

Supplementary Table I A. 2014 cohort - Baseline characteristics

	All Patients (N=332)	No Acute Kidney Injury (N=253)	Acute Kidney Injury (N=79)	P value
Demographics				
Age – years				0.0001
Median	69	67	74	
Interquartile range	59-76	57-74	67-79	
Female sex – no. (%)	106 (31.93)	79 (31.22)	27 (34.81)	0.6232
Body mass index – kg/m ²				0.1012
Median	25.51	25.24	26.42	
Interquartile range	23.39-28.08	23.36-27.73	23.51-30.09	
Comorbidities – no. (%)				
Hypertension	317 (95.48)	177 (69.96)	63 (79.75)	0.0898
Diabetes mellitus	37 (11.4)	24 (9.49)	13 (16.46)	0.0857
Peripheral vasculopathy	11 (3.3)	6 (2.37)	5 (6.33)	0.0862
Chronic obstructive pulmonary disease	39 (11.74)	25 (9.88)	14 (17.72)	0.0589
Obesity	55 (16.57)	32 (12.56)	23 (29.11)	0.0006
Previous heart surgery	55 (16.57)	41 (16.21)	14 (17.72)	0.7517

Supplementary Table I B. 2014 Cohort - Process of care and outcomes.

	All Patients (N=332)	No Acute Kidney Injury (N=253)	Acute Kidney Injury (N=79)	P Value
Surgical clinical data				
Aortic cross-clamp (min)				0.6378
Median	70	70	75	
Interquartile range	52-96	53-92	50-100	
Extracorporeal circulation time (min)				0.1827
Median	107	106	113	
Interquartile range	82-134	82-128	82-149	
urgency/emergency – no. (%)	69 (20.78)	46 (18.18)	23 (29.11)	0.0366
Coronary artery bypass graft only – no. (%)	115 (34.64)	73 (28.85)	42 (53.16)	0.0001
Valve only – no. (%)	194 (58.43)	165 (65.22)	29 (36.71)	0.0000
Aorta – no. (%)	23 (6.93)	15 (5.93)	8 (10.13)	0.1996
Minimal invasive (port access mini thoracotomy) – no. (%)	139 (41.87)	127 (50.20)	12 (15.19)	0.0000
Intensive care unit clinical data				
Postoperative lactate				0.0955
Median	1.79	1.73	2.17	
Interquartile range	1.26-2.73	1.25-2.66	1.29-2.84	
Renal replacement therapy – no. (%)	3 (0.9)	0	3 (0.04)	0.0798
Furosemide day 1 (mg)				0.0001
Median	20	20	40	
Interquartile range	10-40	10-40	20-80	
Stroke – no. (%)	2 (0.6)	2 (0.79)	0	0.4280
	All Patients (N=332)	No Acute Kidney Injury (N=253)	Acute Kidney Injury (N=79)	P Value
Intensive care unit clinical data				
Hospital stay – days (mean)	7.94	7.43	9.59	0.0001
Median	9	8	12	
Interquartile range	7-13	7-12	9-18	

Supplementary Table I C. 2014 Cohort - Renal function and biomarker characteristics.

	All Patients (N=332)	No Acute Kidney Injury (N=253)	Acute Kidney Injury (N=79)	P value
Serum creatinine – mg/dl				
Preoperative				0.0001
Median	0.92	0.9	1.04	
Interquartile range	0.8-1.08	0.78-1.05	0.87-1.19	
Postoperative				0.0011
Median	0.84	0.81	1.04	
Interquartile range	0.74-1.04	0.7-0.94	0.82-1.3	
Estimated glomerular filtration rate – ml/min/1.73 m ²				
Preoperative				0.0001
Median	79.5	85	70	
Interquartile range	65-93	68-94	55-80	

Supplementary Table II A. 2015 cohort - Baseline characteristics.

	All Patients (N=110)	No Acute Kidney Injury (N=95)	Acute Kidney Injury (N=15)	P Value
Demographics				
Age – years				0.0342
Median	62	61	71	
Interquartile range	53-71	52-69	59-75	
Female sex – no. (%)	32 (29.09)	28 (29.47)		0.8240
Body mass index – kg/m ²				0.0172
Median	25.34	25.14	28.58	
Interquartile range	23.44-28.09	23.12-27.68	23.87-31.07	
Comorbidities – no. (%)				
Hypertension	64 (58.18)	53 (55.79)	11 (73.33)	0.2005
Diabetes mellitus	10 (9.09)	7 (7.37)	3 (20)	0.1138
Peripheral vasculopathy	4 (3.64)	2 (2.11)	2 (13.33)	0.0309
Chronic obstructive pulmonary disease	8 (7.27)	7 (7.37)	1 (6.67)	0.9225
Obesity	14 (12.73)	9 (9.47)	5 (33.33)	0.0100
Previous heart surgery	5 (4.55)	3 (3.16)	2 (13.33)	0.0787

Supplementary Table II B. 2015 Cohort - Process of care and outcomes.

