

Table S1. Comparison of Clinical Characteristics Between ARDS Patients and Non-ARDS Patients in VUMC Cohort

	VUMC Cohort (n=937)		P-value
	Non-ARDS (n=688)	ARDS (n=249)	
Age (years), mean (SD)	53 (17)	52 (18)	0.23
Male, n (%)	413 (60.0)	150 (60.2)	1.00
Non-Caucasian, n (%)	136 (20)	36 (15)	0.08
BMI, mean (SD)	29 (8.3)	29 (8.3)	0.60
Smoking Status, n (%)			0.53
None	256 (37)	99 (40)	
Former Smoker	162 (24)	50 (20)	
Current Smoker	221 (32)	86 (35)	
Unknown	49 (7.1)	14 (5.6)	
ARDS Risk Factor, n (%)			<0.001
Sepsis	156 (23)	60 (24)	
Pneumonia	51 (7.5)	54 (22)	
Severe Trauma	186 (28)	89 (36)	
Aspiration	26 (3.8)	31 (12)	
Others	257 (36)	15 (6.0)	
PaO2/FiO2 Ratio, mean (SD)	248 (126)	155 (86)	<0.001
APACHE II score, mean (SD)	24.6 (8.1)	28.7 (7.1)	<0.001
Organ Failure, n (%)	519 (75)	202 (81)	0.08
Circulatory Failure	418 (61)	173 (70)	0.02
Coagulation Failure	137 (20)	49 (20)	1.00
Hepatic failure	98 (14)	35 (14)	1.00
Renal failure	194 (28)	52 (21)	0.03
Vasopressors, n (%)	234 (34)	124 (50)	<0.001
Telomere length (kb), mean (SD)	6.95 (0.77)	6.93 (0.84)	0.69

Abbreviations: SD, standard deviation; BMI, body mass index; ARDS, acute respiratory distress syndrome; APACHE, Acute Physiology and Chronic Health Evaluation.

Table S2. Association Between PBL-TL and Mortality in VUMC Cohort Analyzing by Logistic Regression Models

Telomere Length (Per 1kb decrease)	60-Day Mortality		90-Day Mortality		One-Year Mortality	
	OR (95% CI)	P-value	OR (95% CI)	P-value	OR (95% CI)	P-value
VUMC Cohort (n=937)						
Unadjusted	1.52 (1.25 -1.87)	<0.0001	1.67 (1.37- 2.04)	<0.0001	1.11 (1.11-1.15)	<0.0001
Adjusted ¹	1.24 (0.99-1.56)	0.057	1.36 (1.09-1.71)	0.006	1.29 (1.05-1.58)	0.015
VUMC Sepsis Subgroup (n=368)						
Unadjusted	1.68 (1.23-2.31)	0.001	1.78 (1.31-2.46)	0.0003	1.64 (1.23-2.21)	0.0009
Adjusted ¹	1.59 (1.14-2.23)	0.007	1.67 (1.20-2.34)	0.003	1.47 (1.08-2.02)	0.015

¹Adjusted for age, male sex, ethnicity, smoking status, and APACHE II Score.

Table S3. Relationship of PBL-TL to 90-day Survival Using Multivariable Survival Analysis of Trauma Patients in VUMC Cohort

Multivariable Analysis (Individual Covariates)	VUMC Trauma Subgroup (n=281)	
	HR (95% CI)	P-value
Age	1.04 (1.02-1.07)	<0.0001
Male Sex	0.81 (0.42-1.56)	0.53
Ethnicity (Non-Caucasian)	0.83 (0.31-2.3)	0.72
Smoking Status (Never Smoking)	1.01 (0.53-1.94)	0.97
APACHE II Score	1.08 (1.03-1.13)	0.0007
Telomere Length (Per 1 kb decrease)	0.90 (0.75-1.65)	0.59

Abbreviations: APACHE, Acute Physiology and Chronic Health Evaluation; HR, Hazard Ratio.

