

**S4 Table - Part A. Complete standardized form.** Original publications of the tools externally validated in 25 articles.

Score	First publication	Name of the cohort Country (nb of centres)	Date of inclusion	Initial type of injury	Initial main outcome	Type of tool	Predictors	Public equation/ score?	External validation
Tuhrim equation	Tuhrim et al. 1991 Ann Neurol	Pilot Stroke Data Bank USA (4)	NA	ICH 100%	- Mortality at 1 month - Mortality or Bartel index > 60 at 1 year	Continuous score	4 Pulse pressure, GCS, ICH volume, IVH, IVH*GCS	Yes	Edwards et al. 1999 Neurology (1)
									Barbieri et al. 2009 J Eval Clin Pract (2)
									Chuang et al. 2009 Int J Qual Health Care (3)
									Di Napoli et al. 2011 Stroke (4)
									Godoy et al. 2006 Stroke (5)
									Huang et al. 2012 Eur J Neurol (6)
ICH score	Hemphill et al. 2001 Stroke	San Francisco USA (2)	1997 - 1998	ICH 100%	Mortality at 1 month	Risk stratification scale based on the strength of association with outcome from LR model	5 Age (2 cat), GCS (3 cat), ICH volume (2 cat), IVH (y/n), Infra-tentorial origin (y/n)	Yes	Maas et al. 2017 Cerebrovasc Dis (7)
									Naval et al. 2009 Neurology Res (8)
									Patriota et al. 2009 Arq Neuropsiquiatr (9)
									Rodriguez-Fernandez et al 2018 BMJ open (10)
									Schmidt et al 2018 Neurology (11)
									Sembill et al 2017 Neurology (12)
ICH-GS	Ruiz-Sandoval et al. 2007 Stroke	Mexico (1)	1999 - 2003	ICH 100%	- Mortality at discharge - Mortality at 1 month	Score (5-13)	5 age (3 cat), GCS (3 cat), ICH location (2 cat), IVH volume (3)	Yes	Chuang et al. 2009 Int J Qual Health Care (3)

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					- Fav outcome (GOS 4-5) at 1 month		cat), extension into ventricles (y/n)		Naval et al. 2009 <i>Neurol Res</i> (8)
Modified Intracerebral Hemorrhage Score (MICH)	Cho et al. 2008 <i>Crit Care Med</i>	Taiwan (1)	2001 - 2005	ICH 100%	- Mortality at 6 month - Fav. outcome (GOS 4-5) at 12 months - Barthel index ( $\geq 55$ ) at 12 months	Score (0-5)	<sup>3</sup> GCS (3 cat), ICH volume (3 cat), IVH or hydrocephalus (y/n)	Yes	Sembill et al 2017 <i>Neurology</i> (12)
Max ICH score	Sembill et al 2017 <i>Neurology</i>	Germany (monocentric)	2007/01 - 2011/12	Maximally treated ICH 100%	- Mortality at 3 and 12 months - Unfav outcome (mRS 4-6) at 3 and 12 months	Continuous score	<sup>6</sup> lobar ICH vol (2 cat), non-lobar ICH vol (2 cat), age (4 cat), NIHSS (4 cat), IVH (y/n), oral anticoag (y/n)	Yes	Schmidt et al. 2018 <i>Neurology</i> (11)
ISAT	Risselada et al. 2010 <i>Eur J Epidemiol</i>	ISAT Europe (RCT - multicentre)	NA	aneurysmal SAH 100%	Mortality at 60 days	Continuous score	<sup>4</sup> age (in decades), lumen size (num), Fisher grade (4 cat), and WFNS grade (5 cat + NA)	Yes	Dijkland et al. 2016 <i>Crit Care Med</i> (13)
