Evaluation of antithrombotic use and COVID-19 outcomes in a nationwide atrial fibrillation cohort

SUPPLEMENTARY MATERIAL

SUPPLEMENTARY TABLES

Supplementary Table 1 - study population demographic characteristics for individuals with COVID-19 event by antithrombotic medication category Percentages should be interpreted vertically for all variables e.g. proportion within category for variable, except for the first row showing percentage of individuals across AT medication categories.

	Total	Any AT	AC only	AP only	AC and	No AT
					AP	
Individuals	77364	67087	54756	6743	5588	10277
	(100%)	(86.7%)	(70.8%)	(8.7%)	(7.2%)	(13.3%)
Age (mean years, +/- sd)	81 (+/-	81 (+/-	81 (+/-	82 (+/-	79 (+/-	81 (+/-
	10.1)	9.8)	9.7)	10.6)	9.7)	12)
65-74	12928	11331	9123	1014	1194	1597
	(16.7%)	(16.9%)	(16.7%)	(15%)	(21.4%)	(15.5%)
>=75	59369	51579	42348	5289	3942	7790
	(76.7%)	(76.9%)	(77.3%)	(78.4%)	(70.5%)	(75.8%)
Female	37227	31498	26569	2992	1937	5729
	(48.1%)	(47%)	(48.5%)	(44.4%)	(34.7%)	(55.7%)
Ethnicity						
White	72745	63132	51899	6162	5071	9613
	(94%)	(94.1%)	(94.8%)	(91.4%)	(90.7%)	(93.5%)
Asian or Asian British	2666	2311	1578	389	344	355
	(3.4%)	(3.4%)	(2.9%)	(5.8%)	(6.2%)	(3.5%)
Black or Black British	1010	844	645	118	81	166
	(1.3%)	(1.3%)	(1.2%)	(1.7%)	(1.4%)	(1.6%)
Mixed	281	238	187	24	27	43 (0.4%)
	(0.4%)	(0.4%)	(0.3%)	(0.4%)	(0.5%)	
Other Ethnic Groups	662	562	447	50	65	100 (1%)
	(0.9%)	(0.8%)	(0.8%)	(0.7%)	(1.2%)	
Geographical locations						

South East	11387	9725	8012	913	800	1662
	(14.7%)	(14.5%)	(14.6%)	(13.5%)	(14.3%)	(16.2%)
North West	12691	11153	9024	1113	1016	1538
	(16.4%)	(16.6%)	(16.5%)	(16.5%)	(18.2%)	(15%)
East of England	7095	6163	5047	591	525	932
	(9.2%)	(9.2%)	(9.2%)	(8.8%)	(9.4%)	(9.1%)
South West	4185	3577	2911	367	299	608
	(5.4%)	(5.3%)	(5.3%)	(5.4%)	(5.4%)	(5.9%)
Yorkshire and The	8809	7639	6230	878	531	1170
Humber	(11.4%)	(11.4%)	(11.4%)	(13%)	(9.5%)	(11.4%)
West Midlands	13273	11492	9423	1129	940	1781
	(17.2%)	(17.1%)	(17.2%)	(16.7%)	(16.8%)	(17.3%)
East Midlands	7279	6439	5376	603	460	840
	(9.4%)	(9.6%)	(9.8%)	(8.9%)	(8.2%)	(8.2%)
London	8806	7528	5929	802	797	1278
	(11.4%)	(11.2%)	(10.8%)	(11.9%)	(14.3%)	(12.4%)
North East	3839	3371	2804	347	220	468
	(5%)	(5%)	(5.1%)	(5.1%)	(3.9%)	(4.6%)
IMD deciles						
1 (most deprived)	8396	7331	5843	832	656	1065
	(10.9%)	(10.9%)	(10.7%)	(12.3%)	(11.7%)	(10.4%)
10 (least deprived)	6306	5449	4574	480	395	857
	(8.2%)	(8.1%)	(8.4%)	(7.1%)	(7.1%)	(8.3%)

