

1 Appendix A: variables in each scoring system

| | Variable | SC1 | SC2 | SC3 | SC4 |
|----|--|-----------|-----------|-----------|-----------|
| 1 | age (years) | x | x | x | x |
| 2 | hospital length of stay before ICU admission (days) | x | | | |
| 3 | intra-hospital location before ICU admission | x | | | x |
| 4 | acquired immunodeficiency syndrome (AIDS) | x | | | |
| 5 | cancer | x | | | |
| 6 | haematological cancer | x | | | |
| 7 | cirrhosis | x | x | x | |
| 8 | chronic kidney disease | x | | | |
| 9 | heart failure (NYHA Class IV) | x | x | x | |
| 10 | diabetes | x | | | |
| 11 | hypertension | x | | | |
| 12 | human immunodeficiency virus (HIV) infection | x | | | x |
| 13 | use of vasoactive medication before ICU admission | x | | | x |
| 14 | ICU admission (planned or unplanned) | x | | | x |
| 15 | cardiovascular reason for ICU admission | x | | | x |
| 16 | hepatic reason for ICU admission | x | | | |
| 17 | digestive reason for ICU admission | x | | | |
| 18 | neurological reason for ICU admission | x | x | x | x |
| 19 | surgical status at ICU admission | x | | | x |
| 20 | anatomical site of surgery | x | | | x |
| 21 | nosocomial acute infection at ICU admission | x | x | x | x |
| 22 | respiratory acute infection at ICU admission | x | | | x |
| 23 | Glasgow Coma Scale (GCS) score | x | x | x | x |
| 24 | bilirubin level in the blood (mg/dL) | x | x | | x |
| 25 | body temperature (degrees Celsius) | x | x | x | x |
| 26 | creatinine level in the blood (mg/dL) | x | x | x | x |
| 27 | heart rate (beats/minutes) | x | x | x | x |
| 28 | leukocytes count (cells per μ L) | x | x | | |
| 29 | blood pH level | x | x | | x |
| 30 | platelets count (cells per μ L) | x | x | | x |
| 31 | systolic blood pressure (mm Hg) | x | x | x | x |
| 32 | oxygenation (PaO ₂ /FiO ₂ if ventilated, PaO ₂ if not ventilated) | x | x | x | x |
| | Total | 32 | 15 | 11 | 20 |

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Appendix B: The final multiple logistic regression model

