

Supplementary Table 1. The characteristics of participants across natremia status during PICU admission.

	Normonatremia (N=424)	Hyponatremia (N=360)	Hypernatremia (N=57)	Mixed dysnatremia (N=125)	P-value
Boys (%)	231 (54.5)	201 (55.8)	30 (52.6)	81 (64.8)	0.20
Age (month)	50.8 ± 54.1	61.8 ± 56.07	35.9 ± 40.2	50.2 ± 55.05	0.01
Height (cm)	96.3 ± 33.5	102.7 ± 32.7	86.0 ± 28.4	93.4 ± 31.9	0.01
Weight (kg)	17.2 ± 15.4	18.3 ± 15.3	12.9 ± 11.1	15.7 ± 12.8	0.04
Body mass index (kg/m²)	15.9 ± 6.8	15.4 ± 6.2	15.4 ± 4.1	16.8 ± 12.07	0.31
Admission type					
Elective surgery (%)	116 (27.4)	38 (10.6)	7 (12.3)	20 (16.0)	<0.001
Emergency surgery (%)	34 (8.0)	14 (3.9)	5 (8.8)	4 (3.2)	
Medical (%)	274 (64.6)	308 (85.6)	45 (78.9)	101 (80.8)	
Diagnosis category					
Cardiorespiratory (%)	45 (10.6)	51 (14.2)	9 (15.8)	18 (14.4)	<0.001
Neuromuscular (%)	126 (29.7)	77 (21.4)	10 (17.5)	33 (26.4)	
Infectious disease (%)	10 (2.4)	44 (12.2)	6 (10.5)	13 (10.4)	
Hematology/oncology (%)	18 (4.2)	33 (9.2)	2 (3.5)	11 (8.8)	
Gastrointestinal (%)	36 (8.5)	63 (17.5)	12 (21.1)	14 (11.2)	
Renal, endocrine (%)	39 (9.2)	40 (11.1)	6 (10.5)	12 (9.6)	
Surgical (%)	116 (27.4)	38 (10.6)	7 (12.3)	20 (16.0)	
Emergency (%)	34 (8.0)	14 (3.9)	5 (8.8)	4 (3.2)	
Glasgow Coma Score Status					
Mild (%)	309 (72.9)	247 (68.6)	30 (52.6)	48 (38.4)	<0.001
Moderate (%)	64 (15.1)	41 (11.4)	5 (8.8)	12 (9.6)	
Severe (%)	51 (12.0)	72 (20.0)	22 (38.6)	65 (52.0)	
Nutritional status					
Normal weight (%)	200 (47.2)	160 (44.4)	23 (40.4)	58 (46.4)	0.77
Underweight (%)	135 (31.8)	133 (36.9)	20 (35.1)	42 (33.6)	
Overweight or obese (%)	89 (21.0)	67 (18.6)	14 (24.6)	25 (20.0)	
Serum sodium level (mmol/L)	138.0 ± 2.5	134.2 ± 4.7	141.7 ± 7.8	136.9 ± 7.5	<0.001
Serum creatinine level (mg/dl)	0.62 ± 0.32	0.69 ± 0.62	0.69 ± 0.41	0.72 ± 0.38	0.06

estimated glomerular filtration rate	86.9 ± 38.1	90.2 ± 36.0	78.9 ± 55.0	80.7 ± 51.1	0.06
PICU length of stay (days)	2.8 ± 4.5	6.3 ± 18.9	7.7 ± 7.5	14.9 ± 33.6	<0.001
Prolonged PICU stay (%)	34 (8.0)	85 (23.6)	23 (40.4)	65 (52.0)	<0.001
PICU mortality (%)	11 (2.6)	22 (6.1)	10 (17.5)	20 (16.0)	<0.001

Data represented as mean ± standard deviation, or median (interquartile) for continuous variables and number and percent for categorical variables.

*Chi-square or Fisher's exact, and analysis of variance or Kruskal-Wallis tests were used to test the categorical and continuous variables across nutritional status categories.

Supplementary Table 2. Sensitivity analysis of the association between serum sodium status during PICU admission and risk of clinical outcomes.¹

	Normonatremia (N=413)	Hyponatremia (N=172)	Hypernatremia (N=44)	Mixed dysnatremia (N=64)
Prolonged PICU stay (> 7 days)	1.00 (Reference)	4.11 (2.37-7.15)	7.33 (3.21-16.73)	11.23 (5.45-23.11)
PICU mortality	1.00 (Reference)	1.45 (0.52-4.03)	6.01 (1.92-18.85)	2.35 (0.69-8.03)

Abbreviations: PICU: Pediatric Intensive Care Unit.

¹ Sensitivity analysis was conducted after excluding participants with dysnatremia at PICU admission and adjusted for age, gender, admission type, diagnosis category, Glasgow Coma Scale score status, baseline serum sodium, eGFR, and nutritional status.

Supplementary Table 3. Sensitivity analysis of the association between fluctuations in serum sodium level during PICU admission and risk of clinical outcomes.¹

	1 st quartile	2 nd quartile	3 rd quartile	4 th quartile	P trend
Prolonged PICU stay (> 7 days)	1.00 (Reference)	1.54 (0.68-3.48)	3.19 (1.54-6.63)	11.72 (5.72-24.01)	<0.001
PICU mortality	1.00 (Reference)	0.88 (0.19-4.10)	2.62 (0.78-8.84)	3.43 (1.03-11.41)	0.02

Abbreviations: PICU: Pediatric Intensive Care Unit.

¹Sensitivity analysis was conducted after excluding participants with dysnatemia at PICU admission and adjusted for age, gender, admission type, diagnosis category, Glasgow Coma Scale score status, baseline serum sodium, eGFR, and nutritional status.