IV Thrombolysis Update 2026
The Extended Window

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May 11, 2026

Disclosures

I have no financial relationships with the developers of any of the products discussed.

Clinical Trials and Studies

- StrokeNET - NINDS
- ASPIRE - NINDS
- DISCOVERY - NINDS
- CAPTIVA – NINDS
- STEP – NINDS
- CLARITY – NINDS
- PICASSO – Mercy Health Ohio

Wake-up Strokes within 4.5 of discovery…

4.6.3. Extended Time Windows for Intravenous Thrombolysis

Recommendations for Extended Time Windows for Intravenous Thrombolysis
Referenced studies that support the recommendations are summarized in the online data supplement.

COR	LOE	Recommendations
2a	B-R	1. In patients with AIS who (a) have unknown time of onset and are within 4.5 hours from symptom recognition and (b) have an MRI-DWI lesion smaller than one-third of the MCA territory and no marked signal change on FLAIR, IVT administered within 4.5 hours of stroke symptom recognition can be beneficial to improve functional outcomes.[1]

Prabhakaran S. Stroke 2026;57:e44

The extended window 4.5 – 9 hr; 4.5 – 24 hr…

Recommendations for Extended Time Windows for Intravenous Thrombolysis (Continued)		
COR	**LOE**	**Recommendations**
2a	**B-R**	2. In patients with AIS who have salvageable ischemic penumbra detected on automated perfusion imaging and who (a) awake with stroke symptoms within 9 hours from the midpoint of sleep or (b) are 4.5–9 hours from last known well, IV thrombolysis may be reasonable to improve functional outcomes.[2,3]
2b	**B-R**	3. In patients with AIS due to LVO with salvageable ischemic penumbra, presenting within 4.5 to 24 hours from symptom onset or last known well, and who cannot receive EVT, treatment with IVT directed by individuals with expertise in thrombolytic stroke care may be beneficial to improve functional outcomes.[2–5]

Prabhakaran S. Stroke 2026;57:e44

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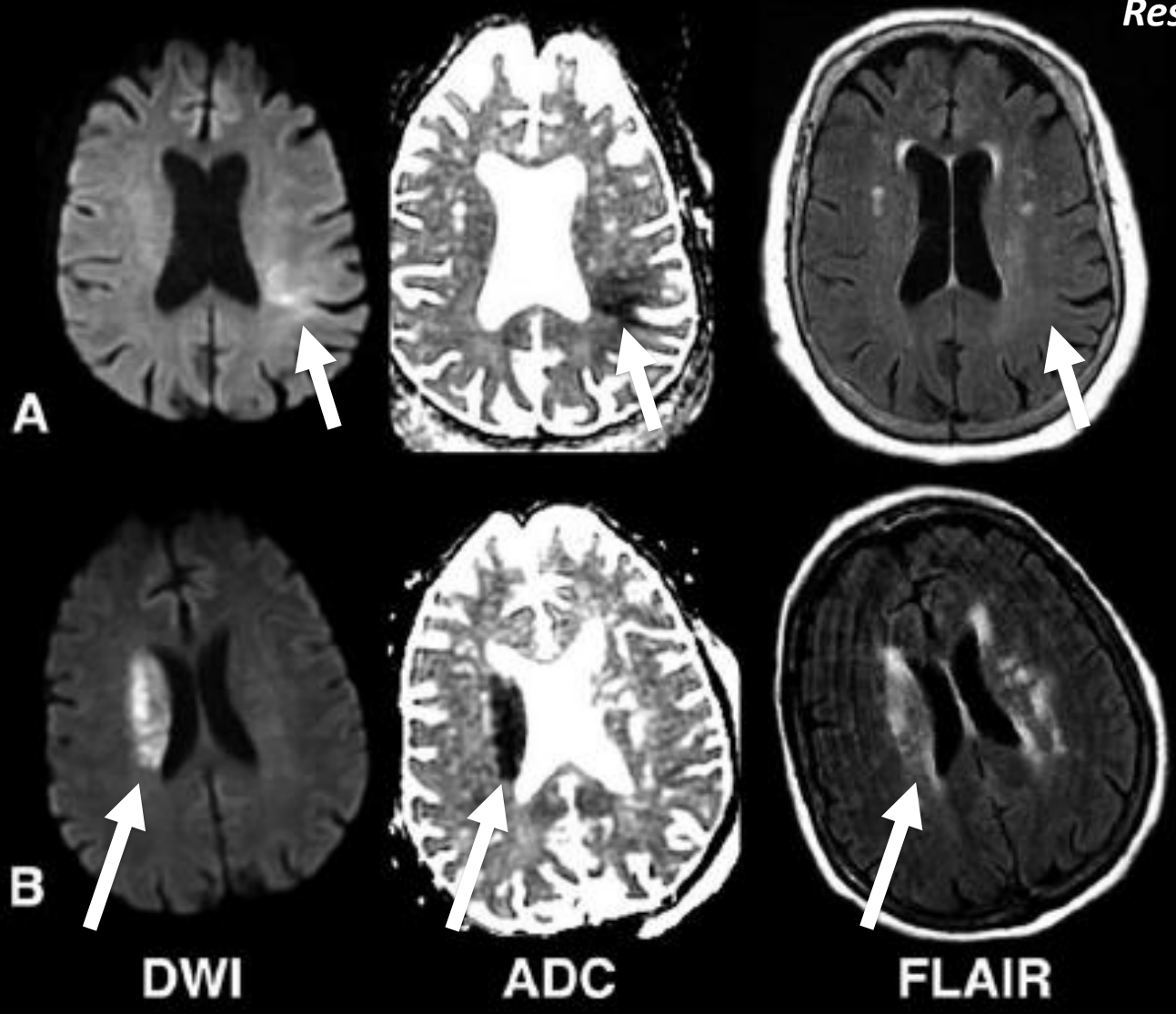
No change from 2019

Prabhakaran S. Stroke 2026;57:e44

MR WITNESS

Safety trial: sICH < 5.3%
Result: sICH 1.3%



enrolled

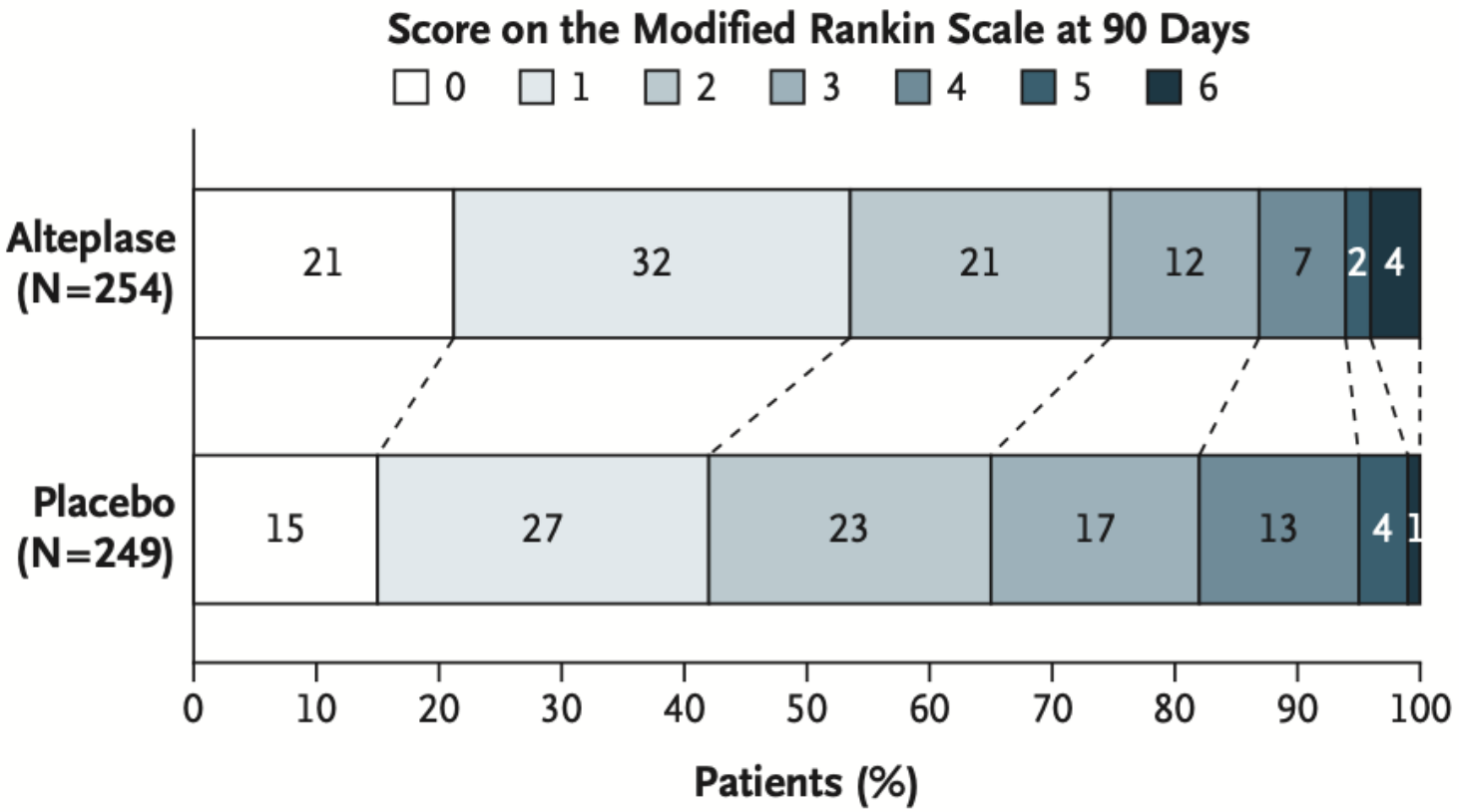
excluded

Schwamm LR. Ann Neurol 2018;83:980-93

WAKE-UP 2018

- **Patients: NIHSS ≤ 25; N = 503 (254 v 249)**
- **LVO/EVT: no LVO if planned EVT**
- **Window: recognition of stroke symptoms within 4.5 hr of treatment**
- **Imaging: DWI, FLAIR, SWI*, TOF MRA; positive DWI with "no [clearly] visible change in FLAIR" corresponding; excluded if > 1/3 MCA territory on DWI or hemorrhage**
- **Randomization: ALT v BMT**
- **Outcome: better 90-d mRS with ALT (mRS 0-1: ALT 53.3% v BMT 41.8%; OR 1.61; P = 0.02)**
- **Safety: more sICH (PH2): ALT 4.0% v BMT 0.4%; aRR 10.46; CI 1.32-82.77; p = 0.03)**

