

Supplemental Table 1: Demographics and clinical characteristics

	Development cohort (n = 456)	Validation cohort (n = 220)	P value
Age (years)			
Median (IQR)	56 (48-63)	57 (48-68)	0.046
Missing data	0 (0%)	0 (0%)	
Aneurysm size (mm)			
≥10	42 (9%)	14 (6%)	0.007
<10	356 (78%)	199 (90%)	
Missing data	58 (13%)	7 (3%)	
Baseline hemoglobin (g/L)			
Median (IQR)	131 (119-141)	131.5 (118-145)	0.397
Missing data	2 (0%)	0 (0%)	
Fasting blood glucose (mmol/L)			
Median (IQR)	6.42 (5.34-8.02)	7.18 (6.00-8.70)	0.015
Missing data	6 (1%)	5 (2%)	
Prothrombin time (s)			
Median (IQR)	11.2 (10.7-11.7)	11.6 (11.1-12.0)	<0.001
Missing data	19 (4%)	4 (2%)	
Heart rate (per minute)			
Median (IQR)	78 (70-87)	78 (69-88.5)	0.486
Missing data	0 (0%)	1 (0%)	
SIRS score on admission			

0	195 (43%)	81(37%)	0.128
1	161 (35%)	83 (38%)	
2	72 (16%)	39 (18%)	
3	22 (5%)	14(6%)	
4	6 (1%)	3 (1%)	
Missing data	0 (0%)	0 (0%)	
GCS score			
3-6	55 (12%)	32 (15%)	0.790
7-12	81 (18%)	37(17%)	
13-14	76 (17%)	34 (15%)	
15	242 (53%)	115 (52%)	
Missing data	2 (0%)	2 (1%)	
Aneurysm treatment			
Open-surgery	260 (57%)	126 (57%)	0.965
Endovascular	165 (36%)	78 (35%)	
Others	31 (7%)	16(7%)	
Missing data	0 (0%)	0 (0%)	
Post-acute phase anemia	155 (34%)	97 (44%)	0.011

IQR, interquartile range; GCS, glasgow coma scale; SIRS, systemic inflammatory response syndrome;

Supplemental Table 2: Univariate risk factors associated with post-acute phase anaemia after aSAH

	Anemia (n = 155)	No anemia (n = 301)	Univariate OR	95% CI	P value
Age, years (mean ± SD)	55.9 ± 12.5	54.6 ± 11.5	1.03	1.01-1.05	0.001
Sex: female	129 (93%)	173 (57%)	3.67	2.27-5.93	<0.001
Medical history					
Hypertension	78 (50%)	135 (45%)	1.25	0.85-1.84	0.27
Diabetes mellitus	6 (4%)	13 (4%)	0.89	0.33-2.39	0.82
Smoking	25 (16%)	80 (27%)	0.53	0.32-0.87	0.012
Alcohol	19 (12%)	71 (24%)	0.45	0.26-0.78	0.004
Stroke	5 (3%)	6 (2%)	1.64	0.49-5.46	0.42
Heart disease of any kind	6 (4%)	10 (3%)	1.17	0.42-3.29	0.76
GCS score	10.8 ± 4.40	13.3 ± 3.12	0.84	0.80-0.89	<0.001
SIRS score on admission	1.10 ± 1.04	0.75 ± 0.87	1.48	1.20-1.82	<0.001
Modified Fisher scale	2.92 ± 1.15	2.45 ± 1.26	1.38	1.15-1.65	<0.001
Graeb score	2.02 ± 2.64	1.42 ± 2.43	1.096	1.01-1.19	0.028

Hydrocephalus	13 (9%)	10 (4%)	2.64	1.13-6.19	0.025
Baseline hemoglobin (g/L)	118.7 ± 19.4	135.1 ± 16.2	0.945*	0.932-0.958	<0.001
Aneurysm treatment					
Open-surgery	109 (70%)	151 (50%)	2.35†	1.56-3.55	<0.001
Endovascular	36 (23%)	129 (43%)			
Others	10 (7%)	21 (7%)			
INR	1.005 ± 0.09	0.974 ± 0.08	70.8	6.6-764	<0.001
Prothrombin time (s)	11.63 ± 1.33	11.20 ± 0.97	1.42	1.17-1.72	<0.001
D-Dimer (µg/L)	3203 ± 6094	1518 ± 2348	1.00015	1.00006-1.00023	0.001
Fasting blood glucose (mmol/L)	8.00 ± 3.83	6.64 ± 2.15	1.19	1.10-1.28	<0.001
Alanine transaminase (U/L)	20.4 ± 17.4	22.1 ± 24.2	0.996	0.987-1.006	0.45
Aspartate aminotransferase (U/L)	29.3 ± 20.5	24.1 ± 16.2	1.016	1.01-1.028	0.006
Alkaline phosphatase (U/L)	65.6 ± 21.4	72.3 ± 42.1	0.990	0.98-1.00	0.041
Creatinine (µmol/L)	61.9 ± 41.6	56.1 ± 18.2	1.006	0.999-1.013	0.104

