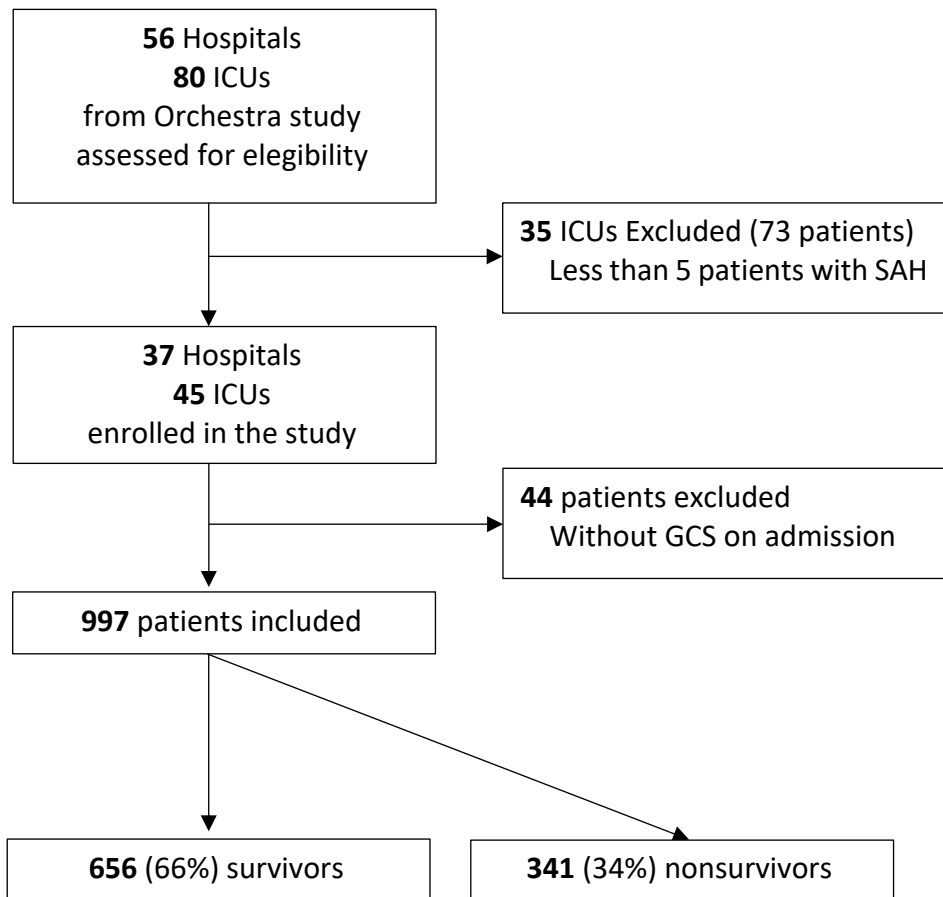
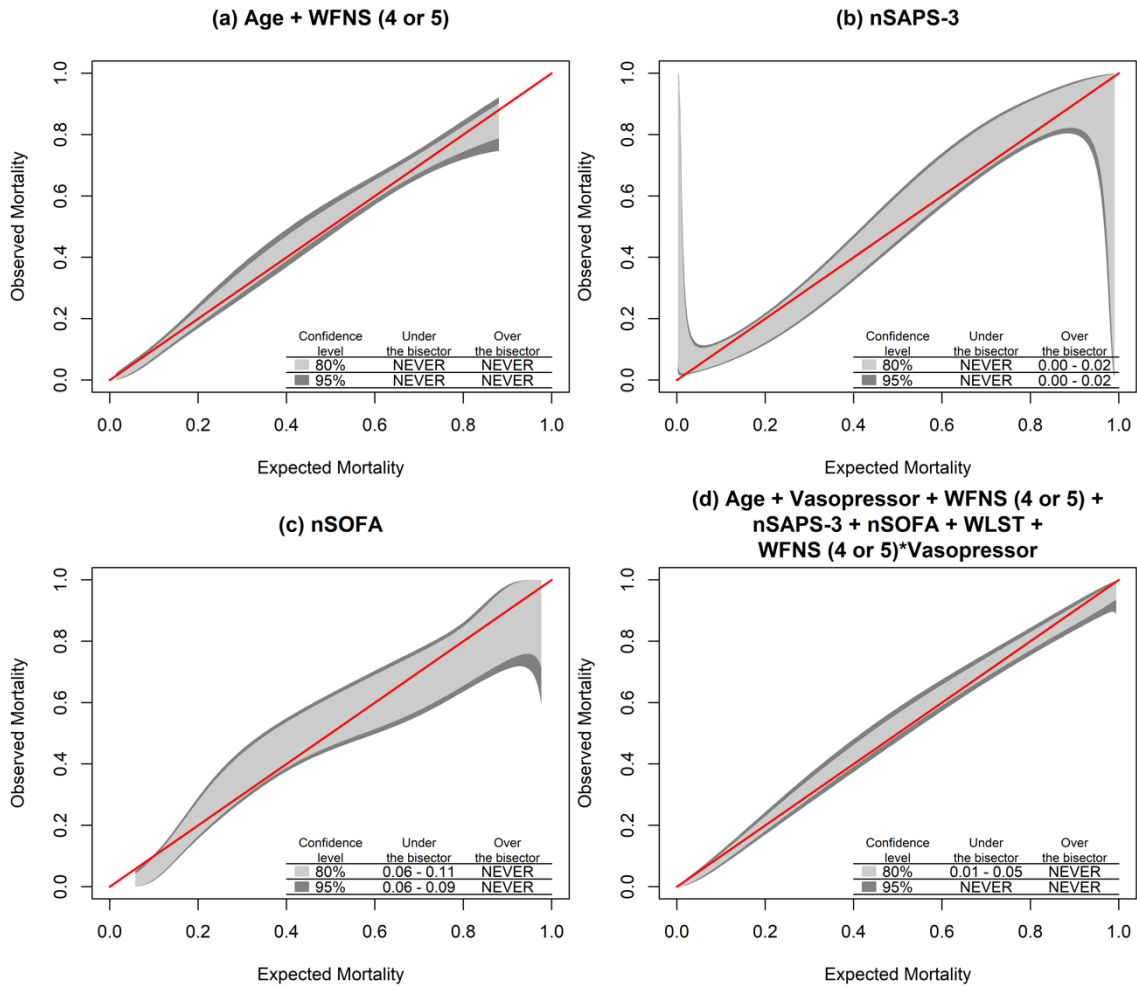


