

Healthcare Utilization and Costs Decreased Over Time During Nusinersen Treatment in Patients With Spinal Muscular Atrophy (SMA)



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Objective

- To examine the healthcare utilization and costs of patients with SMA treated with nusinersen using real-world data from an administrative database including a large network of hospitals in the United States.

Conclusion

- Healthcare utilization and costs associated with inpatient and outpatient hospitalization decreased over time after initiation of nusinersen treatment, suggesting observed economic benefits of treatment.

Introduction

- Spinal muscular atrophy (SMA) is a rare, genetic neuromuscular disease with high cost of illness.¹ Nusinersen is the first pharmacologic therapy approved for treatment of SMA.² More research is needed to understand the real-world economic benefits of nusinersen treatment.³
- The objective of this study is to examine the healthcare utilization and costs of patients treated with nusinersen using real-world data from an administrative database including a large network of hospitals in the United States, the PINC AI™ Healthcare Database (PHD).

Methods

- Patients who were likely to have complete information on the date of first nusinersen dose⁴ (index admission) between 01 January 2017 and 31 March 2021 were included from the PHD.
- Patients were followed in their index hospital system from index date to last discharge date up to 30 September 2021. Healthcare utilization and costs were reported descriptively for patients with ≥ 24-month follow-up over 3 time periods: index to 6 months, 6 to 12 months, and 12 to 24 months (normalized to a 6-month period).
- Number and days of inpatient hospitalization, outpatient visits, and their costs (\$US 2021) were evaluated, excluding those related to nusinersen. Results were stratified by age: pediatric (< 18 years) and adult (≥ 18 years).

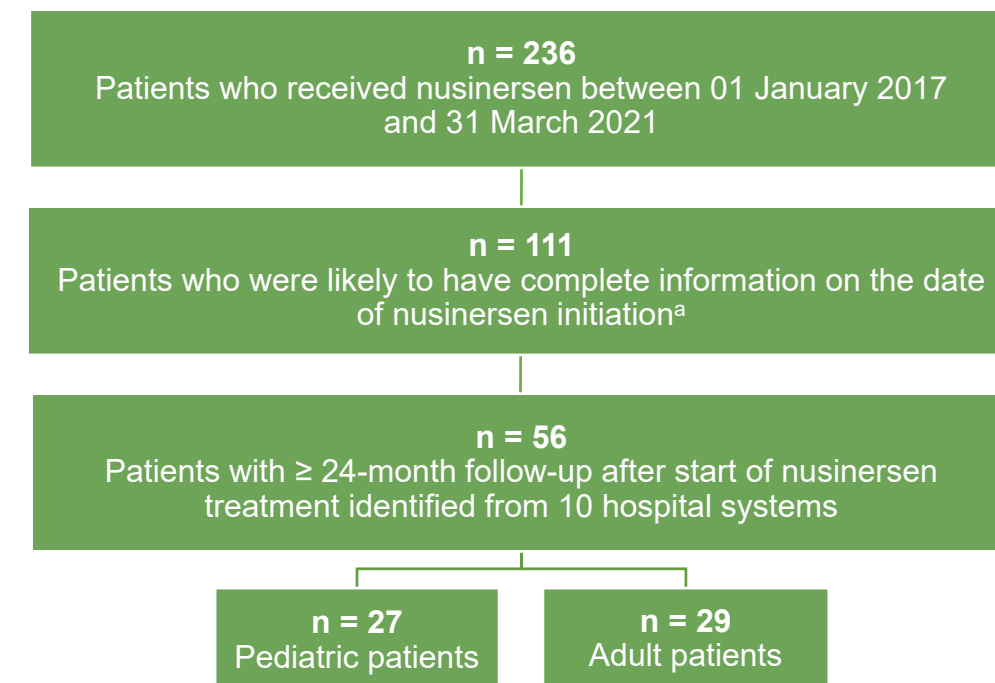
Results

- A total of 56 patients met the inclusion criteria for this study, of whom 27 were considered pediatrics and 29 were adults (Figure 1, Table 1).
- Decreasing trends for inpatient hospitalizations, number of days in inpatient hospitalization, and outpatient hospital visits were observed for all ages (Figure 2).
- Mean number of hospitalization days per pediatric patient decreased from 8 days (index to 6 months) to 3 days (6 to 12 months) to 2 days per 6 months (12 to 24 months; data not shown).
- Decreasing trends for total costs and costs per patient were observed for pediatric patients for both inpatient hospitalization and outpatient hospital visits (Figure 3); similar results reported for adult patients (data not shown).

Limitations

- We could not ascertain disease severity in the PHD.
- We could not follow patients across multiple hospitals.

