

On-line Table 1: Demography of the baseline data in derivation and validation cohorts

Parameter	Derivation Cohort (n = 114)	Validation Cohort (n = 89)	P Value
Age (yr) (mean) (SD)	69.3 (14.1)	72.5 (14.4)	.06
Male sex (%)	56 (49.1)	36 (40.0)	.12
ASPECTS (median) (IQR)	7 (6–8)	7 (5–9)	.98
CBS (median) (IQR)	6 (4–9)	6 (4–9)	.85
CS (median) (IQR)	2 (2–3)	2 (2–3)	.31
Time-to-scan (mean) (SD)	130 (105)	140 (129)	.91
NIHSS score (median) (IQR)	13 (7–18)	14 (7–18)	.68
Recanalization, frequency (%)	59 (51.8)	45 (50.0)	.87
Hyperglycemia, frequency (%)	25 (21.9)	21 (23.3)	.78
Intravenous rtPA, frequency (%)	89 (78%)	61 (69%)	.13
Right hemispheric infarction, frequency (%)	55 (48%)	41 (46%)	.76
Hypertension, frequency (%)	74 (65%)	50 (56%)	.21
Atrial fibrillation, frequency (%)	33 (29%)	27 (30%)	.83
Diabetes mellitus, frequency (%)	13 (11%)	10 (11%)	.97
Hyperlipidemia, frequency (%)	32 (28%)	30 (34%)	.39
Smoking, frequency (%)	24 (21%)	10 (11%)	.06
Most proximal occlusion site, frequency (%)			
ICA	42 (37%)	25 (28%)	.19
MCA M1	37 (32%)	38 (43%)	.13
MCA M2	25 (22%)	18 (20%)	.77
MCA M3	5 (4%)	4 (4%)	.69
MCA M4	5 (4%)	4 (4%)	.69

Note:—IQR indicates interquartile range; CBS, clot burden score; CS, collateral score.

On-line Table 2: Comparing models with and without clinical covariates in distinguishing infarct from noninfarct regions^a

In All Patients	Cutoff Value	Accuracy	AIC	-2 L	G ²	P Value
CBF-GM-Abs						
A) Without any covariate	21.4	0.84	1838.6	1834.6		
B) With covariates	26.8	0.89	1810.2	1806.2	28.4	.0004 ^b
CBF-GM-Rel						
A) Without any covariate	0.64	0.88	2465.9	2461.9		
B) With covariates	0.78	0.91	2401.4	2397.4	64.5	<.0001 ^b
CBF-WM-Abs						
A) Without any covariate	14.1	0.80	1669.1	1665.1		
B) With covariates	17.4	0.82	1649.1	1645.1	28.4	.0423 ^b
CBF-WM-Rel						
A) Without any covariate	0.80	0.85	2693.6	2689.6		
B) With covariates	0.87	0.86	2593.6	2589.5	100.1	<.0001 ^b
CBV-GM-Abs						
A) Without any covariate	1.68	0.71	1720.1	1716.1		
B) With covariates	1.72	0.72	1688.1	1684.1	32.0	<.0001 ^b
CBV-GM-Rel						
A) Without any covariate	0.89	0.74	2733.8	2729.8		
B) With covariates	0.97	0.74	2652.0	2648.0	81.8	<.0001 ^b
CBV-WM-Abs						
A) Without any covariate	1.08	0.69	1421.1	1417.1		
B) With covariates	1.04	0.72	1406.9	1402.9	14.2	.1153
CBV-WM-Rel						
A) Without any covariate	0.92	0.70	2743.7	2739.7		
B) With covariates	0.98	0.73	2667.8	2663.8	75.9	<.0001 ^b
Tmax-GM-Abs						
A) Without any covariate	6.0	0.84	1377.8	1373.8		
B) With covariates	4.4	0.88	1358.5	1354.5	19.3	.0113 ^b
Tmax-WM-Abs						
A) Without any covariate	5.9	0.79	1251.5	1247.5		
B) With covariates	3.7	0.80	1232.1	1228.1	19.4	.0108 ^b
Tmax-GM-Rel						
A) Without any covariate	2.1	0.85	2249.6	2245.6		
B) With covariates	2.0	0.86	2196.5	2192.5	53.1	<.0001 ^b
Tmax-WM-Rel						
A) Without any covariate	2.0	0.79	1984.2	1980.2		
B) With covariates	1.6	0.80	1923.4	1919.4	60.8	<.0001 ^b
MTT-GM-Abs						
A) Without any covariate	7.18	0.81	1421.3	1417.3		
B) With covariates	4.97	0.84	1411.3	1407.3	10.0	.3504
MTT-WM-Abs						
A) Without any covariate	7.27	0.74	1301.3	1297.3		
B) With covariates	5.08	0.74	1285.2	1281.2	16.1	.0648
MTT-GM-Rel						
A) Without any covariate	1.65	0.82	1956.9	1952.9		
B) With covariates	1.44	0.85	1917.0	1913.0	39.9	<.0001 ^b
MTT-WM-Rel						
A) Without any covariate	1.50	0.76	1725.0	1721.0		
B) With covariates	1.11	0.78	1671.7	1667.7	53.3	<.0001 ^b

