

Access and Service Use by Children with Autism Spectrum Disorders in Medicaid Managed Care

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Although Medicaid is the largest public payer of behavioral health services, information on access and utilization of services is lacking, and no data on the frequency of service use or types of services provided for children with autism spectrum disorders (ASDs) are available. As states move toward managed care approaches for their Medicaid program, services information is critical. Behavioral health service data for children with autism spectrum disorders were collected from a state Medicaid Managed Care (MMC) program and analyzed from fiscal years 1995 through 2000. Findings revealed that the number of children who received services over time increased significantly; however, the rate of service use was only one tenth of what should be expected based on prevalence rates. The mean number of service days provided per child decreased significantly, about 40%, and the most prevalent forms of treatment changed. Day treatment vanished and medication and case management increased disproportionately to the number of children served. Explanations and implications of the findings are presented as well as recommendations for future research.

KEY WORDS: Services; medicaid managed care; mental health; behavioral health.

New information on the epidemiology of autism spectrum disorders (ASDs) reveals a potential crisis for agencies accountable for providing publicly funded intervention and treatment services. ASDs, which include Autistic Disorder, Asperger's Disorder, and Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS), are estimated to be at least 10 times more common than previously thought (Chakrabarti & Fombonne, 2001; Fombonne, 2003; Yeargin-Allsopp *et al.*, 2003). ASDs share qualitative impairments in the development of social and communication skills and fall under the umbrella of Pervasive Developmental Disorders, a group of

disorders described in the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2000).

Two publicly funded child service agencies have commented on a notable increase in numbers of children served. The Federal U.S. Department of Education (USDOE) characterized autism as the largest growing low incidence disability (U.S. Department of Education, 1999), and the California Department of Health and Human Services (CDHHS) reported a 273% increase in the number of children with autism seeking services from 1987 to 1998 (Department of Developmental Services, 1999). Researchers from the MIND Institute (2002) provide a compelling, yet controversial (Croen, Grether, Hoogstrate, & Selvin, 2002), argument that the rising numbers in California are due in part to a true increase in children with autism. Although debate ensues on the causes for the observed increases, the mounting numbers of children seeking services is clear and inarguable. Further, because of the

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relationships between early identification, intensive early intervention, and outcomes for children with ASDs, public service agencies responsible for funding intervention and treatment must respond in accordance and make efforts to identify children early and provide specialized services immediately (National Research Council, 2001).

Standards of care for children with ASDs are now available to guide publicly funded agencies (American Academy of Pediatrics, 2001; Committee on Children with Disabilities, 2001; National Research Council, 2001). Researchers have summarized the empirically supported evidence documenting beneficial outcomes using comprehensive and intensive early intervention strategies (Dawson & Osterling, 1997; Hurth, Shaw, Izeman, Whaley, & Rogers, 1999; New York State Department of Health Early Intervention Program, 1999; Strain, Wolery, & Izeman, 1998). The types of interventions published in standards of care guidelines include a family centered approach addressing speech and language therapy, social skills training, proactive and positive behavior management interventions, and other less traditional services such as respite care. Experienced clinicians in autism are typically available through tertiary care centers and specialty clinics and include physicians, psychologists, and other specialists like speech and language pathologists and occupational therapists. Concern is expressed that access to tertiary clinics and specialists may be in jeopardy in managed care programs (Fox & McManus, 1998) and specific policy changes in managed care may result in underutilization of therapeutic services, in turn threatening successful outcomes.

Now that consensus exists regarding best practices for young children, essential information on the service delivery system for children with ASDs is surprisingly lacking. Without such data, researchers, policy makers, service providers, caregivers, and advocates are unable to study the use, organization, and financing of services, implementation of best practices, methods to bridge the gap between research and real-world practice, and ways to promote long-term outcomes management (Perrin, 2002). Gaining this understanding, however, poses special challenges due to the varied mix of systems encountered in the private and public sectors. For children with disabilities, many financial systems are involved and include private and public health insurance programs, state health programs, school special education programs, and other philanthropic agencies (Perrin, 2002).

Federal legislation designates two programs to provide services to children with disabilities: The Individual with Disabilities Education Act (IDEA; Public Law 101-157; U.S. Department of Education, 1997) and Medicaid (Title XIX of the Social Security Act). IDEA requires the USDOE to make available a free and appropriate public education for children with disabilities, including autism. Part B of IDEA also requires reporting of child count data by eligibility category. For the 1999-2000 year, a total number of 65,424 children between the ages of 6 and 21 years with autism was reported, reflecting a 21 percent increase from the previous year (U.S. Department of Education, 2001). Fombonne (2003) estimated 425,000 children in the United States have an ASD disorder, including 114,000 under the age of 5. Because the USDOE does not recognize two ASDs for eligibility (Asperger's Disorder and PDDNOS), service data on these diagnoses are not reported; nevertheless, it is expected that the USDOE will continue to report a rise in the number of children with autism who seek services.

