Supplemental Materials

Supplemental Tables

Supplemental Figures

Table S1 Quality control indicators and their definitions

indicators	Definition
Proportion of ICU patients to total inpatients (%)	(Patients admitted to the ICU) / (patients admitted to hospital during the same period)
Proportion of ICU patient bed occupancy to total inpatient bed occupancy (%)	(Days of ICU bed occupancy by patients) / (days of hospital bed occupancy by patient during the same period)
Proportion of ICU patients with Apache II score ≥15 (%) (within 24h after being admitted to ICU)	(No. of patients with Apache II Score≥15 during the first 24h in the ICU) / (patients admitted to the ICU during the same period)
3-h SSC bundle compliance rate (%)	(No. of septic shock patients who received the 3-h SSC bundle treatment) / (No. of septic shock patients admitted to the ICU during the same period)
6-h SSC bundle compliance rate (%)	(No. of septic shock patients who received the 6-h SSC bundle treatment) / (No. of septic shock patients admitted to the ICU during the same period)
Microbiology detection rate before antibiotic use (%)	(No. of patients with microbiology detection before antibiotics) / (No. of patients who received antibiotics during the same period)
DVT prophylaxis rate (%)	(No. of patients who received DVT prophylaxis treatment) / (No. of patients admitted to the ICU during the same period)
Unplanned endotracheal extubation rate (%)	(No. of patients with unplanned endotracheal extubation) / (No. of patients with endotracheal extubation during the same period)
Reintubation rate with 48 h (%)	(No. of patients reintubated within 48 h after endotracheal extubation) / (No. of patients with endotracheal extubation during the same period)
Rate of unplanned transfer to ICU (%)	(No. of patients with unplanned transfer to the ICU from other wards) / (No. of patients transferred to the ICU from other wards during the same period)
ICU admission rate within 48 h (%)	(No. of patients readmitted to the ICU within 48 h after discharge from the ICU) / (No. of patients discharged from the ICU during the same period)
VAP incidence rate per 1000 ventilator days (‰)	(No. of patients with VAP) / (No. of patients with mechanical ventilation during the same period)
CRBSI incidence rate per 1000 catheter days (‰)	(No. of patients with CRBSI) / (No. of patients with a central venous catheter during the same period)
CAUTI incidence rate per 1000 catheter days (‰)	(No. of patients with CAUTI) / (No. of patients with a urinary catheter during the same period)
ICU mortality rate (%)	(No. of patients who died in the ICU) / (No. of patients admitted to the ICU during the same period)

ICU, intensive care unit; SSC, surviving sepsis campaign; DVT, deep venous thrombosis; VAP, ventilator-associated pneumonia; CRBSI, catheter-related blood stream infection; CAUTI, catheter-associated urinary tract infection.

Table S2 Capacity parameters and their calculations

Parameters	Calculation
(1) ICU patient-to-bed ratio	(Number of patients admitted to the ICU per year) / (number of ICU beds in that year) (average ratio for the 3 years; the same below);
(2) Severe patient-to-bed ratio	(Number of ICU patients with APACHE II score ≥15 per year) / (number of ICU beds in that year);
(3) Intensivist-to-bed ratio	(Number of intensivists) / (number of ICU beds in that year);
(4) Nurse-to-bed ratio	(Number of ICU nurses) / (number of ICU beds in that year);
(5) Intensivist-to-patient ratio	Number of ICU intensivists per 1000 ICU patients per year;
(6) Intensivist-to-severe patient ratio	Number of intensivists per 1000 ICU patients with APACHE II score ≥15 per year.

All of the above ratios were capacity parameters, with (1) and (2) representing the ability of an ICU to admit patients and severe patients, and (3)–(6) representing the resource allocation in an ICU.

ICU, intensive care unit; APACHE II, Acute Physiology and Chronic Health Evaluation II

Table S3 Divisions in the mainland of China

Age division	
	less than 14 years old
	14–20 years old
	21–30 years old
	31–40 years old
	41–50 years old
	51–60 years old
	61–70 years old
	and older than 70 years
Season division	
Spring	from March to May
Summer	from June to August
Autumn	from September to November
Winter	from December to February
Geographical area of China	
East China	Shanghai City, Jiangsu, Zhejiang, Anhui, Fujian, Jiangxi, and Shandong provinces, as well as Taiwan (not analyzed in this survey)
South China	Guangdong Province, Guangxi Zhuang Autonomous Region (Guangxi), Hainan Province, as well as Hong Kong and Macao (not analyzed in the survey)
North China	Beijing, Tianjin, Hebei Province, Shanxi Province, and Inner Mongolia Autonomous Region (Inner Mongolia)
Central China	Henan, Hunan, and Hubei provinces
Southwest	Sichuan, Guizhou, and Yunnan provinces, Chongqing City, and the Tibet Autonomous Region (Tibet)
Northwest	Shaanxi, Gansu, and Qinghai provinces, Ningxia Hui Autonomous Region (Ningxia), and the Xinjiang Uygur Autonomous Region (Xinjiang)
Northeast	Heilongjiang, Jilin, and Liaoning provinces