WAKE-UP



Thomalla NEJM 2018;379(7):611-22

THAWS 2020

- **Patients: N = 131 (68 v 58)**
- **LVO: no LVO if planned EVT**

Stopped early for lack of equipoise after publication of WAKE-UP

- **Window: recognition of stroke symptoms within 4.5 hr of treatment; LKW < 12 hr before treatment**
- **Imaging: DWI, FLAIR, SWI*, TOF MRA; positive DWI with no corresponding FLAIR; ASPECTS ≥ 5**
- **Randomization: ALT (0.6 mg/kg) v BMT**
- **Outcome: no benefit in 90-d mRS with ALT (mRS 0-1: ALT 47.1% v BMT 48.3%; RR 0.97; P = 0.892)**
- **Safety: sICH: ALT 1.4% v BMT 0; death at 90 d: 0.03% v 2.8% v 3.3%; NS**

Koga M. Stroke 2020;51(5):1530-8

TWIST 2023

- **Patients: N = 578 (288 v 290); NIHSS ≥ 3 or aphasia**
- **LVO/EVT: not assessed/no EVT**
- **Window: recognition of stroke symptoms within 4.5 hr of treatment**
- **Imaging: NCCT: excluding ICH and early infarct changes in > 1/3 MCA territory**
- **Randomization: TNK v BMT**
- **Outcome: functional mRS: aOR 1.18; 95%CI 0.88-1.58, p = 0.27**
- **Safety: no difference in sICH or death**

Roaldsen MB Lancet Neurol 2023;22:117-26

Wake-up Strokes within 4.5 of discovery…

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Prabhakaran S. Stroke 2026;57:e44

The extended window 4.5 – 9 hr; 4.5 – 24 hr…

Recommendations for Extended Time Windows for Intravenous Thrombolysis (Continued)		
COR	**LOE**	**Recommendations**
2a	**B-R**	2. In patients with AIS who have salvageable ischemic penumbra detected on automated perfusion imaging and who (a) awake with stroke symptoms within 9 hours from the midpoint of sleep or (b) are 4.5–9 hours from last known well, IV thrombolysis may be reasonable to improve functional outcomes.[2,3]
2b	**B-R**	3. In patients with AIS due to LVO with salvageable ischemic penumbra, presenting within 4.5 to 24 hours from symptom onset or last known well, and who cannot receive EVT, treatment with IVT directed by individuals with expertise in thrombolytic stroke care may be beneficial to improve functional outcomes.[2–5]

Prabhakaran S. Stroke 2026;57:e44

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MAY 9, 2019 VOL. 380 NO. 19

Thrombolysis Guided by Perfusion Imaging up to 9 Hours after Onset of Stroke

H. Ma, B.C.V. Campbell, M.W. Parsons, L. Churilov, C.R. Levi, C. Hsu, T.J. Kleinig, T. Wijeratne, S. Curtze, H.M. Dewey, F. Miteff, C.-H. Tsai, J.-T. Lee, T.G. Phan, N. Mahant, M.-C. Sun, M. Krause, J. Sturm, R. Grimley, C.-H. Chen, C.-J. Hu, A.A. Wong, D. Field, Y. Sun, P.A. Barber, A. Sabet, J. Jannes, J.-S. Jeng, B. Clissold, R. Markus, C.-H. Lin, L.-M. Lien, C.F. Bladin, S. Christensen, N. Yassi, G. Sharma, A. Bivard, P.M. Desmond, B. Yan, P.J. Mitchell, V. Thijs, L. Carey, A. Meretoja, S.M. Davis, and G.A. Donnan, for the EXTEND Investigators*

Ma H NEJM 2019;380(19):1795-803

EXTEND 2019

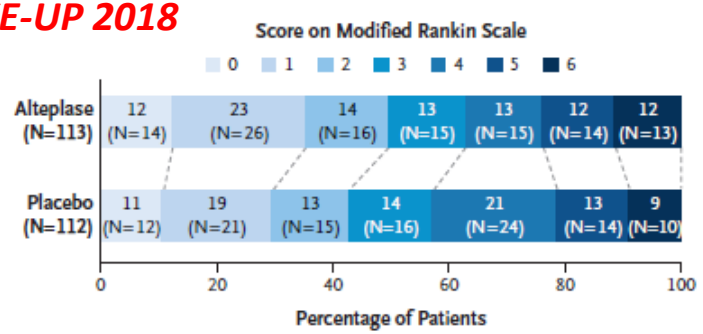
Estimated that 77% of patients would now be treated with EVT

- **Patients: N = 225 (113 v 112)**
- **LVO/EVT: could have LVO but with not planned EVT**
- **Window: 4.5-9 hr; upon waking, if within 9 hr of midpoint of sleep**
- **Imaging: CTP or MRP (RAPID) with salvageable penumbra (core: < DWI or 30% rCBF; penumbra TTP > 6s; mismatch ratio ≥ 1.2; absolute > 10cc; core < 70cc)**
- **Randomization: ALT v BMT**
- **Outcome: better 90-d mRS with ALT (mRS 0-1: ALT 35.4% v BMT 29.5%; aRR 1.44; CI, 1.01-2.06; P = 0.04)**
- **Safety: sICH ALT 6.2% v BMT 0.9%; RR 7.22; CI, 0.97-53.5; p = 0.05)**

Ma H NEJM 2019;380(19):1795-803

early stop due to loss of equipoise after publication of WAKE-UP 2018

EXTEND



- ***NIHSS 4-26***
- ***Salvageable, hypoperfused region on CTP or MRP RAPID***
- ***Irreversible = DWI diffusion restriction or CBF < 30% normal***
- ***Reversible = > 6 sec TTP***

Outcome	***Alteplase (N = 113)***	***Placebo (N = 112)***	***adj Effect Size (95% CI)***	***P-Value***
Primary Efficacy Favorable* at 90d (%)	35.4	29.5	1.44 (1.01 - 2.06)	0.04
Safety Death at 90d (%)	11.5	8.9	1.17 (0.57 - 2.40)	0.67
sICH within 36h (%)	6.2	0.9	7.22 (0.97 – 53.54)	0.053

*mRS = 0-1

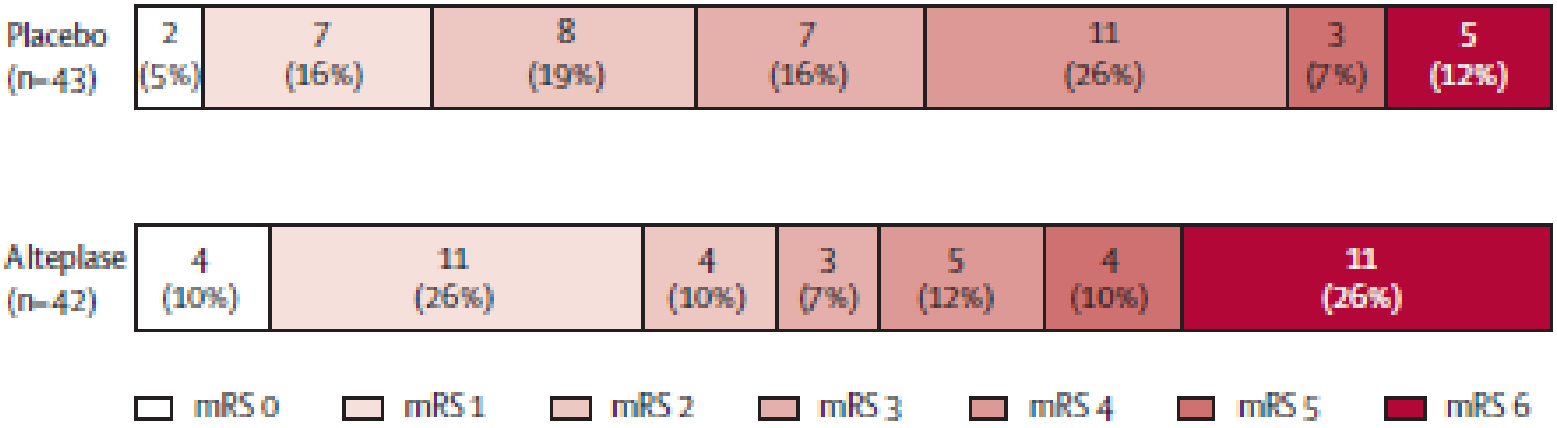
Ma H NEJM 2019;380(19):1795-803

EPITHET

EPITHET Phase II ALT at 3-6 hr

- **N = 101: ALT 52 v placebo 49**
- **ALT showed better reperfusion**
- **ALT showed non-significant decrease in infarct growth**

