

## **SUPPLEMENTAL DIGITAL CONTENT LEGEND**

- Supplemental Digital Content 1. STROBE Checklist
- Supplemental Digital Content 2. Study flow diagram
- Supplemental Digital Content 3. Baseline characteristics of neuro exclusion subgroup
- Supplemental Digital Content 4. Sedation variables of neuro exclusion subgroup
- Supplemental Digital Content 5. Baseline characteristics of air medical intubation subgroup
- Supplemental Digital Content 6. Sedation variables of air medical intubation subgroup
- Supplemental Digital Content 7. Sensitivity analyses

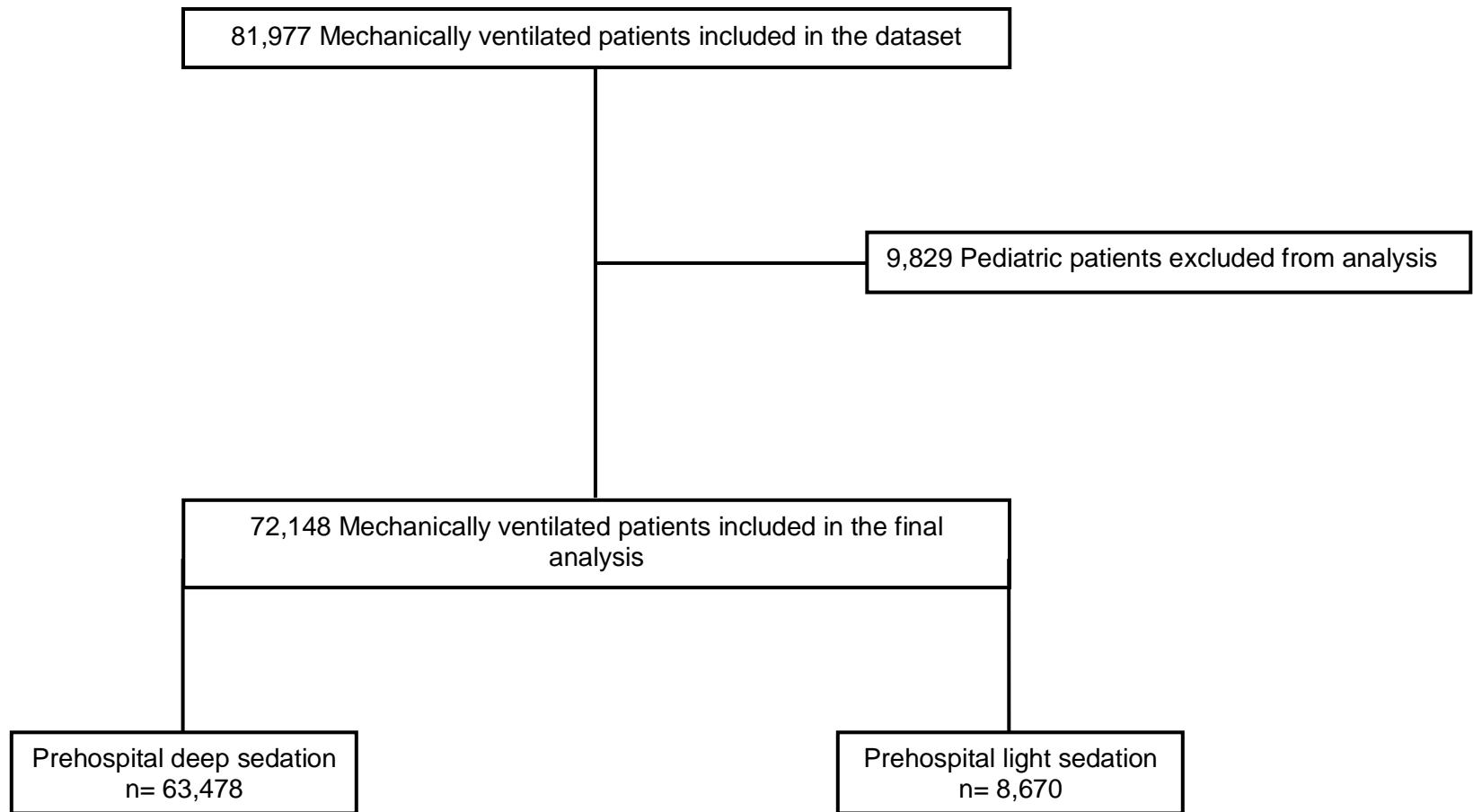
## Supplemental Digital Content 1. STROBE Checklist

