Table S1. Baseline characteristics before and after propensity score matching of cohort 1.

|  | **Before Matching** | | | | |  | **After Matching** | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Overall (N=12013)** | **RD (N=8708)** | **SD (N=3305)** | **p-value** | **SMD** |  | **Overall (N=6364)** | **RD (N=3182)** | **SD (N=3182)** | **p-value** | **SMD** |
| Age | 67.02 (14.44) | 66.98 (14.36) | 67.12 (14.65) | 0.422 | 0.009 |  | 67.03 (14.74) | 66.82 (14.84) | 67.25 (14.62) | 0.217 | 0.029 |
| Gender (Female) | **4709 (39.20%)** | **3330 (38.24%)** | **1379 (41.72%)** | **<0.001** | **0.071** |  | 2659 (41.78%) | 1335 (41.95%) | 1324 (41.61%) | 0.799 | 0.007 |
| Race |  |  |  |  |  |  |  |  |  |  |  |
| Asian | 360 (3.00%) | 271 (3.11%) | 89 (2.69%) | 0.052 | 0.03 |  | 183 (2.88%) | 97 (3.05%) | 86 (2.70%) | 0.674 | 0.004 |
| Black | 934 (7.77%) | 661 (7.59%) | 273 (8.26%) |  |  |  | 514 (8.08%) | 247 (7.76%) | 267 (8.39%) |  |  |
| White | 8293 (69.03%) | 6059 (69.58%) | 2234 (67.59%) |  |  |  | 4334 (68.10%) | 2175 (68.35%) | 2159 (67.85%) |  |  |
| Other | 2426 (20.19%) | 1717 (19.72%) | 709 (21.45%) |  |  |  | 1333 (20.95%) | 663 (20.84%) | 670 (21.06%) |  |  |
| Weight | 83.75 (23.26) | 83.60 (22.71) | 84.13 (24.63) | 0.955 | 0.022 |  | 83.87 (24.27) | 83.97 (24.16) | 83.77 (24.38) | 0.648 | 0.009 |
| SAPS II | **43.81 (14.17)** | **41.92 (13.31)** | **48.80 (15.13)** | **<0.001** | **0.483** |  | 47.76 (14.55) | 47.63 (14.72) | 47.89 (14.37) | 0.32 | 0.018 |
| SOFA score | **7.42 (3.56)** | **6.90 (3.31)** | **8.78 (3.82)** | **<0.001** | **0.526** |  | 8.55 (3.63) | 8.53 (3.58) | 8.57 (3.68) | 0.655 | 0.01 |
| Charlson comorbidity index | **5.26 (2.84)** | **5.10 (2.79)** | **5.68 (2.92)** | **<0.001** | **0.204** |  | 5.62 (2.94) | 5.59 (2.96) | 5.64 (2.91) | 0.43 | 0.016 |
| **Interventions (boolean for 1st 24 h)** |  |  |  |  |  |  |  |  |  |  |  |
| PiCCO (YES) | **63 (0.52%)** | **27 (0.31%)** | **36 (1.09%)** | **<0.001** | **0.094** |  | 48 (0.75%) | 22 (0.69%) | 26 (0.82%) | 0.664 | 0.015 |
| NICOM (YES) | **506 (4.21%)** | **260 (2.99%)** | **246 (7.44%)** | **<0.001** | **0.202** |  | 392 (6.16%) | 190 (5.97%) | 202 (6.35%) | 0.566 | 0.016 |
| Mechanical ventilation (YES) | **8713 (72.53%)** | **6192 (71.11%)** | **2521 (76.28%)** | **<0.001** | **0.118** |  | 4837 (76.01%) | 2432 (76.43%) | 2405 (75.58%) | 0.445 | 0.02 |
| Sedative therapy (YES) | 9158 (76.23%) | 6607 (75.87%) | 2551 (77.19%) | 0.137 | 0.031 |  | 4892 (76.87%) | 2450 (77.00%) | 2442 (76.74%) | 0.835 | 0.006 |
| Albumin (YES) | 3647 (30.36%) | 2676 (30.73%) | 971 (29.38%) | 0.157 | 0.029 |  | 1848 (29.04%) | 919 (28.88%) | 929 (29.20%) | 0.804 | 0.007 |
| **Comorbidities (boolean)** |  |  |  |  |  |  |  |  |  |  |  |
| HF (YES) | **4049 (33.71%)** | **2762 (31.72%)** | **1287 (38.94%)** | **<0.001** | **0.152** |  | 2444 (38.40%) | 1211 (38.06%) | 1233 (38.75%) | 0.588 | 0.014 |
| Hypertension (YES) | **8072 (67.19%)** | **5972 (68.58%)** | **2100 (63.54%)** | **<0.001** | **0.107** |  | 4064 (63.86%) | 2016 (63.36%) | 2048 (64.36%) | 0.419 | 0.021 |
| AFIB (YES) | 2698 (22.46%) | 1972 (22.65%) | 726 (21.97%) | 0.44 | 0.016 |  | 1374 (21.59%) | 675 (21.21%) | 699 (21.97%) | 0.483 | 0.018 |
| T2DM (YES) | 3751 (31.22%) | 2681 (30.79%) | 1070 (32.38%) | 0.098 | 0.034 |  | 2067 (32.48%) | 1033 (32.46%) | 1034 (32.50%) | 1 | 0.001 |
| Renal (YES) | **2850 (23.72%)** | **1944 (22.32%)** | **906 (27.41%)** | **<0.001** | **0.118** |  | 1732 (27.22%) | 859 (27.00%) | 873 (27.44%) | 0.714 | 0.01 |
| Liver (YES) | **830 (6.91%)** | **533 (6.12%)** | **297 (8.99%)** | **<0.001** | **0.109** |  | 564 (8.86%) | 290 (9.11%) | 274 (8.61%) | 0.508 | 0.018 |
| COPD (YES) | **1804 (15.02%)** | **1272 (14.61%)** | **532 (16.10%)** | **<0.05** | **0.041** |  | 1035 (16.26%) | 525 (16.50%) | 510 (16.03%) | 0.634 | 0.013 |
| CAD (YES) | **4935 (41.08%)** | **3714 (42.65%)** | **1221 (36.94%)** | **<0.001** | **0.117** |  | 2358 (37.05%) | 1169 (36.74%) | 1189 (37.37%) | 0.622 | 0.013 |
| Stroke (YES) | 943 (7.85%) | 669 (7.68%) | 274 (8.29%) | 0.285 | 0.022 |  | 542 (8.52%) | 275 (8.64%) | 267 (8.39%) | 0.753 | 0.009 |
| Malignancy (YES) | **2089 (17.39%)** | **1457 (16.73%)** | **632 (19.12%)** | **<0.01** | **0.062** |  | 1196 (18.79%) | 600 (18.86%) | 596 (18.73%) | 0.923 | 0.003 |
| **Vital signs (1st 24 h)** |  |  |  |  |  |  |  |  |  |  |  |
| MAP | **77.70 (17.91)** | **78.02 (17.56)** | **76.84 (18.76)** | **<0.001** | **0.065** |  | 77.30 (18.76) | 77.53 (18.74) | 77.07 (18.79) | 0.37 | 0.025 |
| Temperature | **36.56 (1.01)** | **36.55 (0.97)** | **36.60 (1.10)** | **<0.001** | **0.046** |  | 36.60 (1.06) | 36.61 (1.03) | 36.59 (1.09) | 0.896 | 0.016 |
| Heart rate | **89.98 (20.35)** | **88.72 (19.64)** | **93.29 (21.77)** | **<0.001** | **0.22** |  | 92.94 (21.58) | 93.27 (21.59) | 92.61 (21.56) | 0.484 | 0.031 |
| **Laboratory tests (1st 24 h)** |  |  |  |  |  |  |  |  |  |  |  |
| WBC count | **14.47 (9.13)** | **14.17 (8.42)** | **15.24 (10.75)** | **<0.001** | **0.11** |  | 15.23 (10.22) | 15.27 (9.65) | 15.18 (10.76) | 0.443 | 0.009 |
| Hemoglobin | 10.06 (2.19) | 10.04 (2.16) | 10.13 (2.28) | 0.265 | 0.043 |  | 10.14 (2.27) | 10.17 (2.28) | 10.12 (2.27) | 0.158 | 0.024 |
| Platelet | **196.15 (110.69)** | **192.67 (106.64)** | **205.31 (120.24)** | **<0.001** | **0.111** |  | 207.13 (121.76) | 209.39 (125.27) | 204.87 (118.12) | 0.468 | 0.037 |
| pH | **7.35 (0.10)** | **7.36 (0.10)** | **7.33 (0.12)** | **<0.001** | **0.299** |  | 7.33 (0.11) | 7.33 (0.11) | 7.33 (0.11) | 0.865 | 0.004 |
| PO2 | **206.29 (129.22)** | **217.60 (129.84)** | **176.51 (122.69)** | **<0.001** | **0.325** |  | 178.67 (121.75) | 177.86 (120.15) | 179.48 (123.34) | 0.875 | 0.013 |
| PCO2 | 42.86 (12.64) | 42.76 (12.32) | 43.11 (13.42) | 0.989 | 0.028 |  | 43.26 (13.77) | 43.44 (14.15) | 43.08 (13.37) | 0.504 | 0.026 |
| Lactate | **2.60 (2.05)** | **2.47 (1.80)** | **2.95 (2.56)** | **<0.001** | **0.215** |  | 2.83 (2.40) | 2.80 (2.32) | 2.87 (2.48) | 0.847 | 0.028 |
| Creatinine | **1.57 (1.56)** | **1.45 (1.44)** | **1.88 (1.81)** | **<0.001** | **0.263** |  | 1.84 (1.83) | 1.82 (1.85) | 1.85 (1.81) | 0.865 | 0.017 |
| **Outcomes (boolean)** |  |  |  |  |  |  |  |  |  |  |  |
| 28-day mortality (Death) | **2100 (17.48%)** | **1102 (12.66%)** | **998 (30.20%)** | **<0.001** | **0.438** |  | **1529 (24.03%)** | **605 (19.01%)** | **924 (29.04%)** | **<0.001** | **0.236** |
| ICU mortality (Death) | **1362 (11.34%)** | **605 (6.95%)** | **757 (22.90%)** | **<0.001** | **0.459** |  | **1045 (16.42%)** | **355 (11.16%)** | **690 (21.68%)** | **<0.001** | **0.287** |
| In-hospital mortality (Death) | **1825 (15.19%)** | **888 (10.20%)** | **937 (28.35%)** | **<0.001** | **0.473** |  | **1374 (21.59%)** | **507 (15.93%)** | **867 (27.25%)** | **<0.001** | **0.278** |
| **Length of Stay (days)** |  |  |  |  |  |  |  |  |  |  |  |
| ICU LOS | **5.65 (6.68)** | **4.76 (5.95)** | **8.00 (7.83)** | **<0.001** | **0.466** |  | **6.93 (7.32)** | **5.91 (6.68)** | **7.96 (7.78)** | **<0.001** | **0.282** |
| Hospital LOS | **11.90 (12.47)** | **10.72 (10.89)** | **15.01 (15.47)** | **<0.001** | **0.321** |  | **13.69 (13.86)** | **12.36 (12.05)** | **15.01 (15.35)** | **<0.001** | **0.192** |
| Values are presented as mean (standard deviation) for continuous variables and number (percentage) for categorical variables. Variables in bold have p-value < 0.05. | | | | | | | | | | | |

Table S2. Baseline characteristics before and after propensity score matching of cohort 2.

|  | **Before Matching** | | | | |  | **After Matching** | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Overall (N=9921)** | **RD (N=8708)** | **SI (N=1213)** | **p-value** | **SMD** |  | **Overall (N=2414)** | **RD (N=1207)** | **SI (N=1207)** | **p-value** | **SMD** |
| Age | 66.97 (14.44) | 66.98 (14.36) | 66.88 (15.05) | 0.919 | 0.007 |  | 66.74 (15.16) | 66.64 (15.26) | 66.84 (15.06) | 0.819 | 0.013 |
| Gender (Female) | **3835 (38.66%)** | **3330 (38.24%)** | **505 (41.63%)** | **<0.05** | **0.069** |  | 992 (41.09%) | 489 (40.51%) | 503 (41.67%) | 0.591 | 0.024 |
| Race |  |  |  |  |  |  |  |  |  |  |  |
| Asian | **298 (3.00%)** | **271 (3.11%)** | **27 (2.23%)** | **<0.05** | **0.026** |  | 50 (2.07%) | 23 (1.91%) | 27 (2.24%) | 0.942 | 0.003 |
| Black | **775 (7.81%)** | **661 (7.59%)** | **114 (9.40%)** |  |  |  | 230 (9.53%) | 116 (9.61%) | 114 (9.44%) |  |  |
| White | **6872 (69.27%)** | **6059 (69.58%)** | **813 (67.02%)** |  |  |  | 1624 (67.27%) | 815 (67.52%) | 809 (67.03%) |  |  |
| Other | **1976 (19.92%)** | **1717 (19.72%)** | **259 (21.35%)** |  |  |  | 510 (21.13%) | 253 (20.96%) | 257 (21.29%) |  |  |
| Weight | **83.49 (22.99)** | **83.60 (22.71)** | **82.68 (24.92)** | **<0.05** | **0.039** |  | 82.59 (24.40) | 82.49 (23.85) | 82.69 (24.96) | 0.986 | 0.008 |
| SAPS II | **42.92 (13.80)** | **41.92 (13.31)** | **50.07 (15.08)** | **<0.001** | **0.573** |  | 49.79 (15.22) | 49.67 (15.55) | 49.90 (14.89) | 0.351 | 0.015 |
| SOFA score | **7.17 (3.49)** | **6.90 (3.31)** | **9.09 (4.06)** | **<0.001** | **0.592** |  | 9.05 (3.95) | 9.06 (3.87) | 9.05 (4.02) | 0.953 | 0.001 |
| Charlson comorbidity index | **5.18 (2.81)** | **5.10 (2.79)** | **5.78 (2.90)** | **<0.001** | **0.241** |  | 5.77 (2.94) | 5.76 (2.99) | 5.77 (2.90) | 0.967 | 0.006 |
| **Interventions (boolean for 1st 24 h)** |  |  |  |  |  |  |  |  |  |  |  |
| PiCCO (YES) | **43 (0.43%)** | **27 (0.31%)** | **16 (1.32%)** | **<0.001** | **0.112** |  | 27 (1.12%) | 13 (1.08%) | 14 (1.16%) | 1 | 0.008 |
| NICOM (YES) | **343 (3.46%)** | **260 (2.99%)** | **83 (6.84%)** | **<0.001** | **0.179** |  | 163 (6.75%) | 82 (6.79%) | 81 (6.71%) | 1 | 0.003 |
| Mechanical ventilation (YES) | **7151 (72.08%)** | **6192 (71.11%)** | **959 (79.06%)** | **<0.001** | **0.185** |  | 1906 (78.96%) | 953 (78.96%) | 953 (78.96%) | 1 | <0.001 |
| Sedative therapy (YES) | **7586 (76.46%)** | **6607 (75.87%)** | **979 (80.71%)** | **<0.001** | **0.118** |  | 1954 (80.94%) | 981 (81.28%) | 973 (80.61%) | 0.717 | 0.017 |
| Albumin (YES) | **2996 (30.20%)** | **2676 (30.73%)** | **320 (26.38%)** | **<0.01** | **0.096** |  | 628 (26.01%) | 309 (25.60%) | 319 (26.43%) | 0.676 | 0.019 |
| **Comorbidities (boolean)** |  |  |  |  |  |  |  |  |  |  |  |
| HF (YES) | **3203 (32.29%)** | **2762 (31.72%)** | **441 (36.36%)** | **<0.01** | **0.098** |  | 877 (36.33%) | 437 (36.21%) | 440 (36.45%) | 0.933 | 0.005 |
| Hypertension (YES) | **6731 (67.85%)** | **5972 (68.58%)** | **759 (62.57%)** | **<0.001** | **0.127** |  | 1495 (61.93%) | 738 (61.14%) | 757 (62.72%) | 0.451 | 0.032 |
| AFIB (YES) | 2255 (22.73%) | 1972 (22.65%) | 283 (23.33%) | 0.619 | 0.016 |  | 552 (22.87%) | 272 (22.54%) | 280 (23.20%) | 0.734 | 0.016 |
| T2DM (YES) | 3062 (30.86%) | 2681 (30.79%) | 381 (31.41%) | 0.685 | 0.013 |  | 756 (31.32%) | 378 (31.32%) | 378 (31.32%) | 1 | <0.001 |
| Renal (YES) | **2308 (23.26%)** | **1944 (22.32%)** | **364 (30.01%)** | **<0.001** | **0.175** |  | 718 (29.74%) | 357 (29.58%) | 361 (29.91%) | 0.894 | 0.007 |
| Liver (YES) | **670 (6.75%)** | **533 (6.12%)** | **137 (11.29%)** | **<0.001** | **0.184** |  | 261 (10.81%) | 125 (10.36%) | 136 (11.27%) | 0.512 | 0.029 |
| COPD (YES) | **1501 (15.13%)** | **1272 (14.61%)** | **229 (18.88%)** | **<0.001** | **0.115** |  | 453 (18.77%) | 226 (18.72%) | 227 (18.81%) | 1 | 0.002 |
| CAD (YES) | **4123 (41.56%)** | **3714 (42.65%)** | **409 (33.72%)** | **<0.001** | **0.185** |  | 805 (33.35%) | 396 (32.81%) | 409 (33.89%) | 0.604 | 0.023 |
| Stroke (YES) | **788 (7.94%)** | **669 (7.68%)** | **119 (9.81%)** | **<0.05** | **0.075** |  | 244 (10.11%) | 125 (10.36%) | 119 (9.86%) | 0.736 | 0.016 |
| Malignancy (YES) | **1706 (17.20%)** | **1457 (16.73%)** | **249 (20.53%)** | **<0.01** | **0.098** |  | 510 (21.13%) | 265 (21.96%) | 245 (20.30%) | 0.343 | 0.041 |
| **Vital signs (1st 24 h)** |  |  |  |  |  |  |  |  |  |  |  |
| MAP | **77.95 (17.81)** | **78.02 (17.56)** | **77.44 (19.54)** | **<0.05** | **0.031** |  | 77.46 (18.82) | 77.42 (18.07) | 77.51 (19.55) | 0.885 | 0.005 |
| Temperature | **36.55 (0.99)** | **36.55 (0.97)** | **36.57 (1.16)** | **<0.01** | **0.018** |  | 36.59 (1.11) | 36.60 (1.07) | 36.57 (1.14) | 0.899 | 0.023 |
| Heart rate | **89.26 (19.90)** | **88.72 (19.64)** | **93.11 (21.35)** | **<0.001** | **0.214** |  | 93.43 (21.84) | 93.78 (22.34) | 93.08 (21.32) | 0.826 | 0.032 |
| **Laboratory tests (1st 24 h)** |  |  |  |  |  |  |  |  |  |  |  |
| WBC count | 14.25 (8.84) | 14.17 (8.42) | 14.80 (11.41) | 0.464 | 0.062 |  | 14.60 (10.11) | 14.37 (8.63) | 14.84 (11.40) | 0.659 | 0.047 |
| Hemoglobin | **10.07 (2.18)** | **10.04 (2.16)** | **10.30 (2.32)** | **<0.01** | **0.118** |  | 10.28 (2.32) | 10.26 (2.33) | 10.29 (2.31) | 0.739 | 0.014 |
| Platelet | **193.95 (109.03)** | **192.67 (106.64)** | **203.13 (124.48)** | **<0.05** | **0.09** |  | 202.05 (120.79) | 200.53 (117.28) | 203.56 (124.22) | 0.582 | 0.025 |
| pH | **7.35 (0.10)** | **7.36 (0.10)** | **7.32 (0.12)** | **<0.001** | **0.346** |  | 7.32 (0.12) | 7.32 (0.12) | 7.32 (0.12) | 0.692 | 0.006 |
| PO2 | **211.52 (129.31)** | **217.60 (129.84)** | **167.85 (116.44)** | **<0.001** | **0.403** |  | 168.29 (116.92) | 168.30 (117.34) | 168.28 (116.54) | 0.976 | <0.001 |
| PCO2 | 42.85 (12.68) | 42.76 (12.32) | 43.53 (14.96) | 0.897 | 0.056 |  | 43.72 (15.17) | 43.88 (15.37) | 43.56 (14.98) | 0.757 | 0.021 |
| Lactate | **2.54 (1.94)** | **2.47 (1.80)** | **3.01 (2.71)** | **<0.001** | **0.236** |  | 3.03 (2.69) | 3.06 (2.69) | 3.01 (2.70) | 0.208 | 0.02 |
| Creatinine | **1.51 (1.50)** | **1.45 (1.44)** | **1.98 (1.85)** | **<0.001** | **0.317** |  | 1.95 (1.95) | 1.93 (2.04) | 1.97 (1.85) | 0.357 | 0.019 |
| **Outcomes (boolean)** |  |  |  |  |  |  |  |  |  |  |  |
| 28-day mortality (Death) | **1616 (16.29%)** | **1102 (12.66%)** | **514 (42.37%)** | **<0.001** | **0.706** |  | **778 (32.23%)** | **269 (22.29%)** | **509 (42.17%)** | **<0.001** | **0.435** |
| ICU mortality (Death) | **1009 (10.17%)** | **605 (6.95%)** | **404 (33.31%)** | **<0.001** | **0.696** |  | **567 (23.49%)** | **168 (13.92%)** | **399 (33.06%)** | **<0.001** | **0.463** |
| In-hospital mortality (Death) | **1375 (13.86%)** | **888 (10.20%)** | **487 (40.15%)** | **<0.001** | **0.735** |  | **711 (29.45%)** | **229 (18.97%)** | **482 (39.93%)** | **<0.001** | **0.473** |
| **Length of Stay (days)** |  |  |  |  |  |  |  |  |  |  |  |
| ICU LOS | **5.29 (6.59)** | **4.76 (5.95)** | **9.09 (9.19)** | **<0.001** | **0.56** |  | **7.81 (8.36)** | **6.53 (7.22)** | **9.10 (9.19)** | **<0.001** | **0.311** |
| Hospital LOS | **11.20 (11.59)** | **10.72 (10.89)** | **14.60 (15.27)** | **<0.001** | **0.293** |  | 13.85 (14.06) | 13.08 (12.68) | 14.63 (15.29) | 0.096 | 0.111 |
| Values are presented as mean (standard deviation) for continuous variables and number (percentage) for categorical variables. Variables in bold have p-value < 0.05. | | | | | | | | | | | |

Table S3. Baseline characteristics before and after propensity score matching of cohort 3.

|  | **Before Matching** | | | | |  | **After Matching** | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Overall (N=9812)** | **RD (N=8708)** | **RI (N=1104)** | **p-value** | **SMD** |  | **Overall (N=2200)** | **RD (N=1100)** | **RI (N=1100)** | **p-value** | **SMD** |
| Age | 67.00 (14.39) | 66.98 (14.36) | 67.14 (14.63) | 0.502 | 0.011 |  | 67.27 (14.49) | 67.39 (14.34) | 67.14 (14.64) | 0.998 | 0.017 |
| Gender (Female) | **3789 (38.62%)** | **3330 (38.24%)** | **459 (41.58%)** | **<0.05** | **0.068** |  | 899 (40.86%) | 441 (40.09%) | 458 (41.64%) | 0.488 | 0.031 |
| Race |  |  |  |  |  |  |  |  |  |  |  |
| Asian | **305 (3.11%)** | **271 (3.11%)** | **34 (3.08%)** | **<0.05** | **0.021** |  | 65 (2.95%) | 31 (2.82%) | 34 (3.09%) | 0.943 | 0.003 |
| Black | **760 (7.75%)** | **661 (7.59%)** | **99 (8.97%)** |  |  |  | 203 (9.23%) | 105 (9.55%) | 98 (8.91%) |  |  |
| White | **6783 (69.13%)** | **6059 (69.58%)** | **724 (65.58%)** |  |  |  | 1441 (65.50%) | 719 (65.36%) | 722 (65.64%) |  |  |
| Other | **1964 (20.02%)** | **1717 (19.72%)** | **247 (22.37%)** |  |  |  | 491 (22.32%) | 245 (22.27%) | 246 (22.36%) |  |  |
| Weight | 83.68 (22.92) | 83.60 (22.71) | 84.32 (24.51) | 0.974 | 0.031 |  | 84.16 (23.42) | 84.05 (22.27) | 84.27 (24.52) | 0.43 | 0.01 |
| SAPS II | **42.69 (13.63)** | **41.92 (13.31)** | **48.75 (14.59)** | **<0.001** | **0.489** |  | 49.06 (15.12) | 49.47 (15.70) | 48.65 (14.50) | 0.567 | 0.054 |
| SOFA score | **7.10 (3.45)** | **6.90 (3.31)** | **8.64 (4.07)** | **<0.001** | **0.469** |  | 8.65 (3.90) | 8.69 (3.75) | 8.61 (4.03) | 0.634 | 0.021 |
| Charlson comorbidity index | **5.19 (2.81)** | **5.10 (2.79)** | **5.89 (2.87)** | **<0.001** | **0.279** |  | 5.90 (2.91) | 5.91 (2.95) | 5.88 (2.86) | 0.956 | 0.011 |
| **Interventions (boolean for 1st 24 h)** |  |  |  |  |  |  |  |  |  |  |  |
| PiCCO (YES) | 33 (0.34%) | 27 (0.31%) | 6 (0.54%) | 0.324 | 0.036 |  | 11 (0.50%) | 5 (0.45%) | 6 (0.55%) | 1 | 0.013 |
| NICOM (YES) | **312 (3.18%)** | **260 (2.99%)** | **52 (4.71%)** | **<0.01** | **0.09** |  | 99 (4.50%) | 48 (4.36%) | 51 (4.64%) | 0.837 | 0.013 |
| Mechanical ventilation (YES) | **7018 (71.52%)** | **6192 (71.11%)** | **826 (74.82%)** | **<0.05** | **0.084** |  | **1686 (76.64%)** | **864 (78.55%)** | **822 (74.73%)** | **<0.05** | **0.09** |
| Sedative therapy (YES) | 7464 (76.07%) | 6607 (75.87%) | 857 (77.63%) | 0.212 | 0.042 |  | 1726 (78.45%) | 873 (79.36%) | 853 (77.55%) | 0.324 | 0.044 |
| Albumin (YES) | **2967 (30.24%)** | **2676 (30.73%)** | **291 (26.36%)** | **<0.01** | **0.097** |  | 607 (27.59%) | 317 (28.82%) | 290 (26.36%) | 0.215 | 0.055 |
| **Comorbidities (boolean)** |  |  |  |  |  |  |  |  |  |  |  |
| HF (YES) | **3176 (32.37%)** | **2762 (31.72%)** | **414 (37.50%)** | **<0.001** | **0.122** |  | 827 (37.59%) | 414 (37.64%) | 413 (37.55%) | 1 | 0.002 |
| Hypertension (YES) | **6682 (68.10%)** | **5972 (68.58%)** | **710 (64.31%)** | **<0.01** | **0.091** |  | 1431 (65.05%) | 722 (65.64%) | 709 (64.45%) | 0.592 | 0.025 |
| AFIB (YES) | 2247 (22.90%) | 1972 (22.65%) | 275 (24.91%) | 0.099 | 0.053 |  | 545 (24.77%) | 271 (24.64%) | 274 (24.91%) | 0.921 | 0.006 |
| T2DM (YES) | 3021 (30.79%) | 2681 (30.79%) | 340 (30.80%) | 1 | <0.001 |  | 681 (30.95%) | 342 (31.09%) | 339 (30.82%) | 0.927 | 0.006 |
| Renal (YES) | **2261 (23.04%)** | **1944 (22.32%)** | **317 (28.71%)** | **<0.001** | **0.147** |  | 637 (28.95%) | 321 (29.18%) | 316 (28.73%) | 0.851 | 0.01 |
| Liver (YES) | **669 (6.82%)** | **533 (6.12%)** | **136 (12.32%)** | **<0.001** | **0.215** |  | 256 (11.64%) | 123 (11.18%) | 133 (12.09%) | 0.55 | 0.028 |
| COPD (YES) | **1461 (14.89%)** | **1272 (14.61%)** | **189 (17.12%)** | **<0.05** | **0.069** |  | 379 (17.23%) | 190 (17.27%) | 189 (17.18%) | 1 | 0.002 |
| CAD (YES) | **4137 (42.16%)** | **3714 (42.65%)** | **423 (38.32%)** | **<0.01** | **0.088** |  | 852 (38.73%) | 429 (39.00%) | 423 (38.45%) | 0.827 | 0.011 |
| Stroke (YES) | **804 (8.19%)** | **669 (7.68%)** | **135 (12.23%)** | **<0.001** | **0.152** |  | 266 (12.09%) | 134 (12.18%) | 132 (12.00%) | 0.948 | 0.006 |
| Malignancy (YES) | **1677 (17.09%)** | **1457 (16.73%)** | **220 (19.93%)** | **<0.01** | **0.083** |  | 457 (20.77%) | 238 (21.64%) | 219 (19.91%) | 0.344 | 0.043 |
| **Vital signs (1st 24 h)** |  |  |  |  |  |  |  |  |  |  |  |
| MAP | 78.17 (17.82) | 78.02 (17.56) | 79.38 (19.75) | 0.094 | 0.073 |  | 79.50 (19.39) | 79.65 (19.02) | 79.36 (19.76) | 0.88 | 0.015 |
| Temperature | 36.55 (0.97) | 36.55 (0.97) | 36.56 (1.00) | 0.222 | 0.014 |  | 36.54 (1.05) | 36.51 (1.10) | 36.57 (1.00) | 0.339 | 0.051 |
| Heart rate | **89.04 (19.83)** | **88.72 (19.64)** | **91.55 (21.16)** | **<0.001** | **0.139** |  | 91.72 (21.45) | 91.88 (21.72) | 91.55 (21.19) | 0.925 | 0.015 |
| **Laboratory tests (1st 24 h)** |  |  |  |  |  |  |  |  |  |  |  |
| WBC count | 14.15 (8.41) | 14.17 (8.42) | 13.92 (8.32) | 0.127 | 0.03 |  | 14.13 (8.56) | 14.33 (8.79) | 13.93 (8.33) | 0.329 | 0.046 |
| Hemoglobin | 10.05 (2.16) | 10.04 (2.16) | 10.13 (2.21) | 0.401 | 0.041 |  | 10.13 (2.23) | 10.14 (2.25) | 10.13 (2.21) | 0.781 | 0.005 |
| Platelet | 192.61 (107.94) | 192.67 (106.64) | 192.19 (117.70) | 0.664 | 0.004 |  | 195.62 (119.17) | 198.79 (120.67) | 192.46 (117.63) | 0.413 | 0.053 |
| pH | **7.36 (0.10)** | **7.36 (0.10)** | **7.34 (0.11)** | **<0.001** | **0.18** |  | 7.34 (0.11) | 7.33 (0.11) | 7.34 (0.11) | 0.056 | 0.061 |
| PO2 | **212.97 (129.64)** | **217.60 (129.84)** | **176.50 (122.04)** | **<0.001** | **0.326** |  | 178.21 (121.69) | 179.99 (121.39) | 176.43 (122.02) | 0.439 | 0.029 |
| PCO2 | **42.69 (12.37)** | **42.76 (12.32)** | **42.11 (12.71)** | **<0.01** | **0.052** |  | 42.04 (12.59) | 41.90 (12.53) | 42.18 (12.66) | 0.892 | 0.022 |
| Lactate | **2.51 (1.87)** | **2.47 (1.80)** | **2.81 (2.35)** | **<0.05** | **0.162** |  | 2.82 (2.26) | 2.85 (2.22) | 2.79 (2.31) | 0.112 | 0.028 |
| Creatinine | **1.51 (1.49)** | **1.45 (1.44)** | **1.96 (1.82)** | **<0.001** | **0.312** |  | 1.94 (1.91) | 1.93 (2.01) | 1.95 (1.81) | 0.6 | 0.011 |
| **Outcomes (boolean)** |  |  |  |  |  |  |  |  |  |  |  |
| 28-day mortality (Death) | **1568 (15.98%)** | **1102 (12.66%)** | **466 (42.21%)** | **<0.001** | **0.702** |  | **706 (32.09%)** | **243 (22.09%)** | **463 (42.09%)** | **<0.001** | **0.439** |
| ICU mortality (Death) | **1009 (10.28%)** | **605 (6.95%)** | **404 (36.59%)** | **<0.001** | **0.77** |  | **555 (25.23%)** | **154 (14.00%)** | **401 (36.45%)** | **<0.001** | **0.535** |
| In-hospital mortality (Death) | **1348 (13.74%)** | **888 (10.20%)** | **460 (41.67%)** | **<0.001** | **0.769** |  | **664 (30.18%)** | **207 (18.82%)** | **457 (41.55%)** | **<0.001** | **0.511** |
| **Length of Stay (days)** |  |  |  |  |  |  |  |  |  |  |  |
| ICU LOS | **5.28 (6.68)** | **4.76 (5.95)** | **9.38 (9.93)** | **<0.001** | **0.565** |  | **7.72 (8.67)** | **6.06 (6.78)** | **9.39 (9.95)** | **<0.001** | **0.391** |
| Hospital LOS | **11.20 (11.69)** | **10.72 (10.89)** | **14.99 (16.17)** | **<0.001** | **0.31** |  | **13.65 (14.09)** | **12.31 (11.48)** | **15.00 (16.19)** | **<0.01** | **0.192** |
| Values are presented as mean (standard deviation) for continuous variables and number (percentage) for categorical variables. Variables in bold have p-value < 0.05. | | | | | | | | | | | |