Functional outcome in mismatch patients



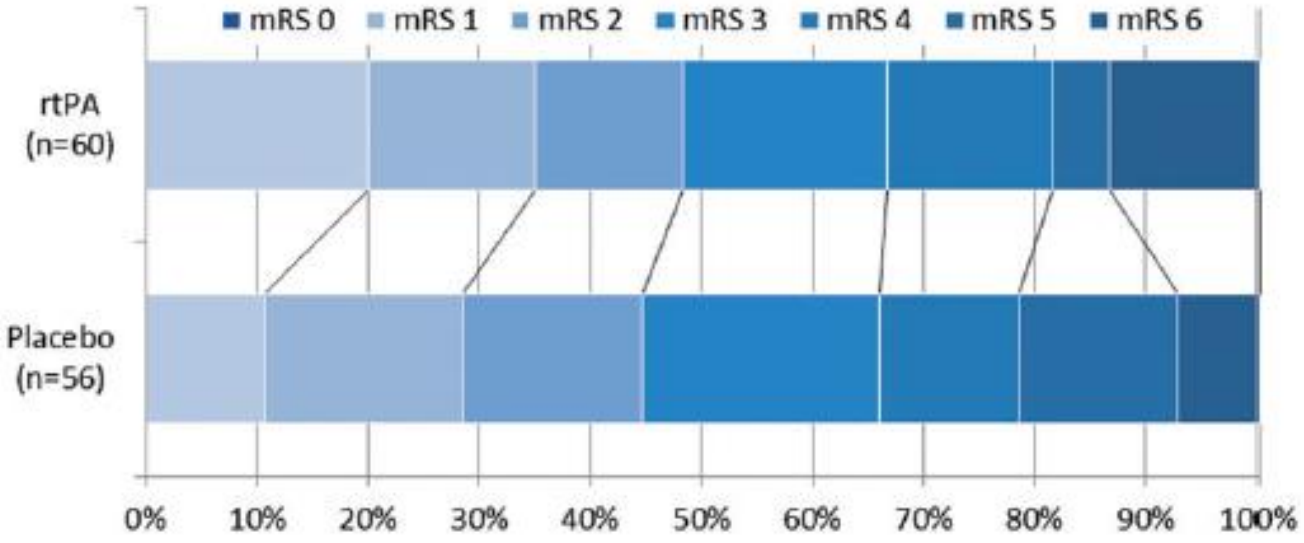
Davis SM Lancet Neurol 2008;7:299-309

ECASS-4

Stopped early for slow recruitment

ECASS-4 ALT at 4.5-9 hr

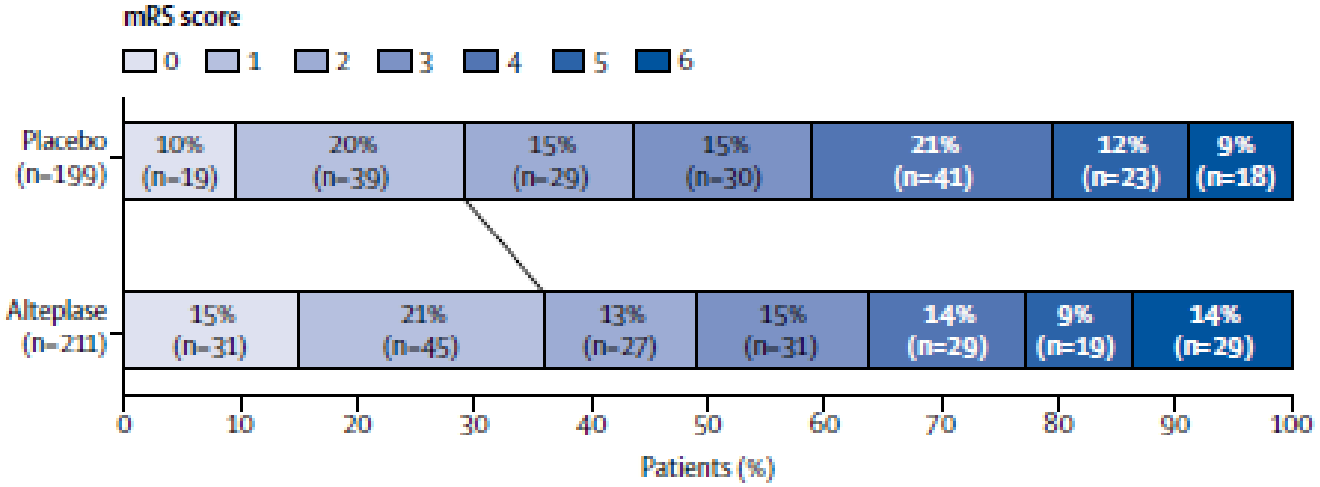
- **N = 119: ALT 61 v placebo 58**
- **No significant difference in mRS at 90 days**
  - **OR 1.20; 95%CI 0.63-2.27; p = 0.58**
- **1 sICH in the ALT group**
- **Death: ALT 11.5% v placebo 6.8%; p = 0.53**



Ringleb P Int J Stroke 2019;14(5):483-90

Meta-analysis 2019 of EXTEND, ECASS-4, EPITHET

- > 18 yr
- IV ALT at > 4.5 hr or wake-up stroke
- Perfusion imaging, MRI or CT
- Primary outcome: mRS 0-1 at 90 days; adj for age and stroke severity
- Safety outcomes: death and sICH



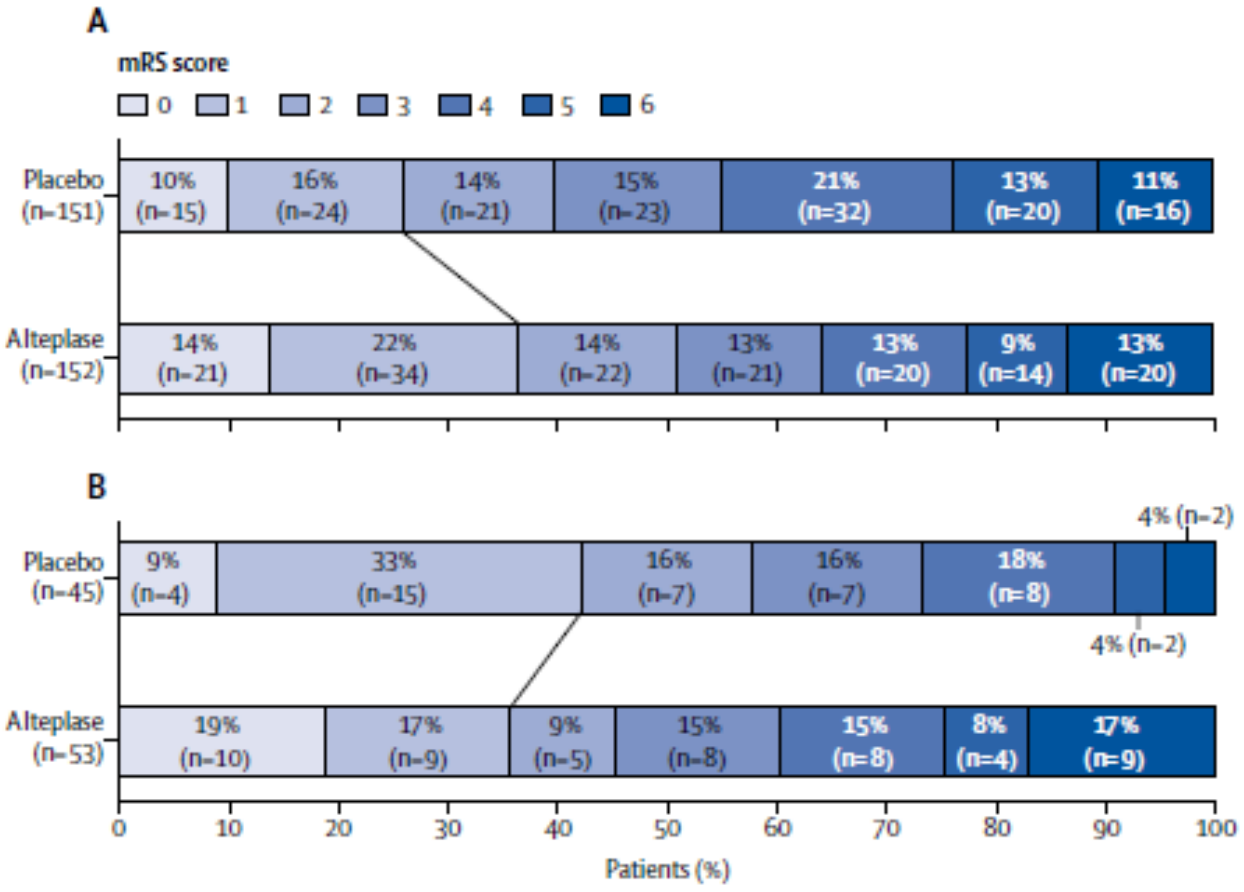
414 patients: ALT 211 v BMT 199

- mRS 0-1: ALT 36% v BMT 29%; adj OR 1.86; 95%CI 1.15-2.99, p = 0.011
- sICH: ALT 5% v BMT 0.5%, adj OR 9.7; 95%CI 1.23-76.55; p = 0.031
- Death: ALT 14% v BMT 9%, 1.55; 95%CI 0.81-2.96, p = 0.66

Campbell BCV Lancet 2019;394:139-47

Meta-analysis 2019 of EXTEND, ECASS-4, EPITHET

Benefit depended on the selection of patients with mismatch.

