

Table S1. Missing data

Characteristic	Missing values (%)		Approach to missing data
	Derivation [N=417,972]	Validation [N=417,974]	
<i>Chronic model</i>			
Age	0 (0.0)	0 (0.0)	N/A
Sex	0 (0.0)	0 (0.0)	N/A
BMI	45,913 (11.0)	45,994 (11.0)	Single imputation to population mean
Dependency prior to hospital admission	2,624 (0.6)	2,731 (0.7)	Separate variable for no evidence to assess past medical history
Severe comorbidities	2,624 (0.6)	2,731 (0.7)	Separate variable for no evidence to assess past medical history
Residence prior to admission	8 (<0.01)	4 (<0.01)	Assumed "Home"
Index of Multiple Deprivation	3,853 (0.9)	3,974 (1.0)	Separate categories for non-UK and unknown
<i>Acute model</i>			
Source of admission to the critical care unit	0 (0.0)	0 (0.0)	N/A
CPR within 24 hours prior to admission	10 (0.0)	6 (0.0)	Assumed "No"
LOS in hospital prior to admission	0 (0.0)	0 (0.0)	N/A
Primary reason for admission	16 (<0.01)	14 (<0.01)	Excluded
Level 3 care received	1,234 (0.3)	1,220 (0.3)	Assumed "No"
Mechanical ventilation	2,341 (0.6)	2,395 (0.6)	Assumed "No"
Neurological status	13,144 (3.1)	13,223 (3.2)	MI (ordered logit)
Highest heart rate	2,023 (0.5)	2,063 (0.5)	MI (linear)
Lowest respiratory rate	2,341 (0.6)	2,395 (0.6)	MI (log-linear)
Lowest systolic blood pressure	2,077 (0.5)	2,127 (0.5)	MI (linear)
Highest temperature	3,086 (0.7)	3,151 (0.8)	MI (linear)
PaO ₂ /FiO ₂ with lowest PaO ₂	46,984 (11.2)	47,527 (11.4)	MI (log-linear)
Lowest pH	46,964 (11.2)	47,514 (11.4)	MI (linear)
PaCO ₂ associated with lowest pH	47,007 (11.2)	47,553 (11.4)	MI (log-linear)
Highest blood lactate	52,554 (12.6)	53,164 (12.7)	MI (log-linear)
Urine output	12,341 (3.0)	12,353 (3.0)	MI (log-linear)
Highest serum sodium	15,096 (3.6)	15,275 (3.7)	MI (linear)
Highest serum urea	19,470 (4.7)	19,416 (4.6)	MI (log-linear)
Highest serum creatinine	18,154 (4.3)	18,202 (4.4)	MI (log-linear)
Lowest white blood cell count	18,192 (4.4)	18,183 (4.4)	MI (log-linear)
Lowest platelet count	18,396 (4.4)	18,266 (4.4)	MI (log-linear)

BMI: body mass index; CPR: cardiopulmonary resuscitation; LOS: length of stay; MI: multiple imputation using fully conditional specification; N/A: not applicable

Table S2. Chronic model (day 0)

