

Table S1: The overall accuracy of each of the ML classifiers used in the study.

Machine learning algorithm	Accuracy in Stroke prediction	Accuracy in mortality prediction
Decision Trees	0.998	0.988
k Nearest Neighbour	0.994	0.974
Random Forest	0.999	0.994
Logistic regression	0.865	0.749
Gradient Boosting classifier	0.911	0.811
Support vector machine	0.911	0.811

Table S2: Performance metrics for the DOAC doses based on different ML models.

Outcomes	Precision			Recall			F1-score			*Support
	DTA	RFA	KNN	DTA	RFA	KNN	DTA	RFA	KNN	DTA, RFA, BAA & KNN
Stroke=Yes	1.00	1.00	0.98	0.99	1.00	0.98	0.99	1.00	0.98	5180
Stroke=No	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	24044
Mortality=Yes	0.99	0.99	0.98	0.99	0.99	0.97	0.99	0.99	0.97	14357
Mortality=No	0.99	0.99	0.97	0.99	1.00	0.98	0.99	0.99	0.97	14867

Table S3: Summary of outcomes according to eGFR staging (for all the DOACs)

eGFR Cat	Treatment Years	LoS in days	Emergency visits	Bleeding Event (CRNMB)		Ischaemic Stroke		Any TE event		All-cause mortality	
		Mean (SD)	Mean (SD)	Yes n (%)	No n (%)	Yes n (%)	No n (%)	Yes n (%)	No n (%)	Yes n (%)	No n (%)
Normal Kidney Function (>90)	≤1yr	41.04(33.150)	1.46(1.741)	80(0.7)	10957(99.3)	1936(18.1)	8741(81.9)	84(0.8)	10593(99.2)	7011(65.7)	3666(34.3)
	2yrs	35.40(33.442)	3.36(3.289)	18(0.4)	4506(99.6)	633(14.0)	3891(86.0)	85(1.9)	4439(98.1)	2072(45.8)	2452(54.2)
	3yrs	59.03(67.317)	3.03(3.739)	151(3.3)	4390(96.7)	1225(27.0)	3316(73.0)	10(0.2)	4531(99.8)	1134(25.0)	3407(75.0)
	4yrs	37.71(35.152)	2.77(4.190)	69(2.4)	2827(97.6)	630(21.8)	2266(78.2)	50(1.7)	2846(98.3)	410(14.2)	2486(85.8)
	5yrs	38.34(47.056)	1.83(2.703)	0(0.0)	1088(100)	407(37.4)	681(62.6)	0(0.0)	1088(100)	43(4.0)	1045(96.0)
Non-CKD Stage 2 (60-89)	≤1yr	33.91(28.531)	1.73(2.150)	114(0.7)	16574(99.3)	3004(18)	13684(82.0)	161(1.0)	16527(99.0)	11020(66.0)	5668(34.0)
	2yrs	29.34(28.182)	2.88(3.075)	66(0.9)	6910(99.1)	1286(18.4)	5690(81.6)	90(1.3)	6686(98.7)	3033(43.5)	3943(56.5)
	3yrs	40.12(44.982)	2.52(2.791)	47(0.7)	6691(99.3)	1923(28.5)	4815(71.5)	109(1.6)	6629(98.4)	1587(23.6)	5151(76.4)
	4yrs	29.84(34.488)	2.19(2.634)	9(0.2)	4561(99.8)	1027(22.5)	3543(77.5)	47(1.0)	4523(99.0)	393(8.6)	4177(91.4)
	5yrs	21.73(28.442)	1.53(2.347)	0(0.0)	1917(100)	313(16.3)	1604(83.7)	18(0.9)	1899(99.1)	98(5.1)	1819(94.9)