Note:—Rel indicates relative to the contralateral side; Abs, absolute value; AIC, Akaike Information Criterion; -2 L, $-2 \times \log$ likelihood; G², the difference between -2 L of the fitted model (transformed threshold) and the reference model (nontransformed threshold).

^aIncluding the clinical covariates improved the accuracy and goodness-of-fit in perfusion parameters. The dimensions for perfusion parameters are the following: CBF, mL \times 100 g⁻¹ \times min⁻¹; and CBV, mL \times 100 g⁻¹; Tmax, seconds; MTT, seconds.

^bSignificant.

On-line Table 3: Comparing models with and without clinical covariates in predicting the 90-day clinical outcome^a

In All Patients	AIC	-2 L	R ²	G ²	P Value
CBF-GM-Abs					
Null model	291.5	289.5	—	—	
A) Without any covariate	293.3	289.3	0.0008	0.175	.6753
B) With covariates	291.6	287.6	0.0066	1.914	.1666
CBF-GM-Rel					
Null model	291.5	289.5	—	—	
A) Without any covariate	291.7	287.7	0.0062	1.796	.1803
B) With covariates	291.3	287.3	0.0076	2.247	.1338
CBF-WM-Abs					
Null model	282.5	280.5	—	—	
A) Without any covariate	284.3	280.3	0.0008	1.164	.6859
B) With covariates	277.5	273.5	0.0249	6.986	.0082 ^b
CBF-WM-Rel					
Null model	282.5	280.5	—	—	
A) Without any covariate	280.4	276.4	0.0146	4.080	.0434
B) With covariates	268.9	264.9	0.0556	15.613	<.0001 ^b
CBV-GM-Abs					
Null model	291.5	289.5	—	—	
A) Without any covariate	292.5	288.5	0.0035	0.988	.3203
B) With covariates	292.6	288.6	0.0031	0.947	.3305
CBV-GM-Rel					
Null model	291.5	289.5	—	—	
A) Without any covariate	292.8	288.8	0.0024	0.728	.3937
B) With covariates	293.2	289.2	0.0010	0.294	.5877
CBV-WM-Abs					
Null model	282.5	280.5	—	—	
A) Without any covariate	284.1	280.1	0.0014	0.382	.5366
B) With covariates	284.4	280.4	0.0004	0.101	.7502
CBV-WM-Rel					
Null model	282.5	280.5	—	—	
A) Without any covariate	284.5	280.5	<.0001	0.0469	.8285
B) With covariates	270.4	266.4	0.0503	14.120	.0002 ^b
Tmax-GM-Abs					
Null model	291.5	289.5	—	—	
A) Without any covariate	291.3	287.3	0.0076	2.255	.1332
B) With covariates	285.4	281.4	0.0280	8.116	.0044 ^b
Tmax-GM-Rel					
Null model	291.5	289.5	—	—	
A) Without any covariate	291.9	288.0	0.0052	1.528	.2164
B) With covariates	287.9	283.9	0.0193	5.661	.0173 ^b
Tmax-WM-Abs					
Null model	282.5	280.5	—	—	
A) Without any covariate	280.9	276.9	0.0128	3.643	.0563
B) With covariates	266.2	262.2	0.0652	18.328	<.0001 ^b
Tmax-WM-Rel					
Null model	282.5	280.5	—	—	
A) Without any covariate	280.8	276.8	0.0132	3.699	.0544
B) With covariates	268.1	264.1	0.0585	16.357	<.0001 ^b
MTT-GM-Abs					
Null model	291.5	289.5	—	—	
A) Without any covariate	290.8	286.8	0.0093	2.680	.1016
B) With covariates	286.9	282.9	0.0228	6.618	.0101 ^b
MTT-GM-Rel					
Null model	291.5	289.5	—	—	
A) Without any covariate	289.8	285.8	0.0128	3.729	.0535
B) With covariates	287.9	283.8	0.0197	5.653	.0174 ^b
MTT-WM-Abs					
Null model	282.5	280.5	—	—	
A) Without any covariate	280.6	276.6	0.0139	3.906	.0481
B) With covariates	268.6	264.6	0.0567	15.892	<.0001 ^b
MTT-WM-Rel					
Null model	282.5	280.5	—	—	
A) Without any covariate	279.1	275.1	0.0193	5.401	.0201
B) With covariates	269.3	265.3	0.0542	15.179	<.0001 ^b