Supplementary Table 2 - study population comorbidities that increase stroke and bleeding risk for individuals with COVID-19 event by antithrombotic medication category

Percentages should be interpreted vertically for all variables e.g. proportion within category for variable

	Total	Any AT	AC only	AP only	AC and AP	No AT
CHA2DS2-VASc score						
components						
Vascular disease	169797	159892	103946	23815	32131	9905
	(17.5%)	(18.7%)	(14.4%)	(33.8%)	(50.9%)	(8.5%)
Stroke / TIA /	196899	183140	150588	16611	15941	13759
Thromboembolism	(20.2%)	(21.4%)	(20.8%)	(23.6%)	(25.3%)	(11.8%)
Congestive heart failure	247562	228877	192023	15038	21816	18685
	(25.4%)	(26.7%)	(26.6%)	(21.3%)	(34.6%)	(16%)

Diabetes	268437	242060	197216	21602	23242	26377
	(27.6%)	(28.3%)	(27.3%)	(30.6%)	(36.8%)	(22.6%)
Hypertension	675680	600627	505516	49680	45431	75053
	(69.4%)	(70.1%)	(69.9%)	(70.5%)	(72%)	(64.3%)
CHA2DS2-VASc score	3.9 (+/-	4 (+/-	3.9 (+/-	4.1 (+/-	4.4 (+/-	3.4 (+/-
(mean, +/- sd)	1.4)	1.4)	1.4)	1.5)	1.5)	1.3)
2	172174	138751	120968	10914	6869	33423
	(17.7%)	(16.2%)	(16.7%)	(15.5%)	(10.9%)	(28.7%)
3	245977	213057	184242	16290	12525	32920
	(25.3%)	(24.9%)	(25.5%)	(23.1%)	(19.8%)	(28.2%)
4	252051	224259	190710	17874	15675	27792
	(25.9%)	(26.2%)	(26.4%)	(25.4%)	(24.8%)	(23.8%)
5	162315	149102	122353	12996	13753	13213
	(16.7%)	(17.4%)	(16.9%)	(18.4%)	(21.8%)	(11.3%)
>=6	140457	131171	104466	12426	14279	9286
	(14.4%)	(15.3%)	(14.5%)	(17.6%)	(22.6%)	(8%)
HAS-BLED score						
components						
Renal disease	315940	284379	237965	24423	21991	31561
	(32.5%)	(33.2%)	(32.9%)	(34.6%)	(34.9%)	(27.1%)
Liver disease	8462	6707	5440	788	479	1755
	(0.9%)	(0.8%)	(0.8%)	(1.1%)	(0.8%)	(1.5%)
Stroke	196493	182756	150232	16606	15918	13737
	(20.2%)	(21.3%)	(20.8%)	(23.6%)	(25.2%)	(11.8%)
Major bleeding event	335289	293096	240703	27431	24962	42193
	(34.5%)	(34.2%)	(33.3%)	(38.9%)	(39.6%)	(36.2%)
Harmful alcohol use	28969	25571	21161	2274	2136	3398
	(3%)	(3%)	(2.9%)	(3.2%)	(3.4%)	(2.9%)
Uncontrolled	66576	58873	48444	5395	5034	7703
hypertension	(6.8%)	(6.9%)	(6.7%)	(7.7%)	(8%)	(6.6%)
History of fall	119738	103615	85718	10717	7180	16123
	(12.3%)	(12.1%)	(11.9%)	(15.2%)	(11.4%)	(13.8%)
BMI (mean, +/- sd)	28.7 (+/-	28.8 (+/-	28.8 (+/-	28.1 (+/-	29 (+/-	27.9 (+/-
	6)	6)	6.1)	5.6)	5.8)	5.9)
Smoking status (ever	638774	566861	472208	48568	46085	71913
smoker)	(65.7%)	(66.2%)	(65.3%)	(68.9%)	(73%)	(61.7%)