Stage 3a (30-39.9)	≤1yr	29.22(22.380)	1.70(1.814)	146(1.6)	8950(98.4)	1292(14.2)	7804(85.8)	100(1.1)	8996(98.9)	6313(69.4)	2783(30.6)
	2yrs	30.69(24.473)	2.97(3.220)	46(1.2)	3944(98.8)	649(16.3)	3341(83.7)	16(0.4)	3974(99.6)	1889(47.3)	2101(52.7)
	3yrs	31.30(27.956)	3.54(3.374)	20(0.7)	2921(99.3)	443(15.1)	2498(84.9)	27(0.9)	2914(99.1)	990(33.7)	1951(66.3)
	4yrs	33.79(30.281)	2.67(2.859)	0(0.0)	1634(100.0)	456(27.9)	1178(72.1)	0(0.0)	1634(100.0)	190(11.6)	1444(88.4)
	5yrs	21.21(23.260)	2.54(2.956)	0(0.0)	736(100.0)	56(7.6)	680(92.4)	0(0.0)	736(100.0)	20(2.7)	716(97.3)
Stage 3b (≥40)	≤1yr	27.17(20.875)	1.67(1.753)	40(0.5)	7306(99.5)	808(11.0)	6538(89.0)	78(1.1)	7268(98.9)	1991(72.9)	5118(27.1)
	2yrs	23.68(18.266)	3.53(3.559)	0(0.00)	2670(100.0)	284(10.6)	2386(89.4)	9(0.3)	2661(99.7)	1357(50.8)	1313(49.2)
	3yrs	28.97(25.491)	3.58(2.932)	0(0.0)	1652(100.0)	271(16.4)	1381(83.6)	49(3.0)	1603(97.0)	595(36.0)	1057(64.0)
	4yrs	30.11(25.036)	3.49(2.948)	0(0.0)	704(100.0)	79(11.2)	625(88.8)	0(0.0)	704(100.0)	234(33.2)	470(66.8)
	5yrs	21.70(18.276)	2.19(2.296)	0(0.0)	302(100.0)	68(22.5)	234(77.5)	0(0.0)	302(100.0)	15(5.0)	287(95.0)
Stage 4	≤1yr	24.05(19.940)	1.69(1.475)	5(0.1)	3811(99.9)	235(6.2)	3581(93.8)	29(0.6)	5113(99.4)	3166(83.0)	650(17.0)
	2yrs	23.08(21.174)	3.38(2.967)	0(0.0)	671(100.0)	123(18.3)	548(81.7)	3(0.4)	668(99.6)	313(46.6)	358(53.4)
	3yrs	27.26(23.176)	3.51(2.846)	0(0.0)	404(100.0)	26(6.4)	378(93.6)	3(0.7)	401(99.3)	185(45.8)	219(54.2)
	4yrs	21.93(24.055)	2.74(1.980)	0(0.0)	204(100.0)	21(10.3)	183(89.7)	0(0.0)	204(100.0)	58(28.4)	146(71.6)
	5yrs	25.04(17.256)	2.79(2.084)	0(0.0)	47(100.0)	2(4.3)	45(95.7)	0(0.0)	47(100.0)	0(0.0)	47(100.0)
Stage 5	≤1yr	27.23(15.302)	1.44(1.305)		431(100.0)	51(11.8)	380(88.2)	0(0.0)	431(100.0)	334(77.5)	97(22.5)
	2yrs	28.73(20.656)	3.54(2.320)		63(100.0)	2(3.2)	61(96.8)	4(6.3)	59(93.7)	30(47.6)	33(52.4)
	3yrs	51.60(92.006)	3.60(2.296)		40(100.0)	7(17.5)	33(82.5)	0(0.0)	40(100.0)	11(27.5)	29(72.5)
	4yrs	32.22(18.811)	3.12(3.480)		50(100.0)	8(16.0)	42(84.0)	0(0.0)	50(100.0)	2(4.0)	48(96.0)
	5yrs	1.00(—)	—		1(100.0)	0(0.0)	1(100.0)	0.0	1(100.0)	0(0.0)	1(100.0)

Table S4: Summary of outcomes according to DOAC type in patients at different stages of CKD