Table S4. Comparison of Clinical Characteristics of Critically Ill Patients with Sepsis between VUMC Cohort and UCSF Cohort

	VUMC Sepsis Subgroup (n=368)	UCSF Sepsis Cohort (n=394)	P-value
Age (years), mean (SD)	55 (16)	66 (16)	<0.001
Male, n (%)	199 (54)	221 (56)	0.63
Non-Caucasian, n (%)	71 (19)	193 (49.0)	<0.001
BMI, mean (SD)	29(8.8)	28 (23)	0.51
Smoking Status, n (%)			<0.001
None	140 (38.0)	198 (50.4)	
Former Smoker	106 (28.8)	133 (33.8)	
Current Smoker	109 (29.6)	47 (12.0)	
Unknown	13 (3.5)	15 (3.8)	
ARDS, n (%)	151 (41.0)	123 (35.0)	0.12
ARDS Risk Factor, n (%)			<0.001
Sepsis	208 (56.7)	220 (55.8)	
Pneumonia	95 (26)	140 (36)	
Aspiration	34 (9.3)	29 (7.4)	
Others	30 (8.2)	5 (1.3)	
PaO2/FiO2 Ratio, mean (SD)	196 (124)	209 (131)	0.27
APACHE II score, mean (SD)	27.7 (8.45)	24.6 (10)	<0.001
Organ Failure, n (%)	317 (86.1)	308 (78.2)	0.006
Circulatory Failure	269 (73.1)	241(61.5)	0.001
Coagulation Failure	57 (16)	55 (14)	0.69
Hepatic failure	77 (21)	62 (20)	0.71
Renal failure	140 (38.0)	118 (30.3)	0.031
Vasopressors, n (%)	181 (49.2)	172 (43.7)	0.15
Telomere length (kb), mean (SD)	6.84 (0.75)	6.19 (0.62)	<0.001

Abbreviations: SD, standard deviation; BMI, body mass index; ARDS, acute respiratory distress syndrome; APACHE, Acute Physiology and Chronic Health Evaluation.

Figure S1. Venn Diagram of Subgroups in VUMC Cohort

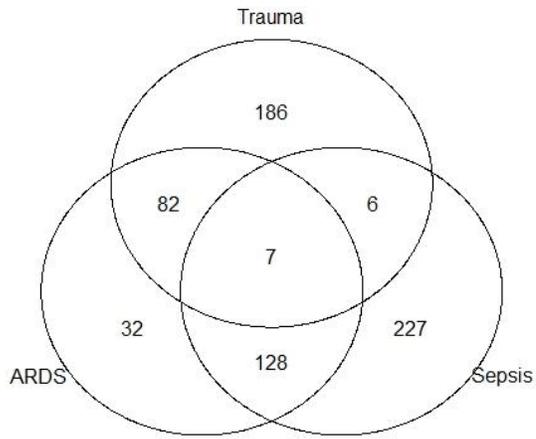
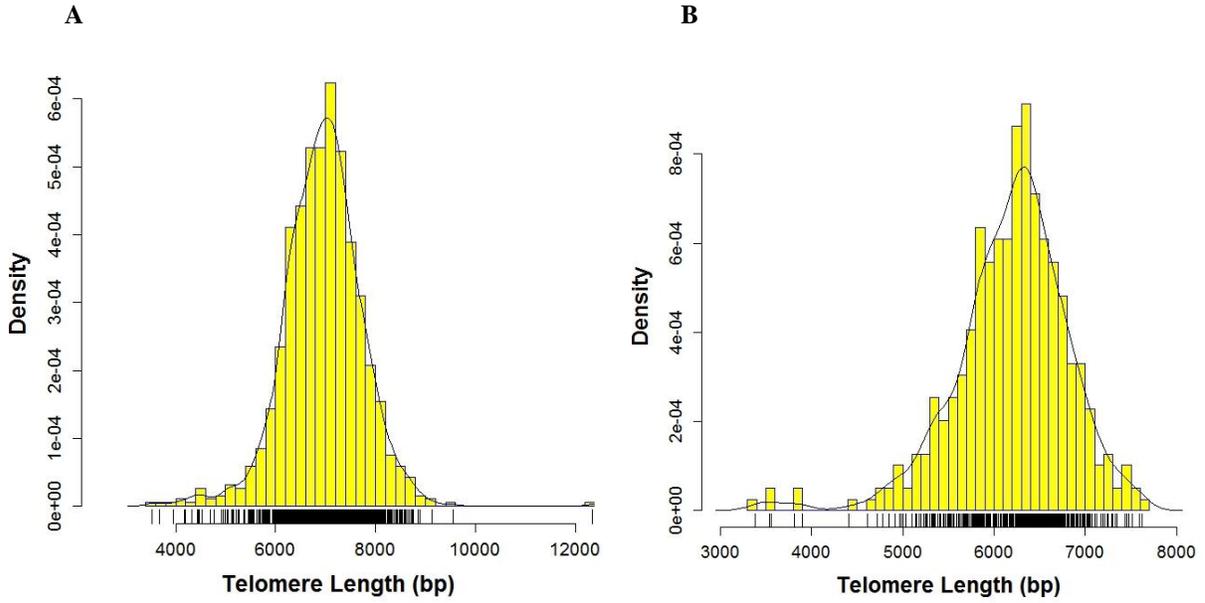