Economic zones of China	
Southeast coastal area	Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong, Guangxi, Hainan, and Chongqing
Central inland area	Shanxi, Inner Mongolia, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei, and Hunan
Western remote area	Sichuan, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Qinghai, Ningxia, and Xinjiang
Different GDP level areas of China	
High	Guangdong, Jiangsu, Shandong, Zhejiang, Henan, Sichuan, Hubei, Hunan, Hebei and Fujian Provinces
Middle	Shanghai, Beijing, Anhui, Liaoning, Shaanxi, Jiangxi, Chongqing, Guangxi, Tianjin and Yunnan provinces
Low	Inner Mongolia, Shanxi, Heilongjiang, Jilin, Guizhou, Xinjiang, Gansu, Hainan, Ningxia, Qinghai and Tibet Provinces

All data are from China's new economic white paper, 2017 to 2019.

GDP, gross domestic product.

Table S4 Characteristics of V-V ECMO-supported patients from 2017 to 2019

	2017 (n, %)	2018 (n, %)	2019 (n, %)	2017-2019 (n, %)	P
Overall (N)	386	719	1458	2563	
Sex					0.105
Male	270 (69.9)	483 (67.2)	1044 (71.6)	1797 (70.1)	
Female	116 (30.1)	236 (32.8)	414 (28.4)	766 (29.9)	
Age (Years)					0.004
Median (IQR)	52 (31, 63)	48 (31, 63)	50 (32, 62)	49 (32, 62)	
Age group (years)					0.004
0-13	35 (9.1)	62 (8.6)	160 (10.9)	257 (10.0)	
14-20	18 (4.7)	29 (4.0)	48 (3.3)	95 (3.7)	
21-30	40 (10.4)	73 (10.2)	127 (8.7)	240 (9.4)	
31-40	39 (10.1)	108 (15.0)	172 (11.8)	319 (12.5)	
41-50	50 (12.9)	136 (18.9)	244 (16.7)	430 (16.8)	
51-60	73 (18.9)	98 (13.6)	289 (19.8)	460 (17.9)	
61-70	95 (24.6)	156 (21.7)	315 (21.6)	566 (22.1)	
>70	36 (9.3)	57 (7.9)	103 (7.1)	196 (7.7)	
Comorbidity					
Diabetes Mellitus	62 (16.1)	83 (11.5)	199 (13.7	344 (13.4)	0.102
Chronic Kidney Disease	121 (31.4)	227 (31.6)	400 (27.4)	748 (29.2)	0.081
Chronic Liver Disease	64 (16.6)	113 (15.7)	234 (16.1)	411 (16.1)	0.933
Digestive Disease	102 (26.4	200 (27.8)	479 (32.9)	781 (30.5)	0.010
Chronic Pulmonary Disease	78 (20.2)	126 (17.5)	281 (19.3)	485 (18.9)	0.485
Cerebral Vascular Disease	25 (6.5)	29 (4)	115 (7.9)	169 (6.6)	0.003
Hypertension	98 (25.4)	147 (20.5)	307 (21.1)	552 (21.5)	0.129