Table S4. Baseline characteristics before and after propensity score matching of cohort 4.

|  | **Before Matching** | | | | |  | **After Matching** | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Overall (N=4518)** | **SD (N=3305)** | **SI (N=1213)** | **p-value** | **SMD** |  | **Overall (N=2408)** | **SD (N=1204)** | **SI (N=1204)** | **p-value** | **SMD** |
| Age | 67.05 (14.75) | 67.12 (14.65) | 66.88 (15.05) | 0.715 | 0.016 |  | 66.97 (15.11) | 67.03 (15.18) | 66.91 (15.05) | 0.758 | 0.008 |
| Gender (Female) | 1884 (41.70%) | 1379 (41.72%) | 505 (41.63%) | 0.983 | 0.002 |  | 993 (41.24%) | 491 (40.78%) | 502 (41.69%) | 0.679 | 0.019 |
| Race |  |  |  |  |  |  |  |  |  |  |  |
| Asian | 116 (2.57%) | 89 (2.69%) | 27 (2.23%) | 0.543 | 0.005 |  | 56 (2.33%) | 29 (2.41%) | 27 (2.24%) | 0.923 | 0.026 |
| Black | 387 (8.57%) | 273 (8.26%) | 114 (9.40%) |  |  |  | 228 (9.47%) | 118 (9.80%) | 110 (9.14%) |  |  |
| White | 3047 (67.44%) | 2234 (67.59%) | 813 (67.02%) |  |  |  | 1616 (67.11%) | 807 (67.03%) | 809 (67.19%) |  |  |
| Other | 968 (21.43%) | 709 (21.45%) | 259 (21.35%) |  |  |  | 508 (21.10%) | 250 (20.76%) | 258 (21.43%) |  |  |
| Weight | 83.74 (24.72) | 84.13 (24.63) | 82.68 (24.92) | 0.069 | 0.059 |  | 82.55 (23.75) | 82.39 (22.54) | 82.71 (24.92) | 0.973 | 0.013 |
| SAPS II | **49.14 (15.12)** | **48.80 (15.13)** | **50.07 (15.08)** | **<0.01** | **0.084** |  | 50.14 (15.41) | 50.29 (15.77) | 49.99 (15.04) | 0.926 | 0.019 |
| SOFA score | **8.86 (3.89)** | **8.78 (3.82)** | **9.09 (4.06)** | **<0.05** | **0.079** |  | 9.07 (3.98) | 9.07 (3.91) | 9.08 (4.05) | 0.842 | 0.004 |
| Charlson comorbidity index | 5.71 (2.92) | 5.68 (2.92) | 5.78 (2.90) | 0.267 | 0.035 |  | 5.80 (2.95) | 5.83 (3.01) | 5.76 (2.89) | 0.679 | 0.023 |
| **Interventions (boolean for 1st 24 h)** |  |  |  |  |  |  |  |  |  |  |  |
| PiCCO (YES) | 52 (1.15%) | 36 (1.09%) | 16 (1.32%) | 0.628 | 0.021 |  | 28 (1.16%) | 13 (1.08%) | 15 (1.25%) | 0.849 | 0.015 |
| NICOM (YES) | 329 (7.28%) | 246 (7.44%) | 83 (6.84%) | 0.533 | 0.023 |  | 173 (7.18%) | 90 (7.48%) | 83 (6.89%) | 0.636 | 0.023 |
| Mechanical ventilation (YES) | 3480 (77.03%) | 2521 (76.28%) | 959 (79.06%) | 0.054 | 0.067 |  | 1910 (79.32%) | 960 (79.73%) | 950 (78.90%) | 0.651 | 0.021 |
| Sedative therapy (YES) | **3530 (78.13%)** | **2551 (77.19%)** | **979 (80.71%)** | **<0.05** | **0.086** |  | 1948 (80.90%) | 978 (81.23%) | 970 (80.56%) | 0.717 | 0.017 |
| Albumin (YES) | 1291 (28.57%) | 971 (29.38%) | 320 (26.38%) | 0.052 | 0.067 |  | 652 (27.08%) | 333 (27.66%) | 319 (26.50%) | 0.551 | 0.026 |
| **Comorbidities (boolean)** |  |  |  |  |  |  |  |  |  |  |  |
| HF (YES) | 1728 (38.25%) | 1287 (38.94%) | 441 (36.36%) | 0.121 | 0.053 |  | 883 (36.67%) | 446 (37.04%) | 437 (36.30%) | 0.735 | 0.016 |
| Hypertension (YES) | 2859 (63.28%) | 2100 (63.54%) | 759 (62.57%) | 0.573 | 0.02 |  | 1505 (62.50%) | 753 (62.54%) | 752 (62.46%) | 1 | 0.002 |
| AFIB (YES) | 1009 (22.33%) | 726 (21.97%) | 283 (23.33%) | 0.35 | 0.033 |  | 553 (22.97%) | 273 (22.67%) | 280 (23.26%) | 0.771 | 0.014 |
| T2DM (YES) | 1451 (32.12%) | 1070 (32.38%) | 381 (31.41%) | 0.562 | 0.021 |  | 748 (31.06%) | 369 (30.65%) | 379 (31.48%) | 0.692 | 0.018 |
| Renal (YES) | 1270 (28.11%) | 906 (27.41%) | 364 (30.01%) | 0.092 | 0.057 |  | 723 (30.02%) | 364 (30.23%) | 359 (29.82%) | 0.859 | 0.009 |
| Liver (YES) | **434 (9.61%)** | **297 (8.99%)** | **137 (11.29%)** | **<0.05** | **0.077** |  | 259 (10.76%) | 126 (10.47%) | 133 (11.05%) | 0.693 | 0.019 |
| COPD (YES) | **761 (16.84%)** | **532 (16.10%)** | **229 (18.88%)** | **<0.05** | **0.073** |  | 451 (18.73%) | 226 (18.77%) | 225 (18.69%) | 1 | 0.002 |
| CAD (YES) | **1630 (36.08%)** | **1221 (36.94%)** | **409 (33.72%)** | **<0.05** | **0.068** |  | 812 (33.72%) | 404 (33.55%) | 408 (33.89%) | 0.897 | 0.007 |
| Stroke (YES) | 393 (8.70%) | 274 (8.29%) | 119 (9.81%) | 0.122 | 0.053 |  | 236 (9.80%) | 120 (9.97%) | 116 (9.63%) | 0.837 | 0.011 |
| Malignancy (YES) | 881 (19.50%) | 632 (19.12%) | 249 (20.53%) | 0.311 | 0.035 |  | 505 (20.97%) | 261 (21.68%) | 244 (20.27%) | 0.423 | 0.035 |
| **Vital signs (1st 24 h)** |  |  |  |  |  |  |  |  |  |  |  |
| MAP | 77.00 (18.97) | 76.84 (18.76) | 77.44 (19.54) | 0.472 | 0.031 |  | 77.78 (19.74) | 78.09 (19.92) | 77.47 (19.56) | 0.481 | 0.031 |
| Temperature | 36.59 (1.12) | 36.60 (1.10) | 36.57 (1.16) | 0.975 | 0.025 |  | 36.56 (1.13) | 36.55 (1.15) | 36.58 (1.12) | 0.238 | 0.03 |
| Heart rate | 93.24 (21.66) | 93.29 (21.77) | 93.11 (21.35) | 0.789 | 0.008 |  | 92.93 (21.76) | 92.69 (22.19) | 93.17 (21.32) | 0.601 | 0.022 |
| **Laboratory tests (1st 24 h)** |  |  |  |  |  |  |  |  |  |  |  |
| WBC count | 15.12 (10.93) | 15.24 (10.75) | 14.80 (11.41) | 0.052 | 0.039 |  | 14.69 (9.14) | 14.74 (8.85) | 14.63 (9.43) | 0.458 | 0.013 |
| Hemoglobin | **10.18 (2.29)** | **10.13 (2.28)** | **10.30 (2.32)** | **<0.05** | **0.073** |  | 10.27 (2.31) | 10.25 (2.31) | 10.29 (2.31) | 0.551 | 0.018 |
| Platelet | 204.73 (121.38) | 205.31 (120.24) | 203.13 (124.48) | 0.356 | 0.018 |  | 203.94 (123.79) | 204.35 (122.95) | 203.54 (124.68) | 0.727 | 0.007 |
| pH | 7.33 (0.12) | 7.33 (0.12) | 7.32 (0.12) | 0.216 | 0.051 |  | 7.32 (0.12) | 7.32 (0.12) | 7.32 (0.12) | 0.872 | 0.006 |
| PO2 | 174.18 (121.09) | 176.51 (122.69) | 167.85 (116.44) | 0.171 | 0.072 |  | 169.34 (117.35) | 170.57 (118.20) | 168.11 (116.54) | 0.797 | 0.021 |
| PCO2 | 43.23 (13.85) | 43.11 (13.42) | 43.53 (14.96) | 0.931 | 0.029 |  | 43.45 (14.60) | 43.32 (14.21) | 43.59 (14.98) | 0.896 | 0.019 |
| Lactate | 2.96 (2.60) | 2.95 (2.56) | 3.01 (2.71) | 0.658 | 0.025 |  | 3.08 (2.81) | 3.15 (2.90) | 3.01 (2.71) | 0.703 | 0.049 |
| Creatinine | **1.91 (1.82)** | **1.88 (1.81)** | **1.98 (1.85)** | **<0.05** | **0.052** |  | 1.96 (1.87) | 1.96 (1.91) | 1.96 (1.83) | 0.61 | 0.003 |
| **Outcomes (boolean)** |  |  |  |  |  |  |  |  |  |  |  |
| 28-day mortality (Death) | **1512 (33.47%)** | **998 (30.20%)** | **514 (42.37%)** | **<0.001** | **0.255** |  | **910 (37.79%)** | **400 (33.22%)** | **510 (42.36%)** | **<0.001** | **0.189** |
| ICU mortality (Death) | **1161 (25.70%)** | **757 (22.90%)** | **404 (33.31%)** | **<0.001** | **0.233** |  | **700 (29.07%)** | **298 (24.75%)** | **402 (33.39%)** | **<0.001** | **0.191** |
| In-hospital mortality (Death) | **1424 (31.52%)** | **937 (28.35%)** | **487 (40.15%)** | **<0.001** | **0.251** |  | **856 (35.55%)** | **373 (30.98%)** | **483 (40.12%)** | **<0.001** | **0.192** |
| **Length of Stay (days)** |  |  |  |  |  |  |  |  |  |  |  |
| ICU LOS | **8.30 (8.23)** | **8.00 (7.83)** | **9.09 (9.19)** | **<0.01** | **0.127** |  | **8.52 (8.60)** | **8.01 (8.05)** | **9.02 (9.10)** | **<0.01** | **0.117** |
| Hospital LOS | **14.90 (15.41)** | **15.01 (15.47)** | **14.60 (15.27)** | **<0.05** | **0.027** |  | 14.78 (15.93) | 15.05 (16.62) | 14.51 (15.20) | 0.304 | 0.034 |
| Values are presented as mean (standard deviation) for continuous variables and number (percentage) for categorical variables. Variables in bold have p-value < 0.05. | | | | | | | | | | | |

Table S5. Baseline characteristics before and after propensity score matching of cohort 5.

|  | **Before Matching** | | | | |  | **After Matching** | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Overall (N=4409)** | **SD (N=3305)** | **RI (N=1104)** | **p-value** | **SMD** |  | **Overall (N=2202)** | **SD (N=1101)** | **RI (N=1101)** | **p-value** | **SMD** |
| Age | 67.12 (14.64) | 67.12 (14.65) | 67.14 (14.63) | 0.897 | 0.002 |  | 67.03 (14.65) | 66.94 (14.68) | 67.13 (14.64) | 0.608 | 0.013 |
| Gender (Female) | 1838 (41.69%) | 1379 (41.72%) | 459 (41.58%) | 0.959 | 0.003 |  | 939 (42.64%) | 481 (43.69%) | 458 (41.60%) | 0.343 | 0.042 |
| Race |  |  |  |  |  |  |  |  |  |  |  |
| Asian | 123 (2.79%) | 89 (2.69%) | 34 (3.08%) | 0.624 | 0.009 |  | 68 (3.09%) | 35 (3.18%) | 33 (3.00%) | 0.928 | 0.025 |
| Black | 372 (8.44%) | 273 (8.26%) | 99 (8.97%) |  |  |  | 204 (9.26%) | 106 (9.63%) | 98 (8.90%) |  |  |
| White | 2958 (67.09%) | 2234 (67.59%) | 724 (65.58%) |  |  |  | 1444 (65.58%) | 720 (65.40%) | 724 (65.76%) |  |  |
| Other | 956 (21.68%) | 709 (21.45%) | 247 (22.37%) |  |  |  | 486 (22.07%) | 240 (21.80%) | 246 (22.34%) |  |  |
| Weight | 84.18 (24.60) | 84.13 (24.63) | 84.32 (24.51) | 0.942 | 0.008 |  | 84.33 (24.96) | 84.38 (25.42) | 84.28 (24.50) | 0.846 | 0.004 |
| SAPS II | 48.79 (14.99) | 48.80 (15.13) | 48.75 (14.59) | 0.563 | 0.003 |  | 49.11 (15.02) | 49.48 (15.46) | 48.75 (14.57) | 0.664 | 0.049 |
| SOFA score | 8.74 (3.89) | 8.78 (3.82) | 8.64 (4.07) | 0.246 | 0.035 |  | 8.74 (4.04) | 8.84 (4.01) | 8.64 (4.07) | 0.322 | 0.048 |
| Charlson comorbidity index | **5.73 (2.91)** | **5.68 (2.92)** | **5.89 (2.87)** | **<0.05** | **0.071** |  | 5.84 (2.91) | 5.81 (2.96) | 5.87 (2.86) | 0.492 | 0.022 |
| **Interventions (boolean for 1st 24 h)** |  |  |  |  |  |  |  |  |  |  |  |
| PiCCO (YES) | 42 (0.95%) | 36 (1.09%) | 6 (0.54%) | 0.151 | 0.061 |  | 11 (0.50%) | 5 (0.45%) | 6 (0.54%) | 1 | 0.013 |
| NICOM (YES) | **298 (6.76%)** | **246 (7.44%)** | **52 (4.71%)** | **<0.01** | **0.115** |  | 103 (4.68%) | 51 (4.63%) | 52 (4.72%) | 1 | 0.004 |
| Mechanical ventilation (YES) | 3347 (75.91%) | 2521 (76.28%) | 826 (74.82%) | 0.347 | 0.034 |  | 1669 (75.79%) | 844 (76.66%) | 825 (74.93%) | 0.37 | 0.04 |
| Sedative therapy (YES) | 3408 (77.30%) | 2551 (77.19%) | 857 (77.63%) | 0.794 | 0.011 |  | 1728 (78.47%) | 873 (79.29%) | 855 (77.66%) | 0.378 | 0.04 |
| Albumin (YES) | 1262 (28.62%) | 971 (29.38%) | 291 (26.36%) | 0.06 | 0.067 |  | 590 (26.79%) | 299 (27.16%) | 291 (26.43%) | 0.736 | 0.016 |
| **Comorbidities (boolean)** |  |  |  |  |  |  |  |  |  |  |  |
| HF (YES) | 1701 (38.58%) | 1287 (38.94%) | 414 (37.50%) | 0.415 | 0.03 |  | 815 (37.01%) | 404 (36.69%) | 411 (37.33%) | 0.791 | 0.013 |
| Hypertension (YES) | 2810 (63.73%) | 2100 (63.54%) | 710 (64.31%) | 0.67 | 0.016 |  | 1400 (63.58%) | 692 (62.85%) | 708 (64.31%) | 0.507 | 0.03 |
| AFIB (YES) | **1001 (22.70%)** | **726 (21.97%)** | **275 (24.91%)** | **<0.05** | **0.07** |  | 536 (24.34%) | 264 (23.98%) | 272 (24.70%) | 0.728 | 0.017 |
| T2DM (YES) | 1410 (31.98%) | 1070 (32.38%) | 340 (30.80%) | 0.349 | 0.034 |  | 677 (30.74%) | 337 (30.61%) | 340 (30.88%) | 0.926 | 0.006 |
| Renal (YES) | 1223 (27.74%) | 906 (27.41%) | 317 (28.71%) | 0.425 | 0.029 |  | 625 (28.38%) | 311 (28.25%) | 314 (28.52%) | 0.925 | 0.006 |
| Liver (YES) | **433 (9.82%)** | **297 (8.99%)** | **136 (12.32%)** | **<0.01** | **0.108** |  | 271 (12.31%) | 138 (12.53%) | 133 (12.08%) | 0.795 | 0.014 |
| COPD (YES) | 721 (16.35%) | 532 (16.10%) | 189 (17.12%) | 0.454 | 0.027 |  | 375 (17.03%) | 187 (16.98%) | 188 (17.08%) | 1 | 0.002 |
| CAD (YES) | 1644 (37.29%) | 1221 (36.94%) | 423 (38.32%) | 0.436 | 0.028 |  | 813 (36.92%) | 391 (35.51%) | 422 (38.33%) | 0.185 | 0.058 |
| Stroke (YES) | **409 (9.28%)** | **274 (8.29%)** | **135 (12.23%)** | **<0.001** | **0.13** |  | 259 (11.76%) | 125 (11.35%) | 134 (12.17%) | 0.597 | 0.025 |
| Malignancy (YES) | 852 (19.32%) | 632 (19.12%) | 220 (19.93%) | 0.587 | 0.02 |  | 441 (20.03%) | 222 (20.16%) | 219 (19.89%) | 0.915 | 0.007 |
| **Vital signs (1st 24 h)** |  |  |  |  |  |  |  |  |  |  |  |
| MAP | **77.47 (19.04)** | **76.84 (18.76)** | **79.38 (19.75)** | **<0.001** | **0.132** |  | 79.77 (20.01) | 80.16 (20.25) | 79.38 (19.77) | 0.573 | 0.039 |
| Temperature | 36.59 (1.08) | 36.60 (1.10) | 36.56 (1.00) | 0.117 | 0.032 |  | 36.57 (1.10) | 36.58 (1.20) | 36.57 (1.00) | 0.523 | 0.015 |
| Heart rate | **92.85 (21.63)** | **93.29 (21.77)** | **91.55 (21.16)** | **<0.05** | **0.081** |  | 91.56 (21.62) | 91.55 (22.06) | 91.57 (21.17) | 0.917 | 0.001 |
| **Laboratory tests (1st 24 h)** |  |  |  |  |  |  |  |  |  |  |  |
| WBC count | **14.91 (10.21)** | **15.24 (10.75)** | **13.92 (8.32)** | **<0.001** | **0.137** |  | 13.95 (8.34) | 13.97 (8.35) | 13.94 (8.33) | 0.941 | 0.004 |
| Hemoglobin | 10.13 (2.27) | 10.13 (2.28) | 10.13 (2.21) | 0.906 | 0.003 |  | 10.10 (2.22) | 10.07 (2.23) | 10.13 (2.21) | 0.574 | 0.025 |
| Platelet | **202.03 (119.73)** | **205.31 (120.24)** | **192.19 (117.70)** | **<0.01** | **0.11** |  | 192.94 (115.52) | 193.81 (113.29) | 192.08 (117.75) | 0.692 | 0.015 |
| pH | **7.33 (0.11)** | **7.33 (0.12)** | **7.34 (0.11)** | **<0.001** | **0.117** |  | 7.34 (0.11) | 7.34 (0.11) | 7.34 (0.11) | 0.883 | 0.029 |
| PO2 | 176.51 (122.51) | 176.51 (122.69) | 176.50 (122.04) | 0.735 | <0.001 |  | 176.57 (123.41) | 176.84 (124.96) | 176.29 (121.89) | 0.679 | 0.005 |
| PCO2 | **42.86 (13.25)** | **43.11 (13.42)** | **42.11 (12.71)** | **<0.05** | **0.077** |  | 41.93 (12.63) | 41.74 (12.55) | 42.11 (12.71) | 0.81 | 0.03 |
| Lactate | 2.91 (2.51) | 2.95 (2.56) | 2.81 (2.35) | 0.238 | 0.056 |  | 2.79 (2.41) | 2.77 (2.47) | 2.81 (2.35) | 0.312 | 0.015 |
| Creatinine | 1.90 (1.81) | 1.88 (1.81) | 1.96 (1.82) | 0.187 | 0.044 |  | 1.94 (1.85) | 1.91 (1.88) | 1.96 (1.81) | 0.311 | 0.024 |
| **Outcomes (boolean)** |  |  |  |  |  |  |  |  |  |  |  |
| 28-day mortality (Death) | **1464 (33.20%)** | **998 (30.20%)** | **466 (42.21%)** | **<0.001** | **0.252** |  | **814 (36.97%)** | **350 (31.79%)** | **464 (42.14%)** | **<0.001** | **0.216** |
| ICU mortality (Death) | **1161 (26.33%)** | **757 (22.90%)** | **404 (36.59%)** | **<0.001** | **0.303** |  | **669 (30.38%)** | **267 (24.25%)** | **402 (36.51%)** | **<0.001** | **0.269** |
| In-hospital mortality (Death) | **1397 (31.69%)** | **937 (28.35%)** | **460 (41.67%)** | **<0.001** | **0.282** |  | **789 (35.83%)** | **331 (30.06%)** | **458 (41.60%)** | **<0.001** | **0.242** |
| **Length of Stay (days)** |  |  |  |  |  |  |  |  |  |  |  |
| ICU LOS | **8.35 (8.43)** | **8.00 (7.83)** | **9.38 (9.93)** | **<0.001** | **0.154** |  | **8.69 (8.76)** | **7.98 (7.33)** | **9.39 (9.95)** | **<0.05** | **0.16** |
| Hospital LOS | **15.01 (15.65)** | **15.01 (15.47)** | **14.99 (16.17)** | **<0.05** | **0.001** |  | 14.93 (16.01) | 14.85 (15.84) | 15.01 (16.19) | 0.111 | 0.009 |
| Values are presented as mean (standard deviation) for continuous variables and number (percentage) for categorical variables. Variables in bold have p-value < 0.05. | | | | | | | | | | | |

Table S6. Baseline characteristics before and after propensity score matching of cohort 6.

|  | **Before Matching** | | | | |  | **After Matching** | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Overall (N=2317)** | **SI (N=1213)** | **RI (N=1104)** | **p-value** | **SMD** |  | **Overall (N=1930)** | **SI (N=965)** | **RI (N=965)** | **p-value** | **SMD** |
| Age | 67.00 (14.84) | 66.88 (15.05) | 67.14 (14.63) | 0.686 | 0.017 |  | 67.17 (14.79) | 67.24 (14.83) | 67.11 (14.75) | 0.886 | 0.009 |
| Gender (Female) | 964 (41.61%) | 505 (41.63%) | 459 (41.58%) | 1 | 0.001 |  | 818 (42.38%) | 410 (42.49%) | 408 (42.28%) | 0.963 | 0.004 |
| Race |  |  |  |  |  |  |  |  |  |  |  |
| Asian | 61 (2.63%) | 27 (2.23%) | 34 (3.08%) | 0.537 | 0.004 |  | 45 (2.33%) | 23 (2.38%) | 22 (2.28%) | 0.498 | 0.056 |
| Black | 213 (9.19%) | 114 (9.40%) | 99 (8.97%) |  |  |  | 172 (8.91%) | 79 (8.19%) | 93 (9.64%) |  |  |
| White | 1537 (66.34%) | 813 (67.02%) | 724 (65.58%) |  |  |  | 1293 (66.99%) | 642 (66.53%) | 651 (67.46%) |  |  |
| Other | 506 (21.84%) | 259 (21.35%) | 247 (22.37%) |  |  |  | 420 (21.76%) | 221 (22.90%) | 199 (20.62%) |  |  |
| Weight | 83.46 (24.73) | 82.68 (24.92) | 84.32 (24.51) | 0.121 | 0.066 |  | 83.38 (24.13) | 83.21 (24.78) | 83.54 (23.47) | 0.672 | 0.014 |
| SAPS II | 49.44 (14.86) | 50.07 (15.08) | 48.75 (14.59) | 0.053 | 0.089 |  | 49.16 (14.73) | 49.21 (14.90) | 49.10 (14.57) | 0.93 | 0.007 |
| SOFA score | **8.88 (4.07)** | **9.09 (4.06)** | **8.64 (4.07)** | **<0.01** | **0.111** |  | 8.78 (4.07) | 8.76 (4.10) | 8.80 (4.05) | 0.681 | 0.01 |
| Charlson comorbidity index | 5.83 (2.88) | 5.78 (2.90) | 5.89 (2.87) | 0.39 | 0.036 |  | 5.87 (2.87) | 5.83 (2.85) | 5.90 (2.88) | 0.532 | 0.024 |
| **Interventions (boolean for 1st 24 h)** |  |  |  |  |  |  |  |  |  |  |  |
| PiCCO (YES) | 22 (0.95%) | 16 (1.32%) | 6 (0.54%) | 0.088 | 0.081 |  | 11 (0.57%) | 6 (0.62%) | 5 (0.52%) | 1 | 0.014 |
| NICOM (YES) | **135 (5.83%)** | **83 (6.84%)** | **52 (4.71%)** | **<0.05** | **0.091** |  | 95 (4.92%) | 45 (4.66%) | 50 (5.18%) | 0.674 | 0.024 |
| Mechanical ventilation (YES) | **1785 (77.04%)** | **959 (79.06%)** | **826 (74.82%)** | **<0.05** | **0.101** |  | 1471 (76.22%) | 738 (76.48%) | 733 (75.96%) | 0.831 | 0.012 |
| Sedative therapy (YES) | 1836 (79.24%) | 979 (80.71%) | 857 (77.63%) | 0.076 | 0.076 |  | 1512 (78.34%) | 758 (78.55%) | 754 (78.13%) | 0.868 | 0.01 |
| Albumin (YES) | 611 (26.37%) | 320 (26.38%) | 291 (26.36%) | 1 | 0.001 |  | 516 (26.74%) | 263 (27.25%) | 253 (26.22%) | 0.643 | 0.023 |
| **Comorbidities (boolean)** |  |  |  |  |  |  |  |  |  |  |  |
| HF (YES) | 855 (36.90%) | 441 (36.36%) | 414 (37.50%) | 0.598 | 0.024 |  | 724 (37.51%) | 359 (37.20%) | 365 (37.82%) | 0.814 | 0.013 |
| Hypertension (YES) | 1469 (63.40%) | 759 (62.57%) | 710 (64.31%) | 0.409 | 0.036 |  | 1234 (63.94%) | 616 (63.83%) | 618 (64.04%) | 0.962 | 0.004 |
| AFIB (YES) | 558 (24.08%) | 283 (23.33%) | 275 (24.91%) | 0.401 | 0.037 |  | 469 (24.30%) | 233 (24.15%) | 236 (24.46%) | 0.915 | 0.007 |
| T2DM (YES) | 721 (31.12%) | 381 (31.41%) | 340 (30.80%) | 0.785 | 0.013 |  | 607 (31.45%) | 304 (31.50%) | 303 (31.40%) | 1 | 0.002 |
| Renal (YES) | 681 (29.39%) | 364 (30.01%) | 317 (28.71%) | 0.524 | 0.028 |  | 569 (29.48%) | 281 (29.12%) | 288 (29.84%) | 0.765 | 0.016 |
| Liver (YES) | 273 (11.78%) | 137 (11.29%) | 136 (12.32%) | 0.484 | 0.032 |  | 226 (11.71%) | 108 (11.19%) | 118 (12.23%) | 0.524 | 0.032 |
| COPD (YES) | 418 (18.04%) | 229 (18.88%) | 189 (17.12%) | 0.296 | 0.046 |  | 339 (17.56%) | 173 (17.93%) | 166 (17.20%) | 0.72 | 0.019 |
| CAD (YES) | **832 (35.91%)** | **409 (33.72%)** | **423 (38.32%)** | **<0.05** | **0.096** |  | 721 (37.36%) | 361 (37.41%) | 360 (37.31%) | 1 | 0.002 |
| Stroke (YES) | 254 (10.96%) | 119 (9.81%) | 135 (12.23%) | 0.073 | 0.077 |  | 210 (10.88%) | 104 (10.78%) | 106 (10.98%) | 0.942 | 0.007 |
| Malignancy (YES) | 469 (20.24%) | 249 (20.53%) | 220 (19.93%) | 0.759 | 0.015 |  | 394 (20.41%) | 193 (20.00%) | 201 (20.83%) | 0.693 | 0.021 |
| **Vital signs (1st 24 h)** |  |  |  |  |  |  |  |  |  |  |  |
| MAP | **78.36 (19.66)** | **77.44 (19.54)** | **79.38 (19.75)** | **<0.01** | **0.099** |  | 78.22 (19.17) | 77.92 (19.61) | 78.53 (18.72) | 0.326 | 0.032 |
| Temperature | 36.57 (1.08) | 36.57 (1.16) | 36.56 (1.00) | 0.184 | 0.005 |  | 36.56 (1.09) | 36.56 (1.18) | 36.56 (1.00) | 0.232 | 0.002 |
| Heart rate | 92.37 (21.27) | 93.11 (21.35) | 91.55 (21.16) | 0.077 | 0.073 |  | 91.94 (20.76) | 91.91 (20.71) | 91.97 (20.82) | 0.816 | 0.003 |
| **Laboratory tests (1st 24 h)** |  |  |  |  |  |  |  |  |  |  |  |
| WBC count | 14.38 (10.06) | 14.80 (11.41) | 13.92 (8.32) | 0.101 | 0.088 |  | 14.05 (8.40) | 13.93 (8.40) | 14.18 (8.41) | 0.433 | 0.029 |
| Hemoglobin | 10.22 (2.27) | 10.30 (2.32) | 10.13 (2.21) | 0.083 | 0.078 |  | 10.17 (2.22) | 10.16 (2.23) | 10.18 (2.20) | 0.827 | 0.011 |
| Platelet | 197.92 (121.39) | 203.13 (124.48) | 192.19 (117.70) | 0.06 | 0.09 |  | 195.14 (116.78) | 194.33 (113.42) | 195.95 (120.10) | 0.856 | 0.014 |
| pH | **7.33 (0.12)** | **7.32 (0.12)** | **7.34 (0.11)** | **<0.001** | **0.166** |  | 7.34 (0.11) | 7.34 (0.11) | 7.34 (0.11) | 0.975 | 0.016 |
| PO2 | 171.98 (119.19) | 167.85 (116.44) | 176.50 (122.04) | 0.162 | 0.073 |  | 173.80 (119.35) | 174.42 (119.06) | 173.18 (119.70) | 0.73 | 0.01 |
| PCO2 | 42.85 (13.95) | 43.53 (14.96) | 42.11 (12.71) | 0.055 | 0.103 |  | 42.38 (12.83) | 42.25 (12.73) | 42.50 (12.93) | 0.941 | 0.019 |
| Lactate | 2.92 (2.54) | 3.01 (2.71) | 2.81 (2.35) | 0.183 | 0.08 |  | 2.86 (2.39) | 2.84 (2.44) | 2.87 (2.33) | 0.578 | 0.01 |
| Creatinine | 1.97 (1.83) | 1.98 (1.85) | 1.96 (1.82) | 0.648 | 0.008 |  | 1.95 (1.80) | 1.95 (1.85) | 1.96 (1.76) | 0.551 | 0.008 |
| **Outcomes (boolean)** |  |  |  |  |  |  |  |  |  |  |  |
| 28-day mortality (Death) | 980 (42.30%) | 514 (42.37%) | 466 (42.21%) | 0.97 | 0.003 |  | 809 (41.92%) | 393 (40.73%) | 416 (43.11%) | 0.31 | 0.048 |
| ICU mortality (Death) | 808 (34.87%) | 404 (33.31%) | 404 (36.59%) | 0.106 | 0.069 |  | **654 (33.89%)** | **295 (30.57%)** | **359 (37.20%)** | **<0.01** | **0.14** |
| In-hospital mortality (Death) | 947 (40.87%) | 487 (40.15%) | 460 (41.67%) | 0.484 | 0.031 |  | 775 (40.16%) | 366 (37.93%) | 409 (42.38%) | 0.051 | 0.091 |
| **Length of Stay (days)** |  |  |  |  |  |  |  |  |  |  |  |
| ICU LOS | 9.23 (9.55) | 9.09 (9.19) | 9.38 (9.93) | 0.697 | 0.03 |  | 9.09 (9.41) | 8.93 (9.09) | 9.26 (9.71) | 0.829 | 0.035 |
| Hospital LOS | 14.79 (15.71) | 14.60 (15.27) | 14.99 (16.17) | 0.905 | 0.025 |  | 14.72 (15.81) | 14.59 (15.55) | 14.84 (16.08) | 0.582 | 0.016 |
| Values are presented as mean (standard deviation) for continuous variables and number (percentage) for categorical variables. Variables in bold have p-value < 0.05. | | | | | | | | | | | |

