

Supplementary Online Content

Adcock AK, Schwamm LH, Smith EE, et al. Trends in use, outcomes, and disparities in endovascular thrombectomy in US patients with stroke aged 80 years and older compared with younger patients. *JAMA Netw Open*. 2022;5(6):e2215869. doi:10.1001/jamanetworkopen.2022.15869

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This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1. Variables used in adjusted model

| |
|--|
| Adjusted Variables |
| Patient characteristics |
| Age (≥ 80) |
| Sex |
| Race/ethnicity |
| White, non-Hispanic |
| Black, non-Hispanic |
| Hispanic (any race) |
| Asian |
| Other |
| Patient location at onset (home, acute care facility, chronic care facility, outpatient healthcare, other) |
| Arrival by emergency medical services |
| Off-hour arrival |
| Initial NIHSS Score, (0-42) |
| Exam findings (weakness/paresis, altered level of consciousness, aphasia) |
| Ambulation status prior to admission |
| Independent |
| With assistance (from another person) |
| Unable to ambulate |
| Received tPA at EVT or outside hospital |
| Medical history |
| Atrial fibrillation/Flutter |
| Prosthetic heart valve |
| Coronary artery disease or myocardial infarction |
| Heart failure |
| Carotid stenosis |
| Peripheral vascular disease |
| Diabetes mellitus |
| Dyslipidemia |
| Hypertension |
| Smoker |
| Prior Stroke/TIA |
| Medications prior to admission |
| Anticoagulant use |
| Antiplatelet use |
| Temporal Trends |
| Indicator variables for strokes prior to 2015 |
| Interactions of age ≥ 80 stroke before 2015 |

| Hospital characteristics |
|---|
| Teaching status (academic, non-academic) |
| Stroke Center status |
| Comprehensive Stroke Center (CRC) |
| Primary Stroke Center (PSC) |
| Neither CSC or PSC |
| Number of beds |
| Annual volume of ischemic stroke admissions |
| Annual volume of IVT |
| Annual volume of EVT |
| Rural location |
| Region |
| Northeast |
| Midwest |
| South |
| West |

eTable 2. Missingness rates and imputation methods for baseline model covariates

| Variable | Overall | EVT | No EVT | Imputation Details |
|--|---------|------|--------|---|
| Patient Demographics | | | | |
| Age | 0 | 0 | 0 | N/A |
| Sex | 0 | 0 | 0 | N/A |
| Race/Ethnicity | 0 | 0 | 0 | N/A |
| Health Insurance Status | 0 | 0 | 0 | N/A |
| Year of Stroke Admission | 0 | 0 | 0 | N/A |
| Medical History | | | | |
| Ambulatory status prior to the current event | 29.2 | 24.9 | 29.9 | Missing/ND treated as a new category. |
| Arrival Information | | | | |
| Ambulatory status on Admission | 46.5 | 46.3 | 46.5 | Missing/ND treated as a new category. |
| Patient location when stroke symptoms discovered | 0.7 | 0.8 | 0.7 | Missing treated as Not in a healthcare setting. |
| Arrival Mode: EMS | 1.7 | 0.2 | 2.0 | Missing treated as No. |
| Off-Hour Arrival* | 0 | 0 | 0 | N/A |
| Initial NIHSS Score (0-42) | 0 | 0 | 0 | N/A |
| Medications Prior to Admission | | | | |
| Antiplatelets | 12.1 | 12.6 | 12.0 | Missing/ND treated as a new category. |
| Anticoagulants | 40.0 | 29.3 | 41.8 | Missing/ND treated as a new category. |
| Initial exam findings | 33.0 | 30.7 | 33.3 | Added an indicator variable for missing/ND. |
| Reperfusion | | | | |
| IV t-PA at this hospital or at an outside hospital | 0.0 | 0.0 | 0.0 | Missing rate <.05, missing treated as No. |
| Hospital Characteristics | | | | |
| Number of Beds | 0 | 0 | 0 | N/A |
| Rural Location | 0 | 0 | 0 | N/A |
| Stroke Center Status | 0 | 0 | 0 | N/A |
| Academic Hospital | 0 | 0 | 0 | N/A |
| Region | 0 | 0 | 0 | N/A |
| Annual Volume of IS Admissions | 0 | 0 | 0 | N/A |
| Annual Volume of IV t-PA | 0 | 0 | 0 | N/A |
| Annual Volume of EVT | 0 | 0 | 0 | N/A |

