

**Supplementary file 1:**

**Full multilevel logistic regression model for ROSC > 20 minutes (n=27,700)**

Predictor	OR	(95% CI)	P value
Day/time of arrest (vs Weekday daytime)			<0.001
Weekend daytime	0.88	(0.81, 0.95)	
Night-time	0.72	(0.68, 0.76)	
Age (restricted cubic splines)*			<0.001
age <sub>1</sub>	0.996	(0.990, 1.002)	
age <sub>2</sub>	0.990	(0.975, 1.005)	
age <sub>3</sub>	1.015	(0.828, 1.243)	
age <sub>4</sub>	0.961	(0.536, 1.722)	
Male sex (vs Female)	0.89	(0.84, 0.94)	<0.001
Prior length of stay (vs 0 days)			<0.001
1 day	0.90	(0.82, 0.98)	
2-7 days	0.79	(0.72, 0.86)	
8 or more days	0.83	(0.76, 0.91)	
Reason for attendance at hospital (vs Medical)			<0.001
Trauma	1.05	(0.91, 1.20)	
Elective/scheduled surgery	1.44	(1.28, 1.62)	
Emergency/urgent surgery	0.98	(0.88, 1.08)	
Obstetric	4.01	(2.01, 8.03)	
Outpatient	1.37	(0.96, 1.95)	
Staff or Visitor	1.12	(0.63, 1.98)	
Location of arrest (vs Ward†)			<0.001
Emergency department	0.86	(0.69, 1.08)	
Emergency admissions unit	1.18	(1.06, 1.31)	
Coronary care unit	2.41	(1.99, 2.93)	
Critical care unit	1.17	(0.87, 1.56)	
Imaging department or Specialist treatment area	1.43	(0.90, 2.30)	
Cardiac catheter laboratory	2.71	(2.11, 3.48)	
Theatre and recovery	0.99	(0.50, 1.95)	
Clinic or Non-clinical area	1.84	(1.23, 2.74)	
Presenting rhythm (vs Ventricular fibrillation)			<0.001
Pulseless ventricular tachycardia	1.41	(1.19, 1.66)	
Shockable – unknown rhythm	0.61	(0.43, 0.86)	
Asystole	0.13	(0.11, 0.15)	
Pulseless electrical activity	0.32	(0.29, 0.36)	
Bradycardia	0.70	(0.46, 1.06)	
Non-shockable – unknown rhythm	0.50	(0.41, 0.62)	
Unknown	0.92	(0.79, 1.06)	
Interaction between Asystole and Location of arrest (vs Ward†, Emergency admissions unit, Clinic or Non-clinical area)			<0.001
Emergency department	1.67	(1.24, 2.25)	
Coronary care unit or Cardiac catheter laboratory	2.27	(1.73, 2.98)	
Critical care unit	4.37	(3.03, 6.29)	
Imaging department or Specialist treatment area	1.40	(0.76, 2.56)	
Theatre and recovery	5.99	(2.51, 14.32)	
Interaction between Pulseless electrical activity and Location of arrest (vs Ward†, Emergency admissions unit, Clinic or Non-clinical area)			<0.001
Emergency department	1.06	(0.84, 1.34)	
Coronary care unit or cardiac catheter laboratory	0.46	(0.36, 0.56)	
Critical care unit	1.70	(1.23, 2.35)	

Imaging department or specialist treatment area	1.02	(0.62, 1.30)	
Theatre and recovery	2.31	(1.11, 4.82)	
Interaction between Other non-shockable or unknown rhythm and Location of arrest (vs Ward†, Emergency admissions unit, Clinic or Non-clinical area)			0.16
Emergency department	0.90	(0.62, 1.30)	
Coronary care unit or Cardiac catheter laboratory	0.92	(0.61, 1.39)	
Critical care unit	1.63	(0.92, 2.88)	
Imaging department or Specialist treatment area	1.71	(0.82, 3.59)	
Theatre and recovery	2.75	(0.76, 9.92)	
Standard deviation of random effect	0.27	(0.23, 0.32)	<0.001

CI, confidence interval; OR, odds ratio

\*Spline base variables:

$$\text{age}_1 = \text{age}$$

$$\text{age}_2 = [\max((\text{age} - 42)^3, 0) - 49 \times \max((\text{age} - 83)^3, 0)/8 + 41 \times \max((\text{age} - 91)^3, 0)/8]/492$$

$$\text{age}_3 = [\max((\text{age} - 67)^3, 0) - 24 \times \max((\text{age} - 83)^3, 0)/8 + 16 \times \max((\text{age} - 91)^3, 0)/8]/492$$

$$\text{age}_4 = [\max((\text{age} - 76)^3, 0) - 15 \times \max((\text{age} - 83)^3, 0)/8 + 7 \times \max((\text{age} - 91)^3, 0)/8]/492$$

†Ward includes Obstetrics area, Intermediate care area and Other inpatient location