Note:—Rel indicates relative to the contralateral side; Abs, absolute value; AIC, Akaike Information Criterion; -2 L, $-2 \times \log$ likelihood; G², the difference between -2 L of the fitted model (transformed threshold) and the reference model (nontransformed threshold).

^a The outcome is a binary variable of mRS, where mRS ≥ 3 was considered a poor outcome and mRS ≤ 2 was a good outcome.

^b Significant.

On-line Table 4: Comparing model estimations on the SE of clinical covariates in distinguishing infarct from noninfarct regions, using original data and 1000 bootstrapping samples

Significant Models with Clinical Covariates	Original SE	Bootstrap SE
CBF-GM-Abs		
ASPECTS	0.290	0.141
Age (yr)	0.032	0.014
CBS	0.166	0.070
CS	0.661	0.317
Sex (1 = M; 0 = F)	0.911	0.393
Hyperglycemia (1 = Y; 0 = N)	1.061	0.433
NIHSS score	0.068	0.028
rtPA treatment (1 = Y; 0 = N)	1.181	0.498
Time-to-scan (min)	0.004	0.003
CBF-GM-Rel		
ASPECTS	0.0071	0.0032
Age (yr)	0.0008	0.0004
CBS	0.0040	0.0019
CS	0.0161	0.0069
Sex (1 = M; 0 = F)	0.0222	0.0098
Hyperglycemia (1 = Y; 0 = N)	0.0258	0.0125
NIHSS score	0.0017	0.0008
rtPA treatment (1 = Y; 0 = N)	0.0287	0.0126
Time-to-scan (min)	0.0001	0.0000
CBF-WM-Abs		
ASPECTS	0.241	0.113
Age (yr)	0.027	0.010
CBS	0.138	0.063
CS	0.548	0.272
Sex (1 = M; 0 = F)	0.757	0.342
Hyperglycemia (1 = Y; 0 = N)	0.880	0.327
NIHSS score	0.057	0.022
rtPA treatment (1 = Y; 0 = N)	0.982	0.410
Time-to-scan (min)	0.004	0.002
CBF-WM-Rel		
ASPECTS	0.0111	0.0057
Age (yr)	0.0012	0.0005
CBS	0.0063	0.0026
CS	0.0252	0.0132
Sex (1 = M; 0 = F)	0.0348	0.0173
Hyperglycemia (1 = Y; 0 = N)	0.0405	0.0177
NIHSS score	0.0026	0.0017
rtPA treatment (1 = Y; 0 = N)	0.0452	0.0355
Time-to-scan (min)	0.0002	0.0001
CBV-GM-Abs		
ASPECTS	0.020	0.011
Age (yr)	0.002	0.001
CBS	0.012	0.006
CS	0.047	0.025
Sex (1 = M; 0 = F)	0.064	0.031
Hyperglycemia (1 = Y; 0 = N)	0.075	0.036
NIHSS score	0.005	0.002
rtPA treatment (1 = Y; 0 = N)	0.083	0.042
Time-to-scan (min)	0.0001	0.0001
CBV-GM-Rel		
ASPECTS	0.0088	0.0050
Age (yr)	0.0010	0.0006
CBS	0.0050	0.0033
CS	0.0200	0.0110
Sex (1 = M; 0 = F)	0.0276	0.0155
Hyperglycemia (1 = Y; 0 = N)	0.0321	0.0182
NIHSS score	0.0021	0.0012
rtPA treatment (1 = Y; 0 = N)	0.0357	0.0192
Time-to-scan (min)	0.0001	0.0001
CBV-WM-Rel		
ASPECTS	0.0105	0.0054
Age (yr)	0.0012	0.0006
CBS	0.0060	0.0035
CS	0.0238	0.0136
Sex (1 = M; 0 = F)	0.0329	0.0193

