Supplemental Material

Supplemental Table 1. Demographic, Clinical, and Procedural Characteristics of the PRESERVE Trial[a] and Sub-Study[b]

	Sub-Study Participants (n=922)	Overall PRESERVE Participants (n=4993)
Demographic		
Age-years, mean ± sd	70 ± 8	70 ± 8
Male sex, no. (%)	896 (97%)	4671 (94%)
Race/Ethnicity, no. (%)		
White	718 (78%)	3893 (78%)
Black	144 (16%)	570 (11%)
Other	26 (3%)	349 (7%)
Hispanic	32 (3%)	181 (4%)
Clinical		
Weight –kg, mean ± sd	100 ± 22	98 ± 22
Median baseline serum creatinine (IQR) -mg/dL	1.5 (1.3-1.7)	1.5 (1.3-1.8)
UACR Categories, no. (%)		
<30	371 (43%)	1723/4515(38%)
30-300	286 (33%)	1637/4515 (36%)
>300	205 (24%)	1155/4515 (26%)
Median baseline eGFR (IQR), mL/min	48 (40-57)	50 (41-59)
Diabetes, no. (%)	760 (82%)	4041 (81%)
Procedural		
Coronary Procedure, no. (%)	812 (88%)	4466/4937 (90%)
Percutaneous Intervention, no. (%)	255 (28%)	1406/4837 (29%)
Left ventricular end diastolic pressure - mmHg, mean ± sd	19 ± 8	18 ± 8
Trial arm, no. (%)		
Saline + Placebo	211 (23%)	1244 (25%)
Saline + Acetylcysteine	236 (26%)	1238 (25%)
Sodium Bicarbonate + Placebo	242 (26%)	1254 (25%)
Sodium Bicarbonate + Acetylcysteine	233 (25%)	1257 (25%)
PRESERVE Trial Outcomes		
CA-AKI	73 (8%)	445 (9%)
MAKE-D	60 (7%)	226 (5%)

Abbreviations: CA-AKI, contrast associated acute kidney injury; eGFR, estimated glomerular filtration rate; IQR, interquartile range; MAKE-D, major adverse kidney events or death; UACR, urine albumin to creatinine ratio.

[a] Weisbord SD, Gallagher M, Jneid H, et al. Outcomes after Angiography with Sodium Bicarbonate and Acetylcysteine. *N Engl J Med*. 2018;378(7):603-614.

[b] Parikh CR, Liu C, Mor MK, et al. Kidney Biomarkers of Injury and Repair as Predictors of Contrast-Associated AKI: A Substudy of the PRESERVE Trial. *Am J Kidney Dis*. September 2019. doi:10.1053/j.ajkd.2019.06.011

Supplemental Table 2. Unadjusted Urine Biomarker Concentrations According to Development of Contrast Associated-Acute Kidney Injury