<b>Element</b>	<b>Item No.</b>	<b>Recommendation</b>	<b>Page No.</b>
<b>Title and abstract</b>	1	(a) Indicate the study's design with a commonly used term in the title or the abstract  (b) Provide in the abstract an informative and balanced summary of what was done and what was found	1 4
<b>Introduction</b>			
Background / rationale	2	Explain the scientific background and rationale for the investigation being reported	5
Objectives	3	State specific objectives, including any prespecified hypotheses	5,6
<b>Methods</b>			
Study design	4	Present key elements of study design early in the paper	6
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	6
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up  (b) For matched studies, give matching criteria and number of exposed and unexposed	6 N/A
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	6,7
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	6,7
Bias	9	Describe any efforts to address potential sources of bias	6,7
Study size	10	Explain how the study size was arrived at	6,9
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	8,9
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding  (b) Describe any methods used to examine subgroups and interactions  (c) Explain how missing data were addressed  (d) If applicable, explain how loss to follow-up was addressed  (e) Describe any sensitivity analyses	8,9 8,9 8,9 N/A 8,9
<b>Results</b>			
Participants	13*	(a) Report numbers of individuals at each stage of	Supp Dig

		study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	Content 2
		(b) Give reasons for non-participation at each stage	Supp Dig Content 2
		(c) Consider use of a flow diagram	Supp Dig Content 2
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	9,10, Table 1
		(b) Indicate number of participants with missing data for each variable of interest	Table 1
		(c) Summarise follow-up time (eg, average and total amount)	N/A
Outcome data	15*	Report numbers of outcome events or summary measures over time	10,11, Table 1
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	10,11, Table 3
		(b) Report category boundaries when continuous variables were categorized	10,11, Table 3
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	N/A
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	11, Supp Dig Content 7
<b>Discussion</b>			
Key results	18	Summarise key results with reference to study objectives	11-13
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	13,14
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	11-13
Generalisability	21	Discuss the generalisability (external validity) of the study results	11-13
<b>Other information</b>			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	3

\*Give information separately for exposed and unexposed groups.

**Note:** An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at <http://www.strobe-statement.org>.



**Supplemental Digital Content 3.** Characteristics of mechanically ventilated air medical transport patients, subgroup of patients after exclusion of those with potential neurological injuries.

