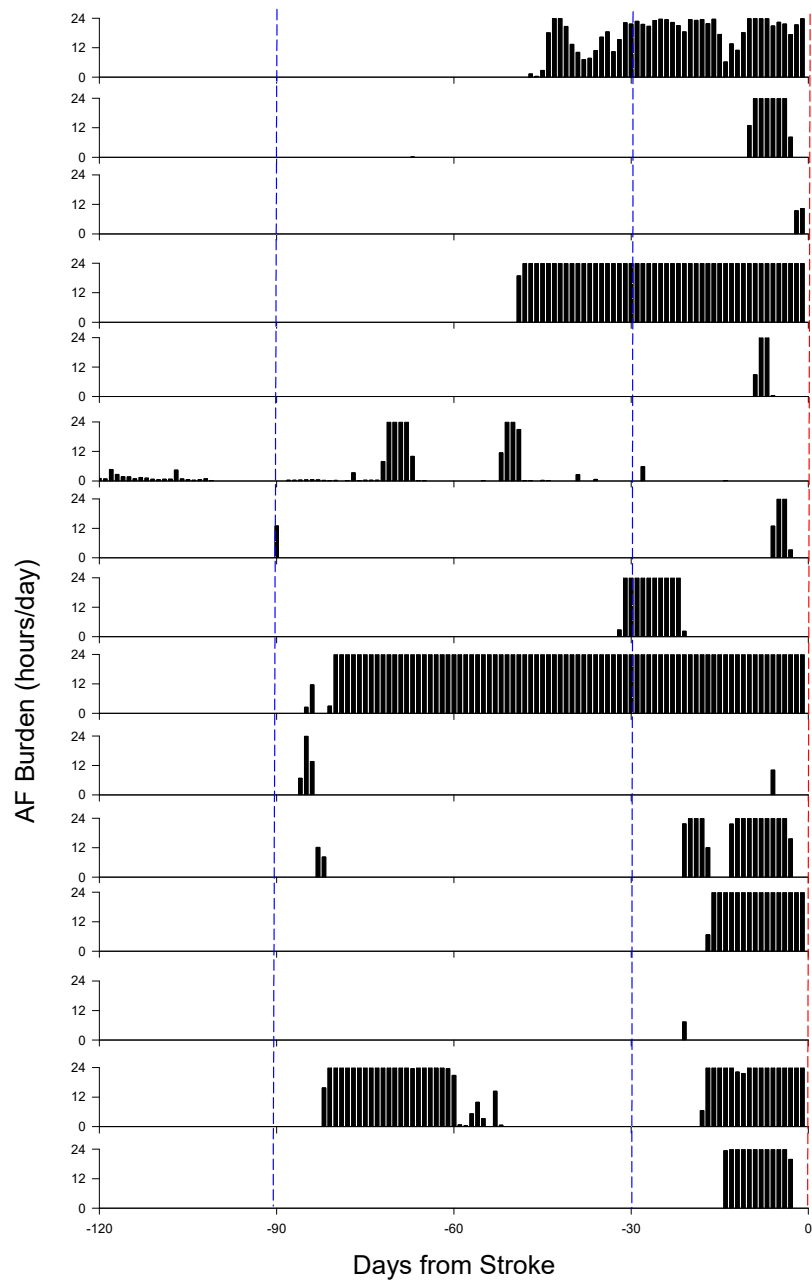
eFigure 2. AF records for all patients with stroke with discordant patterns in days 1 to 30 and 91 to 120 prestroke

The threshold was set at 5.5 hours of AF on any given day during the period. Each row is a separate patient. The red vertical dashed line denotes the day of ischemic stroke. The blue vertical dashed lines demarcate the case period (days 1 to 30 prestroke) and control period (days 91 to 120 pre-stroke). The x-axis is days from stroke. The y-axis is hours of AF on each day prestroke. A, Patients who had 5.5 hours or more of AF on at least 1 day during the case period (days 1 to 30 prestroke) and no such days in the control period (days 91 to 120 prestroke). B, Patients who had 5.5 hours or more of AF on at least 1 day during the control period and no such days in the case period.

