

Supplementary Online Content

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eAppendix. Statistical Power Calculation

This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1. Baseline Characteristics, Mortality Rates for One and Two Day

Characteristics ¹	1-day			2-day		
	Survivors	Non-survivors	P value ²	Survivors	Non-survivors	P value ²
No. of patients	3475	131		3440	166	
Age, median, years	69 (53-81)	80 (66-87)	.000	69 (53-81)	79 (66-87)	.000
Sex, female, No. (%)	1432 (41.2)	52 (39.7)	.730	1420 (41.3)	64 (38.6)	.486
Basal evaluation, median						
Breathing rate, breaths/min	18 (14-22)	24 (11-34)	.000	17 (14-22)	24 (14-34)	.000
SpO ₂ , %	96 (93-98)	82 (72-93)	.000	96 (93-98)	84 (73-93)	.000
Supplemental O ₂ , No. (%)	397 (11.4)	43 (32.8)	.000	386 (11.2)	54 (32.5)	.000
FiO ₂ , %	0.21 (0.21-0.21)	0.21 (0.21-0.24)	.000	0.21 (0.21-0.21)	0.21 (0.21-0.24)	.000
SaFi 1	457 (438-467)	367 (286-438)	.000	457 (438-467)	375 (288-438)	.000
SBP, mmHg	138 (120-156)	120 (87-148)	.000	138 (120-156)	124 (91-150)	.000
DBP, mmHg	80 (68-91)	68 (48-89)	.000	80 (68-91)	71 (49-90)	.000
Heart rate, beats/min	84 (70-103)	97 (74-122)	.008	84 (70-103)	97 (74-122)	.000
Temperature, °C	36.3 (36-36.8)	36 (35.1-37)	.020	36.3 (36-36.8)	36 (35.1-37)	.024
GCS, points	15 (15-15)	11 (4-15)	.000	15 (15-15)	10 (4-15)	.000
Pre-transfer evaluation, median						
Breathing rate, breaths/min	15 (12-18)	19 (15-28)	.000	14 (12-18)	17 (15-28)	.000
SpO ₂ , %	97 (94-98)	92 (90-97)	.000	97 (94-98)	92 (90-97)	.000
FiO ₂ , %	0.21 (0.21-0.28)	0.5 (0.35-0.99)	.000	0.21 (0.21-0.26)	0.5 (0.31-0.99)	.000
SaFi 2	452 (350-467)	160 (92-269)	.000	452 (354-467)	166 (92 - 295)	.000
SBP, mmHg	130 (113-147)	97 (76-131)	.000	130 (113-147)	101 (78-132)	.000
DBP, mmHg	73 (64-83)	57 (45-73)	.000	73 (64-83)	60 (45-75)	.000
Heart rate, beats/min	80 (68-96)	92 (67-115)	.001	80 (68-96)	93 (67-114)	.000
Temperature, °C	36.1 (35.8-36.6)	36 (34.9-36.7)	.421	36.1 (35.8-36.6)	36 (35-36.7)	.397
GCS, points	15 (15-15)	9 (3-14)	.000	15 (15-15)	8 (3-15)	.000
Hospital outcomes						
Inpatients, No. (%)	1919 (55.2)	131 (100)	.000	1884 (54.8)	166 (100)	.000
ICU, No. (%)	252 (7.3)	65 (49.6)	.000	232 (6.7)	85 (51.2)	.000

SpO₂: pulse oximetry saturation; FiO₂: fraction of inspired oxygen; SaFi: pulse oximetry saturation/fraction of inspired oxygen; SBP: systolic blood pressure; DBP: diastolic blood pressure; GCS: Glasgow coma scale

¹Values expressed as total number (fraction) and medians [25 percentile-75 percentile], as appropriate

²p value were calculated using a χ^2 test, t test, or Wilcoxon.