Table S7. Standardized mean difference (SMD) of covariates before and after propensity score matching of cohort 1

| Characteristic | Before matcing | After matcing |
| --- | --- | --- |
| SMD ≤ 0.1 | 16 | 33 |
| SMD > 0.1 | 17 | 0 |
| Total number of covariates | 33 | 33 |

Table S8. Standardized mean difference (SMD) of covariates before and after propensity score matching of cohort 2

| Characteristic | Before matcing | After matcing |
| --- | --- | --- |
| SMD ≤ 0.1 | 15 | 33 |
| SMD > 0.1 | 18 | 0 |
| Total number of covariates | 33 | 33 |

Table S9. Standardized mean difference (SMD) of covariates before and after propensity score matching of cohort 3

| Characteristic | Before matcing | After matcing |
| --- | --- | --- |
| SMD ≤ 0.1 | 21 | 33 |
| SMD > 0.1 | 12 | 0 |
| Total number of covariates | 33 | 33 |

Table S10. Standardized mean difference (SMD) of covariates before and after propensity score matching of cohort 4

| Characteristic | Before matcing | After matcing |
| --- | --- | --- |
| SMD ≤ 0.1 | 33 | 33 |
| Total number of covariates | 33 | 33 |

Table S11. Standardized mean difference (SMD) of covariates before and after propensity score matching of cohort 5

| Characteristic | Before matcing | After matcing |
| --- | --- | --- |
| SMD ≤ 0.1 | 26 | 33 |
| SMD > 0.1 | 7 | 0 |
| Total number of covariates | 33 | 33 |

Table S12. Standardized mean difference (SMD) of covariates before and after propensity score matching of cohort 6

| Characteristic | Before matcing | After matcing |
| --- | --- | --- |
| SMD ≤ 0.1 | 29 | 33 |
| SMD > 0.1 | 4 | 0 |
| Total number of covariates | 33 | 33 |

Table S13. Unadjusted log-rank test for 28-day mortality of original cohort

| Group | HR1 | 95% CI1 | p-value |
| --- | --- | --- | --- |
| RD vs SD | 2.66 | 2.44, 2.91 | <0.001 |
| RD vs SI | 4.12 | 3.59, 4.73 | <0.001 |
| RD vs RI | 4.20 | 3.63, 4.86 | <0.001 |
| SD vs SI | 1.55 | 1.33, 1.80 | <0.001 |
| SD vs RI | 1.58 | 1.35, 1.85 | <0.001 |
| SI vs RI | 1.02 | 0.84, 1.23 | 0.791 |
| 1HR = Hazard Ratio, CI = Confidence Interval; | | | |

Table S14. Unadjusted log-rank test for ICU mortality of original cohort

| Group | HR1 | 95% CI1 | p-value |
| --- | --- | --- | --- |
| RD vs SD | 1.83 | 1.66, 2.02 | <0.001 |
| RD vs SI | 2.34 | 2.04, 2.67 | <0.001 |
| RD vs RI | 2.51 | 2.18, 2.87 | <0.001 |
| SD vs SI | 1.28 | 1.11, 1.47 | <0.001 |
| SD vs RI | 1.37 | 1.19, 1.58 | <0.001 |
| SI vs RI | 1.07 | 0.91, 1.27 | 0.274 |
| 1HR = Hazard Ratio, CI = Confidence Interval; | | | |

Table S15. Unadjusted log-rank test for In-hospital mortality of original cohort

| Group | HR1 | 95% CI1 | p-value |
| --- | --- | --- | --- |
| RD vs SD | 2.09 | 1.91, 2.28 | <0.001 |
| RD vs SI | 3.05 | 2.68, 3.47 | <0.001 |
| RD vs RI | 3.12 | 2.73, 3.57 | <0.001 |
| SD vs SI | 1.46 | 1.27, 1.68 | <0.001 |
| SD vs RI | 1.49 | 1.30, 1.72 | <0.001 |
| SI vs RI | 1.02 | 0.86, 1.22 | 0.624 |
| 1HR = Hazard Ratio, CI = Confidence Interval; | | | |

Table S16. Multivariate Cox model adjusted with all covariates for 28-day mortality of original cohort 1

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| SD | 1.69 | 1.55, 1.85 | <0.001 |
| Age (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.93 | 0.85, 1.02 | 0.121 |
| Race (time dependent) |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.96 | 0.88, 1.05 | 0.404 |
| White | 1.01 | 0.94, 1.09 | 0.815 |
| Other | 1.11 | 1.02, 1.19 | 0.011 |
| Weight | 0.99 | 0.99, 1.00 | <0.001 |
| SAPS II (time dependent) | 1.01 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.03 | 1.02, 1.03 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.04 | 1.03, 1.05 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.86 | 0.55, 1.35 | 0.516 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.77, 1.07 | 0.247 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.82, 0.92 | <0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.96 | 1.63, 2.35 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.53 | 1.36, 1.71 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.99, 1.05 | 0.329 |
| Hypertension (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 1.01, 1.07 | 0.021 |
| AFIB (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.98, 1.05 | 0.351 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 1.03, 1.09 | <0.001 |
| Renal (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.03 | 1.00, 1.07 | 0.07 |
| Liver (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.88, 0.97 | <0.001 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.83, 1.04 | 0.175 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.19 | 1.08, 1.32 | <0.001 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.64 | 0.56, 0.73 | <0.001 |
| Malignancy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.97, 1.04 | 0.789 |
| MAP (time dependent) | 1.00 | 1.00, 1.00 | 0.215 |
| Temperature (time dependent) | 0.97 | 0.96, 0.98 | <0.001 |
| Heart rate (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| WBC count | 1.00 | 1.00, 1.01 | 0.013 |
| Hemoglobin (time dependent) | 1.01 | 1.00, 1.01 | 0.016 |
| Platelet | 1.00 | 1.00, 1.00 | 0.004 |
| pH (time dependent) | 1.03 | 0.89, 1.19 | 0.702 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.059 |
| Lactate (time dependent) | 1.02 | 1.01, 1.02 | <0.001 |
| Creatinine | 1.00 | 0.97, 1.03 | 0.967 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S17. Multivariate Cox model adjusted with MW for 28-day mortality of cohort 1

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| SD | 1.65 | 1.51, 1.81 | <0.001 |
| Age (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.92 | 0.83, 1.02 | 0.114 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.80 | 0.59, 1.10 | 0.175 |
| White | 0.94 | 0.71, 1.24 | 0.662 |
| Other | 1.32 | 1.00, 1.76 | 0.053 |
| Weight | 1.00 | 0.99, 1.00 | <0.001 |
| SAPS II (time dependent) | 1.01 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.03 | 1.02, 1.03 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.04 | 1.03, 1.04 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.60, 1.61 | 0.947 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.89 | 0.75, 1.06 | 0.188 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.88 | 0.82, 0.95 | <0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.86 | 1.48, 2.33 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.44 | 1.27, 1.62 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.98, 1.04 | 0.534 |
| Hypertension (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 1.01, 1.07 | 0.021 |
| AFIB (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.97, 1.05 | 0.593 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 1.02, 1.09 | 0.002 |
| Renal (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 1.01, 1.09 | 0.011 |
| Liver (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.88, 0.97 | 0.002 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.84, 1.07 | 0.412 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.11 | 0.99, 1.24 | 0.071 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.71 | 0.61, 0.82 | <0.001 |
| Malignancy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.97, 1.05 | 0.567 |
| MAP (time dependent) | 1.00 | 1.00, 1.00 | 0.191 |
| Temperature (time dependent) | 0.97 | 0.95, 0.98 | <0.001 |
| Heart rate (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| WBC count | 1.00 | 1.00, 1.01 | 0.02 |
| Hemoglobin (time dependent) | 1.01 | 1.00, 1.01 | 0.077 |
| Platelet | 1.00 | 1.00, 1.00 | 0.033 |
| pH (time dependent) | 1.00 | 0.86, 1.16 | 0.999 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.168 |
| Lactate (time dependent) | 1.02 | 1.01, 1.02 | <0.001 |
| Creatinine | 0.99 | 0.96, 1.02 | 0.629 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S18. Multivariate logistic model adjusted with all covariates for 28-day mortality of original cohort 1

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| SD | 1.97 | 1.76, 2.20 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.92 | 0.82, 1.04 | 0.173 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.84 | 0.59, 1.22 | 0.361 |
| White | 1.04 | 0.76, 1.44 | 0.799 |
| Other | 1.62 | 1.17, 2.27 | 0.004 |
| Weight | 0.99 | 0.99, 1.00 | <0.001 |
| SAPS II | 1.02 | 1.02, 1.03 | <0.001 |
| SOFA score | 1.11 | 1.09, 1.14 | <0.001 |
| Charlson comorbidity index | 1.19 | 1.15, 1.23 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.81 | 0.44, 1.53 | 0.495 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.83 | 0.66, 1.03 | 0.094 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.53 | 0.41, 0.68 | <0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.35 | 1.86, 2.98 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.72 | 1.49, 1.98 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 0.94, 1.21 | 0.333 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.19 | 1.05, 1.35 | 0.008 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.94, 1.24 | 0.285 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.30 | 1.14, 1.48 | <0.001 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 0.94, 1.30 | 0.226 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.69 | 0.56, 0.84 | <0.001 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.81, 1.08 | 0.351 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.30 | 1.14, 1.47 | <0.001 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.51 | 0.43, 0.62 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.83, 1.15 | 0.786 |
| MAP | 1.00 | 1.00, 1.00 | 0.241 |
| Temperature | 0.86 | 0.82, 0.91 | <0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | <0.001 |
| WBC count | 1.01 | 1.00, 1.01 | 0.012 |
| Hemoglobin | 1.03 | 1.00, 1.05 | 0.052 |
| Platelet | 1.00 | 1.00, 1.00 | <0.001 |
| pH | 1.33 | 0.70, 2.56 | 0.383 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.01 | 1.00, 1.01 | 0.029 |
| Lactate | 1.11 | 1.08, 1.14 | <0.001 |
| Creatinine | 0.99 | 0.95, 1.03 | 0.713 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S19. Multivariate logistic model adjusted with MW for 28-day mortality of cohort 1

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| SD | 1.94 | 1.70, 2.22 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.002 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.91 | 0.79, 1.05 | 0.196 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.78 | 0.50, 1.24 | 0.29 |
| White | 0.96 | 0.65, 1.43 | 0.823 |
| Other | 1.55 | 1.04, 2.35 | 0.035 |
| Weight | 0.99 | 0.99, 1.00 | <0.001 |
| SAPS II | 1.02 | 1.02, 1.03 | <0.001 |
| SOFA score | 1.11 | 1.08, 1.15 | <0.001 |
| Charlson comorbidity index | 1.18 | 1.13, 1.23 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.49, 2.26 | 0.967 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.82 | 0.64, 1.06 | 0.123 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.57 | 0.42, 0.77 | <0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.18 | 1.63, 2.93 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.61 | 1.37, 1.90 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 0.90, 1.22 | 0.545 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.19 | 1.03, 1.39 | 0.021 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.88, 1.23 | 0.656 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.24 | 1.06, 1.46 | 0.007 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.18 | 0.97, 1.43 | 0.098 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.66 | 0.52, 0.84 | <0.001 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.80, 1.14 | 0.575 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.18 | 1.02, 1.38 | 0.032 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.57 | 0.46, 0.71 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.81, 1.20 | 0.901 |
| MAP | 1.00 | 1.00, 1.01 | 0.201 |
| Temperature | 0.86 | 0.80, 0.92 | <0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | <0.001 |
| WBC count | 1.01 | 1.00, 1.01 | 0.037 |
| Hemoglobin | 1.02 | 0.99, 1.05 | 0.231 |
| Platelet | 1.00 | 1.00, 1.00 | 0.013 |
| pH | 1.22 | 0.58, 2.59 | 0.601 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.089 |
| Lactate | 1.09 | 1.06, 1.13 | <0.001 |
| Creatinine | 0.99 | 0.94, 1.03 | 0.564 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S20. Survey-weighted generalised linear model adjusted with MW for 28-day mortality of cohort 1

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| SD | 1.94 | 1.73, 2.18 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.91 | 0.80, 1.04 | 0.157 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.78 | 0.52, 1.18 | 0.24 |
| White | 0.96 | 0.67, 1.36 | 0.803 |
| Other | 1.55 | 1.08, 2.24 | 0.019 |
| Weight | 0.99 | 0.99, 1.00 | <0.001 |
| SAPS II | 1.02 | 1.02, 1.03 | <0.001 |
| SOFA score | 1.11 | 1.09, 1.14 | <0.001 |
| Charlson comorbidity index | 1.18 | 1.14, 1.22 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.51, 2.01 | 0.963 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.82 | 0.65, 1.05 | 0.113 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.57 | 0.43, 0.76 | <0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.18 | 1.64, 2.89 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.61 | 1.38, 1.88 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 0.91, 1.20 | 0.499 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.19 | 1.04, 1.37 | 0.012 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.89, 1.21 | 0.622 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.24 | 1.08, 1.44 | 0.003 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.18 | 0.99, 1.40 | 0.069 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.66 | 0.53, 0.83 | <0.001 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.81, 1.11 | 0.531 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.18 | 1.03, 1.36 | 0.018 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.57 | 0.46, 0.70 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.83, 1.18 | 0.889 |
| MAP | 1.00 | 1.00, 1.01 | 0.175 |
| Temperature | 0.86 | 0.81, 0.91 | <0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | <0.001 |
| WBC count | 1.01 | 1.00, 1.01 | 0.016 |
| Hemoglobin | 1.02 | 0.99, 1.05 | 0.191 |
| Platelet | 1.00 | 1.00, 1.00 | 0.006 |
| pH | 1.22 | 0.61, 2.45 | 0.573 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.065 |
| Lactate | 1.09 | 1.06, 1.13 | <0.001 |
| Creatinine | 0.99 | 0.95, 1.03 | 0.524 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S21. Multivariate Cox model adjusted with all covariates for ICU mortality of original cohort 1

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| RD | 1.00 | Reference |  |
| SD | 1.11 | 1.07, 1.15 | <0.001 |
| Age (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.86 | 0.77, 0.97 | 0.011 |
| Race (time dependent) |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.93 | 0.84, 1.04 | 0.21 |
| White | 1.01 | 0.92, 1.11 | 0.846 |
| Other | 1.07 | 0.98, 1.18 | 0.147 |
| Weight | 1.00 | 0.99, 1.00 | 0.003 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.02 | 1.01, 1.02 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.55, 1.38 | 0.547 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.77, 1.15 | 0.559 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.85 | 0.78, 0.92 | <0.001 |
| Sedative therapy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.35 | 1.26, 1.44 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.62 | 1.41, 1.85 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.97, 1.05 | 0.766 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.95, 1.22 | 0.227 |
| AFIB (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 1.03, 1.12 | 0.001 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 1.01, 1.10 | 0.01 |
| Renal (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 1.02, 1.13 | 0.004 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.72, 1.06 | 0.174 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.80, 1.06 | 0.243 |
| CAD (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.97 | 0.93, 1.01 | 0.109 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.90 | 0.76, 1.06 | 0.203 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.13 | 0.96, 1.32 | 0.135 |
| MAP (time dependent) | 1.00 | 1.00, 1.00 | 0.184 |
| Temperature (time dependent) | 0.96 | 0.95, 0.98 | <0.001 |
| Heart rate (time dependent) | 1.00 | 1.00, 1.00 | 0.002 |
| WBC count | 1.00 | 1.00, 1.01 | 0.128 |
| Hemoglobin (time dependent) | 1.01 | 1.01, 1.02 | <0.001 |
| Platelet | 1.00 | 1.00, 1.00 | 0.878 |
| pH (time dependent) | 1.01 | 0.85, 1.20 | 0.9 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.271 |
| Lactate (time dependent) | 1.02 | 1.01, 1.03 | <0.001 |
| Creatinine | 1.03 | 0.99, 1.07 | 0.187 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S22. Multivariate Cox model adjusted with MW for ICU mortality of cohort 1

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| RD | 1.00 | Reference |  |
| SD | 1.11 | 1.07, 1.15 | <0.001 |
| Age | 1.01 | 1.00, 1.01 | 0.05 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.85 | 0.75, 0.96 | 0.009 |
| Race (time dependent) |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.91 | 0.81, 1.02 | 0.103 |
| White | 0.97 | 0.88, 1.07 | 0.565 |
| Other | 1.03 | 0.93, 1.14 | 0.583 |
| Weight | 1.00 | 0.99, 1.00 | 0.014 |
| SAPS II (time dependent) | 1.01 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.02 | 1.01, 1.02 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.62, 1.74 | 0.887 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.75, 1.15 | 0.498 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.89 | 0.80, 0.99 | 0.026 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.23 | 1.65, 3.02 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.55 | 1.34, 1.79 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.96, 1.04 | 0.974 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.12 | 0.99, 1.28 | 0.079 |
| AFIB (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 1.02, 1.12 | 0.007 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 1.01, 1.10 | 0.025 |
| Renal (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.09 | 1.04, 1.15 | <0.001 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.74, 1.12 | 0.359 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.81, 1.08 | 0.357 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.88 | 0.76, 1.01 | 0.063 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.78, 1.12 | 0.46 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.15 | 0.98, 1.35 | 0.09 |
| MAP (time dependent) | 1.00 | 1.00, 1.00 | 0.229 |
| Temperature (time dependent) | 0.97 | 0.95, 0.98 | <0.001 |
| Heart rate (time dependent) | 1.00 | 1.00, 1.00 | 0.008 |
| WBC count | 1.00 | 1.00, 1.01 | 0.073 |
| Hemoglobin (time dependent) | 1.01 | 1.00, 1.02 | 0.003 |
| Platelet | 1.00 | 1.00, 1.00 | 0.667 |
| pH (time dependent) | 0.98 | 0.82, 1.16 | 0.8 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.363 |
| Lactate (time dependent) | 1.02 | 1.01, 1.02 | <0.001 |
| Creatinine | 1.02 | 0.98, 1.06 | 0.316 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S23. Multivariate logistic model adjusted with all covariates for ICU mortality of original cohort 1

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| SD | 2.52 | 2.21, 2.88 | <0.001 |
| Age | 1.00 | 1.00, 1.01 | 0.241 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.82 | 0.71, 0.94 | 0.004 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.72 | 0.47, 1.12 | 0.138 |
| White | 0.88 | 0.62, 1.29 | 0.514 |
| Other | 1.33 | 0.92, 1.98 | 0.141 |
| Weight | 1.00 | 0.99, 1.00 | 0.085 |
| SAPS II | 1.03 | 1.02, 1.04 | <0.001 |
| SOFA score | 1.10 | 1.07, 1.13 | <0.001 |
| Charlson comorbidity index | 1.13 | 1.08, 1.17 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.66 | 0.35, 1.26 | 0.192 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.72, 1.19 | 0.524 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.32 | 0.23, 0.43 | <0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.61 | 1.96, 3.49 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.45 | 1.24, 1.71 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.82, 1.11 | 0.528 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 1.00, 1.36 | 0.044 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.20 | 1.01, 1.41 | 0.036 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.30 | 1.11, 1.52 | 0.001 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.11 | 0.91, 1.34 | 0.295 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.73, 1.21 | 0.617 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.83 | 0.70, 0.99 | 0.034 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.12 | 0.96, 1.30 | 0.149 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.50 | 0.40, 0.61 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.23 | 1.01, 1.50 | 0.045 |
| MAP | 1.00 | 1.00, 1.01 | 0.054 |
| Temperature | 0.85 | 0.80, 0.91 | <0.001 |
| Heart rate | 1.01 | 1.01, 1.01 | <0.001 |
| WBC count | 1.00 | 0.99, 1.00 | 0.665 |
| Hemoglobin | 1.05 | 1.02, 1.08 | 0.003 |
| Platelet | 1.00 | 1.00, 1.00 | 0.037 |
| pH | 1.14 | 0.54, 2.39 | 0.735 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.01 | 1.00, 1.01 | 0.007 |
| Lactate | 1.12 | 1.09, 1.15 | <0.001 |
| Creatinine | 0.99 | 0.94, 1.03 | 0.556 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S24. Multivariate logistic model adjusted with MW for ICU mortality of cohort 1

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| SD | 2.48 | 2.12, 2.89 | <0.001 |
| Age | 1.00 | 0.99, 1.01 | 0.706 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.79 | 0.67, 0.92 | 0.003 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.65 | 0.40, 1.07 | 0.085 |
| White | 0.75 | 0.49, 1.17 | 0.196 |
| Other | 1.13 | 0.73, 1.78 | 0.593 |
| Weight | 1.00 | 1.0, 1.00 | 0.333 |
| SAPS II | 1.03 | 1.02, 1.04 | <0.001 |
| SOFA score | 1.10 | 1.07, 1.14 | <0.001 |
| Charlson comorbidity index | 1.12 | 1.07, 1.18 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.79 | 0.38, 1.80 | 0.557 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.69, 1.21 | 0.507 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.39 | 0.27, 0.57 | <0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.14 | 1.52, 3.01 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.35 | 1.12, 1.63 | 0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.97 | 0.81, 1.15 | 0.695 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.19 | 1.00, 1.41 | 0.052 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 0.97, 1.43 | 0.103 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.23 | 1.03, 1.48 | 0.023 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.16 | 0.93, 1.45 | 0.186 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.69, 1.21 | 0.514 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.86 | 0.70, 1.05 | 0.13 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.84, 1.19 | 0.977 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.56 | 0.44, 0.71 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 0.93, 1.48 | 0.172 |
| MAP | 1.00 | 1.00, 1.01 | 0.152 |
| Temperature | 0.86 | 0.80, 0.92 | <0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | <0.001 |
| WBC count | 1.00 | 0.99, 1.01 | 0.919 |
| Hemoglobin | 1.04 | 1.00, 1.07 | 0.039 |
| Platelet | 1.00 | 1.00, 1.00 | 0.097 |
| pH | 1.22 | 0.53, 2.81 | 0.643 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.01 | 1.00, 1.01 | 0.015 |
| Lactate | 1.11 | 1.08, 1.15 | <0.001 |
| Creatinine | 0.98 | 0.93, 1.03 | 0.426 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S25 Survey-weighted generalised linear model adjusted with MW for ICU mortality of cohort 1

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| SD | 2.48 | 2.16, 2.83 | <0.001 |
| Age | 1.00 | 1.0, 1.01 | 0.688 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.79 | 0.68, 0.91 | 0.002 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.65 | 0.41, 1.02 | 0.061 |
| White | 0.75 | 0.51, 1.11 | 0.154 |
| Other | 1.13 | 0.75, 1.69 | 0.555 |
| Weight | 1.00 | 1.0, 1.00 | 0.31 |
| SAPS II | 1.03 | 1.02, 1.04 | <0.001 |
| SOFA score | 1.10 | 1.07, 1.14 | <0.001 |
| Charlson comorbidity index | 1.12 | 1.08, 1.17 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.79 | 0.40, 1.57 | 0.504 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.70, 1.19 | 0.491 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.39 | 0.27, 0.57 | <0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.14 | 1.51, 3.03 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.35 | 1.13, 1.61 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.97 | 0.82, 1.13 | 0.666 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.19 | 1.01, 1.39 | 0.038 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 0.98, 1.40 | 0.079 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.23 | 1.04, 1.46 | 0.015 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.16 | 0.95, 1.42 | 0.153 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.70, 1.19 | 0.495 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.86 | 0.71, 1.03 | 0.1 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.85, 1.18 | 0.975 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.56 | 0.45, 0.70 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 0.95, 1.45 | 0.137 |
| MAP | 1.00 | 1.00, 1.01 | 0.125 |
| Temperature | 0.86 | 0.80, 0.92 | <0.001 |
| Heart rate | 1.01 | 1.01, 1.01 | <0.001 |
| WBC count | 1.00 | 0.99, 1.01 | 0.913 |
| Hemoglobin | 1.04 | 1.00, 1.07 | 0.026 |
| Platelet | 1.00 | 1.00, 1.00 | 0.079 |
| pH | 1.22 | 0.56, 2.64 | 0.616 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.01 | 1.00, 1.01 | 0.008 |
| Lactate | 1.11 | 1.08, 1.15 | <0.001 |
| Creatinine | 0.98 | 0.93, 1.03 | 0.381 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S26. Multivariate Cox model adjusted with all covariates for In-hospital mortality of original cohort 1

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| RD | 1.00 | Reference |  |
| SD | 1.13 | 1.10, 1.17 | <0.001 |
| Age (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.89 | 0.81, 0.99 | 0.028 |
| Race (time dependent) |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.92 | 0.84, 1.01 | 0.089 |
| White | 0.99 | 0.91, 1.07 | 0.798 |
| Other | 1.08 | 0.99, 1.17 | 0.069 |
| Weight | 1.00 | 0.99, 1.00 | <0.001 |
| SAPS II (time dependent) | 1.01 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.02 | 1.01, 1.02 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.75 | 0.49, 1.15 | 0.186 |
| NICOM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.96, 1.06 | 0.68 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.83 | 0.78, 0.89 | <0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.25 | 1.83, 2.76 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.52 | 1.35, 1.71 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.98, 1.04 | 0.655 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 0.99, 1.22 | 0.083 |
| AFIB (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.99, 1.06 | 0.242 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 1.01, 1.08 | 0.006 |
| Renal (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.03 | 1.00, 1.08 | 0.086 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.84 | 0.71, 0.99 | 0.035 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.89 | 0.79, 1.01 | 0.072 |
| CAD (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.98, 1.04 | 0.559 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.73 | 0.64, 0.85 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.09 | 0.96, 1.24 | 0.205 |
| MAP (time dependent) | 1.00 | 1.00, 1.00 | 0.178 |
| Temperature | 0.88 | 0.85, 0.92 | <0.001 |
| Heart rate (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| WBC count | 1.00 | 1.00, 1.01 | 0.093 |
| Hemoglobin (time dependent) | 1.01 | 1.00, 1.02 | 0.001 |
| Platelet | 1.00 | 1.00, 1.00 | 0.183 |
| pH (time dependent) | 0.99 | 0.86, 1.16 | 0.946 |
| PO2 (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 (time dependent) | 1.00 | 1.00, 1.00 | 0.028 |
| Lactate (time dependent) | 1.02 | 1.01, 1.02 | <0.001 |
| Creatinine (time dependent) | 1.00 | 0.99, 1.01 | 0.797 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S27. Multivariate Cox model adjusted with MW for In-hospital mortality of cohort 1

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| RD | 1.00 | Reference |  |
| SD | 1.13 | 1.10, 1.17 | <0.001 |
| Age (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.88 | 0.79, 0.98 | 0.024 |
| Race (time dependent) |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.91 | 0.82, 1.00 | 0.06 |
| White | 0.97 | 0.89, 1.06 | 0.488 |
| Other | 1.06 | 0.97, 1.16 | 0.233 |
| Weight | 1.00 | 0.99, 1.00 | 0.011 |
| SAPS II (time dependent) | 1.01 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.02 | 1.01, 1.02 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.55, 1.39 | 0.559 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.79, 1.14 | 0.568 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.57 | 0.44, 0.75 | <0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.11 | 1.63, 2.72 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.43 | 1.26, 1.62 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.97, 1.04 | 0.929 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.12 | 1.00, 1.26 | 0.045 |
| AFIB (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.98, 1.06 | 0.452 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 1.01, 1.08 | 0.021 |
| Renal (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 1.01, 1.10 | 0.016 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.85 | 0.72, 1.02 | 0.081 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.80, 1.04 | 0.172 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.88, 1.12 | 0.923 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.78 | 0.67, 0.91 | 0.002 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.95, 1.24 | 0.231 |
| MAP (time dependent) | 1.00 | 1.00, 1.00 | 0.103 |
| Temperature | 0.90 | 0.86, 0.94 | <0.001 |
| Heart rate (time dependent) | 1.00 | 1.00, 1.00 | 0.001 |
| WBC count | 1.00 | 1.00, 1.01 | 0.071 |
| Hemoglobin (time dependent) | 1.01 | 1.00, 1.01 | 0.023 |
| Platelet | 1.00 | 1.00, 1.00 | 0.359 |
| pH (time dependent) | 0.99 | 0.84, 1.15 | 0.871 |
| PO2 (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 (time dependent) | 1.00 | 1.00, 1.00 | 0.034 |
| Lactate (time dependent) | 1.02 | 1.01, 1.02 | <0.001 |
| Creatinine | 0.99 | 0.96, 1.02 | 0.571 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S28. Multivariate logistic model adjusted with all covariates for In-hospital mortality of original cohort 1

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| SD | 2.27 | 2.02, 2.56 | <0.001 |
| Age | 1.01 | 1.00, 1.01 | 0.003 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.85 | 0.76, 0.97 | 0.012 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.81 | 0.55, 1.20 | 0.282 |
| White | 0.97 | 0.70, 1.37 | 0.863 |
| Other | 1.58 | 1.12, 2.25 | 0.01 |
| Weight | 1.00 | 0.99, 1.00 | 0.011 |
| SAPS II | 1.03 | 1.02, 1.04 | <0.001 |
| SOFA score | 1.10 | 1.08, 1.13 | <0.001 |
| Charlson comorbidity index | 1.13 | 1.09, 1.17 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.66 | 0.37, 1.23 | 0.185 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.69, 1.10 | 0.232 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.42 | 0.33, 0.55 | <0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.40 | 1.86, 3.10 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.48 | 1.28, 1.71 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.82, 1.07 | 0.344 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 1.03, 1.34 | 0.018 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.13 | 0.98, 1.31 | 0.097 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.29 | 1.13, 1.49 | <0.001 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.84, 1.18 | 0.979 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.71 | 0.57, 0.88 | 0.002 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.88 | 0.76, 1.03 | 0.105 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.27 | 1.11, 1.46 | <0.001 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.47 | 0.39, 0.57 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.79, 1.11 | 0.449 |
| MAP | 1.00 | 1.00, 1.01 | 0.122 |
| Temperature | 0.87 | 0.82, 0.92 | <0.001 |
| Heart rate | 1.01 | 1.01, 1.01 | <0.001 |
| WBC count | 1.00 | 1.00, 1.01 | 0.603 |
| Hemoglobin | 1.01 | 0.98, 1.04 | 0.514 |
| Platelet | 1.00 | 1.00, 1.00 | 0.018 |
| pH | 1.12 | 0.57, 2.20 | 0.744 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.079 |
| Lactate | 1.11 | 1.08, 1.14 | <0.001 |
| Creatinine | 0.97 | 0.93, 1.01 | 0.184 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S29. Multivariate logistic model adjusted with MW for In-hospital mortality of cohort 1

