Category, N (%)	SEVERE AKI N=141 (82.9%)	AKI-CRRT N=29 (17.1%)	P-Value
Demographics/Clinical			
Age at ICU Admission (years)	5.8 (1.3, 13.0)	7.5 (1.7, 14.2)	0.559
Male Gender	79 (56%)	16 (55.2%)	0.933
Weight at ICU Admission (kg)	19.5 (9.7, 46.2)	20.0 (12.9, 55.0)	0.316
Any Comorbid Conditions	121 (85.5%)	25 (86.2%)	1.000
Admission Diagnosis			
Shock	99 (70.2%)	26 (89.7%)	0.031
Medical Cardiac	4 (2.8%)	3 (10.3%)	0.097
Respiratory Failure	59 (41.8%)	18 (62.1%)	0.046
Post-Surgical/Minor Trauma	15 (10.6%)	2 (6.9%)	0.740
CNS Dysfunction	28 (19.9%)	2 (6.9%)	0.095
Pain/Sedation Management	3 (2.1%)	0 (0%)	1.000
History of Transplant	19 (13.5%)	4 (13.8%)	1.000
PRISM-III	9.0 (6.0, 12.5)	14.0 (7.0, 22.0)	0.032
PIM-2	3.0 (1.0, 6.0)	4.5 (3.0, 25.0)	0.073
PELOD	11.0 (10.0, 12.0)	32.0 (23.0, 41.0)	0.001
Any Severity Score >75 <sup>th</sup> Percentile	19 (36.5%)	14 (66.7%)	0.019
Outcomes			
Mechanical Ventilation Use	75 (54.4%)	25 (86.2%)	0.002
ECMO Use	0 (0%)	5 (17.2%)	<0.001
28-Day Mortality	17 (12.1%)	14 (48.3%)	<0.001
28-Day MV-Free Days	21.0 (13.0, 25.0)	0.0 (0.0, 16.5)	<0.001
28-Day ICU-Free Days	21.0 (14.0, 24.0)	0.0 (0.0, 13.0)	<0.001

**Online Resource 11:** Study characteristics by Severe AKI and AKI-CRRT (N=170)

ICU = Intensive Care Unit, AKI = Acute Kidney Injury, PRISM-III = Pediatric Risk of Mortality 3, PIM-2 = Pediatric Index of Mortality 2, PELOD= Pediatric Logistic Organ Dysfunction, CNS = Central Nervous System, MV = Mechanical Ventilation, CRRT = Continuous Renal Replacement Therapy, ECMO = Extracorporeal Membrane Oxygenation, Severity Score based on Sepsis sample (N=757)