

Table S1: Hospital Course and Outcomes by Stage of Acute Kidney Injury

	Acute COVID-19				MIS-C			
	No AKI N = 89	AKI Stage 1 N = 6	AKI Stage 2 N = 1	AKI Stage 3 N = 1	No AKI N = 45	AKI Stage 1 N = 4	AKI Stage 2 N = 2	AKI Stage 3 N = 4
Treatment N(%)								
IVIG	10(11)	2(33)	0(0)	0(0)	40(89)	4(100)	2(100)	3(75)
Anakinra	4(5)	0(0)	1(100)	1(100)	3(7)	2(50)	1(50)	0(0)
Hydroxychloroquine	14(16)	2(33)	1(100)	1(100)	1(2)	0(0)	0(0)	1(25)
Remdesivir	5(6)	1(17)	0(0)	0(0)	0(0)	1(25)	0(0)	0(0)
Methylprednisolone or Prednisone	14(16)	1(17)	1(100)	1(100)	26(58)	4(100)	2(100)	2(50)
PICU (N%)	18 (20.2)	6 (100)	1 (100)	1 (100)	25 (55.6)	4 (100)	2 (100)	3 (75)
Length of PICU stay, days	3.1 (2.1,11)	7.7 (2.8,13.9)	20 (-)	16.6 (-)	3.4 (2.6,4.9)	11.1 (8.2,30.7)	6.8 (4.5,-)	3.7 (1.5, -)
Ionotropes N(%)	1(1)	2(33)	0(0)	1(100)	7(16)	4(100)	1(50)	1(25)
Vasopressors N(%)	3(3)	3(50)	1(100)	1(100)	18(40)	4(100)	2(100)	3(75)
ECMO N(%)	1 (1.1)	1 (16.7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Mechanical Ventilation N(%)	4 (4.5)	2 (33.3)	1 (100)	1 (100)	1 (2.2)	2 (50)	1 (50)	1 (25)
Length of mechanical ventilation, days	10 (6,14)	4 (4,4)	1 (1,1)	13 (13,13)	2 (2,2)	3.5 (3,-)	2 (2,2)	5 (5,5)
Length of hospital stay, days	2.8 (1.6,6.2)	17.4 (9.2,31.5)	25.6 (-)	27.5 (-)	4.6 (3.5, 6.3)	11.4 (8.3,15)	8.9 (4.5, -)	4.2 (3.2,7.7)
Median creatinine, mg/dL	0.34 (0.23,0.5)	0.57 (0.25,0.87)	0.6 (-)	0.78 (-)	0.37 (0.28, 0.51)	0.7 (0.67 0.75)	0.71 (0.65,-)	0.8 (0.6,2)
Peak creatinine, mg/dL	0.39 (0.26,0.57)	0.73 (0.38,1.4)	2.1 (-)	2.3 (-)	0.49 (0.31, 0.7)	1.4 (1,1.8)	1.5 (1.5,-)	3.1 (2.4,4.4)
Discharge creatinine, mg/dL	0.33 (0.23,0.5)	0.26 (0.21,0.61)	0.71 (-)	0.25 (-)	0.36 (0.26, 0.47)	0.52 (0.32,0.58)	0.38 (0.38,-)	0.48 (0.34,0.9)
Discharge eGFR, mL/min/1.73m ²	159 (114,119)	121 (65,220)	170 (-)	174 (-)	189 (159, 212)	211 (140,242)	183 (174, 83)	142 (89,178)
Mortality (%)	1 (1.1)	1 (16.7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

IVIG Intravenous Immunoglobulin, PICU Pediatric ICU, ECMO Extracorporeal Membranous Oxygenation, eGFR Estimated glomerular filtration rate based on original Schwartz equation

Table S2. Echocardiographic Data in MIS-C patients with and without Acute Kidney Injury (N=49)

	No AKI	AKI	Total	p-value
	N=39	N=10	N=49	
Lowest LVEF*	56 (49-62)	49 (40-54)	54 (49-61)	0.020
Systolic Dysfunction**	17 (43.5%)	8 (80%)	25 (49%)	0.038
Coronary dilation***	10 (25.6%)	3 (30%)	13 (25%)	0.70

MIS-C – Multisystem Inflammatory Syndrome in Children, AKI – Acute Kidney Injury, LVEF Left ventricular ejection fraction

*Nadir left ventricular ejection fraction extrapolated from EMR.

**LVEF<55%

***>2mm

Table S3. Admission characteristics and laboratory values by Admission Unit:
Pediatric Intensive Care Unit vs Medical/Surgical Floor

