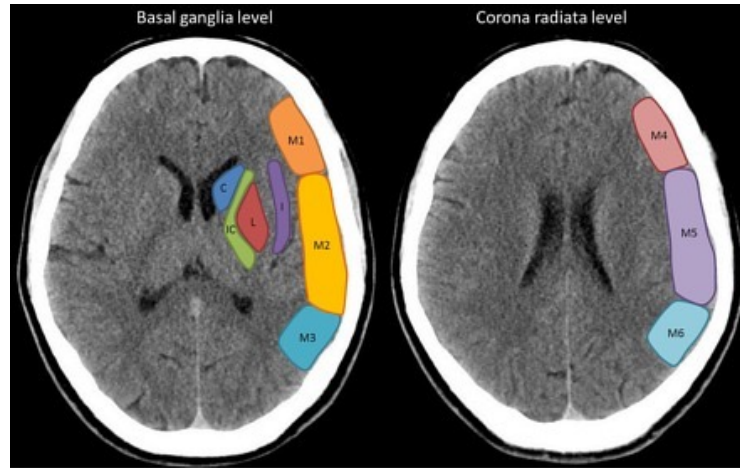




Endovasculaire trombectomie bij grote infarctkern



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Neurovasculaire Nascholing 2023



Faculty Disclosures

<i>Company Name</i>	<i>Honoraria/ Expenses</i>	<i>Consulting/ Advisory Board</i>	<i>Funded Research</i>	<i>Royalties/ Patent</i>	<i>Stock Options</i>	<i>Ownership/ Equity Position</i>	<i>Employee</i>	<i>Other (please specify)</i>
Bayer		X						
AstraZeneca		X						
TrianeCT						X		



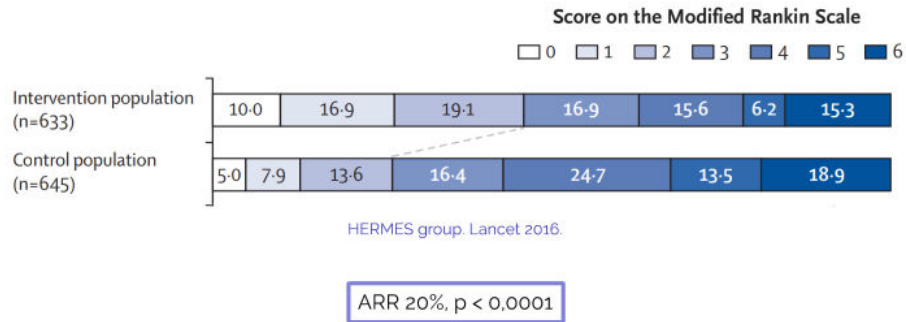
Non-profit funders



Goede Doelen Fonds van de Landelijke Vereniging van Crematoria



Inleiding



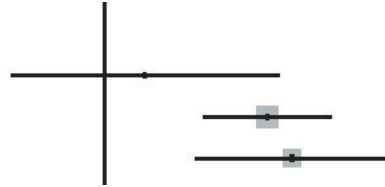
Hermes collaboration; Goyal et al. Lancet 2016



Grote cores in “big five”

ASPECTS ($p_{\text{interaction}} = 0.29$)

0-5	121
6-8	475
9-10	682



1.24 (0.62-2.49)
2.34 (1.68-3.26)
2.66 (1.61-4.40)

Trial	Protocol	Mediane ASPECTS (IQR)
MR CLEAN	Geen restrictie	9 (7-10)
ESCAPE	6-10	9 (8-10)
REVASCAT	7-10	7 (6-9)
SWIFT-PRIME	6-10*	9 (8-10)
EXTEND-IA	CTP criteria	NR**

*Criteria aangepast tijdens studie; **ASPECTS niet gerapporteerd, mediaan core volume 18 ml



Waarom geen grote cores in EVT trials?

- Verminderde effectiviteit
- Verminderde veiligheid (risico op bloeding)^{1,2}
- “Belang positieve trial”
- Observationele data suggereert positief effect van EVT bij grote cores³
 - Toename mRS 0-2 18%
 - Afname mortaliteit 10%
 - Toename sICH 4%

¹Barber et al. Lancet 2000

²Roman et al. Lancet Neurol 2018

³Sarraj et al. JNIS 2020

Richtlijnen



AHA guideline

Although its benefits are uncertain, the use of mechanical thrombectomy with stent retrievers may be reasonable for patients with AIS in whom treatment can be initiated (groin puncture) within 6 hours of symptom onset and who have prestroke mRS score >1, ASPECTS <6, or NIHSS score <6, and causative occlusion of the internal carotid artery (ICA) or proximal MCA (M1).

