

**Supplemental Table 1: Complete list of the admission biochemical characteristics of validation cohort patients with AP**

	<b>SAP (n=22)</b>	<b>Mild AP (n=51)</b>	<b>p-value</b>
<b>Lipase x ULN</b>	23.8 (5.6-45.9) <i>n=21</i>	12.3 (6.9-42.9) <i>n=48</i>	0.66
<b>Amylase x ULN</b>	4.1 (2.4-10.5) <i>n=19</i>	2.2 (1.4-7.1) <i>n=40</i>	0.15
<b>Albumin, g/dL</b>	3.3 (3.1-4.2) <i>n=21</i>	4.0 (3.6-4.6) <i>n=47</i>	<b>0.005</b>
<b>Anion Gap, mmol/L</b>	12.0 (8.0-16.0) <i>n=21</i>	12.0 (10.0-15.0) <i>n=51</i>	0.74
<b>WBC, 10<sup>3</sup>/microL</b>	13.1 (5.8-17.3) <i>n=19</i>	9.8 (6.5-13.8) <i>n=39</i>	0.38
<b>Creatinine, mg/dL</b>	0.5 (0.4-0.7) <i>n=22</i>	0.5 (0.4-0.7) <i>n=51</i>	0.94
<b>Calcium, mg/dL</b>	9.2 (8.8-9.5) <i>n=22</i>	9.3 (8.9-9.7) <i>n=51</i>	0.29
<b>AST, Unit/L</b>	32.0 (24.0-63.0) <i>n=21</i>	38.0 (22.0-80.0) <i>n=47</i>	0.69
<b>ALT, Unit/L</b>	29.0 (21.0-57.0) <i>n=21</i>	31.0 (24.0-135.0) <i>n=47</i>	0.39
<b>Hematocrit, %</b>	39.4 (33.2-41.9) <i>n=19</i>	37.3 (34.4-39.8) <i>n=39</i>	0.53
<b>Hemoglobin, g/dL</b>	13.7 (11.0-14.5) <i>n=19</i>	12.9 (11.7-14.1) <i>n=39</i>	0.89
<b>BUN, mg/dL</b>	14.5 (11.0-19.0) <i>n=22</i>	11.0 (8.0-13.0) <i>n=51</i>	<b>0.002</b>
<b>Alk Phosphorus, Unit/L</b>	163.0 (137.0-207.0) <i>n=21</i>	138.5 (91.0-225.0) <i>n=46</i>	0.54
<b>Glucose, mg/dL</b>	97.5 (80.0-138.0) <i>n=22</i>	99.0 (89.0-118.0) <i>n=51</i>	0.75
<b>Triglyceride, mg/dL</b>	49.5 (35.0-69.0) <i>n=10</i>	68.0 (50.0-115.0) <i>n=21</i>	0.06
<b>Sodium, mmol/L</b>	138.5 (136.0-140.0) <i>n=22</i>	140.0 (138.0-142.0) <i>n=51</i>	0.11
<b>Chloride, mmol/L</b>	103.5 (101.0-106.0) <i>n=22</i>	104.0 (101.0-106.0) <i>n=51</i>	0.91
<b>Total Bilirubin, mg/dL</b>	0.5 (0.4-0.9) <i>n=21</i>	0.6 (0.4-1.1) <i>n=47</i>	0.50
<b>CRP, mg/dL</b>	1.3 (0.5-6.6) <i>n=11</i>	1.1 (0.6-3.0) <i>n=29</i>	0.83
<b>Potassium, mmol/L</b>	4.1 (3.9-4.6) <i>n=21</i>	4.1 (3.7-4.4) <i>n=51</i>	0.64
<b>Total protein, g/dL</b>	6.6 (5.9-7.6) <i>n=21</i>	7.1 (6.5-7.5) <i>n=47</i>	0.20
<b>Platelet count, 10<sup>3</sup>/microL</b>	288.0 (154.0-393.0) <i>n=19</i>	261.0 (219.0-326.0) <i>n=39</i>	0.67
<b>CO2, mmol/L</b>	24.5 (18.0-27.0) <i>n=22</i>	24.0 (22.0-25.0) <i>n=51</i>	0.93

Data presented as median (25<sup>th</sup>-75<sup>th</sup> percentile) or n (%)

