Derived mRS distributions

nLVO

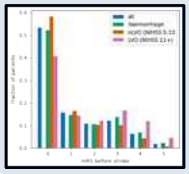
mRS	Pre-stroke	IVT at time zero	IVT at no-effect time	No treatment
0	0.583	0.445	0.196	0.198
1	0.163	0.197	0.259	0.262
2	0.104	0.110	0.119	0.120
3	0.101	0.110	0.127	0.128
4	0.042	0.079	0.146	0.148
5	0.007	0.026	0.061	0.062
6	0.000	0.033	0.092	0.082

Intravenous alteplase meta-analysis Lees et al. 2010

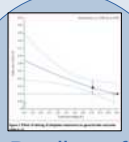
"placebo" population mRS distributions for nLVO and LVO patients combined.

SAMueL-1 survey

Pre-stroke patient mRS scores.

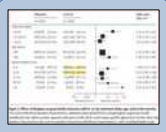


Alteplase meta-analysis Emberson et al. 2014



Decline of odds ratio of good outcome with time.

Mortality rates with and without IVT.



NIHSS < 11 probabilities of good outcome.

mRS	IVT at time zero	IVT at no-effect time
0	0.140	0.048
1	0.093	0.076
2	0.128	0.131
3	0.161	0.159
4	0.208	0.239
5	0.108	0.130
6	0.162	0.217

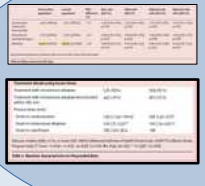
LVO

mRS	Pre-stroke
0	0.408
1	0.144
2	0.120
3	0.166
4	0.118
5	0.044
6	0.000

mRS	No treatment
0	0.050
1	0.079
2	0.136
3	0.164
4	0.247
5	0.135
6	0.189

mRS	MT at time zero	MT at no-effect time
0	0.306	0.048
1	0.123	0.076
2	0.119	0.131
3	0.159	0.157
4	0.144	0.237
5	0.064	0.130
6	0.085	0.221

mRS distribution of control population.



Mortality rate with MT and average time to MT.

HERMES thrombectomy meta-analysis Goyal et al. 2016

"Our traditional meta-analysis yielded a pooled rate of successful recanalization for IVT+MT of 75% (95% CI, 65%–83%; Figure XIC in the Data Supplement)."

Recanalisation meta-analysis Hui et al. 2020

75% weight for pre-stroke mRS distribution.

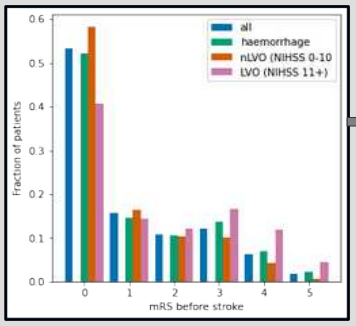
Pre-stroke

Data sources

SAMueL-1 survey

Data: pre-stroke patient mRS scores.

Location: SAMueL-1 online book, “Additional analysis (not in NIHR report) / Analysis of pre-stroke modified Rankin Scale” https://samuel-book.github.io/samuel-1/descriptive_stats/08_prestroke_mrs.html



RACE scale

de la Ossa Herrero et al. 2013

Info: NIHSS <=10 for nLVO and NIHSS >= 11 for LVO.

Location: final sentence of “Results” section.

“Best overall accuracy [for LVO prediction] for the NIHSS scale was achieved for a score >=11, with a sensitivity 0.88, specificity 0.72, and overall accuracy 0.76.”

Method

1. Collect data.

Take SAMueL-1 survey data for patients with ischaemic stroke only.

The data includes pre-stroke mRS scores.