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| SD | 2.24 | 1.95, 2.57 | <0.001 |
| Age | 1.01 | 1.00, 1.01 | 0.025 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.83 | 0.72, 0.96 | 0.011 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.73 | 0.46, 1.16 | 0.177 |
| White | 0.86 | 0.58, 1.30 | 0.456 |
| Other | 1.39 | 0.92, 2.13 | 0.121 |
| Weight | 1.00 | 0.99, 1.00 | 0.101 |
| SAPS II | 1.03 | 1.02, 1.04 | <0.001 |
| SOFA score | 1.10 | 1.07, 1.14 | <0.001 |
| Charlson comorbidity index | 1.12 | 1.08, 1.17 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.78 | 0.39, 1.67 | 0.507 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.85 | 0.66, 1.10 | 0.213 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.48 | 0.35, 0.66 | <0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.11 | 1.55, 2.88 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.35 | 1.14, 1.59 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.96 | 0.82, 1.12 | 0.592 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.19 | 1.02, 1.40 | 0.026 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 0.93, 1.31 | 0.27 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.23 | 1.05, 1.45 | 0.012 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 0.86, 1.29 | 0.605 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.71 | 0.56, 0.91 | 0.007 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.76, 1.09 | 0.299 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.18 | 1.01, 1.38 | 0.042 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.53 | 0.42, 0.66 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.78, 1.17 | 0.636 |
| MAP | 1.00 | 1.00, 1.01 | 0.16 |
| Temperature | 0.88 | 0.82, 0.94 | <0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | <0.001 |
| WBC count | 1.00 | 1.00, 1.01 | 0.473 |
| Hemoglobin | 1.00 | 0.97, 1.03 | 0.942 |
| Platelet | 1.00 | 1.00, 1.00 | 0.034 |
| pH | 1.33 | 0.62, 2.89 | 0.463 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.01 | 1.00, 1.01 | 0.057 |
| Lactate | 1.10 | 1.07, 1.14 | <0.001 |
| Creatinine | 0.96 | 0.92, 1.01 | 0.136 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S30. Survey-weighted generalised linear model adjusted with MW for In-hospital mortality of cohort 1

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| SD | 2.24 | 1.98, 2.52 | <0.001 |
| Age | 1.01 | 1.00, 1.01 | 0.016 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.83 | 0.72, 0.95 | 0.006 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.73 | 0.47, 1.12 | 0.147 |
| White | 0.86 | 0.59, 1.25 | 0.421 |
| Other | 1.39 | 0.95, 2.04 | 0.094 |
| Weight | 1.00 | 0.99, 1.00 | 0.084 |
| SAPS II | 1.03 | 1.02, 1.04 | <0.001 |
| SOFA score | 1.10 | 1.07, 1.13 | <0.001 |
| Charlson comorbidity index | 1.12 | 1.08, 1.17 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.78 | 0.41, 1.50 | 0.461 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.85 | 0.67, 1.09 | 0.197 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.48 | 0.35, 0.65 | <0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.11 | 1.56, 2.85 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.35 | 1.15, 1.57 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.96 | 0.83, 1.11 | 0.556 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.19 | 1.03, 1.38 | 0.015 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 0.94, 1.29 | 0.225 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.23 | 1.06, 1.44 | 0.006 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 0.88, 1.27 | 0.576 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.71 | 0.56, 0.90 | 0.004 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.77, 1.07 | 0.255 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.18 | 1.02, 1.37 | 0.028 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.53 | 0.43, 0.65 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.79, 1.15 | 0.605 |
| MAP | 1.00 | 1.00, 1.01 | 0.133 |
| Temperature | 0.88 | 0.82, 0.93 | <0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | <0.001 |
| WBC count | 1.00 | 1.00, 1.01 | 0.437 |
| Hemoglobin | 1.00 | 0.97, 1.03 | 0.938 |
| Platelet | 1.00 | 1.00, 1.00 | 0.024 |
| pH | 1.33 | 0.65, 2.73 | 0.429 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.01 | 1.00, 1.01 | 0.037 |
| Lactate | 1.10 | 1.07, 1.14 | <0.001 |
| Creatinine | 0.96 | 0.92, 1.01 | 0.103 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S31. Multivariate Cox model adjusted with all covariates for 28-day mortality of original cohort 2

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| RD | 1.00 | Reference |  |
| SI | 1.32 | 1.28, 1.37 | <0.001 |
| Age (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.93 | 0.84, 1.04 | 0.192 |
| Race (time dependent) |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.02 | 0.92, 1.12 | 0.76 |
| White | 1.06 | 0.97, 1.15 | 0.184 |
| Other | 1.14 | 1.05, 1.25 | 0.003 |
| Weight | 1.00 | 0.99, 1.00 | 0.002 |
| SAPS II (time dependent) | 1.01 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.04 | 1.03, 1.05 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 0.62, 2.20 | 0.622 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.84, 1.28 | 0.721 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.87, 0.98 | 0.011 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.73 | 1.41, 2.12 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.61 | 1.41, 1.83 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.98, 1.05 | 0.318 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.16 | 1.03, 1.30 | 0.011 |
| AFIB (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 1.01, 1.09 | 0.015 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 1.06, 1.14 | <0.001 |
| Renal (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 1.01, 1.10 | 0.022 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.75 | 0.63, 0.89 | 0.001 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.87, 1.12 | 0.811 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.16 | 1.03, 1.30 | 0.017 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.62 | 0.53, 0.72 | <0.001 |
| Malignancy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.94, 1.02 | 0.265 |
| MAP (time dependent) | 1.00 | 1.00, 1.00 | 0.963 |
| Temperature | 0.89 | 0.85, 0.94 | <0.001 |
| Heart rate (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| WBC count | 1.00 | 1.00, 1.01 | 0.163 |
| Hemoglobin (time dependent) | 1.00 | 1.00, 1.01 | 0.37 |
| Platelet | 1.00 | 1.00, 1.00 | 0.014 |
| pH (time dependent) | 1.01 | 0.85, 1.19 | 0.921 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.148 |
| Lactate (time dependent) | 1.02 | 1.02, 1.03 | <0.001 |
| Creatinine | 1.01 | 0.98, 1.04 | 0.636 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S32. Multivariate Cox model adjusted with MW for 28-day mortality of cohort 2

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| SI | 2.52 | 2.24, 2.82 | <0.001 |
| Age | 1.01 | 1.01, 1.02 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.93 | 0.81, 1.08 | 0.344 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.20 | 0.75, 1.91 | 0.44 |
| White | 1.29 | 0.85, 1.95 | 0.226 |
| Other | 1.52 | 1.00, 2.32 | 0.052 |
| Weight | 1.00 | 1.00, 1.00 | 0.287 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 0.59, 2.33 | 0.652 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.09 | 0.85, 1.40 | 0.509 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.94, 1.11 | 0.663 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.31 | 0.99, 1.73 | 0.055 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.49 | 1.26, 1.75 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.09 | 0.94, 1.27 | 0.238 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.93, 1.25 | 0.321 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.22 | 1.04, 1.44 | 0.017 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 1.05, 1.15 | <0.001 |
| Renal (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 1.04, 1.16 | <0.001 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.76 | 0.62, 0.94 | 0.01 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.03 | 0.87, 1.22 | 0.719 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.85, 1.17 | 0.992 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.75 | 0.61, 0.92 | 0.005 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.96 | 0.82, 1.13 | 0.633 |
| MAP | 1.00 | 0.99, 1.00 | 0.332 |
| Temperature | 0.89 | 0.84, 0.94 | <0.001 |
| Heart rate (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| WBC count | 1.00 | 1.00, 1.01 | 0.317 |
| Hemoglobin (time dependent) | 1.00 | 0.99, 1.01 | 0.692 |
| Platelet | 1.00 | 1.00, 1.00 | 0.075 |
| pH (time dependent) | 1.00 | 0.81, 1.22 | 0.976 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.332 |
| Lactate (time dependent) | 1.01 | 1.01, 1.02 | <0.001 |
| Creatinine | 1.01 | 0.97, 1.04 | 0.614 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S33. Multivariate logistic model adjusted with all covariates for 28-day mortality of original cohort 2

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| SI | 3.45 | 2.96, 4.03 | <0.001 |
| Age | 1.01 | 1.01, 1.02 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.94 | 0.83, 1.08 | 0.4 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.92 | 0.61, 1.41 | 0.702 |
| White | 1.08 | 0.75, 1.58 | 0.684 |
| Other | 1.57 | 1.08, 2.33 | 0.021 |
| Weight | 0.99 | 0.99, 1.00 | <0.001 |
| SAPS II | 1.02 | 1.02, 1.03 | <0.001 |
| SOFA score | 1.12 | 1.09, 1.15 | <0.001 |
| Charlson comorbidity index | 1.20 | 1.16, 1.25 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.43 | 0.63, 3.49 | 0.408 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.97 | 0.73, 1.29 | 0.837 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.60 | 0.45, 0.78 | <0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.26 | 1.74, 2.96 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.79 | 1.51, 2.11 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.11 | 0.96, 1.29 | 0.171 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.18 | 1.02, 1.37 | 0.024 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.22 | 1.04, 1.43 | 0.018 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.43 | 1.23, 1.66 | <0.001 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.16 | 0.97, 1.40 | 0.104 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.69 | 0.55, 0.88 | 0.002 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.83, 1.15 | 0.769 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.27 | 1.09, 1.47 | 0.002 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.52 | 0.43, 0.64 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.77, 1.11 | 0.387 |
| MAP | 1.00 | 1.00, 1.00 | 0.676 |
| Temperature | 0.86 | 0.81, 0.92 | <0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | <0.001 |
| WBC count | 1.01 | 1.00, 1.01 | 0.1 |
| Hemoglobin | 1.01 | 0.98, 1.05 | 0.342 |
| Platelet | 1.00 | 1.00, 1.00 | 0.004 |
| pH | 1.22 | 0.57, 2.59 | 0.611 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.16 |
| Lactate | 1.12 | 1.08, 1.15 | <0.001 |
| Creatinine | 1.01 | 0.96, 1.05 | 0.768 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S34. Multivariate logistic model adjusted with MW for 28-day mortality of cohort 2

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| SI | 3.35 | 2.73, 4.12 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.004 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.95 | 0.77, 1.17 | 0.628 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.85 | 0.40, 1.80 | 0.661 |
| White | 0.88 | 0.45, 1.76 | 0.707 |
| Other | 1.20 | 0.60, 2.46 | 0.61 |
| Weight | 1.00 | 0.99, 1.00 | 0.191 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.14 | 1.09, 1.19 | <0.001 |
| Charlson comorbidity index | 1.17 | 1.10, 1.25 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.27 | 0.50, 3.57 | 0.636 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 0.75, 1.61 | 0.624 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.58, 1.48 | 0.77 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.62 | 1.01, 2.59 | 0.045 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.70 | 1.32, 2.21 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.13 | 0.89, 1.43 | 0.335 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 0.84, 1.33 | 0.644 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.28 | 1.00, 1.65 | 0.052 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.40 | 1.10, 1.78 | 0.006 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.42 | 1.06, 1.91 | 0.019 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.65 | 0.46, 0.92 | 0.015 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.80, 1.35 | 0.789 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 0.84, 1.37 | 0.56 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.63 | 0.45, 0.88 | 0.006 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.73, 1.32 | 0.882 |
| MAP | 1.00 | 0.99, 1.00 | 0.564 |
| Temperature | 0.84 | 0.76, 0.93 | <0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | <0.001 |
| WBC count | 1.00 | 1.0, 1.01 | 0.375 |
| Hemoglobin | 0.99 | 0.94, 1.04 | 0.627 |
| Platelet | 1.00 | 1.00, 1.00 | 0.062 |
| pH | 1.13 | 0.37, 3.48 | 0.836 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.0, 1.01 | 0.557 |
| Lactate | 1.08 | 1.03, 1.13 | 0.001 |
| Creatinine | 1.00 | 0.94, 1.07 | 0.902 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S35. Survey-weighted generalised linear model adjusted with MW for 28-day mortality of cohort 2

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| SI | 3.35 | 2.86, 3.92 | <0.001 |
| Age | 1.01 | 1.01, 1.02 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.95 | 0.79, 1.13 | 0.563 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.85 | 0.43, 1.65 | 0.625 |
| White | 0.88 | 0.48, 1.62 | 0.676 |
| Other | 1.20 | 0.64, 2.25 | 0.569 |
| Weight | 1.00 | 0.99, 1.00 | 0.132 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.14 | 1.10, 1.18 | <0.001 |
| Charlson comorbidity index | 1.17 | 1.11, 1.23 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.27 | 0.54, 2.95 | 0.583 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 0.78, 1.55 | 0.585 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.61, 1.41 | 0.742 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.62 | 1.07, 2.44 | 0.022 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.70 | 1.37, 2.11 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.13 | 0.92, 1.38 | 0.253 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 0.87, 1.28 | 0.58 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.28 | 1.04, 1.58 | 0.022 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.40 | 1.14, 1.72 | 0.001 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.42 | 1.11, 1.82 | 0.005 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.65 | 0.49, 0.87 | 0.004 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.83, 1.30 | 0.754 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 0.88, 1.32 | 0.493 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.63 | 0.47, 0.84 | 0.002 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.77, 1.24 | 0.855 |
| MAP | 1.00 | 0.99, 1.00 | 0.519 |
| Temperature | 0.84 | 0.77, 0.92 | <0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | <0.001 |
| WBC count | 1.00 | 0.99, 1.01 | 0.42 |
| Hemoglobin | 0.99 | 0.95, 1.03 | 0.577 |
| Platelet | 1.00 | 1.00, 1.00 | 0.034 |
| pH | 1.13 | 0.44, 2.90 | 0.805 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.493 |
| Lactate | 1.08 | 1.03, 1.12 | <0.001 |
| Creatinine | 1.00 | 0.96, 1.05 | 0.879 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S36. Multivariate Cox model adjusted with all covariates for ICU mortality of original cohort 2

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| RD | 1.00 | Reference |  |
| SI | 1.20 | 1.16, 1.25 | <0.001 |
| Age | 1.01 | 1.01, 1.02 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.87 | 0.76, 0.99 | 0.04 |
| Race (time dependent) |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.11 | 0.97, 1.27 | 0.143 |
| White | 1.19 | 1.05, 1.34 | 0.005 |
| Other | 1.25 | 1.10, 1.42 | <0.001 |
| Weight | 1.00 | 0.99, 1.00 | 0.065 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.02 | 1.01, 1.03 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.52 | 0.75, 3.09 | 0.248 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.79, 1.30 | 0.901 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.83, 0.99 | 0.031 |
| Sedative therapy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.27 | 1.17, 1.38 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.65 | 1.40, 1.94 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.96, 1.05 | 0.912 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.14 | 0.98, 1.31 | 0.082 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.42 | 1.21, 1.67 | <0.001 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.11 | 1.06, 1.16 | <0.001 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.48 | 1.23, 1.77 | <0.001 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.88 | 0.70, 1.09 | 0.236 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.88, 1.22 | 0.642 |
| CAD (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.96 | 0.92, 1.00 | 0.076 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.88 | 0.73, 1.07 | 0.197 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.84, 1.22 | 0.88 |
| MAP | 1.00 | 1.00, 1.01 | 0.179 |
| Temperature (time dependent) | 0.97 | 0.95, 0.98 | <0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.008 |
| WBC count | 1.00 | 1.00, 1.01 | 0.295 |
| Hemoglobin (time dependent) | 1.01 | 1.00, 1.02 | 0.066 |
| Platelet | 1.00 | 1.00, 1.00 | 0.64 |
| pH (time dependent) | 0.88 | 0.71, 1.09 | 0.237 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.352 |
| Lactate (time dependent) | 1.02 | 1.02, 1.03 | <0.001 |
| Creatinine | 1.03 | 0.99, 1.08 | 0.094 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S37. Multivariate Cox model adjusted with MW for ICU mortality of cohort 2

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| RD | 1.00 | Reference |  |
| SI | 1.24 | 1.19, 1.30 | <0.001 |
| Age | 1.02 | 1.01, 1.02 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.86 | 0.72, 1.01 | 0.073 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 2.21 | 1.18, 4.12 | 0.013 |
| White | 2.54 | 1.44, 4.48 | 0.001 |
| Other | 2.59 | 1.46, 4.59 | 0.001 |
| Weight | 1.00 | 0.99, 1.00 | 0.261 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| Charlson comorbidity index | 1.07 | 1.03, 1.12 | 0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.32 | 0.61, 2.85 | 0.481 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 0.80, 1.43 | 0.645 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.91, 1.15 | 0.718 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.34 | 0.92, 1.95 | 0.124 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.49 | 1.23, 1.81 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 0.88, 1.28 | 0.507 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.12 | 0.94, 1.34 | 0.2 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.42 | 1.16, 1.74 | <0.001 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.11 | 1.05, 1.17 | <0.001 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.55 | 1.25, 1.91 | <0.001 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.67, 1.12 | 0.272 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.88, 1.33 | 0.443 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.82 | 0.68, 1.00 | 0.048 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.71, 1.16 | 0.438 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.76, 1.16 | 0.542 |
| MAP | 1.00 | 1.00, 1.00 | 0.843 |
| Temperature | 0.90 | 0.84, 0.96 | 0.003 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.021 |
| WBC count | 1.00 | 1.00, 1.01 | 0.084 |
| Hemoglobin (time dependent) | 1.00 | 0.99, 1.01 | 0.842 |
| Platelet | 1.00 | 1.00, 1.00 | 0.946 |
| pH | 0.60 | 0.25, 1.44 | 0.256 |
| PO2 | 1.00 | 1.00, 1.00 | 0.007 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.423 |
| Lactate (time dependent) | 1.02 | 1.01, 1.03 | <0.001 |
| Creatinine | 1.04 | 1.00, 1.08 | 0.038 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S38. Multivariate logistic model adjusted with all covariates for ICU mortality of original cohort 2

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| SI | 4.26 | 3.60, 5.03 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.036 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.87 | 0.74, 1.02 | 0.094 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.21 | 0.71, 2.13 | 0.5 |
| White | 1.50 | 0.94, 2.51 | 0.105 |
| Other | 1.97 | 1.21, 3.34 | 0.009 |
| Weight | 1.00 | 0.99, 1.00 | 0.286 |
| SAPS II | 1.03 | 1.02, 1.04 | <0.001 |
| SOFA score | 1.12 | 1.08, 1.15 | <0.001 |
| Charlson comorbidity index | 1.13 | 1.08, 1.19 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.51 | 0.63, 4.01 | 0.379 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.68, 1.29 | 0.655 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.36 | 0.25, 0.50 | <0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.39 | 1.71, 3.35 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.53 | 1.26, 1.87 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.84, 1.20 | 1 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.19 | 1.00, 1.42 | 0.053 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.26 | 1.04, 1.54 | 0.019 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.51 | 1.25, 1.81 | <0.001 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.15 | 0.92, 1.45 | 0.218 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.70, 1.23 | 0.574 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.72, 1.07 | 0.183 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.14 | 0.95, 1.36 | 0.151 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.51 | 0.40, 0.65 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.18 | 0.94, 1.49 | 0.153 |
| MAP | 1.00 | 1.00, 1.01 | 0.11 |
| Temperature | 0.86 | 0.80, 0.92 | <0.001 |
| Heart rate | 1.01 | 1.01, 1.01 | <0.001 |
| WBC count | 1.00 | 0.99, 1.01 | 0.784 |
| Hemoglobin | 1.04 | 1.01, 1.08 | 0.021 |
| Platelet | 1.00 | 1.00, 1.00 | 0.112 |
| pH | 0.97 | 0.41, 2.34 | 0.952 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.01 | 1.00, 1.01 | 0.024 |
| Lactate | 1.13 | 1.09, 1.17 | <0.001 |
| Creatinine | 1.00 | 0.94, 1.05 | 0.953 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S39. Multivariate logistic model adjusted with MW for ICU mortality of cohort 2

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| SI | 4.15 | 3.29, 5.25 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.035 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.80 | 0.64, 1.02 | 0.069 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.83 | 0.77, 4.68 | 0.187 |
| White | 2.07 | 0.93, 5.01 | 0.087 |
| Other | 2.27 | 1.00, 5.59 | 0.061 |
| Weight | 1.00 | 0.99, 1.00 | 0.662 |
| SAPS II | 1.03 | 1.02, 1.04 | <0.001 |
| SOFA score | 1.14 | 1.09, 1.19 | <0.001 |
| Charlson comorbidity index | 1.11 | 1.04, 1.19 | 0.002 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.33 | 0.49, 4.08 | 0.59 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.03 | 0.69, 1.56 | 0.886 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.71 | 0.41, 1.22 | 0.227 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.25 | 0.73, 2.16 | 0.426 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.44 | 1.09, 1.91 | 0.01 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.12 | 0.86, 1.46 | 0.411 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.14 | 0.88, 1.48 | 0.311 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.27 | 0.97, 1.68 | 0.09 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.53 | 1.17, 2.00 | 0.002 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.35 | 0.98, 1.88 | 0.068 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.86 | 0.59, 1.26 | 0.431 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.75, 1.34 | 0.985 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.72, 1.23 | 0.655 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.64 | 0.45, 0.91 | 0.013 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 0.77, 1.50 | 0.673 |
| MAP | 1.00 | 0.99, 1.01 | 0.805 |
| Temperature | 0.86 | 0.77, 0.95 | 0.003 |
| Heart rate | 1.01 | 1.01, 1.02 | <0.001 |
| WBC count | 1.00 | 0.99, 1.01 | 0.428 |
| Hemoglobin | 1.02 | 0.97, 1.07 | 0.544 |
| Platelet | 1.00 | 1.00, 1.00 | 0.152 |
| pH | 1.26 | 0.37, 4.26 | 0.713 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.01 | 1.00, 1.02 | 0.046 |
| Lactate | 1.10 | 1.05, 1.15 | <0.001 |
| Creatinine | 1.02 | 0.96, 1.09 | 0.484 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S40. Survey-weighted generalised linear model adjusted with MW for ICU mortality of cohort 2

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| SI | 4.15 | 3.47, 4.95 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.017 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.80 | 0.65, 0.99 | 0.038 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.83 | 0.82, 4.11 | 0.143 |
| White | 2.07 | 0.98, 4.37 | 0.056 |
| Other | 2.27 | 1.06, 4.87 | 0.035 |
| Weight | 1.00 | 0.99, 1.00 | 0.626 |
| SAPS II | 1.03 | 1.02, 1.04 | <0.001 |
| SOFA score | 1.14 | 1.09, 1.19 | <0.001 |
| Charlson comorbidity index | 1.11 | 1.05, 1.18 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.33 | 0.51, 3.45 | 0.555 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.03 | 0.70, 1.51 | 0.879 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.71 | 0.44, 1.16 | 0.17 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.25 | 0.78, 1.99 | 0.356 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.44 | 1.13, 1.84 | 0.004 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.12 | 0.88, 1.41 | 0.355 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.14 | 0.92, 1.42 | 0.237 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.27 | 1.00, 1.62 | 0.054 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.53 | 1.21, 1.93 | <0.001 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.35 | 1.02, 1.80 | 0.035 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.86 | 0.62, 1.19 | 0.365 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.78, 1.29 | 0.983 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.74, 1.19 | 0.612 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.64 | 0.46, 0.88 | 0.007 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 0.82, 1.41 | 0.611 |
| MAP | 1.00 | 0.99, 1.00 | 0.781 |
| Temperature | 0.86 | 0.78, 0.94 | <0.001 |
| Heart rate | 1.01 | 1.01, 1.02 | <0.001 |
| WBC count | 1.00 | 0.99, 1.01 | 0.437 |
| Hemoglobin | 1.02 | 0.97, 1.06 | 0.512 |
| Platelet | 1.00 | 1.00, 1.00 | 0.103 |
| pH | 1.26 | 0.45, 3.54 | 0.665 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.01 | 1.00, 1.02 | 0.022 |
| Lactate | 1.10 | 1.05, 1.14 | <0.001 |
| Creatinine | 1.02 | 0.97, 1.08 | 0.402 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S41. Multivariate Cox model adjusted with all covariates for In-hospital mortality of original cohort 2

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| RD | 1.00 | Reference |  |
| SI | 1.26 | 1.22, 1.31 | <0.001 |
| Age (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.89 | 0.79, 1.00 | 0.046 |
| Race (time dependent) |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.03 | 0.92, 1.15 | 0.589 |
| White | 1.11 | 1.01, 1.23 | 0.038 |
| Other | 1.17 | 1.06, 1.30 | 0.002 |
| Weight | 1.00 | 0.99, 1.00 | 0.008 |
| SAPS II (time dependent) | 1.01 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.02 | 1.02, 1.03 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.97 | 0.53, 1.78 | 0.932 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.03 | 0.82, 1.28 | 0.822 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.89 | 0.83, 0.96 | 0.002 |
| Sedative therapy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.22 | 1.14, 1.31 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.59 | 1.39, 1.83 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.96, 1.04 | 1 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.16 | 1.02, 1.31 | 0.019 |
| AFIB (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 1.01, 1.10 | 0.014 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 1.04, 1.12 | <0.001 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.28 | 1.10, 1.50 | 0.002 |
| Liver (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.90, 1.00 | 0.043 |
| COPD (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.94, 1.02 | 0.38 |
| CAD (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.96, 1.03 | 0.821 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.73 | 0.62, 0.86 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.85, 1.15 | 0.859 |
| MAP (time dependent) | 1.00 | 1.00, 1.00 | 0.814 |
| Temperature | 0.88 | 0.84, 0.93 | <0.001 |
| Heart rate (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| WBC count | 1.00 | 1.00, 1.01 | 0.322 |
| Hemoglobin (time dependent) | 1.01 | 1.00, 1.01 | 0.107 |
| Platelet (time dependent) | 1.00 | 1.00, 1.00 | 0.89 |
| pH (time dependent) | 0.92 | 0.77, 1.10 | 0.372 |
| PO2 (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.275 |
| Lactate (time dependent) | 1.02 | 1.01, 1.02 | <0.001 |
| Creatinine (time dependent) | 1.00 | 0.99, 1.01 | 0.794 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S42. Multivariate Cox model adjusted with MW for In-hospital mortality of cohort 2

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| RD | 1.00 | Reference |  |
| SI | 1.28 | 1.23, 1.33 | <0.001 |
| Age | 1.02 | 1.01, 1.02 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.88 | 0.76, 1.03 | 0.105 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.52 | 0.90, 2.56 | 0.116 |
| White | 1.72 | 1.08, 2.77 | 0.024 |
| Other | 1.82 | 1.13, 2.95 | 0.014 |
| Weight | 1.00 | 0.99, 1.00 | 0.128 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| Charlson comorbidity index | 1.08 | 1.04, 1.12 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.52, 1.96 | 0.974 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.09 | 0.84, 1.42 | 0.519 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.71, 1.35 | 0.912 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.39 | 1.01, 1.91 | 0.041 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.49 | 1.25, 1.77 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 0.94, 1.29 | 0.248 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.12 | 0.96, 1.31 | 0.154 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.27 | 1.06, 1.51 | 0.008 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 1.03, 1.13 | 0.002 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.50 | 1.24, 1.80 | <0.001 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.82 | 0.66, 1.03 | 0.083 |
| COPD (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.95, 1.05 | 0.903 |
| CAD (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.96 | 0.91, 1.01 | 0.08 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.82 | 0.67, 1.01 | 0.064 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.83, 1.19 | 0.958 |
| MAP | 1.00 | 0.99, 1.00 | 0.428 |
| Temperature | 0.88 | 0.83, 0.94 | <0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | <0.001 |
| WBC count | 1.00 | 1.00, 1.01 | 0.313 |
| Hemoglobin (time dependent) | 1.00 | 0.99, 1.01 | 0.957 |
| Platelet | 1.00 | 1.00, 1.00 | 0.684 |
| pH (time dependent) | 0.94 | 0.76, 1.17 | 0.604 |
| PO2 (time dependent) | 1.00 | 1.00, 1.00 | 0.006 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.286 |
| Lactate (time dependent) | 1.01 | 1.01, 1.02 | 0.001 |
| Creatinine | 1.02 | 0.98, 1.05 | 0.371 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S43. Multivariate logistic model adjusted with all covariates for In-hospital mortality of original cohort 2

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| SI | 3.92 | 3.35, 4.58 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.92 | 0.80, 1.06 | 0.264 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.08 | 0.68, 1.74 | 0.742 |
| White | 1.29 | 0.86, 1.98 | 0.23 |
| Other | 1.85 | 1.22, 2.88 | 0.005 |
| Weight | 1.00 | 0.99, 1.00 | 0.095 |
| SAPS II | 1.03 | 1.02, 1.04 | <0.001 |
| SOFA score | 1.11 | 1.08, 1.15 | <0.001 |
| Charlson comorbidity index | 1.15 | 1.10, 1.19 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.18 | 0.53, 2.80 | 0.702 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.69, 1.23 | 0.554 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.49 | 0.36, 0.65 | <0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.14 | 1.60, 2.86 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.62 | 1.36, 1.93 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.84, 1.15 | 0.842 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.20 | 1.03, 1.40 | 0.021 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.26 | 1.06, 1.49 | 0.009 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.45 | 1.24, 1.71 | <0.001 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 0.91, 1.34 | 0.325 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.71 | 0.55, 0.90 | 0.005 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.76, 1.08 | 0.271 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.20 | 1.03, 1.41 | 0.021 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.48 | 0.39, 0.59 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.77, 1.15 | 0.543 |
| MAP | 1.00 | 1.00, 1.01 | 0.231 |
| Temperature | 0.86 | 0.80, 0.92 | <0.001 |
| Heart rate | 1.01 | 1.01, 1.01 | <0.001 |
| WBC count | 1.00 | 1.0, 1.01 | 0.71 |
| Hemoglobin | 1.00 | 0.97, 1.03 | 0.919 |
| Platelet | 1.00 | 1.00, 1.00 | 0.02 |
| pH | 0.82 | 0.37, 1.81 | 0.628 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.38 |
| Lactate | 1.11 | 1.08, 1.15 | <0.001 |
| Creatinine | 0.99 | 0.95, 1.04 | 0.79 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S44. Multivariate logistic model adjusted with MW for In-hospital mortality of cohort 2

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| SI | 3.79 | 3.06, 4.70 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.009 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.92 | 0.74, 1.14 | 0.435 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.29 | 0.59, 2.92 | 0.536 |
| White | 1.37 | 0.67, 2.94 | 0.398 |
| Other | 1.70 | 0.82, 3.72 | 0.167 |
| Weight | 1.00 | 0.99, 1.00 | 0.582 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.14 | 1.09, 1.19 | <0.001 |
| Charlson comorbidity index | 1.14 | 1.07, 1.22 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 0.46, 3.26 | 0.754 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.70, 1.51 | 0.907 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.84 | 0.51, 1.36 | 0.477 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.34 | 0.82, 2.19 | 0.243 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.53 | 1.18, 1.99 | 0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.14 | 0.89, 1.46 | 0.303 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.15 | 0.90, 1.46 | 0.259 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.32 | 1.02, 1.71 | 0.034 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.48 | 1.15, 1.89 | 0.002 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.42 | 1.05, 1.92 | 0.024 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.71 | 0.50, 1.01 | 0.054 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.77, 1.31 | 0.987 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.77, 1.27 | 0.93 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.58 | 0.42, 0.81 | 0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 0.78, 1.44 | 0.728 |
| MAP | 1.00 | 1.0, 1.01 | 0.956 |
| Temperature | 0.85 | 0.77, 0.94 | 0.001 |
| Heart rate | 1.01 | 1.01, 1.02 | <0.001 |
| WBC count | 1.00 | 1.00, 1.01 | 0.348 |
| Hemoglobin | 0.98 | 0.93, 1.02 | 0.315 |
| Platelet | 1.00 | 1.00, 1.00 | 0.067 |
| pH | 1.04 | 0.33, 3.31 | 0.942 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.33 |
| Lactate | 1.08 | 1.04, 1.14 | <0.001 |
| Creatinine | 1.01 | 0.94, 1.07 | 0.848 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S45. Survey-weighted generalised linear model adjusted with MW for In-hospital mortality of cohort 2