DOACs	CKD Stage	LoS		Emergency visits		CRNMB		Ischaemic Stroke		Any TE Event		All-cause mortality	
		> 1 week n (%)	≤ 1 week n (%)	Yes n (%)	No n (%)	Yes n (%)	No n (%)	Yes n (%)	No n (%)	Yes n (%)	No n (%)	Yes n (%)	No n (%)
Apixaban	Normal	16592(85.0)	2938(15.0)	13657(69.9)	5873(30.1)	225(1.2)	19305(98.8)	4111(21.0)	15419(79.0)	101(0.5)	19429(99.5)	8715(44.6)	10815(55.4)
	Non-CKD-2	24490(78.1)	6852(21.9)	23093(73.7)	8249(26.3)	215(0.7)	31127(99.3)	7023(22.4)	24319(77.6)	303(1.0)	31039(99.0)	13578(43.3)	17764(56.7)
	CKD-3a	12923(83.6)	2539(16.4)	12,145(78.5)	3,317(21.5)	210(1.4)	15252(98.6)	2686(17.4)	12776(82.6)	135(0.9)	15327(99.1)	7835(50.7)	7627(49.3)
	CKD-3b	9288(86.7)	1429(13.3)	8,765(81.8)	1952(18.2)	40(0.4)	10677(99.6)	1362(12.7)	9355(87.3)	132(1.2)	10585(98.8)	6365(59.4)	4352(40.6)
	CKD-4	3842(84.6)	700(15.4)	3710(81.7)	832(18.3)	5(0.1)	4537(99.9)	398(8.8)	4144(91.2)	24(0.5)	4518(99.5)	3296(72.6)	1246(27.4)
	CKD-5	432(90.0)	48(10.0)	380(79.2)	100(20.8)	0(0.0)	480(100.0)	66(13.8)	414(86.3)	0(0.0)	480(100.0)	298(62.1)	182(37.9)
Rivaroxaban	Normal	3406(89.0)	422(11.0)	3143(82.1)	685(17.9)	93(2.4)	3735(97.6)	683(17.8)	3145(82.2)	128(3.3)	3700(96.7)	1715(44.8)	2113(55.2)
	Non-CKD-2	4091(81.6)	924(18.4)	4259(84.9)	756(15.1)	21(0.4)	4994(99.6)	506(10.1)	4509(89.9)	122(2.4)	4893(97.6)	2230(44.5)	2785(55.5)
	CKD-3a	2169(83.7)	423(16.3)	2175(83.9)	417(16.1)	2(0.1)	2590(99.9)	206(7.9)	2386(92.1)	8(0.3)	2584(99.7)	1379(53.2)	1213(46.8)
	CKD-3b	1505(83.0)	309(17.0)	1589(87.1)	234(12.9)	0(0.0)	1814(100.0)	111(6.1)	1703(93.9)	4(0.2)	1810(99.8)	1091(60.1)	723(39.9)
	CKD-4	444(84.4)	82(15.6)	454(86.3)	72(13.7)	0(0.0)	526(100.0)	6(1.1)	520(98.9)	2(0.4)	524(99.6)	370(70.3)	156(29.7)
	CKD-5	67(90.5)	7(9.5)	64(86.5)	10(13.5)	0(0.0)	74(100.0)	2(2.7)	72(97.3)	0(0.0)	74(100.0)	52(70.3)	22(29.7)
Edoxaban	Normal	44(86.3)	7(13.7)	12(23.5)	39(76.5)	0(0.0)	51(100)	30(58.8)	21(41.2)	0(0.0)	51(100)	11(21.6)	40(78.4)
	Non-CKD-2	98(82.4)	21(17.6)	91(76.5)	28(23.5)	0(0.0)	119(100)	23(19.3)	96(80.7)	0(0.0)	119(100)	45(37.8)	74(62.2)
	CKD-3a	81(86.2)	13(13.8)	86(91.5)	8(8.5)	0(0.0)	94(100.0)	4(4.3)	90(95.7)	0(0.0)	94(100.0)	36(38.3)	58(61.7)
	CKD-3b	47(87.0)	7(13.0)	49(90.7)	5(9.3)	0(0.0)	54(100.0)	5(9.3)	5(90.7)	0(0.0)	54(100.0)	34(63.0)	20(37.0)
	CKD-4	38(97.4)	1(2.6)	34(87.2)	5(12.8)	0(0.0)	39(100.0)	0(0.0)	39(100)	3(7.7)	36(92.3)	34(87.2)	5(12.8)
	CKD-5	9(100.0)	0(0.0)	4(44.4)	5(55.6)	0(0.0)	9(100.0)	0(0.0)	9(100)	4(44.4)	5(55.6)	5(55.6)	4(44.4)
Dabigatran	Normal	276(87.1)	41(12.9)	279(88.0)	38(12.0)	0(0.0)	317(100)	7(2.2)	310(97.8)	0(0.0)	317(100)	229(72.2)	88(27.8)
	Non-CKD-2	328(79.4)	85(20.6)	363(87.9)	50(12.1)	0(0.0)	413(100)	1(0.2)	412(99.8)	0(0.0)	413(100)	278(67.3)	135(32.7)
	CKD-3a	192(77.1)	57(22.9)	213(85.5)	36(14.5)	0(0.0)	249(100.0)	0(0.0)	249(100)	0(0.0)	249(100.0)	152(61.0)	97(39.0)
	CKD-3b	62(69.7)	27(30.3)	74(83.1)	15(16.9)	0(0.0)	89(100.0)	32(36.0)	57(64.0)	0(0.0)	89(100.0)	66(74.2)	23(25.8)
	CKD-4	31(88.6)	4(11.4)	32(91.4)	3(8.6)	0(0.0)	35(100.0)	3(8.6)	32(91.4)	0(0.0)	35(100.0)	22(62.9)	13(37.1)
	CKD-5	22(100.0)	0(0.0)	100.0	0.0	0(0.0)	22(100.0)	0(0.0)	22(100)	0(0.0)	22(100.0)	22(100.0)	0(0.0)