2. Split into nLVO and LVO.

Split the data into two groups using the NIHSS scale cutoff:

- LVO with NIHSS greater than 10 (>=11)
- nLVO with NIHSS of 10 or less (< 11)

3. Find the proportions of each group with each mRS score.

→ Result:

nLVO pre-stroke	
mRS	Probability
0	0.583
1	0.163
2	0.104
3	0.101
4	0.042
5	0.007
6	0.000

LVO pre-stroke	
mRS	Probability
0	0.408
1	0.144
2	0.120
3	0.166
4	0.118
5	0.044
6	0.000

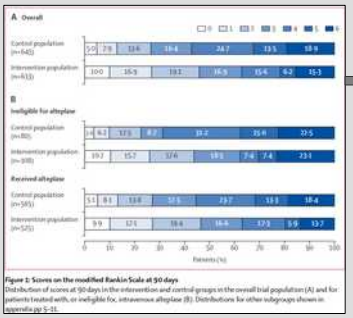
LVO - no treatment

Data sources

HERMES thrombectomy meta-analysis
Goyal et al. 2016

Data: mRS distribution of control population.

Location: Figure 1, Group A: Overall, bar labelled “Control Population”).



Method

1. Collect data.

Use the “Control population” set of data with no changes.

→ Result:

LVO no treatment	
mRS	Probability
0	0.050
1	0.079
2	0.136
3	0.164
4	0.247
5	0.135
6	0.189

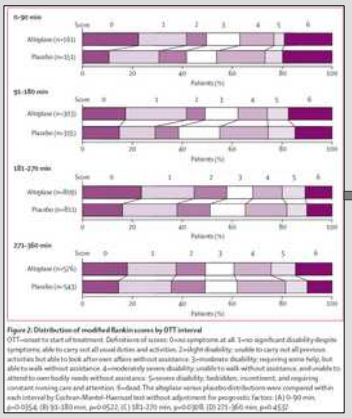
nLVO - no treatment

Data sources

Intravenous alteplase meta-analysis
Lees et al. 2010

Data: “placebo” population mRS distributions for nLVO and LVO patients combined.

Location: Figure 2, all “placebo” bars.



RACE scale
de la Ossa Herrero et al. 2013

Info: NIHSS <=10 for nLVO and NIHSS >= 11 for LVO.

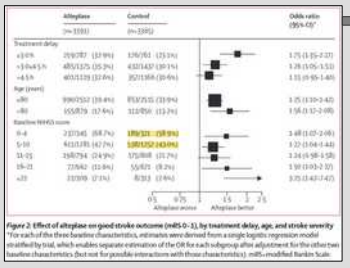
Location: final sentence of “Results” section.

> *“Best overall accuracy [for LVO prediction] for the NIHSS scale was achieved for a score >=11, with a sensitivity 0.88, specificity 0.72, and overall accuracy 0.76.”*

Alteplase meta-analysis
Emberson et al. 2014

Data: NIHSS < 11 probabilities of good outcome.

Location: Figure 2, “Control” column, “Baseline NIHSS score” rows “0-4” and “5-10”.



mRS distribution
as calculated earlier.

LVO no treatment	
mRS	Probability
0	0.050
1	0.079
2	0.136
3	0.164
4	0.247
5	0.135
6	0.189

Method

1. Collect data.

The sizes of the bars are not given in the text.
1) Measure the number of pixels in each section of each “Placebo” bar in the image.
2) Combine the bars and scale so that they sum to 1.

→ Result:

nLVO & LVO no treatment	
mRS	Probability
0	0.149
1	0.202
2	0.125
3	0.140
4	0.181
5	0.086
6	0.118

2. Find a reference probability.

Baseline NIHSS score	Number of patients with mRS 0 or 1	Total number of patients
0-4	189	321
5-10	538	1252
Total:	727	1573

The proportion 727 out of 1573 is 46%.

→ Probability P(mRS<=1)=0.46

3. Remove the LVO patients.

To reach P(mRS<=1)=0.46 in the nLVO-only distribution, use the following weighted distributions:

1) Scale the “nLVO & LVO” distribution up to 149%.
2) Scale the “LVO” distribution down to 49%.
3) Take the difference to leave only the “nLVO” patients.

→ Result:

nLVO no treatment	
mRS	Probability
0	0.198
1	0.262
2	0.120
3	0.128
4	0.148
5	0.062
6	0.082

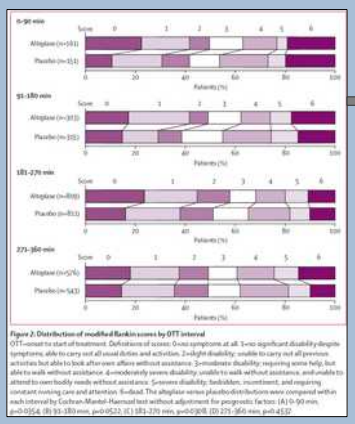
Sanity check – nLVO / LVO split

Data sources

Intravenous alteplase meta-analysis
Lees et al. 2010

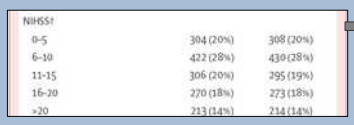
Data: “placebo” population mRS distributions for nLVO and LVO patients combined.

