

Supplemental Digital Content 1: Preoperative Patient Characteristics of the Entire Cohort and Univariable Analysis of the Derivation Cohort

Category	Characteristic	Univariable Analysis of the Derivation Cohort (N = 91,314)					
		Entire Cohort N = 138,021 n(%)	No Postoperative Acute Kidney Injury N=83,022 n(%)	Acute Kidney Injury (any Stage) N=8,292 n(%)	p-Value	Odds Ratio (95% Confidence Interval)	% Cases with Complete Data
Anthropometric Data	Age ¥	58 [46 - 69]	58 [45 - 69]	62 [51 - 72]	<0.001	N/A	100.0
	Body Mass Index ¥	28.2 [24.2 - 33.5]	28.2 [24.2 - 33.4]	29.1 [24.6 - 35.4]	<0.001	N/A	89.0
	Gender (Male)	69,566 (50.4)	41,176 (49.6)	4,820 (58.1)	<0.001	1.4 (1.3-1.5)	100.0
Patient Medical History*	Congestive Heart Failure	12,225 (9.3)	6,537 (8.2)	1,527 (19.2)	<0.001	2.7 (2.5-2.8)	96.0
	Cardiac Arrhythmias	20,614 (15.6)	11,163 (14.7)	1,897 (23.9)	<0.001	1.8 (1.7-1.9)	96.0
	Valvular Disease	7,538 (5.7)	4,118 (5.2)	848 (10.7)	<0.001	2.2 (2.0-2.4)	96.0
	Pulmonary Circulation Disorders	6,405 (4.8)	3,436 (4.3)	778 (9.8)	<0.001	2.4 (2.2-2.6)	96.0
	Peripheral Vascular Disorders	15,086 (11.4)	8,392 (10.5)	1,539 (19.4)	<0.001	2.0 (1.9-2.2)	96.0
	Hypertension, Uncomplicated	49,574 (37.4)	29,312 (36.8)	3,526 (44.3)	<0.001	1.4 (1.3-1.4)	96.0
	Hypertension, Complicated	8,040 (6.1)	3,959 (5.0)	1,306 (16.4)	<0.001	3.8 (3.5-4.0)	96.0
	Paralysis/Other Neurological Disorders	10,993 (8.3)	6,367 (8.0)	876 (11.1)	<0.001	1.4 (1.3-1.5)	96.0
	Chronic Pulmonary Disease	21,821 (16.5)	12,615 (15.8)	1,829 (23.0)	<0.001	1.6 (1.5-1.7)	96.0
	Diabetes, Uncomplicated	20,939 (15.8)	11,907 (14.9)	1,953 (24.6)	<0.001	1.9 (1.8-2.0)	96.0
	Diabetes, Complicated	2,233 (1.7)	1,081 (1.4)	379 (4.8)	<0.001	3.6 (3.2-4.1)	96.0
	Hypothyroidism	12,395 (9.0)	7,428 (9.3)	829 (10.4)	<0.001	1.1 (1.1-1.2)	96.0
	Liver Disease	9,913 (7.5)	5,299 (6.6)	1,215 (15.3)	<0.001	2.5 (2.4-2.7)	96.0
	Peptic Ulcer Disease Excluding Bleeding	2,092 (1.6)	1,155 (1.4)	183 (2.3)	<0.001	1.6 (1.4-1.9)	96.0
	AIDS/HIV	253 (0.2)	149 (0.2)	25 (0.3)	0.015	1.7 (1.1-2.6)	96.0
	Lymphoma/Metastatic Cancer/Solid Tumor	26,166 (19.8)	15,612 (19.6)	1,729 (21.7)	<0.001	1.1 (1.1-1.2)	96.0
	Rheumatoid Arthritis / Collagen Vascular Diseases	4,555 (3.4)	2,715 (3.4)	293 (3.7)	0.194	1.1 (0.9-1.2)	96.0
	Coagulopathy	8,079 (6.1)	4,126 (5.2)	1,229 (15.5)	<0.001	3.3 (3.1-3.6)	96.0
	Weight Loss	12,982 (9.8)	7,112 (8.9)	1,466 (18.4)	<0.001	2.3 (2.2-2.5)	96.0
	Alcohol Abuse	4,726 (3.6)	2,720 (3.4)	361 (4.5)	<0.001	1.3 (1.2-1.5)	96.0
Drug Abuse	3,160 (2.4)	1,886 (2.4)	219 (2.8)	0.031	1.2 (1.0-1.3)	96.0	
Psychoses	1,627 (1.2)	934 (1.2)	114 (1.4)	0.041	1.2 (1.1-1.5)	96.0	
Preoperative Medications	Angiotensin Converting Enzyme Inhibitor or Angiotensin Receptor Blocker	20,187 (14.6)	12,007 (14.5)	1,315 (15.9)	<0.001	1.1 (1.0-1.2)	100.0
	Beta Blocker	24,351 (17.6)	14,353 (17.3)	1,796 (21.7)	<0.001	1.3 (1.3-1.4)	100.0