Table S5: Results of multivariate logistic regression analysis (showing the likelihood of the outcomes (odds ratio) for the CKD categories (Apixaban)

eGFR Category (CKD staging)	CRNMB		Ischaemic stroke		Any TE events		All-cause mortality		LoS (More than a week)		Emergency visit	
	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value
Normal (>90)	Referent											
Non-CKD (60-89)	0.62 (0.51-0.75)	0.001	1.29 (1.23-1.35)	0.001	1.46 (1.16-1.84)	0.001	1.05 (1.01-1.10)	0.023	0.55 (0.52-0.58)	0.001	1.26 (1.21-1.31)	0.001
Stage 3a (45 – 59.9)	1.57 (1.29-1.91)	0.001	0.91 (0.86-0.97)	0.003	1.37 (1.05-1.78)	0.021	1.20 (1.14-1.26)	0.001	0.69 (0.64-0.74)	0.001	1.44 (1.37-1.52)	0.001
Stage 3b (30 – 44.9)	0.44 (0.31-0.61)	0.001	0.65 (0.60-0.70)	0.001	2.04 (1.56-2.67)	0.001	1.42 (1.35-1.51)	0.001	0.72 (0.66-0.77)	0.001	1.55 (1.46-1.65)	0.001
Stage 4 (15 – 29.9)	0.11 (0.05-0.28)	0.001	0.56 (0.50-0.62)	0.001	1.00 (0.64-1.58)	0.995	2.12 (1.95-2.30)	0.001	0.52 (0.47-0.57)	0.001	1.55 (1.42-1.68)	0.001
Stage 5 (<15)	-	0.991	0.76 (0.57-1.01)	0.056	-	0.993	1.17 (0.95-1.45)	0.149	1.01 (0.73-1.38)	0.973	1.35 (1.07-1.69)	0.010

NB: P-value cut-off was 0.001

Variables adjusted for stroke: ethnic group, gender, LoS Cat, BMI Cat, emergency visits cat, bleeding risk, mortality, treatment years, comorbidity, bleeding, thrombosis

