

Table S1: Hazard ratios for survival from Cox regression

Predictive variables	Hazard ratios (95% CIs)	P-value
Age (5-year increase)	1.34 (1.22, 1.40)	<0.001
Premorbid mRS score	1.25 (1.11, 1.40)	<0.001
Baseline NIHSS	1.02 (1.00, 1.04)	0.062
Baseline blood glucose (per 1 mmol/L glucose)	1.03 (1.01, 1.05)	<0.001
Core volume (10 mL increase)	1.10 (1.10, 1.10)	<0.001
History of heart failure	1.51 (1.08, 2.12)	0.018
Thrombolysis before thrombectomy	0.64 (0.49, 0.84)	0.001

Abbreviations: CI, confidence interval; mRS, modified Rankin scale; NIHSS, national institutes of health stroke scale.

Table S2. Using models to predict outcomes investigated.

1. The estimated risk of logistic regression model is formally calculated as formula below:

$$P = \frac{1}{1 + e^{-x}}$$

Very poor functional outcome (mRS \geq 5):

$x = -2.75 + 0.04*(\text{age in years}-72) + 0.51*(\text{premorbid mRS score}) + 0.05*(\text{baseline NIHSS}) + 0.14*(\text{baseline blood glucose in mmol/L}-7.5) + 0.02*(\text{core volume in ml}) - 0.82*(\text{if pre-EVT thrombolytic therapy})$
Quantile-based cutoff: low risk, <0.10; moderate risk, 0.10-0.22; high risk, \geq 0.23

Non-independent mobility (mRS \geq 4):

$x = -2.46 + 0.04*(\text{age in years}-72) + 0.56*(\text{premorbid mRS score}) + 0.06*(\text{baseline NIHSS}) + 0.17*(\text{baseline blood glucose in mmol/L}-7.5) + 0.01*(\text{core volume in ml}) - 0.74*(\text{if pre-EVT thrombolytic therapy}) - 1.05*(\text{if driven by companion or walk-in}) + 0.35*(\text{if interhospital transfer}) + 0.31*(\text{if aero-retrieval})$
Quantile-based cutoff: low risk, <0.15; moderate risk, 0.15-0.33; high risk, \geq 0.34

Functional dependency (mRS \geq 3):

$x = -1.39 + 0.04*(\text{age in years}-72) + 0.41*(\text{premorbid mRS score}) + 0.06*(\text{baseline NIHSS}) + 0.15*(\text{baseline blood glucose in mmol/L}-7.5) + 0.01*(\text{core volume in ml}) - 0.74*(\text{if pre-EVT thrombolytic therapy}) - 0.45*(\text{if non-rural/regional stroke onset}) - 1.08*(\text{if driven by companion or walk-in}) + 0.43*(\text{if interhospital transfer}) + 0.19*(\text{if aero-retrieval}) + 0.52*(\text{if atherosclerosis}) - 0.03*(\text{if undetermined})$
Quantile-based cutoff: low risk, <0.28; moderate risk, 0.28-0.53; high risk, \geq 0.54

Mortality within 30 days:

$x = -2.77 + 0.05*(\text{age in years}-72) + 0.27*(\text{premorbid mRS score}) + 0.10*(\text{baseline blood glucose in mmol/L}-7.5) + 0.02*(\text{core volume in ml}) + 0.62*(\text{if heart failure}) - 0.58*(\text{if pre-EVT thrombolytic therapy})$
Quantile-based cutoff: low risk, <0.06; moderate risk, 0.06-0.11; high risk, \geq 0.12

Mortality within 1 year:

$x = -1.98 + 0.06*(\text{age in years}-72) + 0.39*(\text{premorbid mRS score}) + 0.08*(\text{baseline blood glucose in mmol/L}-7.5) + 0.02*(\text{core volume in ml}) - 0.68*(\text{if pre-EVT thrombolytic therapy})$
Quantile-based cutoff: low risk, <0.10; moderate risk, 0.10-0.23; high risk, \geq 0.24

Mortality within 3 years:

$x = -1.53 + 0.07*(\text{age in years}-72) + 0.48*(\text{premorbid mRS score}) + 0.17*(\text{baseline blood glucose in mmol/L}-7.5) + 0.02*(\text{core volume in ml}) - 0.77*(\text{if pre-EVT thrombolytic therapy}) + 0.08*(\text{onset-to-groin puncture time})$
Quantile-based cutoff: low risk, <0.20; moderate risk, 0.20-0.48; high risk, \geq 0.49

Example

Assume a male patient with predictive variables as a reference: aged 72 years from with Modified Rankin mRS 1, baseline NIHSS 14, baseline blood glucose 7.5 mmol/L, core volume 14.0 ml, no past heart failure, rural/regional stroke onset, ambulance retrieval, stroke caused by cardioembolic, and onset-to-groin puncture time in 3.6 hours, while without pre-EVT thrombolytic therapy.