Characteristic	Mean (SD) or n (%)	Coefficient (95% CI)	P value
Constant	-	-2.357 (-2.582, -2.134)	<0.001
Age (years) – RCS(26, 57, 71, 85)	61.5 (17.8)		<0.001
<i>age</i> ₁		0.037 (0.034, 0.041)	
<i>age</i> ₂		-0.009 (-0.014, -0.004)	
<i>age</i> ₃		0.036 (0.008, 0.064)	
Sex			<0.001
Female	187,459 (44.8)	0	
Male	230,513 (55.2)	0.129 (0.102, 0.156)	
BMI (kg m ⁻²) – RCS(19.2, 24.5, 27.3, 39.0)	27.1 (6.4)		<0.001
<i>bmi</i> ₁		-0.052 (-0.060, -0.044)	
<i>bmi</i> ₂		0.058 (0.016, 0.099)	
<i>bmi</i> ₃		-0.056 (-0.201, 0.088)	
Dependency prior to hospital admission	-		<0.001
Able to live without assistance in ADL	318,536 (76.2)	0	
Minor/major assistance with ADL	95,628 (22.9)	0.521 (0.457, 0.585)	
Total assistance with all ADL	3,808 (0.9)	0.820 (0.719, 0.921)	
Severe comorbidities ^a			
Cardiovascular	7,387 (1.8)	0.310 (0.235, 0.386)	<0.001
Respiratory	11,066 (2.6)	0.352 (0.290, 0.415)	<0.001
Renal	8,005 (1.9)	0.261 (0.181, 0.342)	<0.001
Hepatic	10,666 (2.6)	1.345 (1.198, 1.492)	<0.001
Haematological malignancy	8,130 (1.9)	1.172 (1.082, 1.262)	<0.001
Metastatic cancer	13,519 (3.2)	0.075 (-0.027, 0.177)	0.15
Immunocompromise	31,166 (7.5)	0.042 (-0.020, 0.103)	0.19
No evidence to assess past medical history	2,624 (0.6)	0.784 (0.642, 0.926)	<0.001
Residence prior to admission			<0.001
Home	409,035 (97.9)	0	
Nursing home or health-related institution	7,211 (1.7)	0.084 (0.016, 0.152)	
Hospice	61 (0.0)	-0.010 (-0.606, 0.586)	
No fixed abode or temporary abode	1,665 (0.4)	0.289 (0.130, 0.447)	
Index of Multiple Deprivation ^b (by quintile)			<0.001
1 (least deprived)	67,687 (16.2)	0	
2	75,653 (18.1)	0.008 (-0.031, 0.047)	
3	82,943 (19.8)	0.032 (-0.014, 0.077)	
4	88,091 (21.1)	0.120 (0.071, 0.170)	
5 (most deprived)	99,745 (23.9)	0.203 (0.143, 0.262)	
Non-UK	2,126 (0.5)	0.106 (-0.107, 0.319)	
Unknown	1,727 (0.4)	0.520 (0.337, 0.703)	
Time since 1 April 2009 (per year)	-	-0.051 (-0.061, -0.041)	<0.001
Month of admission			<0.001
January	35,946 (8.6)	0	
February	33,636 (8.0)	-0.050 (-0.086,	

		-0.013)
March	37,101 (8.9)	-0.066 (-0.102, -0.030)
April	32,447 (7.8)	-0.087 (-0.125, -0.050)
May	34,375 (8.2)	-0.161 (-0.199, -0.123)
June	33,777 (8.1)	-0.199 (-0.236, -0.161)
July	35,191 (8.4)	-0.234 (-0.274, -0.195)
August	33,452 (8.0)	-0.159 (-0.198, -0.120)
September	34,151 (8.2)	-0.223 (-0.257, -0.189)
October	36,505 (8.7)	-0.156 (-0.194, -0.118)
November	35,488 (8.5)	-0.116 (-0.151, -0.081)
December	35,903 (8.6)	-0.004 (-0.042, 0.034)

ADL, activities of daily living; BMI, body mass index; CI, confidence interval; RCS(k_1, \dots, k_n), restricted cubic spline with knots at positions k_1, \dots, k_n ; SD, standard deviation

^a APACHE II definitions, evident in 6 months prior to admission

^b IMD 2015 for England, Welsh IMD 2014 for Wales, Northern Ireland Multiple Deprivation Measure 2010 for Northern Ireland

Restricted cubic spline base variables x_1, \dots, x_{n-1} for covariate x with knots at k_1, \dots, k_n are calculated as:

$$x_1 = x$$

$$x_{j+1} = \{\max(x - k_j, 0)\}^3 - [(k_n - k_j) * \max(x - k_{n-1}, 0)]^3 - (k_{n-1} - k_j) * \max(x - k_n, 0)\}^3 / \{(k_n - k_1)^2\}, j = 1, \dots, n-2$$