Location: Figure 2, all “placebo” bars.



IST-3 thrombolysis clinical trial
Sandercock et al. 2012

Data: proportions of patients with nLVO and LVO.
Location: Table 1, “NIHSS”



NIHSS†		
0–5	304 (20%)	308 (20%)
6–10	422 (28%)	430 (28%)
11–15	306 (20%)	295 (19%)
16–20	270 (18%)	273 (18%)
>20	213 (14%)	214 (14%)

RACE scale
de la Ossa Herrero et al. 2013

Info: NIHSS <=10 for nLVO and NIHSS >= 11 for LVO.

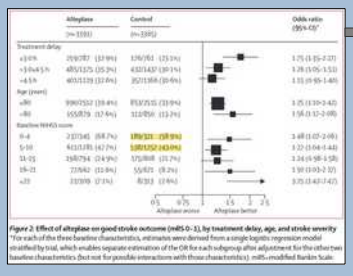
Location: final sentence of “Results” section.

> *“Best overall accuracy [for LVO prediction] for the NIHSS scale was achieved for a score >=11, with a sensitivity 0.88, specificity 0.72, and overall accuracy 0.76.”*

Alteplase meta-analysis.
Emberson et al. 2014

Data: numbers of patients by NIHSS score.

Location: Figure 2.



Method

1. Check Lees et al 2010 data.

Number of patients in total is 3670.
The nLVO/LVO split is not given.

2. Check IST-3 2012 data.

Number of patients in total is 3035.

Of these, 1464 have nLVO (NIHSS <= 10) and 1571 have LVO (NIHSS >= 11).

→ 51.7...% LVO, 48.2...% nLVO.

3. Check Emberson et al. 2014 data

Number of patients in total is 6756.

Of these, 3199 have nLVO (NIHSS <= 10) and 3557 have LVO (NIHSS >= 11).

→ 52.6…% LVO, 47.3...% nLVO.

The patients in Emberson are mostly made up of:

3035 from IST-3 +
3670 from Lees et al. 2010
= 6705 patients.

→ Expect the same nLVO/LVO split for Lees et al. 2010 as in IST-3.

4. Compare with derived split.

51% LVO, 49% nLVO – close enough to the above.

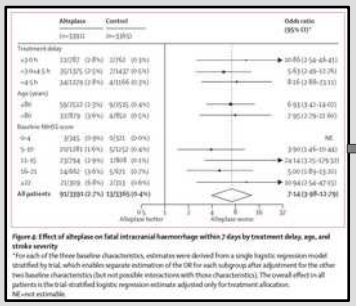
Excess deaths - IVT

Data sources

Alteplase meta-analysis
Emberson et al. 2014

Data: Mortality rates with and without IVT.

Location: Figure 4, “Alteplase” and “Control” columns, “Baseline NIHSS score” section, rows labelled “0-4” and “5-10”.



RACE scale
de la Ossa Herrero et al. 2013

Info: NIHSS <=10 for nLVO and NIHSS >= 11 for LVO.

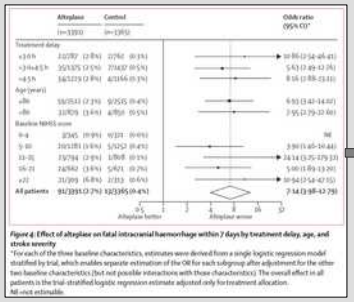
Location: final sentence of “Results” section.

“Best overall accuracy [for LVO prediction] for the NIHSS scale was achieved for a score >=11, with a sensitivity 0.88, specificity 0.72, and overall accuracy 0.76.”

Alteplase meta-analysis
Emberson et al. 2014

Data: Mortality rates with and without IVT.