VASOGRADE	de Oliveira Manoel et al. 2015 <i>Stroke</i>	International 3 SAHIT trials (CONSCIOUS-1, EPO trial, statin trial) + 1 centre (Canada)	NA	SAH 100%	Delayed Cerebral Ischemia	3- cat grading system (green - yellow - red)	<sup>2</sup> WFNS (3 cat), modified Fisher Scale (2 cat)	Yes	Dengler et al. 2017 <i>Eur J Neurol</i> (14)
SAH sum score / Hijdra score	Hijdra et al. 1988 <i>Stroke</i>	European (Rotterdam, Amsterdam, Glasgow, London) (Multicenter)	1977-1983	aneurysmal SAH 100%	- Unfav outcome (GOS 1-3) at 4 weeks- DCI - rebleeding	Continuous score	<sup>2</sup> SAH volume (num), GCS (num)	Yes	Claassen et al. 2004 <i>Crit Care Med</i> (15)
SAHIT	Jaja et al. 2018 <i>BMJ</i>	SAHIT International (7 RCT = Van den Bergh 2005, IMASH, CONSCIOUS-1, ISAT, IHAST, MAPS, Etminan 2013 + 2 registries HELBOK 2013, Smith 2005, Reilly 2004 - multicenter)	NA	SAH 100%	- Mortality at 3 months - Unfav outcome (GOS 1-3) at 3 months	Logistic regression	<u>-Core 3:</u> age, premorbid history of hypertension, WFNS on adm <u>-Neuroimaging</u> 6: core + CT vol of SAH, aneurysmal size, aneurysm location <u>-Full 7:</u> neuroimaging + treatment modality	Online calculator	Mascitelli et al. 2018 <i>Neurosurgery</i> (16)
HAIR / SAH score	Lee et al. 2014 <i>Neurocrit Care</i>	Chicago USA (1)	2006 - 2011	SAH 100% Exclusion of CT negative	In-hospital mortality	risk stratification scale based on	<sup>4</sup> Hunt and Hess grade (3 cat), age (3 cat),	Yes	Witsch et al. 2016 <i>Ann Neurol</i> (17)

Score	First publication	Name of the cohort Country (nb of centres)	Date of inclusion	Initial type of injury	Initial main outcome	Type of tool	Predictors	Public equation/score?	External validation
APACHE II	Knaus et al. 1985 Crit Care Med	USA (13)	1979 - 1982	All admission in ICU	Hospital mortality	Scale (0 - 71)	the strength of association of the predictors with the outcome (0-8)  14 age, t°, mean BP, HR, RR, O2, art pH, Na, K, creat, Haematocrit, WBC, GCS, chronic health point	IVH (y/n), re-bleeding within 24 hours (y/n)  Yes	Dengler et al. 2017 Eur J Neurol (14)  Abulhasan et al. 2017 Neurocrit Care (18)  Claassen et al. 2004 Crit Care Med (15)  Fallenius et al. 2017 Scand J Trauma Resusc Emerg Med (19)  Huang et al. 2012 Eur J Neurol (6)  Moon et al. 2015 J Clin Neurosci (20)  Rodriguez-Fernandez et al. 2018 BMJ Open (10)
SOFA	Vincent et al. 1996 Intensive Care Med	Expert meeting	NA	Admission in ICU for sepsis	Hospital mortality	Scale (6-24)	6 PaO2/FiO2, platelets, bilirubin, hypotension, GCS, creatinine	Yes	Fallenius et al. 2017 Scand J Trauma Resusc Emerg Med (19)  Basile-Filho et al. 2018 Medicine (21)
SIRS summary score	Bone et al. 1992 Chest	USA (40)	NA	Admission in ICU for sepsis	Hospital mortality	NA	4 t°, HR, RR, WBC count	NA	Claassen et al. 2004 Crit Care Med (15)
SAPS	Le Gall et al 1984 Crit Care Med	France (8)	NA	Admission in ICU	Mortality at ICU discharge	Scale (0-50)	14 Age, HR, sBP, t°, RR or MV, urinary output, urea, haematocrit, WBC count, glc, K, Na, HCO3, GCS	Yes	Handschu et al. 2005 J Neurol (22)