Supplementary Table 3 – study population characteristics for COVID-19 outcomes and other medications for individuals with COVID-19 event by antithrombotic medication category

Percentages should be interpreted vertically for all variables e.g. proportion within category for variable

	Total	Any AT	AC only	AP only	AC and AP	No AT
COVID-19 outcomes						
COVID-19 event	77364	67087	54756	6743	5588	10277
	(8%)	(7.8%)	(7.6%)	(9.6%)	(8.9%)	(8.8%)
COVID-19	37418	33150	26887	3201	3062	4268
hospitalisation	(3.8%)	(3.9%)	(3.7%)	(4.5%)	(4.9%)	(3.7%)
COVID-19	27011	23919	19375	2319	2225	3092
hospitalisation (primary	(2.8%)	(2.8%)	(2.7%)	(3.3%)	(3.5%)	(2.7%)
diagnosis)						
COVID-19 death	21116	18173	14553	2055	1565	2943
	(2.2%)	(2.1%)	(2%)	(2.9%)	(2.5%)	(2.5%)
COVID-19 death	15297	13158	10522	1508	1128	2139
(primary diagnosis)	(1.6%)	(1.5%)	(1.5%)	(2.1%)	(1.8%)	(1.8%)
Other medications						
Antihypertensives	540681	498116	412078	40377	45661	42565
	(55.6%)	(58.2%)	(57%)	(57.3%)	(72.4%)	(36.5%)
Lipid regulating drugs	589570	547522	441737	51120	54665	42048
	(60.6%)	(63.9%)	(61.1%)	(72.5%)	(86.6%)	(36.1%)
Proton pump inhibitors	409430	369462	286984	39181	43297	39968
	(42.1%)	(43.1%)	(39.7%)	(55.6%)	(68.6%)	(34.3%)
NSAIDS	19448	14608	11101	2317	1190	4840
	(2%)	(1.7%)	(1.5%)	(3.3%)	(1.9%)	(4.1%)
Corticosteroids	80347	71706	59511	5929	6266	8641
	(8.3%)	(8.4%)	(8.2%)	(8.4%)	(9.9%)	(7.4%)
Other	13216	11690	9498	1152	1040	1526
immunosuppressants	(1.4%)	(1.4%)	(1.3%)	(1.6%)	(1.6%)	(1.3%)
COVID-19 vaccine prior	9463	8248	6799	824	625 (1%)	1215
to COVID-19 event	(1%)	(1%)	(0.9%)	(1.2%)		(1%)

SUPPLEMENTARY FIGURES



Supplementary Figure 1: Study flowchart showing the number of individuals excluded at each step and the study population sizes for each question



Supplementary Figure 2: Individual antithrombotic prescriptions by drug January 2020 – May 2021

Ordered by proportion of prescriptions with non-mutually exclusive categories e.g. an individual may have prescriptions for multiple drugs (warfarin and aspirin). Excludes drugs with <1% of prescriptions (ticagrelor, dipyridamole, prasugrel).





Multivariable results for AC vs AP

Supplementary Figure 3: Factors associated with AC vs AP (January 1st 2020) using multivariable logistic regression





Supplementary Figure 4: Factors associated with DOACs vs warfarin (January 1st 2020) using multivariable logistic regression



Supplementary Figure 5: Comparison of dabigatran versus factor Xa inhibitors on COVID-19 outcomes (follow up to May 1st 2021) using propensity score adjusted multivariable logistic regression



Supplementary Figure 6: Comparison of AT medication exposures on COVID-19 outcomes (follow up to May 1st 2021) using Cox regression



Supplementary Figure 7: Comparison of AT medication exposures on COVID-19 outcomes (follow up to December 1st 2020) using propensity score adjusted multivariable logistic regression



Supplementary Figure 8: Comparison of AT medication exposures on COVID-19 hospitalisation and death defined exclusively as the primary recorded diagnosis (follow up to May 1st 2021) using propensity score adjusted multivariable logistic regression