eTable 2. Baseline Characteristics, Mortality Rates for Three and Seven Day

Characteristics ¹	3-day			7-day		
	Survivors	Non-survivors	P value ²	Survivors	Non-survivors	P value ²
No. of patients	3426	180		3350	256	
Age, median, years	69 (53-81)	79 (67-87)	.000	68 (53-81)	80 (68-87)	.000
Sex, female, No. (%)	1416 (41.3)	68 (37.8)	.345	1381 (41.2)	103 (40.2)	.757
Basal evaluation, median						
Breathing rate, breaths/min	17 (14-22)	24 (14-34)	.000	17 (14-22)	21 (14-32)	.000
SpO ₂ , %	96 (93-98)	85 (74-93)	.000	96 (94-98)	88 (75-95)	.000
Supplemental O ₂ , No. (%)	385 (11.2)	55 (30.6)	.000	367 (11)	73 (28.5)	.000
FiO ₂ , %	0.21 (0.21-0.21)	0.21 (0.21-0.24)	.000	0.21 (0.21-0.21)	0.21 (0.21-0.24)	.000
SaFi 1	457 (443-467)	381 (301-438)	.000	457 (443-467)	383 (306-448)	.000
SBP, mmHg	138 (120-156)	126 (94-154)	.001	138 (110-156)	132 (88-155)	.000
DBP, mmHg	80 (68-91)	73 (50-90)	.000	80 (69-91)	73 (56-90)	.000
Heart rate, beats/min	84 (70-103)	95 (70-120)	.009	84 (70-102)	92 (74-120)	.001
Temperature, °C	36.3 (36-36.8)	36.1 (35.3-37)	.020	36.3 (36-36.8)	36.1 (35.5-36.9)	.019
GCS, points	15 (15-15)	10 (4-15)	.000	15 (15-15)	11 (5-15)	.000
Pre-transfer evaluation, median						
Breathing rate, breaths/min	14 (12-18)	16 (15-28)	.000	14 (12-18)	17 (15-26)	.000
SpO ₂ , %	97 (94-98)	92 (90-97)	.000	97 (94-98)	93 (90-97)	.000
FiO ₂ , %	0.21 (0.21-0.26)	0.5 (0.28-0.99)	.000	0.21 (0.21-0.26)	0.5 (0.28-0.99)	.000
SaFi 2	452 (357-467)	172 (92-314)	.000	452 (370-467)	182 (94-349)	.000
SBP, mmHg	130 (113-147)	103 (78-133)	.000	130 (113-147)	110 (86-138)	.000
DBP, mmHg	73 (64-83)	60 (45-75)	.000	73 (64-83)	60 (48-76)	.000
Heart rate, beats/min	80 (68-96)	90 (47-113)	.002	80 (65-85)	88 (68-110)	.000
Temperature, °C	36.1 (35.8-36.6)	36 (35-36.7)	.386	36.1 (35.9-36.6)	36 (35.1-36.7)	.732
GCS, points	15 (15-15)	8 (3-15)	.000	15 (15-15)	10 (3-15)	.000
Hospital outcomes						
Inpatients, No. (%)	1870 (54.6)	180 (100)	.000	1794 (53.6)	256 (100)	.000
ICU, No. (%)	224 (6.5)	93 (51.7)	.000	196 (5.9)	121 (47.3)	.000

SpO₂: pulse oximetry saturation; FiO₂: fraction of inspired oxygen; SaFi: pulse oximetry saturation/fraction of inspired oxygen; SBP: systolic blood pressure; DBP: diastolic blood pressure; GCS: Glasgow coma scale

¹Values expressed as total number (fraction) and medians [25 percentile-75 percentile], as appropriate system

²p value were calculated using a X² test, t test, or Wilcoxon.