Systolic pressure (mmHg)	147 ± 23	144 ± 21	1.005	0.996-1.014	0.26
Diastolic pressure (mmHg)	85 ± 14	86 ± 13	0.996	0.981-1.011	0.60
Heart rate (per minute)	82 ± 17	78 ± 15	1.016	1.004-1.029	0.011
White blood cell count (×10 ⁹)	12.4 ± 5.4	11.7 ± 4.7	1.029	0.990-1.069	0.15
Weight (kg)	57.7 ± 8.0	63.4 ± 9.4	0.927	0.883-0.973	0.002
BMI	23.1 ± 2.6	24.0 ± 3.75	0.929	0.821-1.051	0.24
Aneurysm size ≥10mm	20 (15%)	22 (8%)	1.98	1.04-3.78	0.038
Posterior circulation aneurysm	16 (10%)	32 (11%)	0.960	0.509-1.811	0.90
Aneurysm location					
ICA (excluding AcomA & PcomA)	15 (10%)	29 (10%)	0.998	0.518-1.922	0.99
MCA	26 (17%)	56 (19%)	0.875	0.524-1.459	0.61
AcomA	56 (36%)	103 (34%)	1.076	0.718-1.614	0.72
PcomA	43 (28%)	72 (24%)	1.210	0.779-1.880	0.40
PCA	1 (1%)	9 (3%)	0.209	0.026-1.667	0.14

BA	4 (3%)	5 (2%)	1.558	0.412-5.886	0.51
VA	5 (3%)	11 (4%)	0.873	0.298-2.558	0.80
ACA	6 (4%)	14 (5%)	0.820	0.309-2.177	0.69
Others	9 (6%)	11 (4%)	1.614	0.654-3.982	0.30
Hospital LOS (median, IQR)	27 (14-29)	18 (13-21)	1.044	1.026-1.063	<0.001
Symptomatic vasospasm	59 (61%)	71 (31%)	3.53	2.14-5.80	<0.001
Mortality	29 (19%)	14 (5%)	4.72	2.41-9.23	<0.001
Postoperative Hs-CRP (mg/L)	36.6 ± 40.2	22.6 ± 26.6	1.013	1.006-1.021	<0.001

*Compared to baseline hematocrit 36–45%.

†Open surgery compared to endovascular or other treatment.

ACA, anterior cerebral artery; AcomA, anterior communicating artery; aSAH, aneursymal subarachnoid haemorrhage; BA, basilar artery; GCS, Glasgow Coma Scale; Hs-CRP, high-sensitivity C-reactive protein; INR, international normalised ratio; ICA, internal carotid artery; IQR, interquartile range; LOS, length of stay; MCA, middle cerebral artery; PCA, posterior cerebral artery; PcomA, posterior communicating artery; VA, vertebral artery.

Supplemental Table 3. Prospective prediction of 13 patients with aSAH by nomogram

Case	Gender	Therapeutic schedule	Baseline hemoglobin (OS; g/L)	Age (Years)	Fasting blood glucose (mmol/L)	SIRS score on admission	GCSS score	Aneurysm size ≥ 10mm	Prothrombin time (OS; s)	Heart rate (Treatment other than OS; per minute)	Total points	Chance of developing Anemia	Realistic result	Predicted effectiveness
1	F	Interventional embolization	119	44	4.56	1	15	0	11.1	79	122	60%	Normal	Lose
2	F	Open surgery	95	66	5.09	1	15	0	11.9	91	139	84%	Anemia	Successful
3	M	Open surgery	147	73	9.39	1	7	0	12.3	72	88	10%	Normal	Successful
4	M	Interventional embolization	119	64	10.9	1	15	0	12.3	80	147	>90%	Normal	Lose
5	F	Interventional embolization and stent implantation	105	69	4.9	1	13	0	13.1	80	167	>90%	Anemia	Successful
6	M	Interventional embolization and stent implantation	153	51	3.88	0	15	0	10	71	64	<10%	Normal	Successful
7	F	Open surgery	120	73	6.42	2	15	0	10.6	100	128	72%	Anemia	Successful
8	M	Open surgery	133	61	5.89	1	11	0	10.5	83	107	35%	Normal	Successful
9	M	Interventional embolization	159	56	5.91	1	15	0	11	79	90	11%	Normal	Successful

10	F	Open surgery	142	62	10.7	2	7	0	11	81	123	62%	Anaemia	Successful
11	M	Interventional embolization	152	69	7.23	1	15	0	10.9	82	100	21%	Normal	Successful
12	F	Interventional embolization	118	77	8.4	0	13	0	11.9	69	147	>90%	Anaemia	Successful
13	M	Open surgery	152	44	6.43	2	15	0	10.6	77	92	13%	Normal	Successful

aSAH, aneurysmal subarachnoid haemorrhage; OS, open surgery.