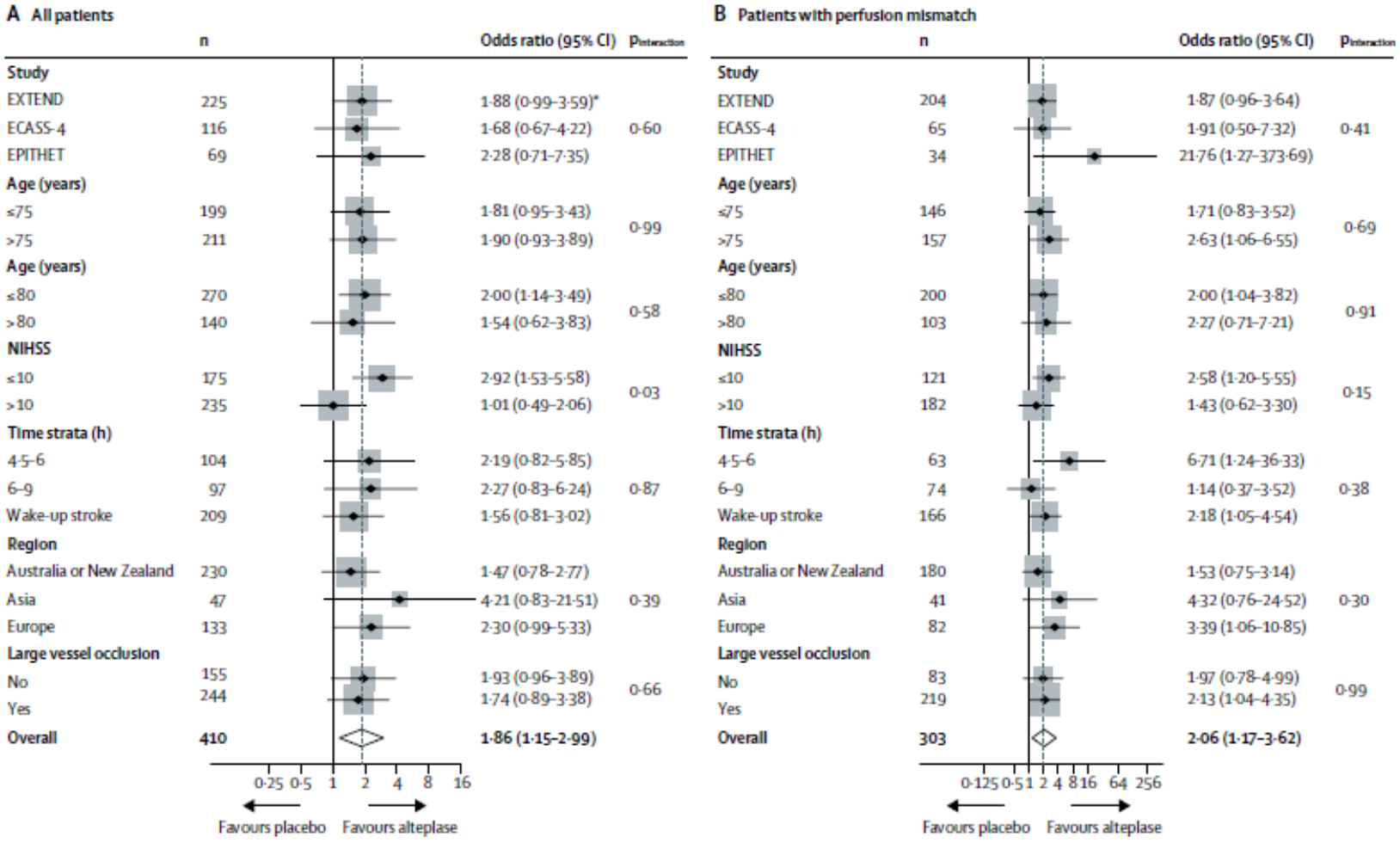


with mismatch

without mismatch

Campbell BCV Lancet 2019;394:139-47

Meta-analysis: EPITHET, ECASS-4, EXTEND



Campbell BCV Lancet 2019;394:139-47

ORIGINAL ARTICLE

Tenecteplase for Stroke at 4.5 to 24 Hours with Perfusion-Imaging Selection

G.W. Albers, M. Jumaa, B. Purdon, S.F. Zaidi, C. Streib, A. Shuaib, N. Sangha, M. Kim, M.T. Froehler, N.E. Schwartz, W.M. Clark, C.E. Kircher, M. Yang, L. Massaro, X.-Y. Lu, G.A. Rippon, J.P. Broderick, K. Butcher, M.G. Lansberg, D.S. Liebeskind, A. Nouh, L.H. Schwamm, and B.C.V. Campbell, for the TIMELESS Investigators*

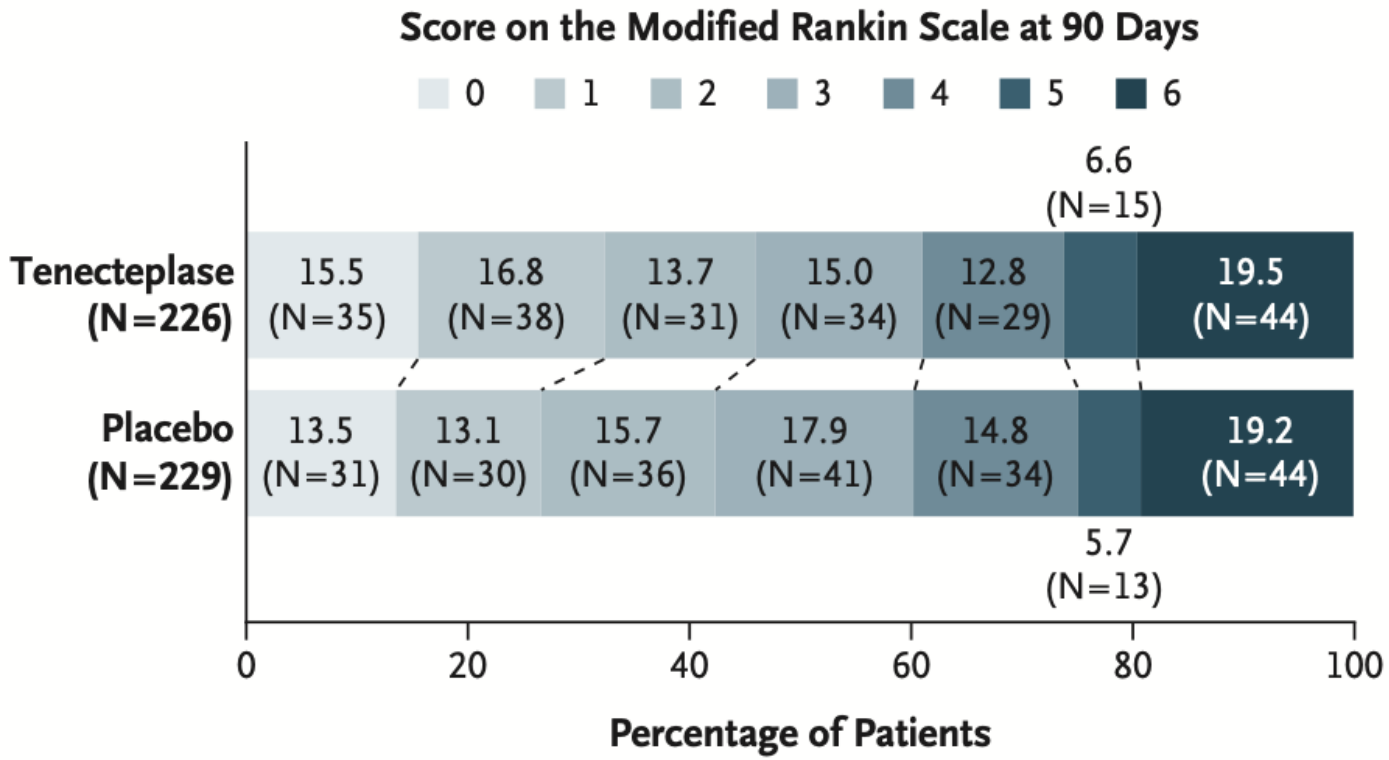
Albers GW NEJM 2024;390(8):701-11

TIMELESS 2024

- **Patients: N = 458 (228 v 230)**
- **LVO/EVT: iICA, M1, M2 / 77.3% EVT**
- **Window: 4.5 – 24 hr since LKW**
- **Imaging: CTP or MRP (RAPID) with salvageable penumbra (core: < DWI or 30% rCBF; penumbra TTP > 6s; mismatch ratio ≥ 1.8; absolute ≥ 15cc; core < 70cc)**
- **Randomization: TNK v BMT before planned EVT**
- **Outcome: no benefit with TNK: ordinal mRS aOR 1.13; CI, 0.82-1.57; P = 0.4; mRS ≤2: 46.0% v 42.4%; OR 1.18; CI, 0.80-1.74**
- **Safety: sICH TNK 3.2 v BMT 2.3; NS**

