

The Value of Population-Based Care for Children with Medical Complexity

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The Problem: Children with medical complexity (CMC) have chronic, multi-system health conditions, substantial healthcare needs, major functional limitations, and high resource utilization. They represent less than 1% of US children, yet account for more than 1/3 of total pediatric healthcare costs. The healthcare needs of CMC cannot be met in systems designed for typical children.

The Initiative: We designed the Comprehensive Care Program (CCP) as a value-based program for CMC in an academic health/pediatric tertiary care center serving a large urban, rural and frontier multi-state region. We describe the experience of CMC in our academic health center's CCP with a purposive sample with evaluable 6-month pre-post data, and describe changes in hospital utilization and costs, and associated outcomes.

Outcomes: From 2007-2017, 1,550 CMC were seen in CCP. Most (73%) had neurologic/neuromuscular disorders; 60% had device dependencies, 50% had gastrointestinal conditions, and 50% had congenital conditions. In a 6-month pre-post analysis of a purposive sample (n=318), we observed a 15% decrease in emergency department visits, 32% decrease in hospitalizations, 67% increase in observation visits, 68% decrease in hospital lengths of stay (LOS), and a 69% decrease in total hospital costs. CMC with tracheostomy and ventilator dependencies demonstrated mean reductions in LOS of 9.9 days and total hospital costs of \$58,967. Parents perceived their child's quality of life (QOL) as good or excellent (86%), and high healthcare satisfaction (89%). Comprehensive care delivery is expensive; we estimate payer contributions of \$145 to \$210 per CMC per month are needed to sustain this service, consistent with national estimates.

Lessons learned: CCP for CMC delivers high value care. Sustainable financial models of population health care for growing numbers of CMC are urgently needed.