Effects of a Multidisciplinary Clinic on Hospitalizations and Emergency Department Visits for Children with Neuromuscular Disorders

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INTRODUCTION:

Children with cerebral palsy (CP) are 7 times more likely to be hospitalized and are more likely to present to the emergency department (ED) than their peers. While prior literature has described a multidisciplinary approach as the most effective method of care delivery for children with CP, there is a paucity of research demonstrating significant decreases in healthcare utilization for patients with CP using this model of care. The clinic in this study is comprised of providers from 13 specialties that provide coordinated care in a single visit to patients with CP and other neuromuscular disorders (NMD). We aimed to evaluate whether enrollment in a multidisciplinary clinic decreased admissions, length of stay (LOS) during admissions, and ED visits for children with NMD.

METHODS:

Pediatric patients with NMD enrolled in a single institution's clinic between 2019 and 2021, whose parents consented to participation in survey studies at the clinic, were eligible for this retrospective study (N=32). The exclusion criterion was death during the period (N=1). Of included children (N=31), mean age was 5.9 years (SD=4.6), 61.3% (N=19) were male, 19.4% were non-Hispanic Black (N=6), 64.5% were Hispanic (N=20), and 80.6% (N=25) had Medicaid as their primary insurance coverage (Table 1).

From each patient's electronic medical record, all hospital admissions, LOS, and ED visits within 12 months before enrollment in the clinic and 12 months after enrollment in the clinic were recorded. The primary outcome was difference in the number of admissions, ED visits, and LOS at a single institution before and after enrollment in the institution's clinic. A paired t-test was used to analyze data.

RESULTS: When comparing 12 months pre-clinic enrollment versus 12 months post-clinic enrollment, analysis showed a statistically significant difference at $\alpha=0.05$ for LOS (7.06 ± 11.8 days vs. 3.48 ± 7.41 days; $t(30)=2.17$, $p=0.038$). However, in the same time frame of 12 months pre-clinic enrollment versus 12 months post-clinic enrollment, analysis showed no statistically significant decreases in hospital admissions (1.39 ± 2.01 admissions vs. 0.77 ± 0.99 admissions; $t(30)=1.99$, $p=0.055$) (Figure 1) or ED visits (0.68 ± 1.08 visits vs. 0.65 ± 1.05 visits; $t(30)=0.162$, $p=0.87$) (Figure 2).

DISCUSSION AND CONCLUSION:

These findings suggest that multidisciplinary clinics for patients with NMD may serve to decrease healthcare utilization, as demonstrated by decreased LOS. Further studies should determine whether similar results are obtained over a greater longitudinal period, with a larger patient population, and when COVID-19 rates are lower, as ED and inpatient volumes have been significantly impacted and may be confounding these results. Nevertheless, since findings suggest that multidisciplinary clinics for pediatric patients with NMD can improve coordination of care, they should continue to be utilized and investigated.

Figure 1. Admissions 1 Year Before vs 1 Year After Clinic Enrollment

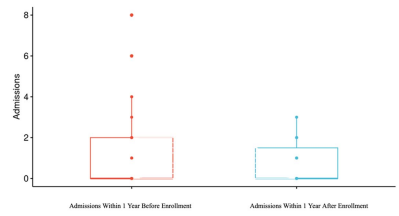

Figure 2. ED Visits 1 Year Before vs 1 Year After Clinic Enrollment

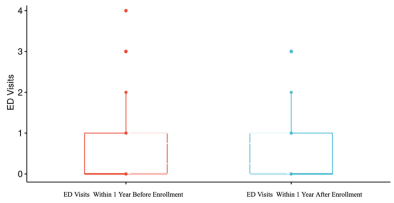

Table 1. Patient Demographics

Characteristics	Clinic Patients (N=31)
Median Age Years (SD)	5 (4.6)
Sex	
Male- n (%)	19 (61.3)
Female- n (%)	12 (38.7)
Race	
Black or African American- n (%)	10 (32.3)
Asian- n (%)	3 (9.7)
White- n (%)	2 (6.5)
Other- n (%)	16 (51.6)
Ethnicity	
Hispanic- n (%)	20 (64.5)
Non-Hispanic- n (%)	10 (32.3)
Other/Not Reported (%)	1 (3.3)
Primary Insurance	
Public- n (%)	25 (80.6)
Private- n (%)	6 (19.4)
Mean Admissions Within 1 Year Before Enrollment (SD)	1.39 (2.01)
Mean Admissions Within 1 Year After Enrollment (SD)	0.77 (0.99)
Mean ED Visits Within 1 Year Before Enrollment (SD)	0.68 (1.08)
Mean ED Visits Within 1 Year After Enrollment (SD)	0.65 (1.05)
Mean LOS Within 1 Year Before Enrollment (SD)	7.06 (11.8)
Mean LOS Within 1 Year After Enrollment (SD)	3.48 (7.41)