

Urgent	2.38	1.13	5.04	1.54	0.98	2.44	2.31	1.07	4.99	1.44	0.76	2.72
Surgical Procedure Type												
Aortic	0.52	0.06	4.26	7.06	3.02	16.50	2.57	0.47	13.97	0.98	0.20	4.88
Valve + Aortic	0.95	0.44	2.04	1.93	1.08	3.44	2.24	0.93	5.38	1.32	0.66	2.66
Valve + Aortic + CABG	1.13	0.34	3.74	3.52	1.58	7.86	1.84	0.48	7.04	0.31	0.06	1.64
Isolated CABG	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Isolated Valve	0.67	0.34	1.33	1.50	0.89	2.53	1.53	0.71	3.29	0.98	0.51	1.89
Valve + CABG	1.23	0.61	2.48	1.96	1.15	3.34	2.04	0.94	4.43	1.31	0.66	2.59
Admission Type												
Admit	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Inpatient	0.38	0.18	0.81	1.39	0.88	2.20	0.66	0.30	1.43	0.69	0.37	1.28
Date of surgery by STS Version												
2.52 (Jan 2006-Dec 2007)	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
2.61 (Jan 2008-June 2011)	1.14	0.45	2.89	2.42	1.20	4.86	3.90	1.18	12.88	4.53	1.70	12.06
2.73 (July 2011-June 2014)	0.63	0.25	1.61	2.85	1.43	5.65	7.79	2.35	25.80	2.22	0.82	6.02
2.81 (July 2014-May 2017)	0.38	0.12	1.19	1.77	0.78	4.03	8.16	2.13	31.36	0.57	0.17	1.89
ASA Physical Status	-	-	-	-	-	-	-	-	-	-	-	-
Intraoperative Characteristics												
Perfusion Time, hours	1.58	1.10	2.27	2.29	1.74	3.03	0.94	0.54	1.65	1.01	0.62	1.64
Aortic Crossclamp Time, hours	0.99	0.63	1.56	0.66	0.47	0.92	0.98	0.54	1.77	1.45	0.86	2.44
Anesthesia Duration, hours	1.02	0.99	1.06	1.02	1.00	1.05	1.25	1.04	1.50	1.17	0.99	1.38
Anesthesia Provider ****	-	-	-	-	-	-	-	-	-	-	-	-
Intraoperative Albuterol	2.10	0.47	9.41	1.39	0.46	4.20	NA	NA	NA	2.83	0.93	8.62
Intraoperative Diuretic *****	-	-	-	-	-	-	-	-	-	-	-	-
Intraoperative Vasopressor infusion (phenylephrine, norepinephrine, vasopressin)	-	-	-	-	-	-	-	-	-	-	-	-
Intraoperative Inotrope infusion (epinephrine, dobutamine, milrinone, isoproterenol, dopamine)	1.30	0.80	2.12	1.64	1.17	2.29	1.60	0.97	2.65	1.19	0.78	1.81
Total intraoperative opioid, oral morphine equivalents	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Total intraoperative crystalloid, L	1.03	0.94	1.13	1.08	1.01	1.15	1.04	0.94	1.16	1.03	0.95	1.11
Total intraoperative colloid, L	1.55	0.95	2.55	1.19	0.84	1.68	1.52	0.90	2.55	0.72	0.43	1.19
Intraoperative Transfusion *****	0.98	0.58	1.64	1.65	1.15	2.36	1.53	0.88	2.66	0.74	0.48	1.16
Total urine output, L	0.92	0.76	1.11	0.94	0.83	1.07	0.88	0.70	1.10	0.89	0.75	1.05
Median SpO ₂ , %	1.12	0.88	1.43	0.96	0.83	1.11	0.98	0.78	1.24	0.68	0.58	0.79
Median Inspired FiO ₂ , %	0.99	0.97	1.01	1.00	0.98	1.02	0.99	0.97	1.01	1.02	0.99	1.06
Summary												
Overall Model Performance, c-statistic (95% CI)	0.82 (0.78, 0.86)			0.85 (0.83, 0.88)			0.84 (0.80, 0.87)			0.84 (0.80, 0.87)		

ASA = American Society of Anesthesiologists; CABG = coronary artery bypass graft; CPB= cardiopulmonary bypass; FiO₂ = fraction of inspired oxygen; LPV = lung-protective ventilation; PA = pulmonary artery; STS = Society of Thoracic Surgeons

† Within 48 hours postoperatively while intubated

†† Defined as intraoperative median values of: tidal volume <8 mL/kg predicted body weight, positive end-expiratory pressure ≥5 cm H₂O, and driving pressure <16 cm H₂O

* Defined by chronic lung disease ≥ moderate or bronchodilator therapy within STS; or chronic obstructive pulmonary disease moderate on preoperative anesthesia history & physical

** Defined by functional capacity – Low (≤4 metabolic equivalents of task) on preoperative anesthesia history & physical

*** Defined via STS as a history of any of the following: atrial fibrillation, atrial flutter, 3rd degree heart block, ventricular fibrillation, ventricular tachycardia

**** Calculated using the Chronic Kidney Disease – Epidemiology Collaboration equation; a unit increase defined as a 10 mL/min/1.73 m² (e.g. increase from 50 to 60 mL/min/1.73 m² defined as one unit)

***** Defined as the frequency of primary anesthesiology attending using a bundled LPV strategy, as a proportion of all cardiac cases performed by the anesthesiology attending among the study population, transformed into tertiles.

***** Defined as intraoperative administration of furosemide, bumetanide, or mannitol

***** Including any of the following: packed red blood cells, red blood cell salvage, fresh frozen plasma, platelets, or cryoprecipitate

Variables indicated by an '-' were not chosen from the least absolute shrinkage and selection operator model.

Variables indicated by an 'NI' were not eligible for inclusion in the least absolute shrinkage and selection operator model.

Variables indicated by 'NA' could not be estimated due to sample size.