Medicaid, a jointly funded state and federal health program for the economically disadvantaged and disabled, is a major funding source of health care for children (Deal & Shiono, 1998), and a key financial resource for persons with developmental disabilities (Braddock, Hemp, Rizzolo, Parish, & Pomeranz, 2002). Accounting for 75% of all funding for developmentally disabled related services, Medicaid funding in 2000 translated into \$29.3 billion. Title XIX of the Social Security Act requires state Medicaid programs to offer certain basic services in order to receive federal matching funds. Services include a range of inpatient and outpatient hospital services, such as physician services, medical and surgical dental services, nursing facility services for persons 21 years of age and older, home health care for persons eligible for nursing facility services, and early and periodic screening, diagnosis, and treatment (EPSDT) services for individuals under age 21 years. The EPSDT program is comprehensive and includes behavioral as well as medical health care and intervention.

Unlike the USDOE, Medicaid does not require reporting based on disability (Mark, Buck, Dilonardo, Coffey, & Chalk, 2003), so there are no national estimates of children with ASDs in Medicaid. What is known is that Medicaid is the largest single public payer of behavioral health services (Mark *et al.*, 2003), and in 1992 about 31% of children with disabilities were covered primarily by Medicaid, compared to 18% of their counterparts without

disabilities (Mele & Flowers, 2000). It is also known that children with disabilities currently comprise 15% of all Medicaid recipients, yet account for 37 percent of all costs (Ronder, Kastner, Parker, & Walsh, 1999). Because children with disabilities and chronic illnesses consume more services than those without disabilities (Mele & Flowers, 2000), financial incentives to control overall costs may have a greater impact on these children. Many states have enacted legislation mandating coverage for children with complex disabilities such as ASDs in response to private health plans' exclusion of behavioral health care (Peele, Lave, & Kelleher, 2002).

Most importantly because more states are experimenting with their Medicaid systems by employing managed care approaches for underserved, low income, and disabled populations (Kaiser Commission on Medicaid and the Uninsured, 2001), obtaining independent analyses of the impact of these programs on the health care of special needs children is increasingly important. Service use, access, expenditures, quality and outcomes of care are all affected by managed care (Hutchinson & Foster, 2003). For children in need of mental or behavioral health services, the dearth of Medicaid managed care (MMC) research is recognized (Hutchinson & Foster, 2003). Thus, it is not surprising that MMC research for specific populations such as children with autism is essentially unavailable. A review of the research literature identifies only one study. Using Medicaid data, the researchers examined the age of diagnosis of children with autism by race and found that African American children received a diagnosis at a statistically significant later age than white children (7.9 years vs. 6.3 years) (Mandell, Jisterud, Levy, & Pinto-Martin, 2002). Given the importance of early identification (National Research Council, 2001), this information has direct implications on service delivery.

In order to understand and improve the treatment for children with ASDs in real world settings, we need descriptive information on the numbers of children receiving services and the frequency and types of services received. Analysis of one state's MMC program is provided. In 1994, the state of Tennessee received a HCFA 1115 Medicaid Waiver that allowed a transition to a fully capitated, statewide, managed care Medicaid program called TennCare. The State of Tennessee contracted with managed care organizations (MCOs), such as health maintenance organizations, to provide health care services for Medicaid enrollees. MCOs received a

fixed monthly fee for each enrollee, and the MCO assumed full financial risk for the delivery of services. In response to concerns about the impact of a fully integrated design on the most seriously mentally ill (Chang *et al.*, 1998), TennCare Partners was developed as the behavioral health care arm of TennCare in 1996 (fiscal year 1997). The new program carved out behavioral health services and awarded full risk contracts to behavioral health organizations (BHOs), managed care firms that specialized in behavioral health treatment. Fully capitated plans like TennCare were expected to result in the greatest cost savings for state Medicaid programs, compared to other managed care models, because they have the fewest incentives for cost shifting among payers and the greatest incentives for controlling service utilization (Deal & Shiono, 1998). Between TennCare's physical health benefits and TennCare Partner's behavioral health benefits, a wide range of services for any diagnosed, medically necessary service was available, and all TennCare enrollees were in TennCare Partners. As part of an interagency agreement between TennCare and the State Department of Education, TennCare is responsible for providing all covered, medically necessary services to all children who are TennCare enrollees regardless of whether or not these children are IDEA eligible. In fact, TennCare is prohibited from denying coverage of services for TennCare enrollees simply because the service is part of an Individual Education Plan (IEP, as specified in IDEA) (Interagency Agreement, 2000).

