Healthcare Costs of Patients with Amyotrophic Lateral Sclerosis with Commercial or Medicare Insurance

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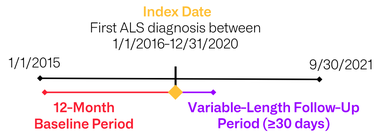
MarketScan by merative

Poster Code: EE255

Study Summary

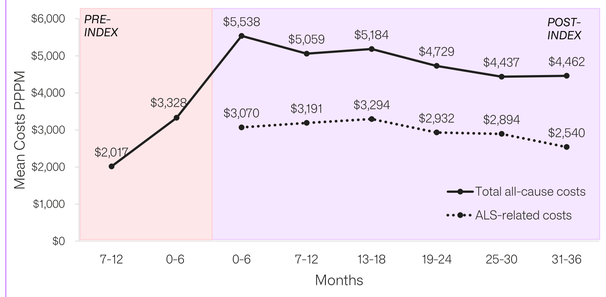
Study Question: What are the economic burden and cost trajectory of ALS in the three years following diagnosis?

Study Design



Study Results

Per-Patient-Per-Month Healthcare Costs



Conclusion: ALS patients incur a substantial economic burden estimated between $2,000 and $5,500 per month. Highest monthly costs are observed in the 6-months following initial diagnosis.

Background

- Amyotrophic lateral sclerosis (ALS) is a fatal neurodegenerative disease that currently has no cure.
  - Management of ALS is focused on improving quality of life and through multidisciplinary supportive therapy.
  - Current pharmacological treatments that may be used have been shown to prolong survival and slow decline in activities of daily living.[1]
- Due to the high levels of support required and impact on day to day activity, the economic burden of ALS is high, estimated at $212 million to $1.4 billion annually in the US.[2]
- Administrative claims are a rich source to understand the current economic burden of ALS in the United States.

Objective

- To examine the near-term economic burden of incident ALS patients by assessing all-cause and ALS-related healthcare costs in the first three years following diagnosis.

Methods

Data Source

- Merative™ MarketScan® Commercial and Medicare Database from 1/1/2015-9/30/2021
  - The MarketScan administrative claims databases contain data for the full healthcare experience (inpatient, outpatient, and outpatient pharmacy) for individuals with employer sponsored commercial or Medicare insurance

Study Design

- Adults newly-diagnosed with ALS on or after 1/1/2016 were identified in the MarketScan Databases
  - ALS diagnosis was defined as ≥1 inpatient or ≥2 non-diagnostic outpatient claims; the first qualifying claim served as the index date
- Patients were also required to have continuous eligibility for ≥12 months prior and ≥30 days following index
  - Patients with additional post-index eligibility were followed over a variable post-period, the end of which was defined as the first of: 1) the end of continuous eligibility, 2) the end of study data (9/30/2021), or 3) 3 years.
  - Patients with non-diagnostic ALS diagnoses or claims for ALS medications (riluzole or edaravone) in the baseline period were excluded
- A 1-year sensitivity analysis was conducted among the subset of patients with continuous enrollment for ≥12-months following index

Outcomes

- Primary outcomes included all-cause and ALS-related healthcare costs (total, medical, and outpatient pharmacy costs)
  - All-cause costs were reported in both the pre- and post- periods
  - Costs were calculated based on paid amounts in the MarketScan Databases
  - ALS-related costs were defined as any claim with an ICD-10 diagnosis for ALS or a drug/procedure code for an ALS medication; as the study sample only included incident ALS patients, ALS-related costs were assessed over the post-period
- Patient demographics (measured on the index date) and baseline clinical characteristics were also examined

Analyses

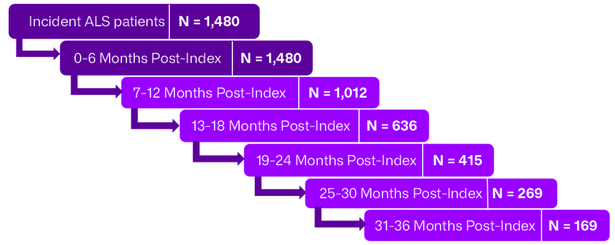
- Costs were calculated and reported for 6-month intervals among the subset of patients with at least 30-days of continuous eligibility in each 6-month reporting interval
  - In order to adjust for variable patient follow-up within each reporting interval, costs were per-patient-per-month (PPPM) format
- The MarketScan data was assessed using Treatment Pathways 4.0, an online analytic platform

Results

Study Sample and Characteristics

- 1,480 ALS patients were eligible for study inclusion; mean follow-up was 457 days (SD = 391 days)
- By definition, all 1,480 patients were included in the two 6-month reporting intervals during the 12-month baseline period and the first 6-month post-index reporting interval; patient sample size throughout the remainder of the the variable-length follow-up is shown in Figure 1.
- Average age at diagnosis was 60.5 (SD = 12.4) and 58% of the sample was male.
- Health plan type and region of residence distributions reflected that of the overall Marketscan databases (Table 1).
- The most common individual component comorbidities from the CCI were COPD (17%), mild-to-moderate diabetes (16.9%), and cardiovascular disease (14.4%).
  - 5.8% of ALS patients had hemi/paraplegia at baseline

Figure 1. Post-Index Sample Sizes by Interval



All 1,480 patients were eligible for the 12-month baseline period

Results, Cont.

