SENSITIVITY ANALYSIS

Background. We performed this sensitivity analysis to evaluate whether results including patients with status epilepticus (SE) as a non-primary diagnosis code besides the primary code differs from results selecting exclusively patients with a primary diagnosis code for SE. SE is often a manifestation of severe medical illness with high associated mortality, in which case SE may be pushed to a non-primary diagnosis position.

Study population. We included 57,607 patients admitted due to SE in 2016 (estimated population based on our sample database). Demographic and clinical characteristics of our study population are detailed in Table 1. The most represented SE codes in our study population were the codes within G40.9 (61.7%), G40.4 (11.6%), G40.2 (8.7%), G40.80 (5.6%), G40.1 (5.0%), G40.3 (2.5%), G40.5 (2.3%), G40.0 (0.8%), and G40.813 (0.9%), detailed in Table 2. For the secondary outcome, we included 26,130 of these patients.

Primary outcome. From our study population, 91.3% of the patients had a single admission for SE in 2016 (12.5% died during the admission) and 8.7% were readmitted for SE within 2016: 6.9% had 2 admissions (4.1% died during the last admission), 1.3% had 3 admissions (5.7% died during the last admission), and 0.5% had ≥ 4 admissions (unable to report ≤ 10 deaths) (bar plot, Figure 1). The incidence rate was 21 readmissions for SE per 1000 patient-months, which equals an average waiting time until readmission of 47.6 months under steady-state conditions (1/0.021= 47.6 months).

Secondary outcome. The cumulative probability of having had a readmission for SE at 1, 3 and 6 months from the index admission was approximately 3.7%, 7.7% and 11.5%, respectively (Kaplan-Meier curve, Figure 2). Patients with refractory epilepsy were more likely to have a readmission for SE than patients without refractory epilepsy (HR 1.52, 95% CI 1.30-1.78, adjusted $p < 0.0001$) during the 6-month follow-up analyzed (Kaplan-Meier curves, Figure 3). Pediatric patients were more likely to have a readmission for SE than adult patients (HR 1.56, 95% CI 1.34-1.81, adjusted $p < 0.0001$) during the 6-month follow-up period (Kaplan-Meier curves, Figure 4). The histogram (Figure 5) shows the percentage of readmission by age at 6 months from the index admission.

TABLE

Table 1. Patients' demographic, clinical and hospital characteristics of our study population (information per patient, and first admission if more than one).

PATIENTS' DEMOGRAPHIC AND CLINICAL CHARACTERISTICS (n =57,607)		
Age	median (p25-p75) [min-max] (years)	53 (26-67) [0-90]*
	Pediatrics	18.8%
	Adults	81.2%
Sex	**Male**	52.2%
	Female	47.8%
Primary payer	**Medicare**	41.3%
	Medicaid	31.0%
	Private insurance	20.0%
	Self-pay	3.8%
	No charge	0.5%
	Other	3.4%
Median household income (based on ZIP codes)	**< $43,000** (1st quartile)	34.7%
	$43,000- 53,999 (2nd quartile)	25.6%
	$54,000-70,999 (3rd quartile)	23.4%
	≥ $71,000 (4th quartile)	16.3%
Refractory epilepsy (based on epilepsy codes)	**Yes**	15.0%
	No	85.0%
Type of SE (based on mechanical ventilation codes)	**Mild SE** (no intubation)	53.4%
	Moderate SE (intubation ≤ 96h)	30.2%
	Severe SE (intubation > 96h)	16.4%
Length of stay	median (p25-p75) [min-max] (days)	5 (2-11) [0-365]
Severity (APRDRG) (loss of function)	**No class specified**	0.4%
	Minor (includes cases with no comorbidities)	7.9%
	Moderate	18.6%
	Major	35.9%