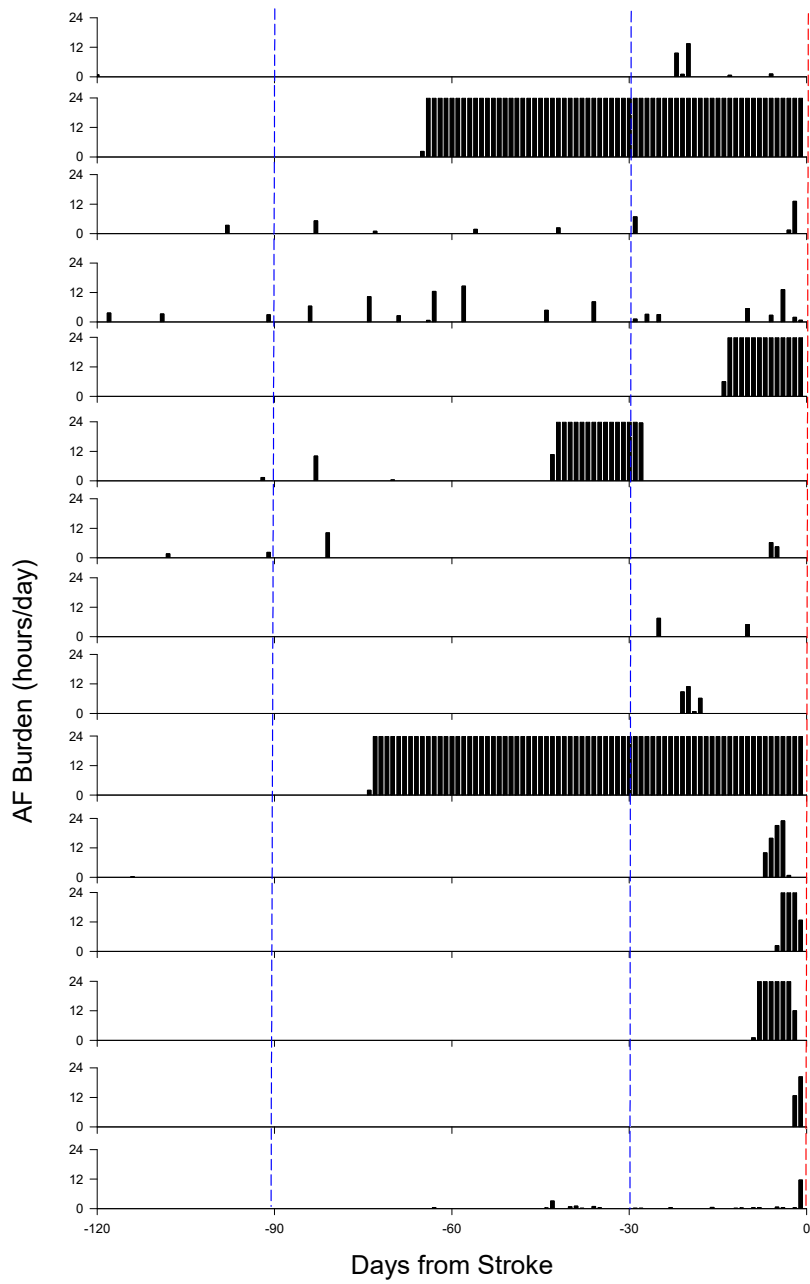
a. Discordant: Case >Control (Part 1)