SAPS II	Le Gall et al 1993 JAMA	International (multicentre)	1991 - 1992	Admission in ICU	Mortality at ICU discharge	Scale (0-163)	17 age, HR, sBP, t°, MV, urinary output, urea, WBC count, K, Na, HCO3-, bilirubin, GCS, type of	Yes	Schuiteling et al. 2005 Neurosurgery (23)  Handshu et al. 2005 J Neurol (22)

Score	First publication	Name of the cohort Country (nb of centres)	Date of inclusion	Initial type of injury	Initial main outcome	Type of tool	Predictors	Public equation/ score?	External validation
SAPS III	Moreno et al. 2005 Intensive Care Med	SAPS 3 project European multicentric cohort (303)	2002	All admission in ICU	Mortality at discharge	Score (5-124)	admission, AIDS, hemato malignancy, metastatic cancer  (20) Age, comorbidities, LOS before ICU, location before ICU, use of vasoactive drugs before ICU, planned ICU adm, reasons for ICU adm, surgical status, anatomical site, acute infection at adm, GCS, bilirubine, temperature, creatinine, HR, WBC, pH, platelets, systolic BP, oxygenation	Yes	Celi et al. 2012 J Pers Med (24)  Czorlich et al. 2015 Acta Neurochir (Wien) (25)  Moon et al. 2015 J Clin Neurosci (20)  Huang et al. 2012 Eur J Neurol (6)  Fallenius et al. 2017 Scand J Trauma Resusc Emerg Med (19)  Barbieri et al. 2009 J Eval Clin Pract (2)

**S4 Table - Part B. Complete standardized form.** Details of the 25 articles about stand-alone external validation studies.

Score	External validation	Study design Country (nb of centre) Date of incl.	Type of injuries	Outcomes	Sample size	Description of the population	Reporting of global performances	Reporting of discrimination	Reporting of classification	Reporting of calibration	Recalibration or updating
Tuhrim equation	Edwards et al. 1999 Neurology (1)	Prospective cohort USA (1) 1996-1997	Supratentorial ICH (exclusion SAH)	Mortality at discharge	81 mortality 21 (26%)	- Age Mean 62.4 SD 16.1 - Female 42%	No	No	correct prediction survivor = 88% death 62% (Cut off NA)	No	No
	Barbieri et al. 2009 J Eval Clin Pract (2)	Registry of ICU Italy (1) period NA	spontaneous intra parenchymal hemorrhage	Mortality at 1 month	81 mortality 49 (60.5%)	- Age Mean 64.6 SD 13.8 - Female: 36%	No	AUC ROC 0.732 (0.617-0.847)	No	No	No
	Chuang et al. 2009 Int J Qual Health Care (3)	Retrospective cohort Taiwan (1) 2006-2007	spontaneous ICH	Mortality at 1 month	293 Mortality 40 (14%)	- Age Mean 60.6 SD 16.7 - Female 30%	accuracy: 74,1%	AUC ROC: 0.74 (0.65-0.83)	Cut off NA (highest Youden) Se, Sp, PPV, NPV, LR+, LR- (table 4)	HL GOF test p>0.05	No
	Di Napoli et al. 2011 Stroke (4)	Prospective Argentine multicenter cohort (2) 2005 – 2009	Spontaneous ICH	Mortality at 1 month	210 Mortality 63 (30%)	- Age mean 67.3 SD 11.5 - Female 42%	Nagelkerke R <sup>2</sup> 56.9 LR chi <sup>2</sup> 144.7	AUC ROC 0.94	No	HL GOF test P=0.9	No