	PICU Admission N=60	Medical/Surgical Admission N=92	P Value
Age, year	10.5 (4.7, 14.5)	6.8 (1.8, 11.3)	0.010
Male N (%)	49 (53.3)	36 (60)	0.5
Race N (%)			0.36
White	5 (8.3)	16 (17.4)	
Black	19 (31.7)	18 (19.6)	
Asian	7 (11.7)	9 (9.8)	
Other	26 (43.3)	45 (48)	
Unknown	3 (5.0)	4 (4.3)	
Ethnicity N (%)			0.35
Hispanic/Latino	13 (21.7)	26 (28.3)	
Not Hispanic/Latino	45 (75.0)	59 (64.1)	
Other/Unknown	2 (3.3)	7 (7.6)	
BMI z-score	0 (-0.01, 1.9)	0.75 (-0.06, 1.8)	0.40
Obese N (%)	10 (18.9)	16 (23.9)	0.66
Children's Hospital N(%)	59 (98.3)	81 (88.0)	0.03
Presenting Symptoms N (%)			
Gastrointestinal	42 (70)	54 (58.7)	0.17
Fever	47 (78.3)	73 (79.3)	>0.99
Cough	13 (21.7)	15 (16.3)	0.52
Rash	21 (35.0)	22 (23.9)	0.15
Myalgias/joint aches	8 (13.3)	4 (4.3)	0.06
Comorbid Condition N (%)			
Hypertension	1 (1.7)	0 (0)	0.39
Diabetes Mellitus	0 (0)	1 (1.1)	>0.99
Asthma	6 (10)	7 (7.6)	0.77
Cancer	3 (5)	1 (1.1)	0.30
Congenital Heart Disease	4 (6.7)	5 (5.4)	0.74
Immunosuppressed	3 (5)	2 (2.2)	0.38
Baseline SCr, mg/dL*	0.54 (0.39, 0.66)	0.65 (0.49, 0.76)	0.002
Admission SCr, mg/dL	0.35 (0.24, 0.50)	0.62 (0.40, 0.90)	<0.001
Admission eGFR, mL/min/1.73m ²	160 (117, 191)	121 (87-156)	<0.001
Sodium, mEq/L	136 (132, 137)	136 (134, 138)	0.13
Potassium, mEq/L	3.9 (3.7, 4.4)	4.25 (3.9, 4.9)	0.009
Bicarbonate, mEq/L	20 (17, 23)	21 (19, 23)	0.16
Magnesium, mEq/L	2.1 (1.9, 2.3)	2 (1.8, 2.2)	0.03
Calcium, mg/dL	8.8 (8.3, 9.3)	9.6 (9.2, 10)	<0.001
Albumin mg/dL	3.45 (2.8-3.9)	4.1 (3.9, 4.5)	<0.001
White blood cell, mm ³	9.9 (7.1, 14.5)	9.5 (6.2, 13.2)	0.35
Hemoglobin, g/dL	11.2 (10.3, 12.1)	11.6 (10.3, 12.7)	0.30
Platelets, mm ³	183 (119, 255)	273 (191, 349)	<0.001
LDH, U/L	323.5 (280, 456)	318 (219, 422)	0.21
Fibrinogen, mg/dL	635 (506, 768)	608 (479, 730)	0.49
CRP, ug/mL	125 (49, 225)	48.5 (12.7-116.29)	<0.001
D-dimer, mcg/mL	1439 (659, 2466)	549 (379, 780)	<0.001
Acute Kidney Injury N (%)	17 (28.3)	1 (1.1)	<0.001

AKI – acute kidney injury, BMI – body mass index, SCr- serum creatinine, eGFR – estimated glomerular filtration rate, LDH – lactate dehydrogenase, CRP- c reactive protein

* Baseline SCr - estimated from assumed eGFR 120ml/min/1.73m² using original Schwartz formula³⁴

Table S4: Logistic regression analyses of baseline demographics and clinical variables associated with acute kidney injury in COVID and MIS-C*

Variable	Unadjusted OR (95%CI)	P Value
Age, years	1.01 (0.93, 1.1)	0.83
Male (ref female)	0.79 (0.29, 2.1)	0.64
Black Race	2.86 (1.04, 7.93)	0.042
Hispanic Ethnicity (ref non-Hispanic)	0.33 (0.07, 1.5)	0.15
Children's Hospital (ref non-children's hospital)	2.3x10 ⁸ (-)	0.99
BMI z-score	1.24 (0.86, 1.8)	0.25
Obesity (ref no obesity)	1.91 (0.61, 6)	0.26
Gastrointestinal symptoms	2.2 (0.69, 7.1)	0.18
Fever	0.66 (0.22, 2)	0.46
Cough	0.52 (0.11, 2.4)	0.15
Comorbid Condition*	1.96 (0.63, 6.1)	0.24
Admission eGFR (mL/min/1.73m ²)	0.96 (0.94, 0.97)	<0.0001
Admission Labs:		
Sodium (meq/L)	0.91 (0.8, 1.04)	0.17
Potassium (meq/L)	0.8 (0.41, 1.6)	0.5
Bicarbonate (meq/L)	0.87 (0.7, 0.99)	0.03
Calcium (mg/dL)	0.35 (0.18, 0.66)	0.001
Albumin (g/dL)	0.17 (0.07, 0.39)	<0.001
CRP (mg/L)	1.01 (1.004, 1.01)	<0.001
Fibrinogen (mg/dL)	1.002 (0.99, 1.004)	0.14
D-dimer (mcg/mL)	1 (1,1)	0.26
LDH (U/L)	1.001 (1, 1.002)	0.07
Hemoglobin (g/dL)	0.89 (0.71, 1.1)	0.31
WBC (mm ³)	1.11 (1.04, 1.2)	0.003
Platelets (mm ³)	0.99 (0.99,1)	0.07
PICU admission	35.9 (4.6, 279)	0.001
Nephrotoxic medication exposure* (N=5)	5.5 (1.33, 22.6)	0.018

MIS-C – Multisystem Inflammatory Syndrome in Children, OR- odds ratio, ref- reference, BMI – body mass index, eGFR – estimated glomerular filtration rate, LDH – lactate dehydrogenase, CRP- c reactive protein, WBC – white blood cells

* COVID-19 and MIS-C analyzed together as one group

Comorbid condition include cancer, congenital heart disease, hypertension, immunosuppressed status, asthma, diabetes mellitus.

Nephrotoxic medication exposure includes angiotensin converting enzyme inhibitor/angiotensin receptor blockers, nonsteroidal inflammatory agents, vancomycin/aminoglycosides