Congestive Heart Disease	105 (27.3)	178 (24.8)	448 (30.7)	731 (28.5)	0.012
Geographical area of China					<0.0001
East China	159 (41.2)	234 (32.6)	436 (29.9)	829 (32.3)	
South China	43 (11.1)	156 (21.7)	352 (24.1)	551 (21.5)	
North China	97 (25.1)	124 (17.3)	190 (13.0)	411 (16.0)	
Central China	39 (10.1)	107 (14.9)	285 (19.6)	431 (16.8)	
Southwest China	35 (9.1)	63 (8.8)	126 (8.6)	224 (8.7)	
Northeast China	11 (2.9)	19 (2.6)	33 (2.3)	63 (2.5)	
Northwest China	2 (0.5)	16 (2.2)	36 (2.5)	54 (2.1)	
Economic zones of China					0.0001
Southeast Coastal Area	282 (73.1)	490 (68.2)	908 (62.3)	1680 (65.6)	
Central Inland Area	67 (17.4)	154 (21.4)	403 (27.6)	624 (24.4)	
Western Remote Area	37 (9.6)	75 (10.4)	147 (10.1)	259 (10.1)	
Different GDP level areas of China					<0.0001
High	275 (71.2)	473 (65.8)	835 (57.3)	1583 (61.8)	
Middle	71 (18.4)	165 (22.9)	373 (25.6)	609 (23.8)	
Low	40 (10.4)	81 (11.3)	250 (17.2)	371 (14.5)	
Hospital stays (days)					
Median (IQR)	21 (11,34)	19 (9,35)	18 (9,30)	19 (9,32)	<0.0001
Hospital stays (days)					<0.0001
1-10	96 (24.9)	204 (28.4)	433 (29.7)	733 (28.6)	
11-20	96 (24.9)	174 (24.2)	370 (25.4)	640 (24.9)	
21-30	69 (17.9)	125 (17.4)	299 (20.5)	493 (19.2)	
>30	125 (32.4)	216 (30.0)	356 (24.4)	697 (27.2)	
Cost (*thousand US Dollars) #					
Median (IQR)	38.8 (25.2, 58.6)	38.1 (16.4, 23.8)	38.9 (16.0, 23.2)	38.7 (23.8, 60.7)	0.755

Cost (*Thousand US Dollars) #					0.755
<14.5	44 (11.4)	79 (10.9)	168 (11.5)	291 (11.4)	
14.5-28.9	77 (19.9)	154 (21.4)	328 (22.5)	559 (21.8)	
28.9-43.5	94 (24.4)	179 (24.9)	320 (21.9)	593 (23.1)	
>43.5	171 (44.3)	307 (42.7)	641 (43.9)	1119 (43.7)	

V-V ECMO, veno-venous extracorporeal membrane oxygenation; IQR, interquartile range; GDP, gross domestic product.

Cost refers to the total hospitalization expenses per patient stay. The exchange rate between RMB and USD was based on the annual average rate in 2019, 1 USD to 6.8985 RMB.

Table S5 In-hospital mortality of V-V ECMO-supported patients of different sexes, age groups, geographic regions, economic regions, and seasons

Non-survivors	2017-2019 N (%)	2017 N (%)	2018 N (%)	2019 N (%)	P
In-hospital mortality	735 (28.7)	125 (32.4)	211 (29.4)	399 (27.4)	0.137
Sex					
Male	521 (28.9)	91 (33.7)	146 (30.2)	284 (27.2)	0.087
Female	214 (27.9)	34 (29.3)	65 (27.5)	115 (27.8)	0.936
Age (years)					
0-13	82 (31.9)	15 (42.9)	19 (30.7)	48 (30)	0.326
14-20	27 (28.4)	8 (44.4)	9 (31.0)	10 (20.8)	0.155
21-30	52 (21.7)	8 (20)	18 (24.7)	26 (20.5)	0.757
31-40	82 (25.7)	8 (20.5)	29 (26.9)	45 (26.2)	0.725
41-50	106 (24.7)	16 (32)	30 (22.1)	60 (24.6)	0.378
51-60	136 (29.6)	21 (28.8)	33 (33.7)	82 (28.4)	0.602
61-70	178 (31.5)	38 (40)	48 (30.8)	92 (29.2)	0.136
>70	72 (36.7)	11 (30.6)	25 (43.9)	36 (34.9)	0.372
Geographic regions					
Northeast China	24 (38.1)	5 (45.5)	8 (42.1)	11 (33.3)	0.705
North China	141 (34.3)	33 (34.0)	44 (35.5)	64 (33.7)	0.945
East China	193 (23.3)	46 (28.9)	51 (21.8)	96 (22.0)	0.172
South China	211 (38.3)	16 (37.2)	64 (41.0)	131 (37.2)	0.709
Central China	77 (17.9)	10 (25.6)	20 (18.7)	47 (16.5)	0.364
Northwest China	16 (29.6)	1 (50)	4 (25)	11 (30.6)	0.749
Southwest China	73 (32.6)	14 (40)	20 (31.8)	39 (30.9)	0.592
Economic zone					
Southeast Coastal Area	527 (31.4)	89 (31.6)	157 (32.0)	281 (30.9)	0.913
Western Remote Area	84 (32.4)	15 (40.5)	23 (30.7)	46 (31.3)	0.521
Central Inland Area	124 (19.9)	21 (31.3)	31 (20.1)	72 (17.9)	0.038