Table S3. Acute model (day 0)

Characteristic	Mean (SD) or n (%)	Coefficient (95% CI)	P value
Constant	-	27.288 (24.777, 29.798)	<0.001
Source of admission to the critical care unit			<0.001
ED or not in hospital	111,839 (26.8)	0	
Theatre – planned admission following elective/scheduled surgery	88,499 (21.2)	-1.095 (-1.179, -1.010)	
Theatre – unplanned admission following elective/scheduled surgery	18,326 (4.4)	-0.689 (-0.776, -0.603)	
Theatre – admission following emergency/urgent surgery	78,910 (18.9)	-0.302 (-0.352, -0.253)	
Ward or intermediate care area	120,382 (28.8)	0.176 (0.139, 0.212)	
CPR within 24 hours prior to admission			<0.001
No CPR	392,247 (93.8)	0	
In-hospital CPR	13,318 (3.2)	0.466 (0.400, 0.531)	
Out-of-hospital CPR	12,391 (3.0)	0.985 (0.890, 1.079)	
LOS in hospital prior to admission (days)			<0.001
0	205,007 (49.0)	0	
1	103,058 (24.7)	0.134 (0.100, 0.167)	
2-7	75,251 (18.0)	0.511 (0.477, 0.544)	
8 or more	34,640 (8.3)	1.019 (0.976, 1.061)	
Primary reason for admission	-		<0.001
Individual conditions:			
Acute alcoholic hepatitis	576 (0.1)	1.105 (0.745, 1.465)	
Acute cholecystitis, gangrenous gall bladder or empyema of gall bladder	415 (0.1)	-0.236 (-0.675, 0.204)	
Anaphylaxis	1,424 (0.3)	-1.421 (-1.849, -0.994)	
Anoxic or ischaemic coma or encephalopathy	3,235 (0.8)	1.120 (0.735, 1.505)	
Asthma attack	4,884 (1.2)	-1.540 (-1.868, -1.213)	
Berry or other intracranial aneurysm	938 (0.2)	0.557 (0.021, 1.092)	
COPD with acute lower respiratory infection	3,238 (0.8)	0.343 (0.037, 0.649)	
Hanging or strangulation	660 (0.2)	0.845 (0.503, 1.188)	
Intracerebral haemorrhage	3,405 (0.8)	2.447 (2.136, 2.757)	
Lower limb artery stenosis or occlusion	3,060 (0.7)	0.682 (0.368, 0.996)	
Multiple rib fractures	1,354 (0.3)	-0.124 (-0.456, 0.208)	
Non-traumatic subdural haemorrhage	896 (0.2)	1.667 (1.348, 1.987)	
Pneumonia, no organism isolated	27,961 (6.7)	0.527 (0.243, 0.811)	
Pulmonary fibrosis or fibrosing alveolitis	607 (0.1)	2.456 (2.118, 2.794)	
Secondary hydrocephalus	219 (0.1)	1.297 (0.836, 1.757)	
Toxic or drug induced coma or	1,853 (0.4)	-0.380 (-0.731, -0.029)	