Variables adjusted for mortality: ethnic group, gender, LoS, BMI Cat, emergency visits, bleeding risk, treatment days, comorbidity, bleeding, stroke, thrombosis

Variables adjusted for emergency visits: ethnic group, gender, LoS, BMI, bleeding risk, treatment days, comorbidity, bleeding, stroke, thrombosis, mortality

Variables adjusted for LoS: ethnic group, gender, BMI flag, bleeding risk, treatment days, comorbidity, bleeding, stroke, thrombosis, mortality, emergency visits

Table S6: Results of multivariate logistic regression analysis (showing the likelihood of the outcomes (odds ratio) for the CKD categories (normal RF)

DOACs	CRNMB		Ischaemic stroke		Any TE events		All-cause mortality		LoS (More than a week)		Emergency visit	
	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value
Apixaban	0.436 (0.336-0.565)	0.001	1.527 (1.375-1.697)	0.001	0.205 (0.156-0.271)	0.001	0.724 (0.665-0.788)	0.001	0.634 (0.564-0.714)	0.001	0.594 (0.542-0.652)	0.001
Rivaroxaban	2.329 (1.795-3.022)	0.001	0.121 (0.061-0.240)	0.001	5.518 (4.175-7.294)	0.001	3.606 (1.747-7.443)	0.001	2.925 (2.075-4.123)	0.001	5.216 (2.584-10.528)	0.001
Edoxaban	NA	-	8.235 (4.161-16.299)	0.001	NA	-	0.277 (0.134-0.572)	0.001	0.329 (0.142-758)	0.001	0.192 (0.095-0.387)	0.001
Dabigatran	NA	-	0.111 (0.051-0.240)	0.001	NA	-	9.219 (4.254-19.977)	0.001	0.344 (0.238-0.499)	0.001	1.425 (0.999-2.034)	0.051

Variables adjusted for significant bleeding: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for stroke: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran..

Variables adjusted for thromboembolic event: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for mortality: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, stroke, treatment days, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for emergency visits: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for LoS: ethnic group, gender, BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Table S7: Results of multivariate logistic regression analysis (showing the likelihood of the outcomes (odds ratio) for the CKD categories (Stage 2)

DOACs	CRNMB		Ischaemic stroke		Any TE events		All-cause mortality		LoS (More than a week)		Emergency visit	
	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value
Apixaban	1.630 (1.036-2.563)	0.001	2.978 (2.692-3.294)	0.001	0.420 (0.338-0.522)	0.001			NA	-	0.559 (0.516-0.606)	0.001
Rivaroxaban	0.627 (0.399-0.987)	0.044	0.413 (0.253-0.674)	0.001	2.336 (1.888-2.991)	0.001	2.840 (1.893-4.261)	0.001	NA	-	1.787 (1.643-1.944)	0.001
Edoxaban	NA		0.813 (0.503-1.314)	0.001	-	0.996	0.131 (0.082-0.210)	0.001	NA	-	-	-
Dabigatran	NA		0.021 (0.003-0.148)	0.001	-	0.993	2.658 (2.076-3.403)	0.001	0.520 (0.396-0.684)	0.001	-	-

Variables adjusted for significant bleeding: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, ~~apixaban~~, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for stroke: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for thromboembolic event: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, ~~apixaban~~, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for mortality: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, stroke, treatment days, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for emergency visits: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for LoS: ethnic group, gender, BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Table S8: Results of multivariate logistic regression analysis (showing the likelihood of the outcomes (odds ratio) for the CKD categories (Stage 3a)

DOACs	CRNMB		Ischaemic stroke		Any TE events		All-cause mortality		LoS (More than a week)		Emergency visit	
	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value
Apixaban	23.676 (5.836-96.050)	0.001	2.453 (2.102-2.862)	0.001	3.711 (1.808-7.614)	0.001	0.866 (0.788-0.953)	0.003	-	-	0.732 (0.656-0.816)	0.001
Rivaroxaban	-	-	2.560 (0.917-7.146)	0.073	0.327 (0.160-0.672)	0.002	4.404 (2.814-6.892)	0.001	-	-	0.719 (0.514-1.006)	0.054
Edoxaban	-	-	0.391 (0.140-1.090)	0.073	-	-	0.227 (0.145-0.355)	0.001	-	-	2.070 (0.992-4.319)	0.053
Dabigatran	-	-	-	-	-	-	2.087 (1.523-2.860)	0.001	0.571 (0.417-0.784)	0.001	-	-

Variables adjusted for significant bleeding: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for stroke: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran..