Location: Figure 4, “Alteplase” and “Control” columns, “Baseline NIHSS score” section, rows labelled “11-15”, “16-21” and “>=22”.



Method

1. Calculate excess deaths for nLVO patients.

	Given IVT			No treatment		
NIHSS →	0-4	5-10	0-10	0-4	5-10	0-10
Number of patients	345	1281	1626	321	1252	1573
Deaths	3	20	23	0	5	5
% deaths			1.41%			0.32%

Excess deaths is the difference in percentages.

→ Excess death is 1.1%.

2. Calculate excess deaths for LVO patients.

Given IVT

NIHSS	11-15	16-21	>=22	>=11
Number of patients	794	662	309	1765
Deaths	23	24	21	68
			% deaths	3.85%

No treatment

NIHSS	11-15	16-21	>=22	>=11
Number of patients	808	671	313	1792
Deaths	1	5	2	8
			% deaths	0.45%

Excess deaths is the difference in percentages.

→ Excess death is 3.4%.

nLVO – IVT at no-effect time

Data sources

IVT excess deaths
as calculated earlier.

1.1%

mRS distribution
as calculated earlier.

nLVO no treatment	
mRS	Probability
0	0.198
1	0.262
2	0.120
3	0.128
4	0.148
5	0.062
6	0.082

Patient transport model
Holodinsky et al. 2018

Data: decline of chance of good outcome (mRS <= 1) with time to thrombolysis.

Location: Table, “Non-Large-Vessel Occlusion” section

Method

1. Apply excess deaths to “no treatment” distribution.

For a population treated at the time of no effect, expect no improvement compared with the no-treatment distribution but for some additional deaths.

Assume excess death is equally likely for all patients.

mRS	nLVO no treatment	1.1% deaths	nLVO no treatment with excess deaths
0	0.198	-0.002	0.196
1	0.262	-0.003	0.259
2	0.120	-0.001	0.119
3	0.128	-0.001	0.127
4	0.148	-0.002	0.146
5	0.062	-0.001	0.061
6	0.082	+0.010	0.092

→ Result:

nLVO IVT at no-effect time	
mRS	Probability
0	0.196
1	0.259
2	0.119
3	0.127
4	0.146
5	0.061
6	0.092

Sanity check

In the patient transport model, for IVT at the time of no effect the probability P(mRS<=1) = 0.4622.

The equivalent measure from the above distribution is P(mRS<=1) = 0.196 + 0.259 = 0.455.

LVO – IVT at no-effect time

Data sources

IVT excess deaths
as calculated earlier.

3.4%

mRS distribution
as calculated earlier.

LVO no treatment	
mRS	Probability
0	0.050
1	0.079
2	0.136
3	0.164
4	0.247
5	0.135
6	0.189

Method

1. Apply excess deaths to "no treatment" distribution.

For a population treated at the time of no effect, expect no improvement compared with the no-treatment distribution but for some additional deaths.

Assume excess death is equally likely for all patients.

mRS	LVO no treatment	3.4% deaths	LVO no treatment with excess deaths
0	0.050	-0.002	0.048
1	0.079	-0.003	0.076
2	0.136	-0.004	0.131
3	0.164	-0.005	0.159
4	0.247	-0.008	0.239
5	0.135	-0.004	0.130
6	0.189	+0.027	0.217

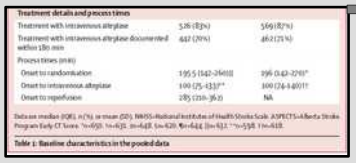
→ Result:

LVO IVT at no-effect time	
mRS	Probability
0	0.048
1	0.076
2	0.131
3	0.159
4	0.239
5	0.130
6	0.217

Excess deaths - MT

Data sources

HERMES thrombectomy meta-analysis
Goyal et al. 2016



Data: Mortality rate with MT and average time to MT.

Locations:
Mortality rate: Table 4.
Time: Table 1.

Recanalisation meta-analysis
Hui et al. 2020

Info: 75% weight for pre-stroke mRS distribution.

Location: “Secondary Outcome: Recanalization” section, final sentence.

> *“Our traditional meta-analysis yielded a pooled rate of successful recanalization for IVT+MT of 75% (95% CI, 65%–83%; Figure XIC in the Data Supplement).”*

mRS distributions
as calculated earlier.

