

Urban/Rural Differences in Therapy Service Use Among Medicaid Children Aged 0–3 With Developmental Conditions in Colorado

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The authors declare that they have no conflict of interest.

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ABSTRACT

OBJECTIVE: To describe urban/rural differences in physical (PT) and occupational therapy (OT) service utilization and spending among a sample of young Medicaid-enrolled children with developmental conditions.

METHODS: We analyzed Colorado Children's Medicaid administrative claims from 2006 to 2008. The sample included children who were younger than 36 months of age, had a select developmental condition, and were continuously eligible for each study year up to their third birthday. The study outcomes were number of PT/OT claims, type of PT/OT service, and Medicaid PT/OT spending. Multivariable analyses examined urban/rural differences in PT/OT utilization and spending, adjusting for child, family, and health service characteristics.

RESULTS: The sample included 20,959 children. In adjusted analyses, urban children had 2-fold higher odds (odds ratio 2.18, 95% confidence interval 1.89, 2.51) of receiving PT/OT

compared to their rural peers. Median annual per-child Medicaid PT/OT spending was \$99 higher (\$98.79 [\$3.23, \$194.35]) for urban children versus rural children. When place of PT/OT service and PT/OT procedures was included, this spending difference was drastically reduced.

CONCLUSIONS: Even accounting for child, family, and health service characteristics, Medicaid PT/OT spending is lower for rural children compared to their urban peers. The difference in spending is largely attributable to utilization of services that are less specialized than urban peers, thus suggesting disparities in access to appropriate PT/OT services.

KEYWORDS: developmental delay; Medicaid; rural; therapy utilization

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WHAT'S NEW

Physical (PT) and occupational therapy (OT) utilization and spending among continuously Medicaid-enrolled infants and toddlers with developmental delays and disabilities is significantly lower for rural children compared to their urban peers, suggesting disparities in PT/OT service provision.

IN THE UNITED States, 3% of children younger than 3 years of age have a condition associated with a cognitive or mobility functional limitation.¹ In addition, approximately 15% of US infants and toddlers have a developmental delay.² Although access to therapy for children with developmental conditions is essential, previous literature^{3–9} suggests children with greater condition severity^{3,4,6} and who are under- or uninsured^{5,6} are significantly more likely to report unmet need for therapy. There appear to be geographic differences in therapy utilization^{6–8} whereby children living in a Western state (exclusive of the West Coast)

report the highest rates of unmet need.⁷ Geographic differences are thought to relate to larger rural areas and stricter eligibility policy for publicly funded children's health insurance programs in the West. Indeed, children in Western states are more likely to be uninsured,¹⁰ and parents of rural children with developmental conditions are significantly more likely than parents of urban children with developmental conditions to report that physical (PT) and occupational therapy (OT) services were unavailable or appointment times were inconvenient.⁸ Young rural children with developmental conditions disproportionately experience health system access barriers and a greater number of functional limitations,¹¹ yet to our knowledge, no published research exists to describe their PT/OT utilization.

The purpose of this study was to describe urban/rural differences in PT/OT utilization and spending among a sample of young Medicaid-enrolled children with developmental conditions. We focused on a sample of Medicaid-enrolled children because infants and toddlers with developmental conditions are eligible for services under Part C of the Individuals With Disabilities Education Act

(IDEA).¹² Per IDEA mandates, Part C should be the most common source of PT/OT for eligible infants and toddlers. IDEA is an underfunded federal mandate, so states have the option to use cost-sharing mechanisms with private and public insurers, including Medicaid.^{13,14} Fiscal constraints during the last 5 to 10 years have threatened the sustainability of Part C programs,¹⁵ so understanding the intersection between Part C and Medicaid has important implications for improving coordination and efficiency of therapy service delivery for a vulnerable population.

We build on previous studies³⁻⁹ examining use of therapy among children with developmental conditions that were limited by parent report and an inquiry of “any” services. Our use of Medicaid claims allowed us to objectively measure PT/OT utilization and spending. This study examined data from a Western state with a relatively large rural population in order to measure urban/rural differences in PT/OT utilization among Medicaid-enrolled infants and toddlers who qualify for PT/OT through Part C under IDEA mandates.