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| SI | 3.79 | 3.22, 4.46 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.003 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.92 | 0.76, 1.11 | 0.366 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.29 | 0.62, 2.66 | 0.498 |
| White | 1.37 | 0.70, 2.68 | 0.354 |
| Other | 1.70 | 0.86, 3.38 | 0.127 |
| Weight | 1.00 | 1.0, 1.00 | 0.522 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.14 | 1.10, 1.18 | <0.001 |
| Charlson comorbidity index | 1.14 | 1.08, 1.21 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 0.51, 2.69 | 0.715 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.72, 1.46 | 0.899 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.84 | 0.55, 1.28 | 0.41 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.34 | 0.88, 2.03 | 0.17 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.53 | 1.22, 1.91 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.14 | 0.92, 1.41 | 0.232 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.15 | 0.94, 1.40 | 0.181 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.32 | 1.06, 1.65 | 0.013 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.48 | 1.19, 1.83 | <0.001 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.42 | 1.10, 1.83 | 0.008 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.71 | 0.52, 0.96 | 0.026 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.79, 1.26 | 0.985 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.80, 1.22 | 0.919 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.58 | 0.43, 0.78 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 0.82, 1.36 | 0.676 |
| MAP | 1.00 | 1.00, 1.00 | 0.948 |
| Temperature | 0.85 | 0.78, 0.93 | <0.001 |
| Heart rate | 1.01 | 1.01, 1.02 | <0.001 |
| WBC count | 1.00 | 0.99, 1.02 | 0.396 |
| Hemoglobin | 0.98 | 0.94, 1.02 | 0.252 |
| Platelet | 1.00 | 1.00, 1.00 | 0.039 |
| pH | 1.04 | 0.40, 2.74 | 0.93 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.255 |
| Lactate | 1.08 | 1.04, 1.13 | <0.001 |
| Creatinine | 1.01 | 0.96, 1.06 | 0.816 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S46. Multivariate Cox model adjusted with all covariates for 28-day mortality of original cohort 3

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| RD | 1.00 | Reference |  |
| RI | 1.37 | 1.32, 1.41 | <0.001 |
| Age (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.93 | 0.83, 1.03 | 0.176 |
| Race (time dependent) |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.01 | 0.92, 1.12 | 0.798 |
| White | 1.06 | 0.97, 1.16 | 0.204 |
| Other | 1.17 | 1.07, 1.28 | <0.001 |
| Weight | 1.00 | 0.99, 1.00 | 0.004 |
| SAPS II (time dependent) | 1.01 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.04 | 1.03, 1.05 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.22 | 0.50, 2.94 | 0.665 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.86, 1.35 | 0.521 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.72 | 0.59, 0.88 | 0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.05 | 1.69, 2.50 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.49 | 1.31, 1.71 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.92, 1.17 | 0.537 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.14 | 1.01, 1.28 | 0.031 |
| AFIB (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 1.00, 1.08 | 0.043 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 1.02, 1.10 | <0.001 |
| Renal (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.96, 1.05 | 0.851 |
| Liver (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.89, 0.99 | 0.026 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.83, 1.07 | 0.363 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.23 | 1.10, 1.38 | <0.001 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.62 | 0.53, 0.72 | <0.001 |
| Malignancy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.96 | 0.92, 1.01 | 0.084 |
| MAP (time dependent) | 1.00 | 1.00, 1.00 | 0.392 |
| Temperature (time dependent) | 0.96 | 0.95, 0.98 | <0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.001 |
| WBC count | 1.01 | 1.00, 1.01 | 0.001 |
| Hemoglobin (time dependent) | 1.01 | 1.00, 1.01 | 0.086 |
| Platelet | 1.00 | 1.00, 1.00 | 0.033 |
| pH (time dependent) | 0.92 | 0.78, 1.09 | 0.323 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.00 | 0.999 |
| Lactate (time dependent) | 1.03 | 1.02, 1.03 | <0.001 |
| Creatinine | 1.00 | 0.97, 1.03 | 0.936 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S47. Multivariate Cox model adjusted with MW for 28-day mortality of cohort 3

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| RD | 1.00 | Reference |  |
| RI | 1.35 | 1.30, 1.40 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.006 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.93 | 0.80, 1.07 | 0.31 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.12 | 0.71, 1.75 | 0.631 |
| White | 1.24 | 0.83, 1.86 | 0.299 |
| Other | 1.67 | 1.10, 2.54 | 0.015 |
| Weight | 1.00 | 1.00, 1.00 | 0.466 |
| SAPS II | 1.01 | 1.01, 1.02 | <0.001 |
| SOFA score | 1.12 | 1.09, 1.15 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.03 | 1.01, 1.04 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.16 | 0.39, 3.41 | 0.791 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.14 | 0.85, 1.54 | 0.383 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.75, 1.33 | 0.977 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.77 | 1.33, 2.36 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.33 | 1.11, 1.58 | 0.002 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.89, 1.22 | 0.605 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 0.90, 1.23 | 0.495 |
| AFIB (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.99, 1.09 | 0.169 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 0.91, 1.26 | 0.384 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.81, 1.19 | 0.861 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.88 | 0.71, 1.10 | 0.263 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.78, 1.11 | 0.436 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 0.94, 1.29 | 0.226 |
| Stroke (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.90 | 0.84, 0.95 | <0.001 |
| Malignancy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.96 | 0.91, 1.02 | 0.191 |
| MAP | 1.00 | 1.00, 1.00 | 0.794 |
| Temperature | 0.87 | 0.82, 0.93 | <0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.115 |
| WBC count | 1.01 | 1.00, 1.02 | 0.002 |
| Hemoglobin (time dependent) | 1.01 | 1.00, 1.02 | 0.316 |
| Platelet | 1.00 | 1.00, 1.00 | 0.103 |
| pH (time dependent) | 0.87 | 0.70, 1.08 | 0.199 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 0.99, 1.00 | 0.139 |
| Lactate (time dependent) | 1.02 | 1.01, 1.03 | <0.001 |
| Creatinine | 0.99 | 0.95, 1.03 | 0.477 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S48. Multivariate logistic model adjusted with all covariates for 28-day mortality of original cohort 3

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| RI | 3.87 | 3.30, 4.54 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.002 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.91 | 0.80, 1.04 | 0.183 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.09 | 0.71, 1.68 | 0.704 |
| White | 1.29 | 0.89, 1.91 | 0.184 |
| Other | 1.94 | 1.32, 2.90 | <0.001 |
| Weight | 0.99 | 0.99, 1.00 | <0.001 |
| SAPS II | 1.02 | 1.02, 1.03 | <0.001 |
| SOFA score | 1.12 | 1.09, 1.15 | <0.001 |
| Charlson comorbidity index | 1.19 | 1.14, 1.24 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.37 | 0.53, 4.27 | 0.55 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.75, 1.37 | 0.949 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.61 | 0.47, 0.79 | <0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.46 | 1.90, 3.19 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.72 | 1.46, 2.04 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 0.92, 1.24 | 0.408 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 1.01, 1.36 | 0.04 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.12 | 0.96, 1.32 | 0.155 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.30 | 1.12, 1.52 | <0.001 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 0.89, 1.28 | 0.51 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.72 | 0.57, 0.91 | 0.007 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.80, 1.12 | 0.492 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.31 | 1.13, 1.52 | <0.001 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.50 | 0.41, 0.61 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.85 | 0.71, 1.03 | 0.093 |
| MAP | 1.00 | 1.00, 1.00 | 0.515 |
| Temperature | 0.86 | 0.80, 0.92 | <0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | <0.001 |
| WBC count | 1.01 | 1.00, 1.02 | 0.002 |
| Hemoglobin | 1.02 | 0.99, 1.05 | 0.157 |
| Platelet | 1.00 | 1.00, 1.00 | 0.023 |
| pH | 1.00 | 0.47, 2.15 | 0.996 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.28 |
| Lactate | 1.13 | 1.10, 1.17 | <0.001 |
| Creatinine | 1.01 | 0.96, 1.05 | 0.712 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S49. Multivariate logistic model adjusted with MW for 28-day mortality of cohort 3

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| RI | 3.69 | 2.97, 4.61 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.049 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.88 | 0.70, 1.10 | 0.25 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.38 | 0.67, 2.93 | 0.396 |
| White | 1.54 | 0.80, 3.07 | 0.205 |
| Other | 2.31 | 1.18, 4.69 | 0.017 |
| Weight | 1.00 | 0.99, 1.00 | 0.145 |
| SAPS II | 1.02 | 1.01, 1.03 | 0.001 |
| SOFA score | 1.15 | 1.10, 1.20 | <0.001 |
| Charlson comorbidity index | 1.13 | 1.06, 1.21 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.32 | 0.35, 6.77 | 0.706 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.16 | 0.72, 1.90 | 0.542 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.60, 1.45 | 0.77 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.12 | 1.37, 3.32 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.52 | 1.16, 2.00 | 0.002 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.78, 1.28 | 0.989 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.81, 1.34 | 0.735 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 0.82, 1.39 | 0.62 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.09 | 0.84, 1.41 | 0.508 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 0.79, 1.46 | 0.661 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.70 | 0.49, 1.00 | 0.049 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.71, 1.26 | 0.694 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 0.91, 1.50 | 0.221 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.53 | 0.38, 0.74 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.79 | 0.57, 1.08 | 0.133 |
| MAP | 1.00 | 0.99, 1.00 | 0.87 |
| Temperature | 0.83 | 0.74, 0.93 | 0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.068 |
| WBC count | 1.02 | 1.01, 1.04 | <0.001 |
| Hemoglobin | 1.01 | 0.96, 1.07 | 0.616 |
| Platelet | 1.00 | 1.00, 1.00 | 0.313 |
| pH | 0.73 | 0.22, 2.47 | 0.614 |
| PO2 | 1.00 | 1.00, 1.00 | 0.002 |
| PCO2 | 1.00 | 0.99, 1.01 | 0.832 |
| Lactate | 1.11 | 1.06, 1.17 | <0.001 |
| Creatinine | 1.00 | 0.94, 1.06 | 0.968 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S50. Survey-weighted generalised linear model adjusted with MW for 28-day mortality of cohort 3

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| RI | 3.69 | 3.13, 4.35 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.017 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.88 | 0.73, 1.06 | 0.166 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.38 | 0.76, 2.49 | 0.289 |
| White | 1.54 | 0.90, 2.64 | 0.115 |
| Other | 2.31 | 1.32, 4.03 | 0.003 |
| Weight | 1.00 | 0.99, 1.00 | 0.093 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.15 | 1.10, 1.19 | <0.001 |
| Charlson comorbidity index | 1.13 | 1.07, 1.20 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.32 | 0.38, 4.56 | 0.666 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.16 | 0.77, 1.77 | 0.478 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.63, 1.39 | 0.743 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.12 | 1.44, 3.14 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.52 | 1.21, 1.91 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.81, 1.22 | 0.986 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.85, 1.28 | 0.684 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 0.86, 1.32 | 0.549 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.09 | 0.88, 1.35 | 0.42 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 0.84, 1.37 | 0.587 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.70 | 0.52, 0.94 | 0.02 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.75, 1.19 | 0.63 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 0.95, 1.43 | 0.137 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.53 | 0.40, 0.70 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.79 | 0.61, 1.00 | 0.054 |
| MAP | 1.00 | 1.0, 1.00 | 0.851 |
| Temperature | 0.83 | 0.76, 0.91 | <0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.031 |
| WBC count | 1.02 | 1.01, 1.03 | <0.001 |
| Hemoglobin | 1.01 | 0.97, 1.06 | 0.547 |
| Platelet | 1.00 | 1.00, 1.00 | 0.2 |
| pH | 0.73 | 0.25, 2.17 | 0.575 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 0.99, 1.01 | 0.819 |
| Lactate | 1.11 | 1.06, 1.16 | <0.001 |
| Creatinine | 1.00 | 0.95, 1.05 | 0.963 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S51. Multivariate Cox model adjusted with all covariates for ICU mortality of original cohort 3

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| RD | 1.00 | Reference |  |
| RI | 1.26 | 1.21, 1.31 | <0.001 |
| Age | 1.01 | 1.01, 1.02 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.91 | 0.80, 1.04 | 0.175 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.89 | 0.58, 1.35 | 0.577 |
| White | 1.08 | 0.74, 1.57 | 0.688 |
| Other | 1.52 | 1.04, 2.23 | 0.032 |
| Weight | 1.00 | 1.00, 1.00 | 0.296 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.02 | 1.01, 1.03 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.02 | 1.01, 1.04 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.22 | 0.71, 6.95 | 0.17 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.14 | 0.87, 1.50 | 0.343 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.86 | 0.66, 1.12 | 0.253 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.05 | 1.59, 2.63 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.64 | 1.39, 1.94 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.95, 1.05 | 0.969 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 0.95, 1.27 | 0.199 |
| AFIB (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.11 | 1.05, 1.16 | <0.001 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.03 | 0.98, 1.08 | 0.221 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.15 | 0.95, 1.38 | 0.145 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.74, 1.16 | 0.519 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.83 | 0.71, 0.98 | 0.027 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.85, 1.13 | 0.774 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.85 | 0.70, 1.02 | 0.081 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.81, 1.18 | 0.819 |
| MAP (time dependent) | 1.00 | 1.00, 1.00 | 0.457 |
| Temperature (time dependent) | 0.96 | 0.94, 0.98 | <0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.109 |
| WBC count (time dependent) | 1.00 | 1.00, 1.00 | 0.01 |
| Hemoglobin (time dependent) | 1.01 | 1.00, 1.02 | 0.009 |
| Platelet | 1.00 | 1.00, 1.00 | 0.228 |
| pH (time dependent) | 0.90 | 0.74, 1.11 | 0.342 |
| PO2 (time dependent) | 1.00 | 1.00, 1.00 | 0.002 |
| PCO2 | 1.00 | 0.99, 1.00 | 0.715 |
| Lactate | 1.10 | 1.07, 1.12 | <0.001 |
| Creatinine | 1.02 | 0.98, 1.06 | 0.282 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S52. Multivariate Cox model adjusted with MW for ICU mortality of cohort 3

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| RD | 1.00 | Reference |  |
| RI | 1.28 | 1.23, 1.34 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.007 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.94 | 0.79, 1.11 | 0.467 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.91 | 0.53, 1.55 | 0.72 |
| White | 1.01 | 0.62, 1.65 | 0.955 |
| Other | 1.36 | 0.83, 2.23 | 0.226 |
| Weight | 1.00 | 1.00, 1.00 | 0.801 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.01 | 0.018 |
| SOFA score (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| Charlson comorbidity index | 1.04 | 0.99, 1.10 | 0.103 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.00 | 0.49, 8.21 | 0.337 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.25 | 0.87, 1.79 | 0.221 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.26 | 0.86, 1.86 | 0.239 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.42 | 0.97, 2.08 | 0.073 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.48 | 1.21, 1.81 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.95, 1.07 | 0.781 |
| Hypertension (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.97, 1.08 | 0.476 |
| AFIB (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.09 | 1.02, 1.16 | 0.007 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.92, 1.04 | 0.509 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.97 | 0.77, 1.21 | 0.784 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.76, 1.26 | 0.87 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.80 | 0.65, 0.98 | 0.031 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.79, 1.14 | 0.56 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.80 | 0.63, 1.00 | 0.05 |
| Malignancy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.96 | 0.89, 1.03 | 0.285 |
| MAP (time dependent) | 1.00 | 1.00, 1.00 | 0.795 |
| Temperature | 0.87 | 0.82, 0.94 | <0.001 |
| Heart rate | 1.00 | 1.00, 1.00 | 0.547 |
| WBC count | 1.01 | 1.00, 1.02 | 0.003 |
| Hemoglobin | 1.03 | 0.99, 1.07 | 0.158 |
| Platelet | 1.00 | 1.00, 1.00 | 0.614 |
| pH (time dependent) | 0.87 | 0.68, 1.12 | 0.275 |
| PO2 | 1.00 | 1.00, 1.00 | 0.017 |
| PCO2 | 1.00 | 0.99, 1.00 | 0.154 |
| Lactate | 1.09 | 1.06, 1.11 | <0.001 |
| Creatinine | 1.00 | 0.96, 1.04 | 0.9 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S53. Multivariate logistic model adjusted with all covariates for ICU mortality of original cohort 3

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| RI | 6.00 | 5.06, 7.11 | <0.001 |
| Age | 1.00 | 1.00, 1.01 | 0.225 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.90 | 0.76, 1.06 | 0.206 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.11 | 0.67, 1.90 | 0.696 |
| White | 1.32 | 0.84, 2.14 | 0.243 |
| Other | 1.94 | 1.22, 3.18 | 0.007 |
| Weight | 1.00 | 1.00, 1.00 | 0.621 |
| SAPS II | 1.03 | 1.02, 1.04 | <0.001 |
| SOFA score | 1.11 | 1.08, 1.15 | <0.001 |
| Charlson comorbidity index | 1.12 | 1.07, 1.18 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.52 | 0.51, 6.64 | 0.508 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.71, 1.44 | 0.991 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.42 | 0.30, 0.58 | <0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.64 | 1.93, 3.63 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.53 | 1.26, 1.87 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.79, 1.13 | 0.549 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.18 | 0.99, 1.41 | 0.064 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.19 | 0.99, 1.45 | 0.073 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.22 | 1.02, 1.47 | 0.032 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.97 | 0.78, 1.22 | 0.807 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.11 | 0.84, 1.49 | 0.466 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.79 | 0.65, 0.97 | 0.021 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.21 | 1.01, 1.44 | 0.039 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.49 | 0.38, 0.62 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.11 | 0.88, 1.40 | 0.376 |
| MAP | 1.00 | 1.00, 1.01 | 0.122 |
| Temperature | 0.85 | 0.78, 0.91 | <0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | 0.001 |
| WBC count | 1.00 | 0.99, 1.01 | 0.626 |
| Hemoglobin | 1.05 | 1.01, 1.09 | 0.007 |
| Platelet | 1.00 | 1.00, 1.00 | 0.95 |
| pH | 0.89 | 0.37, 2.15 | 0.794 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.273 |
| Lactate | 1.15 | 1.11, 1.20 | <0.001 |
| Creatinine | 0.97 | 0.92, 1.03 | 0.321 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S54. Multivariate logistic model adjusted with MW for ICU mortality of cohort 3

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| RI | 5.51 | 4.31, 7.09 | <0.001 |
| Age | 1.00 | 0.99, 1.02 | 0.421 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.86 | 0.68, 1.10 | 0.232 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.34 | 0.62, 3.04 | 0.465 |
| White | 1.43 | 0.71, 3.03 | 0.326 |
| Other | 2.09 | 1.02, 4.50 | 0.05 |
| Weight | 1.00 | 1.00, 1.01 | 0.712 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.14 | 1.09, 1.20 | <0.001 |
| Charlson comorbidity index | 1.09 | 1.01, 1.17 | 0.018 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.81 | 0.39, 17.5 | 0.511 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.23 | 0.74, 2.09 | 0.439 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.83 | 0.51, 1.34 | 0.457 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.87 | 1.16, 3.05 | 0.011 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.43 | 1.07, 1.92 | 0.016 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.75, 1.28 | 0.862 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 0.89, 1.53 | 0.252 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.12 | 0.85, 1.48 | 0.442 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.75, 1.30 | 0.946 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.66, 1.28 | 0.602 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.18 | 0.80, 1.75 | 0.4 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.81 | 0.60, 1.10 | 0.178 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 0.80, 1.37 | 0.731 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.54 | 0.38, 0.77 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.67, 1.34 | 0.763 |
| MAP | 1.00 | 0.99, 1.01 | 0.903 |
| Temperature | 0.85 | 0.75, 0.95 | 0.005 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.24 |
| WBC count | 1.01 | 1.00, 1.03 | 0.033 |
| Hemoglobin | 1.03 | 0.98, 1.09 | 0.264 |
| Platelet | 1.00 | 1.00, 1.00 | 0.422 |
| pH | 0.97 | 0.27, 3.49 | 0.962 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 0.99, 1.01 | 0.932 |
| Lactate | 1.14 | 1.08, 1.21 | <0.001 |
| Creatinine | 0.97 | 0.90, 1.04 | 0.37 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S55. Survey-weighted generalised linear model adjusted with MW for ICU mortality of cohort 3

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| RI | 5.51 | 4.60, 6.60 | <0.001 |
| Age | 1.00 | 0.99, 1.02 | 0.366 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.86 | 0.70, 1.07 | 0.172 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.34 | 0.70, 2.59 | 0.376 |
| White | 1.43 | 0.80, 2.58 | 0.228 |
| Other | 2.09 | 1.14, 3.84 | 0.017 |
| Weight | 1.00 | 1.00, 1.01 | 0.682 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.14 | 1.09, 1.19 | <0.001 |
| Charlson comorbidity index | 1.09 | 1.02, 1.16 | 0.006 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.81 | 0.43, 7.70 | 0.421 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.23 | 0.77, 1.96 | 0.393 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.83 | 0.53, 1.30 | 0.42 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.87 | 1.21, 2.90 | 0.005 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.43 | 1.11, 1.85 | 0.006 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.77, 1.23 | 0.841 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 0.93, 1.47 | 0.184 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.12 | 0.87, 1.43 | 0.391 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.78, 1.25 | 0.937 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.69, 1.21 | 0.537 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.18 | 0.83, 1.68 | 0.353 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.81 | 0.62, 1.06 | 0.118 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 0.83, 1.32 | 0.694 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.54 | 0.39, 0.74 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.71, 1.27 | 0.724 |
| MAP | 1.00 | 0.99, 1.01 | 0.896 |
| Temperature | 0.85 | 0.76, 0.94 | 0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.18 |
| WBC count | 1.01 | 1.00, 1.03 | 0.017 |
| Hemoglobin | 1.03 | 0.98, 1.08 | 0.194 |
| Platelet | 1.00 | 1.00, 1.00 | 0.354 |
| pH | 0.97 | 0.30, 3.12 | 0.959 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 0.99, 1.01 | 0.926 |
| Lactate | 1.14 | 1.09, 1.20 | <0.001 |
| Creatinine | 0.97 | 0.91, 1.03 | 0.3 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S56. Multivariate Cox model adjusted with all covariates for In-hospital mortality of original cohort 3

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| RD | 1.00 | Reference |  |
| RI | 1.31 | 1.26, 1.35 | <0.001 |
| Age (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.94 | 0.84, 1.06 | 0.303 |
| Race (time dependent) |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.97 | 0.87, 1.09 | 0.623 |
| White | 1.05 | 0.95, 1.15 | 0.368 |
| Other | 1.14 | 1.03, 1.26 | 0.012 |
| Weight | 1.00 | 1.00, 1.00 | 0.111 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.02 | 1.01, 1.03 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.02 | 1.01, 1.03 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 0.48, 2.83 | 0.73 |
| NICOM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.97, 1.11 | 0.326 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.70 | 0.56, 0.88 | 0.002 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.09 | 1.68, 2.59 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.50 | 1.31, 1.73 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.95, 1.02 | 0.334 |
| Hypertension (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.98, 1.05 | 0.496 |
| AFIB (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 1.00, 1.09 | 0.043 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.98, 1.06 | 0.283 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.89, 1.21 | 0.652 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.82 | 0.68, 0.99 | 0.035 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.89 | 0.77, 1.02 | 0.1 |
| CAD (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 1.00, 1.08 | 0.06 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.67 | 0.57, 0.79 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.88 | 0.76, 1.03 | 0.115 |
| MAP (time dependent) | 1.00 | 1.00, 1.00 | 0.505 |
| Temperature | 0.87 | 0.82, 0.91 | <0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.005 |
| WBC count | 1.01 | 1.00, 1.01 | 0.005 |
| Hemoglobin (time dependent) | 1.01 | 1.00, 1.02 | 0.038 |
| Platelet | 1.00 | 1.00, 1.00 | 0.587 |
| pH (time dependent) | 0.92 | 0.77, 1.11 | 0.393 |
| PO2 (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.00 | 0.909 |
| Lactate (time dependent) | 1.02 | 1.02, 1.03 | <0.001 |
| Creatinine (time dependent) | 1.00 | 0.99, 1.01 | 0.926 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S57. Multivariate Cox model adjusted with MW for In-hospital mortality of cohort 3

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| RD | 1.00 | Reference |  |
| RI | 1.31 | 1.27, 1.37 | <0.001 |
| Age | 1.01 | 1.01, 1.02 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.96 | 0.82, 1.11 | 0.555 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.06 | 0.65, 1.74 | 0.817 |
| White | 1.23 | 0.78, 1.92 | 0.372 |
| Other | 1.56 | 0.99, 2.47 | 0.057 |
| Weight | 1.00 | 1.00, 1.00 | 0.663 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.01 | 0.002 |
| SOFA score (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| Charlson comorbidity index | 1.04 | 1.00, 1.09 | 0.067 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.50 | 0.49, 4.57 | 0.48 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.14 | 0.83, 1.57 | 0.413 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.74, 1.35 | 0.989 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.73 | 1.28, 2.33 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.33 | 1.12, 1.59 | 0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.94, 1.04 | 0.621 |
| Hypertension (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.94, 1.04 | 0.725 |
| AFIB (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.98, 1.10 | 0.179 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.93, 1.03 | 0.375 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.97 | 0.79, 1.18 | 0.745 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.70, 1.09 | 0.227 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.90 | 0.74, 1.08 | 0.251 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 0.89, 1.24 | 0.571 |
| Stroke (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.89 | 0.84, 0.95 | <0.001 |
| Malignancy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.88, 0.99 | 0.03 |
| MAP | 1.00 | 1.00, 1.00 | 0.843 |
| Temperature | 0.87 | 0.81, 0.92 | <0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.114 |
| WBC count | 1.01 | 1.00, 1.02 | 0.002 |
| Hemoglobin | 1.02 | 0.98, 1.06 | 0.278 |
| Platelet | 1.00 | 1.00, 1.00 | 0.851 |
| pH (time dependent) | 0.93 | 0.74, 1.17 | 0.533 |
| PO2 | 1.00 | 1.00, 1.00 | 0.013 |
| PCO2 | 1.00 | 0.99, 1.00 | 0.344 |
| Lactate (time dependent) | 1.02 | 1.02, 1.03 | <0.001 |
| Creatinine | 0.99 | 0.95, 1.03 | 0.599 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S58. Multivariate logistic model adjusted with all covariates for In-hospital mortality of original cohort 3

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| RI | 4.87 | 4.14, 5.72 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.01 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.90 | 0.78, 1.04 | 0.147 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.21 | 0.77, 1.96 | 0.42 |
| White | 1.42 | 0.95, 2.19 | 0.098 |
| Other | 2.21 | 1.45, 3.44 | <0.001 |
| Weight | 1.00 | 0.99, 1.00 | 0.117 |
| SAPS II | 1.03 | 1.02, 1.03 | <0.001 |
| SOFA score | 1.11 | 1.08, 1.14 | <0.001 |
| Charlson comorbidity index | 1.12 | 1.08, 1.17 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.21 | 0.48, 3.77 | 0.709 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.69, 1.30 | 0.727 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.51 | 0.39, 0.68 | <0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.44 | 1.85, 3.23 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.52 | 1.28, 1.82 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.89 | 0.76, 1.04 | 0.156 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.15 | 0.98, 1.35 | 0.083 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.15 | 0.97, 1.36 | 0.114 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.25 | 1.06, 1.47 | 0.007 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.78, 1.15 | 0.581 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.75 | 0.59, 0.97 | 0.027 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.88 | 0.74, 1.06 | 0.17 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.26 | 1.08, 1.48 | 0.004 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.45 | 0.37, 0.56 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.80 | 0.66, 0.98 | 0.029 |
| MAP | 1.00 | 1.00, 1.01 | 0.285 |
| Temperature | 0.85 | 0.79, 0.91 | <0.001 |
| Heart rate | 1.01 | 1.01, 1.01 | <0.001 |
| WBC count | 1.01 | 1.00, 1.01 | 0.148 |
| Hemoglobin | 1.01 | 0.98, 1.04 | 0.484 |
| Platelet | 1.00 | 1.00, 1.00 | 0.307 |
| pH | 0.75 | 0.34, 1.67 | 0.486 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.756 |
| Lactate | 1.13 | 1.10, 1.17 | <0.001 |
| Creatinine | 0.98 | 0.94, 1.03 | 0.509 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S59. Multivariate logistic model adjusted with MW for In-hospital mortality of cohort 3

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| RI | 4.61 | 3.68, 5.82 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.147 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.86 | 0.68, 1.09 | 0.209 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.62 | 0.77, 3.56 | 0.216 |
| White | 1.71 | 0.87, 3.51 | 0.131 |
| Other | 2.67 | 1.33, 5.60 | 0.007 |
| Weight | 1.00 | 0.99, 1.00 | 0.71 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.14 | 1.09, 1.20 | <0.001 |
| Charlson comorbidity index | 1.09 | 1.02, 1.16 | 0.016 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.76 | 0.43, 11.9 | 0.484 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.66, 1.78 | 0.758 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.88 | 0.55, 1.38 | 0.59 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.06 | 1.31, 3.26 | 0.002 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.35 | 1.03, 1.78 | 0.032 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.88 | 0.68, 1.14 | 0.32 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 0.82, 1.36 | 0.665 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.83, 1.41 | 0.558 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.80, 1.35 | 0.768 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.69, 1.30 | 0.754 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.77 | 0.54, 1.12 | 0.169 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.69, 1.24 | 0.604 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.09 | 0.84, 1.40 | 0.529 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.47 | 0.33, 0.65 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.71 | 0.51, 0.98 | 0.036 |
| MAP | 1.00 | 1.0, 1.01 | 0.92 |
| Temperature | 0.84 | 0.75, 0.93 | 0.002 |
| Heart rate | 1.01 | 1.00, 1.01 | 0.01 |
| WBC count | 1.02 | 1.01, 1.03 | 0.006 |
| Hemoglobin | 1.00 | 0.95, 1.05 | 0.971 |
| Platelet | 1.00 | 1.00, 1.00 | 0.842 |
| pH | 0.82 | 0.24, 2.80 | 0.745 |
| PO2 | 1.00 | 1.00, 1.00 | 0.003 |
| PCO2 | 1.00 | 0.99, 1.01 | 0.722 |
| Lactate | 1.13 | 1.07, 1.19 | <0.001 |
| Creatinine | 0.98 | 0.92, 1.05 | 0.549 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S60. Survey-weighted generalised linear model adjusted with MW for In-hospital mortality of cohort 3

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| RD | 1.00 | Reference |  |
| RI | 4.61 | 3.90, 5.46 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.093 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.86 | 0.71, 1.05 | 0.134 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.62 | 0.86, 3.07 | 0.137 |
| White | 1.71 | 0.96, 3.05 | 0.069 |
| Other | 2.67 | 1.47, 4.86 | 0.001 |
| Weight | 1.00 | 1.0, 1.00 | 0.665 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.14 | 1.10, 1.19 | <0.001 |
| Charlson comorbidity index | 1.09 | 1.03, 1.15 | 0.004 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.76 | 0.52, 5.98 | 0.368 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.70, 1.66 | 0.722 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.88 | 0.59, 1.33 | 0.547 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.06 | 1.38, 3.07 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.35 | 1.07, 1.70 | 0.01 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.88 | 0.71, 1.09 | 0.235 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 0.85, 1.31 | 0.605 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.87, 1.35 | 0.488 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.84, 1.29 | 0.724 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.74, 1.23 | 0.701 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.77 | 0.56, 1.06 | 0.109 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.72, 1.18 | 0.533 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.09 | 0.88, 1.34 | 0.449 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.47 | 0.35, 0.62 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.71 | 0.55, 0.92 | 0.008 |
| MAP | 1.00 | 1.00, 1.01 | 0.909 |
| Temperature | 0.84 | 0.76, 0.92 | <0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | 0.003 |
| WBC count | 1.02 | 1.01, 1.03 | <0.001 |
| Hemoglobin | 1.00 | 0.96, 1.04 | 0.965 |
| Platelet | 1.00 | 1.00, 1.00 | 0.808 |
| pH | 0.82 | 0.27, 2.44 | 0.715 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 0.99, 1.01 | 0.699 |
| Lactate | 1.13 | 1.08, 1.18 | <0.001 |
| Creatinine | 0.98 | 0.93, 1.04 | 0.483 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S61. Multivariate Cox model adjusted with all covariates for 28-day mortality of original cohort 4