	LVO pre-stroke	LVO no treatment
mRS	Probability	Probability
0	0.408	0.050
1	0.144	0.079
2	0.120	0.136
3	0.166	0.164
4	0.118	0.247
5	0.044	0.135
6	0.000	0.189

Method

1. Find reference data point.

The average MT treatment time is 285 minutes and the death rate of patients given MT is 15.3%.

This gives a probability that mRS is less than 6 of 84.7%.

Convert this probability to log-odds. The log-odds of mRS being less than 6 when MT is given at 285 minutes is 1.709.

→ log-odds reference = 1.709

2. Define time-zero distribution.

Calculate two distributions:
- Full-effect data: pre-stroke data with excess deaths.
- No-effect data: no-treatment data with excess deaths.

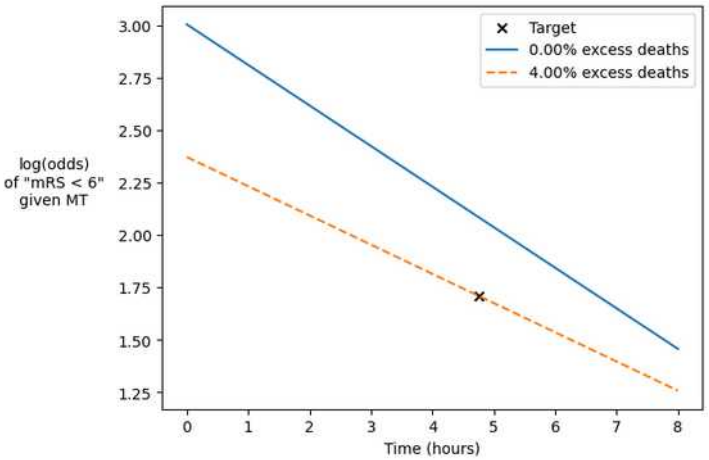
Combine 75% of the full-effect data with 25% of the no-effect data to make the time-zero data.

3. Method for finding excess deaths:

1) Set the excess death value *e*.
2) As above, use these excess deaths to calculate:
   1) The full-effect data
   2) The no-effect-time data
   3) The time-zero data
3) Take the probability that mRS is less than 6 in the time-zero and the no-effect-time distributions.
4) Convert the probabilities to log-odds.
5) Plot the two log-odds values and treatment times and connect the points with a straight line.
6) How close is the straight line to the reference point?

These steps can be repeated with different values of excess death *e* until the line passes exactly through the reference data point.

Using an optimiser function, we find the best *e*=4.00%.



→ Excess death is 4.0%.

LVO – MT at no-effect time

Data sources

MT excess deaths
as calculated earlier.

4.0%

mRS distribution
as calculated earlier.

LVO no treatment	
mRS	Probability
0	0.050
1	0.079
2	0.136
3	0.164
4	0.247
5	0.135
6	0.189

Method

1. Apply excess deaths to "no treatment" distribution.

For a population treated at the time of no effect, expect no improvement compared with the no-treatment distribution but for some additional deaths.

Use the excess death rate of 4.0%.

Assume excess death is equally likely for all patients.

mRS	LVO no treatment	4.0% deaths	LVO no treatment with excess deaths
0	0.050	-0.002	0.048
1	0.079	-0.003	0.076
2	0.136	-0.005	0.131
3	0.164	-0.006	0.157
4	0.247	-0.009	0.237
5	0.135	-0.005	0.130
6	0.189	+0.040	0.221

→ Result:

LVO MT at no-effect time	
mRS	Probability
0	0.048
1	0.076
2	0.131
3	0.157
4	0.237
5	0.130
6	0.221

Chance decay over time

Data sources

Alteplase meta-analysis
Emberson et al. 2014

Data: decline of odds ratio of good outcome with time for all patients (i.e. any NIHSS score) treated with alteplase compared with a control group.