The patient's predictive classifications would be:

- **Very poor functional outcome** = at moderate risk (predictive risk score 0.22)
- **Non-independent mobility** = at high risk (predictive risk score 0.40)
- **Functional dependency** = at moderate risk (predictive risk score 0.50)
- **Mortality within 30 days**= at moderate risk (predictive risk score 0.10).
- **Mortality within 1 year** = at moderate risk (predictive risk score 0.21).
- **Mortality within 3 years** = at moderate risk (predictive risk score 0.38).

The false positive rates for the above outcomes would be in the range of 32.0% to 43.0% with the model thresholds set as a sensitivity of 80%.

Note. a. The quantile-based cutoffs for classifications are selected based on 33rd (lower threshold) and 66th (upper threshold) percentiles of the distribution of risk scores and patient's risk is classified as low (below the 33rd percentile), moderate (between the 33rd and 66th percentiles), or high (above the 66th percentile) categories. b. Age and baseline blood glucose levels were adjusted by subtracting the mean.

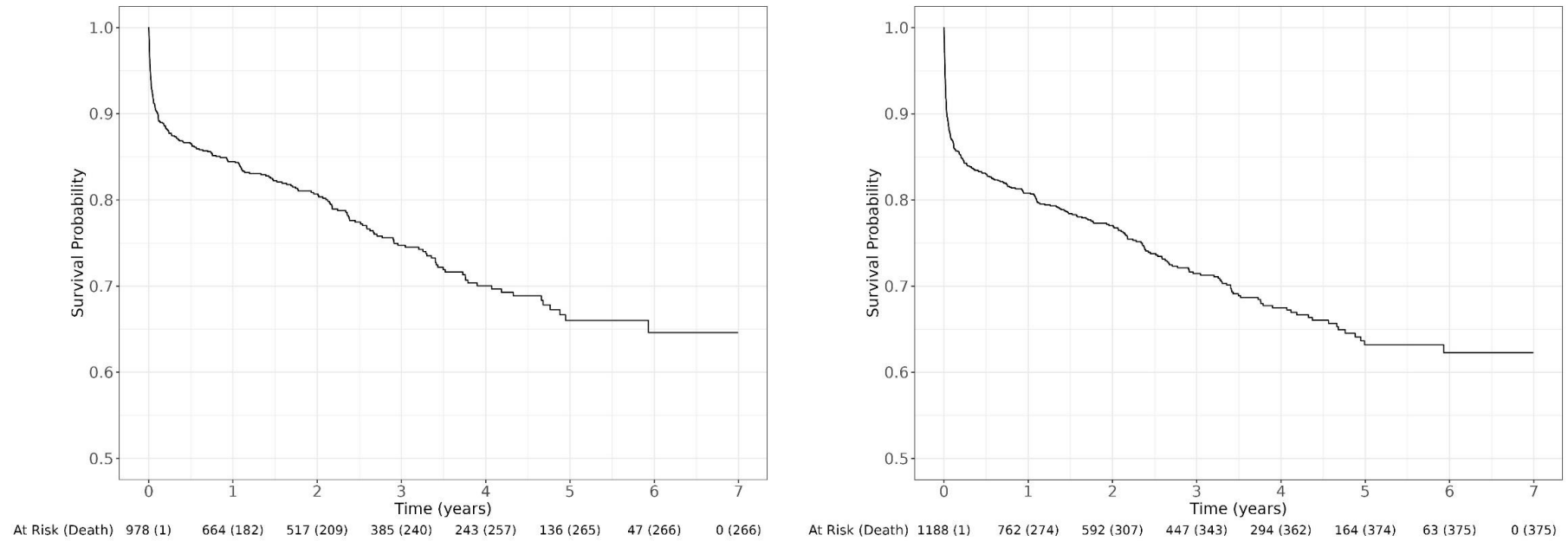


Figure S1. Kaplan-Meier Curve for survival rates: A. large vessel ischemic stroke patients with successful reperfusion after endovascular thrombectomy. B. large vessel ischemic stroke patients after endovascular thrombectomy.