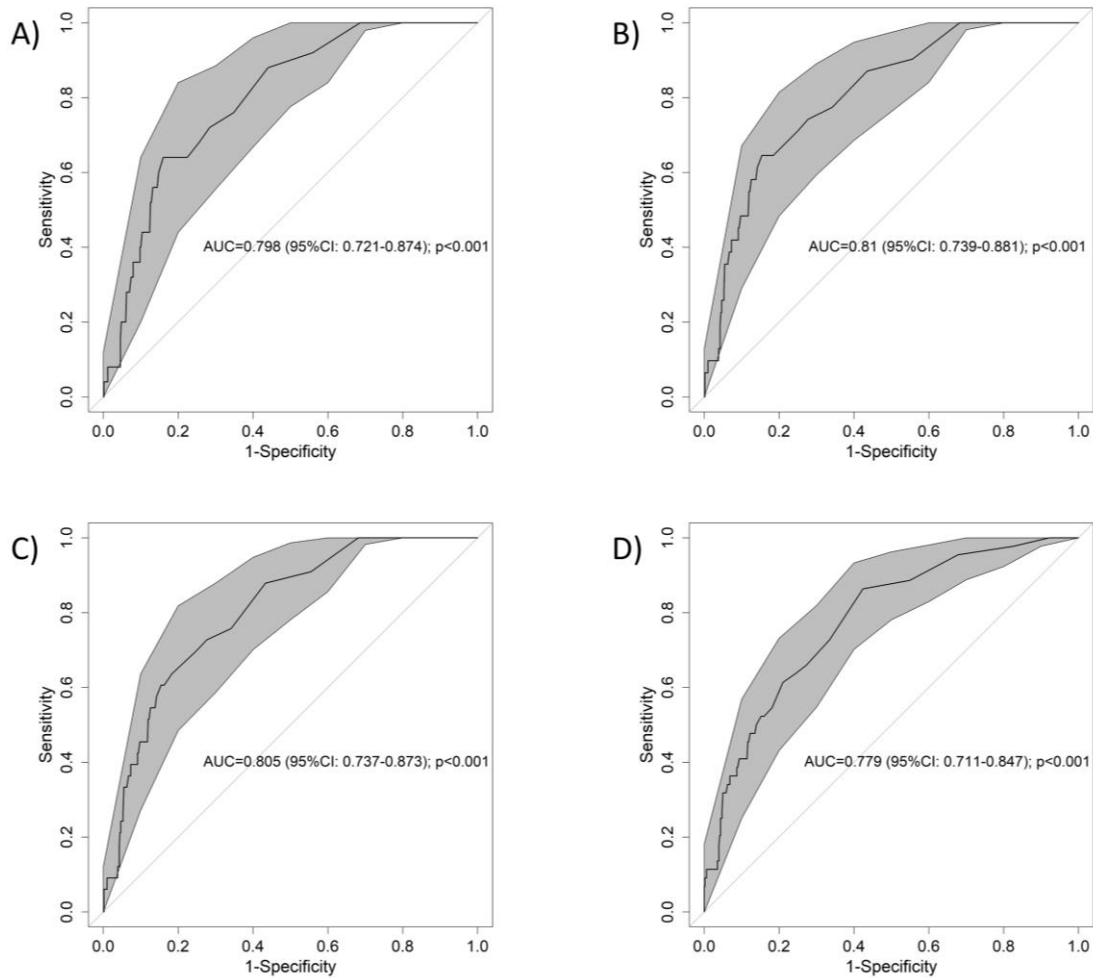
eTable 3. Statistical Details of the Models for SaFi 1 (Basal Assessment) and SaFi 2 (After Prehospital Ventilatory Support)

	Mortality rates ¹			
	1-day	2-days	3-days	7-days
SaFi 1				
Sensitivity	33.9 (31.0-36.8)	32.8 (29.9-35.6)	31.4 (28.7 (34.2)	29.6 (27.0-32.3)
Specificity	89.0 (87.3-90.8)	89.2 (87.5-91.0)	89.2 (87.5-91.0)	89.6 (87.8-91.3)
PPV	20.3 (18.9-21.6)	23.8 (22.4-25.2)	24.2 (22.8-25.5)	32.6 (30.9-34.3)
NPV	97.4 (97.3-97.5)	96.6 (96.5-96.8)	96.3 (96.2-96.4)	94.5 (94.4-94.7)
Likelihood ratio (+)	8.2 (7.3-9.2)	7.8 (7.0-8.6)	7.2 (6.5-7.9)	8.5 (7.2-9.03)
Likelihood ratio (-)	0,70 (0.67-0.72)	0.71 (0.68-0.73)	0.72 (0.70-0.75)	0.75 (0.72-0.77)
Youden Point	440.4	440.4	440.4	440.4
Odds ratio	0.98 (0.98-0.99)	0.98 (0.98-0.99)	0.98 (0.98-0.99)	0.98 (0.98-0.99)
SaFi 2				
Sensitivity	66.8 (64.4-69.3)	66.5 (64.0-69.0)	64.9 (62.5-67.4)	60.0 (57.7-62.4)
Specificity	80.1 (78.5-81.8)	80.6 (78.9-82.3)	80.7 (79.1-82.4)	81.4 (79.7-83.1)
PPV	15.2 (14.4-15.9)	18.7 (17.8-19.6)	19.9 (18.9-20.8)	25.3 (24.2-26.5)
NPV	98.6 (98.5-98.7)	98.2 (98.1-98.3)	97.9 (97.8-98.1)	96.6 (96.5-96.8)
Likelihood ratio (+)	5.1 (4.7-5.3)	5.1 (4.8-5.4)	5.1 (4.8-5.4)	4.9 (4.6-5.2)
Likelihood ratio (-)	0.37 (0.35-0.39)	0.37 (0.35-0.39)	0.39 (0.37-0.41)	0.45 (0.43-0.47)
Youden Point	231.2	383.9	383.9	383.9
Odds ratio	0.98 (0.98-0.99)	0.98 (0.98-0.99)	0.98 (0.98-0.99)	0.98 (0.98-0.99)

SaFi: pulse oximetry saturation / fraction of inspired oxygen; PPV: positive predictive value; NPV: negative predictive value