Location: Figure 1

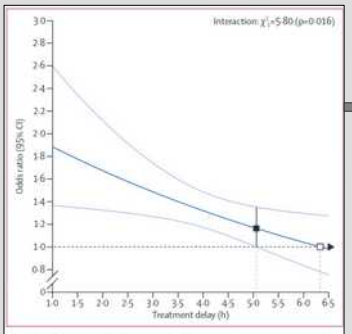


Figure 1: Effect of timing of alteplase treatment on good stroke outcome (mRS 0–1)
The solid line is the best linear fit between the log odds ratio for a good stroke outcome for patients given alteplase compared with those given control (vertical axis) and treatment delay (horizontal axis; $p_{interaction}$=0·016). Estimates are derived from a regression model in which alteplase, time to treatment, age, and stroke severity (handled in a quadratic manner) are included as main effects but the only treatment interaction included is with time to treatment. Only 198 patients (159 from IST-3) had a time from stroke onset to treatment of more than 6 h. The white box shows the point at which the estimated treatment effect crosses 1. The black box shows the point at which the lower 95% CI for the estimated treatment effect first crosses 1·0. mRS=modified Rankin Scale.

Alteplase meta-analysis
Emberson et al. 2014

Info: use same slope for all straight line fits.

Location: "Results" section, paragraphs 2 and 3.

> "*The effect of alteplase on a good outcome was chiefly driven by treatment delay; after controlling for treatment delay, neither age nor severity of stroke contributed significant additional predictive value (appendix p 5).*"

Method

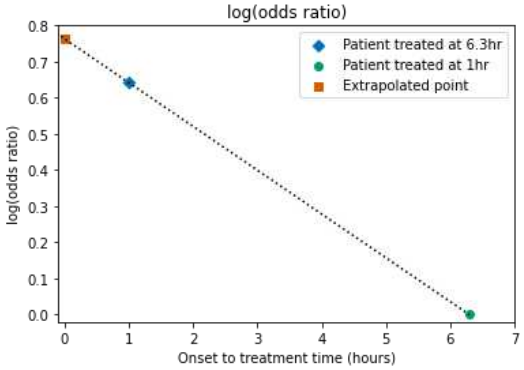
1. Get reference data points

Take two odds ratio points from this chart and convert them to log(odds ratio), where "log" means "natural log":

Treatment delay (hours)	Odds ratio	log(odds ratio)
1.0	1.9	0.64185
6.3	1.0	0.00000

2. Straight line fit

Connect the two "log(odds ratio)" and time points with a straight line.



The slope of the line is:
b = (0.00000 – 0.64185) ÷ (6.3 – 1.0)
b = -0.1211…

The line hits time zero at a log(odds ratio) value:
a= 0.76296.

3. Convert to probability

If we use a reference probability value, then we can calibrate the straight line fit and use it to calculate a probability of mRS <= 1 at any time.

For a reference point at the no-effect time t_{ne}, the probability at time zero is:

$$P(\text{mRS} \leq 1 \mid t = 0) = \frac{e^{a} \cdot \left\{ \frac{P_R}{1-P_R} \right\}}{1 + e^{a} \cdot \left\{ \frac{P_R}{1-P_R} \right\}}$$

where:

$$P_R = P(\text{mRS} \leq 1 \mid t_{\text{ne}})$$

4. Usage

This straight line fit applies to mRS <= 1 data only.

The same value of *a* can be used to fit the decay with time for:

- nLVO and LVO patients combined
- nLVO patients only
- LVO patients only

nLVO – IVT at time zero

Data sources

mRS distribution
as calculated earlier.

nLVO IVT at no-effect time	
mRS	Probability
0	0.196
1	0.259
2	0.119
3	0.127
4	0.146
5	0.061
6	0.092

Formula for probability at time zero
as calculated earlier.

$$P(\text{mRS} \le 1 \mid t = 0) = \frac{e^a \cdot \left\{\frac{P_R}{1-P_R}\right\}}{1 + e^a \cdot \left\{\frac{P_R}{1-P_R}\right\}}$$

$$P_R = P(\text{mRS} \le 1 \mid t_{ne})$$

a= 0.76296

IVT excess deaths
as calculated earlier.

1.1%

mRS distribution
as calculated earlier.

nLVO pre-stroke	
mRS	Probability
0	0.583
1	0.163
2	0.104
3	0.101
4	0.042
5	0.007
6	0.000

Patient transport model
Holodinsky et al. 2018

Data: decline of chance of good outcome (mRS <= 1) with time to thrombolysis.