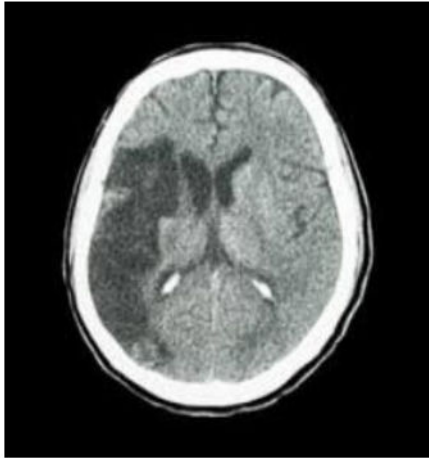
ESO guideline

- We recommend that anterior circulation stroke patients with extensive infarct core (e.g. ASPECTS <6 on non-contrast CT scan or core volume >70 ml or >100 ml) be included in RCTs comparing mechanical thrombectomy plus best medical management versus best medical management alone.

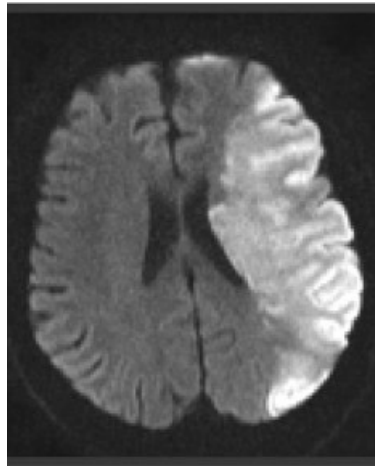
Quality of evidence: Very Low ⊕, Strength of recommendation: -



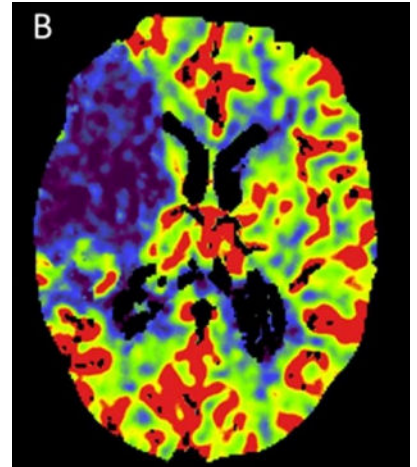
Hoe meet je “core infarct”?



Blanco CT hersenen



MRI (DWI)

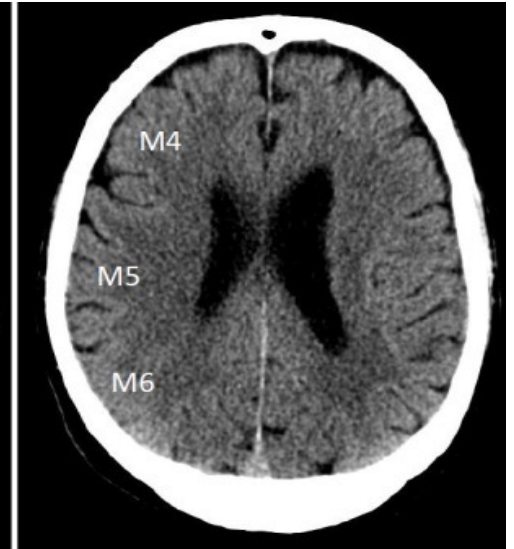
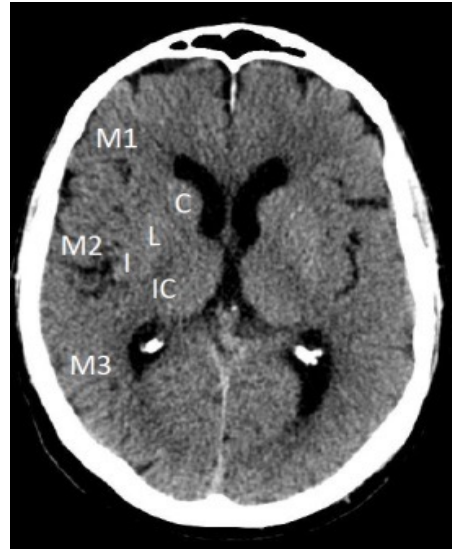


CT-perfusie

ASPECTS



- Barber, Demchuk et al. Lancet 2000; 355: 1670-74
- 10 punten
 - 7 corticaal
 - 3 subcorticaal
- Vroege tekenen van ischemie (zwellings, hypodensiteit)





Onderzoeksvraag RCTs

- Is EVT effectief en veilig bij patienten met een LVO-herseninfarct en een groot core infarct?