**Supplemental Table 2: BUN Change admission to 24-48 hours, patient characteristics**

	<b>All N=176</b>	<b>Mild AP N=137</b>	<b>SAP* N=39</b>	<b>P-value†</b>
<b>Age at admission (years)</b>	13.5 (8.7, 15.6)	13.5 (9.3, 15.6)	12.3 (7.7, 15.5)	0.29
<b>Sex (female)</b>	96 (55%)	77 (56%)	19 (49%)	0.41
<b>Fluid type</b>				0.37
<b>Isotonic</b>	58/157 (37%)	47/121 (39%)	11/36 (31%)	
<b>Hypotonic</b>	88/157 (56%)	67/121 (55%)	21/36 (58%)	
<b>TPN/Other</b>	11/157 (7%)	7/121 (6%)	4/36 (11%)	
<b>Fluid rate</b>				0.73
<b>&lt; 1.5x maintenance</b>	76/160 (47%)	58/122 (48%)	18/38 (47%)	
<b>1.5 - &lt;2x maintenance</b>	70/160 (44%)	52/122 (43%)	18/38 (47%)	
<b>≥ 2x maintenance</b>	14/160 (9%)	12/122 (10%)	2/38 (5%)	
<b>Feeds on admission</b>				-
<b>NPO</b>	134/165 (81%)	101/128 (79%)	33/37 (89%)	
<b>Clear liquid diet</b>	17/165 (10%)	16/128 (13%)	1/37 (3%)	
<b>PO general diet</b>	10/165 (6%)	7/128 (5%)	3/37 (8%)	
<b>PO low fat diet</b>	3/165 (2%)	3/128 (2%)	0/37 (0%)	
<b>Feeds through existing enteral tube</b>	1/165 (1%)	1/128 (1%)	0/37 (0%)	
<b>IV bolus within 6 hours</b>	103/162 (64%)	75/125 (60%)	28/37 (76%)	0.08
<b>BUN admission (mg/dL)</b>	11.0 (8.0, 15.0)	10.0 (8.0-13.0)	15.5 (11.0-22.5)	<0.0001
<b>BUN 24-48hrs (mg/dL)</b>	8.0 (6.0, 12.0)	7.0 (5.0-10.0)	12.5 (8.0-19.0)	<0.0001
<b>BUN change (mg/dL)</b>	-3.0 (-6.0, -1.0)	-3.0 (-5.0, -1.0)	-3.5 (-7.0, -1.0)	0.32
<b>BUN no change admission-24hrs</b>	15/143 (10%)	13/109 (12%)	2/34 (6%)	0.52
<b>BUN percent change from admission (includes all)</b>	-23.5 (-44.4, -9.1) <i>n=143</i>	-27.3 (-50.0, -9.1) <i>n=109</i>	-19.1 (-32.4, -9.4) <i>n=34</i>	0.22
<b>BUN percent rise from admission (for those increased)</b>	25.0 (10.0, 40.0) <i>n=15</i>	25.0 (16.7, 40.0) <i>n=13</i>	19.8 (6.3, 33.3) <i>n=2</i>	0.60
<b>BUN percent decrease from admission (for those decreased)</b>	-33.3 (-50.0, -20.0) <i>n=113</i>	-35.7 (-52.9, -22.2) <i>n=83</i>	-21.5 (-38.5, -12.5) <i>n=30</i>	0.002
<b>BUN elevated admission (&gt;20 mg/dL)</b>	15/162 (9%)	3/126 (2%)	12/36 (33%)	<0.0001
<b>BUN elevated 24hrs (&gt;20 mg/dL)</b>	10/145 (7%)	2/111 (2%)	8/34 (24%)	0.0001
<b>BUN elevated both at admission &amp; at 24 hours (&gt;20 mg/dL)</b>	10/143 (7%)	2/109 (2%)	8/34 (24%)	0.0002

Data presented as median (25<sup>th</sup>-75<sup>th</sup> percentile) or n (%).

\*SAP (moderately severe and severe AP)

†P-value is from testing differences between the Mild AP and SAP groups

**Supplemental Table 3: BUN Values and Resultant Statistics**

**A. Derived from the CHKD and CNH Data (n= 73)**

<b>BUN Value (mg/dL)</b>	<b>Sensitivity</b>	<b>Specificity</b>	<b>PPV</b>	<b>NPV</b>
<b>10</b>	77%	33%	33%	77%
<b>11</b>	77%	49%	40%	83%
<b>12</b>	73%	59%	43%	83%
<b>13</b>	68%	73%	52%	84%
<b>14</b>	59%	76%	52%	81%
<b>15</b>	50%	82%	55%	79%
<b>16</b>	45%	90%	67%	79%
<b>17</b>	41%	90%	64%	78%
<b>18</b>	36%	92%	67%	77%
<b>19</b>	27%	94%	67%	75%
<b>21</b>	23%	98%	83%	75%
<b>23</b>	18%	98%	80%	74%
<b>24</b>	14%	98%	75%	72%
<b>37</b>	14%	100%	100%	73%

**B. Derived from the BUN Change Cohort (CHKD & CCHMC) data (n=176)**

BUN Value (mg/dL)	Admission				24-48 hours			
	Sensitivity	Specificity	PPV	NPV	Sensitivity	Specificity	PPV	NPV
10	83%	38%	28%	89%	59%	71%	38%	85%
11	78%	52%	31%	89%	59%	81%	49%	87%
12	72%	60%	34%	88%	56%	84%	51%	86%
13	69%	72%	42%	89%	50%	88%	57%	85%
14	61%	79%	45%	88%	44%	94%	68%	85%
15	56%	83%	48%	87%	41%	95%	70%	84%
16	50%	88%	55%	86%	41%	95%	74%	84%
17	47%	88%	53%	85%	35%	95%	71%	83%
18	44%	91%	59%	85%	32%	95%	69%	82%
19	42%	91%	59%	85%	26%	96%	69%	81%
20	39%	94%	67%	84%	24%	97%	73%	81%
21	33%	98%	80%	84%	24%	98%	80%	81%
22	28%	98%	77%	83%	21%	98%	78%	80%
25	19%	98%	70%	81%	18%	98%	75%	80%
32	17%	99%	86%	81%	NA	NA	NA	NA

Supplemental Figure 1.