Location: Table, “Non-Large-Vessel Occlusion” section

Method

1. Get reference probability at no-effect time.

Take the probability of mRS being less than or equal to 1. This matches the data that went into the formula for probability at time zero.

→ P(mRS<=1 | t=t_ne) = 45.5%

2. Calculate a reference probability at time zero.

Plug the values of *a* and P_R=45.5% into the formula.

→ P(mRS<=1 | t=0) = 64.2%

3. Combine mRS distributions.

To reach P(mRS<=1 | t=0)=0.642 in the time-zero distribution, use the following weighted distributions:

1) Apply the excess deaths to the pre-stroke data.
2) Multiply the “pre-stroke data with excess deaths” data by 0.643.
3) Multiply the “IVT at no-effect time” data by 0.357.
4) Add these two sets of data together.

→ Result:

nLVO IVT at time zero	
mRS	Probability
0	0.445
1	0.197
2	0.110
3	0.110
4	0.079
5	0.026
6	0.033

Sanity check

In the patient transport model, for IVT at time zero the probability P(mRS<=1) = 0.6343.

The equivalent probability from the above distribution is P(mRS<=1) = 0.642.

LVO – IVT at time zero

Data sources

mRS distribution
as calculated earlier.

LVO IVT at no-effect time	
mRS	Probability
0	0.048
1	0.076
2	0.131
3	0.159
4	0.239
5	0.130
6	0.217

Formula for probability at time zero
as calculated earlier.

$$P(\text{mRS} \leq 1 \mid t = 0) = \frac{e^a \cdot \left\{\frac{P_R}{1-P_R}\right\}}{1 + e^a \cdot \left\{\frac{P_R}{1-P_R}\right\}}$$

$$P_R = P(\text{mRS} \leq 1 \mid t_{ne})$$

a= 0.76296

IVT excess deaths
as calculated earlier.

3.4%

mRS distribution
as calculated earlier.

LVO pre-stroke	
mRS	Probability
0	0.408
1	0.144
2	0.120
3	0.166
4	0.118
5	0.044
6	0.000

Method

1. Get reference probability at no-effect time.

Take the probability of mRS being less than or equal to 1. This matches the data that went into the formula for probability at time zero.

→ P(mRS<=1 | t=t_ne) = 12.4%

2. Calculate a reference probability at time zero.

Plug the values of *a* and P_R=12.4% into the formula.

→ P(mRS<=1 | t=0) = 23.3%

3. Combine mRS distributions.

To reach P(mRS<=1 | t=0)=0.233 in the time-zero distribution, use the following weighted distributions:

1) Apply the excess deaths to the pre-stroke data.
2) Multiply the “pre-stroke data with excess deaths” data by 0.255.
3) Multiply the “IVT at no-effect time” data by 0.745.
4) Add these two sets of data together.

→ Result:

LVO IVT at time zero	
mRS	Probability
0	0.140
1	0.093
2	0.128
3	0.161
4	0.208
5	0.108
6	0.162

LVO – MT at time zero

Data sources

Recanalisation meta-analysis
Hui et al. 2020

Info: 75% weight for pre-stroke mRS distribution.

Location: "Secondary Outcome: Recanalization" section, final sentence.

> *"Our traditional meta-analysis yielded a pooled rate of successful recanalization for IVT+MT of 75% (95% CI, 65%–83%; Figure XIC in the Data Supplement)."*

MT excess deaths
as calculated earlier.

4.0%

mRS distribution
as calculated earlier.

LVO pre-stroke	
mRS	Probability
0	0.408
1	0.144
2	0.120
3	0.166
4	0.118
5	0.044
6	0.000

mRS distribution
as calculated earlier.

LVO MT at no-effect time	
mRS	Probability
0	0.048
1	0.076
2	0.131
3	0.157
4	0.237
5	0.130
6	0.221

Method

1. Define time-zero distribution.

Combine 75% of the full-effect data with 25% of the no-effect data. The full-effect data is the pre-stroke data with the excess deaths as a result of MT.

