### Supplementary Table 1. Baseline variables between LVOS and non-LVOS in derivation data set.

| Items                                           | LVOs (n = 229) | Non-LVOs (n =473) | p value |
|------------------------------------------------|----------------|-------------------|---------|
| Age (years), median (IQR)                       | 66 (58-74)     | 64 (55-73)        | 0.314   |
| Male (n, %)                                     | 145 (63.3)     | 314 (66.4)        | 0.423   |
| Diabetes Mellitus (n, %)                        | 38 (16.6)      | 67 (14.2)         | 0.398   |
| Hypertension (n, %)                             | 184 (80.3)     | 383 (81.0)        | 0.844   |
| Weight (kg), median (IQR)                       | 62 (56-73)     | 65 (57-75)        | 0.916   |
| Heart rate (bpm), median (IQR)                  | 77 (70-86)     | 80 (72-90)        | 0.253   |
| SBP (mmHg), median (IQR)                        | 146 (133-164)  | 152 (140-170)     | 0.093   |
| DBP (mmHg), median (IQR)                        | 83 (74-92)     | 84 (75-100)       | 0.083   |
| Glucose (mmol/L), median (IQR)                  | 6.60 (5.70-9.12)| 7.10 (6.00-8.75)  | 0.705   |
| OTD time (min), median (IQR)                    | 246 (148-420)  | 149 (84-278)      | <0.001  |
| NIHSS, median (IQR)                             | 14 (9-18)      | 4 (2-7)           | <0.001  |
| CPSSS, median (IQR)                             | 2 (1-3)        | 0 (0-1)           | <0.001  |
| 3I-SS, median (IQR)                             | 3 (2-4)        | 1 (0-2)           | <0.001  |
| RACE, median (IQR)                              | 5 (4-7)        | 1 (0-3)           | <0.001  |
| FAST-ED, median (IQR)                           | 4 (2-5)        | 1 (0-2)           | <0.001  |
| SAFE, median (IQR)                              | 4 (2-6)        | 1 (0-2)           | <0.001  |
| Anterior circulation infarction (n, %)          | 172 (75.1)     | 389 (82.2)        | 0.027   |
| Arterial Imaging (n, %)                         |                |                   |         |
| CTA                                             | 20 (8.7)       | 31 (6.6)          | 0.574   |
| MRA                                             | 49 (21.4)      | 106 (22.4)        |         |
| MRA+ CTA                                        | 160 (69.9)     | 336 (71.0)        |         |
| Treatment strategy (n, %)                       |                |                   |         |
| IVT                                             | 21 (9.2)       | 465 (98.3)        | <0.001  |
| EVT                                             | 208 (90.8)     | 8 (1.7)           |         |
| Occlusion Vessel (n, %)                         |                |                   |         |
| ICA                                             | 46 (20.1)      |                   |         |
| ICA +MCA                                        | 32 (14.0)      |                   |         |
| M1-2                                            | 94 (41.0)      |                   |         |
| BA                                              | 57 (24.9)      |                   |         |

SBP, systolic pressure; DBP, diastolic pressure; OTD, onset-to-door time; IVT, Intravenous thrombolysis; EVT, Endovascular treatment; ICA, internal carotid artery; MCA, middle cerebral artery; BA, basilar artery.
Supplementary Table 2. Baseline variables between LVOS and non-LVOS in verification data set.