METHODS

SAMPLE

The sample consisted of Colorado Children’s Medicaid administrative outpatient therapy claims from 2006 to 2008. We restricted the sample to children with select developmental conditions (ascertained via ICD-9 code), including the following: autism spectrum disorder (299), developmental delay (315), Down syndrome (7580), cerebral palsy (343), a complex chronic condition, or neurological impairment, with the latter 2 being classified according to previously published definitions and categorizations.^{16,17} Study diagnostic inclusion criteria corresponded to federal IDEA mandates¹² of eligibility for Part C early intervention services. This is a conservative approach because it includes a sample with objectively measured need for therapy services. Additionally, sample children were less than 36 months of age and continuously eligible (defined as eligible for 9 of 12 calendar months) for each study year up to their third birthday. We limited the sample to continuously insured children with select developmental conditions in order to isolate the influences of living in a rural area while holding insurance status constant. Finally, in Colorado, children’s therapy services are billed through fee-for-service (FFS) Medicaid.¹⁸ As a result, we restricted our sample to children enrolled in FFS Medicaid.

This study was approved by the Colorado Multiple Institutional Review Board.

MEASURES

UTILIZATION

Utilization of PT/OT was categorized as access, total claims, type of service, and dosage. Children were considered to have accessed PT/OT if they had at least 1 PT/OT claim during the study years. PT/OT claims were defined

according to Current Procedural Terminology (CPT) codes 97001–97004 for evaluation and 97010–97799 for treatment. The total number of claims was estimated as the sum of PT/OT claims for the study period, conditional on any PT/OT claim. Type of service was derived from the 6 most commonly reported PT/OT CPT codes (ie, that account for more than 90% of observations) and included therapeutic exercise (97110); balance, posture, and coordination activities (97112); therapeutic activities (97530); development of cognitive skills, memory, and problem solving (97532); use of assistive devices and adaptive technology (97535); and sensory integration therapy (97533). Annual PT/OT dosage was estimated by multiplying the annual total PT/OT claims for each child by the total number of service units (ie, 1 service unit is 15 minutes), which estimates the total annual 15-minute PT/OT evaluation and treatment units. To assist with interpretation, we report PT/OT dosage in terms of hours of PT/OT.

SPENDING

Total annual per child Medicaid PT/OT spending was calculated as the total Medicaid payment amount for each PT/OT visit per study year, conditional on having any PT/OT.

COVARIATES

Urban/rural status was categorized according to Rural–Urban Commuting Area (RUCA) codes.¹⁹ RUCA codes are determined by the US Census definitions of population density, urbanization, and daily commuting information to characterize all of the nation’s census tracts into rural and urban status. In addition, a zip code RUCA approximation was developed, which was linked to each study child’s resident zip code.

Child’s race and ethnicity was categorized as white non-Hispanic; black non-Hispanic; Hispanic; other non-Hispanic (including Asian, Pacific Islander, and multiracial families), and children of unknown race and ethnicity. We also included child’s sex and age (categorized as birth to 12 months; 12 to 24 months, and 24 to 35 months). Type of developmental condition was categorized as one of the developmental diagnoses (DX) under study (eg, autism, neurological impairment, complex chronic condition, Down syndrome, or cerebral palsy) or developmental delay (DD). Because children with one of the study diagnoses often have a co-occurring DD, children were deemed to have a DX if they met the definitional criteria listed above (regardless of co-occurring DD). Children were deemed to have a DD only if they only met the definitional criterion for DD (ie, no co-occurring DX). We classified children as having a complex chronic condition according to previously published definitional criteria (ie, ICD-9 codes) and classification.¹⁶ We categorized the number of children’s complex chronic conditions as 0, 1, or ≥ 2 . Preterm birth (7650–7652.8), defined as less than 37 weeks’ gestation, was categorized as yes or no. To categorize children’s social disadvantage, we created a social disadvantage index. Based on US Census data²⁰ collected at the zip code level,

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