Prehospital Sedation Depth Status				
Baseline characteristics	All subjects (n= 45,279)	Deep sedation (n= 38,486)	Light sedation (n= 6,793)	P value
Age (yr)	50.5 (23.6)	51.1 (22.7)	48.5 (26.9)	<0.01
Weight (kg)	80.0 (67.0 – 100.0)	80.0 (60.0 – 100.0)	80.6 (68.0 – 100.0)	<0.01
Gender				
Male, n (%)	27,590 (61.6)	23,585 (62.0)	4,005 (59.7)	<0.01
Female, n (%)	17,171 (38.4)	14,468 (38.0)	2,703 (40.3)	
Race				
White, n (%)	1,831 (70.0)	1,538 (70.6)	293 (67.4)	0.40
African-American, n (%)	357 (13.7)	293 (13.4)	64 (14.7)	
Hispanic, n (%)	310 (11.9)	251 (11.5)	59 (13.6)	
Asian or Pacific Islander, n (%)	22 (0.8)	21 (1.0)	1 (0.2)	
Native American, Alaska Native, n (%)	70 (2.7)	56 (2.6)	14 (3.2)	
Other, n (%)	25 (1.0)	21 (1.0)	4 (0.9)	
Temp (Celsius)	36.6 (36.2 – 37.0)	36.7 (36.4 – 37.1)	36.6 (36.2 – 37.0)	<0.01
Heart rate (bpm),	97.0 (81.0 – 115.5)	99.0 (83.0 – 120.0)	97.0 (80.5 – 114.5)	<0.01
Mean arterial pressure	85.0 (74.5 – 97.5)	84.5 (73.0 – 96.0)	85.5 (75.0 – 98.0)	<0.01
SpO2 (%)	95.7 (7.7)	95.7 (7.7)	95.9 (8.1)	0.04
Lactate (mmol/L)	3.4 (1.8 – 6.7)	2.8 (1.6 – 5.4)	3.5 (1.9 – 6.9)	<0.01
Creatinine (mg/dl)	1.2 (0.8 – 1.8)	1.1 (0.8 – 1.8)	1.2 (0.8 – 1.8)	<0.01
Hemoglobin (g/dl)	12.3 (3.1)	12.3 (3.1)	12.4 (3.2)	0.02
Platelet (10 <sup>9</sup> /L)	242 (113.6)	241 (113.9)	245 (111.5)	0.06
Bilirubin (mg/dl)	0.4 (0.2 – 1.0)	0.4 (0.2 – 1.0)	0.4 (0.2 – 1.0)	0.65
pH	7.30 (7.18 – 7.38)	7.29 (7.23 – 7.35)	7.27 (7.17 – 7.34)	0.40
PaO <sub>2</sub>	93 (66 – 169)	83 (60 – 136)	96 (68 – 177)	<0.01
PaCO <sub>2</sub>	44 (35 – 56)	45 (35 – 56)	44 (35 – 56)	0.36
Reason for mechanical ventilation, n (%)				
Respiratory failure	15,819 (34.9)	12,658 (32.9)	3,161 (46.5)	<0.01
Trauma	10,511 (23.2)	9,561 (24.8)	950 (14.0)	
Cardiac	3,742 (8.3)	3,130 (8.1)	612 (9.0)	
Sepsis	1,948 (4.3)	1,702 (3.8)	246 (3.6)	
Airway obstruction	469 (1.0)	418 (1.1)	51 (0.8)	
Other	12,790 (28.2)	11,017 (28.6)	1,773 (26.1)	
<b>Process of Care Variables</b>				
Duration of care (hours)	1.2 (0.9 – 1.7)	1.3 (1.0 – 1.9)	1.2 (0.9 – 1.7)	<0.01
Intubation status				
By air medical providers, n (%)	28,824 (63.7)	24,014 (62.5)	4,810 (70.9)	<0.01
Before arrival, n (%)	16,393 (36.3)	14,419 (37.5)	1,974 (29.1)	
Vasopressors, n (%)	10,754 (23.8)	9,189 (23.9)	1,565 (23.0)	0.14

**Supplemental Digital Content 4.** Sedation variables for mechanically ventilated air medical transport patients, subgroup of patients after exclusion of those with potential neurological injuries.