	Godoy et al. 2006 Stroke (5)	Prospective cohort Argentina (2) 2003-2004	spontaneous ICH	Mortality at 1 month / Unfav outcome (GOS 1-3) at 6 months	153 mortality 53 (35%)	- Age Mean 66 SD 12 - Female 37%	No	AUC ROC 0.882 (0.830 - 0.934) 1-m mortality 6-m GOS 0.844 (0.781 - 0.907)	PPV, NPV ICH scores of 1, 2, 3, and 4 were 2.9%, 30.8%, 61.1%, and 88.2%	No	No
	Huang et al. 2012 Eur J Neurol (6)	Registry of NICU Chine (1) 2000-2011	primary pontine hemorrhage	Mortality at 1 month	75 mortality 31 (41%)	- Age Mean 54.8 SD 12.7 - Female 21%	No	AUC ROC 0.844 (0.757 - 0.931)	Cut off 1.5 (Youden) Se 96.8% Sp 54.5%	HL GOF test p=0.176 Table obs / pred	No
	Maas et al. 2017 Cerebrovasc Dis (7)	Prospective NICU cohort US (1) 2010 - 2016	Spontaneous ICH	Unfav outcome (mRS 4-6) at 3 months	254 Good outcome 122 (48%)	- Age Mean 64.3 SD 13.6 - Female 50%	Nagelkerke R <sup>2</sup> 0.36 -2 log likelihood 270.7	No	PPV 66.7% NPV 83.2% Diagnostic effectiveness 73%	No	No
	Naval et al. 2009 Neurol Res (8)	Registry of NICU Baltimore USA (1) 1999-2006	Supratentorial, spontaneous ICH Excl of prior mRS 2-5	Mortality at 1 month	125 mortality 29 (23%)	- Age median 63.5 range 34-90 - Female 42%	No	No	Cut off ≥ 3 (Proba 50/50) PPV: 71% NPV 97.7% Se 93.1% Sp 88.5%	chi square test obs/pred p=0,14	No
	Patriota et al. 2009 Arq Neuropsiquiatr (9)	Prospective cohort admission ICU Brazil (1) 2006	spontaneous ICH	Mortality at 1 month / Fav outcome (GOS 4-5) at 12 months	37 1-m mortality 38% 1-y GOS 4-5 : 38%	- Age Mean 67.7 SD 11.2 - Female 51%	No	AUC ROC 0.804 (0.65 - 0.95) mortality GOS 4-5 0.77 (0.60 - 0.89)	mortality cut off: 3 Se 85.7% Sp 65.2% GOS 4-5 cut off ≤ 2 Se 100% Sp 42%	Histogram obs / pred	No

Score	External validation	Study design Country (nb of centre) Date of incl.	Type of injuries	Outcomes	Sample size	Description of the population	Reporting of global performances	Reporting of discrimination	Reporting of classification	Reporting of calibration	Recalibration or updating
Rodriguez-Fernandez et al 2018 BMJ open (10)	Prospective multicenter Spanish Cohort admission ICU (3) 2009-2012	Spontaneous ICH	Mortality at 1 month	336 Mortality 176 (52%)	- Age Median 62 IQR 50-70 - Female NA	No	AUC ROC 0.74 (0.69-0.79)	No	- HL GOF test p<0.001 - GiViTI calibration belt p<0.001	No	
Schmidt et al 2018 Neurology (11)	Prospective cohort Chicago US (1) 2010-2017	Spontaneous ICH	Unfav outcome (mRS 4-6) at 3 months	372 Mortality at 3m: 153 (41%) Unfav outcome at 3m: 236 (63%)	- Age Mean 67 SD 14 - Female 51%	Likelihood ratio X <sup>2</sup> p<0.001	AUC ROC <u>3m mortality</u> 0.83 (0.79-0.88) <u>3m unfav outcome</u> 0.85 (0.81-0.89)	No	- Histogram score vs observed mortality and poor outcome - Unweighted sum of squared errors test for GOF p>0.3	No	
Sembill et al 2017 Neurology (12)	Prospective cohort Germany (1) 2007-2011	Spontaneous ICH maximally treated	Mortality at 3 and 12 months Unfav outcome (mRS 4-6) at 3 and 12 months	471 12-m mortality 142 (30.1%) 12-m unfav outcome 214 (45.4%)	- Age Mean 70 SD 12 - Female 45.4%	No	AUC ROC <u>12m mortality</u> 0.69 (0.64-0.74) <u>12m unfav outcome</u> 0.72 (0.67-0.76)	3m mortality: PPV 37% 12m unfav outcome: PPV 74.7% Cutoff Youden	Histogram ICH score vs observed mortality	No	