	Extreme	37.2%
Risk of mortality (APRDRG) (likelihood of dying)	**No class specified**	0.4%
	Minor	21.1%
	Moderate	16.5%
	Major	19.8%
	Extreme	42.2%
HOSPITAL CHARACTERISTICS		
Hospital control type	**Government nonfederal**	13.6%
	Private nonprofit	76.2%
	Private for-profit	10.2%
Hospital bed size	**Small**	10.4%
	Medium	23.5%
	Large	66.1%
Teaching status and location	**Metropolitan non-teaching**	18.4%
	Metropolitan teaching	77.8%
	Non-metropolitan	3.8%

Legend. SE: status epilepticus. **(p25-p75) [min-max]:** percentile 25th, percentile 75th, minimum, maximum.

APRDRG: All Patients Refined Diagnosis Related Groups. *: In the NRD database, any age greater than 90 was set to 90.

FIGURES

Figure 1. Bar plot representing the percentage of patients who had a single admission for SE and the percentage of patients who were readmitted (2, 3, 4 or more admissions) in 2016 (cross-sectional analysis of the year). Patients who survived the last hospitalization are represented in blue, and patients who died, in grey at the top of the bar.

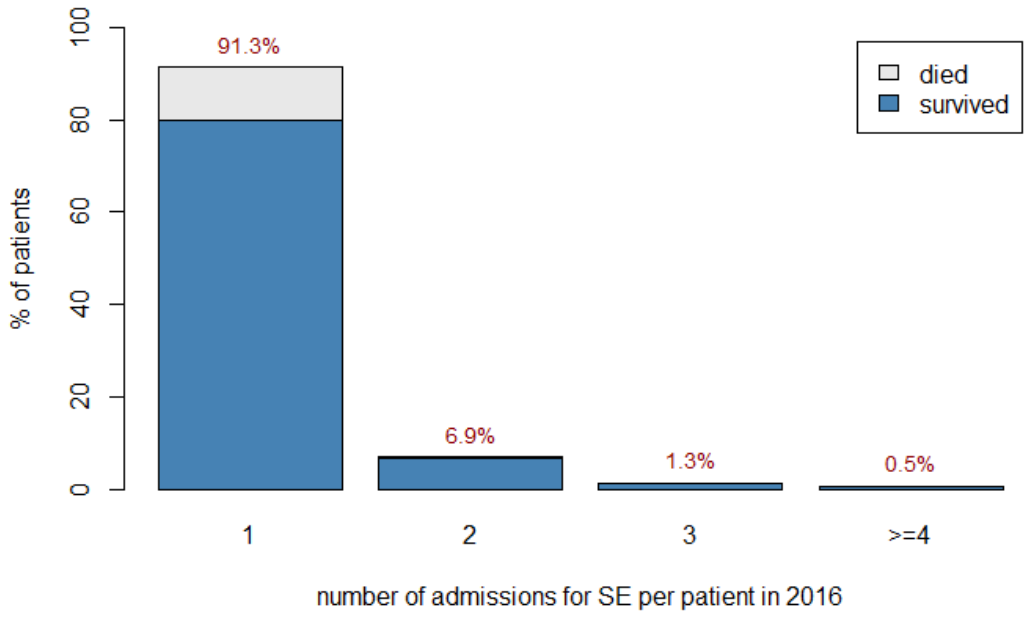

Figure 2. Time to readmission of the entire cohort. Kaplan-Meier curve of the entire cohort showing the cumulative probability of undergoing a readmission for status epilepticus over time. Time is censored at 6 months of follow-up.