This study reports the frequency and type of behavioral health services utilized by children with ASD who participated in the TennCare MMC program during fiscal years 1995 through 2000, compares rates of service utilization to rates of children expected to have an ASD in the TennCare population, and discusses these findings in relation to standards of care for children with ASDs. Like the USDOE and CDHHS reports on increasing numbers of children seeking services, it is reasonable to expect a similar pattern of service use in another public program like Medicaid.

METHODS

Data

TennCare data collected previously for another project, titled the IMPACT Study, were analyzed. The IMPACT study was conducted at Vanderbilt

University's Institute for Public Policy Studies and was part of a national investigation that examined the impact of managed care on vulnerable populations (Heflinger, Simpkins, Northrup, Saunders, & Renfrew, 2000; Coordinating Center for the Managed Behavioral Health Care in the Public Sector, 2002), funded by the Substance Abuse and Mental Health Services Administration. The data for these analyses come from the Bureau of TennCare's (BTC) management information system. All paid claims and encounters with a diagnosis in the 299.00–299.99 range for autism-related disorders (International Classification of Diseases, 1980) were extracted for children who were age 0–17 years at the time of service within July 1994 and June 2000 (fiscal years 1995–2000). The BTC receives all encounters from its contracted physical and behavioral health managed care companies.

The encounter data consist of two main types of records, corresponding to the types of claim forms used: (1) Uniform Billing-1992 Revision (UB92) records, used primarily by hospitals and which employ American Hospital Association-defined revenue codes (Tennessee Hospital Association, 1996); and, (2) HCFA-1500 records, used primarily by individual providers and coded using the Current Procedure Terminology (CPT) system (American Medical Association, 1997) or HCFA Common Procedure Coding System (HCPCS) codes (Center for Medicare and Medicaid Services, 2002). These are the same forms and systems used in the pre-TennCare Medicaid system and in most states that still operate Medicaid on a fee-for-service basis.

Procedure codes reflecting family, individual and group therapy, residential and inpatient services, medication management, day treatment, case management, etc. were used to identify the types of services used by children with ASDs. Saunders and Heflinger (in press) describe more specific details of the data and the methods. A "service-day-type" counting metric was used to summarize the data. Each service for each day was transformed into a single record, which generated a daily count of services. If a person received two of the same services in 1 day, the service was counted only once; however, if the person received two different services the same day, two different services were tallied. No difference in the duration of service was considered; thus, a 15-minute session counted the same as a 90-minute session.

Data quality checks assessed the accuracy and completeness of the data held by the BTC and

revealed some limitations. Incentives were in place during this entire time period for providers to document and submit all encounters in order to be paid under the terms of their contracts. Inpatient service claims for the time period from July 1995 to June 1996, however, are incomplete for one of the managed care organizations due to problems transferring the hospital records to the BTC's data system experienced by the firm's third-party billing administrator. However, incompleteness for FY1996 did not grossly affect the number of children served. Mathematica Policy Research, the TennCare demonstration's evaluators, also noted incompleteness in the inpatient data, but most of the problems they noted were concentrated in the medical data for adults (Sing, 2001). Similarly, there have been problems noted in the completeness of expenditures data in this and other managed care systems due to case rates and other funding mechanisms that are not directly reflected on the claims/encounters. Therefore, this study reports only the days of service. In spite of these limitations, we found the data to be of sufficient completeness to present an initial picture of service patterns for this population. A state audit has documented the accuracy of the data that are reported (Division of State Audit, 2002).

Analysis

First, the demographic characteristics of the population were examined using descriptive statistics. Next, based on the literature on performance indicators (American College of Mental Health Administrators, 2001; Agency for Healthcare Research and Quality, 2001; Children's Medical Health Benchmarking Project, 2002; National Committee for Quality Assurance, n.d.), overall access to services was calculated as the quarterly number of children with any service use per 1000 TennCare enrollees. During the time period covered in this study, TennCare enrollment was open for all children through the federally mandated eligibility categories as well as the uninsured/uninsurable eligibility category available through the TennCare waiver. Subsequently, enrollment increased during the study time period. The changing number of eligible children indicates the need to measure access through a standard rate, or proportion served, in order to control for increases in number of eligible children. The percent change of services provided from FY1995 to FY2000 was calculated. The mean number of TennCare service days and percent of

children who received specific services were derived from counts of days and children.

We then estimated a time-series regression model for the quarterly access rates and average number of behavioral service days. We used ordinary least squares to fit a model with a linear time trend for the study period. We tested for the presence of autocorrelation in the data, and we used econometric techniques to adjust for heteroskedastic and/or autocorrelated error structures as appropriate, specifically the Newey-West corrected standard errors (Greene, 1997; STATA Corporation, 1999).