Figure 1. Cohort Diagram



^aPatients who received any of the first 4 recorded nusinersen doses in 120-day or greater intervals (which would indicate maintenance doses not loading doses per US label) were excluded. Patients with ≤ 4 doses were retained as long as the interdose intervals for each of the first 4 recorded doses were within 120 days.

Table 1. Patient Characteristics

Patient Characteristic	Total All Ages	Pediatrics (< 18 y)	Adults (≥ 18 y)
Number of unique patients	56	27	29
Age, y, mean (SD)	22 (18)	6.3 (4.7)	36 (13)
Sex, n (%)			
Female	28 (50)	16 (59)	12 (41)
Male	28 (50)	11 (41)	17 (59)
Race, n (%)			
White	42 (75)	17 (63)	25 (86)
Black	5 (8.9)	4 (15)	1 (3)
Other/unknown	9 (16)	6 (22)	3 (10)

Figure 2. Total Healthcare Resource Utilization Decreased Over Time Among All Ages, Pediatric, and Adult Patients

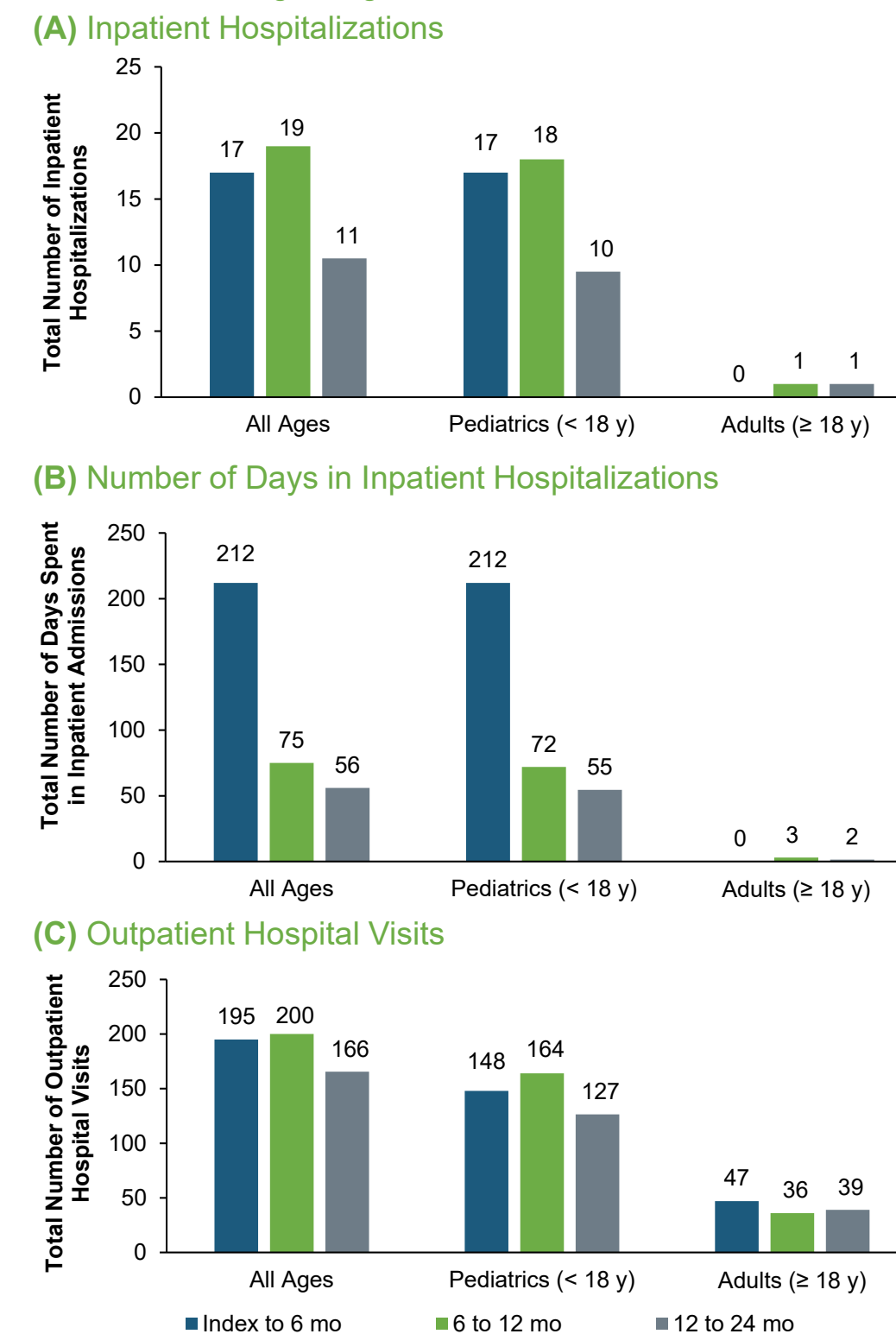