MICH	Sembill et al 2017 Neurology (12)	Prospective cohort Germany (1) 2007-2011	Spontaneous ICH maximally treated	Mortality at 3 and 12 months Unfav outcome (mRS 4-6) at 3 and 12 months	471 12-m mortality 142 (30.1%) 12-m unfav outcome 214 (45.4%)	- Age Mean 70 SD 12 - Female 45.4%	No	AUC ROC <u>12m mortality</u> 0.65 <u>12m unfav outcome</u> 0.69	No	No	No
ICH-GS	Chuang et al. 2009 Int J Qual Health Care (3)	Retrospective cohort Taiwan (1) 2006-2007	Spontaneous ICH	Mortality at 1 month	293 Mortality 40 (14%)	- Age Mean 60.6 SD 16.7 - Female: 30%	Accuracy 78.8%	AUC ROC 0.74 (0.65-0.83)	Cut off NA (highest Youden) Se, Sp, PPV, NPV, LR+, LR- (Table 4)	HL GOF test p>0.05	No
	Naval et al. 2009 Neurol Res (8)	Registry of NICU USA (1) 1999-2006	Supratentorial, spontaneous ICH Excl of prior mRS 2-5	Mortality at 1 month	125 mortality 29 (23%)	- Age 63.5 range 34-90 - Female 42%	No	No	Cut off ≥ 8 (Proba 50/50) PPV: 62.8% NPV 97.6% Se 93.1% Sp 83.3%	chi square test obs/pred overestimation of mortality of 11.2% (p=0.03)	No
Max ICH score	Schmidt et al 2018 Neurology (11)	Prospective cohort Chicago US (1) 2010-2017	Spontaneous ICH	Unfav outcome (mRS 4-6) at 3 months	372 Mortality at 3m: 153 (41%) Unfav outcome at 3m: 236 (63%)	- Age Mean 67 SD 14 - Female 51%	Likelihood ratio X <sup>2</sup> p<0.001	AUC ROC <u>3m mortality</u> 0.82 (0.78-0.86) <u>3m unfav outcome</u> 0.88 (0.85-0.92)	No	- Histogram score vs observed mortality and poor outcome - Unweighted sum of squared errors test for GOF p>0.3	No

Score	External validation	Study design Country (nb of centre) Date of incl.	Type of injuries	Outcomes	Sample size	Description of the population	Reporting of global performances	Reporting of discrimination	Reporting of classification	Reporting of calibration	Recalibration or updating	
VASOGRADE	Dengler et al. 2017 Eur J Neurol (14)	Hosp registry, managed in ICU Germany (1) 2009-2015	aneurysmal SAH	- unfav outcome (mRS 3-6) at 12 months - unfav outcome (mRS 4-6) at 12 months	423 208 (53.1%)	- Age mean 54.2 SD 13.7 - Female 69%	No	AUC ROC <u>mRS 3-6</u> 0.711 <u>mRS 4-6</u> 0.709	No	Histogramme	No	
SAH sum score / Hijdra score	Claassen et al. 2004 Crit Care Med (15)	Prospective cohort 1996-2002 USA (1)	SAH Excl AVM	Unfav outcome (mRS 4-6) at 3 months	413 Unfav outcome 40.4%	- Age mean 54 SD 14- Female 71%	No	AUC ROC 0.67 (0.61-0.73)	No	No	No	
SAHIT	Mascitelli et al 2018 Neurosurgey (16)	Trial cohort admitted in ICU USA (1) 2003-2007	aneurysmal SAH Excl lost to follow up (67)	- Unfav outcome (mRS 3-6) at 6 months - Mortality at 6 months	338 Mortality: 38 (10,1%) Unfav outcome: 100 (29,6%)	- Age mean 54 SD 12 - Female: NA	R <sup>2</sup> Brier score Brier scaled (Figure 2)	AUC ROC <u>Unfav outcome:</u> core: 72.8 (66.8-78.9) Neuroimaging: 73.2 (67.1-79.2) Full: 73.4 (67.5-79.4) <u>Mortality:</u> core: 72.1 (62.1-82.2) neuroimaging: 73.9 (64.4-83.5) Full: 74.4 (65.1-83.8)	No	calibration plot Intercept Slope (figure 2)	No	