| Variable | Level | Coeff | Weight | 95% CI |
|---|--------------------------|-------|--------|----------------|
| | (intercept) | -3.8 | -38 | [-4.70; -2.95] |
| age (years) | [40; 60) | 0.68 | 7 | [0.28; 1.08] |
| | [60; 70) | 1.04 | 10 | [0.41; 1.66] |
| | >=70 | 2.07 | 21 | [1.32; 2.82] |
| hospital length of stay | [14 ;28) | -0.6 | -6 | [-2.20; 0.68] |
| | >=28 | 1.43 | 14 | [-0.18; 2.92] |
| intra-hospital location | emergency room | 0.5 | 5 | [-0.06; 1.06] |
| | other | 0.37 | 4 | [-0.35; 1.08] |
| AIDS | yes | 0.5 | 5 | [-0.33; 1.30] |
| cancer | yes | -0.37 | -4 | [-2.01; 0.90] |
| haematological cancer | yes | 2.85 | 29 | [-1.42; 6.33] |
| heart failure (NYHA CLASS IV) | yes | 1.51 | 15 | [-0.13; 2.98] |
| cirrhosis | yes | 0.59 | 6 | [-1.57; 2.77] |
| chronic kidney disease | yes | -0.69 | -7 | [-1.49; 0.04] |
| hypertension | yes | -0.36 | -4 | [-0.81; 0.09] |
| diabetes | yes | 0.15 | 2 | [-0.39; 0.68] |
| hiv status | not tested | 0.18 | 2 | [-0.21; 0.57] |
| | positive | 0.4 | 4 | [-0.10; 0.90] |
| vasoactive drugs | yes | 0.34 | 3 | [-0.18; 0.85] |
| icu admission | unplanned | -0.79 | -8 | [-2.16; 0.61] |
| cardiovascular reason for icu admission | anaphylactic shock | 1.09 | 11 | [0.16; 2.02] |
| | hypovolemic shock | -0.09 | -1 | [-0.77; 0.57] |
| | rhythm disturbances | 0.54 | 5 | [-0.57; 1.58] |
| | septic shock | 0.09 | 1 | [-0.59; 0.74] |
| hepatic reason for icu admission | liver failure | -0.6 | -6 | [-2.71; 1.14] |
| digestive reason for icu admission | acute abdomen | -0.02 | 0 | [-0.63; 0.58] |
| | severe pancreatitis | 0.12 | 1 | [-0.93; 1.07] |
| neurological reason for icu admission | coma | 0.5 | 5 | [0.02; 0.97] |
| | focal neurologic deficit | 1.7 | 17 | [0.43; 2.89] |
| | intracranial mass effect | 0.44 | 4 | [-0.40; 1.24] |
| | seizures | -0.31 | -3 | [-1.17; 0.49] |
| surgical status | emergency surgery | 0.63 | 6 | [-0.71; 2.03] |
| | no surgery | 0.55 | 5 | [-0.82; 1.99] |
| anatomical site of surgery | cardiac surgery | 0.95 | 9 | [-2.95; 3.54] |
| | neurosurgery | 0.11 | 1 | [-0.87; 1.06] |
| | transplantation surgery | 0.86 | 9 | [-3.16; 3.71] |
| | trauma | -0.66 | -7 | [-1.24; -0.11] |
| nosocomial acute infection | yes | 0.53 | 5 | [-0.30; 1.37] |
| respiratory acute infection | yes | 0.07 | 1 | [-0.52; 0.64] |
| GCS score | 3-5 | 1.26 | 13 | [0.66; 1.87] |
| | 6 | 0.54 | 5 | [-0.27; 1.33] |
| | 7-12 | 0.03 | 0 | [-0.46; 0.50] |
| bilirubin (mg/dl) | [2 ; 6) | 0.49 | 5 | [-0.12; 1.07] |
| | >=6 | 0.82 | 8 | [-0.16; 1.75] |
| body temperature (degrees Celcius) | <35 | 0.58 | 6 | [0.07; 1.08] |
| creatinine (mg/dL) | [1.2; 2) | 0.6 | 6 | [0.14; 1.06] |

| | | | | |
|---------------------------------|--------------------------------|-------|----|---------------|
| | [2; 3.5) | 0.67 | 7 | [0.10; 1.24] |
| | >=3.5 | 1.2 | 12 | [0.65; 1.76] |
| heart rate (beats/minute) | [120 ;160) | 0.47 | 5 | [0.10; 0.85] |
| | >=160 | 1.06 | 11 | [-0.15; 2.24] |
| leukocytes count(cells/mcL) | >=15 | -0.21 | -2 | [-0.57; 0.15] |
| blood pH | >7.25 | 0.07 | 1 | [-0.33; 0.48] |
| platelets count (cells/mcL) | <20 | 0.22 | 2 | [-1.69; 1.71] |
| | [20; 50) | 0.3 | 3 | [-0.77; 1.30] |
| | [50; 100) | 0.35 | 4 | [-0.30; 0.99] |
| systolic blood pressure (mm hg) | [40 ; 70) | 1.09 | 11 | [0.11; 2.15] |
| | [70; 120) | 0.05 | 0 | [-0.31; 0.40] |
| oxygenation | PaO2 <60 and not ventilated | 0.07 | 1 | [-1.84; 1.53] |
| | PaO2/FiO2 <100 and ventilated | 0.89 | 9 | [-0.06; 1.82] |
| | PaO2/FiO2 >=100 and ventilated | 1.04 | 10 | [0.57; 1.53] |