Preoperative Laboratory Values	Preoperative Serum Hemoglobin Level (g/dL) ¥	12.3 [10.3 - 13.8]	12.5 [10.5 - 13.9]	10.8 [9.1 - 12.7]	<0.001	N/A	98.4
	Preoperative Serum Albumin Level (g/dL) ¥	4.0 [3.3 - 4.4]	4.0 [3.4 - 4.4]	3.5 [2.8 - 4.1]	<0.001	NA	55.0%
Preoperative eGFR** (mL/min/1.73 m²)	≥ 90	66,831 (48.4)	41,230 (49.7)	2,859 (34.5)	<0.001	N/A	100.0
	60-89	47,137 (34.2)	28,975 (34.9)	2,338 (28.2)			
	45-59	12,308 (8.9)	7,114 (8.6)	1,040 (12.5)			
	30-44	7,431 (5.4)	3,921 (4.7)	1,004 (12.1)			
	15-29	4,314 (3.1)	1,782 (2.1)	1,051 (12.7)			
Preinduction Blood Pressure	Mean Arterial Pressure (mmHg)¥	90 [80 - 101]	90 [80 - 101]	88 [76 - 100]	<0.001	N/A	99.9
Surgical Characteristics	Emergent Procedure	17,283 (12.8)	9,962 (12.3)	1,532 (19.0)	<0.001	1.7 (1.6-1.8)	97.5
Surgical Procedure Type / Body Region (Anesthesia CPT Code)	Head (0100-00222)	13,994 (10.2)	8,816 (10.7)	432 (5.2)	<0.001	N/A	99.6
	Neck (00300-00352)	8,387 (6.1)	5,026 (6.1)	530 (6.4)			
	Thorax - chest wall & shoulder girdle (00400-00474)	5,509 (4.0)	3,288 (4.0)	319 (3.9)			
	Thorax - intrathoracic (00500-00580)	13,513 (9.8)	7,999 (9.7)	937 (11.3)			
	Spine and spinal cord (00600-00670)	11,654 (8.5)	7,332 (8.9)	332 (4.0)			
	Upper abdomen (00700-00797)	28,586 (20.8)	16,598 (20.1)	2,349 (28.4)			
	Lower abdomen (00800-00882)	14,128 (10.3)	8,343 (10.1)	1,051 (12.7)			
	Perineum (00902-00952)	1,540 (1.1)	971 (1.2)	58 (0.7)			
	Pelvis, except hip (01112-01190)	1,067 (0.8)	663 (0.8)	45 (0.5)			
	Upper leg, except knee (01200-01274)	11,658 (8.5)	6,948 (8.4)	691 (8.4)			
	Knee and popliteal area (01320-01444)	7,073 (5.1)	4,428 (5.4)	276 (3.3)			
	Lower leg, ankle, and foot (01462-01522)	4,686 (3.4)	2,799 (3.4)	277 (3.4)			
	Shoulder and axilla (01610-01682)	1,558 (1.1)	980 (1.2)	77 (0.9)			
	Upper arm and elbow (01710-01782)	970 (0.7)	612 (0.7)	30 (0.4)			
	Forearm, wrist, and hand (01810-01860)	1,584 (1.2)	982 (1.2)	91 (1.1)			

	Radiological procedure (01916-01936) ***	9,315 (6.8)	5,537 (6.7)	603 (7.3)			
	Burn excisions or debridement (01951-01953)	932 (0.7)	560 (0.7)	77 (0.9)			
	Obstetric (01958-01969)	1,312 (1.0)	799 (1.0)	93 (1.1)			
Anesthetic Characteristics	General Anesthetic Used	122,371 (87.3)	71,628 (86.3)	7,382 (89.0)	<0.001	1.3 (1.2-1.4)	100.0
	Anesthetic Duration, min ¥	194.0 [136.0 - 283.0]	193.0 [135.0 - 280.0]	198.0 [135.0 - 304.0]	<0.001	N/A	100.0
ASA Physical Classification	ASA 1	4,355 (3.1)	2,756 (3.6)	123 (1.7)	<0.001	N/A	92.7
	ASA 2	40,654 (29.0)	25,670 (33.2)	1,039 (14.0)			
	ASA 3	68,639 (49.0)	40,612 (52.6)	4,206 (56.5)			
	ASA 4	15,970 (11.4)	7,978 (10.3)	1,962 (26.4)			
	ASA 5	505 (0.4)	188 (0.2)	110 (1.5)			
Institution Characteristics	Non-University Hospital	14,825 (10.6)	8,929 (10.8)	877 (10.6)	0.617	1.0 (0.9-1.1)	100.0
	Institution A	67,705 (49.1)	41,021 (49)	3,677 (44)	<0.001	0.8 (0.8-0.8)	100.0
	Institution B	24,499 (17.8)	14,775 (18)	1,513 (18)	0.307	1.0(1.0-1.1)	100.0
	Institution C	4,728 (3.4)	2,905 (3.5)	237 (2.9)	0.002	0.8 (0.7-0.9)	100.0
	Institution D	25,488 (18.5)	14,894 (18)	1,918 (23)	<0.001	1.4 (1.3-1.5)	100.0
	Institution E	857 (0.6)	498 (0.6)	70 (0.8)	0.007	1.4 (1.1-1.8)	100.0
	Institution F	6,572 (4.8)	3,945 (4.8)	446 (5.4)	0.011	1.1 (1.0-1.3)	100.0
	Institution G	5,471 (4.0)	3,318 (4.0)	310 (3.7)	0.251	0.9 (0.8-1.1)	100.0
	Institution H	2,701 (2.0)	1,666 (2.0)	121 (1.5)	0.001	0.7 (0.6-0.9)	100.0

*As determined by Elixhauser Comorbidity Enhanced ICD-9-CM/ICD-10 CM Algorithm; excluding renal failure, obesity, and fluid/electrolyte disorders.

** As determined by CKD-EPI formula, indexed by body surface area; stratified by Kidney Disease Improving Global Outcomes chronic kidney disease guidelines. Race assumed non-black for patients with race data unavailable.

*** Including procedures with and without intravenous contrast

¥ = non-parametric data presented as median [25th to 75th percentile]

AIDS = autoimmune deficiency syndrome; ASA = American Society of Anesthesiologists; CKD-EPI = Chronic Kidney Disease Epidemiology Collaboration; CPT = Common Procedural Terminology; eGFR = estimated glomerular filtration rate; HIV = human immunodeficiency virus