Drug	Prehospital Sedation Depth Status			
	All Subjects n = 45,279	Deep sedation (n= 38,486)	Light sedation (n= 6,793)	p
Fentanyl				
n (%)	22,918 (50.6)	19,521 (50.7)	3,397 (50.0)	0.28
Cumulative dose (mcg)	100 (50 – 150.0)	100 (50 – 150.0)	100 (50 – 150.0)	0.85
Weight-based dose (mcg/kg)	1.2 (0.7 – 1.9)	1.1 (0.7 – 1.9)	1.3 (0.7 – 2.2)	<0.01
Pre-arrival, n (%)	10,823 (23.9)	9,464 (24.6)	1,359 (20.0)	<0.01
Midazolam				
n (%)	17,566 (38.8)	14,897 (38.7)	2,669 (39.3)	0.36
Cumulative dose (mg)	5.0 (2.5 – 6.0)	5.0 (2.5 – 6.0)	5.0 (2.5 – 6.0)	0.97
Weight-based dose (mg/kg)	0.05 (0.03 – 0.09)	0.05 (0.03 – 0.08)	0.06 (0.03 – 0.11)	<0.01
Pre-arrival, n (%)	1,475 (3.3)	1,317 (3.4)	158 (2.3)	<0.01
Ketamine				
n (%)	17,451 (38.5)	14,879 (38.7)	2,572 (37.9)	0.21
Cumulative dose (mg)	220 (100 – 400)	220 (100 – 400)	203 (100 – 400)	0.71
Weight-based dose (mg/kg)	2.9 (1.3 – 5.1)	2.9 (1.2 – 5.0)	3.3 (1.4 – 6.0)	<0.01
Pre-arrival, n (%)	2,857 (6.3)	2,580 (6.7)	277 (4.1)	<0.01
Propofol				
n (%)	5,900 (13.0)	5,005 (13.0)	895 (13.2)	0.70
Cumulative dose (mg)	140.4 (72.0 – 240.0)	139.0 (72.0 – 240.0)	150 (81.0 – 243.0)	0.03
Weight-based dose (mg/kg)	1.8 (0.9 – 3.2)	1.7 (0.9 – 3.2)	2.0 (1.0 – 4.1)	<0.01
Pre-arrival, n (%)	12,907 (28.5)	11,410 (29.6)	1,497 (22.0)	<0.01
Etomidate				
n (%)	3,788 (8.4)	3,242 (8.4)	546 (8.0)	0.29
Cumulative dose (mg)	24.0 (20.0 – 30.0)	24.0 (20.0 – 30.0)	24.0 (20.0 – 30.0)	0.10
Weight-based dose (mg/kg)	0.31 (0.23 – 0.44)	0.33 (0.24 – 0.50)	0.30 (0.23 – 0.43)	0.01
Pre-arrival, n (%)	10,236 (22.6)	9,264 (24.1)	972 (14.3)	<0.01
Lorazepam				
n (%)	3,260 (7.2)	2,757 (7.2)	503 (7.4)	0.48
Cumulative dose (mg)	2.0 (1.0 – 2.0)	2.0 (1.0 – 2.0)	2.0 (1.0 – 2.0)	0.14
Weight-based dose (mg/kg)	0.02 (0.01 – 0.03)	0.02 (0.01 – 0.03)	0.02 (0.01 – 0.03)	0.08