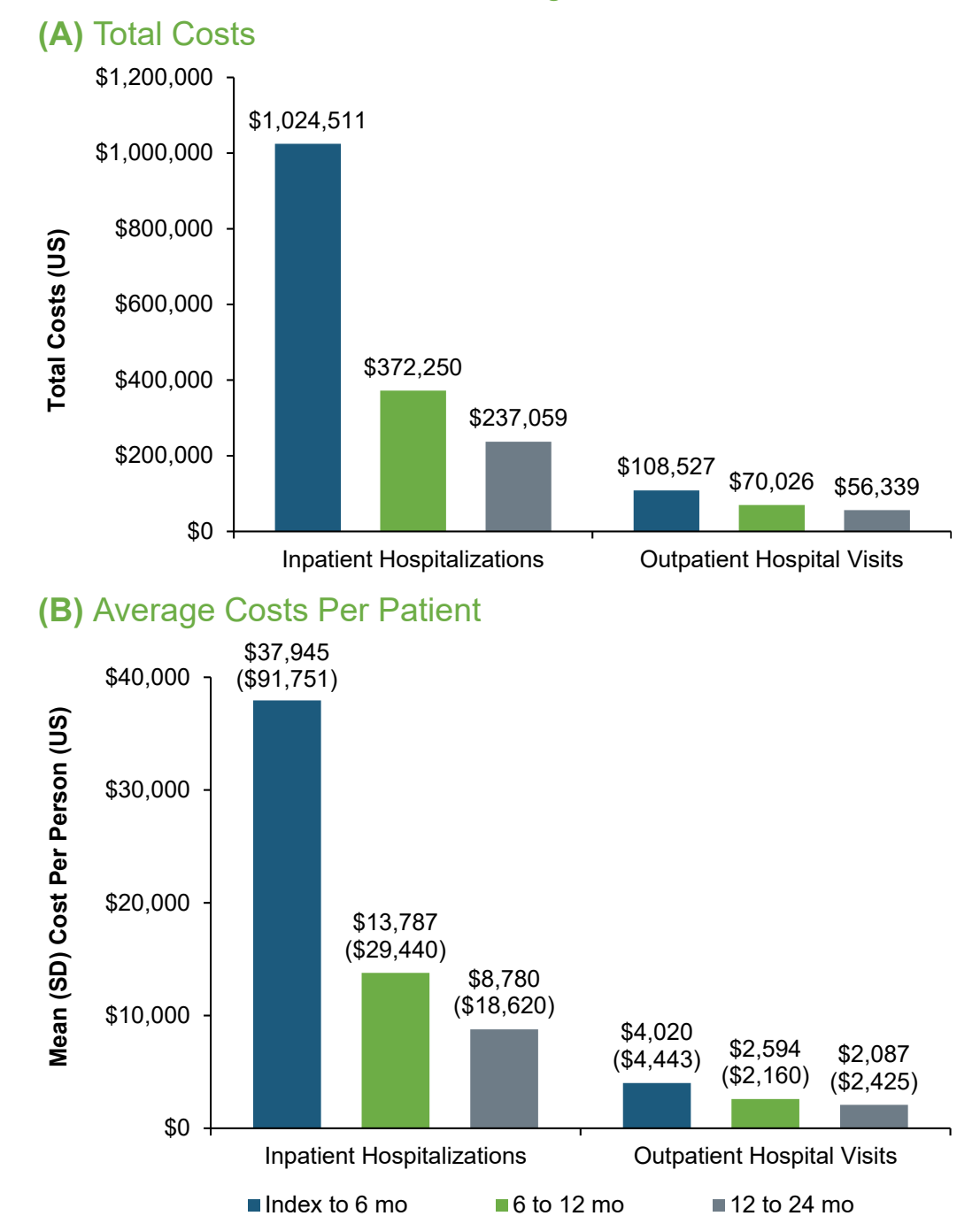


Figure 3. Inpatient Hospitalization and Outpatient Hospital Costs Decreased Over Time Among Pediatric Patients, n = 27



References 1. Armstrong EP, et al. *J Med Econ.* 2016;19(8):822-826. 2. SPINRAZA (nusinersen) injection, for intrathecal use [full prescribing information]. Cambridge, MA: Biogen; 2016. 3. Johnson NB, et al. *J Neuromuscul Dis.* 2021;8(4):569-578. 4. Youn B, et al. *Adv Ther.* 2023;40(3):1129-1140. Disclosures: NBJ, BY, CZ, SR, and ADP: employees of and hold stock/stock options in Biogen. VA, ZC, and GSL: employees of Premier at the time of the study, which received consulting fees from Biogen for conducting the study. Acknowledgments: This study was sponsored by Biogen (Cambridge, MA, USA). Editorial support for the preparation of this presentation was provided by Excel Scientific Solutions (Fairfield, CT, USA); funding was provided by Biogen.