Supplemental Materials

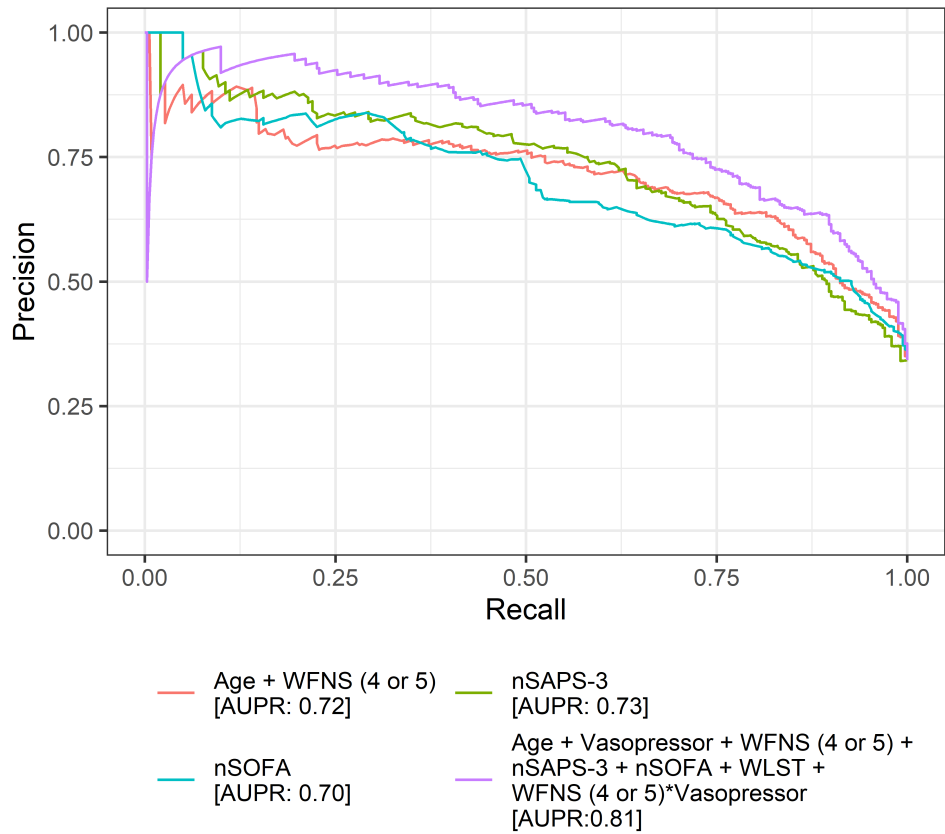
Supplemental figures:



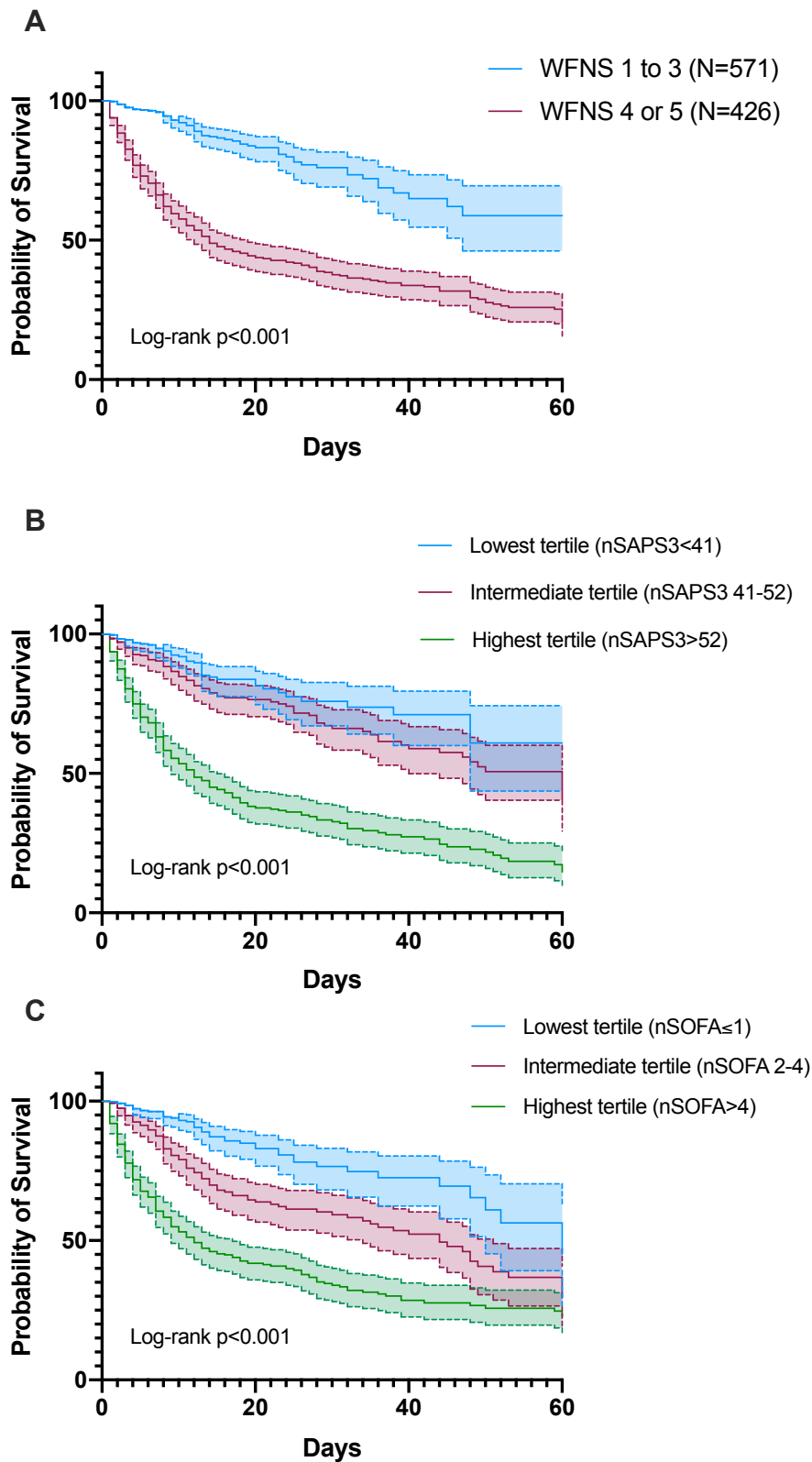
Supplemental Figure I. Study Flow Diagram