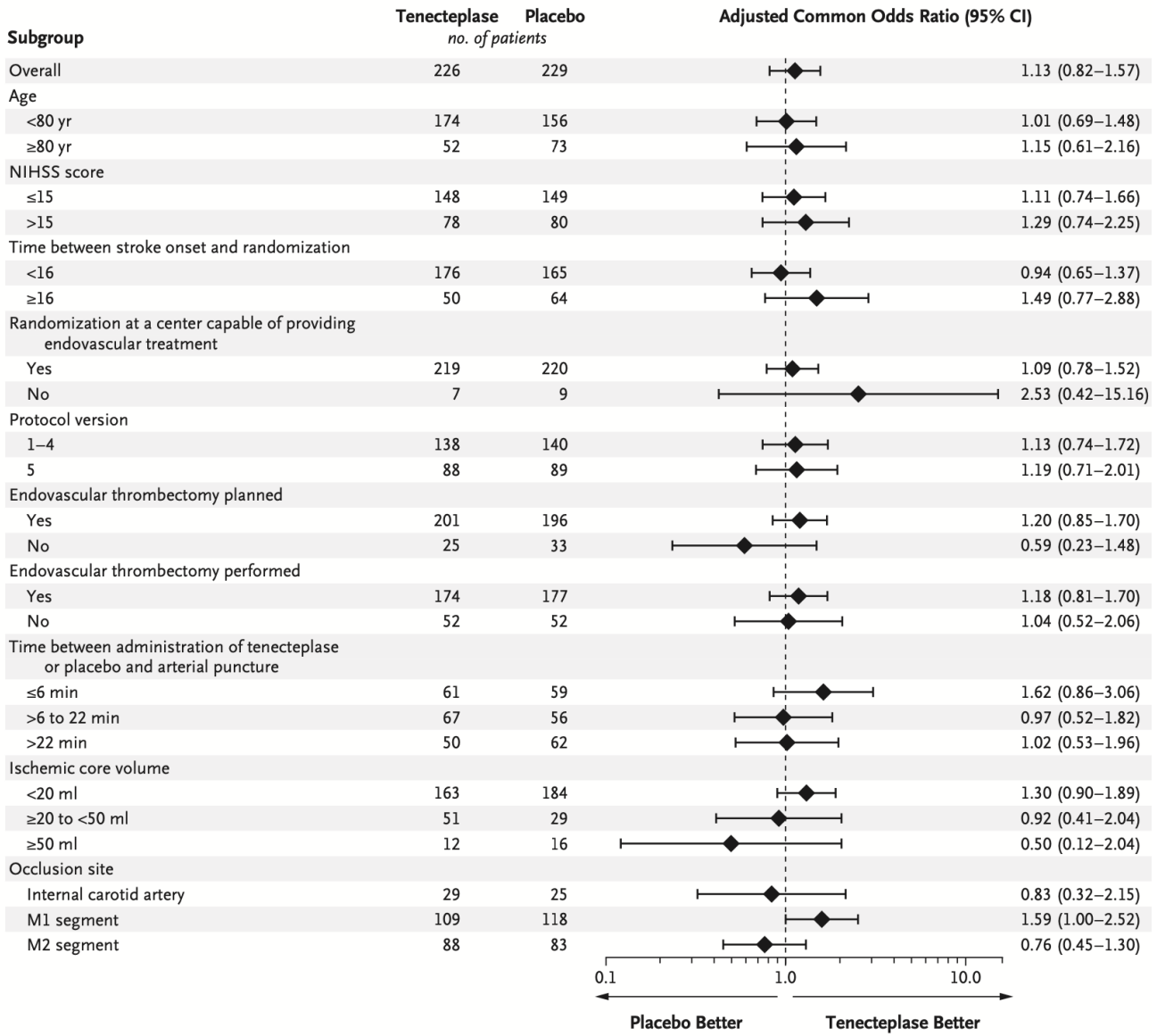
Albers GW NEJM 2024;390(8):701-11

TIMELESS



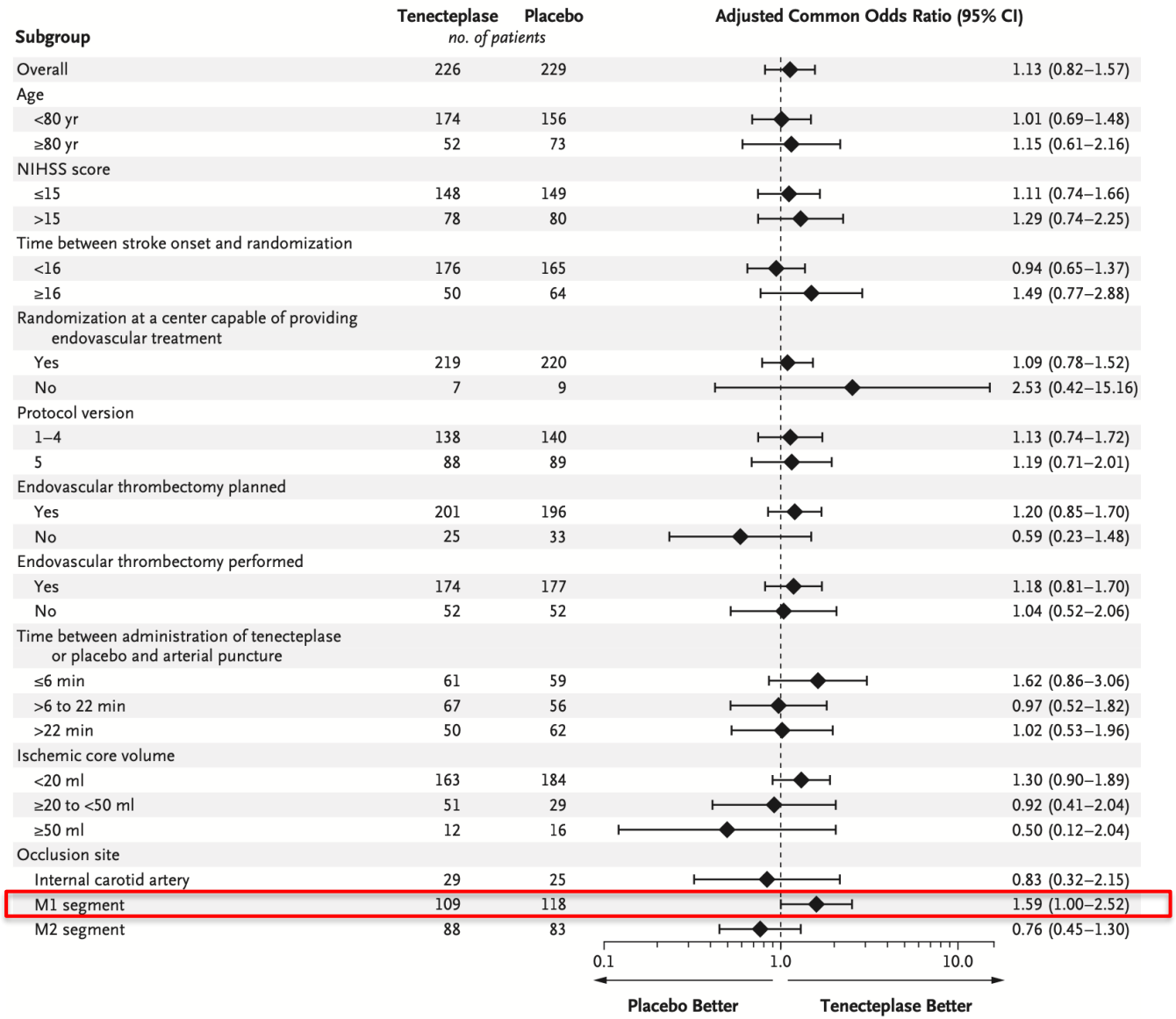
Albers GW NEJM 2024;390(8):701-11

TIMELESS
Subgroups

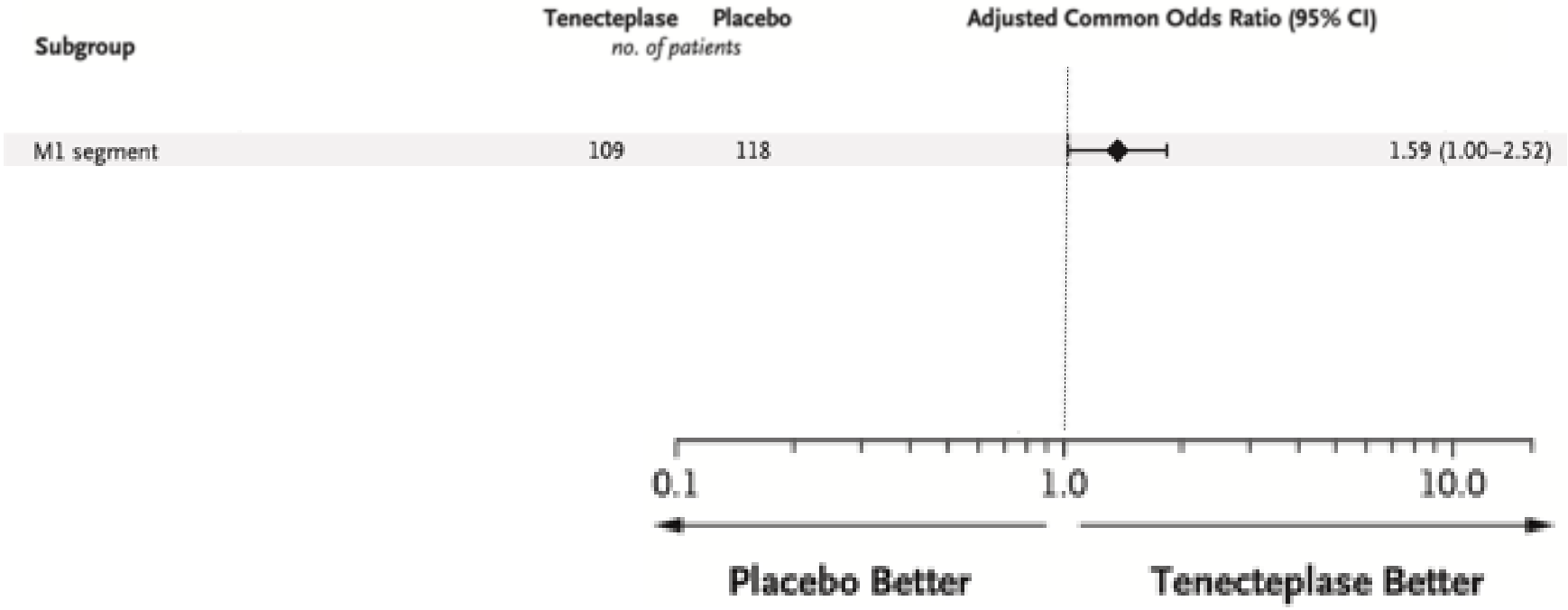


TIMELESS

Subgroups



TIMELESS
Subgroups



Positive findings from TIMELESS

1. ***IV thrombolytics were given up to 24 hr after onset without an increase in brain hemorrhage.***

2. ***In a subgroup analysis of patients with M1 occlusion, 45.9% in the tenecteplase group versus 31.4% in the placebo group achieved functional independence (mRS ≤ 2). (OR 2.03, 95%CI, 1.14-3.66).***

Albers GW International Stroke Conference 2024

TRACE-III

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 JULY 18, 2024 VOL. 391 NO. 3

Tenecteplase for Ischemic Stroke at 4.5 to 24 Hours without Thrombectomy

Yunyun Xiong, M.D., Ph.D., Bruce C.V. Campbell, M.B., B.S., Ph.D., Lee H. Schwamm, M.D., Xia Meng, M.D., Ph.D., Aoming Jin, Ph.D., Mark W. Parsons, M.B., B.S., Ph.D., Marc Fisher, M.D., Yong Jiang, Ph.D., Fengyuan Che, M.D., Lihua Wang, M.D., Ph.D., Li Zhou, M.D., Hongguo Dai, M.D., Xintong Liu, M.D., Yuesong Pan, Ph.D., Chunmiao Duan, M.D., Yuming