

Medicaid expenditures for children with complex healthcare needs: A care coordination model evaluation

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ABSTRACT

Study Design: A six-year retrospective cohort study was conducted using Missouri Medicaid claims data to evaluate the “Care Beyond the Bedside” coordinated care model at Ranken Jordan Pediatric Bridge Hospital.

Main Finding: Children with Medical Complexity (CMC) on Missouri Medicaid who received care at Ranken Jordan under the “Care Beyond the Bedside” coordinated care model experience equal or better post-discharge outcomes and costs to the state are equal or lower, compared to CMC who receive care under traditional models.

INTRODUCTION

Three million American kids are classified as Children with Medical Complexity (CMC), and this number grows 5% annually.¹ Though CMC make up a very small portion of the entire pediatric Medicaid population, they account for about 40% of pediatric Medicaid costs.¹ CMC require multidisciplinary sources of care, the coordination of which is difficult to manage. To be classified as medically complex, patients must have 1) severe health conditions, 2) substantial health service needs, 3) major functional limitations, and 4) high health resource utilization. By reducing both duplication of services and gaps in care, well-coordinated CMC care leads to improved outcomes and lower costs. However, current CMC care is commonly fragmented and disorganized. Without care coordination incentives and collaborative care networks, it has historically been difficult to provide a continuum of care for these children.²

Ranken Jordan Pediatric Bridge Hospital (RJ) in St. Louis specializes in transitioning CMC patients from the acute care hospital to home. This unique 34-bed inpatient facility also has comprehensive outpatient components, including outpatient therapy, intensive day treatment, and a comprehensive orthopedic rehabilitation clinic.³ RJ’s unique “Care Beyond the Bedside” model emphasizes rehabilitation and healing through therapy and play beyond the confines of a hospital bed. Patients spend the majority of waking hours in community with other RJ kids and staff. Families are trained and empowered to successfully care for their child after the transition home.



Ella
“When Ella first came to therapy she wouldn't put her face in the water. Now she's working on swimming the whole length of the pool.”
 -Ella's Mom

DESCRIPTIVE STATISTICS

Table 1.	Ranken Jordan		All Others	
	N	%	N	%
Sample Size	166		1848	
Expired during study	52	31.3	57	3.1
White	82	49.4	1243	67.3
Other	84	50.6	605	32.7
Male	112	67.5	980	53.0
In Foster Care	20	12.0	374	20.2
Fits 1-2 Patient Profiles	87	52.4	1632	88.3
Fits 3-4 Patient Profiles	74	44.6	205	11.1
Fits 5-6 Patient Profiles	5	3.0	11	0.6
Patient Profiles:				
Respiratory	121	72.9	461	24.9
Congenital Heart Defect	14	8.4	104	5.6
Pre-Term Infant	46	27.7	184	10.0
Cerebral Palsy	32	19.3	151	8.2
Spinal Cord Injury	49	29.5	98	5.3
Traumatic Brain Injury	36	21.7	39	2.1
Short Gut	10	6.0	121	6.5
Neonat. Abstinence Synd.	21	12.7	1264	68.4
	Mean	Std. Dev.	Mean	Std. Dev.
% time in managed care	24.3%	31.6%	53.3%	41.9%
Age of first visit	6.8	7.4	1.5	3.6
Age of last visit	8.1	7.5	2.1	4.3

Note: Patient profile percentages do not sum to 100%, as some individual patients fit into more than one profile.

RESULTS & CONCLUSIONS

Overall, children with Medical Complexity on Missouri Medicaid experience lower costs of care, fewer ER visits and costs, fewer re-hospitalizations, and shorter lengths of stay when receiving care under the Ranken Jordan Care Beyond the Bedside model.

Limitations for this study include the rare occurrence (and low counts) for some patient profiles. Additionally, our data only included Missouri Medicaid claims. We had limited information to account for variation in clinical servility without medical records. Without access to Medicaid eligibility data, we could not determine when children enrolled in Medicaid, which may have resulted in omission of outcomes before Medicaid eligibility began. Additionally, Missouri Medicaid claims data have limited geographic and socioeconomic variables. More information about parents and home environments may further explain unobserved heterogeneity.

Few longitudinal studies of this nature exist regarding CMC. This study is a meaningful addition to the literature, helping to begin the study of unique care coordination models for managing this vulnerable and costly population of children.

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Markel
“...he was rarely in his bed, preferring instead to be up, peering over a shoulder, taking in the flurry of activity around him. [At Ranken Jordan] He thrived for the first time in his life.”
 - Dr. Nick Holekamp, MD, CMO

Table 2. Adjusted estimates for Ranken Jordan patients compared to All Other patients by outcome and patient profile

Patient Profile	PMPM		Annual ER Visits		Annual ER Cost		Annual Readmissions		Annual LOS	
	Estimate	P-value	Estimate	P-value	Estimate	P-value	Estimate	P-value	Estimate	P-value
Congenital Heart Defect	1.16	0.935	1.02	0.992	0.84	0.947	0.63	0.795	0.52	0.094 [†]
Cerebral Palsy	0.77	0.296	0.97	0.959	0.49	0.510	0.47	0.006*	1.08	0.956
Neonatal Abstinence Syndrome	0.89	0.007*	0.73	<.001*	0.85	0.119 ^{††}	0.55	<.001*	0.59	<.001*
Premature Babies	0.65	0.599	0.65	0.001*	0.67	0.015*	0.95	0.768	0.91	0.764
Respiratory	0.77	0.538	0.84	0.009*	0.90	0.316 ^{††}	0.81	0.005*	0.82	0.144
Spinal Cord Injury	0.95	0.829	0.80	0.122 ^{††}	0.77	0.316 ^{††}	0.70	0.459	0.56	0.528
Short Gut	0.43	0.008*	0.73	0.754	1.03	0.974	394.8	0.209	0.23	0.002*
Traumatic Brain Injury	0.63	0.909	1.01	0.998	1.07	0.991	0.55	0.873	0.40	0.905

* Significant at alpha = 0.05. †Significant at alpha = 0.10. ††Significant estimate before log-transformation.

METHODS

Comprehensive medical claims data were pulled for all CMC fitting 8 patient profiles (Tables 1&2) who were covered by Missouri Medicaid from 2007-2012. Post-discharge costs and outcomes for RJ patients were compared to those of CMC served by traditional models of care. Propensity Score Weighting was used to adjust for medical and social differences between the RJ and All Other groups in all models. Outcome variables (Table 2) were log-transformed, and OLS regression models used to estimate the changes in the ratio of the geometric mean of the outcome variables, after adjusting for gender, age, race, geographic region, foster care, and proportion of time on a state-contracted managed care health plan for Medicaid beneficiaries.⁴ Descriptive statistics are presented in Table 1, and estimates for the Ranken Jordan variable from each the model are in Table 2.

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Zach
“Even when the goals seemed unachievable, Ranken Jordan encouraged Zach and my husband and me to think they were realistic and keep working toward them. Today he's back in school and having fun. Zach is so just a normal boy.”
 - Zach's Mom