encephalopathy		
For all other admissions, by process (system):		
Accidental intoxication or poisoning (endocrine)	1,836 (0.4)	-1.041 (-1.390, -0.693)
Acidaemia (endocrine)	1,141 (0.3)	-0.201 (-0.530, 0.128)
Burns or hyperthermia (dermatological)	353 (0.1)	0.625 (0.177, 1.074)
Collapse (respiratory)	1,562 (0.4)	0.130 (-0.209, 0.469)
Coma or encephalopathy (neurological)	2,095 (0.5)	0.282 (-0.013, 0.577)
Congenital or acquired deformity or abnormality (cardiovascular)	596 (0.1)	0
Congenital or acquired deformity or abnormality (musculoskeletal)	7,636 (1.8)	-0.674 (-1.019, -0.330)
Congenital or acquired deformity or abnormality (neurological)	2,126 (0.5)	-0.132 (-0.496, 0.232)
Congenital or acquired deformity or abnormality (respiratory)	2,705 (0.6)	0.279 (-0.029, 0.588)
Congenital or acquired deformity or abnormality (other)	7,358 (1.8)	-0.142 (-0.455, 0.171)
Degeneration (cardiovascular)	134 (0.0)	-0.110 (-0.702, 0.481)
Degeneration (neurological)	158 (0.0)	1.336 (0.878, 1.795)
Diabetes mellitus (endocrine)	6,622 (1.6)	-1.684 (-1.999, -1.369)
Dissection or aneurysm (cardiovascular)	12,167 (2.9)	0.377 (0.087, 0.668)
Failure (cardiovascular)	3,722 (0.9)	0.480 (0.183, 0.777)
Failure (genitourinary)	16,649 (4.0)	0.050 (-0.241, 0.342)
Haemolysis or thrombocytopaenia (haematological/immunological)	378 (0.1)	0.021 (-0.404, 0.446)
Haemorrhage (cardiovascular)	468 (0.1)	-0.108 (-0.584, 0.369)
Haemorrhage (gastrointestinal)	9,402 (2.3)	0.254 (-0.034, 0.541)
Haemorrhage (genitourinary)	3,093 (0.7)	-1.393 (-1.777, -1.010)
Haemorrhage (neurological)	3,796 (0.9)	1.957 (1.634, 2.280)
Haemorrhage (respiratory)	569 (0.1)	0.182 (-0.200, 0.564)
Hyperkalaemia (endocrine)	971 (0.2)	-0.157 (-0.483, 0.169)
Hypertension (cardiovascular) or over- or under-activity (cardiovascular or gastrointestinal)	10,766 (2.6)	0.141 (-0.128, 0.410)
Hypokalaemia (endocrine)	518 (0.1)	-0.114 (-0.530, 0.301)
Hyponatraemia (endocrine)	950 (0.2)	-0.688 (-1.049, -0.327)
Hypoplasia or dysplasia (haematological/immunological)	373 (0.1)	0.502 (0.099, 0.905)
Hypothermia (endocrine)	424 (0.1)	0.005 (-0.378, 0.387)
Infection (cardiovascular)	1,302 (0.3)	0.245 (-0.074, 0.565)
Infection (genitourinary)	6,491 (1.6)	-0.402 (-0.697, -0.107)
Infection (respiratory)	19,194 (4.6)	0.299 (0.014, 0.584)
Infection (other)	23,689 (5.7)	0.005 (-0.278, 0.288)
Inflammation (gastrointestinal)	9,793 (2.3)	0.324 (0.030, 0.618)
Inflammation (neurological)	685 (0.2)	-0.319 (-0.705, 0.068)
Inflammation (respiratory)	375 (0.1)	0.596 (0.155, 1.037)
Inflammation (other)	10,444 (2.5)	0.111 (-0.182, 0.405)
Obstruction (cardiovascular)	14,446 (3.5)	0.380 (0.112, 0.648)