Methoden



Trial	RESCUE-JAPAN	ANGEL-ASPECT	SELECT2	TENSION	TESLA	LASTE
Status	NEJM	NEJM	NEJM	Lancet	<i>Under review</i>	<i>Under review</i>
No. patiënten	202	455	352	253	302	324
Lokatie	Japan	China	VS, Can, EU	EU, Can	VS	VS, EU
Oclusie	ICA, M1	ICA, M1	ICA, M1	ICA, M1	<i>ICA, M1</i>	<i>ICA, M1, M1-2</i>

Methoden



Trial	RESCUE-JAPAN	ANGEL-ASPECT	SELECT2	TENSION	TESLA	LASTE
Status	NEJM	NEJM	NEJM	Lancet	<i>Under review</i>	<i>Under review</i>
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Lokatie	Japan	China	VS, Can, EU	EU, Can	VS	VS, EU
Oclusie	ICA, M1	ICA, M1	ICA, M1	ICA, M1	ICA, M1	ICA, M1, M1-2
Type imaging	CT (13%), MRI (87%)	CT + CTP	CT + CTP (2% MRI)	CT (83%) of MRI (17%)	CT	CT of MRI
Imaging criteria	ASPECTS 3-5	- ASPECTS 3-5 - ASPECTS>5: core 70-100 - ASPECTS<3: core 70-100	- ASPECTS 3-5 OF core>50	ASPECTS 3-5	ASPECTS 2-5	ASPECTS 0-5 (>80 jaar 4-5)
NIHSS	≥6	6-30	≥6	<26	≥6	NR
Time	<6 uur of 6-24 uur als FLAIR -	<24 uur	<24 uur	<11 uur	<24 uur	<6.5 uur

Baseline data



Trial	RESCUE-JAPAN	ANGEL-ASPECT	SELECT2	TENSION	TESLA	LASTE
Leeftijd	77	68	66	73	66	NR
NIHSS	22 (18-26)	16 (13-20)	19 (15-23)	19 (16-22)	19 (15-23)	NR
Occlusie	ICA (47%), M1 (73%)	ICA (36%), M1 (63%), M2 (1%)	ICA (45%), M1 (51%), M2 (4%)	ICA (33%), M1 (66%)	ICA (32%), M1 (66%), M2 (2%)	NR
IVT	27%	29%	21%	39%	20%	NR

Baseline data



Trial	RESCUE-JAPAN	ANGEL-ASPECT	SELECT2	TENSION	TESLA	LASTE
Leeftijd	77	68	66	73	66	NR
NIHSS	22 (18-26)	16 (13-20)	19 (15-23)	19 (16-22)	19 (15-23)	NR
Occlusie	ICA (47%), M1 (73%)	ICA (36%), M1 (63%), M2 (1%)	ICA (45%), M1 (51%), M2 (4%)	ICA (33%), M1 (66%)	ICA (32%), M1 (66%), M2 (2%)	NR
IVT	27%	29%	21%	39%	20%	NR
Tandem occl.	20%	18%	32%	6%	3%	NR
Onset – groin tijd*	4 uur	7.5 uur	9 uur	4 uur	NR	NR
ASPECTS	3 (3-4)	3 (3-4)	4 (3-5)	4 (3-5)	4 (3-5)	2 (1-3)
ASPECTS 0-2	5%	14%	6%	12%	NR	54%
Infarct volume	94 ml	61 ml	82 ml	NR	NR	NR

*Onset-randomization indien missend

Uitkomsten

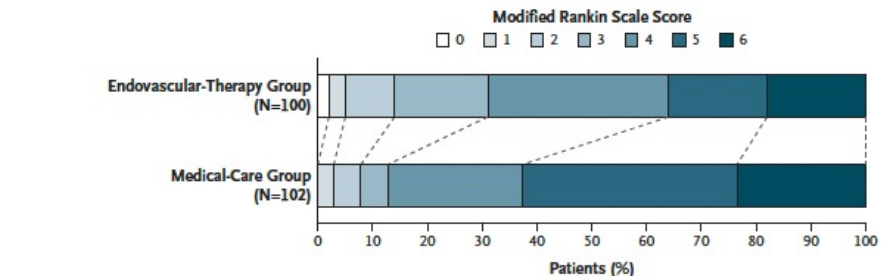


Trial	RESCUE-JAPAN	ANGEL-ASPECT	SELECT2	TENSION	TESLA	LASTE
TICI \geq 2B	86%	86%	80%	83%	73%	<i>NR</i>
mRS 0-1	5 vs 3%	4 vs 4%	6 vs 2%	8 vs 2%	7 vs 5%	4 vs 2%
mRS 0-2	14 vs 8%	30 vs 12%	20 vs 7%	17 vs 2%	14 vs 9%	13 vs 5%
mRS 0-3	31 vs 13%	47 vs 33%	38 vs 19%	31 vs 13%	30 vs 20%	33 vs 13%

Uitkomsten



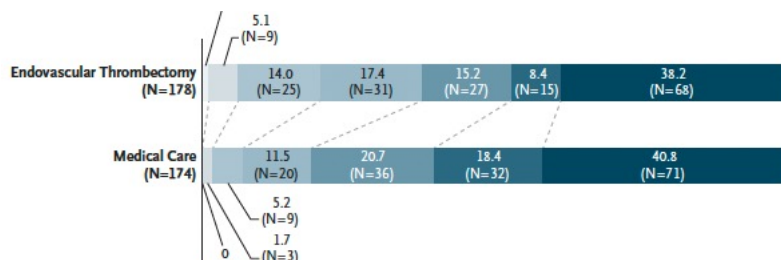
Trial	RESCUE-JAPAN	ANGEL-ASPECT	SELECT2	TENSION	TESLA	LASTE
TICI \geq 2B	86%	86%	80%	83%	73%	NR
mRS 0-1	5 vs 3%	4 vs 4%	6 vs 2%	8 vs 2%	7 vs 5%	4 vs 2%
mRS 0-2	14 vs 8%	30 vs 12%	20 vs 7%	17 vs 2%	14 vs 9%	13 vs 5%
mRS 0-3	31 vs 13%	47 vs 33%	38 vs 19%	31 vs 13%	30 vs 20%	33 vs 13%
mRS 4-5	51 vs 64%	31 vs. 47%	24 vs 39%	31 vs 33%	35 vs 47%	31 vs 32%
Mortaliteit	18 vs 24%	22 vs 20%	38. vs 41%	37 vs 54%	35 vs 33%	36 vs 55%
sICH	9 vs 5%	6 vs 3%	1 vs 1%	5 vs 5%	4 vs 1%	NR
Craniotomie	10 vs 14%	7 vs 4%	NR	9 vs 7%	22 vs 15%	NR



Modified Rankin Scale Score at 90 Days

Endovascular-therapy group — no. (%)

Medical-care group — no. (%)