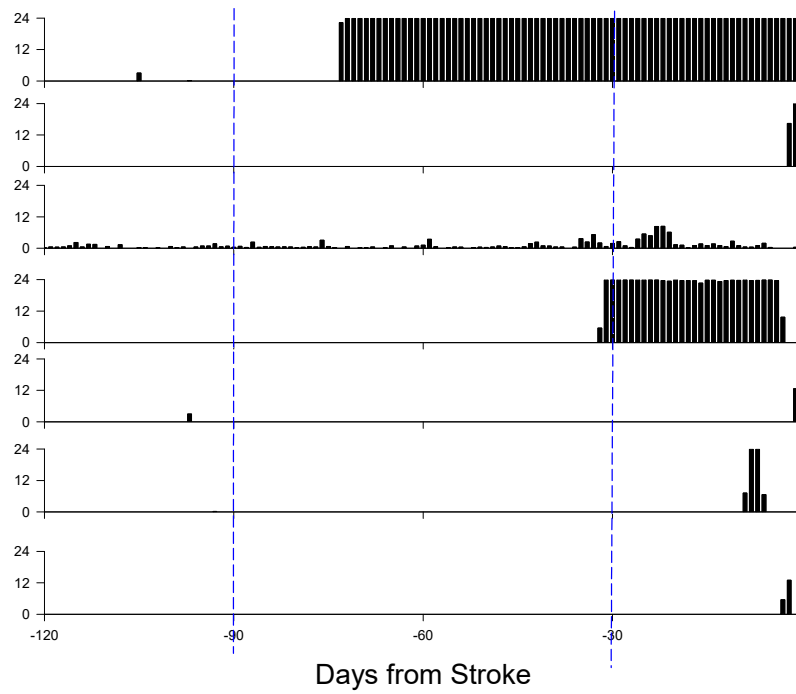
Discordant: Case >Control (Part 2)



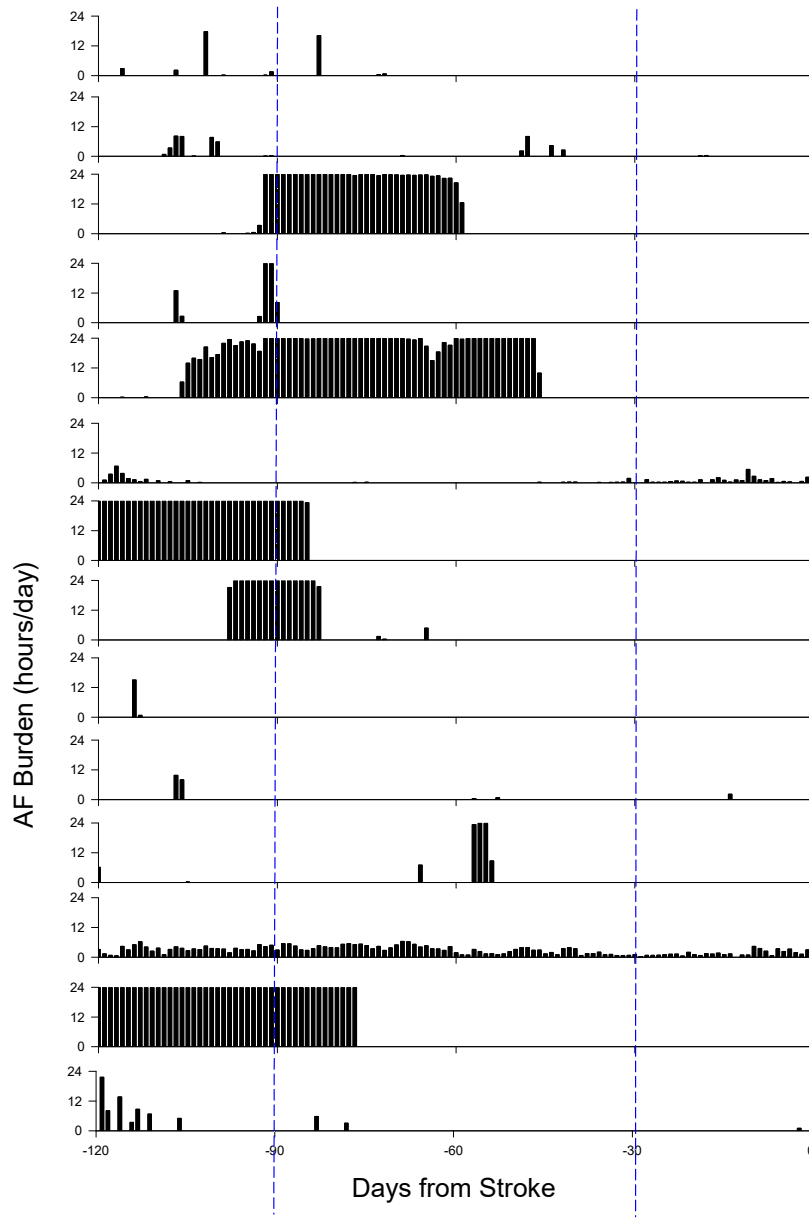
Discordant: Case >Control (Part 3)