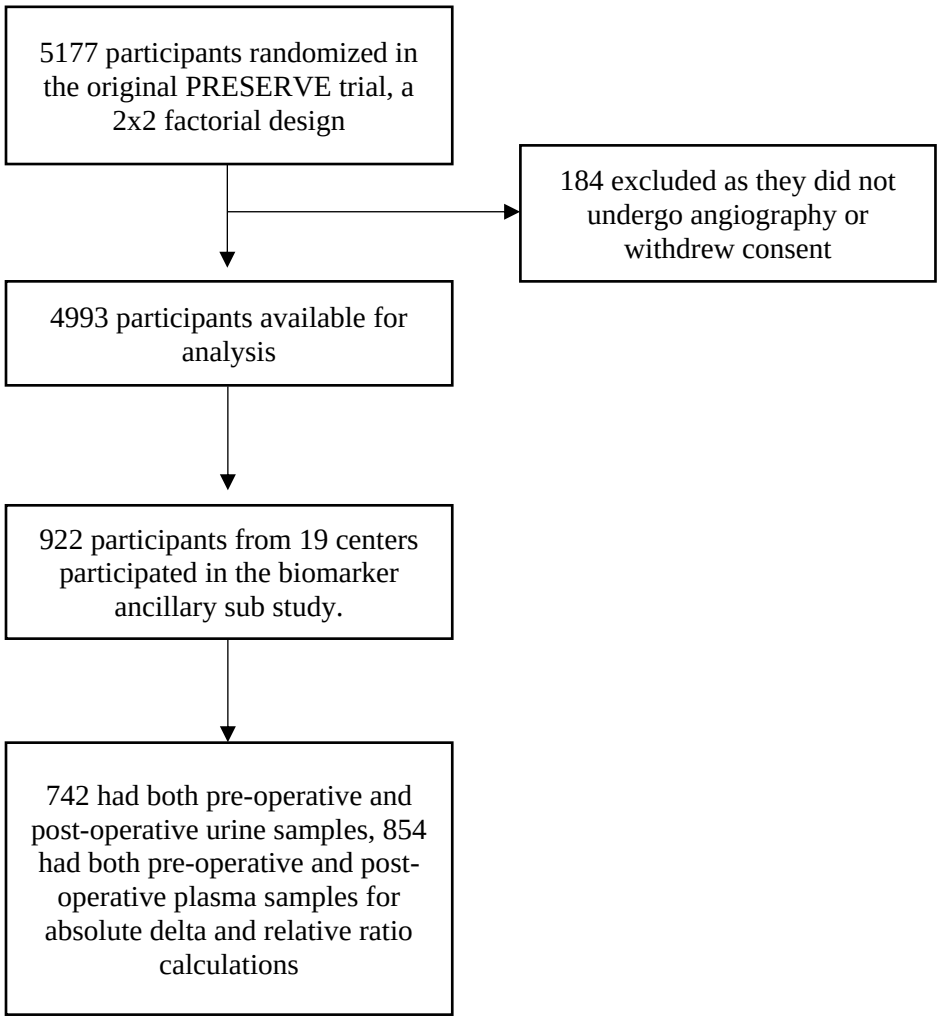
	Median (IQR) Raw Urine Biomarker, pg/mL				
	Biomarker	**CA-AKI**	**No CA-AKI**	**Unadjusted P-value**	**Adjusted[a] P-value**
Pre-Angiography	KIM-1	1460 (767, 2633)	1419 (731, 2805)	0.91	0.99
	NGAL	20 (9, 41)	24 (12, 51)	0.35	0.29
	IL-18	22 (10, 38)	21 (12, 38)	0.83	0.93
	MCP-1	183 (115, 302)	210 (119, 374)	0.33	0.44
	UMOD	2776 (1683, 4606)	2453 (1548, 3862)	0.23	0.34
	YKL-40	400 (137, 1202)	406 (137, 1255)	0.91	0.67
Post-Angiography	KIM-1	864 (461, 1597)	779 (353, 1474)	0.28	0.17
	NGAL	18 (8, 33)	16 (8, 39)	0.85	0.82
	IL-18	13 (9, 25)	14 (8, 23)	0.97	0.76
	MCP-1	114 (73, 208)	127 (73, 237)	0.66	0.85
	UMOD	1862 (1142, 2566)	1591 (1066, 2368)	0.19	0.23
	YKL-40	456 (244, 1467)	502(241, 1170)	0.92	0.92
Absolute Change	KIM-1	-579 (-1458, -250)	-574 (-1605,-52)	0.71	0.75
	NGAL	-4 (-20, 3)	-5 (-19, 2)	0.92	0.86
	IL-18	-4 (-22, 1)	-7 (-18, 1)	0.97	0.91
	MCP-1	-72 (-141, -20)	-76 (-180, -6)	0.67	0.62
	UMOD	-1176 (-2586, -63)	-709 (-1992, 15)	0.42	0.45
	YKL-40	55 (-245, 215)	56 (-223, 315)	0.75	0.77
Relative Ratio	KIM-1	0.57 (0.35, 0.81)	0.53 (0.29, 0.93)	0.81	0.68
	NGAL	0.70 (0.50, 1.52)	0.72 (0.42, 1.15)	0.43	0.45
	IL-18	0.73 (0.42, 1.09)	0.67 (0.39, 1.06)	0.65	0.67
	MCP-1	0.61 (0.43, 0.86)	0.61 (0.37, 0.96)	0.97	0.80
	UMOD	0.57 (0.38, 0.98)	0.67 (0.39, 1.01)	0.72	0.69
	YKL-40	1.27 (0.83, 2.58)	1.17 (0.62, 2.72)	0.65	0.57