Obstruction (gastrointestinal)	15,265 (3.7)	0.235 (-0.050, 0.521)	
Obstruction (genitourinary)	2,215 (0.5)	-0.294 (-0.621, 0.033)	
Obstruction (respiratory)	5,965 (1.4)	0.087 (-0.209, 0.383)	
Other endocrine processes ^a (endocrine)	1,785 (0.4)	-0.434 (-0.776, -0.092)	
Seizures (neurological)	9,792 (2.3)	-0.481 (-0.777, -0.186)	
Self intoxication or self poisoning (endocrine)	13,802 (3.3)	-1.346 (-1.651, -1.042)	
Shock or hypotension (cardiovascular)	6,995 (1.7)	0.337 (0.048, 0.626)	
Transplant or related (gastrointestinal)	1,640 (0.4)	-1.658 (-1.994, -1.323)	
Transplant or related (other)	688 (0.2)	-0.431 (-0.899, 0.037)	
Trauma, perforation or rupture (cardiovascular)	1,225 (0.3)	0.117 (-0.203, 0.436)	
Trauma, perforation or rupture (gastrointestinal)	21,081 (5.0)	0.136 (-0.145, 0.417)	
Trauma, perforation or rupture (neurological)	6,583 (1.6)	1.061 (0.770, 1.353)	
Trauma, perforation or rupture (other)	13,179 (3.2)	0.151 (-0.140, 0.441)	
Tumour or malignancy (genitourinary)	14,413 (3.5)	-0.044 (-0.348, 0.261)	
Tumour or malignancy (haematological/immunological)	1,430 (0.3)	0.499 (0.173, 0.824)	
Tumour or malignancy (neurological)	5,251 (1.3)	0.506 (0.190, 0.823)	
Tumour or malignancy (other)	46,947 (11.2)	0.542 (0.259, 0.826)	
Vascular (cardiovascular)	77 (0.0)	0.026 (-0.773, 1.353)	
Vascular (gastrointestinal)	3,391 (0.8)	0.607 (0.309, 0.905)	
Vascular (neurological)	5,784 (1.4)	1.120 (0.824, 1.416)	
Vascular (genitourinary)	546 (0.1)	-1.039 (-1.634, -0.444)	
Level 3 care received	188,160 (45.0)	0.069 (0.026, 0.113)	0.002
Mechanical ventilation	160,717 (38.5)	0.106 (0.062, 0.150)	0.001
Neurological status			<0.001
Lowest GCS 15	232,034 (57.3)	0	
Lowest GCS 14	40,396 (10.0)	0.363 (0.316, 0.409)	
Lowest GCS 7–13	44,950 (11.1)	0.614 (0.565, 0.663)	
Lowest GCS 4–6	6,692 (1.7)	1.251 (1.153, 1.348)	
Lowest GCS 3	10,161 (2.5)	1.881 (1.729, 2.033)	
Sedated for entire of first 24 hours	70,589 (17.4)	0.804 (0.760, 0.849)	
Highest heart rate (min ⁻¹) – RCS(70, 94, 111, 147)	104.9 (23.4)		<0.001
<i>hr</i> ₁		0.0009 (-0.0011, 0.0029)	
<i>hr</i> ₂		0.0213 (0.0147, 0.0280)	
<i>hr</i> ₃		-0.0693 (-0.0899, -0.0487)	
Lowest respiratory rate (min ⁻¹) – RRCS(8, 11, 14, 20)	12.9 (4.1)		<0.001
<i>rr</i> ₁		-0.0776 (-0.0840, -0.0712)	
<i>rr</i> ₂		-0.0022 (-0.0064, 0.0020)	

