

**Online Resource 1: Study characteristics for all patients: Sepsis and any AKI (N=4,898)**

Category, N (%) *	No Sepsis No AKI (1) N=3,173 (64.8%)	Sepsis No AKI (2) N=450 (9.2%)	No Sepsis AKI (3) N=968 (19.8%)	Sepsis AKI (4) N=307 (6.3%)	*P-Value
<b>Demographics/Clinical</b>					
Age at ICU Admission (years)	5.8 (1.7, 12.6)	3.8 (1.4, 11.9)	5.9 (1.3, 13.7)	6.0 (1.4, 13)	0.112
Male Gender	1,740 (54.9%)	235 (52.2%)	545 (56.3%)	164 (53.4%)	0.746
Weight at ICU Admission (kg)	20 (11, 41.9)	15.1 (9.7, 34)	20 (10, 45)	20 (10.1, 46.2)	<b>0.016</b>
Any Comorbid Conditions	2,528 (79.7%)	377 (83.8%)	823 (85%)	265 (86.3%)	0.339
<b>Admission Diagnosis</b>					
Shock	540 (17%)	239 (53.1%)	222 (22.9%)	209 (68.1%)	<b>&lt;0.001</b>
Medical Cardiac	112 (3.5%)	13 (2.9%)	62 (6.4%)	10 (3.3%)	0.772
Respiratory Failure	1,130 (35.6%)	218 (48.4%)	390 (40.3%)	135 (44%)	0.226
Post-Surgical/Minor Trauma	1,128 (35.6%)	34 (7.6%)	259 (26.8%)	23 (7.5%)	0.974
CNS Dysfunction	592 (18.7%)	99 (22%)	163 (16.8%)	58 (18.9%)	0.301
Pain/Sedation Management	130 (4.1%)	8 (1.8%)	27 (2.8%)	7 (2.3%)	0.626
History of Transplant	69 (2.2%)	17 (3.8%)	91 (9.4%)	39 (12.7%)	<b>&lt;0.001</b>
PRISM-III	2 (0, 5)	4 (0, 10.5)	3 (0, 7)	8 (4, 13)	<b>&lt;0.001</b>
PIM-2	1 (0, 3)	1.5 (1, 4)	1 (1, 4)	3 (1, 5)	0.091
PELOD	2 (0, 11)	10 (1, 12)	10 (1, 11)	11 (10, 12)	<b>0.007</b>
Any Severity Score >75 <sup>th</sup> Percentile	370 (25.5%)	105 (45.9%)	160 (39.2%)	79 (60.3%)	<b>0.008</b>
<b>Outcomes</b>					
Mechanical Ventilation Use	840 (27.8%)	182 (43.3%)	348 (36.9%)	158 (52.3%)	<b>0.017</b>
CRRT Use	8 (0.3%)	2 (0.4%)	27 (2.8%)	29 (9.5%)	<b>&lt;0.001</b>
ECMO Use	4 (0.1%)	6 (1.3%)	10 (1%)	6 (1.9%)	0.560
28-Day Mortality	62 (1.9%)	21 (4.7%)	44 (4.5%)	37 (12.1%)	<b>&lt;0.001</b>
28-Day MV-Free Days	26 (22, 27)	24 (19, 26)	23 (17, 26)	21 (9.5, 24)	<b>&lt;0.001</b>
28-Day ICU-Free Days	25 (23, 26)	24 (20, 25)	23 (19, 25)	21 (13, 25)	<b>&lt;0.001</b>
Complex ICU course	262 (8.3%)	76 (16.9%)	182 (18.8%)	106 (34.5%)	<b>&lt;0.001</b>

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 full sample (N=4,898); \* = Sepsis NO AKI (2) vs. Sepsis ANY AKI (4)

All continuous summaries presented as Medians (25<sup>th</sup> – 75<sup>th</sup>); P-Values calculated using Wilcoxon tests for continuous variables and Chi-square/Fisher’s tests for categorical variables; CRRT Use, ECMO Use, and 28-Day Mortality assumed to be “No” if missing; Complex ICU course indicated by any of: mortality, ICU duration > 14 days, mechanical ventilation > 7 days, CRRT Use, ECMO use; Patients that did not have any of these five conditions were defaulted to non-complex ICU course. >75<sup>th</sup> percentile for severity of illness scores data shown are the number of patients with an available SOI score above the 75<sup>th</sup> percentile for that entire subgrouping (e.g., No Sepsis/No AKI – 25.5% = 370 of 1,449 with a SOI score in that group were > 75<sup>th</sup> percentile). Available SOI scores in each group for this table: No Sepsis/No AKI: 1449 (45.7%), Sepsis/No AKI: 229 (50.9%), No Sepsis/ANY AKI: 408 (42.1%), Sepsis/ANY AKI: 131 (42.7%)