

WHO BENEFITS FROM ACUTE STROKE INTERVENTION? WHO DOES NOT?

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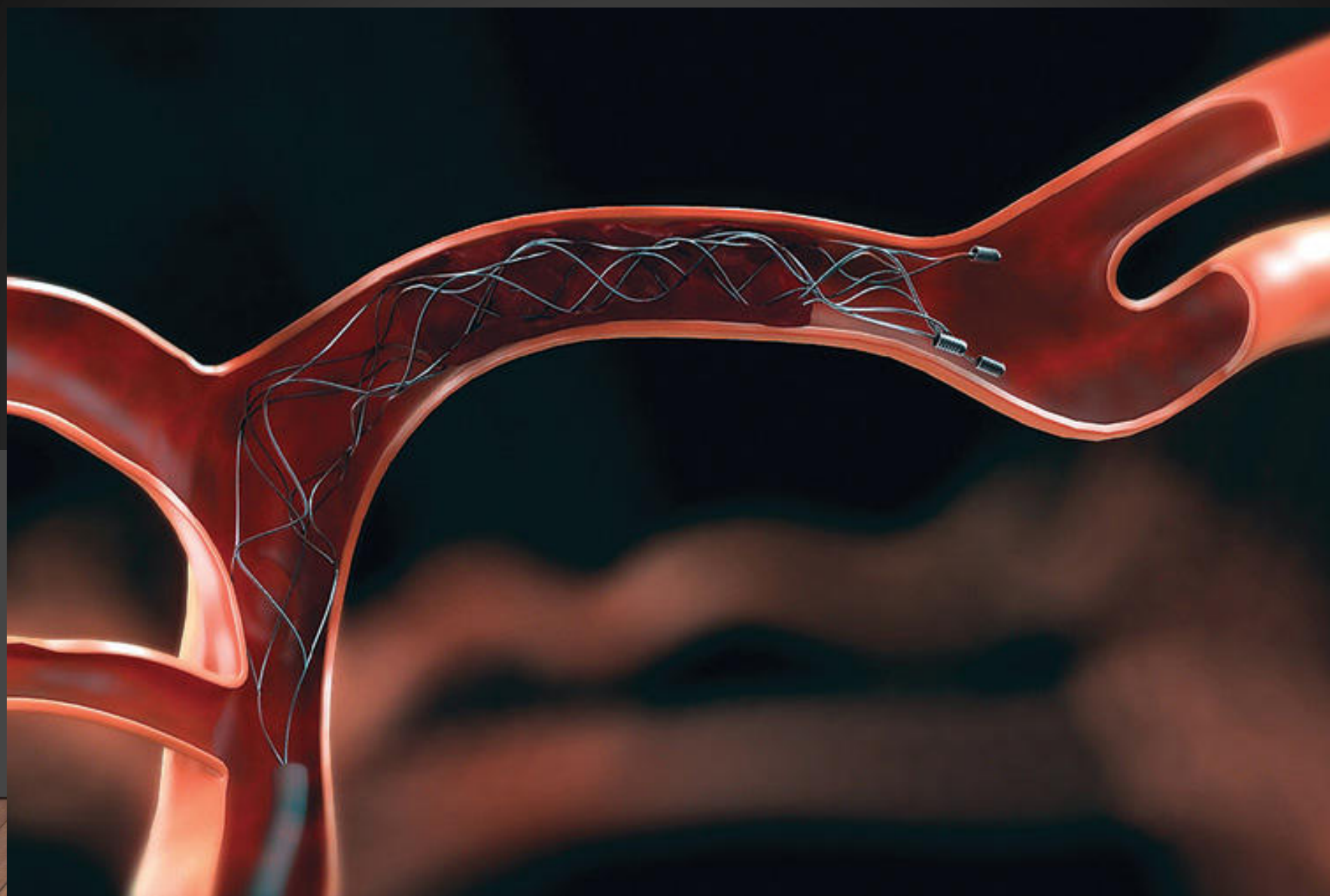
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TYPES OF ACUTE STROKE INTERVENTION

- Intravenous thrombolysis
- Intra-arterial thrombolysis
- Mechanical thrombectomy



MECHANICAL THROMBECTOMY

- Mechanical devices permit the direct revascularisation of occluded cerebral vessels.
- Recanalisation rates are higher than expected for IV thrombolysis compared with historical controls, in some instances very considerably so.
- Can be used as an adjunct to IV thrombolysis, or alone if contraindications.