Supplemental Figure II. Calibration belts for Age and WFNS, nSAPS-3, nSOFA and the final multivariable model, described as bisector deviation intervals, as proposed by GiViTI, (Italian Group for the Evaluation of Intervention in Intensive Care Medicine). The times the calibration belt significantly deviates from the bisector using 80 and 95% confidence levels are described in the lower right part of the plots.



Supplemental Figure III. Precision-Recall Curves (PRC) of nSAPS-3 (green line; Area Under the PR Curve [AUPRC]: 0.73), nSOFA (blue line; AUPRC: 0.7), Age and WFNS 4 or 5 (red line; AUPRC: 0.72) and for the final multivariate model (purple line; AUPRC: 0.78).



Supplemental Figure IV. Kaplan-Meier curves of survival probability according to World Federation of Neurological Surgeons scale (Panel A, Poor Grade vs Good Grade), tertiles of nSAPS 3 (Panel B) and tertiles of nSOFA (Panel C).

Supplemental Tables

Supplemental Table I. Analysis of multicollinearity evaluation in final model

Variables	Tolerance	Variance Inflation Factor
Age	0.7369222	1.356995
Poor Grade	0.6429384	1.555359
nSAPS3	0.4620027	2.164489
nSOFA	0.4628262	2.160638
Vasopressor	0.7193929	1.390061
WLST	0.9554448	1.046633

Table legend: WLST, withdrawal or withhold of life sustaining therapy

Supplemental Table II. Comparisons of performance indices of multivariate mixed models

Model	Description	BIC	RMSE	Performance
Final model	6 Individual-level variables with significant interaction	883.36	0.89	100%
MV model 1	5 Individual-level variables with significant interaction	896.84	0.90	100%
MV model 2	Individual-level without interactions	896.89	0.90	65.39%
MV model 3 (Neuro ICU)	Individual- and group-level	899.88	0.90	51.96%
MV model 4 (High Volume Center)	Individual- and group-level	903.30	0.90	29.68%

Table legend: BIC, Bayesian information criterion; RMSE, root mean square error; MV, multivariate; Neuro ICU, specialized neurological ICU; High Volume Center, hospitals with more than 40 patients with SAH during study period

Final model: In-hospital death ~ Age + Poor Grade + nSAPS3 + nSOFA + Vasopressor + WLST + Poor Grade:Vasopressor (1 | Hospital)

MV model 1: In-hospital death ~ Age + Poor Grade + nSAPS3 + nSOFA + Vasopressor + Poor Grade:Vasopressor (1 | Hospital)

MV model 2: In-hospital death ~ Age + Poor Grade + nSAPS3 + nSOFA + Vasopressor + (1 | Hospital)

MV model 3: In-hospital death ~ Age + Poor Grade + nSAPS3 + nSOFA + Vasopressor + Neuro ICU + (1 | Hospital)

MV model 4: In-hospital death ~ Age + Poor Grade + nSAPS3 + nSOFA + Vasopressor + High Volume Center + (1 | Hospital)

These model syntaxes mean that in-hospital death was to be predicted for several fixed effects (outside parenthesis), interaction terms (separated by “:”) and one random effect, which was a random intercept for the Hospital.