

eTable 4. Multivariable Cox proportional hazards model for death within 30 days of start of critical care: complete case analysis (N=7,699)

Prognostic factor	Hazard ratio (95% CI)	P value
Age (years) – RCS (42,60,75)		<0.0001
Spline base variable 1	1.036 (1.027, 1.045)	
Spline base variable 2	1.012 (1.003, 1.02)	
Male sex (vs female)	0.997 (0.909, 1.094)	0.951
Ethnicity (vs white)		
Asian	1.309 (1.179, 1.453)	<0.0001
Black	1.032 (0.905, 1.177)	0.637
Mixed/other	0.983 (0.853, 1.133)	0.817
Quintile of deprivation (vs 1, least deprived)		
2	1.026 (0.9, 1.169)	0.704
3	0.99 (0.872, 1.123)	0.872
4	1.05 (0.929, 1.187)	0.433
5 (most deprived)	1.104 (0.976, 1.247)	0.115
Body mass index (per 5 kg/m ² increase)	1.015 (0.984, 1.046)	0.346
Any dependency prior to hospital admission	1.5 (1.339, 1.68)	<0.0001
Immunocompromise	1.482 (1.274, 1.723)	<0.0001
Sedated for entire of first 24h	1.114 (1.009, 1.229)	0.033
Highest temperature (per 1°C increase)	0.994 (0.959, 1.03)	0.747
Lowest systolic blood pressure (mmHg)– RCS (78,95,121)		0.001
Spline base variable 1	0.991 (0.987, 0.996)	
Spline base variable 2	1.009 (1.003, 1.015)	
Highest heart rate (per 10 beats/min increase)	1.045 (1.027, 1.064)	<0.0001
Highest respiratory rate (per 10 breaths/min increase)	1.082 (1.037, 1.128)	<0.0001
PaO ₂ /FiO ₂ (per 50 mm Hg increase)	0.69 (0.651, 0.732)	<0.0001
Mechanical ventilation (at PaO ₂ /FiO ₂ = 300 mm Hg)	2.314 (1.765, 3.034)	<0.0001
Mechanical ventilation × PaO ₂ /FiO ₂ (per 50 mm Hg increase)	1.209 (1.129, 1.295)	<0.0001
Highest blood lactate concentration (mmol/L) – RCS (0.9,1.4,2.5)		<0.0001
Spline base variable 1	1.575 (1.342, 1.848)	
Spline base variable 2	0.662 (0.554, 0.791)	
Highest serum creatinine (µmol/L) – RCS (46,72,101,327)		<0.0001
Spline base variable 1	0.998 (0.992, 1.004)	
Spline base variable 2	1.128 (0.999, 1.274)	
Spline base variable 3	0.783 (0.62, 0.99)	
Highest serum urea (mmol/L) – RCS (3.5,7.0,16.6)		0.001
Spline base variable 1	1.058 (1.027, 1.089)	
Spline base variable 2	0.931 (0.896, 0.968)	
Lowest haemoglobin concentration (per 10 g/L increase)	0.994 (0.974, 1.014)	0.535
Lowest platelet count (×10 ⁹ /L) – RCS (134,232,375)		<0.0001
Spline base variable 1	0.997 (0.996, 0.998)	
Spline base variable 2	1.002 (1.001, 1.003)	

RCS (k_1, \dots, k_j) indicates restricted cubic spline with knots at positions k_1 to k_j , corresponding to the following base variables for prognostic factor x :

Spline base variable 1 = x

Spline base variable $i+1$ = $[\max((x - k_i)^3, 0) - (k_j - k_i) \times \max((x - k_{j-1})^3, 0)] / (k_j - k_{j-1}) + (k_{j-1} - k_i) \times \max((x - k_j)^3, 0) / (k_j - k_{j-1}) / (k_j - k_i)^2$; $i=1, \dots, j-2$