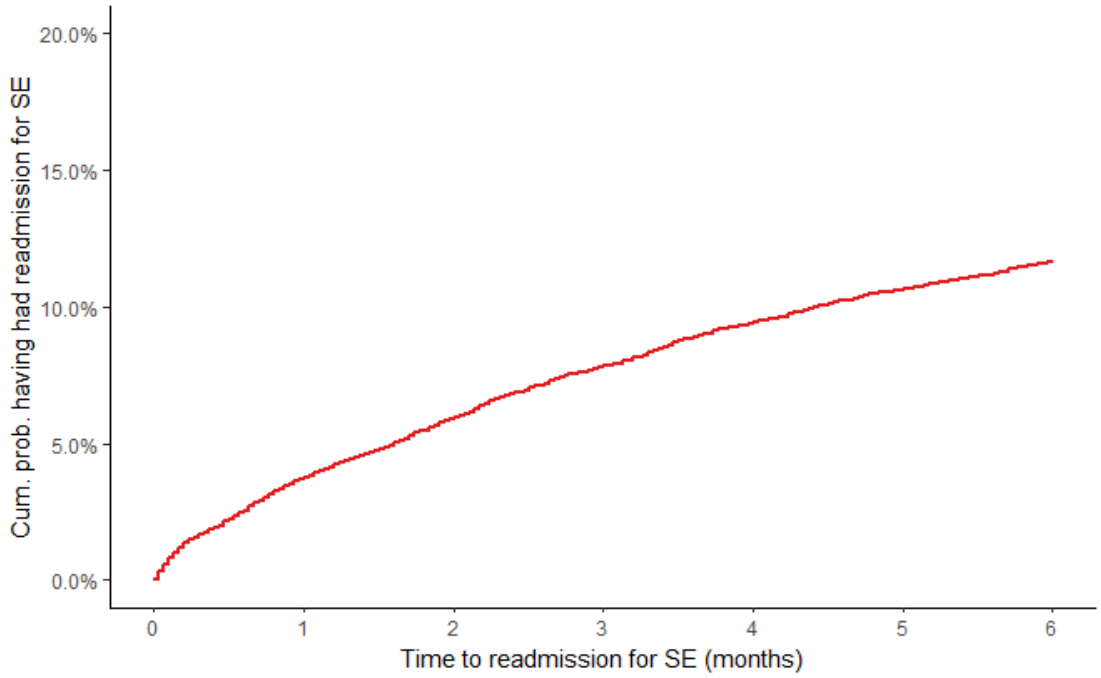

Figure 3. Comparison of time to readmission between subgroups (refractory epilepsy or not).

Two Kaplan-Meier curves showing the cumulative probability of undergoing a readmission for status epilepticus in patients with refractory epilepsy (blue line) and in absence of refractory epilepsy (red line) (unadjusted comparison). Time is censored at 6 months of follow-up.

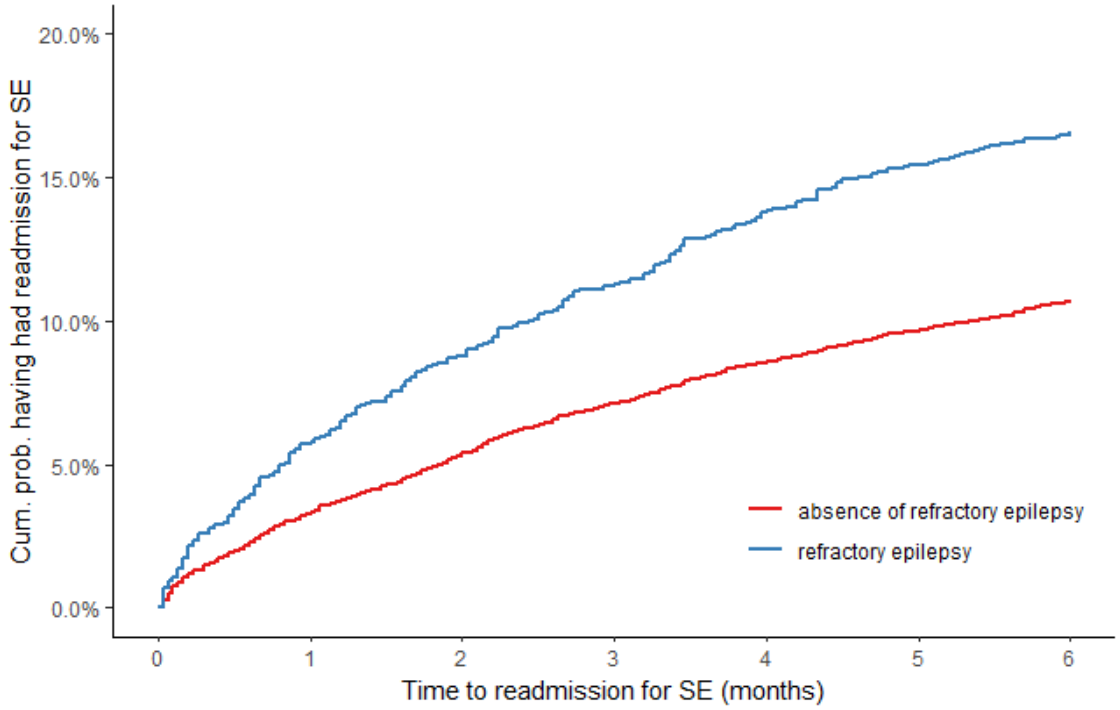

Figure 4. Comparison of time to readmission between subgroups (age). Two Kaplan-Meier curves showing the cumulative probability of undergoing a readmission for status epilepticus in pediatric patients (blue line) and in adult patients (red line) (unadjusted comparison). Time is censored at 6 months of follow-up.

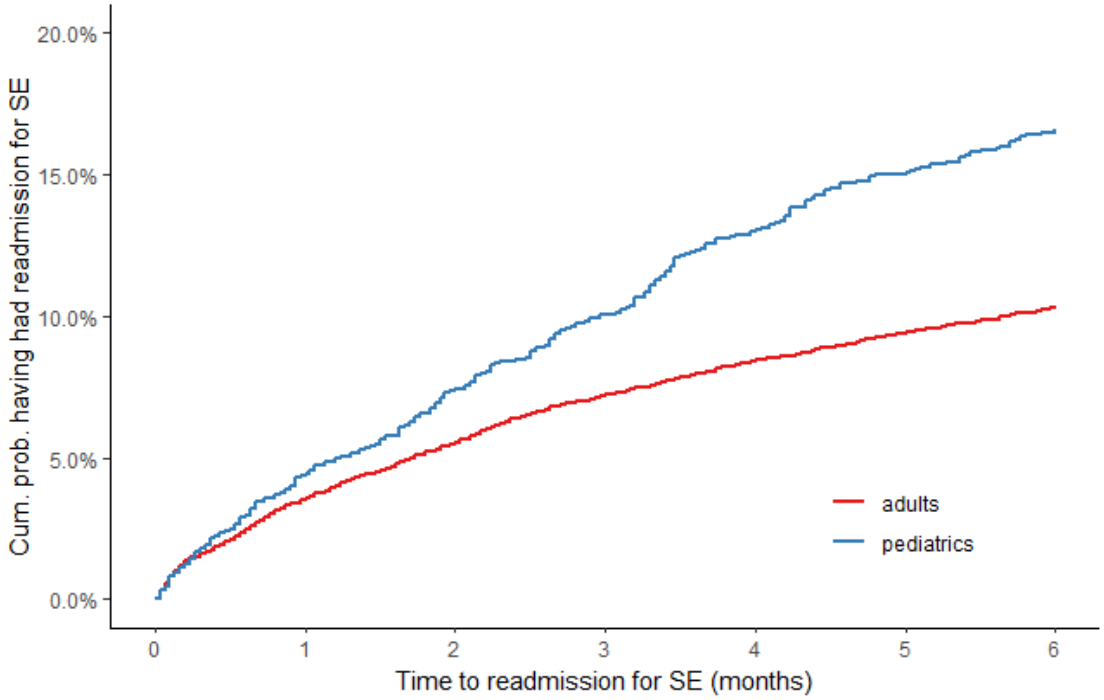

Figure 5. Histogram representing the percentage of readmission by age at 6 months of follow-up from the index admission.