HAIR / SAH score	Witsch et al. 2016 Ann Neurol (17)	- Prospective cohort (SHOP) 1996-2014 USA (1) - CONSCIOUS-1 Israel, Europe, North America (52)	SAH Excl AVM Excl missing predictors (97) multiple Imputation for mRS (351) by MCMCM	Unfav outcome (mRS 4-6) at 12 months	- SHOP: 1526 Unfav outcome: 1200 (79%) - CONSCIOUS: 413	- SHOP: - Age mean 55.3 SD 14.5 - Female 68% - CONSCIOUS: median 55	Nagelkerke R <sup>2</sup> Cox/Snell R <sup>2</sup> -	COUNSCIOU S-1: N-R <sup>2</sup> 0.17 C/S R <sup>2</sup> 0.11 - SHOP: N-R <sup>2</sup> 0.45 C/S R <sup>2</sup> 0.32	AUC ROC <u>-CONSCIOUS-1:</u> 71.8 (66.0-77.5) - SHOP: 88.3 (86.4-90.2)	No	No	No
	Dengler et al. 2017 Eur J Neurol (14)	Hosp registry, managed in ICU Germany (1) 2009-2015	aneurysmal SAH	- unfav outcome (mRS 3-6) at 12 months - unfav outcome (mRS 4-6) at 12 months	423 208 (53.1%)	- Age mean 54.2 SD 13.7 - Female 69%	No	AUC ROC <u>mRS 3-6</u> 0.739 <u>mRS 4-6</u> 0.737	No	Histogram	No	
	Abulhasan et al. 2017 Neurocrit Care (18)	Retrospective cohort in NICU Canada (1) 2010-2016	SAH H&H 1-5 (multiple imputation MICE)	Mortality at discharge	434 Mortality 14.10%	- Age 56-48-65 - Female 63.6%	No	AUC ROC 0.89	No	Calibration curve intercept=-0.05 slope=0.77	No	

Score	External validation	Study design Country (nb of centre) Date of incl.	Type of injuries	Outcomes	Sample size	Description of the population	Reporting of global performances	Reporting of discrimination	Reporting of classification	Reporting of calibration	Recalibration or updating
ISAT	Dijkland et al. 2016 Crit Care Med (13)	Hosp registry, managed in ICU The Nederlands (1) 2007-2011 (same biostat. as initial publication)	Presumed aneurysmal SAH Excl lost to follow up	Mortality at 2 months	307 Mortality 94 (30.6%)	- Age Median 56 IQR 47-66 - Female 65%	No AUC ROC WFNS at time of treatment: 0.89 WFNS at admission: 0.82	No	- Plot - intercept and slope: slopes adm WFNS 1.417 ttt WFNS 1.959 intercept WFNS adm 1.502 WFNS ttt 2.248	adm WFNS 1.417 ttt WFNS 1.959 intercept WFNS adm 1.502 WFNS ttt 2.248	No
	Claassen et al. 2004 Crit Care Med (15)	Prospective cohort 1996-2002 USA (1)	SAH Excl AVM	Unfav outcome (mRS 4-6) at 3 months	413 Unfav outcome 40.4%	- Age Mean 54 SD 14 - Female 71%	No AUC ROC 0.66 (0.60-0.73)	No	No	No	No
	Fallenius et al. 2017 Scand J Trauma Resusc Emerg Med (19)	Finnish Intensive Care Consortium (21) 2003 - 2012	ICH [Excl missing data on predictors or outcome (n=1479)]	Mortality at 6 months	3218 [1589 for recalib. to predict the mortality at 6m - 1629 for validation] Mortality: 1527 (48%) [Validation: 786 (48%)]	- Age: median 60 IQR 52-69 - Female: NA	No AUC ROC 0.83 (0.81 - 0.85)	No	pvalue HL <0.001, pvalue GiViTI <0.001	Yes To predict outcome at 6 months	