GDP					
High	482 (30.5)	85 (30.9)	148 (31.3)	249 (29.8)	0.843
Middle	138 (22.7)	20 (28.2)	40 (24.2)	78 (20.9)	0.347
Low	115 (31)	20 (50)	23 (28.4)	72 (28.8)	0.023
Seasons					
Spring	174 (30.6)	38 (34.9)	51 (33.6)	85 (27.7)	0.249
Winter	281 (27.7)	36 (29.8)	82 (25.9)	163 (28.3)	0.641
Autumn	144 (27.3)	31 (36.1)	38 (29.0)	75 (24.1)	0.078
Summer	136 (30.0)	20 (28.6)	40 (33.6)	76 (28.8)	0.609

V-V ECMO, veno-venous extracorporeal membrane oxygenation; GDP, gross domestic product.

*P for comparison of in-hospital mortality in different years

Table S6 Etiology, treatment, complications, and related in-hospital mortality of V-V ECMO-supported patients

V-V ECMO	All		2017		2018		2019			
	Cases (n, %) N=2563	Mortality (n, %) N=735	Cases (n, %) N=386	Mortality (n, %) N=125	Cases (n, %) N=719	Mortality (n, %) N=211	Cases (n, %) N=1458	Mortality (n, %) N=399	P*	P#
Etiology-related diagnosis										
Respiratory failure	1511 (58.9)	447 (29.6)	192 (49.7)	68 (35.4)	418 (58.1)	135 (32.3)	901 (61.8)	244 (27.1)	<0.0001	0.026
Severe Pneumonia	1338 (52.2)	373 (27.9)	176 (45.6)	57 (32.4)	382 (53.1)	110 (28.8)	780 (53.5)	206 (26.4)	0.019	0.249
ARDS	1088 (42.5)	302 (27.8)	162 (41.9)	51 (31.5)	301 (41.9)	91 (30.2)	625 (42.9)	160 (25.6)	0.886	0.175
Chest Trauma	625 (24.4)	198 (31.7)	95 (24.6)	33 (34.7)	159 (22.1)	57 (35.9)	371 (25.5)	108 (29.1)	0.233	0.244
Bacterial Pneumonia	546 (21.3)	179 (32.8)	83 (21.5)	31 (37.4)	149 (20.7)	49 (32.9)	314 (21.5)	99 (31.5)	0.905	0.603
Other Pneumonia	543 (21.2)	140 (25.8)	89 (23.1)	23 (25.8)	144 (20)	33 (22.9)	310 (21.3)	84 (27.1)	0.499	0.638
Viral Pneumonia	478 (18.7)	144 (30.1)	87 (22.5)	36 (41.4)	127 (17.7)	33 (25.9)	264 (18.1)	75 (28.4)	0.101	0.036
Fungal Pneumonia	327 (12.8)	104 (31.8)	48 (12.4)	19 (39.6)	94 (13.1)	30 (31.9)	185 (12.7)	55 (29.7)	0.948	0.426
Lung Cancer	82 (3.2)	33 (40.2)	18 (4.7)	6 (33.3)	21 (2.9)	9 (42.9)	43 (2.9)	18 (41.9)	0.208	0.793
Treatment										
CRRT	2155 (84.1)	640 (29.7)	325 (84.2)	111 (34.2)	577 (80.3)	173 (30.0)	1253 (85.9)	356 (28.4)	0.003	0.128
Blood transfusion	2089 (81.5)	601 (28.8)	318 (82.4)	106 (33.3)	562 (78.2)	160 (28.5)	1209 (82.9)	335 (27.7)	0.024	0.141
Complications										
Shock	863 (33.7)	295 (34.2)	104 (26.9)	43 (41.4)	246 (34.2)	76 (30.9)	51 (35.2)	176 (34.3)	0.009	0.169
Bacteremia	797 (31.1)	286 (35.9)	111 (28.8)	55 (49.6)	224 (31.2)	77 (34.4)	46 (31.7)	154 (33.3)	0.542	0.005
MODS	664 (25.9)	256 (38.6)	81 (21)	38 (46.9)	183 (25.5)	71 (38.8)	40 (27.4)	147 (36.8)	0.035	0.229
Hypoxic-ischemic encephalopathy	206 (8.1)	92 (44.7)	25 (6.5)	12 (48.0)	57 (7.9)	35 (61.4)	124 (8.5)	45 (36.3)	0.424	0.006
Intracranial hemorrhage	155 (6.1)	70 (45.2)	18 (4.7)	8 (44.4)	38 (5.3)	20 (52.6)	99 (6.8)	42 (42.4)	0.178	0.560
Respiratory Tract Bleeding	86 (3.4)	26 (30.2)	12 (3.1)	1 (8.3)	21 (2.9)	8 (38.1)	53 (3.6)	17 (32.1)	0.656	0.180