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| SI | 1.55 | 1.39, 1.73 | <0.001 |
| Age (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.96 | 0.86, 1.07 | 0.472 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.90 | 0.63, 1.28 | 0.549 |
| White | 1.01 | 0.74, 1.38 | 0.931 |
| Other | 1.26 | 0.92, 1.74 | 0.156 |
| Weight (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.85 | 0.57, 1.28 | 0.442 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.85 | 0.71, 1.01 | 0.066 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.90 | 0.83, 0.97 | 0.007 |
| Sedative therapy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.18 | 1.10, 1.28 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.48 | 1.30, 1.69 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.98, 1.06 | 0.295 |
| Hypertension (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.98, 1.06 | 0.263 |
| AFIB (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.98, 1.06 | 0.354 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 1.00, 1.08 | 0.035 |
| Renal (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 1.03, 1.13 | 0.001 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.77 | 0.65, 0.91 | 0.002 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.83, 1.09 | 0.437 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.11 | 0.98, 1.25 | 0.107 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.82 | 0.69, 0.97 | 0.02 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.09 | 0.94, 1.26 | 0.277 |
| MAP | 1.00 | 1.00, 1.00 | 0.747 |
| Temperature | 0.90 | 0.86, 0.94 | <0.001 |
| Heart rate (time dependent) | 1.00 | 1.00, 1.00 | 0.001 |
| WBC count | 1.00 | 1.00, 1.01 | 0.109 |
| Hemoglobin (time dependent) | 1.00 | 1.00, 1.01 | 0.54 |
| Platelet | 1.00 | 1.00, 1.00 | 0.014 |
| pH (time dependent) | 0.99 | 0.84, 1.17 | 0.939 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.108 |
| Lactate (time dependent) | 1.01 | 1.01, 1.02 | <0.001 |
| Creatinine | 1.00 | 0.97, 1.04 | 0.92 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S62. Multivariate Cox model adjusted with MW for 28-day mortality of cohort 4

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| SI | 1.56 | 1.40, 1.74 | <0.001 |
| Age (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.98 | 0.86, 1.11 | 0.763 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.02 | 0.67, 1.54 | 0.926 |
| White | 1.11 | 0.77, 1.61 | 0.568 |
| Other | 1.31 | 0.90, 1.91 | 0.159 |
| Weight (time dependent) | 1.00 | 1.00, 1.00 | 0.002 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.59, 1.48 | 0.773 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.89 | 0.72, 1.09 | 0.252 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.87, 1.05 | 0.298 |
| Sedative therapy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.14 | 1.04, 1.25 | 0.007 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.47 | 1.27, 1.71 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.98, 1.07 | 0.285 |
| Hypertension (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.98, 1.06 | 0.392 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.13 | 0.97, 1.30 | 0.113 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 1.01, 1.10 | 0.01 |
| Renal (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 1.05, 1.15 | <0.001 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.77 | 0.64, 0.93 | 0.007 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.85, 1.14 | 0.841 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 0.92, 1.22 | 0.427 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.85 | 0.70, 1.02 | 0.08 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 0.91, 1.23 | 0.501 |
| MAP | 1.00 | 1.00, 1.00 | 0.433 |
| Temperature | 0.90 | 0.86, 0.95 | <0.001 |
| Heart rate (time dependent) | 1.00 | 1.00, 1.00 | 0.002 |
| WBC count | 1.00 | 1.00, 1.01 | 0.198 |
| Hemoglobin (time dependent) | 1.00 | 0.99, 1.01 | 0.755 |
| Platelet | 1.00 | 1.00, 1.00 | 0.01 |
| pH (time dependent) | 0.99 | 0.82, 1.18 | 0.895 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.208 |
| Lactate (time dependent) | 1.01 | 1.01, 1.02 | <0.001 |
| Creatinine | 1.01 | 0.98, 1.05 | 0.532 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S63. Multivariate logistic model adjusted with all covariates for 28-day mortality of original cohort 4

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| SI | 1.74 | 1.49, 2.03 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.95 | 0.81, 1.10 | 0.464 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.76 | 0.46, 1.27 | 0.291 |
| White | 0.88 | 0.56, 1.39 | 0.587 |
| Other | 1.34 | 0.84, 2.14 | 0.223 |
| Weight | 0.99 | 0.99, 1.00 | <0.001 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.13 | 1.10, 1.17 | <0.001 |
| Charlson comorbidity index | 1.16 | 1.11, 1.21 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.75 | 0.40, 1.42 | 0.378 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.75 | 0.58, 0.97 | 0.025 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.66 | 0.46, 0.93 | 0.02 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.93 | 1.37, 2.74 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.71 | 1.43, 2.04 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.03 | 0.87, 1.22 | 0.73 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.92, 1.28 | 0.345 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 0.92, 1.32 | 0.303 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 0.99, 1.39 | 0.067 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.32 | 1.07, 1.64 | 0.01 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.61 | 0.47, 0.80 | <0.001 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.79, 1.16 | 0.621 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.21 | 1.03, 1.43 | 0.025 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.66 | 0.52, 0.85 | 0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 0.89, 1.36 | 0.395 |
| MAP | 1.00 | 1.00, 1.00 | 0.749 |
| Temperature | 0.86 | 0.80, 0.92 | <0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | 0.002 |
| WBC count | 1.01 | 1.00, 1.01 | 0.12 |
| Hemoglobin | 1.01 | 0.97, 1.04 | 0.737 |
| Platelet | 1.00 | 1.00, 1.00 | 0.002 |
| pH | 1.29 | 0.57, 2.89 | 0.541 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.123 |
| Lactate | 1.08 | 1.04, 1.11 | <0.001 |
| Creatinine | 0.99 | 0.94, 1.04 | 0.681 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S64. Multivariate logistic model adjusted with MW for 28-day mortality of cohort 4

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| SI | 1.73 | 1.43, 2.08 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.008 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.98 | 0.80, 1.20 | 0.839 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.75 | 0.37, 1.53 | 0.421 |
| White | 0.82 | 0.43, 1.57 | 0.538 |
| Other | 1.16 | 0.59, 2.29 | 0.661 |
| Weight | 0.99 | 0.99, 1.00 | 0.003 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.14 | 1.09, 1.19 | <0.001 |
| Charlson comorbidity index | 1.16 | 1.09, 1.23 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.88 | 0.39, 1.99 | 0.753 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.78 | 0.55, 1.12 | 0.185 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.80 | 0.49, 1.27 | 0.347 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.73 | 1.09, 2.80 | 0.022 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.72 | 1.35, 2.19 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 0.83, 1.32 | 0.692 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.83, 1.30 | 0.731 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.19 | 0.94, 1.51 | 0.148 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.23 | 0.98, 1.55 | 0.077 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.45 | 1.09, 1.93 | 0.01 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.63 | 0.45, 0.88 | 0.006 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.78, 1.28 | 0.992 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.16 | 0.93, 1.46 | 0.197 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.69 | 0.50, 0.96 | 0.025 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.09 | 0.82, 1.45 | 0.542 |
| MAP | 1.00 | 0.99, 1.00 | 0.52 |
| Temperature | 0.86 | 0.78, 0.94 | <0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | 0.006 |
| WBC count | 1.00 | 1.00, 1.01 | 0.312 |
| Hemoglobin | 0.99 | 0.95, 1.04 | 0.727 |
| Platelet | 1.00 | 1.00, 1.00 | 0.014 |
| pH | 1.27 | 0.44, 3.72 | 0.656 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.33 |
| Lactate | 1.07 | 1.02, 1.12 | 0.003 |
| Creatinine | 1.00 | 0.94, 1.07 | 0.941 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S65. Survey-weighted generalised linear model adjusted with MW for 28-day mortality of cohort 4

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| SI | 1.73 | 1.48, 2.02 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.002 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.98 | 0.83, 1.16 | 0.808 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.75 | 0.40, 1.40 | 0.362 |
| White | 0.82 | 0.46, 1.45 | 0.486 |
| Other | 1.16 | 0.64, 2.10 | 0.619 |
| Weight | 0.99 | 0.99, 1.00 | <0.001 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.14 | 1.10, 1.18 | <0.001 |
| Charlson comorbidity index | 1.16 | 1.10, 1.22 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.88 | 0.44, 1.76 | 0.716 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.78 | 0.58, 1.06 | 0.11 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.80 | 0.52, 1.23 | 0.304 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.73 | 1.14, 2.65 | 0.011 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.72 | 1.41, 2.10 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 0.86, 1.27 | 0.638 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.86, 1.25 | 0.68 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.19 | 0.98, 1.45 | 0.084 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.23 | 1.01, 1.50 | 0.04 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.45 | 1.14, 1.85 | 0.002 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.63 | 0.47, 0.84 | 0.002 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.81, 1.24 | 0.991 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.16 | 0.96, 1.41 | 0.128 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.69 | 0.52, 0.92 | 0.013 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.09 | 0.86, 1.38 | 0.465 |
| MAP | 1.00 | 0.99, 1.00 | 0.467 |
| Temperature | 0.86 | 0.79, 0.93 | <0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | 0.002 |
| WBC count | 1.00 | 1.00, 1.01 | 0.312 |
| Hemoglobin | 0.99 | 0.95, 1.03 | 0.69 |
| Platelet | 1.00 | 1.00, 1.00 | 0.005 |
| pH | 1.27 | 0.52, 3.12 | 0.595 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.266 |
| Lactate | 1.07 | 1.03, 1.11 | <0.001 |
| Creatinine | 1.00 | 0.95, 1.06 | 0.927 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S66. Multivariate Cox model adjusted with all covariates for ICU mortality of original cohort 4

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| SD | 1.00 | Reference |  |
| SI | 1.10 | 1.06, 1.14 | <0.001 |
| Age (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| Gender (time dependent) |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.95 | 0.92, 0.99 | 0.017 |
| Race (time dependent) |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.01 | 0.89, 1.14 | 0.864 |
| White | 1.06 | 0.95, 1.18 | 0.276 |
| Other | 1.08 | 0.96, 1.20 | 0.19 |
| Weight (time dependent) | 1.00 | 1.00, 1.00 | 0.002 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.03 | 1.02, 1.03 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.02 | 1.01, 1.03 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.81 | 0.53, 1.24 | 0.331 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.75, 1.12 | 0.388 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.79, 0.95 | 0.004 |
| Sedative therapy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.26 | 1.15, 1.37 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.49 | 1.29, 1.72 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.03 | 0.99, 1.07 | 0.193 |
| Hypertension (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.03 | 0.99, 1.07 | 0.187 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.21 | 1.04, 1.40 | 0.015 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 1.00, 1.09 | 0.051 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.38 | 1.16, 1.64 | <0.001 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.72, 1.06 | 0.173 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.86, 1.18 | 0.938 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.89 | 0.78, 1.03 | 0.125 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.78, 1.15 | 0.574 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 0.88, 1.24 | 0.592 |
| MAP | 1.00 | 1.00, 1.00 | 0.862 |
| Temperature | 0.89 | 0.85, 0.94 | <0.001 |
| Heart rate (time dependent) | 1.00 | 1.00, 1.00 | 0.012 |
| WBC count | 1.00 | 1.00, 1.01 | 0.142 |
| Hemoglobin (time dependent) | 1.00 | 0.99, 1.01 | 0.492 |
| Platelet | 1.00 | 1.00, 1.00 | 0.099 |
| pH (time dependent) | 0.96 | 0.80, 1.15 | 0.633 |
| PO2 | 1.00 | 1.00, 1.00 | 0.012 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.2 |
| Lactate (time dependent) | 1.02 | 1.01, 1.02 | <0.001 |
| Creatinine | 1.04 | 1.00, 1.08 | 0.066 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S67. Multivariate Cox model adjusted with MW for ICU mortality of cohort 4

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| SI | 1.41 | 1.24, 1.60 | <0.001 |
| Age | 1.01 | 1.01, 1.02 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.89 | 0.77, 1.03 | 0.113 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.43 | 0.89, 2.30 | 0.138 |
| White | 1.66 | 1.09, 2.55 | 0.019 |
| Other | 1.68 | 1.10, 2.58 | 0.018 |
| Weight (time dependent) | 1.00 | 1.00, 1.00 | 0.009 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.02 | 1.01, 1.03 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.90 | 0.56, 1.44 | 0.66 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.74, 1.18 | 0.565 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.82, 1.05 | 0.247 |
| Sedative therapy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.16 | 1.03, 1.31 | 0.014 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.46 | 1.23, 1.72 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.99, 1.09 | 0.167 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.13 | 0.98, 1.32 | 0.1 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.24 | 1.04, 1.46 | 0.014 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.24 | 1.05, 1.46 | 0.009 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.46 | 1.21, 1.75 | <0.001 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.73, 1.12 | 0.362 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 0.90, 1.27 | 0.459 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.73, 1.02 | 0.089 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.79, 1.21 | 0.833 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.85, 1.21 | 0.872 |
| MAP | 1.00 | 1.00, 1.00 | 0.606 |
| Temperature | 0.91 | 0.86, 0.96 | <0.001 |
| Heart rate (time dependent) | 1.00 | 1.00, 1.00 | 0.016 |
| WBC count | 1.00 | 1.00, 1.01 | 0.063 |
| Hemoglobin (time dependent) | 1.00 | 0.99, 1.01 | 0.816 |
| Platelet | 1.00 | 1.00, 1.00 | 0.081 |
| pH (time dependent) | 0.92 | 0.75, 1.13 | 0.415 |
| PO2 | 1.00 | 1.00, 1.00 | 0.009 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.329 |
| Lactate (time dependent) | 1.02 | 1.01, 1.02 | <0.001 |
| Creatinine | 1.05 | 1.01, 1.09 | 0.02 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S68. Multivariate logistic model adjusted with all covariates for ICU mortality of original cohort 4

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| SI | 1.70 | 1.44, 2.00 | <0.001 |
| Age | 1.01 | 1.00, 1.01 | 0.117 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.77 | 0.65, 0.90 | 0.001 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.79 | 0.47, 1.36 | 0.396 |
| White | 0.88 | 0.55, 1.43 | 0.602 |
| Other | 1.19 | 0.73, 1.97 | 0.489 |
| Weight | 1.00 | 0.99, 1.00 | 0.02 |
| SAPS II | 1.03 | 1.02, 1.03 | <0.001 |
| SOFA score | 1.13 | 1.10, 1.17 | <0.001 |
| Charlson comorbidity index | 1.11 | 1.06, 1.16 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.69 | 0.37, 1.30 | 0.251 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.67, 1.14 | 0.316 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.46 | 0.30, 0.67 | <0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.82 | 1.24, 2.67 | 0.002 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.40 | 1.16, 1.69 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 0.88, 1.26 | 0.584 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.15 | 0.97, 1.37 | 0.115 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.16 | 0.96, 1.42 | 0.125 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.23 | 1.03, 1.48 | 0.026 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.31 | 1.04, 1.64 | 0.022 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.84 | 0.64, 1.11 | 0.23 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.75, 1.13 | 0.406 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.83, 1.20 | 0.987 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.62 | 0.48, 0.81 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.13 | 0.90, 1.43 | 0.286 |
| MAP | 1.00 | 1.00, 1.00 | 0.709 |
| Temperature | 0.85 | 0.79, 0.92 | <0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | <0.001 |
| WBC count | 1.00 | 1.00, 1.01 | 0.548 |
| Hemoglobin | 1.01 | 0.98, 1.05 | 0.482 |
| Platelet | 1.00 | 1.00, 1.00 | 0.002 |
| pH | 1.28 | 0.55, 2.98 | 0.573 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.01 | 1.00, 1.01 | 0.005 |
| Lactate | 1.09 | 1.06, 1.13 | <0.001 |
| Creatinine | 1.02 | 0.96, 1.07 | 0.563 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S69. Multivariate logistic model adjusted with MW for ICU mortality of cohort 4

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| SI | 1.70 | 1.39, 2.07 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.07 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.80 | 0.65, 0.99 | 0.041 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.13 | 0.53, 2.49 | 0.747 |
| White | 1.24 | 0.62, 2.56 | 0.55 |
| Other | 1.50 | 0.74, 3.17 | 0.271 |
| Weight | 1.00 | 0.99, 1.00 | 0.047 |
| SAPS II | 1.02 | 1.01, 1.04 | <0.001 |
| SOFA score | 1.14 | 1.09, 1.20 | <0.001 |
| Charlson comorbidity index | 1.11 | 1.04, 1.18 | 0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.85 | 0.38, 1.91 | 0.688 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.86 | 0.59, 1.25 | 0.412 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.60 | 0.35, 1.01 | 0.059 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.39 | 0.83, 2.36 | 0.211 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.41 | 1.10, 1.82 | 0.008 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.11 | 0.87, 1.42 | 0.395 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.18 | 0.93, 1.48 | 0.176 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.18 | 0.92, 1.53 | 0.191 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.33 | 1.04, 1.70 | 0.022 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.41 | 1.04, 1.90 | 0.027 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.61, 1.23 | 0.415 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.97 | 0.75, 1.26 | 0.818 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.96 | 0.75, 1.23 | 0.752 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.67 | 0.48, 0.94 | 0.019 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.12 | 0.83, 1.52 | 0.465 |
| MAP | 1.00 | 0.99, 1.00 | 0.545 |
| Temperature | 0.86 | 0.78, 0.94 | 0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | <0.001 |
| WBC count | 1.00 | 0.99, 1.01 | 0.475 |
| Hemoglobin | 1.00 | 0.96, 1.05 | 0.874 |
| Platelet | 1.00 | 1.00, 1.00 | 0.01 |
| pH | 1.35 | 0.44, 4.12 | 0.599 |
| PO2 | 1.00 | 1.00, 1.00 | 0.003 |
| PCO2 | 1.01 | 1.00, 1.02 | 0.028 |
| Lactate | 1.09 | 1.05, 1.14 | <0.001 |
| Creatinine | 1.03 | 0.97, 1.10 | 0.352 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S70. Survey-weighted generalised linear model adjusted with MW for ICU mortality of cohort 4

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| SI | 1.70 | 1.44, 2.00 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.036 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.80 | 0.67, 0.96 | 0.016 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.13 | 0.59, 2.18 | 0.705 |
| White | 1.24 | 0.69, 2.24 | 0.477 |
| Other | 1.50 | 0.82, 2.76 | 0.189 |
| Weight | 1.00 | 0.99, 1.00 | 0.025 |
| SAPS II | 1.02 | 1.02, 1.03 | <0.001 |
| SOFA score | 1.14 | 1.10, 1.19 | <0.001 |
| Charlson comorbidity index | 1.11 | 1.05, 1.17 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.85 | 0.43, 1.68 | 0.639 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.86 | 0.63, 1.17 | 0.333 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.60 | 0.38, 0.97 | 0.038 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.39 | 0.88, 2.20 | 0.158 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.41 | 1.14, 1.74 | 0.002 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.11 | 0.90, 1.37 | 0.323 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.18 | 0.97, 1.43 | 0.107 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.18 | 0.96, 1.46 | 0.119 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.33 | 1.08, 1.63 | 0.007 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.41 | 1.09, 1.82 | 0.009 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.64, 1.17 | 0.35 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.97 | 0.77, 1.21 | 0.788 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.96 | 0.78, 1.18 | 0.709 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.67 | 0.49, 0.91 | 0.011 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.12 | 0.87, 1.44 | 0.382 |
| MAP | 1.00 | 0.99, 1.00 | 0.483 |
| Temperature | 0.86 | 0.79, 0.93 | <0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | <0.001 |
| WBC count | 1.00 | 1.00, 1.01 | 0.418 |
| Hemoglobin | 1.00 | 0.96, 1.05 | 0.86 |
| Platelet | 1.00 | 1.00, 1.00 | 0.002 |
| pH | 1.35 | 0.53, 3.41 | 0.528 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.01 | 1.00, 1.02 | 0.012 |
| Lactate | 1.09 | 1.05, 1.14 | <0.001 |
| Creatinine | 1.03 | 0.98, 1.09 | 0.261 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S71. Multivariate Cox model adjusted with all covariates for In-hospital mortality of original cohort 4

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| SI | 1.50 | 1.34, 1.68 | <0.001 |
| Age (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.90 | 0.80, 1.00 | 0.056 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.89 | 0.62, 1.27 | 0.519 |
| White | 1.00 | 0.73, 1.38 | 0.986 |
| Other | 1.21 | 0.87, 1.68 | 0.259 |
| Weight (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.03 | 1.02, 1.03 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.03 | 1.02, 1.03 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.77 | 0.52, 1.15 | 0.205 |
| NICOM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.94, 1.04 | 0.704 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.86 | 0.79, 0.94 | <0.001 |
| Sedative therapy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.24 | 1.14, 1.34 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.45 | 1.28, 1.66 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 1.00, 1.08 | 0.049 |
| Hypertension (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.98, 1.06 | 0.308 |
| AFIB (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.98, 1.06 | 0.373 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 1.00, 1.08 | 0.028 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.36 | 1.16, 1.58 | <0.001 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.85 | 0.71, 1.01 | 0.06 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.82, 1.09 | 0.451 |
| CAD (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.95, 1.03 | 0.71 |
| Stroke (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.96 | 0.91, 1.01 | 0.089 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.12 | 0.97, 1.31 | 0.126 |
| MAP | 1.00 | 1.00, 1.00 | 0.764 |
| Temperature (time dependent) | 0.97 | 0.96, 0.98 | <0.001 |
| Heart rate (time dependent) | 1.00 | 1.00, 1.00 | 0.002 |
| WBC count | 1.00 | 1.00, 1.01 | 0.283 |
| Hemoglobin (time dependent) | 1.00 | 1.00, 1.01 | 0.307 |
| Platelet | 1.00 | 1.00, 1.00 | 0.111 |
| pH (time dependent) | 0.98 | 0.83, 1.16 | 0.831 |
| PO2 (time dependent) | 1.00 | 1.00, 1.00 | 0.015 |
| PCO2 (time dependent) | 1.00 | 1.00, 1.00 | 0.019 |
| Lactate (time dependent) | 1.01 | 1.01, 1.02 | <0.001 |
| Creatinine (time dependent) | 1.00 | 0.99, 1.01 | 0.541 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S72. Multivariate Cox model adjusted with MW for In-hospital mortality of cohort 4

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| SI | 1.51 | 1.35, 1.70 | <0.001 |
| Age (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.91 | 0.80, 1.04 | 0.171 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.13 | 0.74, 1.73 | 0.57 |
| White | 1.26 | 0.86, 1.84 | 0.238 |
| Other | 1.40 | 0.95, 2.06 | 0.088 |
| Weight (time dependent) | 1.00 | 1.00, 1.00 | 0.002 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.03 | 1.02, 1.03 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.83 | 0.53, 1.30 | 0.424 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.77, 1.18 | 0.669 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.83, 1.02 | 0.13 |
| Sedative therapy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 1.05, 1.29 | 0.004 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.45 | 1.25, 1.68 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 1.00, 1.09 | 0.06 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 0.96, 1.26 | 0.166 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.14 | 0.98, 1.32 | 0.098 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 1.01, 1.10 | 0.013 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.49 | 1.26, 1.76 | <0.001 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.86 | 0.71, 1.05 | 0.136 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.85, 1.15 | 0.876 |
| CAD (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.93, 1.02 | 0.33 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.76, 1.11 | 0.359 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 0.94, 1.28 | 0.24 |
| MAP | 1.00 | 1.00, 1.00 | 0.524 |
| Temperature | 0.90 | 0.86, 0.95 | <0.001 |
| Heart rate (time dependent) | 1.00 | 1.00, 1.00 | 0.001 |
| WBC count | 1.00 | 1.00, 1.01 | 0.383 |
| Hemoglobin (time dependent) | 1.00 | 0.99, 1.01 | 0.938 |
| Platelet | 1.00 | 1.00, 1.00 | 0.105 |
| pH (time dependent) | 0.95 | 0.80, 1.14 | 0.613 |
| PO2 (time dependent) | 1.00 | 1.00, 1.00 | 0.016 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.107 |
| Lactate (time dependent) | 1.01 | 1.01, 1.02 | <0.001 |
| Creatinine | 1.03 | 1.00, 1.07 | 0.088 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S73. Multivariate logistic model adjusted with all covariates for In-hospital mortality of original cohort 4

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| SI | 1.73 | 1.48, 2.03 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.01 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.85 | 0.73, 0.99 | 0.031 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.72 | 0.44, 1.21 | 0.209 |
| White | 0.80 | 0.51, 1.27 | 0.335 |
| Other | 1.24 | 0.78, 1.99 | 0.363 |
| Weight | 1.00 | 0.99, 1.00 | 0.018 |
| SAPS II | 1.02 | 1.02, 1.03 | <0.001 |
| SOFA score | 1.13 | 1.10, 1.17 | <0.001 |
| Charlson comorbidity index | 1.13 | 1.08, 1.18 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.71 | 0.38, 1.32 | 0.278 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.80 | 0.62, 1.03 | 0.086 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.57 | 0.39, 0.81 | 0.002 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.89 | 1.34, 2.71 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.45 | 1.22, 1.73 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 0.90, 1.27 | 0.453 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.13 | 0.95, 1.33 | 0.16 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.15 | 0.96, 1.38 | 0.129 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.27 | 1.07, 1.51 | 0.007 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.30 | 1.05, 1.62 | 0.016 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.69 | 0.53, 0.89 | 0.005 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.76, 1.13 | 0.434 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 0.98, 1.38 | 0.077 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.60 | 0.47, 0.77 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.09 | 0.88, 1.36 | 0.415 |
| MAP | 1.00 | 1.00, 1.00 | 0.991 |
| Temperature | 0.87 | 0.82, 0.94 | <0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | <0.001 |
| WBC count | 1.00 | 1.00, 1.01 | 0.325 |
| Hemoglobin | 0.99 | 0.95, 1.02 | 0.434 |
| Platelet | 1.00 | 1.00, 1.00 | 0.008 |
| pH | 1.25 | 0.56, 2.83 | 0.588 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.01 | 1.00, 1.01 | 0.05 |
| Lactate | 1.08 | 1.05, 1.12 | <0.001 |
| Creatinine | 0.99 | 0.94, 1.04 | 0.722 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S74. Multivariate logistic model adjusted with MW for In-hospital mortality of cohort 4

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| SI | 1.73 | 1.43, 2.09 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.022 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.89 | 0.73, 1.09 | 0.272 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.88 | 0.43, 1.82 | 0.72 |
| White | 0.93 | 0.49, 1.83 | 0.84 |
| Other | 1.31 | 0.67, 2.62 | 0.436 |
| Weight | 1.00 | 0.99, 1.00 | 0.064 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.14 | 1.10, 1.19 | <0.001 |
| Charlson comorbidity index | 1.14 | 1.08, 1.21 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.84 | 0.38, 1.86 | 0.658 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.79 | 0.55, 1.14 | 0.21 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.73 | 0.45, 1.17 | 0.199 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.53 | 0.95, 2.48 | 0.081 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.49 | 1.18, 1.90 | 0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.13 | 0.90, 1.42 | 0.305 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.12 | 0.90, 1.40 | 0.322 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.23 | 0.97, 1.56 | 0.094 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.36 | 1.08, 1.71 | 0.009 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.50 | 1.13, 2.01 | 0.005 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.71 | 0.51, 1.00 | 0.048 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.97 | 0.75, 1.25 | 0.816 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.86, 1.35 | 0.531 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.64 | 0.47, 0.89 | 0.007 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.15 | 0.86, 1.53 | 0.339 |
| MAP | 1.00 | 1.0, 1.00 | 0.899 |
| Temperature | 0.87 | 0.80, 0.96 | 0.004 |
| Heart rate | 1.01 | 1.00, 1.01 | <0.001 |
| WBC count | 1.00 | 1.0, 1.01 | 0.443 |
| Hemoglobin | 0.98 | 0.93, 1.02 | 0.316 |
| Platelet | 1.00 | 1.00, 1.00 | 0.017 |
| pH | 1.17 | 0.40, 3.44 | 0.772 |
| PO2 | 1.00 | 1.00, 1.00 | 0.002 |
| PCO2 | 1.01 | 1.00, 1.01 | 0.179 |
| Lactate | 1.08 | 1.03, 1.13 | 0.001 |
| Creatinine | 1.01 | 0.95, 1.08 | 0.684 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S75. Survey-weighted generalised linear model adjusted with MW for In-hospital mortality of cohort 4

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| SI | 1.73 | 1.47, 2.02 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.009 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.89 | 0.75, 1.06 | 0.192 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.88 | 0.47, 1.64 | 0.68 |
| White | 0.93 | 0.53, 1.65 | 0.815 |
| Other | 1.31 | 0.73, 2.35 | 0.365 |
| Weight | 1.00 | 0.99, 1.00 | 0.03 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.14 | 1.10, 1.18 | <0.001 |
| Charlson comorbidity index | 1.14 | 1.09, 1.20 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.84 | 0.43, 1.63 | 0.598 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.79 | 0.59, 1.07 | 0.135 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.73 | 0.48, 1.11 | 0.144 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.53 | 1.01, 2.31 | 0.043 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.49 | 1.22, 1.83 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.13 | 0.93, 1.37 | 0.227 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.12 | 0.93, 1.35 | 0.238 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.23 | 1.00, 1.50 | 0.046 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.36 | 1.11, 1.66 | 0.002 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.50 | 1.18, 1.92 | 0.001 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.71 | 0.53, 0.96 | 0.025 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.97 | 0.78, 1.21 | 0.787 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.89, 1.31 | 0.459 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.64 | 0.48, 0.87 | 0.004 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.15 | 0.90, 1.47 | 0.259 |
| MAP | 1.00 | 1.00, 1.00 | 0.88 |
| Temperature | 0.87 | 0.81, 0.95 | 0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | <0.001 |
| WBC count | 1.00 | 1.00, 1.01 | 0.414 |
| Hemoglobin | 0.98 | 0.94, 1.02 | 0.255 |
| Platelet | 1.00 | 1.00, 1.00 | 0.006 |
| pH | 1.17 | 0.48, 2.86 | 0.727 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.01 | 1.00, 1.01 | 0.121 |
| Lactate | 1.08 | 1.04, 1.12 | <0.001 |
| Creatinine | 1.01 | 0.96, 1.07 | 0.623 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S76. Multivariate Cox model adjusted with all covariates for 28-day mortality of original cohort 5

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| SD | 1.00 | Reference |  |
| RI | 1.18 | 1.14, 1.22 | <0.001 |
| Age (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.95 | 0.85, 1.06 | 0.33 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.83 | 0.58, 1.19 | 0.319 |
| White | 0.98 | 0.71, 1.34 | 0.887 |
| Other | 1.29 | 0.93, 1.79 | 0.121 |
| Weight (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.02 | 1.01, 1.03 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.79 | 0.50, 1.25 | 0.312 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.81 | 0.67, 0.97 | 0.024 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.85, 0.98 | 0.013 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.85 | 1.47, 2.34 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.42 | 1.25, 1.62 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.97, 1.04 | 0.708 |
| Hypertension (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.98, 1.05 | 0.472 |
| AFIB (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.97, 1.05 | 0.513 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.88, 1.13 | 1 |
| Renal (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.03 | 0.99, 1.08 | 0.189 |
| Liver (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.88, 0.98 | 0.007 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.90 | 0.78, 1.03 | 0.14 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.16 | 1.02, 1.31 | 0.021 |
| Stroke (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.88, 0.98 | 0.004 |
| Malignancy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.97, 1.06 | 0.647 |
| MAP | 1.00 | 1.00, 1.00 | 0.999 |
| Temperature (time dependent) | 0.97 | 0.95, 0.98 | <0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.025 |
| WBC count | 1.01 | 1.00, 1.01 | 0.003 |
| Hemoglobin (time dependent) | 1.01 | 1.00, 1.01 | 0.145 |
| Platelet | 1.00 | 1.00, 1.00 | 0.061 |
| pH (time dependent) | 0.93 | 0.79, 1.10 | 0.403 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.582 |
| Lactate (time dependent) | 1.02 | 1.01, 1.02 | <0.001 |
| Creatinine | 0.99 | 0.96, 1.03 | 0.759 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S77. Multivariate Cox model adjusted with MW for 28-day mortality of cohort 5

