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| **Table 1.** Demographic and clinical characteristics of the training and validation sets | | | | |
| **Variables** | **Total**  **(n = 459)** | **Training set**  **(n = 321)** | **Validation set**  **(n = 138)** | **P value** |
| **Demographics** |  |  |  |  |
| Age, years | 76 (66-83) | 76 (67-82) | 76 (66-84) | 0.754 |
| Female, n (%) | 214 (46.62%) | 142 (44.24%) | 72 (52.17%) | 0.118 |
| Weight, kg | 34.4 (28.9-40.0) | 34.2 (28.6-39.7) | 34.6 (29.3-40.4) | 0.554 |
| Smoker, n (%) | 105 (22.88%) | 74 (23.05%) | 31 (22.46%) | 0.890 |
| **Vital signs** |  |  |  |  |
| HR, beats/min | 89 (76-103) | 88 (76-102) | 89 (76-104) | 0.321 |
| MAP, mmHg | 80 (71-92) | 80 (71-92) | 79 (71-91) | 0.909 |
| RR, times/min | 20 (16-26) | 20 (16-26) | 20 (17-26) | 0.593 |
| Temperature, ℃ | 36.7 (36.4-36.9) | 36.7 (36.4-36.9) | 36.7 (36.3-36.9) | 0.731 |
| **Laboratory tests** |  |  |  |  |
| RBC, m/uL | 3.71±0.76 | 3.72±0.73 | 3.70±0.81 | 0.806 |
| WBC, K/uL | 11.7 (8.5-15.7) | 11.2 (8.3-15.2) | 11.9 (8.8-16.0) | 0.333 |
| Hemoglobin, g/dL | 11.12±2.22 | 11.13±2.14 | 11.09±2.43 | 0.852 |
| Hematocrit, % | 33.99±6.59 | 34.09±6.34 | 33.74±7.14 | 0.600 |
| RDW, % | 14.8 (13.7-16.1) | 14.7 (13.7-16.1) | 14.8 (13.7-16.1) | 0.844 |
| Platelet, K/uL | 227 (161-307) | 227 (159-302) | 227 (172-316) | 0.446 |
| Creatinine, mg/dL | 1.0 (0.8-1.4) | 1.0 (0.8-1.4) | 1.0 (0.8-1.3) | 0.856 |
| BUN, mg/dL | 21 (15-32) | 21 (15-32) | 22 (15-31) | 0.471 |
| Potassium, mEq/L | 4.2 (3.8-4.6) | 4.2 (3.8-4.6) | 4.2 (3.9-4.6) | 0.553 |
| Sodium, mEq/L | 138 (135-140) | 138 (135-141) | 138 (135-140) | 0.368 |
| Chloride, mEq/L | 101 (97-106) | 101 (97-106) | 101 (98-105) | 0.837 |
| Calcium, mg/dL | 8.5 (8.1-9.0) | 8.5 (8.1-9.0) | 8.5 (8.0-8.9) | 0.665 |
| Blood glucose, mg/dL | 128 (105-169) | 127 (104-166) | 134 (107-173) | 0.109 |
| PH | 7.40 (7.34-7.45) | 7.40 (7.33-7.46) | 7.40 (7.35-7.44) | 0.915 |
| PaO2, mmHg | 86 (52-161) | 88 (53-160) | 80 (51-172) | 0.505 |
| PaCO2, mmHg | 42 (36-49) | 43 (36-49) | 41 (37-46) | 0.573 |
| Lactic acid, mmol/L | 1.7 (1.2-2.5) | 1.7 (1.2-2.5) | 1.7 (1.2-2.5) | 0.885 |
| Hydrocarbonate, mEq/L | 24 (22-27) | 24 (22-27) | 24 (22-27) | 0.677 |
| APTT, s | 30.0 (26.8-35.9) | 30.3 (26.9-35.9) | 29.6 (26.4-35.7) | 0.569 |
| PT, s | 13.6 (12.4-16.2) | 13.6 (12.5-16.3) | 13.6 (12.2-15.9) | 0.588 |
| INR | 1.2 (1.1-1.5) | 1.2 (1.1-1.5) | 1.2 (1.1-1.4) | 0.477 |
| 24-hour urine volume, ml | 1400 (900-2265) | 1395 (875-2170) | 1449 (1001-2571) | 0.157 |
| **Clinical score** |  |  |  |  |
| SIRS | 3 (2-3) | 3 (2-3) | 3 (2-3) | 0.940 |
| APSIII | 44 (34-58) | 43 (34-58) | 45 (34-57) | 0.790 |
| SOFA | 4 (2-6) | 4 (2-6) | 4 (2-6) | 0.201 |
| GCS | 14 (13-15) | 14 (13-15) | 14 (13-15) | 0.473 |
| SAPSII | 35 (28-42) | 35 (28-43) | 35 (28-41) | 0.990 |
| OASIS | 32 (27-38) | 32 (27-38) | 32 (26-37) | 0.246 |
| LODS | 4 (2-6) | 4 (2-7) | 4 (2-6) | 0.589 |
| **Comorbidities, n (%)** |  |  |  |  |
| Myocardial infarct | 78 (16.99%) | 56 (17.45%) | 22 (15.94%) | 0.694 |
| Congestive heart failure | 209 (45.53%) | 146 (45.48%) | 63 (45.65%) | 0.973 |
| Peripheral vascular disease | 65 (14.16%) | 47 (14.64%) | 18 (13.04%) | 0.652 |
| Cerebrovascular disease | 48 (10.46%) | 37 (11.53%) | 11 (7.97%) | 0.254 |
| COPD | 237 (51.63%) | 170 (52.96%) | 67 (48.55%) | 0.386 |
| Rheumatic disease | 47 (10.24%) | 33 (10.28%) | 14 (10.14%) | 0.965 |
| Renal disease | 109 (23.75%) | 79 (24.61%) | 30 (21.74%) | 0.507 |
| Malignant cancer | 56 (12.20%) | 39 (12.15%) | 17 (12.32%) | 0.959 |
| Atrial fibrillation | 153 (33.33%) | 112 (34.89%) | 41 (29.71%) | 0.280 |
| Hypertension | 311 (67.76%) | 217 (67.60%) | 94 (68.12%) | 0.914 |
| Asthma | 48 (10.46%) | 36 (11.21%) | 12 (8.70%) | 0.419 |
| Pulmonary arterial hypertension | 25 (5.45%) | 17 (5.30%) | 8 (5.80%) | 0.828 |
| OSAS | 55 (11.98%) | 38 (11.84%) | 17 (12.32%) | 0.884 |
| Esophageal reflux | 129 (28.10%) | 89 (27.73%) | 40 (28.99%) | 0.783 |
| Osteoporosis | 39 (8.50%) | 30 (9.35%) | 9 (6.52%) | 0.320 |
| Diabetes | 136 (29.63%) | 101 (31.46%) | 35 (25.36%) | 0.189 |
| Liver disease | 40 (8.71%) | 30 (9.35%) | 10 (7.25%) | 0.465 |
| Charlson comorbidity index | 6 (5-8) | 6 (5-8) | 6 (5-8) | 0.209 |
| **Outcome** |  |  |  |  |
| 30-day OS rate, n (%) | 314 (68.41%) | 98 (71.01%) | 216 (67.29%) | 0.431 |
| 90-day OS rate, n (%) | 288 (62.75%) | 88 (63.77%) | 200 (62.31%) | 0.766 |
| 180-day OS rate, n (%) | 259 (56.43%) | 78 (56.52%) | 181 (56.39%) | 0.979 |