<i>rr</i> ₃		0.0034 (0.0004, 0.0065)	
<i>rr</i> ₄		-0.0018 (-0.0029, -0.0007)	
<i>rr</i> ₅		0.00041 (0.00030, 0.00053)	
Lowest systolic blood pressure (mmHg) – RCS(65, 88, 100, 130)	95.6 (20.0)		<0.001
<i>sbp</i> ₁		-0.0271 (-0.0290, -0.0253)	
<i>sbp</i> ₂		0.0444 (0.0384, 0.0504)	
<i>sbp</i> ₃		-0.1260 (-0.1526, -0.0994)	
Highest temperature (°C) – RCS(36.0, 37.2, 38.0, 39.2)	37.6 (1.0)		<0.001
<i>temp</i> ₁		-0.328 (-0.378, -0.278)	
<i>temp</i> ₂		0.185 (0.043, 0.328)	
<i>temp</i> ₃		-0.040 (-0.555, 0.476)	
PaO ₂ /FiO ₂ with lowest PaO ₂ (kPa) – RCS(10, 26, 40, 63)	34.4 (17.1)		<0.001
<i>pf</i> ₁		-0.0308 (-0.0340, -0.0276)	
<i>pf</i> ₂		0.0374 (0.0251, 0.0497)	
<i>pf</i> ₃		-0.0743 (-0.1100, -0.0386)	
Lowest pH (per 0.1) – RCS(7.07, 7.29, 7.36, 7.45)	7.31 (0.12)		<0.001
<i>ph</i> ₁		-0.110 (-0.137, -0.084)	
<i>ph</i> ₂		-0.097 (-0.141, -0.053)	
<i>ph</i> ₃		2.056 (1.564, 2.548)	
PaCO ₂ associated with lowest pH (kPa) – RCS(4.1, 5.6, 8.1)	5.9 (2.0)		<0.001
<i>pc</i> ₁		-0.0835 (-0.1016, -0.0654)	
<i>pc</i> ₂		0.0987 (0.0788, 0.1187)	
Highest blood lactate (mmol l ⁻¹) – RCS(0.7, 1.5, 2.5, 8.3)	2.8 (2.8)		<0.001
<i>bl</i> ₁		0.426 (0.368, 0.484)	
<i>bl</i> ₂		-3.995 (-4.978, -3.011)	
<i>bl</i> ₃		6.742 (4.990, 8.495)	
Urine output (ml) – RCS(147, 1165, 1972, 4309)	1834 (1703)		<0.001
<i>up</i> ₁		-0.00102 (-0.00111, -0.00093)	
<i>up</i> ₂		0.00207 (0.00170, 0.00243)	
<i>up</i> ₃		-0.00378 (-0.00469, -0.00286)	
Highest serum sodium (mmol l ⁻¹) – RCS(133, 139, 145)	138.9 (5.3)		<0.001
<i>na</i> ₁		-0.0517 (-0.0557, -0.0476)	
<i>na</i> ₂		0.0521 (0.0479, 0.0563)	
Highest serum urea (mmol l ⁻¹) – RCS(2.7, 5.6, 9.4, 28.4)	10.2 (9.5)		<0.001
<i>ur</i> ₁		0.170 (0.154, 0.186)	

<i>ur</i> ₂		-0.626 (-0.841, -0.412)	
<i>ur</i> ₃		0.847 (0.457, 1.237)	
Highest serum creatinine (per 10 μmol l ⁻¹) – RRCS(45, 74, 115, 423)	141 (155)		<0.001
<i>cr</i> ₁		0.0213 (0.0198, 0.0228)	
<i>cr</i> ₂		-0.0324 (-0.0527, -0.0120)	
<i>cr</i> ₃		0.0053 (0.0024, 0.0081)	
<i>cr</i> ₄		0.00015 (-0.00016, 0.00047)	
<i>cr</i> ₅		-0.0000035 (-0.0000053, -0.0000018)	
Lowest white blood cell count (×10 ⁹ l ⁻¹) – RCS(3.6, 8.7, 12.6, 23.4)	11.8 (8.9)		<0.001
<i>wbc</i> ₁		-0.041 (-0.050, -0.033)	
<i>wbc</i> ₂		0.220 (0.182, 0.258)	
<i>wbc</i> ₃		-0.583 (-0.685, -0.482)	
Lowest platelet count (×10 ⁹ l ⁻¹) – RCS(60, 164, 232, 410)	211 (111)		<0.001
<i>plc</i> ₁		-0.0054 (-0.0058, -0.0049)	
<i>plc</i> ₂		0.0149 (0.0131, 0.0168)	
<i>plc</i> ₃		-0.0404 (-0.0462, -0.0345)	
Calendar time (per year)	-	-0.029 (-0.037, -0.021)	<0.001
Month of admission			<0.001
January	35,944 (8.6)	0	
February	33,635 (8.0)	-0.013 (-0.059, 0.033)	
March	37,100 (8.9)	-0.001 (-0.047, 0.045)	
April	32,446 (7.8)	-0.030 (-0.076, 0.015)	
May	34,374 (8.2)	-0.052 (-0.102, -0.003)	
June	33,774 (8.1)	-0.055 (-0.100, -0.010)	
July	35,190 (8.4)	-0.082 (-0.130, -0.035)	
August	33,452 (8.0)	-0.045 (-0.095, 0.004)	
September	34,151 (8.2)	-0.080 (-0.122, -0.038)	
October	36,505 (8.7)	-0.013 (-0.061, 0.035)	
November	35,486 (8.5)	-0.009 (-0.052, 0.034)	
December	35,899 (8.6)	-0.027 (-0.079, 0.025)	