THE RECENT PROBLEM

WE ONLY HAD EVIDENCE FROM MANY SINGLE-ARM TRIALS

TRIALS OF THROMBECTOMY

	Intervention	Trial	n	Base-line NIHSS	Recanalization	MRS≤2 at 3 mo	Mortality at 3 mo
IMS II 2007	IV+IA EKOs	POL	81	19	58%	46%	16%
MERCI 2007	IA+MERCI	POL	141	20	60%	28%	44%
Multi MERCI 07	IV+IA+MERCI	POL	164	19	68%	36%	34%
Penumbra 09	IA+Penumbra	POL	125	17	82%	25%	33%
Abou-C 2010	IV+IA+MTD/sten	Open	55	19	84%	41 & 43%	29 & 23%
Nayak 2010**	IV+IA+Solitaire	Open	7	19		57%	0%
Brinjiki 2011	IAT+-MT	Open	3864	-	-	-	24% ^A
Caostalat 2011	Iv+IAT+Solitaire	POL	50	15	84%	54%	12%
Lifante 2011	IAT/MT & Enterprise or Wingspan stent	Open	19	19	95%*	42%	26%
Bang 2011	IAT, MT, or both	Open	220	17	64%	-	Haemorrhage in 46%
Stoke 2011***	IV+IA+Solitaire	Open	41	19	88%	42% ^c (39% ^D)	10% ^B

BUT WE HAD NO RCTS

..AND HENCE NO GOLD-STANDARD STATISTICAL PROOF

UNTIL VERY RECENTLY

PATIENT SELECTION

- Ischaemic stroke caused by a proximal large artery occlusion in the anterior circulation & posterior circulation
- Onset within 24 hour
- Neuroimaging (eg, CT without contrast or diffusion-weighted MRI) is consistent with a small infarct core (ie, limited signs of early ischemic change) and excludes haemorrhage
- Angiography (eg, CT angiography or MR angiography) demonstrates a proximal large artery occlusion in the anterior circulation & posterior circulation

PATIENT SELECTION

- Onset within 6 hours
- Onset within 6-24 hours

ONSET WITHIN 6 HOURS

- A clinical diagnosis of acute stroke
- Age > 18 yrs
- A deficit on the National Institutes of Health Stroke Scale (NIHSS) of >6 points or any persistent neurologic deficit that is potentially disabling
- An Alberta Stroke Program Early CT Score (ASPECTS) score >6 on non-contrast brain CT or diffusion-weighted MRI (see 'ASPECTS method' below)
- Brain CT or MRI scan ruling out intracranial haemorrhage
- Intracranial arterial occlusion of the distal intracranial internal carotid artery (ICA), or the M1 or M2 segments of the middle cerebral artery (MCA), or the A1 or A2 segments of the anterior cerebral artery (ACA), demonstrated with CT angiography, MR angiography, or digital subtraction angiography

ONSET BETWEEN 6-24 HOURS

Eligibility criteria based upon the DAWN trial for patients who can start treatment (femoral puncture) within 6 to 24 hours using automated infarct determination

- Failed or contraindicated for intravenous alteplase
- A deficit on the NIHSS of >10 points
- No significant prestroke disability: baseline modified Rankin scale (mRS) score <1
- Baseline infarct involving less than one third of the territory of the MCA on CT or MRI
- Intracranial arterial occlusion of the ICA or the M1 segment of the MCA
- A clinical-core mismatch according to age:
 - Age >80 years: NIHSS >10 and an infarct volume <21 mL
 - Age <80 years: NIHSS 10 to 19 and an infarct volume <31 mL
 - Age <80 years: NIHSS >20 and an infarct volume <51 mL

ONSET WITHIN 6-24 HOURS

Eligibility criteria based upon the DEFUSE 3 trial for patients who can start treatment (femoral puncture) within 6 to 16 hours of time last known to be at neurologic baseline & has facility for automated infarct volume determination

- A deficit on the NIHSS of >6 points
- Only slight or no prestroke disability: baseline mRS score <2
- Arterial occlusion of the cervical or intracranial ICA (with or without tandem MCA lesions) or the M1 segment of the MCA demonstrated on MR angiography or CT angiography
- A target mismatch profile on CT perfusion or MRI defined as an ischemic core volume <70 ml, a mismatch ratio (the volume of the perfusion lesion divided by the volume of the ischemic core) >1.8, and a mismatch volume (volume of perfusion lesion minus the volume of the ischemic core) >15 mL
- Age 18 to 90 years

NON AVAILABILITY OF AUTOMATED INFARCT VOLUME DETERMINATION

- Clinical –ASPECTS mismatch such as an NIHSS ≥ 10
and ASPECTS ≥ 6

THROMBECTOMY FOR POSTERIOR CIRCULATION STROKE

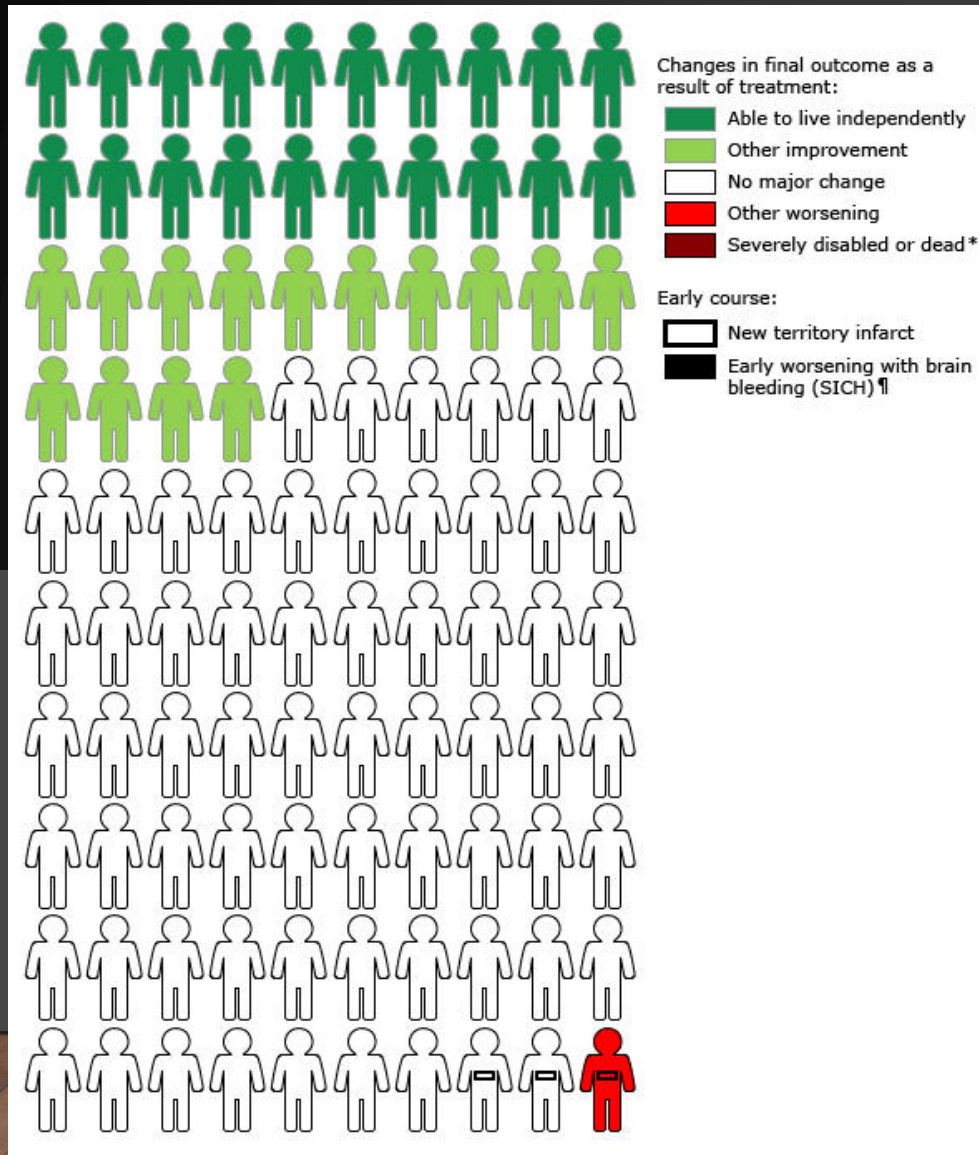
- Higher rate of good functional outcome (approx. 30-40 percent) and lower mortality rate (approx. 30 percent)
- By comparison, a systematic review identified 76 patients receiving intravenous thrombolysis with alteplase for basilar artery occlusion found that the rate of good functional outcome was approximately 22 percent, and mortality was approximately 50 percent

CHOICE CONSEQUENCE MATRIX TYPE VISUAL DECISION AID

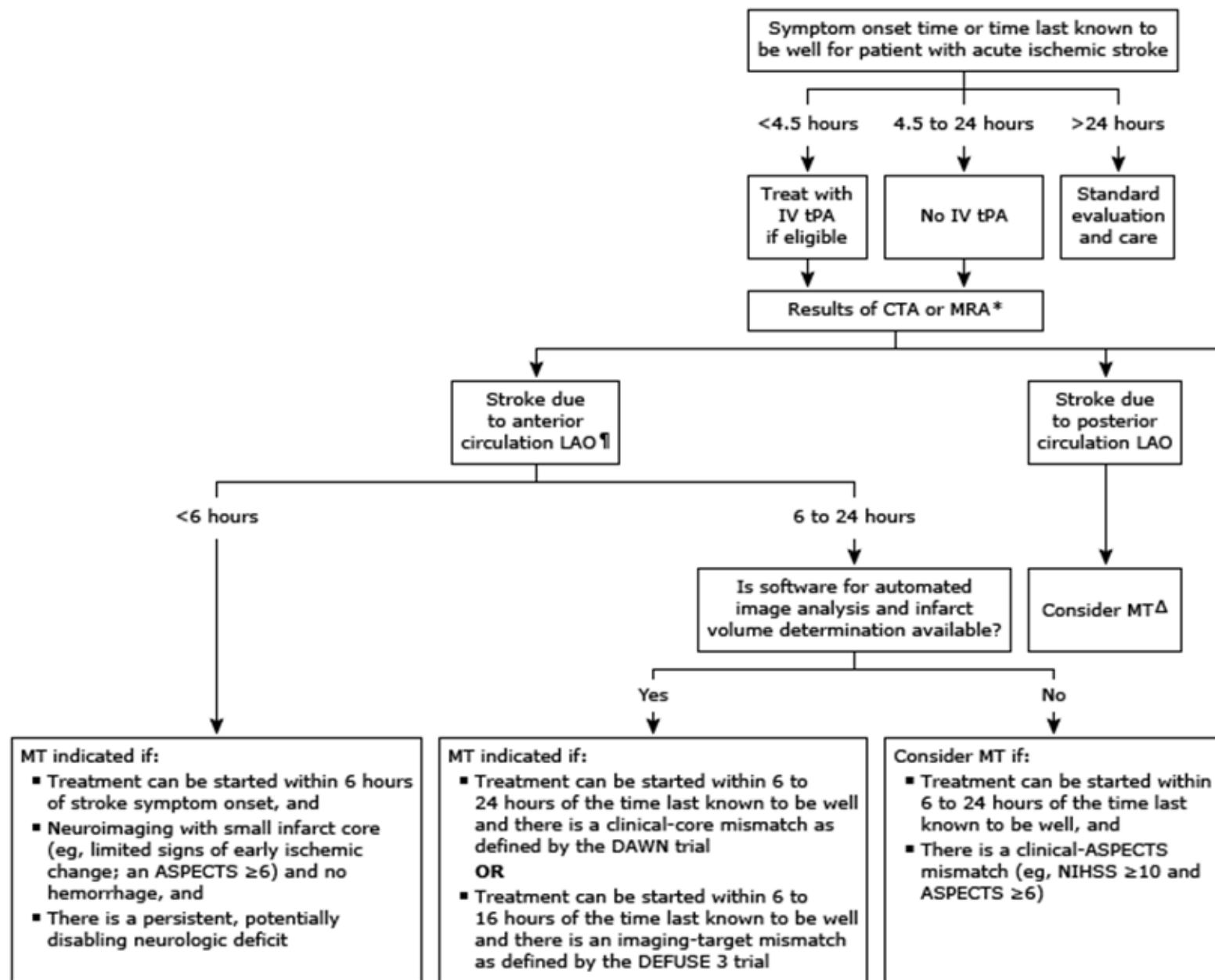


Choice consequence matrix type visual decision aid depicting the benefits and risks of endovascular thrombectomy among tPA (tissue-type plasminogen activator)-ineligible patients. Dark green, attainment of excellent outcome (modified Rankin Scale [mRS], 0–1) as a result of thrombectomy; light green, improved disability outcome (other than excellent outcome) as a result of thrombectomy; dark red, severely disabled or dead outcome (mRS, 5–6) as a result of thrombectomy; light red, worse disability outcome (other than severely disabled/ dead) as a result of thrombectomy; closed dash, symptomatic intracranial hemorrhage as a result of thrombectomy; and open dash, infarct in new territory as a result of thrombectomy. SICH indicates symptomatic intracranial hemorrhage.

CHOICE CONSEQUENCE MATRIX TYPE VISUAL DECISION AID



Choice consequence matrix type visual decision aid depicting the benefits and risks of endovascular thrombectomy added to intravenous tPA (tissue-type plasminogen activator) vs intravenous (IV) tPA alone. Dark green, attainment of excellent outcome (modified Rankin Scale [mRS], 0–1) as a result of thrombectomy; light green, improved disability outcome (other than excellent outcome) as a result of thrombectomy; dark red, severely disabled or dead outcome (mRS, 5–6) as a result of thrombectomy; light red, worse disability outcome (other than severely disabled/dead) as a result of thrombectomy; closed dash, symptomatic intracranial hemorrhage as a result of thrombectomy; and open dash, infarct in new territory as a result of thrombectomy. SICH indicates symptomatic intracranial hemorrhage.



CONCLUSION

- Appropriately selected ischaemic stroke patients benefit from thrombectomy
- Patients with poor premorbid status, large volume infarct and onset >24 hours have poor prognosis

THANK YOU