On-line Table 4: Continued

Significant Models with Clinical Covariates	Original SE	Bootstrap SE
Hyperglycemia (1 = Y; 0 = N)		
NIHSS score	0.0382	0.0210
rtPA treatment (1 = Y; 0 = N)	0.0025	0.0016
Time-to-scan (min)	0.0427	0.0276
0.0002	0.0002	0.0001
Tmax-GM-Abs		
ASPECTS	0.103	0.061
Age (yr)	0.011	0.006
CBS	0.059	0.035
CS	0.232	0.139
Sex (1 = M; 0 = F)	0.321	0.177
Hyperglycemia (1 = Y; 0 = N)	0.373	0.206
NIHSS score	0.024	0.015
rtPA treatment (1 = Y; 0 = N)	0.416	0.248
Time-to-scan (min)	0.002	0.001
Tmax-WM-Abs		
ASPECTS	0.093	0.054
Age (yr)	0.010	0.006
CBS	0.053	0.028
CS	0.211	0.109
Sex (1 = M; 0 = F)	0.293	0.171
Hyperglycemia (1 = Y; 0 = N)	0.340	0.205
NIHSS score	0.022	0.011
rtPA treatment (1 = Y; 0 = N)	0.380	0.161
Time-to-Scan (min)	0.001	0.001
Tmax-GM-Rel		
ASPECTS	0.0414	0.0238
Age (yr)	0.0045	0.0026
CBS	0.0237	0.0123
CS	0.0935	0.0543
Sex (1 = M; 0 = F)	0.1293	0.0665
Hyperglycemia (1 = Y; 0 = N)	0.1502	0.0854
NIHSS score	0.0097	0.0056
rtPA treatment (1 = Y; 0 = N)	0.1672	0.0995
Time-to-scan (min)	0.0006	0.0002
Tmax-WM-Rel		
ASPECTS	0.0294	0.0197
Age (yr)	0.0032	0.0020
CBS	0.0168	0.0096
CS	0.0665	0.0367
Sex (1 = M; 0 = F)	0.0922	0.0546
Hyperglycemia (1 = Y; 0 = N)	0.1070	0.0706
NIHSS score	0.0070	0.0040
rtPA treatment (1 = Y; 0 = N)	0.1196	0.0522
Time-to-Scan (min)	0.0004	0.0002
MTT-GM-Rel		
ASPECTS	0.0257	0.0155
Age (yr)	0.0028	0.0015
CBS	0.0147	0.0075
CS	0.0581	0.0311
Sex (1 = M; 0 = F)	0.0804	0.0415
Hyperglycemia (1 = Y; 0 = N)	0.0933	0.0509
NIHSS score	0.0060	0.0037
rtPA treatment (1 = Y; 0 = N)	0.1039	0.0579
Time-to-scan (min)	0.0004	0.0002
MTT-WM-Rel		
ASPECTS	0.0197	0.0123
Age (yr)	0.0022	0.0011
CBS	0.0113	0.0065
CS	0.0447	0.0244
Sex (1 = M; 0 = F)	0.0619	0.0343
Hyperglycemia (1 = Y; 0 = N)	0.0718	0.0386
NIHSS score	0.0047	0.0026
rtPA treatment (1 = Y; 0 = N)	0.0803	0.0366
Time-to-scan (min)	0.0003	0.0002

Note:—Rel indicates relative to the contralateral side; Abs, absolute value; SE, standard error; CBS, clot burden score; CS, collateral score; Y, yes; N, no.