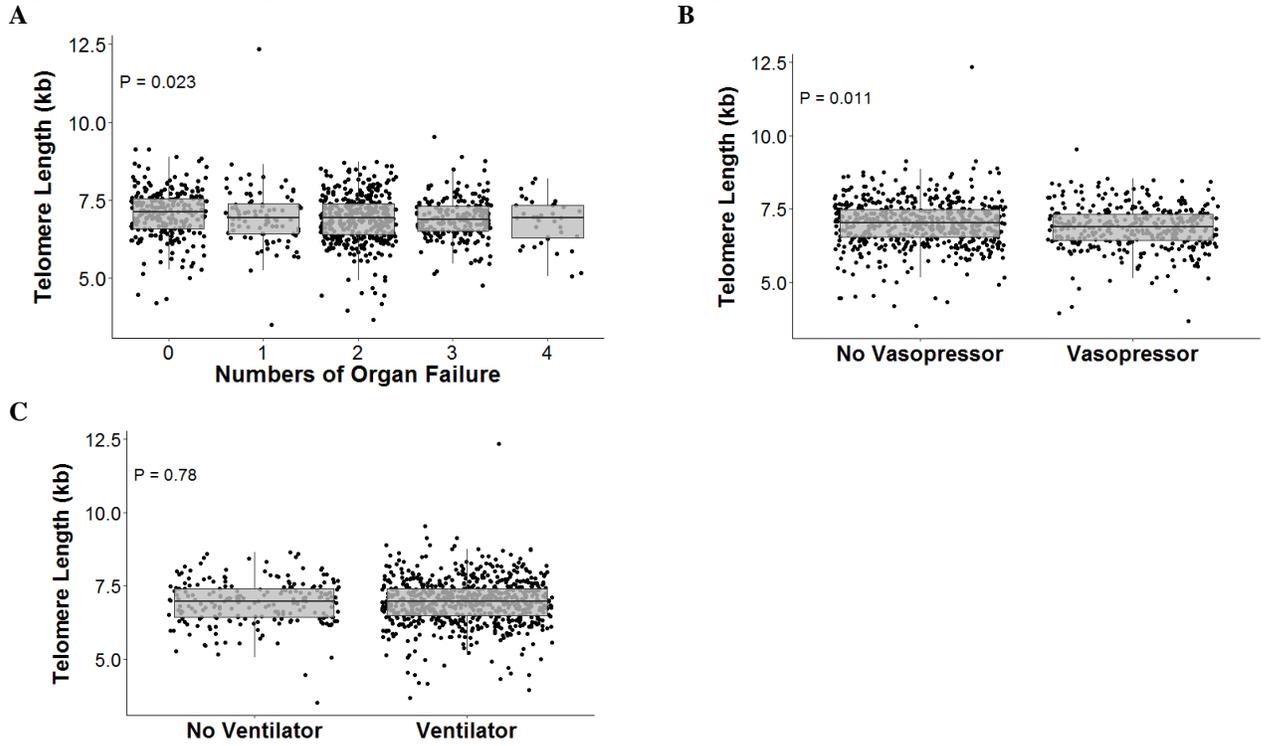
Figure S2. Histogram of PBL-TL in VUMC Cohort and UCSF Sepsis Cohort