Xu, M.D., Ph.D., Anding Xu, M.D., Ph.D., Lixia Zong, M.D., Ph.D., Zefeng Tan, M.D., Ph.D., Wanxing Ye, Ph.D., Hao Wang, M.D., Ziran Wang, M.D., Manjun Hao, M.D., Zhixin Cao, M.D., Liyuan Wang, M.D., Shuangzhe Wu, M.D., Hao Li, Ph.D., Zixiao Li, M.D., Ph.D., Xingquan Zhao, M.D., Ph.D., and Yongjun Wang, M.D., for the TRACE-III Investigators*

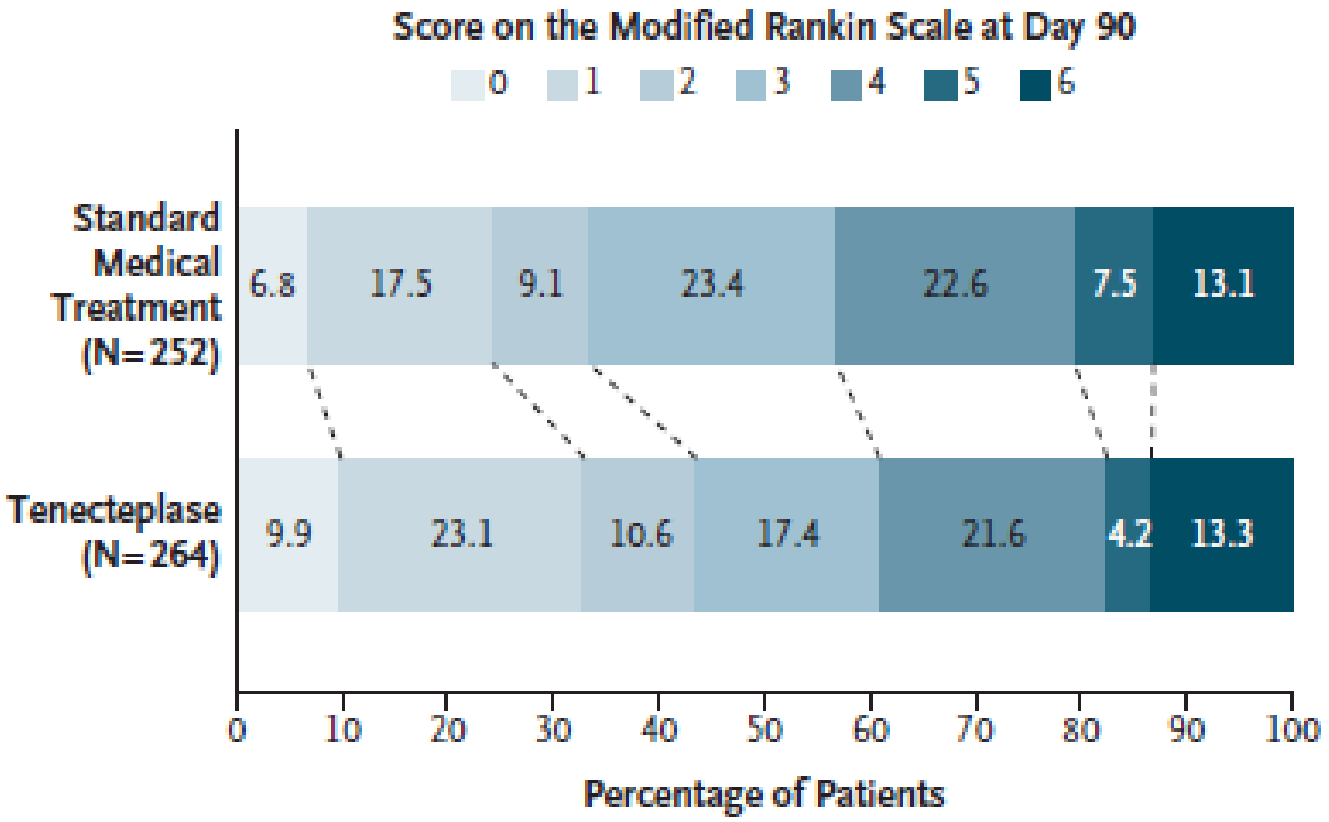
Xiong Y TRACE-III NEJM 2024;391(3):203-12

TRACE-III 2024

- **Patients: N = 516 (264 v 252)**
- **LVO/EVT: iICA, M1, M2 / EVT excluded; < 2%**
- **Window: 4.5 – 24 hr since LKW**
- **Imaging: CTP or MRP with salvageable penumbra (core: < DWI or 30% rCBF; penumbra TTP > 6s; mismatch ratio ≥ 1.8; absolute ≥ 15cc; core < 70cc)**
- **Randomization: TNK v BMT**
- **Outcome: mRS 0-1: TNK 33.0% v BMT 24.2%; OR 1.37; 95%CI 1.04-1.81, p = 0.03**
- **Safety: TNK 3.0% v BMT 0.8%, OR 3.82; 95%CI 0.81-17.87; NS**

Xiong Y TRACE-III NEJM 2024;391(3):203-12

TRACE-III



516 patients: ALT 264 v placebo 252

- **mRS 0-1: TNK 33.0% v BMT 24.2%; OR 1.37; 95%CI 1.04-1.81, p = 0.03**
- **sICH: TNK 3.0% v BMT 0.8%, OR 3.82; 95%CI 0.81-17.87; NS**
- **Death: TNK 13.3% v BMT 13.1%, OR 1.01; 95%CI 0.65-1.58, NS**