Pre-arrival, n (%)	3,680 (8.1)	3,158 (8.2)	522 (7.7)	0.15
Morphine				
n (%)	271 (0.6)	232 (0.6)	39 (0.6)	0.78
Cumulative dose (mg)	5.0 (4.0 – 6.0)	5.0 (4.0 – 6.0)	5.0 (4.0 – 5.0)	0.93
Weight-based dose (mg/kg)	0.06 (0.04 – 0.09)	0.06 (0.04 – 0.09)	0.06 (0.05 – 0.11)	0.90
Pre-arrival, n (%)	1,852 (4.1)	1,513 (3.9)	339 (5.0)	<0.01
Dexmedetomidine				
n (%)	139 (0.3)	115 (0.3)	24 (0.4)	0.45
Highest dose (mcg/kg/hour)	0.7 (0.4 – 1.0)	0.7 (0.4 – 1.0)	0.7 (0.5 – 1.0)	0.67
Pre-arrival, n (%)	762 (1.7)	618 (1.6)	144 (2.1)	<0.01
Hydromorphone				
n (%)	87 (0.2)	70 (0.2)	17 (0.3)	0.24
Cumulative dose (mg)	1.0 (1.0 – 2.0)	1.0 (1.0 – 2.0)	1.0 (0.75 – 1.5)	0.32
Weight-based dose (mg/kg)	0.02 (0.01 – 0.03)	0.01 (0.01 – 0.03)	0.03 (0.01 – 0.13)	0.07
Pre-arrival	86 (0.2)	78 (0.2)	8 (0.1)	0.14
Diazepam				
n (%)	21 (0.04)	16 (0.04)	5 (0.07)	0.01
Cumulative dose (mg)	5.0 (2.5 – 5.0)	4.5 (2.5 – 6.9)	5.0 (3.8 – 5.0)	0.72
Weight-based dose (mg/kg)	0.30 (NA)	0.05 (0.03 – 0.10)	0.26 (0.03 – 1.23)	0.25
Pre-arrival, n (%)	234 (0.5)	213 (0.6)	21 (0.3)	0.01
Phenobarbital, n (%)	30 (0.1)	25 (0.1)	5 (0.1)	0.80
Cumulative dose (mg)	66.0 (41 – 105)	66.0 (41.0 – 114)	49.0 (27.3 – 83.5)	0.45
Neuromuscular blockers, n (%)	27,871 (61.6)	24,711 (64.2)	3,557 (52.4)	<0.01
Rocuronium, n (%)	14,704 (32.5)	12,939 (33.6)	1,765 (26.0)	<0.01
Cumulative dose (mg)	80.0 (60.0 – 100.0)	80.0 (60.0 – 100.0)	85.5 (60.0 – 100.0)	0.26
Succinylcholine, n (%)	11,540 (25.5)	10,284 (26.7)	1,256 (18.5)	<0.01
Cumulative dose (mg)	150.0 (110.0 – 200.0)	150.0 (111.3 – 200.0)	150.0 (110.0 – 200.0)	0.83
Vecuronium, n (%)	5,055 (11.2)	4,573 (11.9)	482 (7.1)	<0.01
Cumulative dose, n (mg)	10.0 (7.5 – 10.0)	10.0 (8.0 – 10.0)	10.0 (7.5 – 10.0)	0.14
Cisatracurium infusion, n (%)	939 (2.1)	885 (2.3)	54 (0.8)	<0.01

Sedation scale documented				
Ramsay, n (%)	11,919 (25.9)	9,687 (25.2)	2,232 (32.9)	<0.01
Ramsay Level	5.5 (4.5 - 6)	6.0 (5.0 – 6.0)	1.0 (1.0 – 4.0)	<0.01
RASS, n (%)	6,696 (14.6)	5,115 (13.3)	1,581 (23.3)	<0.01
RASS Level	-4 (-5 to -3)	-4 (-5 to -3)	-1 (-2 to 0)	<0.01
GCS, n (%)	44,956 (97.9)	38,238 (99.4)	6,718 (98.9)	<0.01
GCS Level	4 (3 - 7)	3 (3 – 5)	7 (4 – 11)	<0.01

RASS= Richmond Agitation-Sedation Scale, GCS= Glasgow Coma Scale

**Supplemental Digital Content 5.** Characteristics of mechanically ventilated air medical transport patients, subgroup of patients intubated by air medical transport crew.

Prehospital Sedation Depth Status				
Baseline characteristics	All subjects (n= 44,671)	Deep sedation (n= 39,167)	Light sedation (n= 5,504 )	P value
Age (yr)	56.0 (18.7)	55.7 (18.8)	58.3 (18.2)	<0.01
Weight (kg)	82.0 (70.0 – 100.0)	82.0 (70.0 – 100.0)	84.0 (70.0 – 100.0)	0.02
Gender				
Male, n (%)	27,096 (61.3)	23,818 (61.4)	3,278 (60.3)	0.11
Female, n (%)	17,110 (38.7)	14,952 (38.6)	2,158 (39.7)	
Race				
White, n (%)	1,910 (71.9)	1,652 (72.7)	258 (66.8)	0.16
African-American, n (%)	382 (14.4)	319 (14.0)	63 (16.3)	
Hispanic, n (%)	281 (10.6)	231 (10.2)	50 (13.0)	
Asian or Pacific Islander, n (%)	23 (0.9)	21 (0.9)	2 (0.5)	
Native American, Alaska Native, n (%)	43 (1.6)	34 (1.3)	9 (2.3)	
Other, n (%)	19 (0.7)	15 (0.7)	4 (1.0)	
Temp (Celsius)	36.6 (36.2 – 36.9)	36.6 (36.1 – 36.9)	36.7 (36.3 – 37.0)	<0.01
Heart rate (bpm)	93.0 (78.5 – 110.0)	93.0 (78.0 – 110.0)	94.0 (80.0 – 109.0)	0.03
Mean arterial pressure	89.5 (78.0 – 102.0)	90.0 (78.0 – 102.5)	89.5 (79.0 – 101.0)	0.60
SpO2 (%)	96.2 (7.1)	96.2 (6.9)	96.3 (8.4)	0.38
Lactate (mmol/L)	3.6 (1.9 – 7.3)	3.7 (2.0 – 7.5)	3.1 (1.7 – 5.7)	<0.01
Creatinine (mg/dl)	1.2 (0.9 – 1.8)	1.2 (0.9 – 1.8)	1.2 (0.9 – 1.9)	0.68
Hemoglobin (g/dl)	12.5 (2.9)	12.6 (3.0)	12.3 (3.1)	<0.01
Platelet (10^9/L)	243 (113.6)	242 (113.6)	246 (113.7)	0.12
Bilirubin (mg/dl)	0.3 (0.1 – 0.8)	0.3 (0.1 – 0.8)	0.4 (0.2 – 0.9)	0.02
pH	7.29 (7.18 – 7.38)	7.29 (7.18 – 7.38)	7.30 (7.19 – 7.38)	0.06
PaO2	102 (71 – 200)	105 (72 – 207)	90 (65 – 152)	<0.01
PaCO2	43 (35 – 55)	43 (35 – 55)	43 (34 – 57)	0.43
Reason for mechanical ventilation, n (%)				
Altered mental status	10,433 (23.4)	9,599 (24.5)	834 (15.2)	<0.01
Respiratory failure	8,557 (19.2)	6,751 (17.2)	1,806 (32.8)	
Trauma	6,206 (13.9)	5,619 (14.3)	587 (10.7)	
Cardiac arrest	3,372 (7.5)	3,097 (7.9)	275 (5.0)	
Cardiac	2,149 (4.8)	1,748 (4.5)	401 (7.3)	
Intracranial hemorrhage	1,733 (3.9)	1,580 (4.0)	153 (2.8)	
Drug overdose	1,483 (3.3)	1,330 (3.4)	153 (2.8)	
Seizure	1,354 (3.0)	1,219 (3.1)	135 (2.5)	
Sepsis	1,085 (2.4)	939 (2.4)	146 (2.7)	
Traumatic brain injury	1,266 (2.8)	1,168 (3.0)	98 (1.8)	
Airway obstruction	229 (0.5)	203 (0.5)	26 (0.5)	
Other	6,804 (15.2)	5,914 (15.1)	890 (16.2)	
Process of Care Variables				

Duration of care (hours)	1.1 (0.9 – 1.5)	1.1 (0.8 – 1.5)	1.2 (0.9 – 1.6)	<0.01
Vasopressors, n (%)	10,642 (23.8)	9,390 (24.0)	1,252 (22.7)	0.05

**Supplemental Digital Content 6.** Sedation variables for mechanically ventilated air medical transport patients, subgroup of patients intubated by the air medical transport crew.

Drug	Prehospital Sedation Depth Status			
	All Subjects n = 44,671	Deep sedation (n= 39,167)	Light sedation (n= 5,504)	p
Fentanyl n (%) Cumulative dose (mcg) Weight-based dose (mcg/kg)	22,615 (50.6) 100 (50 – 150.0) 1.1 (0.7 – 1.7)	19,837 (50.6) 100 (50 – 150.0) 1.1 (0.7 – 1.7)	2,778 (50.5) 100 (50 – 150.0) 1.1 (0.7 – 1.7)	0.81 0.93 0.38
Midazolam n (%) Cumulative dose (mg) Weight-based dose (mg/kg)	17,319 (38.8) 5.0 (2.5 – 6.0) 0.05 (0.03 – 0.08)	15,141 (38.7) 5.0 (2.5 – 6.0) 0.05 (0.03 – 0.08)	2,178 (39.6) 5.0 (2.5 – 6.0) 0.05 (0.03 – 0.08)	0.19 0.16 0.45
Ketamine n (%) Cumulative dose (mg) Weight-based dose (mg/kg)	17,318 (38.8) 220 (100 – 400) 2.6 (1.2 – 4.7)	15,213 (38.8) 225 (100 – 400) 2.6 (1.2 – 4.7)	2,105 (38.2) 200 (100 – 400) 2.5 (1.2 – 4.6)	0.40 0.75 0.78
Propofol n (%) Cumulative dose (mg) Weight-based dose (mg/kg)	5,832 (13.1) 136.5 (72.0 – 234.0) 1.6 (0.8 – 2.9)	5,092 (13.0) 135.0 (72.0 – 234.0) 1.6 (0.8 – 2.8)	740 (13.4) 144.0 (81.6 – 240.0) 1.7 (0.9 – 3.0)	0.36 0.11 0.05
Etomidate n (%) Cumulative dose (mg) Weight-based dose (mg/kg)	3,678 (8.2) 24.0 (20.0 – 30.0) 0.30 (0.23 – 0.40)	3,219 (8.2) 24.0 (20.0 – 30.0) 0.30 (0.23 – 0.40)	459 (8.3) 24.0 (20.0 – 30.0) 0.30 (0.22 – 0.41)	0.76 0.28 0.82
Lorazepam n (%) Cumulative dose (mg) Weight-based dose (mg/kg)	3,111 (7.0) 2.0 (1.0 – 2.0) 0.02 (0.01 – 0.03)	2,697 (6.9) 2.0 (1.0 – 2.0) 0.02 (0.01 – 0.03)	414 (7.5) 2.0 (1.0 – 2.0) 0.02 (0.01 – 0.03)	0.08 0.67 0.58
Morphine n (%) Cumulative dose (mg) Weight-based dose (mg/kg)	255 (0.6) 5.0 (3.5 – 5.0) 0.06 (0.03 – 0.08)	225 (0.6) 5.0 (3.6 – 5.3) 0.06 (0.03 – 0.08)	30 (0.5) 5.0 (3.0 – 5.0) 0.06 (0.04 – 0.06)	0.79 0.76 0.42
Dexmedetomidine n (%) Highest dose (mcg/kg/hour)	138 (0.3) 0.6 (0.4 – 1.0)	118 (0.3) 0.6 (0.4 – 1.0)	20 (0.4) 0.7 (0.5 – 1.2)	0.44 0.08
Hydromorphone n (%) Cumulative dose (mg) Weight-based dose (mg/kg)	83 (0.2) 1.0 (1.0 – 2.0) 0.01 (0.01 – 0.03)	71 (0.2) 1.0 (1.0 – 2.0) 0.01 (0.01 – 0.03)	12 (0.2) 1.0 (1.0 – 2.8) 0.02 (0.01 – 0.13)	0.55 0.68 0.93
Phenobarbital, n (%) Cumulative dose (mg)	33 (0.1) 61.9 (41 – 105)	28 (0.1) 63.9 (41.0 – 137)	5 (0.1) 41.3 (24.1 – 76.8)	0.62 0.20
Diazepam n (%) Cumulative dose (mg) Weight-based dose (mg/kg)	19 (0.01) 5.0 (2.5 – 5.0) 0.05 (0.03 – 0.06)	18 (0.01) 4.5 (2.5 – 5.0) 0.04 (0.03 – 0.07)	1 (0.01) 5.0 (5.0 – 5.0) 0.06 (0.06 – 0.06)	0.35 0.74 0.56
Neuromuscular blockers, n (%) Rocuronium, n (%) Cumulative dose (mg) Succinylcholine, n (%) Cumulative dose (mg) Vecuronium, n (%) Cumulative dose, n (mg)	26,466 (59.2) 14,089 (31.5) 85.0 (60.0 – 100.0) 11,250 (25.2) 150.0 (118.5 – 200.0) 4,479 (10.0) 10.0 (7.4 – 10.0)	23,755 (60.7) 12,541 (32.0) 85.0 (60.0 – 100.0) 10,158 (25.9) 150.0 (120.0 – 200.0) 4,085 (10.4) 10.0 (7.2 – 10.0)	2,711 (49.3) 1,548 (28.1) 90.0 (63.5 – 100.0) 1,092 (19.8) 150.0 (105.0 – 200.0) 394 (7.2) 10.0 (7.5 – 10.0)	<0.01 <0.01 0.44 <0.01 0.45 <0.01 0.57
Sedation scale documented Ramsay, n (%) Ramsay Level RASS, n (%) RASS Level GCS, n (%) GCS Level	11,656 (26.1) 5.5 (4.5 - 6) 6,668 (14.9) -4 (-5 to -3) 44,090 (92.2) 4 (3 - 6)	9,529 (24.3) 6.0 (5.0 – 6.0) 5,242 (13.4) -4 (-5 to -3) 39,013 (99.6) 4 (3 – 6)	2,127 (38.6) 1.0 (1.0 – 4.0) 1,426 (25.9) -1 (-2 to 0) 5,077 (92.2) 9 (5 – 14)	<0.01 <0.01 <0.01 <0.01 <0.01 <0.01

RASS= Richmond Agitation-Sedation Scale, GCS= Glasgow Coma Scale

**Supplemental Digital Content 7.** Post hoc sensitivity analyses: multivariable logistic regression models with deep sedation as the dependent variable, which included: (A) medication dosing in the model; and (B) indication for mechanical ventilation in the model.

**(A)**

Variables	aOR	95% CI	Standard Error	p
Age	0.99	0.99 – 0.99	0.001	<0.001
Intubation by air medical crew	0.75	0.71 – 0.79	0.026	<0.001
Use of validated sedation scale*	0.29	0.27 – 0.30	0.025	<0.001
Longer-acting NMB**	1.28	1.22 – 1.35	0.025	<0.001
Receipt of succinylcholine	0.97	0.89 – 1.06	0.044	0.536
Total dose of:				
Midazolam (mg)	0.99	0.99 – 1.00	0.002	0.023
Lorazepam (mg)	0.99	0.98 – 1.01	0.007	0.462
Ketamine (mg)	1.00	1.00 – 1.00	0.001	0.910
Propofol (mg)	1.00	1.00 – 1.00	0.001	0.881
Fentanyl (mcg)	1.00	1.00 – 1.00	0.001	0.792

NMB: neuromuscular blocker; aOR: adjusted odds ratio; CI: confidence interval

\*Ramsay Sedation Scale or RASS

\*\*Rocuronium or vecuronium

**(B)**

Variables	aOR	95% CI	Standard Error	p
Age	0.99	0.99 – 0.99	0.001	<0.001
Intubation by air medical crew	0.75	0.71 – 0.79	0.026	<0.001
Use of validated sedation scale*	0.29	0.27 – 0.30	0.025	<0.001
Longer-acting NMB**	1.29	1.23 – 1.36	0.026	<0.001
Receipt (yes/no) of:				
Succinylcholine	0.97	0.89 – 1.06	0.045	0.515
Propofol	0.94	0.88 – 1.01	0.036	0.114
Fentanyl	0.97	0.93 – 1.02	0.025	0.242
Ketamine	1.02	0.97 – 1.07	0.025	0.557
Midazolam	0.99	0.94 – 1.04	0.026	0.656
Lorazepam	1.00	0.91 – 1.10	0.048	0.998
Indication for mechanical ventilation:				
Altered mental status	1.39	1.30 – 1.49	0.034	<0.001
Respiratory failure	0.54	0.51 – 0.57	0.029	<0.001

NMB: neuromuscular blocker; aOR: adjusted odds ratio; CI: confidence interval

\*Ramsay Sedation Scale or RASS

\*\*Rocuronium or vecuronium