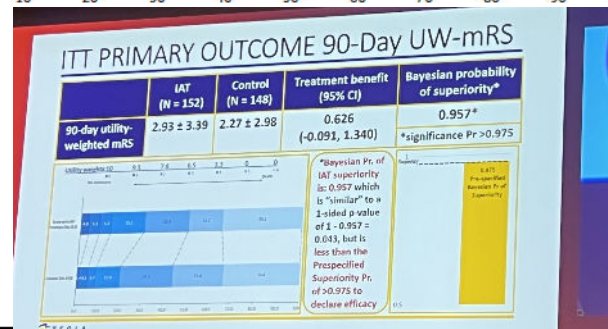
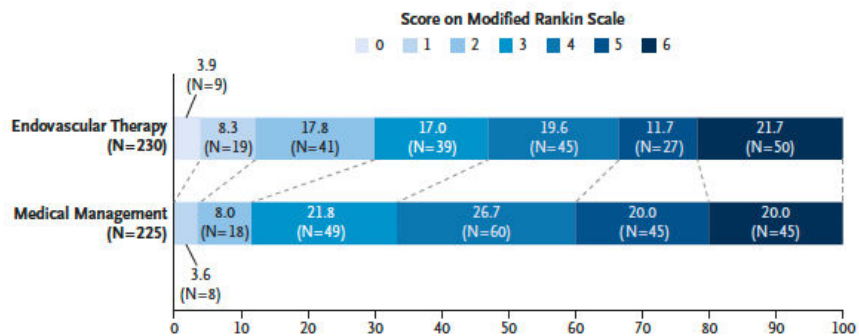
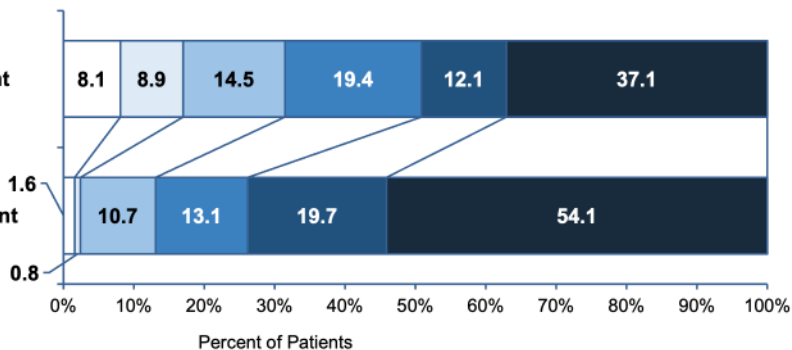


Score on the Modified Rankin Scale at 90 Days

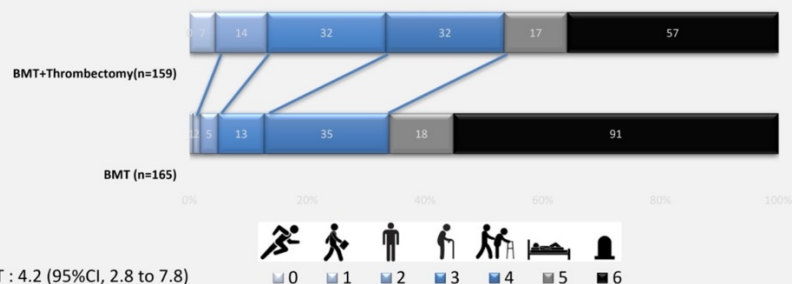
0-1 2 3 4 5 6

Endovascular Treatment

Medical Treatment



GenOR = 1.63 (1.29 to 2.06); p<0.0001



Imputed analysis, median (IQR)

BMT : 6 (4 to 6)

MT + BMT: 4 (3 to 6)

Gen-OR 1.63 (1.29 to 2.06)



Hermes vs grote core trials

	HERMES			Grote core trials*		
	EVT	MM	Abs Risk Dif	EVT	MM	Abs Risk Dif
mRS 0-1	27%	13%	+14%	6%	3%	+3%
mRS 0-2	46%	26%	+20%	19%	8%	+11%
mRS 0-3	63%	43%	+20%	36%	20%	+16%
Mortaliteit	15%	19%	-4%	31%	37%	-6%
sICH	4%	4%	+0%	5%	3%	+2%

*Gewogen gemiddelde RESCUE JAPAN, ANGEL-ASPECT, SELECT2, TENSION, TESLA en LASTE studies



Ondervertegenwoordigde groepen

- ASPECTS 0-2 (behalve LASTE)
- Patienten met pre-existente beperkingen
- IVT

Volgende stappen



- Wachten op TESLA en LASTE publicaties
- IPD meta-analyse
 - MAGNA (RESCUE-JAPAN, ANGEL-ASPECTS, SELECT2) gepresenteerd op ESOC 2023
 - Subgroepen (baseline volume, tijd tot ontstaan, leeftijd, etc.)
 - Analyse hypodensiteit diepte blanco CT
- Verwerking in richtlijnen



Take-to-Work messages

1. EVT is veilig en effectief bij patienten met een LVO herseninfarct en een groot core infarct
2. Ondanks EVT is kans op herstel zonder invaliditeit zeer klein bij deze groep
3. Baseline core volume voorspelt prognose, maar niet zozeer behandel-effect EVT
4. IPD meta-analyse van 6 RCTs zal meer inzicht geven in subgroepen



Acknowledgements

- Gotz Thomalla (co-PI TENSION)
- Charles Majoie (core lab TESLA)

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