Supplemental Table 3. Unadjusted Urine Biomarker Concentrations According to Development of Major Adverse Kidney Events or Death

		Median (IQR) Raw Urine Biomarker, pg/mL			
	Biomarker	**MAKE-D**	**No MAKE-D**	**Unadjusted P-value**	**Adjusted[a] P-value**
Pre-Angiography	KIM-1	1804 (961, 3558)	1392 (720, 2743)	0.06	0.19
	NGAL	37 (16, 97)	23 (11, 49)	0.009	0.09
	IL-18	33 (16, 54)	21 (12, 37)	0.003	0.01
	MCP-1	289 (159, 565)	205 (118, 363)	0.01	0.13
	UMOD	2300 (1462, 3642)	2484 (1554, 3944)	0.47	0.86
	YKL-40	902 (272, 4474)	394 (127, 1184)	<0.001	0.02
Post-Angiography	KIM-1	1169 (412, 2394)	770 (360, 1419)	0.007	0.09
	NGAL	21 (13, 60)	16 (8, 38)	0.04	0.27
	IL-18	19 (12, 38)	14 (8, 22)	0.002	0.01
	MCP-1	166 (100, 337)	123 (72, 232)	0.01	0.15
	UMOD	1382 (868, 2311)	1621 (1083, 2396)	0.15	0.68
	YKL-40	962 (490, 3640)	472 (236, 1091)	<0.001	0.03
Absolute Change	KIM-1	-656 (-1854 -58)	-574 (-1530, -76)	0.86	0.74
	NGAL	-14 (-51, -3)	-5 (-18, 2)	0.003	0.02
	IL-18	-6 (-30, 0)	-6 (-18, 1)	0.55	0.95
	MCP-1	-114 (-246, -53)	-72 (-174, -6)	0.08	0.31
	UMOD	-786 (-1598, -58)	-724 (-2118, 17)	0.83	0.98
	YKL-40	-61 (-1645, 482)	58 (-197, 305)	0.15	0.27
Relative Ratio	KIM-1	0.64 (0.33, 0.94)	0.53 (0.29, 0.91)	0.42	0.62
	NGAL	0.59 (0.49, 0.83)	0.74 (0.43, 1.17)	0.24	0.18
	IL-18	0.76 (0.36, 1.03)	0.67 (0.40, 1.06)	0.92	0.68
	MCP-1	0.55 (0.41, 0.81)	0.62 (0.38, 0.96)	0.96	0.84
	UMOD	0.61 (0.36, 0.96)	0.67 (0.39, 1.01)	0.56	0.55
	YKL-40	0.94 (0.47, 2.24)	1.19 (0.65, 2.77)	0.14	0.11

Abbreviations: IQR, interquartile range; MAKE-D, major adverse kidney events or death.
[a]Adjusted for baseline eGFR and urine albumin to creatinine ratio

Supplemental Figure 1. Study Flow Chart



Supplemental Figure 2. Median [IQR] Relative Ratios of Plasma Biomarkers by CA-AKI Status and Plasma Biomarkers from the Marathon Study and TRIBE-AKI Cohort.