*Regular Hour: 7A-6P, M-F, non-holiday)

eTable 3. Clinical efficacy and safety outcomes in younger (age under 80) patients with stroke who underwent EVT before 2015 and after 2015

| | Before 2015 | After 2015 | P value |
|---------------------------------------|--------------|--------------|---------|
| Efficacy | | | |
| Independent ambulation at discharge | 1,140 (30.8) | 9,076 (37.1) | <.0001 |
| Discharged home | 1,096 (27.3) | 8,126 (31.7) | <.0001 |
| mRS 0-2 at discharge | 606 (21.5) | 5,248 (27.3) | <.0001 |
| Safety | | | |
| In-hospital mortality | 471 (16.7) | 2,653 (13.8) | 0.0005 |
| In-hospital mortality or hospice care | 666 (16.6) | 4,114 (16.0) | 0.37 |
| Symptomatic intracranial hemorrhage | 252 (6.3) | 1,589 (6.3) | 0.99 |

eTable 4. Clinical efficacy and safety outcomes in patients aged 80 years and older with stroke who underwent EVT before 2015 and after 2015

| | Before 2015 | After 2015 | P value |
|---------------------------------------|-------------|-------------|---------|
| Efficacy | | | |
| Independent ambulation at discharge | 186 (14.4) | 1963 (18.3) | 0.004 |
| Discharged home | 158 (11.2) | 1433 (12.6) | 0.13 |
| mRS 0-2 at discharge | 104 (10.3) | 928 (11.0) | 0.52 |
| Safety | | | |
| In-hospital mortality | 270 (26.9) | 1848 (21.9) | 0.0005 |
| In-hospital mortality or hospice care | 470 (33.3) | 3938 (34.7) | 0.31 |
| Symptomatic intracranial hemorrhage | 104 (7.4) | 754 (6.8) | 0.41 |

eTable 5. Primary model results after inverse probability weighting adjustment for missing data.

| <i>outcome</i> | <i>Label</i> | <i>UORCI</i> | <i>P</i> | <i>AORCI</i> | <i>P</i> |
|--|-----------------|--------------------|----------|-------------------|----------|
| O1: Discharged Home | Age >=80 vs <80 | 0.25 (0.13, 0.46) | <.0001 | 0.30 (0.20, 0.46) | <.0001 |
| O2: Independent ambulation at discharge (among discharged alive patients) | Age >=80 vs <80 | 0.42 (0.30, 0.60) | <.0001 | 0.53 (0.38, 0.74) | 0.0002 |
| O5: mRS at discharge (0-2) | Age >=80 vs <80 | 0.30 (0.20, 0.45) | <.0001 | 0.45 (0.35, 0.58) | <.0001 |
| O4: Symptomatic intracranial hemorrhage | Age >=80 vs <80 | 3.28 (1.56, 6.92) | 0.0018 | 1.93 (1.24, 3.02) | 0.0038 |
| O3: In-hospital mortality/Discharged to Hospice | Age >=80 vs <80 | 5.38 (2.35, 12.29) | <.0001 | 3.96 (2.27, 6.90) | <.0001 |