Discordant: Case >Control (Part 4)



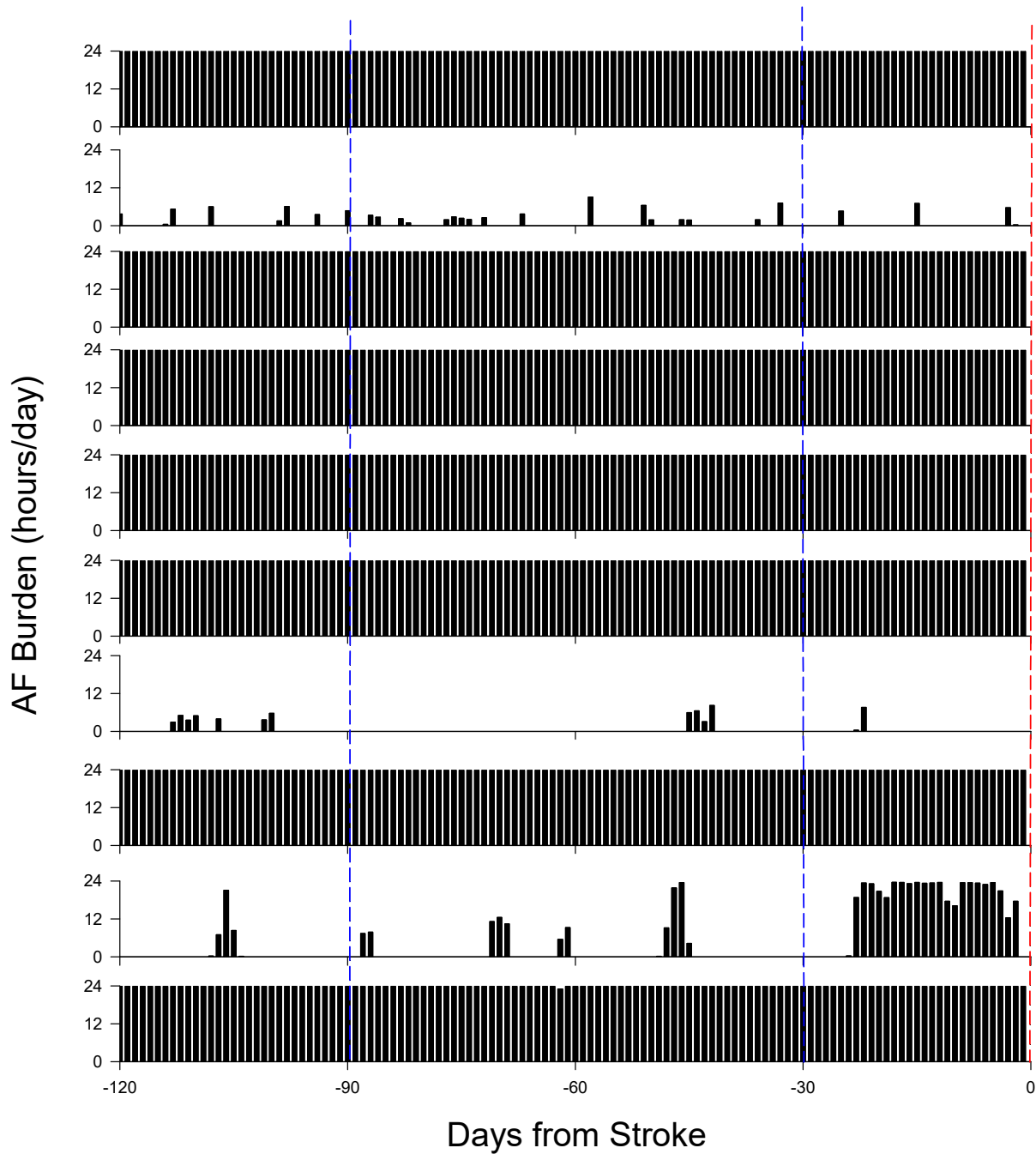
b. Discordant: Control >Case



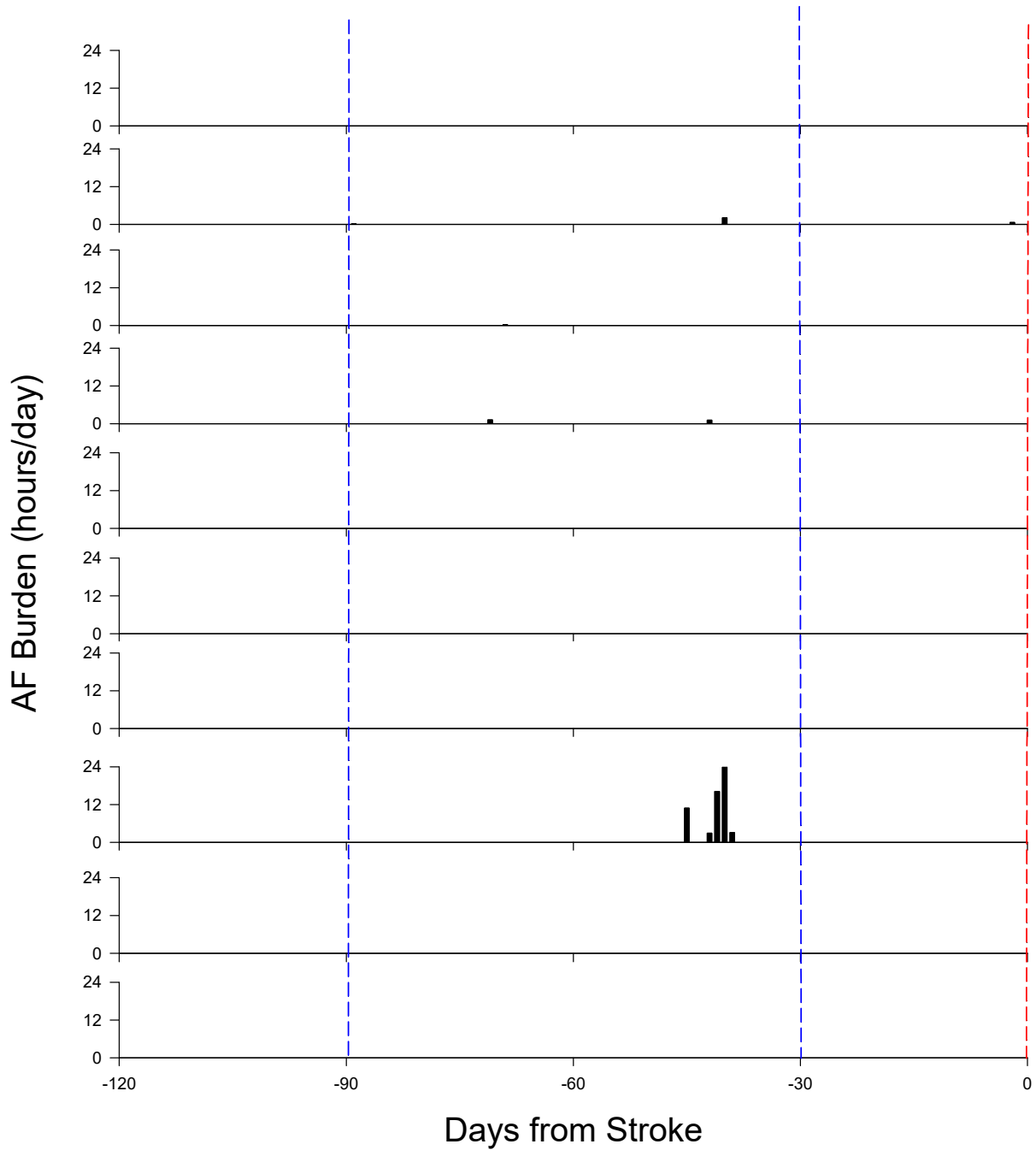
eFigure 3. Atrial fibrillation (AF) records for a random sample of patients with stroke with concordant patterns in days 1 to 30 and 91 to 120 prestroke

≥ 5.5 Hours of AF on any given day during the 30-day periods was used as the AF burden threshold: 10 patients meeting or exceeding the AF threshold in both periods (a.) and 10 patients not meeting or exceeding the AF threshold in either period (b.).