CI, confidence interval; CPR, cardiopulmonary resuscitation; ED, emergency department; GCS, Glasgow coma scale; LOS, length of stay; RCS(k_1, \dots, k_n), restricted cubic spline with knots at positions k_1, \dots, k_n ; RRCS(k_1, \dots, k_n), right-restricted cubic spline with knots at positions k_1, \dots, k_n ; SD, standard deviation

Restricted cubic spline base variables x_1, \dots, x_{n-1} for covariate x with knots at k_1, \dots, k_n are calculated as:

$$x_1 = x$$

$$x_{j+1} = \{\max(x - k_j, 0)\}^3 - [(k_n - k_j) \max(x - k_{n-1}, 0)]^3 - (k_{n-1} - k_j) \max(x - k_n, 0)^3 / \{(k_n - k_{n-1}) / \{(k_n - k_1)^2\}\}, j = 1, \dots, n-2$$

Right-restricted cubic spline base variables x_1, \dots, x_{n+1} for covariate x with knots at k_1, \dots, k_n are calculated as:

$$x_1 = -x$$

$$x_{j+1} = \max(k_j - x, 0)^3, j = 1, \dots, n$$

^a Alcohol related disorders, alkalaemia, chromosomal deletion syndromes, contiguous gene syndromes, envenomation, fluid overload, haemorrhage, hypercalcaemia, hyperglycaemia, hypernatraemia, hyperthermia, hypocalcaemia, hypoglycaemia, inborn errors of metabolism, obesity, over-activity, sex chromosome disorders, starvation, trisomy, under-activity.

Table S4. Change in the AUC for acute versus chronic models by number of days since ICU admission