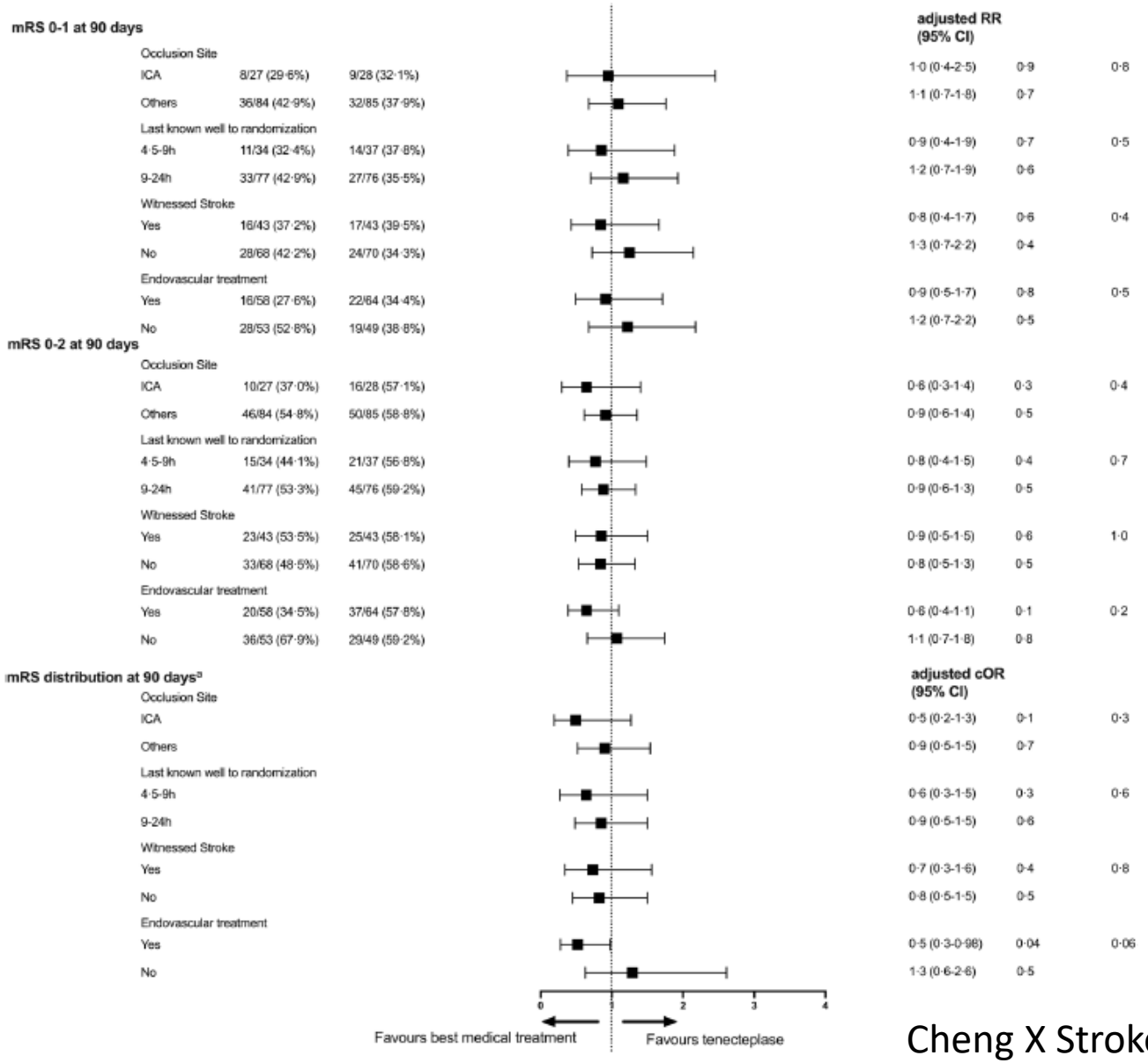
Xiong Y TRACE-III NEJM 2024;391(3):203-12

CHABLIS-T II 2025

- **Patients: N = 224 (111 v 113)**
- **LVO/EVT: eICA, iICA, M1, M2, A1, A2 / EVT in 54.9%**
- **Window: 4.5 – 24 hr since LKW**
- **Imaging: CTP or MRP with salvageable penumbra (core: < DWI or < 30% rCBF; penumbra TTP > 3s; mismatch ratio ≥ 1.2; absolute ≥ 10cc; core < 70cc)**
- **Randomization: TNK v BMT**
- **Outcome: ≥ 50% restoration of CBF at 24-48h: TNK 33.3% v BMT 10.8%; RR 3.0; 95%CI 1.6-5.7, p = 0.001; mRS at 90d NS**
- **Safety: sICH TNK 5.4% v BMT 4.4%, aRR 1.3; 95%CI 0.4-4.2; p = 0.7**

Cheng X Stroke 2025;56:344-54

CHABLIS-T II

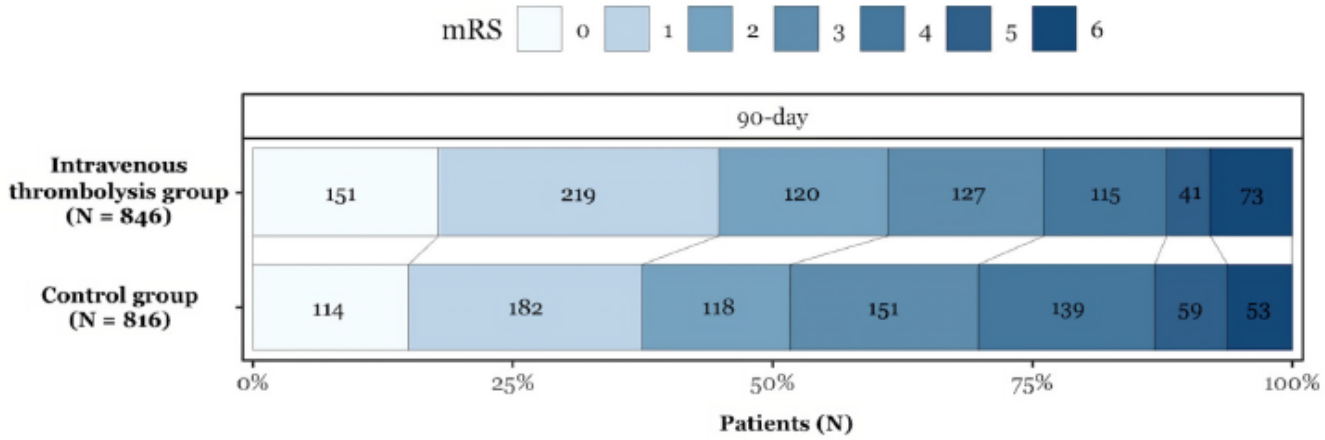


Cheng X Stroke 2025;56:344-54

Meta-analysis 2025

EPITHET, ROSE-TNK, EXIT-BT), WAKE-UP, EXTEND, ECASS-4, THAWS, TRACE-III

- **> 18 yr**
- **IVT at > 4.5 hr or wake-up stroke**
- **No EVT**
- **Perfusion imaging, MRI or CT (except EXIT-B and EPITHET)**



1662 patients: IVT 846 v placebo 816

- **mRS 0-1: IVT 43.9% v BMT 36%; OR 1.43; 95%CI 1.17-1.75, p = 0.0005**
- **sICH: IVt 2.7% v BMT 0.5%, OR 4.25; 95%CI 1.67-10.84; p = 0.002**
- **Death: IVT 8.4% v BMT 6.5%, 1.28; 95%CI 0.87-1.89, p = 0.21**

Günkan A Stroke 2025;56:580-90

Trial	*Hypothesis*	*Selection*	*Result*	*Comment*
EXTEND	ALT works at 4.5-9h	CTP/MRP	Pos	77% would now get EVT
ECASS-4	ALT works at 4.5-9h	CTP/MRP	Neg	Too small
TIMELESS	TNK before EVT works 4.5-24h	CTP/MRP	Neg	Safe; maybe benefit in subgroup
TRACE-III	TNK w/o EVT works 4.5-24h	CTP/MRP	Pos	Most would get EVT at BMC
CHABLIS-T II	TNK ± EVT works 4.5-24h	CTP/MRP	Neg	55% EVT; selection not clear
Meta 2019	IVT w/o EVT works > 4.5 h	CTP/MRP	Pos more sICH	Valid for those not getting EVT
Meta 2025	IVT w/o EVT works > 4.5 h	CTP/MRP	Pos more sICH	Valid for those not getting EVT

The extended window 4.5 – 9 hr; 4.5 – 24 hr…

Recommendations for Extended Time Windows for Intravenous Thrombolysis (Continued)		
COR	**LOE**	**Recommendations**
2a	**B-R**	2. In patients with AIS who have salvageable ischemic penumbra detected on automated perfusion imaging and who (a) awake with stroke symptoms within 9 hours from the midpoint of sleep or (b) are 4.5–9 hours from last known well, IV thrombolysis may be reasonable to improve functional outcomes.[2,3]
2b	**B-R**	3. In patients with AIS due to LVO with salvageable ischemic penumbra, presenting within 4.5 to 24 hours from symptom onset or last known well, and who cannot receive EVT, treatment with IVT directed by individuals with expertise in thrombolytic stroke care may be beneficial to improve functional outcomes.[2–5]

Prabhakaran S. Stroke 2026;57:e44

Preliminary Conclusions

- ***Patient with unknown onset time discovered within 4.5 hr of treatment may benefit from IVT.***
- ***We need more study of CT-based wake-up protocols.***
- ***EVT negates detectable benefit of extended window IVT.***
- ***Extended window IVT may benefit patients who cannot get EVT.***
- ***Extended-window IVT for those without treatable LVO has not been well studied.***
- ***Efficient implementation of extended-window protocols will require the use of tools for the rapid automated analysis of perfusion imaging.***

Post-Guideline Publication

OPTION

JAMA | Original Investigation

Tenecteplase for Acute Non–Large Vessel Occlusion 4.5 to 24 Hours After Ischemic Stroke
The OPTION Randomized Clinical Trial