(A) VUMC cohort. (B) UCSF sepsis cohort.

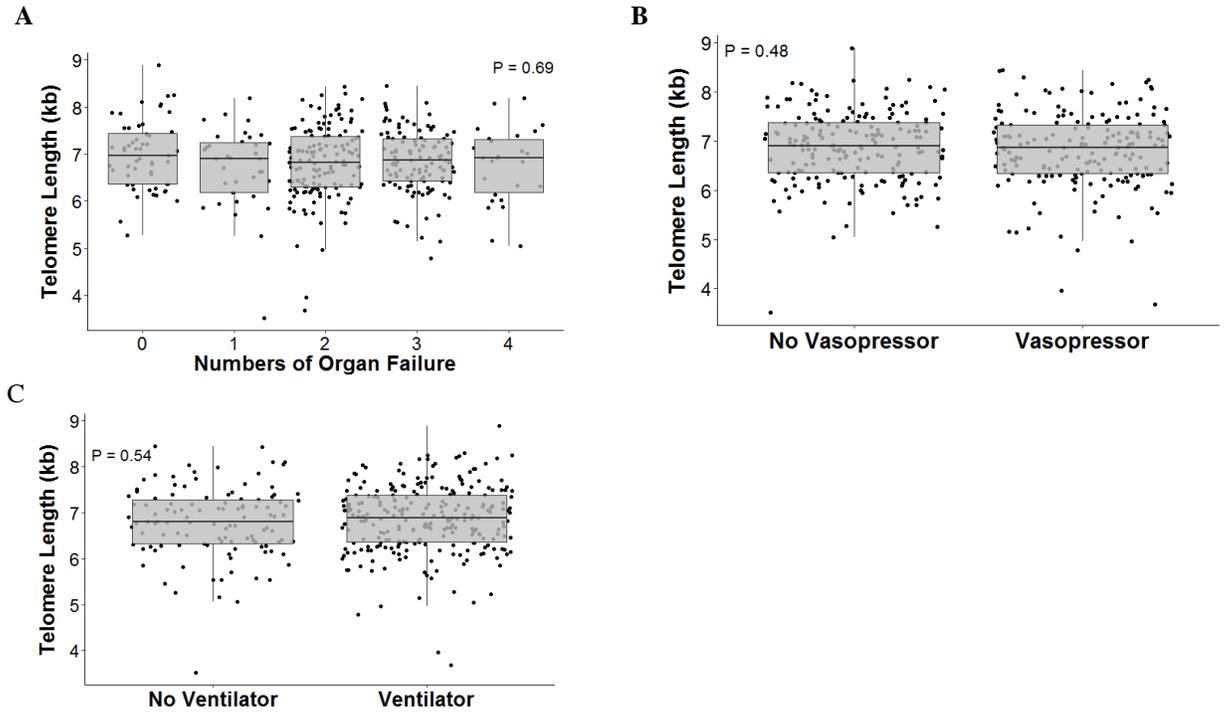
Abbreviations: bp, base pairs.

Figure S3. Relationship between PBL-TL and measures of organ failure in overall VUMC Cohort:



(A) Numbers of failed organs, (B) Vasopressor use, and (C) Use of mechanical ventilation.

Figure S4. Relationship between PBL-TL and measures of organ failure in VUMC sepsis Subgroup:



(A) Numbers of failed organs, (B) Vasopressor use, and (C) Use of mechanical ventilation.