Variables adjusted for thromboembolic event: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for mortality: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, stroke, treatment days, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for emergency visits: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for LoS: ethnic group, gender, BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Table S9: Results of multivariate logistic regression analysis (showing the likelihood of the outcomes (odds ratio) for the CKD categories (Stage 3b)

DOACs	CRNMB		Ischaemic stroke		Any TE events		All-cause mortality		LoS (More than a week)		Emergency visit	
	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value
Apixaban	-	-	2.306 (1.878-2.830)	0.001	4.655 (1.706-12.701)	0.003	-		1.240 (1.078-1.426)	0.003	0.623 (0.539-0.719)	0.001
Rivaroxaban	-	-	0.423 (0.344-0.522)	0.001	-		-		0.800 (0.695-0.921)	0.002	-	
Edoxaban	-	-			-		-				-	
Dabigatran	-	-	33.473 (19.128-58.577)	0.001	-		1.937 (1.140-3.294)	0.015	0.432 (0.264-0.706)	0.001	-	

Variables adjusted for significant bleeding: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for stroke: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran..

Variables adjusted for thromboembolic event: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for mortality: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, stroke, treatment days, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for emergency visits: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for LoS: ethnic group, gender, BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Table S10: Results of multivariate logistic regression analysis (showing the likelihood of the outcomes (odds ratio) for the CKD categories (Stage 4)

DOACs	CRNMB		Ischaemic stroke		Any TE events		All-cause mortality		LoS (More than a week)		Emergency visit	
	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value
Apixaban	NA	-	13.654 (6.005-31.046)	0.001	NA	-	NA	-	NA	-	0.664 (0.510-0.866)	0.003
Rivaroxaban	NA	-	NA	-	0.001 (0.000-0.011)	0.001	NA	-	0.453 (0.171-1.198)	0.110	0.455 (0.205-1.008)	0.052
Edoxaban	NA	-	NA	-	-	0.001	2.301 (0.833-6.356)	0.108	4.611 (0.627-33.924)	0.133	NA	-
Dabigatran	NA	-	4.831 (1.040-22.450)	0.044	-	-	NA	-	NA	-	NA	-

Variables adjusted for significant bleeding: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for stroke: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran..

Variables adjusted for thromboembolic event: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for mortality: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, stroke, treatment days, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for emergency visits: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for LoS: ethnic group, gender, BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Table S11: Results of multivariate logistic regression analysis (showing the likelihood of the outcomes (odds ratio) for the CKD categories (Stage 5)

DOACs	Significant bleeding		Ischaemic stroke		Thromboembolic events		All-cause mortality		LoS (More than a week)		Emergency visit	
	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value
Apixaban	-	-	7.340 (1.519-35.472)	0.013	-	-	0.283 (0.138-0.578)	0.001	NA	-	NA	-
Rivaroxaban	-	-	NA	-	-	-	NA	-	NA	-	51.057 (7.662-340.233)	0.001
Edoxaban	-	-	NA	-	-	-	NA	-	NA	-	0.034 (0.006-0.200)	0.001
Dabigatran	-	-	NA	-	-	-	NA	-	NA	-	NA	-

Variables adjusted for significant bleeding: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for stroke: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran..

Variables adjusted for thromboembolic event: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for mortality: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, stroke, treatment days, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for emergency visits: ethnic group, gender, Cat. length of stay (LoS), BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.

Variables adjusted for LoS: ethnic group, gender, BMI Cat, emergency visits, bleeding risk, mortality, treatment years, comorbidity, apixaban, rivaroxaban, edoxaban, dabigatran.