V-V ECMO, veno-venous extracorporeal membrane oxygenation; ARDS, acute respiratory distress syndrome; CRRT, continuous renal replacement therapy; MODS, multiple organ dysfunction syndrome.

*P for comparison of ECMO cases within the 3 years

#P for comparison of in-hospital mortality within the 3 years

Table S7 *Apriori* algorithm-based association rules of V-V ECMO-supported patients from 2017 to 2019

No.	LHS	RHS	Support (%)	Confidence (%)
1	Complicated with Coagulation disorder; Complicated with kidney Injury; CRRT	death	11.081	48.592
2	Complicated with Coagulation disorder; Complicated with bacteremia; CRRT	death	11.003	47.872
3	Complicated with Coagulation disorder; Complicated with kidney Injury; Received Blood Transfusion due to hemorrhage; CRRT	death	10.417	47.566
4	Complicated with Coagulation disorder; Complicated with kidney Injury; NOMV	death	10.339	47.547
5	Complicated with Coagulation disorder; Complicated with MODS; NOMV; CRRT	death	10.183	47.510
6	Complicated with Coagulation disorder; Complicated with kidney Injury; Received Blood Transfusion due to hemorrhage; NOMV; CRRT	death	10.183	47.510
7	Complicated with Coagulation disorder; Complicated with bacteremia; Received Blood Transfusion due to hemorrhage; CRRT	death	10.613	47.426
8	Complicated with Coagulation disorder; Complicated with bacteremia; NOMV; CRRT	death	10.456	47.388
9	Complicated with Coagulation disorder; Comorbid with diabetes mellitus; Received Blood Transfusion due to hemorrhage; NOMV; CRRT	death	10.456	47.388
10	Complicated with Coagulation disorder; Complicated with kidney Injury; CPR	death	10.222	47.328
11	Complicated with Coagulation disorder; Complicated with MODS; Received Blood Transfusion due to hemorrhage; NOMV	death	10.222	47.328
12	Complicated with Coagulation disorder; Complicated with bacteremia; Received Blood Transfusion due to hemorrhage;	death	10.652	47.253
13	Complicated with Coagulation disorder; Complicated with bacteremia; Received Blood Transfusion due to hemorrhage; NOMV	death	10.496	47.212
14	Complicated with Coagulation disorder; Complicated with kidney Injury; CPR; CRRT	death	10.183	47.126
15	Complicated with Coagulation disorder; Complicated with MODS; CPR; NOMV	death	10.105	47.104
16	Complicated with Coagulation disorder; Complicated with bacteremia; CPR	death	10.456	47.015

17	Complicated with Coagulation disorder; Complicated with bacteremia; CPR; CRRT	death	10.456	47.015

Apriori association rule learning analysis was conducted to determine the risk factors for in-hospital mortality of V-V ECMO-supported patients, using the 17 most frequently used association rules. The results showed that the combination of coagulation disorder, kidney injury, and CRRT was the most lethal risk factor for in-hospital mortality of V-V ECMO-supported patients.

CPR, received cardiopulmonary resuscitation; CRRT, received continuous renal replacement therapy; MODS, multiple organ dysfunction syndrome; NOMV, received noninvasive mechanical ventilation.

Table S8 Comparison of V-V ECMO-supported patients between high- and low-volume centers*

