Supplemental Material

American Heart Association Get With the Guidelines – Resuscitation (formerly National Registry of Cardiopulmonary Resuscitation) Investigators:

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Table S1. Patient characteristics by ROSC status.

	ROSC (n = 59,754)	Died (n = 22,975)	*P* Value
Demographics			
Age, Mean ± SD	64.7 ± 15.4	66.6 ± 15.9	<0.001
Age			< 0.001
18 to <50	9124 (15.3%)	3176 (13.8%)	
50 to 59	10626 (17.8%)	3534 (15.4%)	
60 to 69	15566 (26.1%)	5540 (24.1%)	
70 to 79	14289 (23.9%)	5536 (24.1%)	
80 to 89	10149 (17.0%)	5189 (22.6%)	
≥ 90			
Male sex	34,804 (58.3%)	13,604 (59.2%)	0.01
Race			0.01
White	40,497 (67.8%)	15,543 (67.7%)	
Black	13,766 (23.0%)	5174 (22.5%)	
Other	1438 (2.4%)	558 (2.4%)	
Unknown	4053 (6.8%)	1700 (7.4%)	
Characteristics of arrest			
Cardiac arrest rhythm			< 0.001
Asystole	14,476 (24.2%)	7228 (31.5%)	
Pulseless electrical activity	33,788 (56.5%)	13,110 (57.1%)	
Ventricular fibrillation	6382 (10.7%)	1536 (6.7%)	
Pulseless ventricular tachycardia	5108 (8.5%)	1101 (4.8%)	
Hospital Location			< 0.001
Intensive care unit	29,210 (48.9%)	11,170 (48.6%)	
Monitored unit	9328 (15.6%)	3122 (13.6%)	
Non-Monitored unit	8206 (13.7%)	4081 (17.8%)	
Emergency room	6979 (11.7%)	2772 (12.1%)	

Procedural or surgical area	5012 (8.4%)	1393 (6.1%)	
Other	1019 (1.7%)	437 (1.9%)	
Pre-Existing Conditions			
Respiratory insufficiency	28,470 (47.6%)	10,236 (44.6%)	<0.001
Renal insufficiency	22,041 (36.9%)	8026 (34.9%)	<0.001
Diabetes mellitus	21,162 (35.4%)	7168 (31.2%)	<0.001
Hypotension	15,818 (26.5%)	6016 (26.2%)	0.40
Heart failure this admission	9153 (15.3%)	3069 (13.4%)	<0.001
Prior heart failure	13,533 (22.6%)	4938 (21.5%)	<0.001
Myocardial infarction this admission	8763 (14.7%)	3082 (13.4%)	<0.001
Prior myocardial infarction	8212 (13.7%)	3024 (13.2%)	0.03
Metabolic or electrolyte abnormality	14,355 (24.0%)	4972 (21.6%)	<0.001
Sepsis	11,272 (18.9%)	4278 (18.6%)	0.42
Pneumonia	8611 (14.4%)	3127 (13.6%)	0.003
Metastatic or hematologic malignancy	6135 (10.3%)	2759 (12.0%)	<0.001
Hepatic insufficiency	5004 (8.4%)	1773 (7.7%)	0.002
Baseline depression in CNS function	4437 (7.4%)	1602 (7.0%)	0.02
Acute CNS non-stroke event	4513 (7.6%)	1440 (6.3%)	<0.001
Acute stroke	2366 (4.0%)	949 (4.1%)	0.26
Major trauma	2803 (4.7%)	1173 (5.1%)	0.01
Interventions in Place			
Mechanical ventilation	14,351 (24.0%)	5744 (25.0%)	0.003
Continuous intravenous vasopressor	13,707 (22.9%)	6142 (26.7%)	< 0.001
Dialysis	1674 (2.8%)	598 (2.6%)	0.12

CNS, central nervous system; SD, standard deviation

Table S2. Definitions of Select Variables in Models.

Myocardial infarction -- Documented diagnosis of acute coronary syndrome or myocardial infarction.

Heart failure -- Documented diagnosis of congestive heart failure.

Renal insufficiency – Evidence for any of the following within 24 hours of cardiac arrest:
- Requirement for ongoing dialysis or extracorporeal filtration therapies.
- Serum creatinine > 2 mg/dL

Hepatic insufficiency – Evidence for any of the following within 24 hours of cardiac arrest:
- Total bilirubin > 2 mg/dL and AST > 2x normal
- Cirrhosis

Hypotension – Evidence for any of the following within 24 hours of cardiac arrest:
- SBP < 90 or MAP < 60 mmHg.
- Vasopressor/inotropic requirement after volume expansion (except for dopamine ≤ 3 mcg/kg/min).
- Intra-aortic balloon pump

Septicemia -- Documented bloodstream infection where antibiotics have not yet been started or the infection is still being treated with antibiotics.

Acute stroke -- Documented diagnosis of an intracranial/intraventricular hemorrhage or thrombosis during the index admission prior to cardiac arrest.

Diabetes mellitus -- Documented diagnosis of either Type I or Type II diabetes mellitus.