2. Add excess deaths to pre-stroke distribution.

mRS	LVO pre-stroke	4.0% deaths	LVO pre-stroke with excess deaths
0	0.408	-0.016	0.392
1	0.144	-0.006	0.138
2	0.120	-0.005	0.115
3	0.166	-0.007	0.160
4	0.118	-0.005	0.113
5	0.044	-0.002	0.042
6	0.0000	+0.040	0.040

3. Combine the data for full effect and no effect of recanalisation.

- Multiply the "LVO pre-stroke with excess deaths" data by 0.75.
- Multiply the "LVO MT at no-effect time" data by 0.25.
- Add these two sets of data together.

→ Result:

LVO MT at time zero	
mRS	Probability
0	0.306
1	0.123
2	0.119
3	0.159
4	0.144
5	0.064
6	0.085

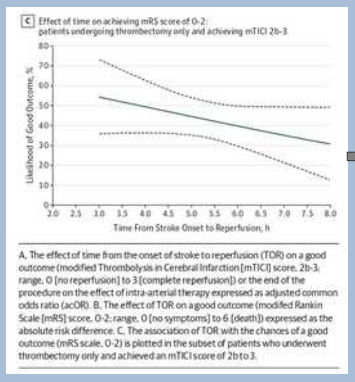
Sanity check – MT success rate

Data sources

MR CLEAN Recanalisation clinical trial
Fransen et al. 2016

Data: decline of chance of good outcome (mRS 0-2) with time to thrombectomy for successful reperfusion only.

Location: Figure C, end points of graph stated in "Tertiary analysis" subsection.



A, The effect of time from the onset of stroke to reperfusion (TOR) on a good outcome (modified Thrombolysis in Cerebral Infarction [mTICI] score, 2b-3; range, 0 [no reperfusion] to 3 [complete reperfusion]) or the end of the procedure on the effect of intra-arterial therapy expressed as adjusted common odds ratio (acOR). B, The effect of TOR on a good outcome (modified Rankin Scale [mRS] score, 0-2; range, 0 [no symptoms] to 6 [death]) expressed as the absolute risk difference. C, The association of TOR with the chances of a good outcome (mRS scale, 0-2) is plotted in the subset of patients who underwent thrombectomy only and achieved an mTICI score of 2b to 3.

mRS distribution
as calculated earlier.

LVO pre-stroke	
mRS	Probability
0	0.408
1	0.144
2	0.120
3	0.166
4	0.118
5	0.044
6	0.000

Recanalisation meta-analysis
Hui et al. 2020

Info: 75% weight for pre-stroke mRS distribution.

Location: "Secondary Outcome: Recanalization" section, final sentence.

"Our traditional meta-analysis yielded a pooled rate of successful recanalization for IVT+MT of 75% (95% CI, 65%–83%; Figure XIC in the Data Supplement)."

mRS	LVO MT at no-effect time	LVO MT at time zero
0	0.048	0.306
1	0.076	0.123
2	0.131	0.119
3	0.157	0.159
4	0.237	0.144
5	0.130	0.064
6	0.221	0.085

mRS distributions
as calculated earlier.

Method

1. Extrapolate the line back to time zero.

End points from the graph (given in "Tertiary analysis" section):

Time (hours)	Probability of mRS 0-2
3.0	55%
8.0	31%

Assume the decrease with time is constant and that the graph shows a straight line. This gives an average decrease in probability of 4.8% per hour.

At time zero, the probability would be 55% + (3 x 4.8%) = **69.4%**.

Pre-stroke probability of mRS 0-2 is:
0.408+0.144+0.120 = **67.2%**.

→ for successful recanalisation, use the full recovery mRS distribution.

2. Check treatment at 8 hours.

From the graph, the end point is 31%. Scaling down by 0.75 successful recanalisation gives 31% x 0.75 = **23.25%**.

Probability of mRS 0-2 given MT at time of no effect (8 hours) is 0.048 + 0.076 + 0.131 = **25.5%**.

3. Check treatment at 0 hours.

From the graph, the extrapolated point at time zero is 69.4%. Scaling down by 0.75 successful recanalisation rate, 69.4% x 0.75 = **52.05**%.

MT at time zero probability of mRS 0-2 is:
0.306 + 0.123 + 0.119 = **54.8%**.

→ 75% successful recanalisation gives a good enough match.