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| SD | 1.00 | Reference |  |
| RI | 1.18 | 1.14, 1.22 | <0.001 |
| Age (time dependent) | 1.00 | 1.00, 1.01 | 0.002 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.96 | 0.84, 1.09 | 0.511 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.87 | 0.58, 1.31 | 0.506 |
| White | 1.00 | 0.70, 1.44 | 0.99 |
| Other | 1.28 | 0.88, 1.85 | 0.192 |
| Weight (time dependent) | 1.00 | 1.00, 1.00 | 0.022 |
| SAPS II | 1.01 | 1.01, 1.02 | <0.001 |
| SOFA score (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.02 | 1.01, 1.03 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.85 | 0.44, 1.66 | 0.641 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.85 | 0.67, 1.09 | 0.194 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.86 | 0.63, 1.18 | 0.358 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.75 | 1.28, 2.38 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.41 | 1.21, 1.65 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.96, 1.05 | 0.821 |
| Hypertension (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.96, 1.04 | 0.981 |
| AFIB (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.03 | 0.98, 1.07 | 0.277 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.96 | 0.82, 1.11 | 0.555 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 0.88, 1.25 | 0.57 |
| Liver (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.88, 1.00 | 0.047 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.88 | 0.75, 1.04 | 0.134 |
| CAD (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.99, 1.09 | 0.098 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.77 | 0.64, 0.93 | 0.006 |
| Malignancy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.93, 1.03 | 0.467 |
| MAP | 1.00 | 1.00, 1.00 | 0.795 |
| Temperature | 0.89 | 0.85, 0.94 | <0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.169 |
| WBC count | 1.01 | 1.01, 1.02 | <0.001 |
| Hemoglobin (time dependent) | 1.00 | 1.00, 1.01 | 0.352 |
| Platelet | 1.00 | 1.00, 1.00 | 0.201 |
| pH (time dependent) | 0.91 | 0.75, 1.10 | 0.312 |
| PO2 | 1.00 | 1.00, 1.00 | 0.004 |
| PCO2 | 1.00 | 0.99, 1.00 | 0.341 |
| Lactate (time dependent) | 1.02 | 1.01, 1.03 | <0.001 |
| Creatinine | 0.99 | 0.96, 1.03 | 0.753 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S78. Multivariate logistic model adjusted with all covariates for 28-day mortality of original cohort 5

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| RI | 1.96 | 1.66, 2.30 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.003 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.92 | 0.79, 1.07 | 0.263 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.91 | 0.55, 1.52 | 0.723 |
| White | 1.09 | 0.70, 1.72 | 0.708 |
| Other | 1.71 | 1.08, 2.74 | 0.024 |
| Weight | 0.99 | 0.99, 1.00 | <0.001 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.13 | 1.10, 1.17 | <0.001 |
| Charlson comorbidity index | 1.13 | 1.08, 1.19 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.65 | 0.33, 1.31 | 0.221 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.73 | 0.56, 0.96 | 0.024 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.68 | 0.48, 0.95 | 0.025 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.09 | 1.51, 2.92 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.65 | 1.38, 1.97 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.82, 1.16 | 0.793 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 0.91, 1.27 | 0.414 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.85, 1.22 | 0.842 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.86, 1.22 | 0.782 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.16 | 0.94, 1.44 | 0.171 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.63 | 0.48, 0.81 | <0.001 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.76, 1.12 | 0.412 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.25 | 1.06, 1.48 | 0.009 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.62 | 0.48, 0.79 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.79, 1.23 | 0.899 |
| MAP | 1.00 | 1.00, 1.00 | 0.989 |
| Temperature | 0.85 | 0.79, 0.91 | <0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.043 |
| WBC count | 1.01 | 1.00, 1.02 | 0.004 |
| Hemoglobin | 1.01 | 0.98, 1.05 | 0.428 |
| Platelet | 1.00 | 1.00, 1.00 | 0.016 |
| pH | 1.05 | 0.46, 2.39 | 0.909 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.218 |
| Lactate | 1.09 | 1.05, 1.13 | <0.001 |
| Creatinine | 0.99 | 0.94, 1.04 | 0.671 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S79. Multivariate logistic model adjusted with MW for 28-day mortality of cohort 5

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| RI | 1.93 | 1.58, 2.36 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.033 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.92 | 0.74, 1.14 | 0.444 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.05 | 0.53, 2.12 | 0.885 |
| White | 1.19 | 0.65, 2.23 | 0.587 |
| Other | 1.73 | 0.92, 3.32 | 0.092 |
| Weight | 0.99 | 0.99, 1.00 | 0.007 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.14 | 1.10, 1.19 | <0.001 |
| Charlson comorbidity index | 1.11 | 1.04, 1.18 | 0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.82 | 0.24, 3.07 | 0.757 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.81 | 0.51, 1.28 | 0.357 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.84 | 0.53, 1.29 | 0.424 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.01 | 1.30, 3.13 | 0.002 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.66 | 1.29, 2.15 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.74, 1.20 | 0.637 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.79, 1.26 | 0.959 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 0.82, 1.34 | 0.696 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.96 | 0.75, 1.23 | 0.758 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.13 | 0.84, 1.53 | 0.412 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.63 | 0.45, 0.89 | 0.009 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.70, 1.21 | 0.561 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.21 | 0.96, 1.53 | 0.111 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.57 | 0.42, 0.79 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.82 | 0.61, 1.12 | 0.21 |
| MAP | 1.00 | 1.0, 1.01 | 0.991 |
| Temperature | 0.85 | 0.77, 0.95 | 0.002 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.172 |
| WBC count | 1.02 | 1.01, 1.04 | <0.001 |
| Hemoglobin | 1.01 | 0.96, 1.06 | 0.638 |
| Platelet | 1.00 | 1.00, 1.00 | 0.244 |
| pH | 0.85 | 0.27, 2.68 | 0.782 |
| PO2 | 1.00 | 1.00, 1.00 | 0.017 |
| PCO2 | 1.00 | 0.99, 1.01 | 0.978 |
| Lactate | 1.10 | 1.05, 1.16 | <0.001 |
| Creatinine | 1.00 | 0.93, 1.06 | 0.93 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S80. Survey-weighted generalised linear model adjusted with MW for 28-day mortality of cohort 5

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| RI | 1.93 | 1.64, 2.28 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.012 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.92 | 0.77, 1.10 | 0.36 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.05 | 0.60, 1.86 | 0.861 |
| White | 1.19 | 0.71, 1.98 | 0.512 |
| Other | 1.73 | 1.02, 2.94 | 0.042 |
| Weight | 0.99 | 0.99, 1.00 | 0.002 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.14 | 1.10, 1.19 | <0.001 |
| Charlson comorbidity index | 1.11 | 1.05, 1.17 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.82 | 0.31, 2.17 | 0.692 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.81 | 0.56, 1.15 | 0.239 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.84 | 0.56, 1.26 | 0.388 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.01 | 1.34, 2.99 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.66 | 1.35, 2.05 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.77, 1.15 | 0.569 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.82, 1.21 | 0.951 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 0.86, 1.29 | 0.641 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.96 | 0.79, 1.18 | 0.709 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.13 | 0.88, 1.45 | 0.327 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.63 | 0.47, 0.86 | 0.003 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.73, 1.16 | 0.481 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.21 | 1.00, 1.47 | 0.055 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.57 | 0.43, 0.76 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.82 | 0.64, 1.06 | 0.126 |
| MAP | 1.00 | 1.00, 1.00 | 0.99 |
| Temperature | 0.85 | 0.78, 0.93 | <0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.107 |
| WBC count | 1.02 | 1.01, 1.03 | <0.001 |
| Hemoglobin | 1.01 | 0.97, 1.05 | 0.574 |
| Platelet | 1.00 | 1.00, 1.00 | 0.146 |
| pH | 0.85 | 0.30, 2.37 | 0.758 |
| PO2 | 1.00 | 1.00, 1.00 | 0.005 |
| PCO2 | 1.00 | 0.99, 1.01 | 0.976 |
| Lactate | 1.10 | 1.06, 1.15 | <0.001 |
| Creatinine | 1.00 | 0.94, 1.06 | 0.922 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S81. Multivariate Cox model adjusted with all covariates for ICU mortality of original cohort 5

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| SD | 1.00 | Reference |  |
| RI | 1.15 | 1.11, 1.20 | <0.001 |
| Age (time dependent) | 1.00 | 1.00, 1.00 | 0.006 |
| Gender (time dependent) |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.97 | 0.93, 1.00 | 0.081 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.72 | 0.49, 1.04 | 0.083 |
| White | 0.82 | 0.59, 1.15 | 0.247 |
| Other | 1.00 | 0.71, 1.40 | 0.994 |
| Weight (time dependent) | 1.00 | 1.00, 1.00 | 0.012 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| SOFA score (time dependent) | 1.02 | 1.02, 1.03 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.02 | 1.01, 1.03 | 0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.81 | 0.51, 1.31 | 0.394 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.74, 1.13 | 0.432 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.85, 1.02 | 0.109 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.86 | 1.42, 2.44 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.48 | 1.28, 1.72 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.98, 1.06 | 0.41 |
| Hypertension (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.98, 1.06 | 0.422 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.22 | 1.04, 1.41 | 0.012 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.85, 1.13 | 0.785 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.14 | 0.96, 1.35 | 0.126 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.75, 1.11 | 0.377 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.85 | 0.72, 0.99 | 0.035 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.83, 1.10 | 0.495 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.90 | 0.75, 1.08 | 0.27 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.03 | 0.87, 1.22 | 0.713 |
| MAP (time dependent) | 1.00 | 1.00, 1.00 | 0.404 |
| Temperature | 0.88 | 0.83, 0.93 | <0.001 |
| Heart rate (time dependent) | 1.00 | 1.00, 1.00 | 0.254 |
| WBC count | 1.01 | 1.00, 1.01 | 0.01 |
| Hemoglobin (time dependent) | 1.01 | 1.00, 1.02 | 0.105 |
| Platelet | 1.00 | 1.00, 1.00 | 0.384 |
| pH (time dependent) | 0.94 | 0.78, 1.12 | 0.487 |
| PO2 | 1.00 | 1.00, 1.00 | 0.021 |
| PCO2 | 1.00 | 1.00, 1.00 | 0.827 |
| Lactate (time dependent) | 1.02 | 1.01, 1.02 | <0.001 |
| Creatinine | 1.02 | 0.98, 1.06 | 0.368 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S82. Multivariate Cox model adjusted with MW for ICU mortality of cohort 5

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| SD | 1.00 | Reference |  |
| RI | 1.16 | 1.12, 1.21 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.012 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.94 | 0.81, 1.09 | 0.425 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.72 | 0.47, 1.10 | 0.132 |
| White | 0.81 | 0.56, 1.19 | 0.288 |
| Other | 1.00 | 0.68, 1.48 | 0.99 |
| Weight | 1.00 | 0.99, 1.00 | 0.227 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.00 | 0.011 |
| SOFA score (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| Charlson comorbidity index | 1.04 | 1.00, 1.09 | 0.058 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 0.54, 2.03 | 0.889 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.96 | 0.72, 1.26 | 0.748 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 0.70, 1.58 | 0.799 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.47 | 0.99, 2.18 | 0.053 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.47 | 1.23, 1.74 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.97, 1.08 | 0.363 |
| Hypertension (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.97, 1.07 | 0.524 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.25 | 1.05, 1.48 | 0.014 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.77, 1.09 | 0.305 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.85, 1.26 | 0.72 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.80, 1.24 | 0.986 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.79 | 0.66, 0.95 | 0.012 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.79, 1.10 | 0.429 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.86 | 0.70, 1.05 | 0.133 |
| Malignancy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.92, 1.04 | 0.49 |
| MAP (time dependent) | 1.00 | 1.00, 1.00 | 0.63 |
| Temperature | 0.89 | 0.84, 0.95 | <0.001 |
| Heart rate | 1.00 | 1.00, 1.00 | 0.65 |
| WBC count | 1.01 | 1.01, 1.02 | <0.001 |
| Hemoglobin (time dependent) | 1.01 | 1.00, 1.02 | 0.307 |
| Platelet | 1.00 | 1.00, 1.00 | 0.875 |
| pH (time dependent) | 0.91 | 0.73, 1.12 | 0.363 |
| PO2 | 1.00 | 1.00, 1.00 | 0.022 |
| PCO2 | 1.00 | 0.99, 1.00 | 0.124 |
| Lactate (time dependent) | 1.02 | 1.01, 1.03 | <0.001 |
| Creatinine | 1.01 | 0.97, 1.06 | 0.587 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S83. Multivariate logistic model adjusted with all covariates for ICU mortality of original cohort 5

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| RI | 2.33 | 1.97, 2.75 | <0.001 |
| Age | 1.00 | 1.00, 1.01 | 0.385 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.81 | 0.69, 0.95 | 0.011 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.71 | 0.43, 1.20 | 0.203 |
| White | 0.77 | 0.49, 1.22 | 0.256 |
| Other | 1.17 | 0.73, 1.89 | 0.512 |
| Weight | 1.00 | 0.99, 1.00 | 0.068 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.14 | 1.10, 1.18 | <0.001 |
| Charlson comorbidity index | 1.09 | 1.04, 1.15 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.59 | 0.30, 1.18 | 0.126 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.90 | 0.68, 1.20 | 0.454 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.54 | 0.37, 0.78 | <0.001 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.00 | 1.41, 2.85 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.40 | 1.16, 1.69 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.82, 1.18 | 0.836 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.14 | 0.96, 1.36 | 0.146 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.11 | 0.92, 1.35 | 0.284 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.84, 1.21 | 0.912 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.86, 1.36 | 0.489 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.76, 1.32 | 0.974 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.84 | 0.69, 1.04 | 0.105 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 0.88, 1.26 | 0.578 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.58 | 0.45, 0.76 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 0.84, 1.33 | 0.634 |
| MAP | 1.00 | 1.00, 1.00 | 0.716 |
| Temperature | 0.85 | 0.79, 0.91 | <0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.016 |
| WBC count | 1.00 | 1.00, 1.01 | 0.167 |
| Hemoglobin | 1.02 | 0.98, 1.05 | 0.351 |
| Platelet | 1.00 | 1.00, 1.00 | 0.131 |
| pH | 1.14 | 0.49, 2.66 | 0.769 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.14 |
| Lactate | 1.11 | 1.07, 1.15 | <0.001 |
| Creatinine | 0.98 | 0.93, 1.04 | 0.555 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S84. Multivariate logistic model adjusted with MW for ICU mortality of cohort 5

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| RI | 2.31 | 1.88, 2.86 | <0.001 |
| Age | 1.00 | 0.99, 1.01 | 0.536 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.86 | 0.69, 1.07 | 0.177 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.87 | 0.43, 1.77 | 0.692 |
| White | 0.88 | 0.47, 1.66 | 0.679 |
| Other | 1.30 | 0.69, 2.52 | 0.425 |
| Weight | 1.00 | 0.99, 1.00 | 0.297 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.14 | 1.09, 1.20 | <0.001 |
| Charlson comorbidity index | 1.08 | 1.01, 1.15 | 0.018 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.26, 3.73 | 0.882 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.60, 1.51 | 0.81 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.76 | 0.47, 1.20 | 0.25 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.71 | 1.09, 2.74 | 0.022 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.45 | 1.11, 1.89 | 0.006 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.76, 1.25 | 0.866 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.13 | 0.88, 1.44 | 0.335 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.11 | 0.86, 1.43 | 0.439 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.72, 1.20 | 0.575 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.75, 1.38 | 0.918 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.13 | 0.79, 1.62 | 0.511 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.80 | 0.60, 1.07 | 0.127 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.80, 1.31 | 0.847 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.56 | 0.41, 0.78 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.68, 1.27 | 0.62 |
| MAP | 1.00 | 0.99, 1.00 | 0.771 |
| Temperature | 0.86 | 0.78, 0.96 | 0.006 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.33 |
| WBC count | 1.02 | 1.00, 1.03 | 0.01 |
| Hemoglobin | 1.02 | 0.97, 1.07 | 0.489 |
| Platelet | 1.00 | 1.00, 1.00 | 0.86 |
| pH | 1.17 | 0.37, 3.77 | 0.79 |
| PO2 | 1.00 | 1.00, 1.00 | 0.002 |
| PCO2 | 1.00 | 0.99, 1.01 | 0.913 |
| Lactate | 1.13 | 1.07, 1.19 | <0.001 |
| Creatinine | 0.98 | 0.92, 1.05 | 0.57 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S85. Survey-weighted generalised linear model adjusted with MW for ICU mortality of cohort 5

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| RI | 2.31 | 1.95, 2.75 | <0.001 |
| Age | 1.00 | 0.99, 1.01 | 0.486 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.86 | 0.71, 1.04 | 0.113 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.87 | 0.48, 1.56 | 0.635 |
| White | 0.88 | 0.52, 1.47 | 0.615 |
| Other | 1.30 | 0.76, 2.23 | 0.335 |
| Weight | 1.00 | 0.99, 1.00 | 0.238 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.14 | 1.10, 1.19 | <0.001 |
| Charlson comorbidity index | 1.08 | 1.02, 1.14 | 0.006 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.38, 2.19 | 0.827 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.64, 1.38 | 0.769 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.76 | 0.49, 1.18 | 0.223 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.71 | 1.12, 2.63 | 0.014 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.45 | 1.16, 1.80 | 0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.79, 1.21 | 0.842 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.13 | 0.92, 1.39 | 0.256 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.11 | 0.89, 1.38 | 0.373 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.75, 1.15 | 0.503 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.78, 1.32 | 0.903 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.13 | 0.82, 1.55 | 0.459 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.80 | 0.63, 1.02 | 0.072 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.83, 1.26 | 0.821 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.56 | 0.42, 0.75 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.70, 1.21 | 0.563 |
| MAP | 1.00 | 0.99, 1.00 | 0.751 |
| Temperature | 0.86 | 0.79, 0.94 | 0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.249 |
| WBC count | 1.02 | 1.01, 1.03 | 0.002 |
| Hemoglobin | 1.02 | 0.98, 1.06 | 0.411 |
| Platelet | 1.00 | 1.00, 1.00 | 0.833 |
| pH | 1.17 | 0.41, 3.34 | 0.767 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 0.99, 1.01 | 0.904 |
| Lactate | 1.13 | 1.08, 1.18 | <0.001 |
| Creatinine | 0.98 | 0.92, 1.04 | 0.525 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S86. Multivariate Cox model adjusted with all covariates for In-hospital mortality of original cohort 5

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| SD | 1.00 | Reference |  |
| RI | 1.16 | 1.12, 1.20 | <0.001 |
| Age (time dependent) | 1.00 | 1.00, 1.00 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.92 | 0.82, 1.03 | 0.134 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.75 | 0.53, 1.08 | 0.12 |
| White | 0.87 | 0.63, 1.19 | 0.378 |
| Other | 1.13 | 0.82, 1.56 | 0.442 |
| Weight (time dependent) | 1.00 | 1.00, 1.00 | 0.002 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| SOFA score (time dependent) | 1.02 | 1.02, 1.03 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.02 | 1.01, 1.03 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.79 | 0.50, 1.25 | 0.316 |
| NICOM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.93, 1.04 | 0.592 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.90 | 0.83, 0.97 | 0.008 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.95 | 1.53, 2.49 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.39 | 1.22, 1.59 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.98, 1.06 | 0.366 |
| Hypertension (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.96, 1.04 | 0.919 |
| AFIB (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.98, 1.06 | 0.427 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.87, 1.13 | 0.908 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.13 | 0.97, 1.32 | 0.12 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.73, 1.04 | 0.13 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.89 | 0.77, 1.03 | 0.123 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 0.94, 1.21 | 0.338 |
| Stroke (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.89, 0.99 | 0.012 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.03 | 0.89, 1.20 | 0.679 |
| MAP | 1.00 | 1.00, 1.00 | 0.719 |
| Temperature (time dependent) | 0.97 | 0.95, 0.98 | <0.001 |
| Heart rate (time dependent) | 1.00 | 1.00, 1.00 | 0.06 |
| WBC count | 1.01 | 1.00, 1.01 | 0.012 |
| Hemoglobin | 1.02 | 1.00, 1.05 | 0.052 |
| Platelet | 1.00 | 1.00, 1.00 | 0.356 |
| pH (time dependent) | 0.97 | 0.82, 1.14 | 0.715 |
| PO2 (time dependent) | 1.00 | 1.00, 1.00 | 0.037 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.246 |
| Lactate (time dependent) | 1.02 | 1.01, 1.02 | <0.001 |
| Creatinine (time dependent) | 1.00 | 0.99, 1.01 | 0.966 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S87. Multivariate Cox model adjusted with MW for In-hospital mortality of cohort 5

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| SD | 1.00 | Reference |  |
| RI | 1.17 | 1.13, 1.21 | <0.001 |
| Age (time dependent) | 1.00 | 1.00, 1.01 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.94 | 0.82, 1.08 | 0.397 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.82 | 0.55, 1.23 | 0.338 |
| White | 0.93 | 0.65, 1.34 | 0.694 |
| Other | 1.17 | 0.81, 1.69 | 0.413 |
| Weight | 1.00 | 0.99, 1.00 | 0.096 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.00 | 0.002 |
| SOFA score (time dependent) | 1.03 | 1.02, 1.04 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.01 | 1.00, 1.03 | 0.01 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.53, 1.90 | 0.987 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.71, 1.18 | 0.494 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.63, 1.20 | 0.395 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.73 | 1.26, 2.38 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.37 | 1.17, 1.61 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.97, 1.05 | 0.678 |
| Hypertension (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.95, 1.03 | 0.57 |
| AFIB (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.03 | 0.98, 1.08 | 0.279 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.79, 1.08 | 0.31 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 0.89, 1.27 | 0.511 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.74, 1.11 | 0.331 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.74, 1.03 | 0.112 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.90, 1.21 | 0.587 |
| Stroke (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.88, 0.98 | 0.01 |
| Malignancy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.97 | 0.92, 1.02 | 0.205 |
| MAP | 1.00 | 1.00, 1.00 | 0.959 |
| Temperature | 0.90 | 0.85, 0.94 | <0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.147 |
| WBC count | 1.01 | 1.01, 1.02 | <0.001 |
| Hemoglobin | 1.02 | 0.99, 1.05 | 0.213 |
| Platelet | 1.00 | 1.00, 1.00 | 0.804 |
| pH (time dependent) | 0.96 | 0.79, 1.16 | 0.657 |
| PO2 (time dependent) | 1.00 | 1.00, 1.00 | 0.056 |
| PCO2 | 1.00 | 0.99, 1.00 | 0.646 |
| Lactate (time dependent) | 1.02 | 1.01, 1.03 | <0.001 |
| Creatinine | 1.00 | 0.96, 1.04 | 0.882 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S88. Multivariate logistic model adjusted with all covariates for In-hospital mortality of original cohort 5

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| RI | 2.11 | 1.80, 2.49 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.032 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.83 | 0.71, 0.97 | 0.017 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 0.80 | 0.48, 1.33 | 0.38 |
| White | 0.88 | 0.56, 1.38 | 0.569 |
| Other | 1.49 | 0.95, 2.38 | 0.089 |
| Weight | 1.00 | 0.99, 1.00 | 0.02 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.13 | 1.10, 1.17 | <0.001 |
| Charlson comorbidity index | 1.10 | 1.05, 1.15 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.67 | 0.34, 1.33 | 0.244 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.79 | 0.60, 1.04 | 0.093 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.61 | 0.43, 0.86 | 0.005 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.16 | 1.55, 3.03 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.38 | 1.15, 1.65 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.80, 1.13 | 0.588 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.91, 1.28 | 0.381 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 0.89, 1.28 | 0.514 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 0.89, 1.26 | 0.547 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.87, 1.34 | 0.51 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.73 | 0.56, 0.95 | 0.018 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.75, 1.11 | 0.356 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.21 | 1.02, 1.44 | 0.025 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.56 | 0.43, 0.72 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.73, 1.13 | 0.386 |
| MAP | 1.00 | 1.00, 1.00 | 0.87 |
| Temperature | 0.87 | 0.81, 0.93 | <0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | 0.005 |
| WBC count | 1.01 | 1.00, 1.01 | 0.056 |
| Hemoglobin | 1.00 | 0.96, 1.03 | 0.807 |
| Platelet | 1.00 | 1.00, 1.00 | 0.202 |
| pH | 1.15 | 0.50, 2.62 | 0.743 |
| PO2 | 1.00 | 1.00, 1.00 | <0.001 |
| PCO2 | 1.00 | 1.00, 1.01 | 0.19 |
| Lactate | 1.09 | 1.06, 1.13 | <0.001 |
| Creatinine | 0.97 | 0.93, 1.02 | 0.32 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S89. Multivariate logistic model adjusted with MW for In-hospital mortality of cohort 5

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| RI | 2.10 | 1.72, 2.57 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.124 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.85 | 0.69, 1.06 | 0.143 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.04 | 0.53, 2.09 | 0.911 |
| White | 1.06 | 0.57, 1.98 | 0.863 |
| Other | 1.73 | 0.92, 3.31 | 0.093 |
| Weight | 1.00 | 0.99, 1.00 | 0.176 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.15 | 1.10, 1.20 | <0.001 |
| Charlson comorbidity index | 1.09 | 1.02, 1.16 | 0.01 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 0.32, 4.40 | 0.887 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.80 | 0.51, 1.26 | 0.333 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.81 | 0.52, 1.26 | 0.359 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.96 | 1.27, 3.07 | 0.003 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.42 | 1.10, 1.83 | 0.007 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.72, 1.16 | 0.437 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.80, 1.29 | 0.871 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 0.84, 1.38 | 0.566 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.77, 1.25 | 0.879 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 0.78, 1.43 | 0.72 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.77 | 0.54, 1.08 | 0.131 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.90 | 0.68, 1.19 | 0.459 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.14 | 0.90, 1.45 | 0.271 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.53 | 0.38, 0.73 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.77 | 0.57, 1.04 | 0.092 |
| MAP | 1.00 | 1.0, 1.01 | 0.958 |
| Temperature | 0.87 | 0.79, 0.96 | 0.007 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.061 |
| WBC count | 1.02 | 1.01, 1.03 | 0.006 |
| Hemoglobin | 1.00 | 0.95, 1.05 | 0.919 |
| Platelet | 1.00 | 1.00, 1.00 | 0.904 |
| pH | 0.98 | 0.31, 3.11 | 0.979 |
| PO2 | 1.00 | 1.00, 1.00 | 0.013 |
| PCO2 | 1.00 | 0.99, 1.01 | 0.894 |
| Lactate | 1.11 | 1.05, 1.17 | <0.001 |
| Creatinine | 0.98 | 0.92, 1.05 | 0.609 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S90. Survey-weighted generalised linear model adjusted with MW for In-hospital mortality of cohort 5

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SD | 1.00 | Reference |  |
| RI | 2.10 | 1.78, 2.47 | <0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.08 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.85 | 0.71, 1.02 | 0.079 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.04 | 0.58, 1.85 | 0.894 |
| White | 1.06 | 0.63, 1.78 | 0.837 |
| Other | 1.73 | 1.01, 2.96 | 0.046 |
| Weight | 1.00 | 0.99, 1.00 | 0.119 |
| SAPS II | 1.02 | 1.01, 1.03 | <0.001 |
| SOFA score | 1.15 | 1.10, 1.19 | <0.001 |
| Charlson comorbidity index | 1.09 | 1.03, 1.15 | 0.003 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 0.47, 2.58 | 0.83 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.80 | 0.56, 1.14 | 0.215 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.81 | 0.54, 1.22 | 0.317 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.96 | 1.31, 2.92 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.42 | 1.15, 1.74 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.74, 1.11 | 0.352 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.84, 1.24 | 0.846 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 0.87, 1.32 | 0.495 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.98 | 0.80, 1.20 | 0.855 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 0.82, 1.36 | 0.669 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.77 | 0.57, 1.04 | 0.084 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.90 | 0.72, 1.13 | 0.373 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.14 | 0.94, 1.39 | 0.184 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.53 | 0.39, 0.71 | <0.001 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.77 | 0.60, 0.99 | 0.041 |
| MAP | 1.00 | 1.00, 1.00 | 0.953 |
| Temperature | 0.87 | 0.80, 0.95 | 0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.026 |
| WBC count | 1.02 | 1.01, 1.03 | <0.001 |
| Hemoglobin | 1.00 | 0.96, 1.04 | 0.904 |
| Platelet | 1.00 | 1.00, 1.00 | 0.883 |
| pH | 0.98 | 0.35, 2.73 | 0.977 |
| PO2 | 1.00 | 1.00, 1.00 | 0.004 |
| PCO2 | 1.00 | 0.99, 1.01 | 0.885 |
| Lactate | 1.11 | 1.06, 1.16 | <0.001 |
| Creatinine | 0.98 | 0.93, 1.04 | 0.57 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S91. Multivariate Cox model adjusted with all covariates for 28-day mortality of original cohort 6

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SI | 1.00 | Reference |  |
| RI | 1.10 | 0.97, 1.25 | 0.144 |
| Age | 1.01 | 1.01, 1.02 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.95 | 0.83, 1.09 | 0.483 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.23 | 0.79, 1.93 | 0.358 |
| White | 1.29 | 0.86, 1.94 | 0.214 |
| Other | 1.47 | 0.97, 2.22 | 0.072 |
| Weight (time dependent) | 1.00 | 1.00, 1.00 | 0.162 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.00 | 0.005 |
| SOFA score (time dependent) | 1.04 | 1.03, 1.05 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.02 | 1.01, 1.03 | 0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.55, 2.12 | 0.814 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.96 | 0.75, 1.23 | 0.747 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.92, 1.10 | 0.881 |
| Sedative therapy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.16 | 1.06, 1.26 | <0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.43 | 1.21, 1.68 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.97, 1.07 | 0.401 |
| Hypertension (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.96, 1.06 | 0.68 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.20 | 1.02, 1.41 | 0.025 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.99, 1.09 | 0.119 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.23 | 1.02, 1.49 | 0.029 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.82 | 0.67, 1.01 | 0.062 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.79, 1.11 | 0.445 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.89, 1.21 | 0.653 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.86 | 0.70, 1.07 | 0.18 |
| Malignancy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.96 | 0.91, 1.02 | 0.193 |
| MAP | 1.00 | 0.99, 1.00 | 0.188 |
| Temperature | 0.89 | 0.84, 0.94 | <0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.057 |
| WBC count | 1.00 | 1.00, 1.01 | 0.159 |
| Hemoglobin (time dependent) | 1.00 | 0.99, 1.01 | 0.812 |
| Platelet | 1.00 | 1.00, 1.00 | 0.01 |
| pH (time dependent) | 0.88 | 0.72, 1.09 | 0.242 |
| PO2 | 1.00 | 1.00, 1.00 | 0.004 |
| PCO2 | 1.00 | 0.99, 1.00 | 0.571 |
| Lactate (time dependent) | 1.02 | 1.01, 1.02 | <0.001 |
| Creatinine | 1.00 | 0.97, 1.04 | 0.83 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S92. Multivariate Cox model adjusted with MW for 28-day mortality of cohort 6