	High volume centers (V-V ECMO≥50 cases)		Low volume centers (V-V ECMO<50 cases)			
	Cases [N (%)]	Mortality [n (%)]	Cases [N (%)]	Mortality [n (%)]	P (cases)	P (mort)
Years					0.024	
2017	146 (16.9)	39 (26.7)	240 (14.1)	86 (35.8)		0.063
2018	258 (29.9)	74 (28.7)	461 (27.1)	137 (29.7)		0.769
2019	460 (53.2)	99 (21.5)	998 (58.7)	300 (30.1)		0.001
2017-2019	864 (100)	212 (24.5)	1699 (100)	523 (30.8)		0.001
Sex					0.265	
Male	618 (71.5)	161 (26.1)	1179 (69.4)	360 (30.5)		0.05
Female	246 (28.5)	51 (20.7)	520 (30.6)	163 (31.4)		0.002
Age (years)					<0.0001	
0-13	33 (3.8)	11 (33.3)	224 (13.2)	71 (31.7)		0.851
14-20	36 (4.2)	10 (27.8)	59 (3.5)	17 (28.8)		0.914
21-30	73 (8.5)	15 (20.6)	167 (9.8)	37 (22.2)		0.781
31-40	108 (12.5)	29 (26.9)	211 (12.4)	53 (25.1)		0.737
41-50	162 (18.8)	36 (22.2)	268 (15.8)	70 (26.1)		0.364
51-60	165 (19.1)	32 (19.4)	295 (17.4)	104 (35.3)		0.0003
61-70	215 (24.9)	54 (25.1)	351 (20.7)	124 (35.3)		0.011
>70	72 (8.3)	25 (34.7)	124 (7.3)	47 (37.9)		0.656
Hospital stays (days)					0.848	
1-10	241 (27.9)	79 (32.8)	492 (28.9)	213 (43.3)		0.006
11-20	216 (25)	53 (24.5)	424 (24.9)	133 (31.4)		0.072
21-30	174 (20.1)	36 (20.7)	319 (18.8)	80 (25.1)		0.272
>30	233 (27.0)	44 (18.9)	464 (27.3)	97 (20.9)		0.531
Cost (*Thousand US Dollars) #					<0.0001	
<14.5	63 (7.3)	24 (38.1)	228 (13.4)	82 (35.9)		0.756
14.5-28.9	174 (20.1)	52 (29.9)	385 (22.7)	121 (31.4)		0.715
28.9-43.5	178 (20.6)	35 (19.7)	415 (24.4)	118 (28.4)		0.025
>43.5	449 (52.0)	101 (22.5)	670 (39.4)	202 (30.2)		0.005
Comorbidities						
Hypertension	190 (21.9)	49 (25.8)	362 (21.3)	116 (32.0)	0.690	0.127
Diabetes Mellitus	124 (14.4)	37 (29.8)	220 (12.9)	78 (35.5)	0.325	0.289
Chronic cardiac dysfunction	261 (30.2)	79 (30.3)	470 (27.7)	172 (36.6)	0.177	0.084
Cerebral vascular disease	60 (6.9)	19 (31.7)	109 (6.4)	35 (32.1)	0.61	0.953
Respiratory diseases	245 (28.4)	54 (22.0)	240 (14.1)	73 (30.4)	<0.0001	0.036
Digestive system diseases	279 (32.3)	87 (31.2)	502 (29.6)	165 (32.9)	0.154	0.629
Etiology						
ARDS	337 (39)	103 (30.6)	751 (44.2)	199 (26.5)	0.012	0.166
Severe pneumonia	417 (48.3)	91 (21.8)	921 (54.2)	282 (30.6)	0.004	0.001
Bacterial pneumonia	233 (26.9)	87 (37.3)	313 (18.4)	92 (29.4)	<0.0001	0.050
Viral pneumonia	176 (20.4)	55 (31.3)	302 (17.8)	89 (29.5)	0.111	0.683
Fungal pneumonia	159 (18.4)	51 (32.1)	168 (9.9)	53 (31.6)	<0.0001	0.918