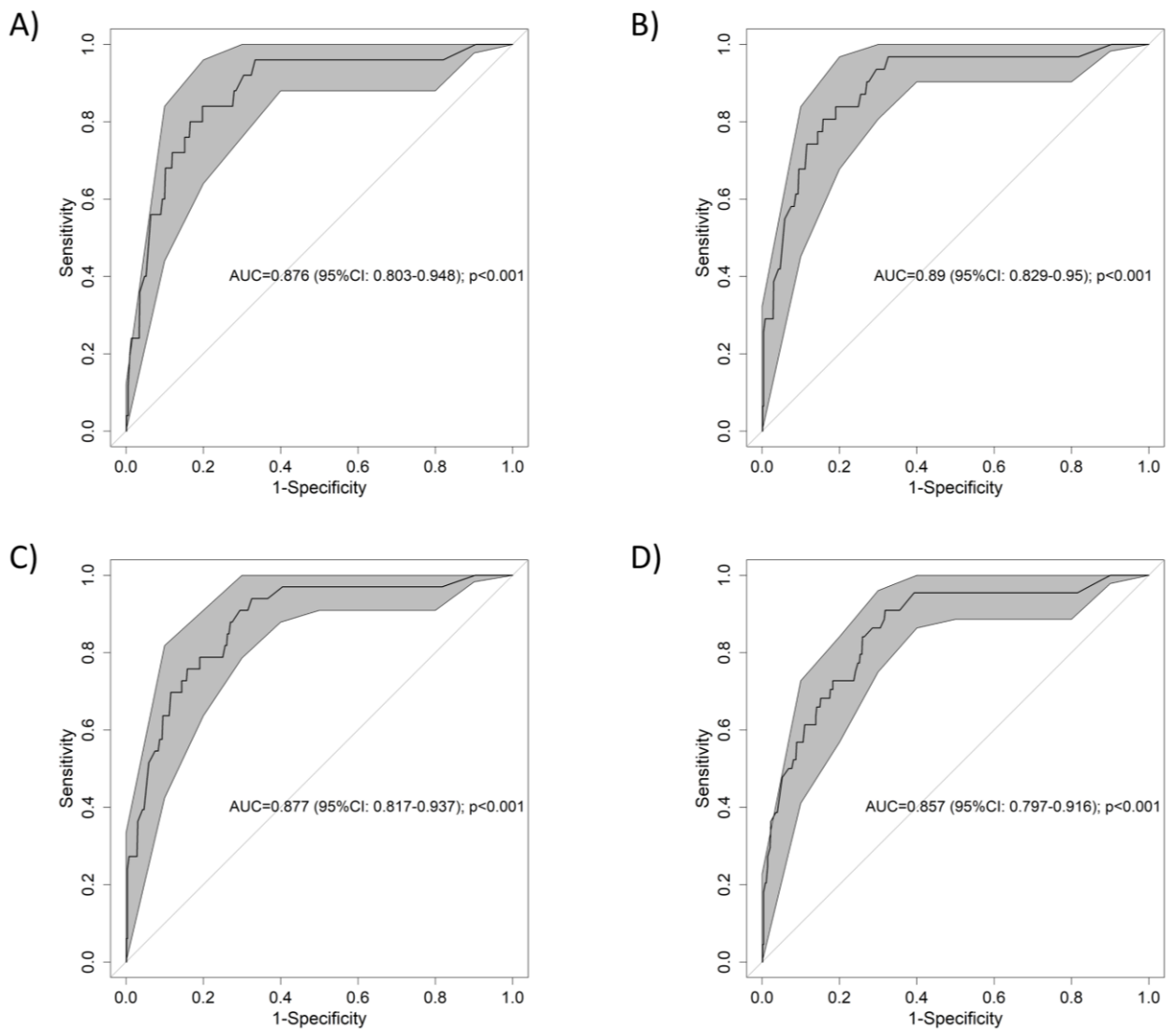
¹Bracketed numbers indicate 95% confidence interval

Figure 1. Receiver Operational Curve (ROC) of SaFi 1 for the Different Outcomes: One (a), Two (b), Three (c), and Seven (d) Day Mortality



The bold line shows the ROC curve value, and the grey shading is the result of the validation coefficient. In the center of the graph is the area under the curve (AUC) and its 95% confidence interval.

eFigure 2. Receiver Operational Curve (ROC) of SaFi 2 for the Different Outcomes: One (a), Two (b), Three (c), and Seven (d) Day Mortality



The bold line shows the ROC curve value, and the grey shading is the result of the validation coefficient. In the center of the graph is the area under the curve (AUC) and its 95% confidence interval.

eAppendix. Statistical Power Calculation

The statistical power (from 1 to 100) of the present study considering the sample used for training (3,081 patients), a significant level of $p=0.001$, and a SaFi difference between survivors and non survivors of 90 units (standard deviation = 20) is equal to 100.