Continuous variables are presented as mean ± SD if normally distributed, and median (interquartile range) if not normally distributed. Categorical variables are presented as number of patients (%). HR: heart rate; MAP: mean arterial blood pressure; RR: respiratory rate; RBC: red blood cell; WBC: white blood cell; RDW: red cell distribution width; BUN: blood urea nitrogen; PH: potential of hydrogen; PaO2: partial pressure of arterial oxygen; PaCO2: carbon dioxide partial pressure; APTT: activated partial thromboplastin time; PT: prothrombin time; INR: international normalized ratio; SIRS: systemic inflammatory response syndrome; APSIII: acute physiology score III; SOFA: sequential organ failure assessment; GCS: Glasgow coma scale; SAPSII: simplified acute physiology score II; OASIS: oxford acute severity of illness score; LODS: logistic organ dysfunction system; COPD: chronic obstructive pulmonary disease; OSAS: obstructive sleep apnea syndrome; OS: overall survival.

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| **Table 2.** Multivariate cox regression analysis based on LASSO regression results | | | |
| **Variables** | **Coefficients** | **HR (95%CI)** | **P value** |
| Age | 0.012156 | 1.0122 (1.0015-1.0246) | **0.0493** |
| Temperature | -0.229618 | 0.7948 (0.6582-0.9599) | **0.0171** |
| WBC | 0.023057 | 1.0233 (0.9990-1.0483) | 0.0605 |
| RDW | 0.079686 | 1.0829 (1.0101-1.1610) | **0.0249** |
| PaO2 | -0.003471 | 0.9965 (0.9950-0.9981) | **<0.0001** |
| SIRS | 0.151512 | 1.1636 (0.9786-1.3836) | 0.0864 |
| APSIII | 0.010508 | 1.0106 (1.0003-1.0209) | **0.0434** |
| OASIS | 0.013335 | 1.0134 (0.9907-1.0367) | 0.2495 |
| LODS | 0.055595 | 1.0572 (0.9789-1.1417) | 0.1566 |

LASSO: least absolute shrinkage and selection operator; HR: hazard ratio; CI: confidence interval; WBC: white blood cell; RDW: red cell distribution width; PaO2: partial pressure of arterial oxygen; SIRS: systemic inflammatory response syndrome; APSIII: acute physiology score III; OASIS: oxford acute severity of illness score; LODS: logistic organ dysfunction system.