



Enrollment in a Multidisciplinary Aerodigestive Clinic Decreases Length of Hospital Stay for Children with Special Healthcare Needs



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Introduction

Children with special healthcare needs (CSHCN) utilize healthcare services more and therefore incur higher healthcare expenditures compared to other children¹. Previous studies have demonstrated that a medical home with coordinated care for CSHCN provides improved healthcare outcomes and reduced costs^{2,3,4}. This study aimed to elucidate if enrollment in a multidisciplinary aerodigestive clinic with comprehensive and coordinated care improved outcomes and reduced healthcare costs by decreasing admissions and inpatient days.

Patients in this aerodigestive clinic had a variety of comorbidities such as prematurity, cerebral palsy, velocardiofacial syndrome, VACTERL, gastroesophageal reflux, Pierre Robin sequence, and subglottic stenosis. Many were tracheostomy and gastrostomy tube dependent.

Care in this aerodigestive clinic was coordinated between otolaryngology, gastroenterology, pulmonology, pain medicine and rehabilitation, speech pathology, and social work. Patients enrolled in this clinic actively meet with providers from all specialties in a medical home setting. Following patient appointments, providers meet to discuss and actively manage care for each patient, including coordinating future procedures, goals of care moving forward, and scheduling follow-up visits.

Methods and Materials

A retrospective chart review of 113 children who were enrolled in a pediatric multidisciplinary clinic at a tertiary care center was performed.

Admissions data prior to and after enrollment were examined and the Wilcoxon signed rank test was performed to determine if there was a significant difference in admissions and inpatient days before and after enrollment.

Financial data was also examined for aerodigestive (AD) admissions alone. Median hospital days per month per patient was determined prior to and post enrollment. This figure was then used to determine the amount of hospital days avoided per year. Based on the cost per hospital day, the amount saved per year was then estimated.

Results

The admissions data for 113 patients were analyzed from April 1995 to July 2014. Patients included in the study were enrolled in the clinic from June 2009 to December 2013. On average, 47.3% of admissions involved a stay in the pediatric intensive care unit.

No significant difference in number of admissions per year was seen with enrollment in the clinic (0.30 +/- 2.16 admissions, P=0.15). However, there was a significant decrease of 28.37 +/- 62.69 inpatient and observation days per year following enrollment (P<0.001). When examining admissions for aerodigestive reasons alone, there was a similar significant decrease of 22.66 +/- 58.95 hospital days per year (P=0.008).

The median number of aerodigestive inpatient and observation days per month per patient prior to enrollment was 0.81, with a decrease to 0.24 post-enrollment. This translates to 0.57 days avoided per month, or 6.8 days per year. This also represents a 70% reduction in hospital days, and therefore a 70% reduction in technical direct cost per patient.

	Prior to Enrollment	Post-Enrollment	Change
Mean Admissions/Year	1.71 +/- 1.64	2.01 +/- 1.94	0.30 +/- 2.16 (p=0.15)
Mean Hospital Days/Year	40.0 +/- 62.9	11.6 +/- 16.6	-28.4 +/- 62.7 (p<0.001)
Mean AD Hospital Days/Year	31.3 +/- 58.6	8.62 +/- 14.76	22.66 +/- 59.0 (p=0.008)

Table 2. Admissions Data Prior to and Post Enrollment.