	All Patients (N=110)	No Acute Kidney Injury (N=95)	Acute Kidney Injury (N=15)	P Value
Surgical clinical data				
Aortic cross-clamp, min				0.3413
Median	78	76.5	94.5	
Interquartile range	60-101	60.5-98	64-113	
Extracorporeal circulation time – min				0.0630
Median	112.5	110	142	
Interquartile range	97-149	96-144	105-158	
urgency/emergency (%)	0	0	0	
Coronary artery bypass graft only – no. (%)	12 (10.91)	8 (8.42)	4 (26.67)	0.0352
Valve only – no. (%)	85 (77.27)	77 (81.05)	8 (53.33)	0.0173
Aorta – no. (%)	13 (11.82)	10 (10.53)	3 (30)	0.2909
Minimal invasive (port access mini thoracotomy) – no. (%)	66 (60)	63 (66.32)	3 (20)	0.0007
Intensive care unit clinical data				
Postoperative lactate				0.4374
Median	1.86	1.81	2.01	
Interquartile range	1.35-2.41	1.35-2.39	1.32-3.21	
Renal replacement therapy – no. (%)	1 (0.91)	0	1 (6.67)	0.0115
Furosemide dose day 1 (mg)				0.3320
Median	10	10	20	
Interquartile range	0-30	0-30	0-40	
Stroke – no. (%)	0	0		
	All Patients (N=110)	No Acute Kidney Injury (N=95)	Acute Kidney Injury (N=15)	P Value
Intensive care unit clinical data				
Hospital stay – days	6.33	5.76	9.93	0.8336
Median	7	7	7	
Interquartile range	7-10	7-10	7-9	

Supplementary Table II C. 2015 Cohort - Renal function and biomarker characteristics.

	All Patients (N=110)	No Acute Kidney Injury (N=95)	Acute Kidney Injury (N=15)	P Value
Serum creatinine – mg/dl				
Preoperative				0.0978
Median	0.82	0.82	0.86	
Interquartile range	0.73-0.96	0.7-0.95	0.8-1.1	
Postoperative				0.0003
Median	0.79	0.77	1	
Interquartile range	0.69-0.88	0.69-0.86	0.85-1.1	

Supplementary Table III. Comparison of 2014-2015 cohorts (all patients)

	2014 n=332		2015 n=110		P
	Median	Interquartile Range	Median	Interquartile Range	
Age	69	59-76	62	53-71	0.0001
body mass index	25.51	23.39-28.08	25.34	23.44-28.09	0.9734
aortic cross-clamp time	70	52-96	78	60-101	0.073
extracorporeal circulation time	107	82-134	112.5	97-149	0.0101
postoperative lactate	1.79	1.26-2.73	1.86	1.35-2.41	0.9060
furosemide day 1	20	10-40	10	0-30	0.0001
hospital stay (days)	9	7-13	7	7-10	0.7080
preoperative Serum creatinine – mg/dl	0.92	0.8-1.08	0.82	0.73-0.96	0.0001
postoperative Serum creatinine – mg/dl	0.84	0.74-1.04	0.79	0.69-0.88	0.0011
	n	%	n	%	P
AKI	79	23.80%	15	13.65%	0.0240
AKI stage 1	61	18.37%	11	10%	0.0393
AKI stage 2-3	18	5.42%	4	3.64%	0.2783
Female	106	31.93%	32	29%	0.5779
hypertension	240	72.29%	64	58.18%	0.0057
diabetes mellitus	37	11.14%	10	9.09%	0.5448
peripheral vasculopathy	11	3.31%	4	3.64%	0.8711
chronic obstructive pulmonary disease	39	11.75%	8	7.27%	0.1871
Obesity	55	16.57%	14	12.73%	0.3363
CKD	19	5.72%	0	0	0.0103
Previous heart surgery	55	16.57%	5	4.55%	0.0014
urgency/emergency	69	20.78%	0	0%	0.0000
valve only	194	58.43%	85	77.27%	0.0004
Coronary artery	115	34.64%	12	10.9%	0.0000

bypass graft only					
Aorta	23	6.93%	13	11.81%	0.1041
minimal invasive	139	41.87%	66	60%	0.0009
renal replacement therapy	3	0.9%	1	0.91%	0.9958
stroke (ICU)	2	0.6%	0	0%	0.4146

Supplementary Table IV. Specification Error Test for Logit Regression Model in unified cohorts (2014-2015 cohorts).

Specification Error Test				Number of obs = 316		
				LR chi2(2) = 108.60		
				Prob > chi2 = 0.0000		
<i>Log likelihood = -120.02563</i>				Pseudo R2 = 0.3115		
akipost	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
_hat	.9162684	.1104711	8.29	0.000	.6997491	1.132788
_hatsq	-.0625851	.0340019	-1.84	0.066	-.1292275	.0040573
_cons	.0812334	.1981786	0.41	0.682	-.3071896	.4696564

**Supplementary Table V.
Classification Table at 15%**

Classified	Actual		Total
	AKI	non-AKI	
AKI	10	11	21
non-AKI	3	81	84
Total	13	92	105
Sensitivity		76.92%	
Specificity		88.04%	
PPV		47.62%	
NPV		96.43%	
Correctly classified		86.67%	
AUC		89.63%	

Logit Model with NephroCheck as continuous variable. AUC, area under the curve; NPV, negative predictive value; PPV, positive predictive value.