APACHE II	Huang et al. 2012 Eur J Neurol (6)	Registry of NICU Chine (1) 2000-2011	primary pontine hemorrhage (ICH)	Mortality at 1 month	75 mortality 31 (41%)	- Age 54.8 SD 12.7 - Female 21%	No AUC ROC 0.919 (0.843 – 0.995)	Youden Cut off 16.5 Se 91.2% Sp 86.5%	- HL GOF test p=0.428 - Table obs / expected	No	
	Moon et al. 2015 J Clin Neurosci (20)	Prospective cohort adm in ICU South Korea (1) 2001-2012	ICH (60%) and ischemic strokes (40%) Excl 44 missing data	Mortality at discharge	ICH only: 300 Mortality 81 (27%)	- Age Mean 57.3 SD 17.2 - Female 48%	No AUC ROC 0.805	ICH only: AUC ROC 0.805	No	ICH only: - Calibration curve - HL GOF test p=0.782	No
	Rodriguez- Fernandez et al. 2018 BMJ Open (10)	Prospective multicenter Spanish Cohort (3) 2009-2012	Spontaneous ICH	Mortality at discharge	336 Mortality 181 (54%)	- Age Median 62 IQR 50-70 - Female NA	No AUC ROC 0.80 (0.74-0.84)	No	- HL GOF test p=ns - GiViTI calibration belt p=0.43	No	

Score	External validation	Study design Country (nb of centre) Date of incl.	Type of injuries	Outcomes	Sample size	Description of the population	Reporting of global performances	Reporting of discrimination	Reporting of classification	Reporting of calibration	Recalibration or updating
SAPS	Handshu et al. 2005 J Neurol (22)	Handshu et al. Prospective cohort adm in ICU Germany (2) Period NA	ICH (54%) and ischemic stroke (46%) requiring endotracheal intubation	Mortality at 10 days, 3 months and 12 months	90 3-mM 58.9% 12-mM 67.8%	- Age mean 64.3 SD 10.4 - Female 50%	No	AUC ROC 10 days: 0.67 (0.55-0.80) 3months: 0.75 (0.65-0.86) 12 months: 0.77 (0.67-0.88)	Youden 10d: cut off > 12 Se 66.5% Sp 72.1% 3m: cut off > 12 Se 56.6% Sp 83.8% 12m: cut off > 10 Se 77.0% Sp 72.4%	No	No
	Schuling et al. 2005 Neurosurgery (23)	Retrospective cohort / The Nederlands (1) 2000 - 2002	SAH with long lasting and severe vasospasm	Unfav outcome (mRS 4-6) at 3 months	136 Unfav outcome: 65 (48%)	- Age mean 55 range 17-93 - Female 73%	No	AUC ROC 0.85 (0.78-0.91)	No	No	No
	Schuling et al. 2005 Neurosurgery (23)	Prospective cohort adm in ICU Germany (2) Period NA	ICH (54%) and ischemic stroke (46%) requiring endotracheal intubation	Mortality at 10 days, 3 months and 12 months	90 3-mM 58.9% 12-mM 67.8%	- Age mean 64.3 SD 10.4 - Female 50%	No	AUC ROC 10 days: 0.68 (0.57 – 0.80) 3months: 0.77 (0.67 – 0.97) 12 months: 0.77 (0.66 – 0.88)	Youden 10d: cut off > 40 Se 75.9% Sp 55.7% 3m: cut off > 36 Se 84.9% Sp 62.2% 12m: cut off > 40 Se 72.1% Sp 82.8%	No	No
SAPS II	Celi et al. 2012 J Pers Med (24)	Retrospective analysis on prospective cohort USA (1) 1995 - 2006	SAH	Mortality at discharge	MIMIC database 150 Mortality: 57 (25.6%)	NA	No	AUC ROC 0.84	No	HL GOF test p<0.001	No
	Czorlich et al. 2015 Acta Neurochir (Wien) (25)	ICU registry Germany (1) 2010 - 2014	aneurysmal SAH	Unfav outcome (GOS 1-3) at 1 month	263 Mortality: 49 (18.3%)	- Age mean 54,4 SD 13,74 - Female 70%	No	AUC ROC 0,834 (0,771-0,896)	No	No	No