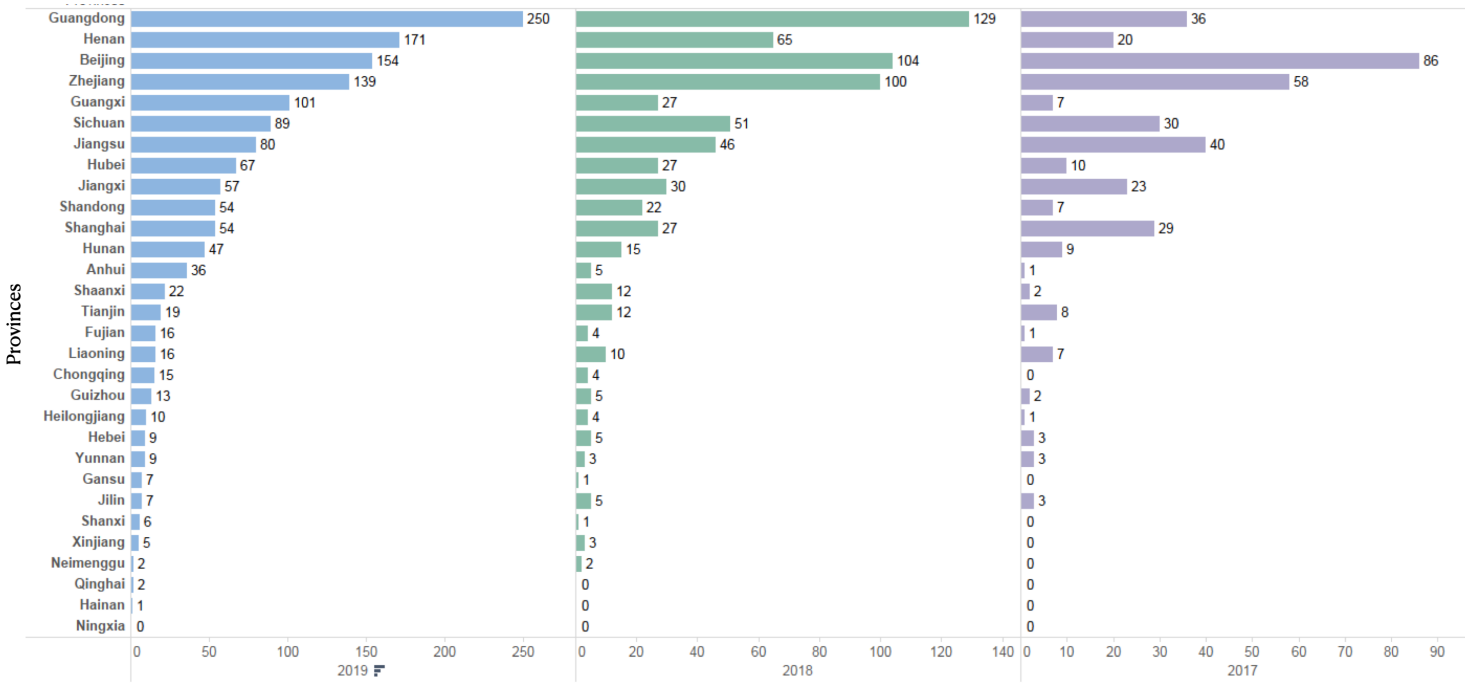
Other pneumonia (unexplained)	168 (19.4)	39 (23.2)	375 (22.1)	101 (26.9)	0.124	0.359
Chest trauma	228 (26.4)	70 (30.7)	397 (23.4)	128 (32.2)	0.092	0.690
Lung cancer	31 (3.6)	9 (29.0)	51 (3.0)	24 (47.1)	0.425	0.107
Complication related diagnosis						
Intracranial Hemorrhage	45 (5.2)	19 (42.2)	110 (6.5)	51 (46.4)	0.204	0.638
Hypoxic-ischemic encephalopathy	65 (7.5)	28 (43.1)	141 (8.3)	64 (45.4)	0.495	0.756
Multiple organ dysfunction	210 (24.3)	80 (38.1)	454 (26.7)	176 (38.8)	0.187	0.869
Kidney injury	281 (32.5)	98 (34.9)	467 (27.5)	176 (37.7)	0.008	0.439
Coagulation disorder	288 (33.3)	116 (40.3)	384 (22.6)	152 (39.6)	<0.0001	0.856
Bacteremia	281 (32.5)	98 (34.9)	516 (30.4)	176 (37.7)	0.266	0.439
Shock	246 (28.5)	70 (28.5)	617 (36.3)	225 (36.5)	<0.0001	0.025
Respiratory tract bleeding	24 (2.8)	8 (33.3)	62 (3.7)	18 (29.0)	0.247	0.697
Seasons					0.803	
Spring	194 (22.5)	45 (23.2)	374 (22.0)	129 (34.5)		0.006
Summer	159 (18.4)	86 (25.9)	294 (17.3)	195 (28.6)		0.392
Autumn	180 (20.8)	39 (21.7)	348 (20.5)	105 (30.2)		0.038
Winter	331 (38.3)	42 (26.4)	683 (40.2)	94 (31.9)		0.218
Treatment						
CRRT	681 (78.8)	180 (26.4)	1474 (86.8)	460 (31.2)	<0.0001	0.024
Blood transfusion	671 (77.7)	168 (25.0)	1418 (83.5)	433 (30.5)	0.0004	0.010

V-V ECMO, veno-venous extracorporeal membrane oxygenation; ARDS, acute respiratory distress syndrome; CRRT, continuous renal replacement therapy.