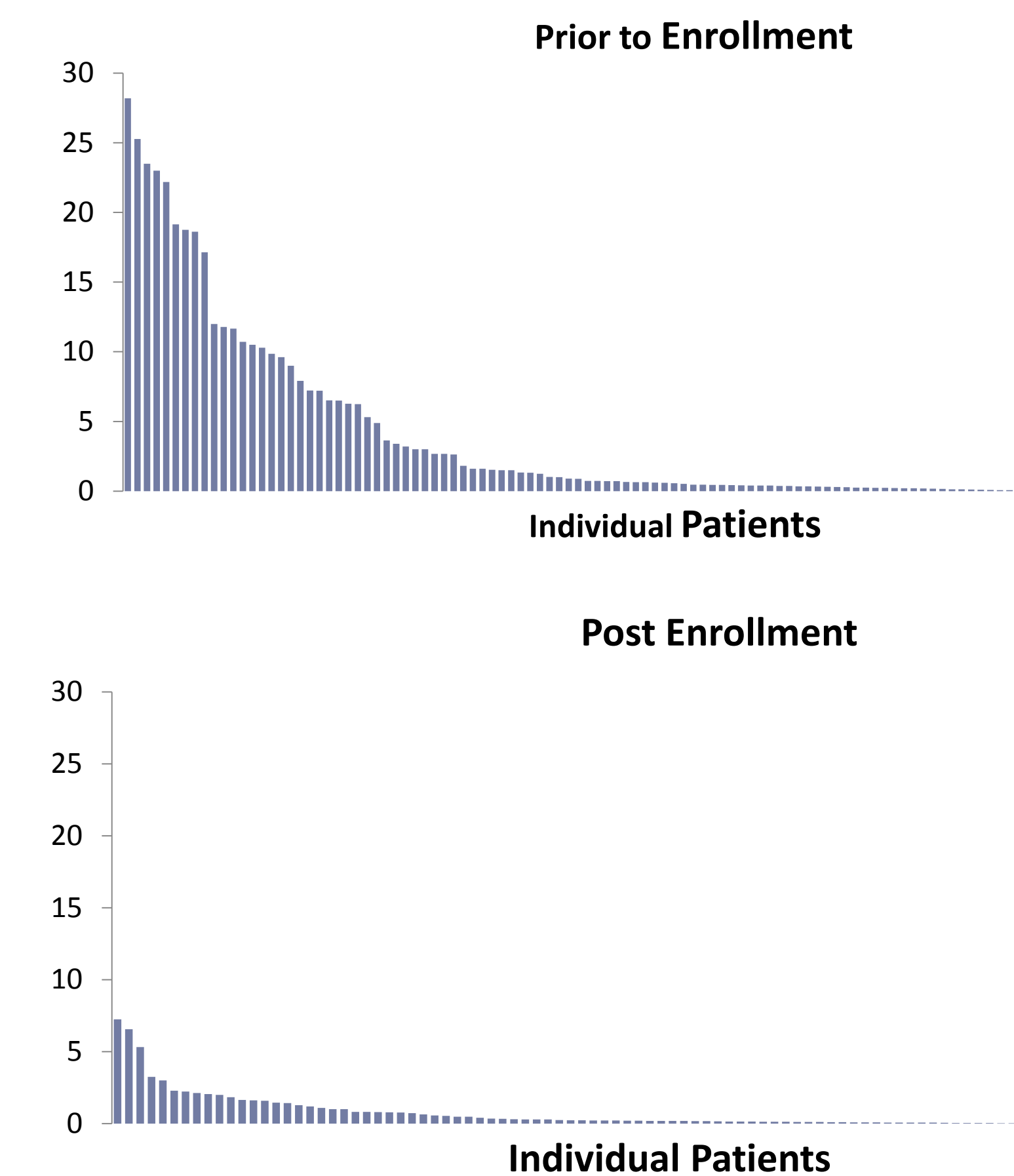
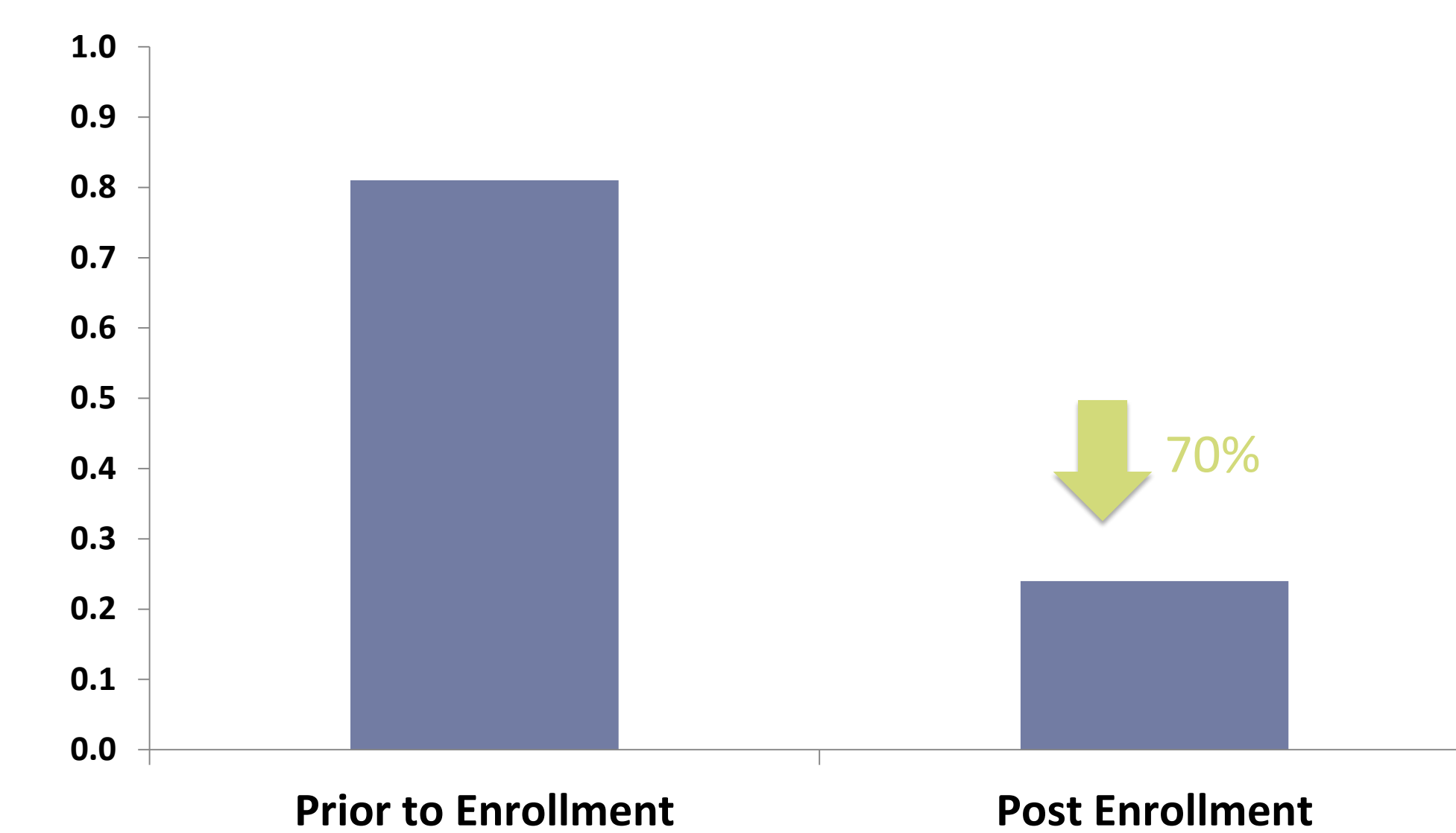