Healthcare Costs

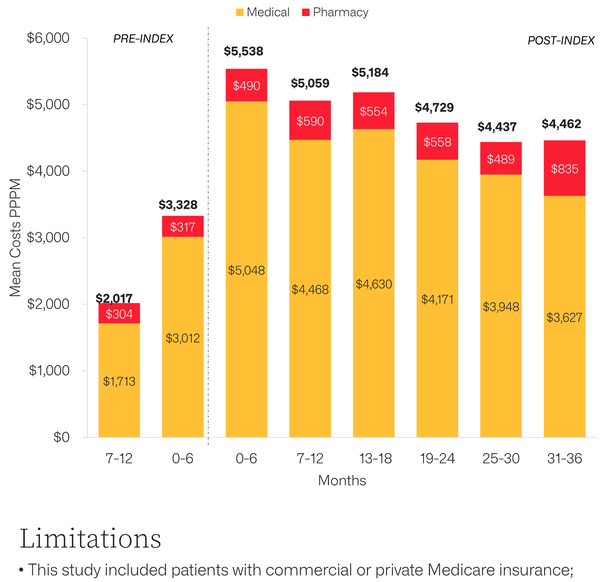
- Total all-cause costs increased approximately 66% interval-to-interval over the first three intervals (Figure 2).
  - Total all-cause costs peaked at $5,538 PPPM in the first 6 months of the post-period before largely stabilizing over the remainder of the study period ($4,437-$5,184 PPPM).
  - Medical costs were the primary cost driver throughout the study period with pharmacy costs accounting for 9% to 12% of costs over the post-period.
- ALS-related costs accounted for over half of total all-cause costs over the post-period.
  - ALS-related costs accounted for 55-65% of total healthcare costs in each interval over the 3 years of follow-up.
- Sensitivity analyses among patients with at least one year of follow-up revealed similar cost trends in the baseline and follow-up, with mean costs of $4,784 in months 0-6 of the post-period and mean costs of $4,865 in months 7-12 of the post-period.

Table 1. Baseline Demographic and Clinical Characteristics

	Incident ALS Patients N=1,480
Age, N (%)	
18-34	42 (2.8%)
35-44	86 (5.8%)
45-54	273 (18.5%)
55-64	646 (43.7%)
65+	433 (29.3%)
Male, N (%)	862 (58.2%)
Heath plan type[a], N (%)	
Comprehensive	184 (21%)
EPO/PPO	789 (53%)
HMO	171 (12%)
POS/POS with capitation	108 (7%)
CDHP/HDHP	204 (14%)
Geographic region[a], N (%)	
Northeast	303 (20.5%)
North Central	415 (28.0%)
South	570 (39.0%)
West	186 (12.6%)
CCI, mean (SD)	1.3 (2.0)

[a]Healthplan and region could not be determined for <2% of patients. CCI, Deyo-Charlson Comorbidity Index; CDHP/HDHP, consumer-directed health plan/high-deductible health plan; EPO/PPO, exclusive /preferred provider organizations; HMO, health maintenance organization; POS, point of service; SD, standard deviation

Figure 2. All-Cause PPPM Costs, 6-month intervals



Limitations

- This study included patients with commercial or private Medicare insurance; results may not extend to patients with other types or the uninsured
- Although claims provide information on healthcare encounters and associated costs, they lack more clinical data and can contain coding or other misclassification errors
- A short duration of post-index follow-up was imposed on the sample to reduce survival bias in these analyses; however, this limited follow-up can impact assessment of post-index healthcare costs. The survival analysis among patients with one year of post-index eligibility revealed similar cost trajectories

Conclusions

- ALS is associated with a substantial economic burden that could exceed $175,000 per patient over the first 3 years following diagnosis.
  - The majority of healthcare costs are driven by ALS, which is not surprising given the widespread impacts of the condition.
- Although ALS will always be expensive due to its physically devastating nature, prompt diagnosis and effective early management may help to reduce the overall burden of disease in the long-term
- Further research is warranted to understand the impact of various ALS management strategies, including new therapies, on the trajectory and associated economic burden of disease.

References

1 HHS. National Institute of Neurological Disorders and Stroke. https://www.ninds.nih.gov/health-information/disorders/amyotrophic-lateral-sclerosis-als
2 Berry JD, et al. Amyotroph Lateral Scler Frontotemporal Degener. 2023 Feb 7:1-13.

Disclosure

Hana Schwartz and Brenna Brady are employees of Merative. This study was funded by Merative.

Presented at ISPOR 2023, May 7-10, 2023, Boston, Massachusetts, USA