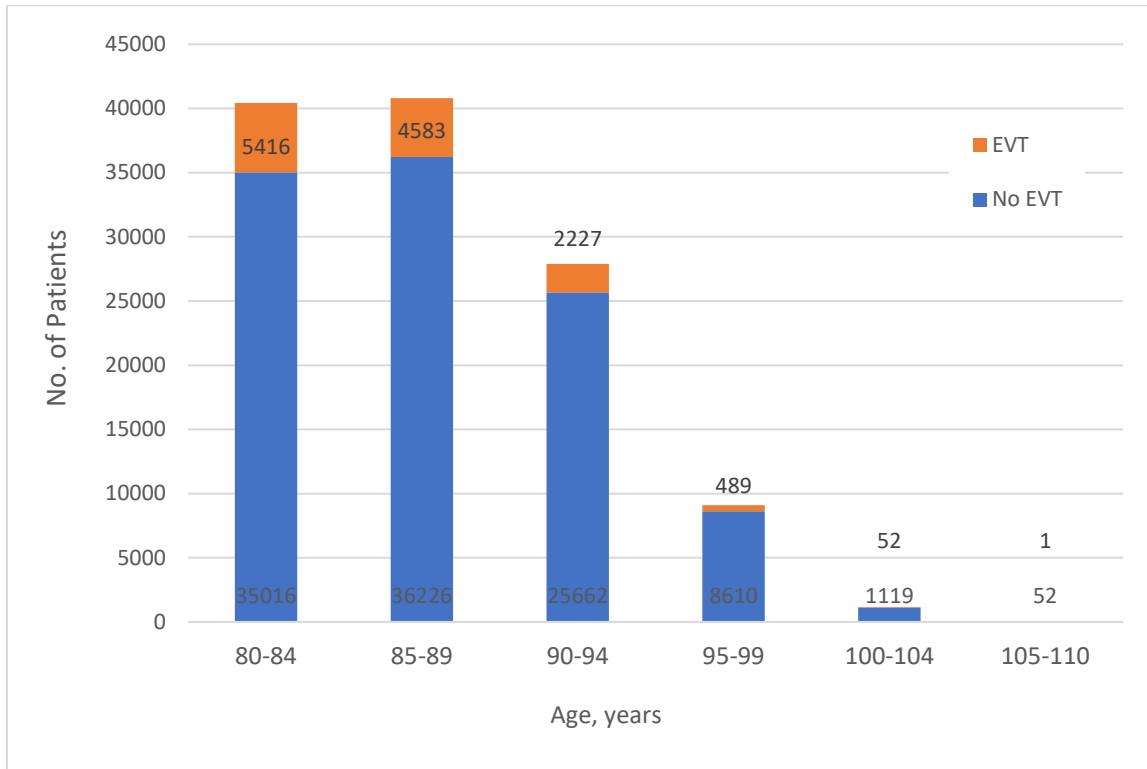
eTable 6. Predictors of favorable and unfavorable outcomes on multivariate analysis among EVT patients aged 80 years and older

| Variable | OR |
|--------------------------------|-------------------|
| Age, every 5-year increase | 0.47 (0.43, 0.51) |
| Female | 0.90 (0.83, 0.98) |
| Black | 1.27 (1.09, 1.47) |
| Hispanic (any race) | 1.23 (1.02, 1.49) |
| White | Reference |
| Another acute care facility | 0.76 (0.61, 0.94) |
| Chronic health care facility | 0.26 (0.21, 0.32) |
| Not in a healthcare setting | Reference |
| Able to ambulate independently | 1.69 (1.19, 2.40) |
| Able to ambulate independently | 1.54 (1.19, 1.99) |
| With assistance (from person) | 2.02 (1.71, 2.40) |
| Previous Stroke/TIA | 0.84 (0.76, 0.92) |
| Previous MI/CAD | 0.88 (0.80, 0.96) |
| Diabetes Mellitus | 0.72 (0.66, 0.79) |
| NIHSS, every 5-point increase | 0.72 (0.69, 0.74) |
| Received IV tPA | 1.13 (1.04, 1.24) |
| Altered level of consciousness | 0.74 (0.67, 0.82) |
| Aphasia | 1.29 (1.13, 1.47) |
| Western Region | 0.74 (0.61, 0.91) |
| Northeast | Reference |