Table S3: Baseline characteristics of large vessel ischemic stroke patients (N=1188)

Variables	Summary statistics
Age (years), median (IQR)	75.0 (64.0-82.3)
Female sex, n (%)	573 (48.2)
Rural/regional stroke onset, n (%)	223 (18.8)
Index of relative socio-economic advantage and disadvantage, median (IQR)	5.0 (2.0-8.0)
Pre-morbidly independent (mRS \leq 2), n (%)	1096 (92.3)
Baseline NIHSS, median (IQR)	14.0 (8.0-20.0)
Baseline blood glucose (mmol/L), median (IQR)	6.6 (5.7-8.2)
Baseline SBP (mm Hg), mean (SD)	146.1 (25.0)
Baseline DBP (mm Hg), mean (SD)	81.3 (16.2)
Core volume at admission (mL), median (IQR)	14.5 (5.0-35.0)
Perfusion lesion volume at admission (mL), median (IQR)	106.0 (67.0-154.0)
ICA occlusion, n (%)	250 (21.0)
M1 MCA occlusion, n (%)	826 (69.5)
M2 MCA occlusion, n (%)	431 (36.3)
Current or prior atrial fibrillation, n (%)	534 (44.9)
Prior stroke, n (%)	153 (12.9)
Prior transient ischemic attack, n (%)	72 (6.1)
Hypertension, n (%)	747 (62.9)
Obesity, n (%)	133 (11.2)
Diabetes, n (%)	283 (23.8)
Dyslipidaemia, n (%)	504 (42.4)
Ischemic heart disease, n (%)	244 (20.5)
History of heart failure, n (%)	120 (10.1)
Chronic obstructive pulmonary disease, n (%)	88 (7.4)
Smoking, n (%)	358 (30.1)
Cause of stroke, n (%)	
Cardioembolic	567 (47.7)
Atherosclerosis	230 (19.4)
Undetermined	391 (32.9)
Pre-EVT thrombolytic therapy, n (%)	439 (37.7)
Pre-existing antiplatelet therapy, n (%)	240 (20.2)
Pre-existing anticoagulant therapy, n (%)	263 (22.1)
Onset-to-groin puncture time (hours), median (IQR)	3.6 (2.8-6.4)
Method of arrival, n (%)	
Ambulance or road retrieval	690 (58.1)
Driven by companion or walk-in	26 (2.2)
Interhospital transfer	400 (33.7)
Aero-retrieval	72 (6.1)
Functional outcome at 3 months (N=1088)	
Very poor functional outcome (mRS \geq 5), n (%)	289 (26.6)
Non-independent mobility (mRS \geq 4), n (%)	387 (35.6)
Functional dependency (mRS \geq 3), n (%)	541 (49.7)
Mortality (30 days, N=1188; 1 year, N=1036; 3 years, N=790)	
30 days, n (%)	198 (16.7)
1 year, n (%)	274 (26.4)
3 years, n (%)	343 (43.4)

Abbreviations: SD, standard deviation; mRS, modified Rankin scale; NIHSS, national institutes of health stroke scale; IQR, interquartile range; SBP, systolic blood pressure; DBP, diastolic blood pressure; ICA, internal carotid artery; MCA, middle cerebral artery.

Table S4: Odds ratios for functional outcomes at 3 months from multivariable logistic regression on all patients: sensitivity analysis

Predictive variables	Odds ratios (95% CIs)	P-value
Very poor functional outcome (mRS\geq5)		
Age (5-year increase)	1.28 (1.22, 1.40)	<0.001
Premorbid mRS score	1.49 (1.29, 1.72)	<0.001
Baseline NIHSS	1.06 (1.04, 1.08)	<0.001
Baseline blood glucose (per 1 mmol/L glucose)	1.13 (1.07, 1.18)	<0.001
Core volume (every 10 mL increase)	1.22 (1.10, 1.22)	<0.001
Thrombolysis before thrombectomy	0.41 (0.30, 0.57)	<0.001
Non-independent mobility (mRS\geq4)		
Age (5-year increase)	1.28 (1.16, 1.34)	<0.001
Premorbid mRS score	1.59 (1.38, 1.85)	<0.001
Baseline NIHSS	1.07 (1.05, 1.09)	<0.001
Baseline blood glucose (per 1 mmol/L glucose)	1.18 (1.12, 1.24)	<0.001
Core volume (every 10 mL increase)	1.22 (1.10, 1.22)	<0.001
Thrombolysis before thrombectomy	0.42 (0.31, 0.57)	<0.001
Method of arrival, n (%)		
Ambulance or road retrieval	Reference	
Driven by companion or walk-in	0.52 (0.11, 1.78)	0.347
Interhospital transfer	1.42 (1.04, 1.93)	0.026
Aero-retrieval	1.29 (0.70, 2.32)	0.410
Functional dependency (mRS\geq3)		
Age (5-year increase)	1.28 (1.22, 1.34)	<0.001
Premorbid mRS score	1.60 (1.37, 1.88)	<0.001
Baseline NIHSS	1.07 (1.05, 1.10)	<0.001
Baseline blood glucose (per 1 mmol/L glucose)	1.13 (1.08, 1.19)	<0.001
Core volume (every 10 mL increase)	1.10 (1.10, 1.22)	<0.001
Thrombolysis before thrombectomy	0.47 (0.36, 0.63)	<0.001
Non-rural/regional stroke onset	0.52 (0.37, 0.73)	0.001
Cause of stroke		
Cardioembolic	Reference	
Atherosclerosis	1.47 (1.03, 2.12)	0.004
Undetermined	1.11 (0.82, 1.52)	0.297

Abbreviations: CI, confidence interval; mRS, modified Rankin scale; NIHSS, national institutes of health stroke scale.