| Items                                      | LVOs (n =112) | Non-LVOs (n =239) | p value |
|--------------------------------------------|---------------|-------------------|---------|
| Age (years), median (IQR)                  | 66 (58-76)    | 65 (57-74)        | 0.426   |
| Male (n, %)                                | 72 (64.3)     | 158 (66.1)        | 0.738   |
| Diabetes Mellitus (n, %)                   | 20 (17.9)     | 42 (17.6)         | 0.948   |
| Hypertension (n, %)                        | 91 (81.3)     | 192 (80.3)        | 0.840   |
| Weight (kg), median (IQR)                  | 67 (56-76)    | 66 (60-71)        | 0.063   |
| Heart rate (bpm), median (IQR)             | 75 (67-92)    | 76 (66-86)        | 0.761   |
| SBP (mmHg), median (IQR)                   | 152 (136-176) | 148 (132-163)     | 0.826   |
| DBP (mmHg), median (IQR)                   | 81 (72-91)    | 86 (73-99)        | 0.158   |
| Glucose (mmol/L), median (IQR)             | 7.30 (6.25-9.30) | 6.80 (5.65-8.45) | 0.082   |
| OTD time (min), median (IQR)               | 240 (152-421) | 145 (85-236)      | <0.001  |
| NIHSS, median (IQR)                        | 14 (8-20)     | 4 (2-8)           | <0.001  |
| CPSSS, median (IQR)                        | 2 (1-3)       | 0 (0-1)           | <0.001  |
| 3I-SS, median (IQR)                        | 3 (2-4)       | 1 (0-2)           | <0.001  |
| RACE, median (IQR)                         | 5 (3-7)       | 1 (0-3)           | <0.001  |
| FAST-ED, median (IQR)                      | 5 (2-6)       | 1 (0-2)           | <0.001  |
| SAFE, median (IQR)                         | 4 (3-6)       | 1 (0-2)           | <0.001  |
| Anterior circulation infarction (n, %)     | 80 (71.4)     | 205 (85.8)        | 0.001   |
| Arterial Imaging (n, %)                    |               |                   |         |
| CTA                                         | 9 (8.0)       | 18 (7.5)          | 0.959   |
| MRA                                         | 23 (20.5)     | 52 (21.8)         |         |
| MRA+ CTA                                    | 80 (71.4)     | 169 (70.7)        |         |
| Treatment strategy (n, %)                  |               |                   |         |
| IVT                                         | 9 (8.0)       | 233 (97.5)        | <0.001  |
| EVT                                         | 103 (92.0)    | 6 (2.5)           |         |
| Occlusion Vessel (n, %)                     |               |                   |         |
| ICA                                         | 21 (18.8)     |                   |         |
| ICA +MCA                                    | 16 (14.3)     |                   |         |
| M1-2                                        | 43 (38.4)     |                   |         |
| BA                                         | 32 (28.6)     |                   |         |

SBP, systolic pressure; DBP, diastolic pressure; OTD, onset-to-door time; IVT, Intravenous thrombolysis; EVT, Endovascular treatment; ICA, internal carotid artery; MCA, middle cerebral artery; BA, basilar artery.
Supplementary Table 3. NIHSS items and its odds ratios regarding LVOS.

| Items                      | ORs  | 95% CI       | P value |
|----------------------------|------|--------------|---------|
| N1a. Level of consciousness| 0.939| 0.635-1.389  | 0.754   |
| N1b. Questions             | 1.604| 1.070-2.403  | 0.022   |
| N1c. Commands              | 1.128| 0.709-1.793  | 0.611   |
| N2. Gaze                   | 2.068| 1.482-2.886  | 0.000   |
| N3. Visual Fields          | 0.768| 0.403-1.460  | 0.420   |
| N4. Facial Palsy           | 1.286| 1.006-1.643  | 0.045   |
| N5a. Left motor Arm        | 1.537| 1.187-1.991  | 0.001   |
| N5b. Right motor Arm       | 1.371| 1.030-1.825  | 0.031   |
| N6a. Left motor Leg        | 1.058| 0.795-1.408  | 0.698   |
| N6b. Right motor Leg       | 1.138| 0.851-1.524  | 0.383   |
| N7. Ataxia                 | 0.938| 0.596-1.475  | 0.781   |
| N8. Sensory                | 1.003| 0.706-1.426  | 0.986   |
| N9. Language               | 1.020| 0.813-1.279  | 0.866   |
| N10. Dysarthria            | 1.142| 0.850-1.533  | 0.379   |
| N11. Extinction/Neglect    | 1.142| 0.624-2.092  | 0.666   |