

# The Effect of a Comprehensive Care Transition Model on Cost and Utilization for Medically Complex Children With Cerebral Palsy

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## ABSTRACT

**Introduction:** Our aim was to evaluate cost and acute care utilization related to an organized approach to care coordination and transitional care after major acute care hospitalization for children with medical complexities, including cerebral palsy. **Methods:** A retrospective cohort of 32 patients from Ranken Jordan Pediatric Bridge Hospital (RJPBH) who received the Care Beyond the Bedside model was compared with 151 patients receiving standard care elsewhere across Missouri. Claims data (2007–2012) were obtained from MoHealthNet, Missouri's Medicaid program, for all children with moderate to severe cerebral palsy (defined using approximated Gross Motor Function Classification System levels) who had at least one hospital visit during the study period ( $N = 183$ ). Risk-adjusted linear and Poisson regression models were used to analyze per-member-per-month costs and three indicators of acute care utilization (emergency department visits, readmissions, and inpatient days). **Results:** RJPBH patients were associated with statistically significant reductions in per-member-per-month costs (–21%), hospital readmissions (–66%), and inpatient days (–57%). **Discussion:** RJPBH's enhanced interprofessional medical home-like model, including intense care coordination, psychosocial therapy, family and caregiver empowerment, and transitional care, may be keys to reducing cost and unnecessary hospital use for children with medical complexities with cerebral palsy who receive Medicaid. *J Pediatr Health Care.* (2017) ■, ■-■.

## KEY WORDS

Care beyond the bedside, care coordination, children with medical complexity, economic evaluation, medical home, outcomes research, transitional care

## INTRODUCTION

Children with medical complexity (CMCs) have significant clinical, therapeutic, and social needs. Advances in medical technology have improved the chances for very sick infants and children to survive into adolescence and adulthood (Anderson, Dumont, Jacobs, & Azzaria, 2007). As a result, the number of children with complex medical conditions is increasing and placing newer and greater demands on the health care system (Berry et al., 2011). This, in turn, requires a refocusing of the efforts to provide comprehensive, interprofessional, and coordinated health care for these children (Cohen et al., 2011; Gresley-Jones, Green, Wade, & Gillespie, 2015; Simon, Mahant, & Cohen, 2012). CMC diagnoses are those that require intensive inpatient hospital care, reliance on technology, polypharmacy, and home care (Simon et al., 2012). Parents of CMCs can experience caregiver fatigue, emotional and financial stress related to personal expenditures for care, and loss of household income (Cohen et al., 2011). CMCs can have a broad range of chronic conditions and illnesses that include congenital heart defects, traumatic brain injury, and cerebral palsy (CP). This study will focus specifically on the posthospitalization health expenditures and acute care utilization measures of children with CP.

## Cerebral Palsy

CP is a nonprogressive developmental disability with complex origins, many different neuromotor and cognitive manifestations, and a wide range of severity. Children with severe CP often develop musculoskeletal abnormalities that interfere with their ability to function independently (Jones, Morgan, Shelton, & Thorogood, 2007). Major corrective orthopedic surgeries are sometimes required to stabilize or reverse the deficits that evolve as the child grows with a permanent perinatal brain injury. For example, posterior spinal fusion to correct and prevent progression of severe scoliosis can enhance a child's condition by simplifying his care and increasing his tolerance of upright positioning and assisted mobility. Likewise, multilevel, often bilateral, lower extremity surgery that can include osteotomies and/or soft-tissue releases involving the hips, thighs, knees, ankles, and/or feet may be required to offset or reverse progressive abnormalities of stance or gait (Jones, Morgan, & Shelton, 2007). CP patients who require these types of interventions are also at risk for (or have already been diagnosed with) aspiration, respiratory issues (Jones, Morgan, & Shelton, 2007), gastrointestinal issues (such as constipation or reflux), seizures, sensory impairments, communication deficits, emotional and behavioral issues, and/or cognitive delays (Jones, Morgan, Shelton, & Thorogood, 2007).

Taken together, these mental and physical issues can be taxing in the best of circumstances. Faced with the additional stress of a major surgery, these families are at risk for major disruptions that can overwhelm their ability to provide care at home (Jones, Morgan, & Shelton, 2007). These same challenges confront many families of CMCs. Their children are both chronically and acutely ill, making their care coordination especially difficult. Furthermore, these challenges can result in high use of health care services, including hospitalization, readmissions, and longer lengths of stay (Berry et al., 2011). Berry et al. (2011) reported that CMCs, including children with neurologic impairments like CP, have greater risk for frequent, prolonged hospital stays and a greater need for care coordination. CMCs, including those with CP, may benefit considerably from specially tailored models of care that are designed to meet their special needs (Berry et al., 2011; Gresley-Jones et al., 2015). Children with CP differ significantly from most pediatric patients for whom episodic, curative models of care were designed.

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## Medicaid

The Centers for Disease Control and Prevention has estimated that the lifetime cost to care for an individual with CP is approximately \$1 million (Centers for

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