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OPTION 2026

- **Patients: N = 566 (282 v 284); NIHSS 6-25 or 4-5 with disabling (hemianopia, aphasia, loss of hand function)**
- **LVO/EVT: no LVO (iICA, M1, "vertebrobasilar artery") / rescue EVT TNK 6 pt BMT 1 pt, after neurologic deterioration**
- **Window: 4.5 – 24 hr since LKW**
- **Imaging: CTP with salvageable penumbra (core: < 30% rCBF; penumbra TTP > 6s; mismatch ratio ≥ 1.2; absolute ≥ 10cc; core < 50cc)**
- **Randomization: TNK v BMT**
- **Outcome: mRS 0-1: TNK 43.6% v BMT 34.2%; aRR 1.32; 95%CI 1.08-1.61, p = 0.007**
- **Safety: sICH at 36 h:TNK 2.8% v BMT 0%, RR 2.85; 95%CI 1.16-5.54; p = 0.004; death at 90 d: 5.0% v 3.2%; RR 1.57; 95%CI 0.69-3.57, p = 0.28**

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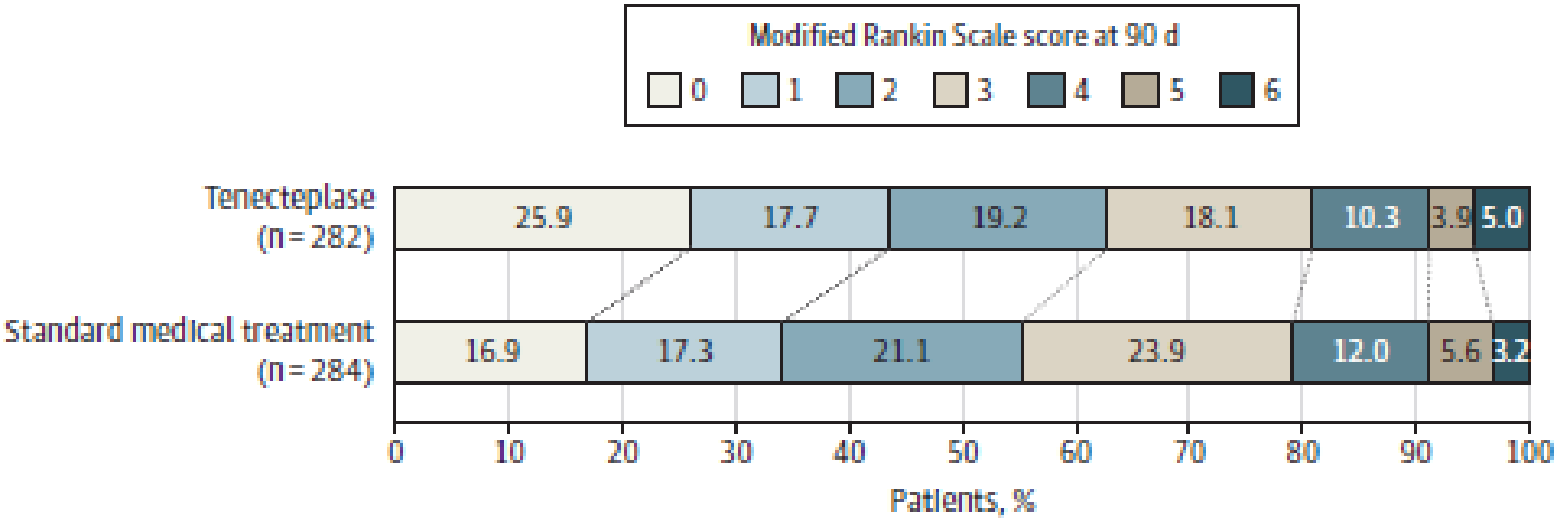

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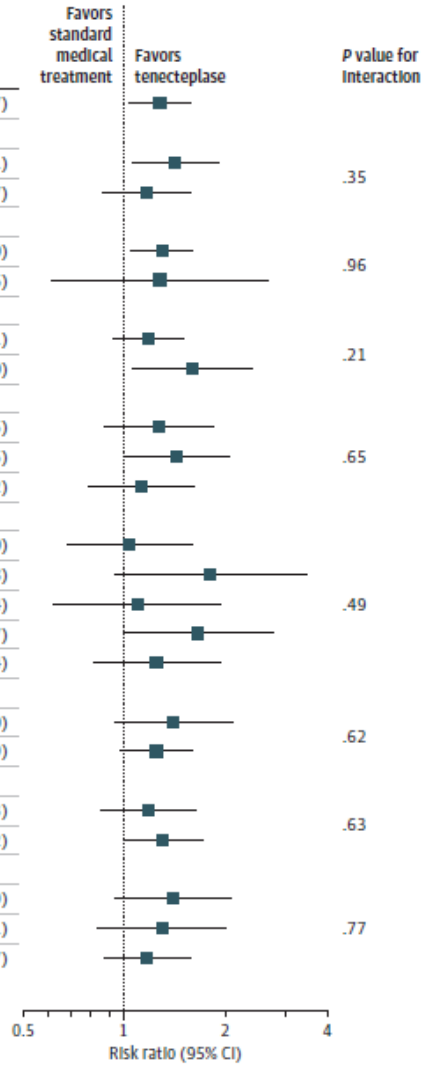
Subgroup	Patients with mRS score of 0 or 1 at 90 d, No./total (%)		Risk ratio (95% CI)[a]	*P* value for interaction
	Tenecteplase	Standard medical treatment		
Overall	123/282 (43.6)	97/284 (34.2)	1.28 (1.04-1.57)	
Age, y				
<65	60/114 (52.6)	43/116 (37.1)	1.42 (1.06-1.91)	.35
≥65	63/168 (37.5)	54/168 (32.1)	1.17 (0.87-1.57)	
NIHSS score[b]				
<10	109/214 (50.9)	87/222 (39.2)	1.30 (1.05-1.60)	.96
≥10	14/68 (20.6)	10/62 (16.1)	1.28 (0.61-2.66)	
Circulation with steno-occlusion[c]				
Anterior	89/219 (40.6)	75/218 (34.4)	1.18 (0.93-1.51)	.21
Posterior	34/63 (54.0)	22/65 (33.9)	1.59 (1.06-2.40)	
Time from symptom onset to randomization, h				
4.5-9.0	33/67 (49.3)	29/75 (38.7)	1.27 (0.88-1.85)	.65
>9.0-24	51/124 (41.1)	34/119 (28.6)	1.44 (1.01-2.05)	
Stroke on awakening	39/91 (42.9)	34/90 (37.8)	1.13 (0.79-1.62)	
Qualifying artery				
M2 segment of middle cerebral artery	28/86 (32.6)	29/93 (31.2)	1.04 (0.68-1.60)	.49
M3-M4 segment of middle cerebral artery	16/24 (66.7)	7/19 (36.8)	1.81 (0.94-3.48)	
Anterior cerebral artery	18/48 (37.5)	13/38 (34.2)	1.10 (0.62-1.94)	
Posterior cerebral artery	21/37 (56.8)	14/41 (34.2)	1.66 (0.99-2.77)	
Stenosis	28/65 (43.1)	23/67 (34.3)	1.25 (0.82-1.94)	
Serum glucose, mg/dL				
<100	30/57 (52.6)	24/64 (37.5)	1.40 (0.94-2.10)	.62
≥100	93/225 (41.3)	73/220 (33.2)	1.25 (0.98-1.59)	
Systolic blood pressure, mm Hg				
≤140	46/90 (51.1)	35/81 (43.2)	1.18 (0.86-1.63)	.63
>140	77/192 (40.1)	62/203 (30.5)	1.31 (1.00-1.72)	
Stroke etiology[d]				
Large artery atherosclerosis	38/101 (37.6)	29/108 (26.9)	1.40 (0.94-2.09)	.77
Cardioembolism	29/67 (43.3)	22/66 (33.3)	1.30 (0.84-2.01)	
Undetermined or other cause	56/114 (49.1)	46/110 (41.8)	1.17 (0.88-1.57)	



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Trial	*Hypothesis*	*Selection*	*Result*	*Comment*
EXTEND	ALT works at 4.5-9h	CTP/MRP	Pos	77% would now get EVT
ECASS-4	ALT works at 4.5-9h	CTP/MRP	Neg	Too small
TIMELESS	TNK before EVT works 4.5-24h	CTP/MRP	Neg	Safe; maybe benefit in subgroup
TRACE-III	TNK w/o EVT works 4.5-24h	CTP/MRP	Pos	Most would get EVT at BMC
CHABLIS-T II	TNK ± EVT works 4.5-24h	CTP/MRP	Neg	55% EVT; selection not clear
Meta 2019	IVT w/o EVT works > 4.5 h	CTP/MRP	Pos more sICH	Valid for those not getting EVT
Meta 2025	IVT w/o EVT works > 4.5 h	CTP/MRP	Pos more sICH	Valid for those not getting EVT
OPTION	TNK works at 4.5-24 h in non-LVO patients	CTP	Pos more ICH	Benefit for non-LVO patients

Conclusions

- ***Patient with unknown onset time discovered within 4.5 hr of treatment may benefit from IVT.***
- ***We need more study of CT-based wake-up protocols.***
- ***EVT negates detectable benefit of extended window IVT.***
- ***Extended window IVT may benefit patients who cannot get EVT.***
- ~~***Extended-window IVT for those without treatable LVO has not been well studied***~~***. There is now RCT evidence that extended-window IVT benefits patients without LVO.***
- ***Efficient implementation of extended-window protocols will require the use of tools for the rapid automated analysis of perfusion imaging.***