Chart 1. Aerodigestive Hospital Days Per Month.



	Prior To Enrollment	Post-Enrollment	Change	% Change
Median Hospital Days/Month	0.81	0.24	-0.57	-70.2%

Chart 2. Aerodigestive Hospital Days per Month per Patient

Estimated HD/year reduction per patient	Number of Patients	Average Inpatient Day Cost	Annual Cost Avoided
6.8	113	\$2,502*	\$1,922,536

Table 3. Estimated Cost Reduction per Patient
*Estimate based on average inpatient day for an Ohio non-profit hospital in 2012⁵

Conclusions

These findings indicate that for medically complex children, enrollment in a multidisciplinary aerodigestive clinic improves healthcare outcomes by significantly decreasing patient hospital days at an estimated one week per year. Furthermore, coordinated aerodigestive care in a medical home setting lowers healthcare expenditures from a systems-based perspective.

Patient Characteristics	N (%)
Gender	
Male	58 (51.3)
Female	55 (48.6)
Tracheostomy dependent	59 (52.2)
Gastrostomy tube dependent	90 (80.5)
Comorbidities	
Cerebral palsy	32 (28.3)
Prematurity	20 (17.7)
Gastroesophageal reflux	15 (13.2)
Velocardiofacial syndrome	4 (3.5)
VACTERL	5 (4.4)
Pierre Robin sequence	4 (3.5)
Subglottic stenosis	4 (3.5)
Cleft lip/palate	4 (3.5)

Table 1. Patient Characteristics.

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