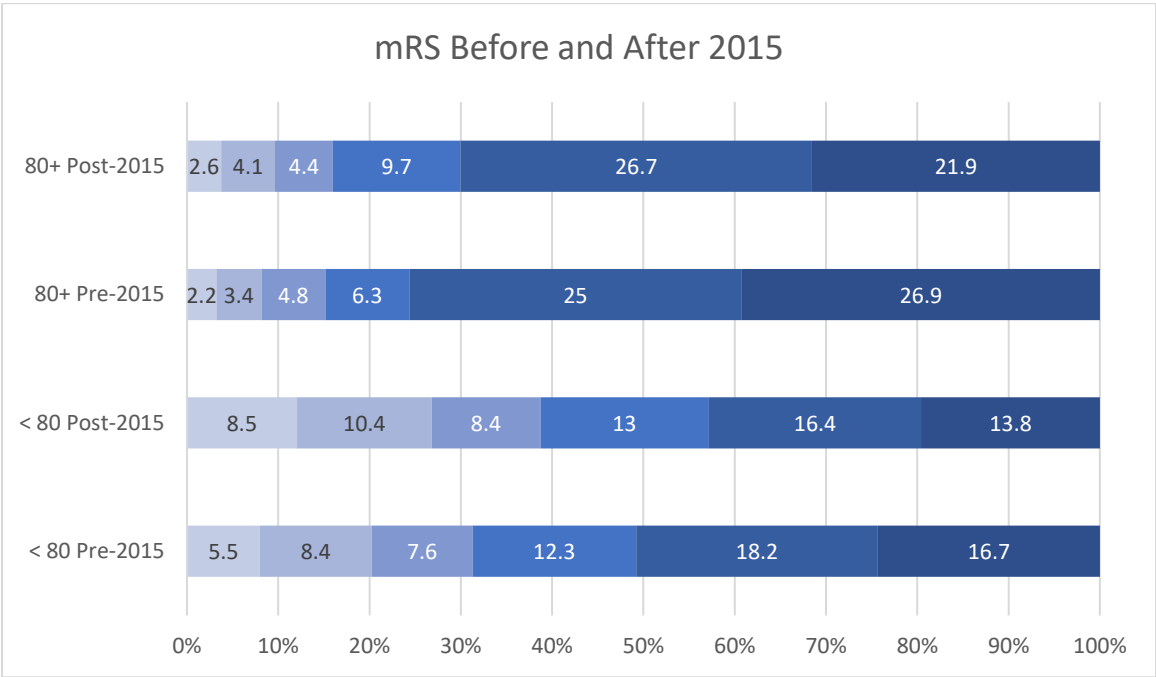
eTable 7. Reperfusion status and clinical outcome as a function of age.

| Age | Successful Reperfusion (mTICI 2b-3) | N | mRS at discharge (0-2) n/N (%) | | | In-hospital mortality/ Discharged to Hospice n/N (%) | | |
|------------------------|-------------------------------------|-------|-----------------------------------|-------|-------|--|-------|-------|
| | | | 0 | 1 | 2 | 0 | 1 | 2 |
| EVT patients age 18-79 | 1 = Yes | 19185 | 4472 | 14735 | 30.35 | 2624 | 19185 | 13.68 |
| EVT patients age 18-79 | 0 = No | 2521 | 148 | 1916 | 7.72 | 772 | 2521 | 30.62 |
| EVT patients age 80+ | 1 = Yes | 8115 | 786 | 6176 | 12.73 | 2410 | 8115 | 29.70 |
| EVT patients age 80+ | 0 = No | 1270 | 21 | 942 | 2.23 | 773 | 1270 | 60.87 |

eFigure 1. Histogram chart of number of patients aged 80 years and older treated with and without EVT in 5-year age intervals



eFigure 2. Distribution of mRS global disability scores at discharge among EVT patients aged 80 years and older and younger than 80 years before 2015 and after 2015.



eFigure 3. Distribution of mRS global disability scores at discharge in EVT patients aged 90 years and older.