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| SI | 1.00 | Reference |  |
| RI | 1.03 | 0.99, 1.07 | 0.196 |
| Age | 1.01 | 1.01, 1.02 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.95 | 0.82, 1.09 | 0.439 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.11 | 0.70, 1.76 | 0.664 |
| White | 1.17 | 0.77, 1.78 | 0.449 |
| Other | 1.35 | 0.88, 2.06 | 0.173 |
| Weight (time dependent) | 1.00 | 1.00, 1.00 | 0.383 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.00 | 0.005 |
| SOFA score (time dependent) | 1.04 | 1.03, 1.05 | <0.001 |
| Charlson comorbidity index (time dependent) | 1.02 | 1.01, 1.03 | 0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.09 | 0.50, 2.40 | 0.822 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.70, 1.21 | 0.547 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.92, 1.10 | 0.915 |
| Sedative therapy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.16 | 1.06, 1.27 | 0.001 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.44 | 1.22, 1.71 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 0.90, 1.23 | 0.533 |
| Hypertension (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.96, 1.06 | 0.705 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.21 | 1.03, 1.43 | 0.024 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.13 | 0.96, 1.33 | 0.137 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.20 | 0.99, 1.46 | 0.061 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.84 | 0.68, 1.04 | 0.105 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.77, 1.09 | 0.333 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 0.92, 1.26 | 0.381 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.83 | 0.67, 1.04 | 0.101 |
| Malignancy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.90, 1.01 | 0.075 |
| MAP | 1.00 | 0.99, 1.00 | 0.133 |
| Temperature | 0.89 | 0.84, 0.94 | <0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.075 |
| WBC count | 1.01 | 1.00, 1.01 | 0.007 |
| Hemoglobin (time dependent) | 1.00 | 0.99, 1.01 | 0.946 |
| Platelet | 1.00 | 1.00, 1.00 | 0.02 |
| pH (time dependent) | 0.89 | 0.73, 1.10 | 0.277 |
| PO2 | 1.00 | 1.00, 1.00 | 0.005 |
| PCO2 | 1.00 | 0.99, 1.00 | 0.517 |
| Lactate (time dependent) | 1.02 | 1.01, 1.03 | <0.001 |
| Creatinine | 1.00 | 0.96, 1.04 | 0.973 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S93. Multivariate logistic model adjusted with all covariates for 28-day mortality of original cohort 6

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SI | 1.00 | Reference |  |
| RI | 1.11 | 0.92, 1.35 | 0.272 |
| Age | 1.02 | 1.01, 1.03 | 0.003 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.94 | 0.77, 1.16 | 0.567 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.22 | 0.61, 2.47 | 0.581 |
| White | 1.20 | 0.64, 2.30 | 0.57 |
| Other | 1.58 | 0.82, 3.09 | 0.178 |
| Weight | 1.00 | 0.99, 1.00 | 0.055 |
| SAPS II | 1.01 | 1.00, 1.02 | 0.004 |
| SOFA score | 1.17 | 1.12, 1.22 | <0.001 |
| Charlson comorbidity index | 1.12 | 1.05, 1.19 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.11 | 0.42, 3.05 | 0.838 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.88 | 0.59, 1.32 | 0.539 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.68, 1.58 | 0.855 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.93 | 1.26, 2.97 | 0.003 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.74 | 1.37, 2.21 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.03 | 0.82, 1.30 | 0.781 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.97 | 0.77, 1.22 | 0.791 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.23 | 0.97, 1.56 | 0.083 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.11 | 0.89, 1.41 | 0.355 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.41 | 1.05, 1.89 | 0.021 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.60 | 0.43, 0.85 | 0.003 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.96 | 0.74, 1.24 | 0.749 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.13 | 0.90, 1.41 | 0.309 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.70 | 0.50, 0.96 | 0.027 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.65, 1.16 | 0.346 |
| MAP | 1.00 | 0.99, 1.00 | 0.229 |
| Temperature | 0.84 | 0.76, 0.92 | <0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | 0.026 |
| WBC count | 1.01 | 1.00, 1.02 | 0.035 |
| Hemoglobin | 0.98 | 0.94, 1.03 | 0.45 |
| Platelet | 1.00 | 1.00, 1.00 | 0.012 |
| pH | 0.66 | 0.22, 1.97 | 0.46 |
| PO2 | 1.00 | 1.00, 1.00 | 0.002 |
| PCO2 | 1.00 | 0.99, 1.01 | 0.786 |
| Lactate | 1.10 | 1.05, 1.16 | <0.001 |
| Creatinine | 1.02 | 0.95, 1.08 | 0.642 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S94. Multivariate logistic model adjusted with MW for 28-day mortality of cohort 6

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SI | 1.00 | Reference |  |
| RI | 1.10 | 0.90, 1.35 | 0.349 |
| Age | 1.01 | 1.00, 1.03 | 0.007 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.93 | 0.75, 1.16 | 0.543 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.05 | 0.49, 2.28 | 0.902 |
| White | 1.08 | 0.53, 2.20 | 0.836 |
| Other | 1.41 | 0.68, 2.95 | 0.351 |
| Weight | 1.00 | 0.99, 1.00 | 0.143 |
| SAPS II | 1.02 | 1.00, 1.03 | 0.004 |
| SOFA score | 1.16 | 1.11, 1.22 | <0.001 |
| Charlson comorbidity index | 1.12 | 1.04, 1.19 | 0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.30, 4.32 | 0.912 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.55, 1.38 | 0.551 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.65, 1.60 | 0.92 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.00 | 1.27, 3.18 | 0.003 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.80 | 1.39, 2.34 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.77, 1.27 | 0.929 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.97 | 0.76, 1.24 | 0.815 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.26 | 0.98, 1.62 | 0.076 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 0.86, 1.41 | 0.453 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.37 | 1.00, 1.88 | 0.049 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.62 | 0.43, 0.89 | 0.009 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.72, 1.26 | 0.736 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 0.91, 1.49 | 0.218 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.68 | 0.48, 0.95 | 0.026 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.81 | 0.59, 1.10 | 0.177 |
| MAP | 1.00 | 0.99, 1.00 | 0.168 |
| Temperature | 0.85 | 0.76, 0.94 | 0.002 |
| Heart rate | 1.01 | 1.00, 1.01 | 0.054 |
| WBC count | 1.02 | 1.01, 1.03 | 0.005 |
| Hemoglobin | 0.99 | 0.94, 1.04 | 0.569 |
| Platelet | 1.00 | 1.00, 1.00 | 0.048 |
| pH | 0.68 | 0.21, 2.20 | 0.516 |
| PO2 | 1.00 | 1.00, 1.00 | 0.006 |
| PCO2 | 1.00 | 0.99, 1.01 | 0.888 |
| Lactate | 1.12 | 1.06, 1.18 | <0.001 |
| Creatinine | 1.01 | 0.94, 1.08 | 0.876 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S95. Survey-weighted generalised linear model adjusted with MW for 28-day mortality of cohort 6

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SI | 1.00 | Reference |  |
| RI | 1.10 | 0.91, 1.34 | 0.321 |
| Age | 1.01 | 1.00, 1.03 | 0.006 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.93 | 0.76, 1.15 | 0.517 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.05 | 0.50, 2.18 | 0.897 |
| White | 1.08 | 0.55, 2.11 | 0.828 |
| Other | 1.41 | 0.70, 2.84 | 0.33 |
| Weight | 1.00 | 0.99, 1.00 | 0.123 |
| SAPS II | 1.02 | 1.01, 1.03 | 0.002 |
| SOFA score | 1.16 | 1.11, 1.22 | <0.001 |
| Charlson comorbidity index | 1.12 | 1.05, 1.19 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.33, 3.48 | 0.903 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.56, 1.34 | 0.523 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.64, 1.63 | 0.922 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 2.00 | 1.25, 3.19 | 0.004 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.80 | 1.41, 2.29 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.78, 1.25 | 0.924 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.97 | 0.77, 1.22 | 0.804 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.26 | 0.99, 1.60 | 0.058 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 0.87, 1.39 | 0.424 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.37 | 1.02, 1.84 | 0.036 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.62 | 0.43, 0.87 | 0.006 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.73, 1.24 | 0.72 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 0.92, 1.47 | 0.194 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.68 | 0.48, 0.95 | 0.023 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.81 | 0.61, 1.07 | 0.138 |
| MAP | 1.00 | 0.99, 1.00 | 0.171 |
| Temperature | 0.85 | 0.76, 0.94 | 0.002 |
| Heart rate | 1.01 | 1.00, 1.01 | 0.045 |
| WBC count | 1.02 | 1.00, 1.03 | 0.009 |
| Hemoglobin | 0.99 | 0.94, 1.03 | 0.554 |
| Platelet | 1.00 | 1.00, 1.00 | 0.033 |
| pH | 0.68 | 0.21, 2.16 | 0.51 |
| PO2 | 1.00 | 1.00, 1.00 | 0.004 |
| PCO2 | 1.00 | 0.99, 1.01 | 0.89 |
| Lactate | 1.12 | 1.06, 1.18 | <0.001 |
| Creatinine | 1.01 | 0.94, 1.08 | 0.871 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S96. Multivariate Cox model adjusted with all covariates for ICU mortality of original cohort 6

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SI | 1.00 | Reference |  |
| RI | 1.17 | 1.02, 1.35 | 0.029 |
| Age | 1.02 | 1.01, 1.02 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.91 | 0.79, 1.06 | 0.227 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.49 | 0.89, 2.49 | 0.128 |
| White | 1.63 | 1.02, 2.61 | 0.042 |
| Other | 1.73 | 1.07, 2.81 | 0.025 |
| Weight (time dependent) | 1.00 | 1.00, 1.00 | 0.353 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.00 | 0.035 |
| SOFA score (time dependent) | 1.04 | 1.03, 1.05 | <0.001 |
| Charlson comorbidity index | 1.03 | 0.99, 1.08 | 0.148 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.23 | 0.58, 2.63 | 0.594 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.76, 1.31 | 0.997 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.13 | 0.81, 1.57 | 0.475 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.33 | 0.96, 1.85 | 0.082 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.47 | 1.23, 1.75 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.03 | 0.98, 1.08 | 0.284 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.12 | 0.95, 1.32 | 0.179 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.32 | 1.11, 1.58 | 0.002 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.97, 1.08 | 0.389 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.16 | 0.95, 1.43 | 0.151 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.96 | 0.77, 1.20 | 0.726 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.89 | 0.73, 1.07 | 0.219 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.90 | 0.76, 1.07 | 0.25 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.89 | 0.71, 1.12 | 0.326 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.82 | 0.67, 1.02 | 0.071 |
| MAP | 1.00 | 0.99, 1.00 | 0.15 |
| Temperature | 0.89 | 0.84, 0.95 | <0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.347 |
| WBC count | 1.00 | 1.00, 1.01 | 0.092 |
| Hemoglobin (time dependent) | 1.00 | 0.99, 1.01 | 0.689 |
| Platelet | 1.00 | 1.00, 1.00 | 0.204 |
| pH (time dependent) | 0.83 | 0.66, 1.04 | 0.105 |
| PO2 | 1.00 | 1.00, 1.00 | 0.025 |
| PCO2 | 1.00 | 0.99, 1.00 | 0.39 |
| Lactate (time dependent) | 1.02 | 1.01, 1.03 | <0.001 |
| Creatinine | 1.02 | 0.98, 1.07 | 0.348 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S97. Multivariate Cox model adjusted with MW for ICU mortality of cohort 6

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SI | 1.00 | Reference |  |
| RI | 1.18 | 1.02, 1.37 | 0.027 |
| Age | 1.02 | 1.01, 1.02 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.90 | 0.77, 1.06 | 0.21 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.39 | 0.81, 2.37 | 0.229 |
| White | 1.55 | 0.95, 2.53 | 0.078 |
| Other | 1.67 | 1.02, 2.75 | 0.042 |
| Weight | 1.00 | 1.00, 1.00 | 0.749 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.00 | 0.044 |
| SOFA score (time dependent) | 1.04 | 1.03, 1.05 | <0.001 |
| Charlson comorbidity index | 1.03 | 0.98, 1.07 | 0.234 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.53 | 0.61, 3.80 | 0.363 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.97 | 0.72, 1.30 | 0.815 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.13 | 0.79, 1.61 | 0.506 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.33 | 0.93, 1.90 | 0.115 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.50 | 1.25, 1.80 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 0.92, 1.32 | 0.281 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.12 | 0.95, 1.33 | 0.184 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.35 | 1.12, 1.62 | 0.002 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.96, 1.08 | 0.516 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.10 | 0.89, 1.36 | 0.357 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.97 | 0.78, 1.22 | 0.819 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.86 | 0.70, 1.05 | 0.129 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.78, 1.12 | 0.471 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.86 | 0.68, 1.08 | 0.194 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.78 | 0.63, 0.97 | 0.024 |
| MAP | 1.00 | 0.99, 1.00 | 0.091 |
| Temperature | 0.89 | 0.83, 0.94 | <0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.378 |
| WBC count | 1.01 | 1.00, 1.01 | 0.002 |
| Hemoglobin (time dependent) | 1.00 | 0.99, 1.01 | 0.859 |
| Platelet | 1.00 | 1.00, 1.00 | 0.338 |
| pH (time dependent) | 0.83 | 0.66, 1.04 | 0.106 |
| PO2 | 1.00 | 1.00, 1.00 | 0.049 |
| PCO2 | 1.00 | 0.99, 1.00 | 0.336 |
| Lactate (time dependent) | 1.02 | 1.01, 1.03 | <0.001 |
| Creatinine | 1.02 | 0.98, 1.06 | 0.432 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S98. Multivariate logistic model adjusted with all covariates for ICU mortality of original cohort 6

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SI | 1.00 | Reference |  |
| RI | 1.39 | 1.14, 1.70 | 0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.029 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.85 | 0.69, 1.05 | 0.124 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.82 | 0.88, 3.83 | 0.11 |
| White | 1.82 | 0.94, 3.63 | 0.082 |
| Other | 2.11 | 1.07, 4.30 | 0.035 |
| Weight | 1.00 | 0.99, 1.00 | 0.302 |
| SAPS II | 1.02 | 1.01, 1.03 | 0.001 |
| SOFA score | 1.18 | 1.13, 1.23 | <0.001 |
| Charlson comorbidity index | 1.09 | 1.02, 1.16 | 0.007 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.35 | 0.51, 3.95 | 0.559 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.91 | 0.61, 1.36 | 0.637 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.85 | 0.54, 1.32 | 0.471 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.57 | 1.01, 2.46 | 0.048 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.52 | 1.19, 1.94 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.12 | 0.89, 1.42 | 0.345 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.17 | 0.93, 1.47 | 0.191 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.15 | 0.91, 1.47 | 0.247 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.12 | 0.88, 1.42 | 0.348 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.19 | 0.88, 1.60 | 0.255 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.97 | 0.69, 1.37 | 0.86 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.90 | 0.69, 1.17 | 0.412 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.0 | 0.79, 1.26 | 0.964 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.66 | 0.47, 0.91 | 0.011 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.93 | 0.69, 1.25 | 0.616 |
| MAP | 1.00 | 0.99, 1.00 | 0.294 |
| Temperature | 0.85 | 0.78, 0.94 | 0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | 0.045 |
| WBC count | 1.01 | 1.00, 1.02 | 0.043 |
| Hemoglobin | 1.00 | 0.95, 1.04 | 0.881 |
| Platelet | 1.00 | 1.00, 1.00 | 0.134 |
| pH | 0.86 | 0.29, 2.58 | 0.793 |
| PO2 | 1.00 | 1.00, 1.00 | 0.002 |
| PCO2 | 1.00 | 0.99, 1.01 | 0.636 |
| Lactate | 1.13 | 1.07, 1.19 | <0.001 |
| Creatinine | 1.01 | 0.94, 1.07 | 0.867 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S99. Multivariate logistic model adjusted with MW for ICU mortality of cohort 6

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SI | 1.00 | Reference |  |
| RI | 1.39 | 1.13, 1.72 | 0.002 |
| Age | 1.01 | 1.00, 1.02 | 0.041 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.84 | 0.67, 1.05 | 0.124 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.65 | 0.75, 3.74 | 0.223 |
| White | 1.72 | 0.83, 3.68 | 0.151 |
| Other | 2.00 | 0.95, 4.38 | 0.074 |
| Weight | 1.00 | 0.99, 1.00 | 0.516 |
| SAPS II | 1.02 | 1.01, 1.03 | 0.003 |
| SOFA score | 1.17 | 1.12, 1.23 | <0.001 |
| Charlson comorbidity index | 1.08 | 1.01, 1.16 | 0.018 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.59 | 0.42, 8.02 | 0.527 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.59, 1.49 | 0.78 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.82 | 0.51, 1.32 | 0.427 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.64 | 1.02, 2.67 | 0.044 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.56 | 1.20, 2.05 | 0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.84, 1.39 | 0.562 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.18 | 0.92, 1.52 | 0.187 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.19 | 0.92, 1.55 | 0.182 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.11 | 0.86, 1.44 | 0.432 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.15 | 0.83, 1.58 | 0.402 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.69, 1.44 | 0.975 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.88 | 0.66, 1.18 | 0.39 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.79, 1.31 | 0.877 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.63 | 0.44, 0.89 | 0.008 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.63, 1.20 | 0.385 |
| MAP | 1.00 | 0.99, 1.00 | 0.211 |
| Temperature | 0.86 | 0.77, 0.95 | 0.004 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.092 |
| WBC count | 1.02 | 1.00, 1.03 | 0.014 |
| Hemoglobin | 1.00 | 0.95, 1.05 | 0.866 |
| Platelet | 1.00 | 1.00, 1.00 | 0.368 |
| pH | 0.85 | 0.26, 2.78 | 0.782 |
| PO2 | 1.00 | 1.00, 1.00 | 0.007 |
| PCO2 | 1.00 | 0.99, 1.01 | 0.614 |
| Lactate | 1.14 | 1.08, 1.20 | <0.001 |
| Creatinine | 1.00 | 0.93, 1.07 | 0.947 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S100. Survey-weighted generalised linear model adjusted with MW for ICU mortality of cohort 6

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SI | 1.00 | Reference |  |
| RI | 1.39 | 1.14, 1.70 | 0.001 |
| Age | 1.01 | 1.00, 1.02 | 0.038 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.84 | 0.68, 1.04 | 0.101 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.65 | 0.81, 3.34 | 0.167 |
| White | 1.72 | 0.91, 3.27 | 0.097 |
| Other | 2.00 | 1.03, 3.90 | 0.041 |
| Weight | 1.00 | 0.99, 1.00 | 0.506 |
| SAPS II | 1.02 | 1.01, 1.03 | 0.001 |
| SOFA score | 1.17 | 1.12, 1.23 | <0.001 |
| Charlson comorbidity index | 1.08 | 1.02, 1.16 | 0.012 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.59 | 0.51, 4.92 | 0.423 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.60, 1.46 | 0.77 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.82 | 0.52, 1.32 | 0.417 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.64 | 1.03, 2.62 | 0.037 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.56 | 1.22, 2.01 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.85, 1.37 | 0.542 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.18 | 0.93, 1.50 | 0.161 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.19 | 0.93, 1.53 | 0.159 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.11 | 0.88, 1.40 | 0.393 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.15 | 0.85, 1.55 | 0.371 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.70, 1.41 | 0.974 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.88 | 0.67, 1.15 | 0.357 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.80, 1.30 | 0.871 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.63 | 0.44, 0.89 | 0.009 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.87 | 0.65, 1.16 | 0.34 |
| MAP | 1.00 | 0.99, 1.00 | 0.2 |
| Temperature | 0.86 | 0.78, 0.95 | 0.003 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.081 |
| WBC count | 1.02 | 1.00, 1.03 | 0.026 |
| Hemoglobin | 1.00 | 0.95, 1.05 | 0.862 |
| Platelet | 1.00 | 1.00, 1.00 | 0.331 |
| pH | 0.85 | 0.27, 2.69 | 0.776 |
| PO2 | 1.00 | 1.00, 1.00 | 0.005 |
| PCO2 | 1.00 | 0.99, 1.01 | 0.615 |
| Lactate | 1.14 | 1.08, 1.20 | <0.001 |
| Creatinine | 1.00 | 0.94, 1.07 | 0.944 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S101. Multivariate Cox model adjusted with all covariates for In-hospital mortality of original cohort 6

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SI | 1.00 | Reference |  |
| RI | 1.09 | 0.96, 1.25 | 0.185 |
| Age | 1.02 | 1.01, 1.02 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.92 | 0.81, 1.06 | 0.265 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.31 | 0.82, 2.10 | 0.253 |
| White | 1.42 | 0.92, 2.17 | 0.112 |
| Other | 1.49 | 0.96, 2.32 | 0.074 |
| Weight (time dependent) | 1.00 | 1.00, 1.00 | 0.064 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.00 | 0.029 |
| SOFA score (time dependent) | 1.04 | 1.03, 1.04 | <0.001 |
| Charlson comorbidity index | 1.05 | 1.01, 1.09 | 0.026 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.09 | 0.54, 2.21 | 0.816 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.96 | 0.75, 1.24 | 0.769 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.92, 1.10 | 0.831 |
| Sedative therapy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.15 | 1.05, 1.25 | 0.002 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.43 | 1.22, 1.68 | <0.001 |
| HF (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.98, 1.07 | 0.326 |
| Hypertension (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.96, 1.05 | 0.833 |
| AFIB (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.05 | 1.00, 1.10 | 0.055 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.02 | 0.97, 1.07 | 0.46 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.30 | 1.07, 1.57 | 0.009 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.88 | 0.72, 1.08 | 0.21 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.77, 1.10 | 0.347 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.96 | 0.82, 1.12 | 0.621 |
| Stroke (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.89, 1.01 | 0.075 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.86 | 0.71, 1.04 | 0.125 |
| MAP | 1.00 | 0.99, 1.00 | 0.146 |
| Temperature | 0.89 | 0.84, 0.94 | <0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.05 |
| WBC count | 1.00 | 1.00, 1.01 | 0.169 |
| Hemoglobin (time dependent) | 1.00 | 0.99, 1.01 | 0.936 |
| Platelet | 1.00 | 1.00, 1.00 | 0.243 |
| pH (time dependent) | 0.91 | 0.73, 1.12 | 0.362 |
| PO2 (time dependent) | 1.00 | 1.00, 1.00 | 0.053 |
| PCO2 | 1.00 | 0.99, 1.00 | 0.864 |
| Lactate (time dependent) | 1.02 | 1.01, 1.02 | <0.001 |
| Creatinine | 1.02 | 0.98, 1.06 | 0.333 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S102. Multivariate Cox model adjusted with MW for In-hospital mortality of cohort 6

| **Characteristic** | **HR1** | **95% CI1** | **p-value** |
| --- | --- | --- | --- |
| Group (time dependent) |  |  |  |
| SI | 1.00 | Reference |  |
| RI | 1.02 | 0.98, 1.07 | 0.265 |
| Age | 1.02 | 1.01, 1.02 | <0.001 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.92 | 0.80, 1.06 | 0.255 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.20 | 0.74, 1.95 | 0.458 |
| White | 1.32 | 0.85, 2.05 | 0.221 |
| Other | 1.39 | 0.88, 2.17 | 0.156 |
| Weight (time dependent) | 1.00 | 1.00, 1.00 | 0.183 |
| SAPS II (time dependent) | 1.00 | 1.00, 1.00 | 0.037 |
| SOFA score (time dependent) | 1.03 | 1.03, 1.04 | <0.001 |
| Charlson comorbidity index | 1.04 | 1.00, 1.09 | 0.033 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.28 | 0.56, 2.92 | 0.551 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.92 | 0.70, 1.21 | 0.541 |
| Mechanical ventilation (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.92, 1.10 | 0.866 |
| Sedative therapy (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.15 | 1.05, 1.26 | 0.003 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.44 | 1.21, 1.70 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.08 | 0.92, 1.27 | 0.335 |
| Hypertension (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.96, 1.05 | 0.947 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.23 | 1.03, 1.45 | 0.019 |
| T2DM (time dependent) |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.96, 1.06 | 0.627 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.25 | 1.03, 1.53 | 0.027 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.90 | 0.73, 1.11 | 0.323 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.90 | 0.75, 1.08 | 0.242 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.99 | 0.85, 1.17 | 0.945 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.82 | 0.66, 1.02 | 0.069 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.83 | 0.68, 1.00 | 0.052 |
| MAP | 1.00 | 0.99, 1.00 | 0.086 |
| Temperature | 0.89 | 0.84, 0.94 | <0.001 |
| Heart rate | 1.00 | 1.00, 1.01 | 0.054 |
| WBC count | 1.01 | 1.00, 1.01 | 0.006 |
| Hemoglobin | 1.01 | 0.97, 1.04 | 0.706 |
| Platelet | 1.00 | 1.00, 1.00 | 0.409 |
| pH (time dependent) | 0.92 | 0.75, 1.14 | 0.45 |
| PO2 (time dependent) | 1.00 | 1.00, 1.00 | 0.082 |
| PCO2 | 1.00 | 0.99, 1.00 | 0.8 |
| Lactate (time dependent) | 1.02 | 1.01, 1.03 | <0.001 |
| Creatinine | 1.02 | 0.98, 1.06 | 0.369 |
| 1HR = Hazard Ratio, CI = Confidence Interval | | | |

Table S103. Multivariate logistic model adjusted with all covariates for In-hospital mortality of original cohort 6

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SI | 1.00 | Reference |  |
| RI | 1.22 | 1.01, 1.48 | 0.042 |
| Age | 1.01 | 1.00, 1.02 | 0.015 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.91 | 0.74, 1.11 | 0.346 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.54 | 0.76, 3.18 | 0.234 |
| White | 1.50 | 0.79, 2.92 | 0.224 |
| Other | 1.97 | 1.01, 3.91 | 0.05 |
| Weight | 1.00 | 0.99, 1.00 | 0.266 |
| SAPS II | 1.01 | 1.00, 1.02 | 0.011 |
| SOFA score | 1.18 | 1.13, 1.23 | <0.001 |
| Charlson comorbidity index | 1.13 | 1.06, 1.20 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.39 | 0.53, 3.93 | 0.513 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.79 | 0.53, 1.18 | 0.256 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.00 | 0.65, 1.51 | 0.983 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.75 | 1.14, 2.70 | 0.01 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.58 | 1.24, 2.01 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.11 | 0.88, 1.40 | 0.371 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.83, 1.31 | 0.71 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.20 | 0.95, 1.52 | 0.127 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.18 | 0.94, 1.49 | 0.161 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.44 | 1.08, 1.93 | 0.015 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.71 | 0.51, 1.00 | 0.049 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.95 | 0.74, 1.24 | 0.715 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.01 | 0.80, 1.27 | 0.949 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.62 | 0.45, 0.85 | 0.003 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.89 | 0.67, 1.19 | 0.433 |
| MAP | 1.00 | 0.99, 1.00 | 0.472 |
| Temperature | 0.85 | 0.77, 0.94 | 0.001 |
| Heart rate | 1.01 | 1.00, 1.01 | 0.003 |
| WBC count | 1.01 | 1.00, 1.02 | 0.025 |
| Hemoglobin | 0.97 | 0.93, 1.02 | 0.254 |
| Platelet | 1.00 | 1.00, 1.00 | 0.094 |
| pH | 0.58 | 0.20, 1.72 | 0.329 |
| PO2 | 1.00 | 1.00, 1.00 | 0.006 |
| PCO2 | 1.00 | 0.99, 1.01 | 0.837 |
| Lactate | 1.10 | 1.05, 1.16 | <0.001 |
| Creatinine | 1.02 | 0.96, 1.09 | 0.548 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S104. Multivariate logistic model adjusted with MW for In-hospital mortality of cohort 6

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SI | 1.00 | Reference |  |
| RI | 1.21 | 0.98, 1.48 | 0.075 |
| Age | 1.01 | 1.00, 1.02 | 0.025 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.90 | 0.72, 1.12 | 0.356 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.33 | 0.61, 2.94 | 0.47 |
| White | 1.36 | 0.67, 2.82 | 0.403 |
| Other | 1.74 | 0.84, 3.69 | 0.143 |
| Weight | 1.00 | 0.99, 1.00 | 0.392 |
| SAPS II | 1.01 | 1.00, 1.02 | 0.016 |
| SOFA score | 1.18 | 1.13, 1.23 | <0.001 |
| Charlson comorbidity index | 1.12 | 1.05, 1.20 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.61 | 0.44, 7.30 | 0.493 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.76 | 0.48, 1.21 | 0.252 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.97 | 0.61, 1.51 | 0.878 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.81 | 1.15, 2.89 | 0.012 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.62 | 1.25, 2.11 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 0.83, 1.37 | 0.603 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 0.83, 1.36 | 0.649 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.26 | 0.98, 1.63 | 0.075 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.16 | 0.90, 1.49 | 0.248 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.39 | 1.01, 1.91 | 0.042 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.73 | 0.51, 1.05 | 0.093 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.71, 1.25 | 0.672 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.81, 1.33 | 0.777 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.60 | 0.43, 0.85 | 0.003 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.83 | 0.61, 1.14 | 0.249 |
| MAP | 1.00 | 0.99, 1.00 | 0.287 |
| Temperature | 0.86 | 0.77, 0.95 | 0.003 |
| Heart rate | 1.01 | 1.00, 1.01 | 0.008 |
| WBC count | 1.02 | 1.01, 1.03 | 0.003 |
| Hemoglobin | 0.98 | 0.93, 1.03 | 0.337 |
| Platelet | 1.00 | 1.00, 1.00 | 0.243 |
| pH | 0.60 | 0.18, 1.94 | 0.392 |
| PO2 | 1.00 | 1.00, 1.00 | 0.018 |
| PCO2 | 1.00 | 0.99, 1.01 | 0.979 |
| Lactate | 1.11 | 1.05, 1.18 | <0.001 |
| Creatinine | 1.02 | 0.95, 1.09 | 0.64 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |

Table S105. Survey-weighted generalised linear model adjusted with MW for In-hospital mortality of cohort 6

| **Characteristic** | **OR**1 | **95% CI**1 | **p-value** |
| --- | --- | --- | --- |
| Group |  |  |  |
| SI | 1.00 | Reference |  |
| RI | 1.21 | 0.99, 1.46 | 0.06 |
| Age | 1.01 | 1.00, 1.02 | 0.024 |
| Gender |  |  |  |
| Female | 1.00 | Reference |  |
| Male | 0.90 | 0.73, 1.11 | 0.326 |
| Race |  |  |  |
| Asian | 1.00 | Reference |  |
| Black | 1.33 | 0.65, 2.75 | 0.435 |
| White | 1.36 | 0.70, 2.63 | 0.365 |
| Other | 1.74 | 0.88, 3.45 | 0.114 |
| Weight | 1.00 | 0.99, 1.00 | 0.37 |
| SAPS II | 1.01 | 1.00, 1.02 | 0.009 |
| SOFA score | 1.18 | 1.13, 1.23 | <0.001 |
| Charlson comorbidity index | 1.12 | 1.05, 1.20 | <0.001 |
| PiCCO |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.61 | 0.57, 4.58 | 0.368 |
| NICOM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.76 | 0.49, 1.19 | 0.235 |
| Mechanical ventilation |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.97 | 0.62, 1.51 | 0.876 |
| Sedative therapy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.81 | 1.15, 2.84 | 0.01 |
| Albumin |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.62 | 1.27, 2.06 | <0.001 |
| HF |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.07 | 0.84, 1.35 | 0.583 |
| Hypertension |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.06 | 0.84, 1.34 | 0.631 |
| AFIB |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.26 | 0.99, 1.60 | 0.058 |
| T2DM |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.16 | 0.92, 1.47 | 0.217 |
| Renal |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.39 | 1.03, 1.87 | 0.031 |
| Liver |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.73 | 0.51, 1.04 | 0.08 |
| COPD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.94 | 0.72, 1.23 | 0.653 |
| CAD |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 1.04 | 0.82, 1.31 | 0.764 |
| Stroke |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.60 | 0.42, 0.85 | 0.004 |
| Malignancy |  |  |  |
| YES | 1.00 | Reference |  |
| NO | 0.83 | 0.62, 1.11 | 0.204 |
| MAP | 1.00 | 0.99, 1.00 | 0.27 |
| Temperature | 0.86 | 0.77, 0.95 | 0.003 |
| Heart rate | 1.01 | 1.00, 1.01 | 0.006 |
| WBC count | 1.02 | 1.01, 1.03 | 0.007 |
| Hemoglobin | 0.98 | 0.93, 1.02 | 0.321 |
| Platelet | 1.00 | 1.00, 1.00 | 0.213 |
| pH | 0.60 | 0.19, 1.88 | 0.38 |
| PO2 | 1.00 | 1.00, 1.00 | 0.014 |
| PCO2 | 1.00 | 0.99, 1.01 | 0.979 |
| Lactate | 1.11 | 1.05, 1.17 | <0.001 |
| Creatinine | 1.02 | 0.95, 1.09 | 0.628 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | |