

Supplementary Tables

eTable 1 The modified Rankin Scale for Children¹ and the original NEOS score developed by Balu *et al.*

1. Bigi S, Fischer U, Wehrli E, et al. Acute ischemic stroke in children versus young adults. *Ann Neurol.* 2011;70:245–254.

NEOS	Patient characteristics
1	ICU admission required
1	No clinical improvement after 4 weeks of treatment
1	No treatment within 4 weeks of symptom onset
1	Abnormal MRI
1	CSF white blood cell count >20 cells/μL
Sum	0-5
mRS	Description
0	No symptoms at all
1	No significant disabilities despite symptoms; behavior appropriate to age and normal further development
2	Slight disability; unable to carry out all previous activities, but same independence as other age- and sex-matched children (no reduction of levels on the gross motor function scale)
3	Moderate disability; requiring some help, but able to walk without assistance; in younger patients adequate to walk without assistance motor development despite mild functional impairment (reduction of 1 level on the gross motor function scale)
4	Moderately severe disability; unable to walk without assistance; in younger patients, reduction of at least 2 levels on the gross motor function scale
5	Severe disability; bedridden, requiring constant nursing care and attention
6	Dead

CSF = cerebrospinal fluid, ICU = intensive care unit; mRS = modified Rankin scale, NEOS = anti-NMDAR Encephalitis One-Year Functional Status.

eTable 2 Distribution of the time after discharge for the different follow-up time-points investigated in this study, including mean, standard deviation, median, and median absolute deviation (MAD) of months between discharge and the respective follow-up

Follow-up [months]	Mean [months]	SD	Median [months]	MAD	N (patients analyzed)
2	2	1.3	2	1.1	59
5	5	3.7	4	1.5	53
9	9	4.9	8	1.5	37
12	12	2.4	12	1.5	46
16	16	10.9	16	8.9	32

eTable 3 Recomposition of the original NEOS score: Association of different factors associated to mRS-based outcomes of NMDARE (good: mRS≤2, poor: mRS≥3) *via* binomial generalized linear models. The table summarizes the significant associations of different patient characteristics with the mRS-based outcome over time (based on likelihood ratio tests (LRT)). All p-values generated for one time-point were adjusted for multiple testing *via* Benjamini-Hochberg correction. Pseudo R² values signify the strength of the association between mRS and patient characteristic.² The number of good and poor outcomes are highlighted, as well as the distribution of the respective patient characteristic (range, incidence of factor levels).

2. Cox DR, Snell EJ. Analysis of Binary Data [online]. 2nd ed. CRC Press; 2018.

follow-up [months]	Variable	DF	Deviance	Residual Deviance	P	P FDR	Pseudo R2 (Cox & Snell)	mRS distribution (0:≤2; 1:≥3)	Variable distribution
2	Onset to treatment	1.57	6.07843	74.88047	0.01368	0.07116	0.09789	0:26; 1:33	1-240
	Treatment to improvement	1.57	5.54123	75.41767	0.01857	0.08780	0.08964	0:26; 1:33	1-70
	Treatment to improvement bin original	1.57	8.51190	72.44700	0.00353	0.03082	0.13435	0:26; 1:33	No:41; Yes:18
	Admission 3 rd week	2.55	23.96437	55.81890	0.00001	0.00033	0.34695	0:26; 1:32	general:34; ICU:16; IMC:8
	Admission seizure response	1.43	8.46222	53.36432	0.00363	0.03082	0.37356	0:20; 1:25	in control:34; refractory:11
	Admission treatment rituximab	1.57	6.16325	74.79565	0.01304	0.07116	0.09919	0:26; 1:33	Yes:24; No:35
	Admission treatment 2 nd -line	1.57	6.16325	74.79565	0.01304	0.07116	0.09919	0:26; 1:33	No:35; Yes:24
	Discharge memory	1.55	8.68917	69.46778	0.00320	0.03082	0.17697	0:25; 1:32	Yes:37; No:20
	Discharge speech	1.56	8.21723	71.56605	0.00415	0.03082	0.14718	0:26; 1:32	Yes:32; No:26
	Discharge sleep	1.56	8.21723	71.56605	0.00415	0.03082	0.14718	0:26; 1:32	Yes:32; No:26
	Discharge movement	1.56	10.36595	69.41732	0.00128	0.03082	0.17768	0:26; 1:32	Yes:29; No:29
5	Treatment to improvement	1.51	5.71593	57.43696	0.01681	0.06230	0.09234	0:38; 1:15	1-70
	Onset to treatment bin original	1.51	7.35533	55.79755	0.00669	0.03009	0.11721	0:38; 1:15	Yes:33; No:20
	Treatment to improvement bin original	1.51	12.67642	50.47647	0.00037	0.00389	0.19334	0:38; 1:15	Yes:37; No:16
	Admission protein (mg/l)	1.45	6.21845	51.03232	0.01264	0.04978	0.18571	0:33; 1:14	86-2460
	Admission protein (mg/l) binned	1.45	4.68749	52.56328	0.03038	0.09571	0.16430	0:33; 1:14	Yes:28; No:19
	Admission MRI	1.51	10.59136	52.56153	0.00114	0.00716	0.16432	0:38; 1:15	normal:29; not normal:24
	Admission HSV encephalitis prior	1.51	7.11135	56.04154	0.00766	0.03217	0.11355	0:38; 1:15	Yes:9; No:44
	Admission treatment IV steroids	1.51	8.04490	55.10799	0.00456	0.02211	0.12747	0:38; 1:15	Yes:50; No:3
	Admission treatment 1 st -line	1.51	5.25191	57.90098	0.02192	0.07673	0.08517	0:38; 1:15	No:2; Yes:51
	Discharge behavior	1.50	4.55020	56.02900	0.03291	0.09874	0.11374	0:38; 1:14	Yes:38; No:14
	Discharge memory	1.49	8.87965	51.06503	0.00288	0.01652	0.18525	0:37; 1:14	Yes:32; No:19
	Discharge speech	1.50	8.56821	52.01098	0.00342	0.01796	0.17209	0:38; 1:14	Yes:28; No:24

	Discharge movement	1.50	5.01140	55.56779	0.02518	0.08349	0.12064	0:38; 1:14	Yes:24; No:28
	Follow-up relapse	1.51	10.96474	52.18815	0.00093	0.00650	0.16960	0:38; 1:15	Yes:4; No:49
	Follow-up behavior	1.50	11.21826	49.36093	0.00081	0.00638	0.20845	0:38; 1:14	Yes:18; No:34
	Follow-up memory	1.50	18.02916	42.55004	0.00002	0.00046	0.29475	0:38; 1:14	Yes:17; No:35
	Follow-up speech	1.50	18.02916	42.55004	0.00002	0.00046	0.29475	0:38; 1:14	Yes:17; No:35
	Follow-up sleep	1.50	11.48613	49.09307	0.00070	0.00631	0.21204	0:38; 1:14	Yes:12; No:40
	Follow-up movement	1.51	16.53043	46.62246	0.00005	0.00075	0.24435	0:38; 1:15	Yes:14; No:39
	Follow-up seizures	1.51	18.31589	44.83700	0.00002	0.00046	0.26687	0:38; 1:15	Yes:9; No:44
9	Admission autonomic dysfunction	1.35	9.62500	35.40821	0.00192	0.02975	0.15052	0:26; 1:11	Yes:13; No:24
	Admission CSF WBC/ μ l binned	1.35	6.78000	38.25321	0.00922	0.07144	0.10856	0:26; 1:11	Yes:22; No:15
	Discharge memory	1.34	7.90343	36.41245	0.00493	0.06118	0.13594	0:25; 1:11	Yes:21; No:15
	Discharge movement	1.34	13.44577	30.87011	0.00025	0.00507	0.21341	0:25; 1:11	Yes:17; No:19
	Follow-up behavior	1.35	6.78000	38.25321	0.00922	0.07144	0.10856	0:26; 1:11	Yes:15; No:22
	Follow-up memory	1.35	6.78000	38.25321	0.00922	0.07144	0.10856	0:26; 1:11	Yes:15; No:22
	Follow-up speech	1.35	15.82253	29.21068	0.00007	0.00216	0.23523	0:26; 1:11	Yes:16; No:21
	Follow-up movement	1.35	19.68624	25.34697	0.00001	0.00057	0.28371	0:26; 1:11	Yes:9; No:28
12	Admission MRI	1.44	9.84162	25.78192	0.00171	0.05777	0.19261	0:40; 1:6	normal:24; not normal:22
	Admission HSV encephalitis prior	1.44	7.69726	27.92628	0.00553	0.05777	0.15408	0:40; 1:6	Yes:9; No:37
	Admission treatment IV steroids	1.44	8.81556	26.80798	0.00299	0.05777	0.17440	0:40; 1:6	Yes:44; No:2
	Discharge memory	1.42	6.96041	28.09062	0.00833	0.06562	0.15105	0:38; 1:6	Yes:26; No:18
	Discharge speech	1.43	8.34861	26.99209	0.00386	0.05777	0.17109	0:39; 1:6	Yes:24; No:21
	Follow-up speech	1.44	9.33790	26.28564	0.00224	0.05777	0.18372	0:40; 1:6	Yes:13; No:33
	Follow-up movement	1.44	7.42873	28.19480	0.00642	0.05777	0.14913	0:40; 1:6	Yes:5; No:41
	Follow-up seizures	1.44	7.42873	28.19480	0.00642	0.05777	0.14913	0:40; 1:6	Yes:5; No:41
16	Discharge memory	1.29	7.54779	22.91451	0.00601	0.09463	0.12636	0:25; 1:6	Yes:18; No:13
	Discharge speech	1.29	7.54779	22.91451	0.00601	0.09463	0.12636	0:25; 1:6	Yes:18; No:13
	Discharge movement	1.29	8.38786	22.07444	0.00378	0.09463	0.13872	0:25; 1:6	Yes:17; No:14

CSF, cerebrospinal fluid; DF, degree of freedom; FDR, false discovery rate; HSV, *Herpes simplex* virus; mRS, modified Rankin scale; WBC, white blood cells

eTable 4 Interaction of additional patient characteristics with the NEOS score. To investigate different factors which modify the association between mRS-based good or poor outcomes (mRS $\leq$ 2 / mRS $\geq$ 3) and the NEOS score, we used binomial generalized linear models ranging from simple to complex, including no variables, only the NEOS score, a covariable, or an additional interaction between NEOS score and the covariable. The table summarizes models which improved in fit after the addition of a covariable and or an interaction, as based on a minimal Akaike information criterion (AIC) criterium and significant likelihood ratio test. Pseudo R² values signify the strength of the association.² The number good / poor outcomes are indicated, as well as the distribution of the respective patient characteristic (range, incidence of factor levels).

2. Cox DR, Snell EJ. Analysis of Binary Data [online]. 2nd ed. CRC Press; 2018.

Follow-up [months]	Model components	DF	Deviance	Residual Deviance	P-value	Pseudo R ² (Cox & Snell)	Δ AIC to less complex model	Δ LRT p-value to less complex model	mRS Distribution (0: $\leq$ 2; 1: $\geq$ 3)	Variable Distribution
2	NEOS	1.55	14.22713	64.35249	0.00016	0.36170	-8.26052	0.00218	0:26; 1:31	general:34; ICU:15; IMC:8
	3 rd week on ICU during first adm.	2.53	12.26052	52.09197	0.00218					
	NEOS	1.56	14.19601	65.58726	0.00016	0.27637	-2.88916	0.02703	0:26; 1:32	Yes:55; No:3
	IV steroids during first adm.	1.55	4.88916	60.69811	0.02703					
	NEOS	1.55	13.10563	65.47399	0.00029	0.29050	-5.14268	0.00753	0:26; 1:31	Yes:32; No:25
	Sleep disorder at d/c	1.54	7.14268	58.33131	0.00753					
	NEOS	1.55	13.10563	65.47399	0.00029	0.26506	-3.06448	0.02442	0:26; 1:31	Yes:17; No:40
	Consciousness problem at d/c	1.54	5.06448	60.40951	0.02442					
	NEOS	1.55	13.10563	65.47399	0.00029	0.33950	-7.36518	0.00340	0:26; 1:31	Yes:28; No:29
	Movement disorder at d/c	1.54	8.57891	56.89508	0.00340					
	NEOS: Movement disorder at d/c	1.53	2.78627	54.10881	0.09508					
5	NEOS	1.51	22.19178	40.96111	0.00000	0.38041	-2.05149	0.04852	0:38; 1:15	none:11; focal:13; generalized:29;
	Seizures during first adm.	2.49	6.05149	34.90962	0.04852					
	NEOS	1.51	22.19178	40.96111	0.00000	0.46503	-12.71584	0.00012	0:38; 1:15	Yes:50; No:3
	IV steroids during first adm.	1.50	14.71584	26.24527	0.00012					
	NEOS	1.51	22.19178	40.96111	0.00000	0.42240	-8.19222	0.00141	0:38; 1:15	No:2; Yes:51
	1 st -line therapy during first adm.	1.50	10.19222	30.76889	0.00141					
	NEOS	1.50	19.76618	40.81301	0.00001	0.36695	-3.20937	0.02720	0:38; 1:14	Yes:28; No:24

	Speech disorder at d/c	1.49	4.24743	36.56559	0.03931					
	NEOS: Speech disorder at d/c	1.48	2.96195	33.60364	0.08525					
	NEOS	1.50	19.76618	40.81301	0.00001	0.33497	-2.30171	0.03807	0:38; 1:14	Yes:14; No:38
	Consciousness problem at d/c	1.49	4.30171	36.51131	0.03807					
	NEOS	1.50	19.76618	40.81301	0.00001	0.34529	-3.22420	0.02227	0:38; 1:14	Yes:24; No:28
	Movement disorder at d/c	1.49	5.22420	35.58881	0.02227					
9	NEOS	1.35	9.35645	35.67676	0.00222	0.24813	-3.47007	0.02387	0:26; 1:11	Yes:26; No:11
	Sex	1.34	0.19629	35.48047	0.65773					
	NEOS: Sex	1.33	7.27378	28.20668	0.00700					
	NEOS	1.35	9.35645	35.67676	0.00222	0.23981	-2.82088	0.03303	0:26; 1:11	general:20; ICU:8; IMC:9
	1 st week on ICU during first adm.	2.33	6.82088	28.85588	0.03303					
	NEOS	1.35	9.35645	35.67676	0.00222	0.26165	-4.54038	0.01398	0:26; 1:11	No:7; Yes:30
	General ward during first adm.	1.34	1.91884	33.75791	0.16598					
	NEOS: General ward during first adm.	1.33	6.62154	27.13638	0.01008					
	NEOS	1.35	9.35645	35.67676	0.00222	0.26057	-6.45457	0.00364	0:26; 1:11	Yes:13; No:24
	Autonomic dysfunction during first adm.	1.34	8.45457	27.22219	0.00364					
	NEOS	1.34	11.72441	32.59147	0.00062	0.31208	-8.34628	0.00130	0:25; 1:11	Yes:17; No:19
	Movement disorder at d/c	1.33	10.34628	22.24519	0.00130					
12	NEOS	1.44	10.51911	25.10443	0.00118	0.35226	-5.45739	0.00884	0:40; 1:6	general:23; ICU:11; IMC:12
	1 st week on ICU during first adm.	2.42	9.45739	15.64704	0.00884					
	NEOS	1.44	10.51911	25.10443	0.00118	0.41437	-12.09433	0.00017	0:40; 1:6	Yes:44; No:2
	IV steroids during first adm.	1.43	14.09433	11.01010	0.00017					
	NEOS	1.44	10.51911	25.10443	0.00118	0.30604	-2.28630	0.04315	0:40; 1:6	Yes:20; No:26
	PLEX during first adm.	1.43	0.36954	24.73489	0.54326					
	NEOS: PLEX during first adm.	1.42	5.91676	18.81813	0.01500					
	NEOS	1.44	10.51911	25.10443	0.00118	0.30216	-4.03041	0.01406	0:40; 1:6	No:1; Yes:45
	1 st -line therapy during first adm.	1.43	6.03041	19.07402	0.01406					
16	NEOS	1.30	4.09267	26.79229	0.04307	0.17438	-5.21310	0.00724	0:26; 1:6	1-17
	Age at disease onset	1.29	7.21310	19.57920	0.00724					
	NEOS	1.29	3.93873	26.52357	0.04719	0.18624	-4.22072	0.01640	0:25; 1:6	general:21; ICU:4; IMC:6
	4 th week on ICU during first adm.	2.27	8.22072	18.30285	0.01640					
	NEOS	1.30	4.09267	26.79229	0.04307	0.16333	-2.42849	0.04019	0:26; 1:6	Yes:22; No:10

	Sleep disorder during first adm.	1.29	0.34478	26.44751	0.55708						
	NEOS: Sleep disorder during first adm.	1.28	6.08370	20.36381	0.01364						
	NEOS	1.30	4.09267	26.79229	0.04307	0.14835	-3.38119	0.02036	0:26; 1:6	Yes:8; No:24	
	HSV encephalitis prior to NMDARE	1.29	5.38119	21.41111	0.02036						
	NEOS	1.30	4.09267	26.79229	0.04307	0.15855	-2.09207	0.04755	0:26; 1:6	Yes:2; No:30	
	CYC during first adm.	1.29	0.05065	26.74165	0.82194						
	NEOS: CYC during first adm.	1.28	6.04143	20.70022	0.01397						
	NEOS	1.30	4.09267	26.79229	0.04307	0.13573	-2.51380	0.03362	0:26; 1:6	No:1; Yes:31	
	1st-line therapy during first adm.	1.29	4.51380	22.27849	0.03362						
	NEOS	1.29	4.78502	25.67729	0.02871	0.13958	-2.08482	0.04327	0:25; 1:6	Yes:18; No:13	
	Memory problems at d/c	1.28	4.08482	21.59247	0.04327						
	NEOS	1.29	4.78502	25.67729	0.02871	0.15208	-2.94812	0.02612	0:25; 1:6	Yes:18; No:13	
	Speech disorder at d/c	1.28	4.94812	20.72916	0.02612						
	NEOS	1.29	4.78502	25.67729	0.02871	0.18875	-3.55623	0.02287	0:25; 1:6	Yes:17; No:14	
	Sleep disorder at d/c	1.28	0.00515	25.67213	0.94277						
	NEOS: Sleep disorder at d/c	1.27	7.55108	18.12105	0.00600						
	NEOS	1.29	4.78502	25.67729	0.02871	0.16879	-4.12244	0.01335	0:25; 1:6	Yes:17; No:14	
	Movement disorder at d/c	1.28	6.12244	19.55485	0.01335						

adm, admission; AIC, Akaike information criterion; CYC, cyclophosphamide; d/c, discharge; DF, degree of freedom; foc, focal; f/u, follow-up; gen, general ward; HSV, *Herpes simplex* virus; ICU, intensive care unit; IMC, intermediate care; LRT, likelihood ratio test; mRS, modified Rankin scale; PLEX, plasma exchange.

eTable 5 Association of the original and adapted NEOS score with outcomes based on cognitive measures instead of mRS during follow-up. Therefore, cognitive test results were dichotomized to be either in normal ranges or showing pathologic characteristics. All tests were performed using simple binomial generalized linear models including only the NEOS score (original, adapted). Pseudo R² values signify the strength of the association.² The number of good / poor clinical outcomes are indicated (target variable).