a. Concordant: Case and control ≥ 5.5 hours of AF*

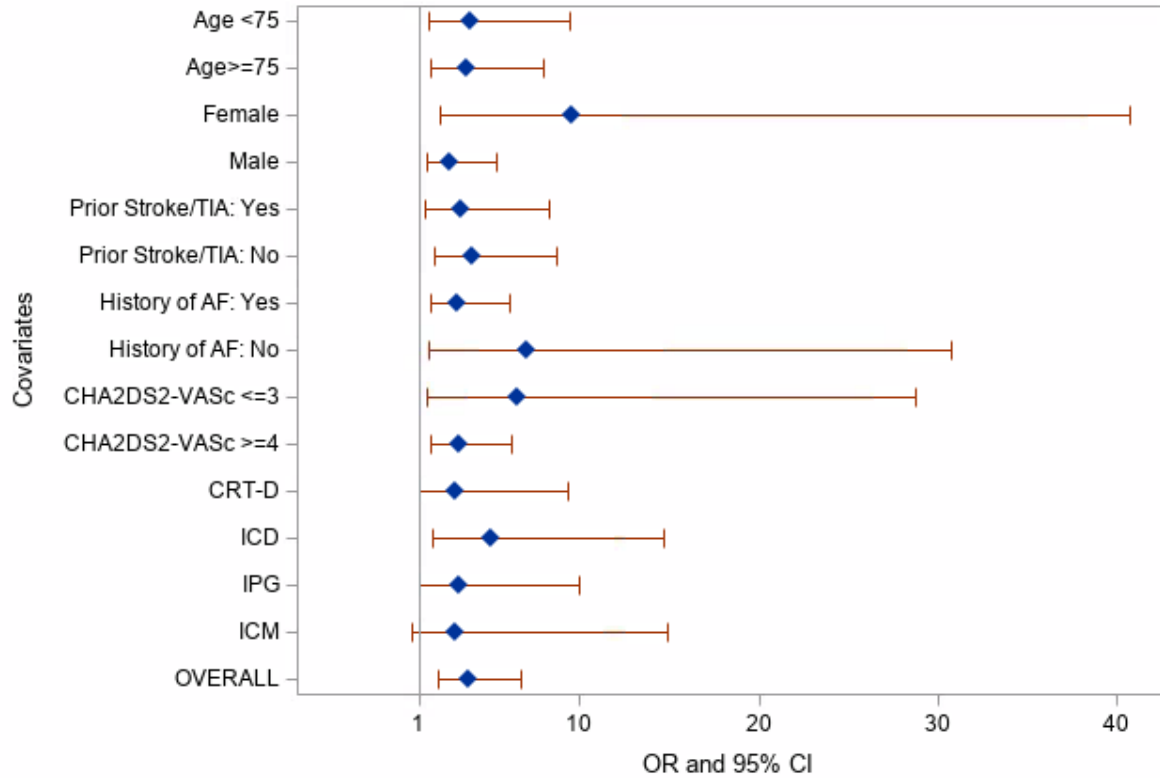


b. Concordant: Case and Control <5.5 hours



*Each row is a separate patient. The red vertical line dashed denotes the day of ischemic stroke. The blue vertical dashed lines demarcate the case (days 1-30 pre-stroke) and control (days 91-120 pre-stroke) periods. The x-axis is days from stroke. The y-axis is hours of AF on each day pre-stroke.

eFigure 4. Odds of ischemic stroke within 30 days of a qualifying atrial fibrillation (AF) episode vs 91 to 120 days after a qualifying AF episode



Abbreviations: TIA, transient ischemic attack; CHA2DS2-VASc, AF stroke risk score including C, congestive heart failure (1 point); H, diagnosis of hypertension (1 point); A, age \geq 75 years (2 points); D, diagnosis of diabetes (1 point); S, prior stroke (2 points); V, diagnosis of vascular disease (1 point); S, female sex (1 point); CRT-D, cardiac resynchronization therapy defibrillator; ICD, implantable cardioverter defibrillator; IPG, implantable pulse generator; ICM, insertable cardiac monitor. Analysis restricted to patients with a Cardiac Resynchronization Therapy-Pacemaker (CRT-P) device was not done because of the small number of patients with this device (n=19).