*The ECMO centers were divided into high- and low-volume ones according to whether the total cases were >50 from 2017 to 2019.

#Cost referred to the total hospitalization expenses per patient stay. The exchange rate between RMB and USD was based on the annual average rate in 2019, 1 USD to 6.8985 RMB.

Figure S1 Number of V-V ECMO cases in different years in different provinces



Number of VV ECMO cases in different years

Figure S2 Number of V-V ECMO-supported patients and age compositions from 2017 to 2019

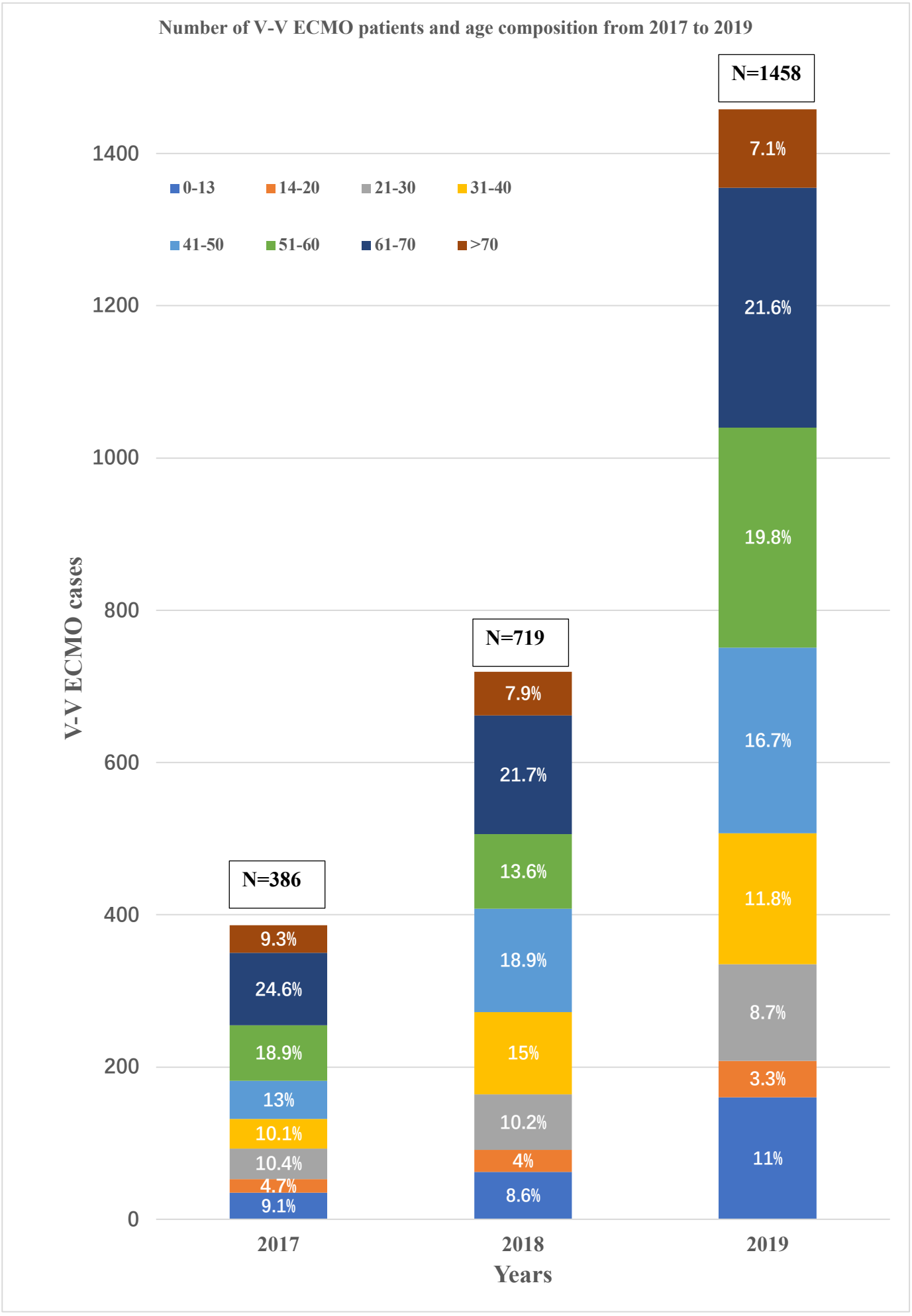


Figure S3 Number of V-V ECMO-supported patients in different months from 2017 to 2019