2. Cox DR, Snell EJ. Analysis of Binary Data [online]. 2nd ed. CRC Press; 2018.

Follow-up [Months]	Outcome measure	Target variable: cognition (norm:0, path:1)	DF	NEOS Score original					NEOS Score adapted				
				Deviance	Resid. Dev.	Pseudo R2 (Cox & Snell)	P-value	P FDR	Deviance	Resid. Dev	Pseudo R2 (Cox & Snell)	P-value	P FDR
5	Behavior	0:14; 1:10	1.22	1.94598	30.65529	0.05726	0.16302	0.21736	0.53187	32.06941	0.01599	0.46582	0.62110
9		0:14; 1:10	1.17	0.34734	24.66084	0.01047	0.55563	0.55563	0.18313	24.82505	0.00553	0.66870	0.66870
12		0:14; 1:10	1.21	2.27213	27.44803	0.07294	0.13172	0.21736	1.19985	28.52031	0.03921	0.27335	0.54670
16		0:14; 1:10	1.15	2.95047	17.64664	0.08553	0.08585	0.21736	2.69909	17.89802	0.07854	0.10041	0.40162
5	Intelligence	0:21; 1:4	1.23	0.68070	21.30279	0.02042	0.40935	0.54579	1.10368	20.87981	0.03289	0.29346	0.47477
9		0:16; 1:2	1.16	4.91979	7.63817	0.13850	0.02655	0.10620	1.04093	11.51702	0.03105	0.30760	0.47477
12		0:21; 1:2	1.21	1.25248	12.33772	0.04089	0.26308	0.52616	0.85169	12.73851	0.02799	0.35608	0.47477
16		0:16	1.14	0.00000	0.00000	0.00000	1.00000	1.00000	0.00000	0.00000	0.00000	1.00000	1.00000
5	Memory	0:18; 1:5	1.21	1.01654	23.06843	0.03033	0.31334	0.41779	6.62331	17.46166	0.18185	0.01007	0.04026
9		0:15; 1:2	1.15	1.04530	11.26985	0.03118	0.30659	0.41779	1.11618	11.19898	0.03326	0.29074	0.29074
12		0:19; 1:2	1.19	0.09585	13.11283	0.00319	0.75687	0.75687	4.08355	9.12512	0.12726	0.04330	0.04661
16		0:15; 1:1	1.14	2.98265	4.49868	0.08642	0.08416	0.33665	1.45301	6.02832	0.04308	0.22805	0.29074
5	Language	0:18; 1:5	1.21	0.23284	23.85213	0.00703	0.62943	0.86290	0.05086	24.03411	0.00154	0.82157	0.82157
9		0:12; 1:5	1.15	0.02982	20.56730	0.00090	0.86290	0.86290	0.33486	20.26225	0.01010	0.56281	0.82157
12		0:17; 1:4	1.19	0.21745	20.23288	0.00722	0.64099	0.86290	0.18268	20.26765	0.00607	0.66908	0.82157
16		0:11; 1:5	1.14	0.14484	19.72993	0.00438	0.70352	0.86290	0.11551	19.75926	0.00349	0.73396	0.82157
5	Executive function	0:14; 1:9	1.21	1.30551	29.48358	0.03879	0.25321	0.29317	7.14156	23.64752	0.19460	0.00753	0.03013
9		0:11; 1:6	1.15	8.23912	13.83533	0.22094	0.00410	0.01640	5.39927	16.67517	0.15093	0.02015	0.04029
12		0:13; 1:8	1.19	3.20813	24.70206	0.10142	0.07327	0.14655	3.90823	24.00196	0.12215	0.04805	0.06407
16		0:11; 1:5	1.14	1.10501	18.76975	0.03293	0.29317	0.29317	0.91774	18.95702	0.02743	0.33807	0.33807
5	Visuospatial function	0:20; 1:3	1.21	0.10471	17.70706	0.00317	0.74625	1.00000	2.88942	14.92235	0.08383	0.08916	0.35665
9		0:16; 1:1	1.15	2.60239	5.00402	0.07583	0.10670	0.42681	0.53796	7.06845	0.01617	0.46328	0.61771
12		0:19; 1:2	1.19	0.09585	13.11283	0.00319	0.75687	1.00000	1.06045	12.14822	0.03473	0.30311	0.60622
16		0:16	1.14	0.00000	0.00000	0.00000	1.00000	1.00000	0.00000	0.00000	0.00000	1.00000	1.00000

DF, degree of freedom; FDR, false discovery rate; norm, normal; path, pathologic; Resid. Dev., Residual Deviance;