	Moon et al. 2015 J Clin Neurosci (20)	Prospective cohort adm in ICU / South Korea (1) 2001-2012	ICH (60%) and ischemic strokes (40%) [Excl 44 missing data]	Mortality at discharge	ICH only: 300 Mortality 81 (27%)	- Age Mean 57.3 SD 17.2 - Female 48%	No	ICH only: AUC ROC 0.783	No	ICH only: - Calibration curve - HL GOF test p=0.485	No
	Huang et al. 2012 Eur J Neurol (6)	Registry of NICU Chine (1) 2000 - 2011	primary pontine hemorrhage (ICH)	Mortality at 1 month	75 mortality 31 (41%)	- Age 54.8 SD 12.7 - Female 21%	No	AUC ROC 0.890 (0.817 - 0.943)	Cut off 32.5 (Youden) Se 82.4% Sp 86.5%	- HL GOF test p=0.682 - Table obs / expected	No

Score	External validation	Study design Country (nb of centre) Date of incl.	Type of injuries	Outcomes	Sample size	Description of the population	Reporting of global performances	Reporting of discrimination	Reporting of classification	Reporting of calibration	Recalibration or updating
Fallenius et al. 2017 Scand J Trauma Resusc Emerg Med (19)	Finnish Intensive Care Consortium (21) 2003 - 2012	ICH [Excl missing data on predictors or outcome (n=1479)]	Mortality at 6 months	3218 [1589 for recalib. to predict the mortality at 6m - 1629 for validation] Mortality: 1527 (48%) [Validation: 786 (48%)]	- Age: median 60 IQR 52-69 - Female: NA	No	AUC ROC 0.84 (0.82 - 0.86)	No	pvalue HL = 0.058, pvalue GiViTI = 0.014	Yes To predict outcome at 6 months	
Barbieri et al. 2009 J Eval Clin Pract (2)	Registry of ICU Italy (1) Period NA	spontaneous intra parenchymal hemorrhage (ICH)	Mortality at 1 month	81 mortality 49 (60.5%)	- Age 64.6 SD 13.8 - Female: 36%	No	AUC ROC 0.510 (0.377 - 0.642)	No	No	No	
SAPS III	Basile-Filho et al. 2018 Medicine (21)	ICU registry Brasil (1) 2011-2016	SAH	Overall mortality - Unknown horizon	51 Mortality 14 (27%)? 37.8%?	- Age Mean 54 SD 10 - Female 67%	No	AUC ROC 0.73 (0.59-0.85)	No	No	No
SOFA	Fallenius et al. 2017 Scand J Trauma Resusc Emerg Med (19)	Finnish Intensive Care Consortium (21) 2003 - 2012	ICH [Excl missing data on predictors or outcome (n=1479)]	Mortality at 6 months	3218 [1589 for recalib. to predict the mortality at 6m - 1629 for validation] Mortality: 1527 (48%) [Validation: 786 (48%)]	- Age: median 60 IQR 52-69 - Female: NA	No	AUC ROC 0.73 (0.71 - 0.76)	No	pvalue HL <0.001, pvalue GiViTI <0.001	Yes, To predict outcome at 6 months
	Basile-Filho et al. 2018 Medicine (21)	ICU registry Brasil (1) 2011-2016	SAH	Overall mortality - Unknown horizon	Mortality 14 (27%)? 37.8%?	- Age Mean 54 SD 10 - Female 67%	No	AUC ROC Day1 0.62 (0.48-0.75) Day 3 0.77 (0.63-0.87)	No	No	No
SIRS summary score	Claassen et al. 2004 Crit Care Med (15)	Prospective cohort 1996-2002 USA (1)	SAH Excl AVM	Unfav outcome (mRS 4-6) at 3 months	413 Unfav outcome 40.4%	- Age Mean 54 SD 14 - Female 71%	No	AUC ROC 0.57 (0.51-0.064)	No	No	No

## References of the S4 Table

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