Metabolic / electrolyte abnormality -- Evidence for any of the following within 24 hours of cardiac arrest:

- Sodium < 125 or > 150 mEq/L
- Potassium < 2.5 or > 6 mEq/L
- pH < 7.3 or > 7.5, arterial
- Lactate > 2.5 mmol/L,
- Blood glucose < 60 mg/dL

Metastatic or hematologic malignancy -- Documentation of any solid tissue malignancy with evidence of metastasis, or any blood borne malignancy.

Major trauma -- Evidence of multi-system injury or single system injury associated with shock or altered mental status during the index hospitalization prior to cardiac arrest.

Mechanical ventilation -- Requirement for assisted ventilation via an endotracheal tube or tracheostomy within 24 hours of cardiac arrest.

Dialysis -- Requirement for hemodialysis, peritoneal dialysis, or continuous arteriovenous or veno-venous hemofiltration/dialysis prior to the time of the cardiac arrest

Continuous intravenous vasopressor -- Continuous intravenous infusion of at least one of the following vasoactive agents at the time of cardiac arrest:

- Dobutamine
- Dopamine > 3 mcg/kg/min
- Epinephrine
- Norepinephrine
- Phenylephrine
- Other Vasoactive Agent

Figure S1. Calibration Plot of Reduced ROSC Model in Validation Cohort.

Model Reduced: ROSC (deciles are determined by predicted probabilities)
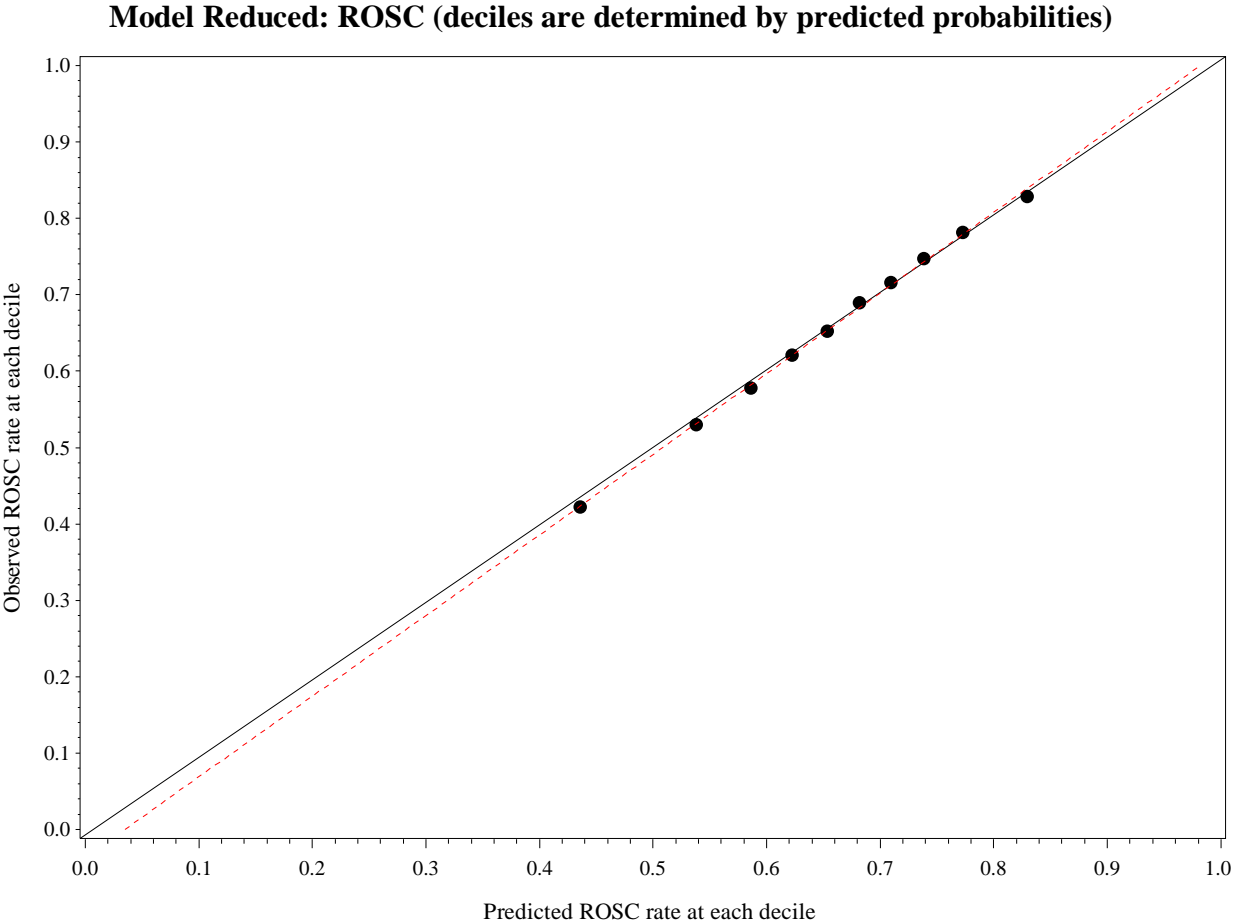
Model had an R^2 of 0.99, suggesting excellent fit in the validation cohort.