Table S5: Odds ratios for mortality (30 days, 1 year and 3 years) from multivariable logistic regression on all patients: sensitivity analysis

Predictive variables	Odds ratios (95% CIs)	P-value
Mortality within 30 days		
Age (5-year increase)	1.28 (1.16, 1.40)	<0.001
Premorbid mRS score	1.23 (1.05, 1.44)	0.016
Baseline NIHSS	1.05 (1.02, 1.07)	<0.001
Diastolic blood pressure (per 1 mmHg)	1.01 (1.00, 1.02)	0.023
Baseline blood glucose (per 1 mmol/L glucose)	1.09 (1.04, 1.14)	0.001
Core volume (10 mL increase)	1.22 (1.10, 1.22)	<0.001
Thrombolysis before thrombectomy	0.53 (0.36, 0.76)	0.001
Mortality within 1 year		
Age (5-year increase)	1.34 (1.28, 1.47)	<0.001
Premorbid mRS score	1.40 (1.21, 1.64)	<0.001
Baseline NIHSS	1.04 (1.02, 1.06)	0.001
Baseline blood glucose (per 1 mmol/L glucose)	1.08 (1.03, 1.13)	0.003
Core volume (10 mL increase)	1.22 (1.10, 1.22)	<0.001
Thrombolysis before thrombectomy	0.46 (0.33, 0.64)	<0.001
Mortality within 3 years		
Age (5-year increase)	1.40 (1.28, 1.54)	<0.001
Premorbid mRS score	1.66 (1.39, 2.00)	<0.001
Baseline blood glucose (per 1 mmol/L glucose)	1.14 (1.08, 1.21)	<0.001
Core volume (10 mL increase)	1.22 (1.22, 1.34)	<0.001
Thrombolysis before thrombectomy	0.42 (0.29, 0.61)	<0.001
Onset-to-groin puncture time (1-hour increase)	1.06 (1.01, 1.11)	0.027

Abbreviations: CI, confidence interval; mRS, modified Rankin scale.

Table S6: Hazard ratios for survival from Cox regression on all patients: sensitivity analysis

Predictive variables	Hazard ratios (95% CIs)	P-value
Age (5-year increase)	1.28 (1.22, 1.34)	<0.001
Premorbid mRS score	1.20 (1.10, 1.32)	<0.001
Baseline NIHSS	1.03 (1.01, 1.05)	<0.001
Core volume (10 mL increase)	1.10 (1.10, 1.10)	<0.001
Diabetes mellitus	1.57 (1.26, 1.97)	<0.001
Thrombolysis before thrombectomy	0.65 (0.52, 0.81)	<0.001

Abbreviations: CI, confidence interval; mRS, modified Rankin scale; NIHSS, national institutes of health stroke scale.

Table S7: Model performance of outcomes on all patients: sensitivity analysis

Outcome	Corrected AUC (95% CI)	Corrected SEN (95% CI)	Corrected SPE (95% CI)
Very poor functional outcome (mRS \geq 5)	0.779 (0.749, 0.809)	0.660 (0.607, 0.712)	0.767 (0.721, 0.813)
Non-independent mobility (mRS \geq 4)	0.784 (0.757, 0.811)	0.697 (0.649, 0.744)	0.722 (0.671, 0.773)
Functional dependency (mRS \geq 3)	0.778 (0.751, 0.805)	0.692 (0.648, 0.737)	0.712 (0.663, 0.760)
Mortality within 30 days	0.754 (0.717, 0.790)	0.701 (0.635, 0.768)	0.691 (0.629, 0.753)
Mortality within 1 year	0.776 (0.748, 0.805)	0.689 (0.630, 0.749)	0.717 (0.659, 0.775)
Mortality within 3 years	0.793 (0.764, 0.822)	0.710 (0.652, 0.767)	0.729 (0.666, 0.792)

Abbreviation: AUC, areas under the receiver operating characteristic curve; CI, confidence interval; SEN, sensitivity; SPE, specificity; mRS, modified Rankin scale.

Note: Thresholds for sensitivity and specificity shown in the table were selected based on point closest to the top-left corner of the receiver operating characteristic curve in each bootstrap sampling.