Day	AUC (95% CI)		Difference in AUC (95% CI)
	Acute model	Chronic model	
0	0.892 (0.891, 0.893)	0.689 (0.687, 0.691)	0.204 (0.202, 0.207)
1	0.881 (0.880, 0.882)	0.687 (0.685, 0.689)	0.194 (0.192, 0.197)
2	0.828 (0.826, 0.830)	0.676 (0.674, 0.679)	0.152 (0.149, 0.155)
3	0.789 (0.787, 0.792)	0.668 (0.666, 0.671)	0.121 (0.117, 0.124)
4	0.759 (0.756, 0.762)	0.665 (0.662, 0.668)	0.094 (0.090, 0.098)
5	0.735 (0.732, 0.738)	0.664 (0.661, 0.668)	0.071 (0.066, 0.076)
6	0.716 (0.713, 0.720)	0.664 (0.660, 0.668)	0.052 (0.047, 0.057)
7	0.702 (0.698, 0.706)	0.666 (0.662, 0.671)	0.036 (0.030, 0.041)
8	0.693 (0.688, 0.698)	0.672 (0.668, 0.677)	0.021 (0.015, 0.027)
9	0.684 (0.679, 0.689)	0.673 (0.668, 0.678)	0.011 (0.005, 0.017)
10	0.679 (0.674, 0.684)	0.675 (0.669, 0.680)	0.004 (-0.002, 0.011)
11	0.674 (0.669, 0.680)	0.675 (0.669, 0.680)	-0.000 (-0.007, 0.007)
12	0.671 (0.665, 0.677)	0.675 (0.669, 0.681)	-0.003 (-0.011, 0.004)
13	0.671 (0.665, 0.678)	0.675 (0.669, 0.681)	-0.004 (-0.012, 0.004)
14	0.668 (0.661, 0.675)	0.675 (0.668, 0.681)	-0.006 (-0.015, 0.002)
15	0.665 (0.658, 0.673)	0.674 (0.666, 0.681)	-0.008 (-0.017, 0.001)
16	0.663 (0.656, 0.671)	0.671 (0.663, 0.678)	-0.007 (-0.017, 0.002)
17	0.661 (0.653, 0.669)	0.671 (0.663, 0.679)	-0.010 (-0.020, -0.000)
18	0.659 (0.650, 0.667)	0.671 (0.663, 0.679)	-0.012 (-0.023, -0.002)
19	0.661 (0.652, 0.670)	0.669 (0.660, 0.678)	-0.009 (-0.020, 0.002)
20	0.656 (0.647, 0.666)	0.666 (0.657, 0.675)	-0.010 (-0.021, 0.002)
21	0.656 (0.646, 0.666)	0.665 (0.655, 0.675)	-0.009 (-0.021, 0.003)
22	0.651 (0.640, 0.661)	0.665 (0.655, 0.675)	-0.014 (-0.027, -0.001)
23	0.648 (0.637, 0.658)	0.663 (0.652, 0.673)	-0.015 (-0.028, -0.002)
24	0.646 (0.635, 0.657)	0.661 (0.650, 0.672)	-0.015 (-0.029, -0.001)
25	0.644 (0.632, 0.656)	0.659 (0.647, 0.670)	-0.015 (-0.029, -0.000)
26	0.640 (0.628, 0.653)	0.657 (0.644, 0.669)	-0.016 (-0.031, -0.001)
27	0.640 (0.627, 0.653)	0.654 (0.641, 0.667)	-0.014 (-0.030, 0.002)
28	0.641 (0.627, 0.654)	0.656 (0.643, 0.669)	-0.015 (-0.031, 0.001)

AUC, area under the receiver operating characteristic curve; CI, confidence interval

Figure S1. Calibration of day 0 models

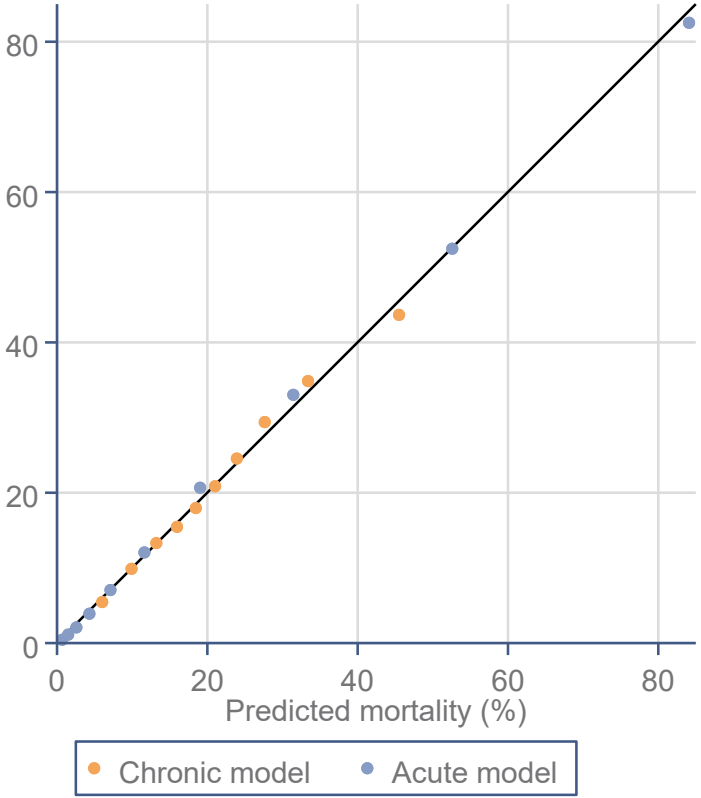


Figure S2. Calibration of day 1-28 models

