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| TABLE 1. | SELECTED ELIGIBILITY CRITERIA FOR RECENT RANDOMIZED, CLINICAL TRIALS OF ENDOVASCULAR TREATMENTS FOR ACUTE ISCHEMIC STROKE | | | | | | | | | | |
|  | **Treatment Groups** | **Eligibility** | | | | | | | | | |
| Study | Active vs Control | IV r-tPA Eligible | Age, y | Time | Territory | NIHSS Score | Prestroke Function | Anticoagulationor Coagulopathy | ASPECTS | Vascular Imaging | Other Imaging |
| SYNTHESIS Expansion | IA drug/any device/both vs IV r-tPA | Required | 18–80 | 6 h to IAT | Any | ≤25 | mRS score  0–1 | Exclusion criteria | No | No | No |
| IMS III | 2/3 standard-dose IV r-tPA+IA drug/any device/both vs IV r-tPA | Required, ≤3 h | 18–82 | 5 h to IAT | Any | ≥10 or 8–9 with occlusion | mRS score  0–2 | Exclusion criteria | >4 | No | >1/3 MCA excluded |
| MR RESCUE | Standard (±IV r-tPA)+MERCI or Penumbra vs standard (±IV r-tPA) | Not required | 18–85 | 8 h to IAT Stop by 9 h | Anterior circulation | 6–29 | mRS score  0–2 | Exclusion criteria | No | CTA, MRA | Multimodal CT/MR for stratification |
| MR CLEAN | Standard (±IV r-tPA)+IA UK, r-tPA, device vs standard (±IV r-tPA) | Not required | >18 | 6 h to IAT | Anterior circulation | >2 | None | Exclusion criteria | No | CTA, MRA, DSA |  |
| ESCAPE | Standard (±IV r-tPA)+stent retriever “recommended” vs standard (±IV r-tPA) | Not required | >18 | 12 h to randomization | ICA/MCA | >5 | Barthel score ≥90 | No exclusion criteria | ≥6 | CTA | Multiphase CTA or CT perfusion for detection of core size and collaterals |
| SWIFT PRIME | Standard (±IV r-tPA)+stent retriever vs standard (±IV r-tPA) | Required | 18–80 | 6 h to groin | ICA/M1 | 8–29 | mRS score  0–1 | Exclusion criteria | ≥6 | CTA, MRA | CTP also used in most cases |
| EXTEND-IA | Standard (±IV r-tPA)+stent retriever vs standard (±IV r-tPA) | Required | ≥18 | 6 h to groin Complete in 8 h | Anterior circulation | None | mRS score  0–1 | Exclusion criteria | No | CTA, MRA | CT/MRI mismatch |
| REVASCAT | Standard (±IV r-tPA)+stent retriever vs standard (±IV r-tPA) | Not required | 18–80 (85) | 8 h to groin | ICA/M1 | ≥6 | mRS score  0–1 | Exclusion criteria | ≥7 (noncontrast CT) ≥6 (MRI-DWI) ≥8 (age >81–85 y) | CTA, MRA, DSA | CT perfusion, CTA source, or MRI-DWI required if >4.5 h |
| THRACE | Standard (±IV r-tPA)+stent retriever vs standard (±IV r-tPA) | Required | 18-80 | 5 hours to IAT | ICA/M1/Superior 3rd of Basilar | 10-25 | None | Exclusion Criteria | No | CTA, MRA | No |
| ADAPT vs Stent Retriever | Standard (±IV r-tPA)+stent retriever vs Standard (±IV r-tPA)+ADAPT | Not Required | None | 6 hours to IAT | ICA/MCA | None | None | No Exclusion Criteria | No | No |  |
| THERAPY | Standard (±IV r-tPA)+stent retriever vs standard (±IV r-tPA) | Required | 18 - 85 | 4.5 hours | Anterior (ICA, M1, M2) | ≥8 | mRS Score  0-1 | No Exclusion Criteria | No | CTA | CTA confirmed large vessel occlusion with a clot length ≥ 8mm |

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| TABLE.2 | SELECTED PATIENT CHARACTERISTICS FOR RECENT RANDOMIZED, CLINICAL TRIALS OF ENDOVASCULAR TREATMENTS FOR ACUTE | | | | | | | | | | | |
| Participants (Active/Control) | | | | | | | | | | | | |
| Study | n | Age, Mean±SD (IQR), y | NIHSS Score, Median (IQR) [Range] | Territory, % | ASPECTS, Median (IQR) | Device Deployment in Active Group | Emergent Carotid Stenting, % (n) | General Anesthesia, % (n) | Onset to IV r-tPA, Mean±SD, Median (IQR), min | Time Onset to Groin Puncture, Mean±SD, Median (IQR), min | TICI Grade 2b/3 Recanalization, % | Time to Reperfusion Mean±SD, Median (IQR), min |
| SYNTHESIS Expansion | 181/181 | 66±11/67±11 | 13 (9–17)/13 (9–18) | 88/94 anterior |  | 91% IA r-tPA alone 66% Device added 34% 14% stent retriever | Not Available | 12.15% (n=22) - for treatment group | 165 (140–200) | 225 (194–260) to clot |  |  |
| IMS III | 434/222 | 69/68 | 17 [7–40]/16 [8–30] | 97/97 anterior (clinical) | 56.9%/59.0% (8–10) | 77% 41% IA r-tPA 38% IAr-tPA+device 21% device only 1.5% stent retriever | Not Available | Not Available | 122±34/121±34 | 208±47 | 41 | 325±52 |
| MR RESCUE | 64/54 | 66±15 | 17 (13–21) | ICA 20/13 M1 61/72 M2 19/15 |  | 95% 58% MERCI 22% Penumbra 16% both | Not Available | Not Available |  | 381±74 | 27 |  |
| MR CLEAN | 233/267 | 66 (55–76)/66 (56–76) | 17 (14–21) [3–30]/18 (14–22) [4–38] | IC ICA 0.4/1.1 ICA+M1 25.3/28.2 M1 66.1/62.0 M2 7.7/7.9 A1/A2 0.4/0.8 | 9 (7–10)/9 (8–10) | 83.7% 81.5% stent retriever IAT 21% | 12.9% (n = 30) - for treatment group | 37.8% (n=88) - for treatment group | 85 (67–110)/87 (65–116) | 260 (210–313) | 59 | 332 (279–394) |
| ESCAPE | 165/150 | 71 (60–81)/70 (60–81) | 16 (13–20)/17 (12–20) | ICA+M1 27.6/26.5 M1/all M2 68.1/71.4 M2 3.7/2.0 | 9 (8–10)/9 (8–10) | 91.5% 72.7% stent retriever | Not available | 9.1% (n=15) - for treatment group | 110 (80–142) / 125 (89–183) |  | 72.4 |  |
| SWIFT PRIME | 98/98 | 65±13/66±11 | 17 (13–20)/17 (13–19) | ICA 18.3/16.0 M1 67/77 M2 14/6 | 9 (7–10)/9 (8–10) | 88.8% All stent retriever | 1.02% - 1 patient ultimately not treated | 37% (n=36) for treatment group | 110.5 (85–156) / 117 (80–155) | 224 (165–275) | 88 |  |
| EXTEND-IA | 35/35 | 69±12//70±12 | 17 (13–20)/13 (9–19) | ICA 31/31 M1 57/51 M2 11/17 |  | 77% All stent retriever | 8.6% (n = 3) for treatment group | Not Available | 127 (93–162) / 145 (105–180) | 210 (166–251) | 86 | 248 (204–277) |
| REVASCAT | 103/103 | 66±11/67±10 | 17 (14–20)/17 (12–19) | ICA 0/1 ICA+M1 26/27 M1 65/64 M2 10/8 | 7 (6–9)/8 (6–9) | 95% All stent retriever | 8.7% (n = 9) | 6.7% (n=7) for treatment group | 118 (90–150)/105 (86–138) | 269 (201–340) | 66 | 355 (269–430) |
| THRACE | 204/208 | 66 (54–74)/68 (54–75) | 18 (15–21)/17 (13–20) | ICA 12/19, M1 (86/79), TB 1/1, M2 0/1 | 0-4 (11/17), 5-7 (41/26), 8-10 (48/57) | 69% overall Deployment in active group - 83% Stent Retriever, 16% Aspiration Systems | Not Available | 49% (n = 69) for treatment group | 150 (120–178)/153 (124–180) | 250 (210–290§) | 69 (in active group who underwent thrombectomy) | Not Available |
| ADAPT vs Stent Retriever | 124/119 | 64.3±15.7/65.5±14.7 | 15.9±6.5/15.9±6.1 | ICA±MCA(30.7/26.9), MCA Alone (69.3/73.1) | 9 (8-10)/8 (7-10) | 100% device deployment in active group (ADAPT) - however 38.7% use of adjunctive device in active group | Not Available | Not Available | Not Available | 247 (206-308)/235 (181-300) | 82.3% (in ADAPT group) | Not Available |
| THERAPY | 55/53 | 67.4±11.4/70.1±10.3 | 17 (13-22)/18 (14-22) | ICA (32.7/22.6), M1 (56.4/67.9), M2 (10.9/9.4) | 7.5 (6 - 9)/8.0 (7 - 9) | 100% device deployment in active group - Penumbra devices used: 54% Separator, 25% Separator 3D, 27% ACE, 0% ACE64, 13% Other | Not Available | Not Available | 108 (86-138)/102 (80-154) | 226 (184 - 263) | 70% after Penumbra System alone, 86% after Penumbra System + Additional Treatment | Not available |

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| TABLE 3A | CLINICAL OUTCOMES FOR RECENT RANDOMIZED, CLINICAL TRIALS OF ENDOVASCULAR TREATMENTS FOR ACUTE ISCHEMIC STROKE | | | | | | | | | | | | | | | |
|  | **Primary End Point** | | | | **Death (90 d/3 mo)** | | | | **Symptomatic ICH** | | | | **mRS 0 to 2 at 90 d** | | |
|  |  | Active, % | Control, % | Comparison | Active, % | | Control, % | Comparison | Time | Active, % | Control,% | Comparison | Active, % | Control, % | Comparison |
| Study |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |
| SYNTHESIS Expansion | mRS 0 to 1 at 3 mo | 30.4 | 34.8 | 0.71 (0.44 to 1.14)\* | 14.4 | | 9.9 | P=0.22 | 7 d | 6 | 6 | P=0.53 | 42.0 | 46.4 |  |
| IMS III | mRS 0 to 2 at 90 d | 40.8 | 38.7 | 1.5 (−6 to 9)† | 19.1 | | 21.6 | P=0.52 | 30 h | 6.2 | 5.9 | P=0.83 | 40.8 | 38.7 | 1.5 (−6 to 9)† |
| MR RESCUE | Mean mRS | 3.9 | 3.9 | P=0.99 | 19 | | 24 | P=0.75 | 7 d | 5 | 4 | P=0.24 | 19 | 20 |  |
| MR CLEAN | Improvement in mRS at 90 d (shift analysis) |  |  | 1.67 (1.21 to 2.3)\* | 21 | | 22 |  | 90 d | 7.7 | 6.4 |  | 32.6 | 19.1 | 2.16 (1.39 to 3.38)\* |
| ESCAPE | improvementmRS at 90 d (shift analysis) |  |  | 3.1 (2.0 to 4.7)\* | | 10.4 | 19 | 0.5 (0.3 to 0.8)§ | 90 d | 3.6 | 2.7 | 1.2 (0.3 to 4.6)§ | 53 | 29.3 | 1.7 (1.3 to 2.2)§ |
| SWIFT PRIME | Improvement in mRS at 90 d |  |  | P<0.001 | | 9 | 12 | 0.74 (0.33 to 1.68)# | 27 h | 0 | 3 |  | 60 | 35 | 1.7 (1.23 to 2.33)# |
| EXTEND-IA | Median reperfusion at 24 h | 100 | 37 | 4.7 (2.5 to 9.0)\* | | 9 | 20 | 0.45 (0.1 to 2.1)\* | 36 h | 0 | 6 | −6 (−13 to 2) | 71 | 40 | 4.2 (1.4 to 12)\* |
|  | Decrease in NIHSS 8 or NIHSS 0, 1 at 3 d | 80 | 37 | 6 (2.0 to 18.0)\* | |  |  |  |  |  |  |  |  |  |  |
| REVASCAT | Improvement in mRS at 90 d |  |  | 1.7 (1.05 to 2.8)\* | | 18 | 16 | 1.2 (0.6 to 2.2)†† | 90 d | 2 | 2 | 1 (0.1 to7.0)†† | 43.7 | 28.2 | 2.1 (1.1 to 4.0)║║ |
|  | 5 and 6 combined (shift analysis) |  |  |  | |  |  |  |  |  |  |  |  |  |  |
| THRACE | mRS 0 to 2 at 90 d | 53 | 42 | 1.55 (1.05–2.30) P = 0.028 | | 12 | 13 | 0.81 (0.53–1.24) P = 0.70 | 24 h | 2 | 2 | 1.39 (0.31–6.31) P = 0.71 | 53 | 42 | 1.55 (1.05–2.30) P = 0.028 |
| ADAPT vs Stent Retriever | Complete Recanalization (Modified TICI ≥ 2b) | 82.3 | 68.9 | 1.19 (1.03 - 1.38) p = 0.015 | | 22.6 | 17.4 | 1.30 (0.77 - 2.19) p = 0.32) | 24 h | 2.4 | 5.9 |  | 53 | 54.8 | 0.97 (0.76 - 1.23) P = 0.79 |
| THERAPY | mRS 0 to 2 at 90 days | 38% | 30% | p = 0.52 | | 12 | 23.9 | p = 0.18 |  | 9.3 | 11.3 | p = 1 | 38% | 30% | p = 0.52 |

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| TABLE 3B | CLINICAL OUTCOMES FOR RECENT RANDOMIZED, CLINICAL TRIALS OF ENDOVASCULAR TREATMENTS FOR ACUTE ISCHEMIC STROKE | | | | | | | | | | | | | | | | | |
|  | IV r-tPA Subgroups | | | Time Subgroups | | | ASPECTS Subgroups | | | NIHSS Subgroups | | | Age Subgroups | | | Vessel Subgroups | | |
| Study | IV r-tPA | n | Comparison | Time | n | Comparison | ASPECTS | n | Comparison | NIHSS | n | Comparison | Age, y | n | Comparison | Vessel | n | Comparison |
| SYNTHESIS Expansion | None |  |  | 0 to 3 h to treatment | 161 | 0.79 (0.33 to 1.88)\* |  |  |  | <11 | 129 | 0.57 (0.27 to 1.2)\* | ≤67 | 153 | 1.13 (0.54 to 2.37)\* | Anterior | 330 | 0.77 (0.47 to 1.27)\* |
|  |  |  |  | 3 to 4.5 h | 156 | 0.88 (0.4 to 1.92)\* |  |  |  | ≥11 | 233 | 0.82 (0.43 to 1.57)\* | >67 | 209 | 0.52 (0.27 to 1.10)\* | Posterior | 29 | 0.35 (0.05 to 2.56)\* |
|  |  |  |  | >4.5 h | 28 | 0 .78 (0.03 to 22.1)\* |  |  |  |  |  |  |  |  |  |  |  |  |
| IMS III | All |  |  | ≤120 min to IV r-tPA | 345 | 1.24 (0.88 to 1.74)‡ | 8 to 10 | 378 | 1.03 (0.79 to 1.34)‡ | 8 to 19 | 452 | 1.01 (0.78 to 1.31)‡ | 18–65 | 270 | 1.07 (0.7 to 1.48)‡ | ICA, M1, or basilar | 220 | 1.05 (0.67 to 1.64)‡ |
|  |  |  |  | >120 min | 310 | 0.88 (0.6 to 1.24)‡ | 0 to 7 | 271 | 1.12 (0.67 to 1.87)‡ | ≥20 | 204 | 1.37 (0.63 to 2.99)‡ | ≥66 | 386 | 1.1 (0.69 to 1.5)‡ |  |  |  |
| MR RESCUE | Yes | 445 | 1.71 (1.22 to 2.40)\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| MR CLEAN | No | 55 | 2.06 (0.69 to 6.13)\* | <120 min to randomization | 51 | 1.57 (0.51 to 4.85)\* | 8 to 10 | 376 | 1.61 (1.11 to 2.34)\* | 2 to 15 | 164 | 1.71 (0.96 to 3.02)\* | <80 | 419 | 1.6 (1.13 to 2.28)\* | ICA T | 134 | 2.43 (1.24 to 4.77)\* |
|  |  |  |  | ≥120 min | 449 | 1.69 (1.21 to 2.38)\* | 5 to 7 | 92 | 1.97 (0.89 to 4.35)\* | 16 to 19 | 153 | 1.5 (0.84 to 2.67)\* | ≥80 | 81 | 3.24 (1.22 to 8.62)\* | No ICA T | 366 | 1.61 (1.11 to 2.33)\* |
|  |  |  |  |  |  |  | 0 to 4 | 28 | 1.09 (0.14 to 8.46)\* | ≥20 | 183 | 1.85 (1.06 to 3.21)\* |  |  |  | EC ICA | 146 | 1.43 (0.78 to 2.64)\* |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | NO EC ICA | 354 | 1.85 (1.26 to 2.72)\* |
| ESCAPE | Yes | 238 | 2.5 (1.6 to 4.0)║║ | ≤180 min to randomization |  | 2.6 (1.5 to 4.5)║║ | 8 to 10 |  | 2.6 (1.7 to 4.1)║║ | 6 to 19 |  | 2.6 (1.6 to 4.2)║║ | ≤80 |  | 2.7 (1.7 to 4.3)║║ | ICA+ |  | 2.6 (1.2 to 5.9)║║ |
|  | No | 77 | 2.6 (1.1 to 5.9)║║ | >180 min |  | 2.5 (1.4 to 4.5)║║ | <8 |  | 2.7 (1.0 to 7.2)║║ | >19 |  | 2.4 (1.1 to 5.3)║║ | >80 |  | 3 (1.3 to 6.8)║║ | No ICA |  | 2.7 (1.7 to 4.4)║║ |
|  |  |  |  | >6 h | 49 | 1.7 (0.7 to 4.0) |  |  |  |  |  |  |  |  |  |  |  |  |
| SWIFT-PRIME | All |  |  | <189 min to randomization | 96 | 1.62 (1.08 to 2.42)\*\* | 8 to 10 | 142 | 1.62 (1.17 to 2.24)\*\* | ≤17 | 110 | 1.49 (1.05 to 2.11)\*\* | <70 | 106 | 1.67 (1.13 to 2.47)\*\* | ICA | 30 | 2.04 (0.67 to 6.21)\*\* |
|  |  |  |  | ≥189 min | 94 | 1.77 (1.07 to 2.93)\*\* | 6 to 7 | 43 | 1.98 (0.73 to 5.33)\*\* | >17 | 80 | 2.21 (1.17 to 4.19)\*\* | ≥70 | 83 | 1.78 (1.03 to 3.09)\*\* | M1 | 133 | 1.74 (1.23 to 2.46)\*\* |
| EXTEND-IA | All |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| REVASCAT | Yes | 150 | 1.4 (0.8 to 2.6)║║ | ≤4.5 h to randomization | 135 | 1.8 (1.0 to 3.4)║║ | ≥8 | 105 | 2.2 (1.1 to 4.4)║║ | 6 to 16 | 92 | 1.5 (0.7 to 3.1)║║ | <70 | 121 | 2.5 (1.3 to 4.6)║║ | M1 | 135 | 1.2 (0.7 to 2.2)║║ |
|  | No | 56 | 2.7 (1.0 to 7.1)║║ | >4.5 h | 71 | 1.4 (0.6 to 3.3)║║ | <8 | 101 | 1.4 (0.7 to 2.9)║║ | ≥17 | 114 | 2 (1.0 to 4.0)║║ | ≥70 | 85 | 0.9 (0.4 to 2.0)║║ |  |  |  |
| THRACE | All |  |  | <180 min | 232 | 1.35 (1.03 - 1.76)║║ | 8 to 10 (MRI) | 123 | 1.25 (0.63 - 3.02)║║ | <20 | 266 | 1.29 (1.04 - 1.62)║║ | < 70 | 239 | 1.23 (0.97 - 1.55)║║ | ICA | 62 | 1.58 (0.63 - 3.95)║║ |
|  |  |  |  | ≥180 min | 166 | 1.35 (1.03 - 1.76)║║ | 5 to 7 (MRI) | 114 | 1.14 (0.80 - 1.64)║║ | ≥20 | 132 | 1.26 (0.78 - 2.03)║║ | 70 -80 | 163 | 1.32 (0.87 - 1.99)║║ | M1 | 333 | 1.15 (0.94 - 1.42)║║ |
| ADAPT vs. Stent Retriever |  |  |  |  |  |  | 0 to 4 (MRI) | 56 | 1.37 (0.92 - 1.69)║║ |  |  |  |  |  |  |  |  |  |
| THERAPY | All |  |  |  |  |  | 0 to 4 | 7 |  | <20 | 57 |  | < 65 | 28 |  | ICA | 25 |  |
|  |  |  |  |  |  |  | 5 to 10 | 88 |  | ≥20 | 39 |  | ≥ 65 | 68 |  | M1 | 62 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M2 | 9 |  |