

**Online Data Supplement** for Unplanned Admissions, Emergency Department Visits, and Epilepsy after Critical Neurological Illness Requiring Prolonged Mechanical Ventilation in Children

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**Supplemental Table 1.** Pediatric Neurocritical Care Diagnoses based on Primary Diagnoses in the Virtual Patient Systems database

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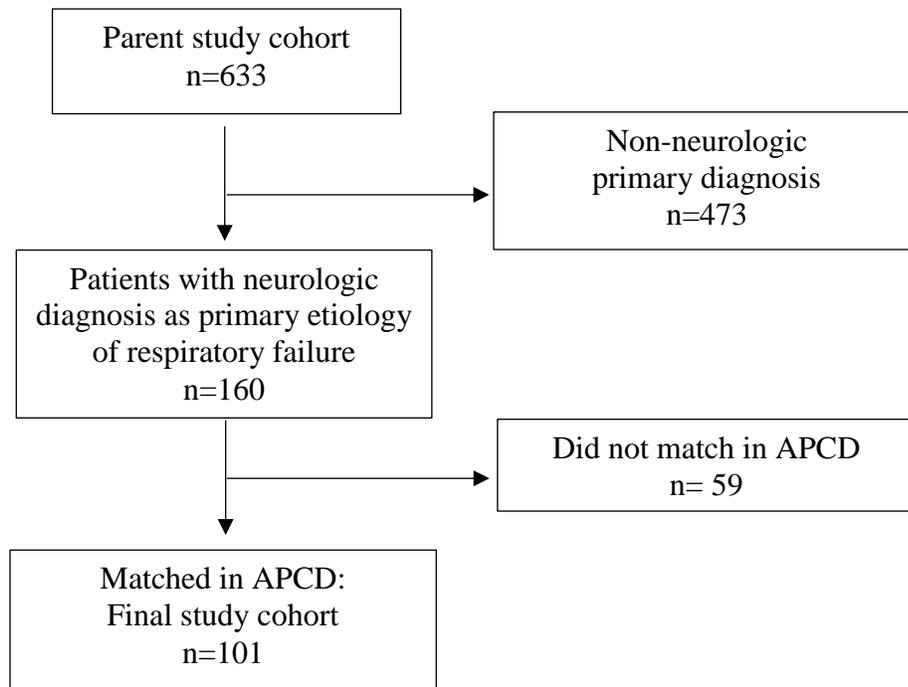
**Supplemental Figure 2.** Cumulative incidence of Emergency Department (ED) visits and unplanned hospitalizations during the 12 months following discharge within the pediatric neurocritical care cohort.

**Supplemental Table 1.** Pediatric Neurocritical Care Diagnoses based on primary diagnoses in the Virtual Patient Systems database

<b>Group (n)</b>	<b>Diagnoses (n)</b>
Trauma (58)	Closed Intracranial Injury (48) Traumatic Subdural Hemorrhage (5) Open Intracranial Injury (4) Open Wound of the Head (1)
Hypoxic-Ischemic Injury (17)	Asphyxiation/Strangulation (4) Cerebral Artery Occlusion/Stroke (3) Intracranial Hemorrhage NEC (2) Nontraumatic Subarachnoid Hemorrhage (2) Nontraumatic Subdural Hemorrhage (2) Drowning/Near Drowning (2) Nontraumatic Intraventricular Hemorrhage (1) Ill-defined Causes of Morbidity and Mortality (1) <sup>a</sup>
Seizures (15)	Grand Mal Status (11) Convulsion/Seizure (3) Petit Mal Status (1)
Central Nervous System Infections (8)	Meningitis (2) Mycoses, Fungal Infections (2) Encephalitis (1) Viral Encephalitis (1) Encephalopathy, unspecified (1) <sup>a</sup>

	Other Demyelinating Disorders of CNS (1) <sup>a</sup>
Other (3)	Coma/Stupor/Unconsciousness (1) Hydrocephalus, acquired (1) Other Brain Conditions NEC (1)

<sup>a</sup>Additional chart review done to clarify diagnosis category. “Ill-defined causes of morbidity and mortality” identified to be an admission of an infant who sustained a hypoxic-ischemic injury. “Other demyelinating disorders” identified as a child diagnosed with antibody negative neuromyelitis optica in the setting of new diagnosis of HIV. “Encephalopathy, unspecified” identified to be acute encephalopathy and refractory status epilepticus in the setting of a febrile illness with clinical course consistent with Febrile Illness Related Epilepsy Syndrome (FIRES).



**Supplemental Figure 1.** Enrollment Diagram.

**Supplemental Table 2.** Patients that matched in the Colorado All Payers Claims Database versus those who did not match.

Characteristic	Entire cohort (n=160)	Did not match in APCD (n=59)	Matched in APCD (n=101)	P value
<b>Patient Characteristics</b>				
Age (years), median (IQR)	4.4 (0.7, 11.7)	4.9 (1.9, 11.5)	3.7 (0.4, 11.9)	0.21
Male sex, n (%)	109 (68)	34 (58)	75 (74)	0.045
Race/Ethnicity, n (%)				0.50
White	91 (57)	37 (63)	54 (53)	
Hispanic or Latino	38 (24)	11 (19)	27 (27)	
Black or African American	9 (6)	2 (3)	7 (7)	
Other/unspecified	22 (14)	9 (15)	13 (13)	
Pediatric Medical Complexity Algorithm designation prior to admission, n (%)				0.07
Complex chronic condition	30 (19)	13 (22)	17 (17)	
Non-complex chronic condition	21 (13)	3 (5)	18 (18)	
None	109 (68)	43 (73)	66 (65)	
<b>Admission Characteristics</b>				
Diagnosis Category, n (%)				0.25
Trauma	88 (55)	30 (51)	58 (57)	
Hypoxic-Ischemic Injuries	32 (20)	15 (25)	17 (17)	
Seizures	24 (15)	9 (15)	15 (15)	
Central Nervous System Infections	9 (6)	1 (2)	8 (8)	
Other	7 (4)	4 (7)	3 (3)	
Pre-hospital cardiopulmonary resuscitation, n (%)	28 (18)	11 (19)	17 (17)	0.94
PRISM III Score, median (IQR)	5 (2, 11)	6 (3, 11)	5 (2, 11)	0.42
PIM2 risk of mortality score, median (IQR)	3.7 (3.0, 14.0)	3.7 (3.0, 12.1)	3.7 (3.0, 14.2)	0.98
<b>Clinical Course Characteristics</b>				
Cardiopulmonary resuscitation <sup>a</sup> , n (%)	5 (3)	1 (2)	4 (4)	0.65
Tracheostomy <sup>a</sup> , n (%)	9 (6)	2 (3)	7 (7)	0.49
Complicated PICU stay <sup>b</sup> , n (%)	16 (10)	5 (8)	11 (11)	0.83
Duration of Mechanical Ventilation (days), median (IQR)	7.0 (4.8, 10.2)	6.4 (3.9, 9.9)	7.4 (5.3, 10.2)	0.28
PICU length of stay (days),	10.6 (7.8, 14.1)	11.0 (7.7, 13.9)	10.3 (7.9, 14.2)	0.73

median (IQR)				
Hospital length of stay (days), median (IQR)	34.6 (19.8, 57.8)	31.2 (19.6, 45.7)	41.8 (21.6, 60.9)	0.07
<b>Post-discharge mortality</b>				
Died during post-discharge year, n (%)	5 (3)	1 (2)	4 (4)	0.65
Months from discharge to death (IQR)	2 (1.2, 7.3)	0 (0, 0)	4.7 (1.8, 8.4)	0.40

<sup>a</sup>Delineates seizures, cardiopulmonary resuscitation, or tracheostomies placed during the PICU (pediatric intensive care unit) stay.

<sup>b</sup>Complicated PICU stay delineates any patient who received cardiopulmonary resuscitation or a tracheostomy during the PICU stay.

APCD: All Payers Claims Database; IQR: interquartile range; PRISM III: Pediatric Risk of Mortality; PIM 2: Pediatric Index of Mortality.

**Supplemental Table 3.** Anti-seizure medication prescriptions filled by post-ICU epilepsy cohort in months 6-12 following discharge.

<b>Medication</b>	<b>Dose and Formulation</b>
Clobazam	5mg Tablet, 10mg Tablet
Clonazepam	0.1mg/ml Suspension
Levetiracetam	100mg/ml Solution
Phenobarbital	20mg/5ml Elixir, Solution
Phenytoin	125/5ml Suspension
Rufinamide	200mg Tablet
Topiramate	200mg Tablet
Valproic Acid	250mg Tablet, 500mg Tablet, 500mg ER Tablet
	250mg/5ml Solution

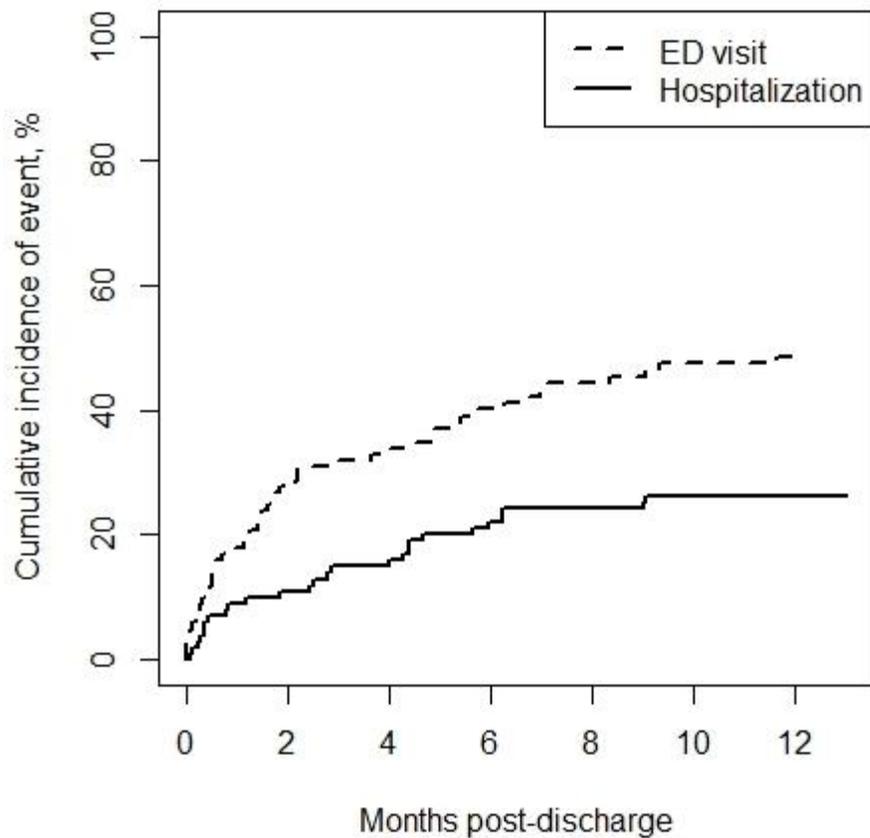
**Supplemental Table 4.** Patients with post-ICU epilepsy without seizures during the index hospitalization.

<b>Characteristic</b>	<b>Patients with post-ICU epilepsy without seizures during index hospitalization (n=10)</b>
<b>Patient Characteristics</b>	
Age (years), median (IQR)	12.4 (5.4, 13.4)
Male sex, n (%)	8 (80)
Race/Ethnicity, n (%)	
White	5 (50)
Hispanic or Latino	2 (20)
Black or African American	0 (0)
Other/unspecified	3 (30)
Pediatric Medical Complexity Algorithm designation prior to admission, n (%)	
Complex chronic condition	0 (0)
Non-complex chronic condition	6 (60)
None	4 (40)
<b>Admission Characteristics</b>	
Primary Diagnosis Category, n (%)	
Trauma	6 (60)
Hypoxic-Ischemic Injury	3 (30)
Central Nervous System Infections	1 (10)
Pre-hospital cardiopulmonary resuscitation, n	3 (30)
PRISM III Score, median (IQR)	9.5 (5.0, 18.5)
PIM2 risk of mortality score, median (IQR)	11.6 (3.4, 15.8)
<b>Clinical Course Characteristics</b>	
Tracheostomy <sup>a</sup> , n (%)	1 (10)
Complicated PICU stay <sup>b</sup> , n (%)	1 (10)
Duration of Mechanical Ventilation (days), median (IQR)	8.7 (6.7, 11.4)
PICU length of stay (days), median (IQR)	18.3 (11.2, 23.8)
Hospital length of stay (days), median (IQR)	92.2 (46.8, 135.1)

<sup>a</sup>Tracheostomy placed during the PICU (pediatric intensive care unit) stay.

<sup>b</sup>Complicated PICU stay delineates any patient who received cardiopulmonary resuscitation (n=0 in this subset) or a tracheostomy during the PICU stay.

APCD: All Payers Claims Database; IQR: interquartile range; PRISM III: Pediatric Risk of Mortality; PIM 2: Pediatric Index of Mortality.



**Supplemental Figure 2.** Cumulative incidence of Emergency Department (ED) visits and unplanned hospitalizations during the 12 months following discharge within the pediatric neurocritical care cohort.