RESULTS

All TennCare enrollees were also enrolled in TennCare Partners, and during FY1995 through FY2000, a total of 1474 children with an ASD received a TennCare behavioral health service. Of these, 55.2% were white, 26.5% were non-white, and 18.3% had unknown or missing data for race. Males

comprised 76.7% of the proportion of children, and the mean age was 8.9 years (*SD* = 4.4 years). A gender ratio of about three males to every female was found for all groups. This finding is consistent with gender rates observed in autism but inconsistent with those observed for ASDs in general (Chakrabarti & Fombonne, 2001). The rate of children with ASDs served in TennCare increased from 0.24/1000 in FY1995 to 0.65/1000 in FY2000. The expected rate of children with ASDs, which was calculated from published prevalence estimates, is 6.26/1000 (Chakrabarti & Fombonne, 2001) (see Fig. 1), indicating an approximate 10-fold under-representation in the TennCare population. In addition, the prevalence rate of 6.26/1000 is likely a conservative estimate for the TennCare population for two reasons: (a) more children with disabilities participate in Medicaid programs and (b) children who are uninsured or uninsurable due to a pre-existing medical condition, which ASDs might be defined as, are also eligible to participate in TennCare (Bureau of TennCare, 2003).

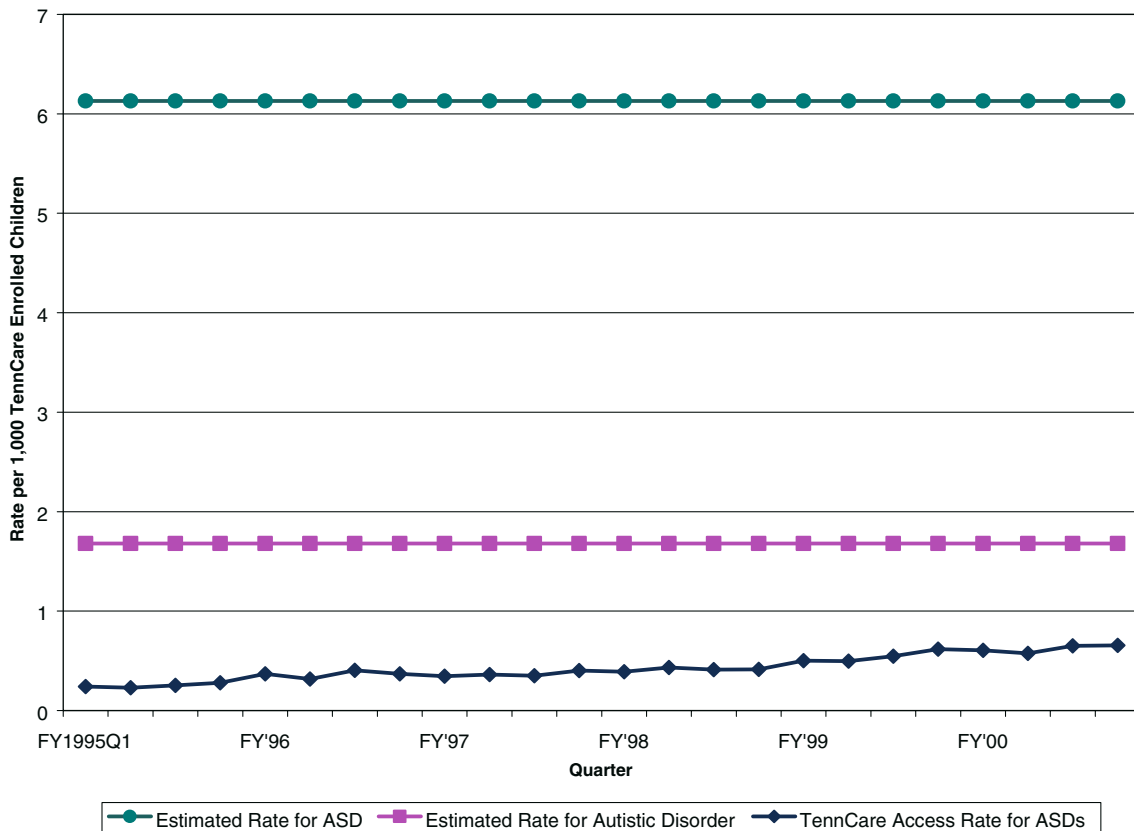


Fig. 1. Estimated incidence rates vs. service rates of autism spectrum disorders (ASDs) in TennCare for children ages 0–17 years, by quarter.

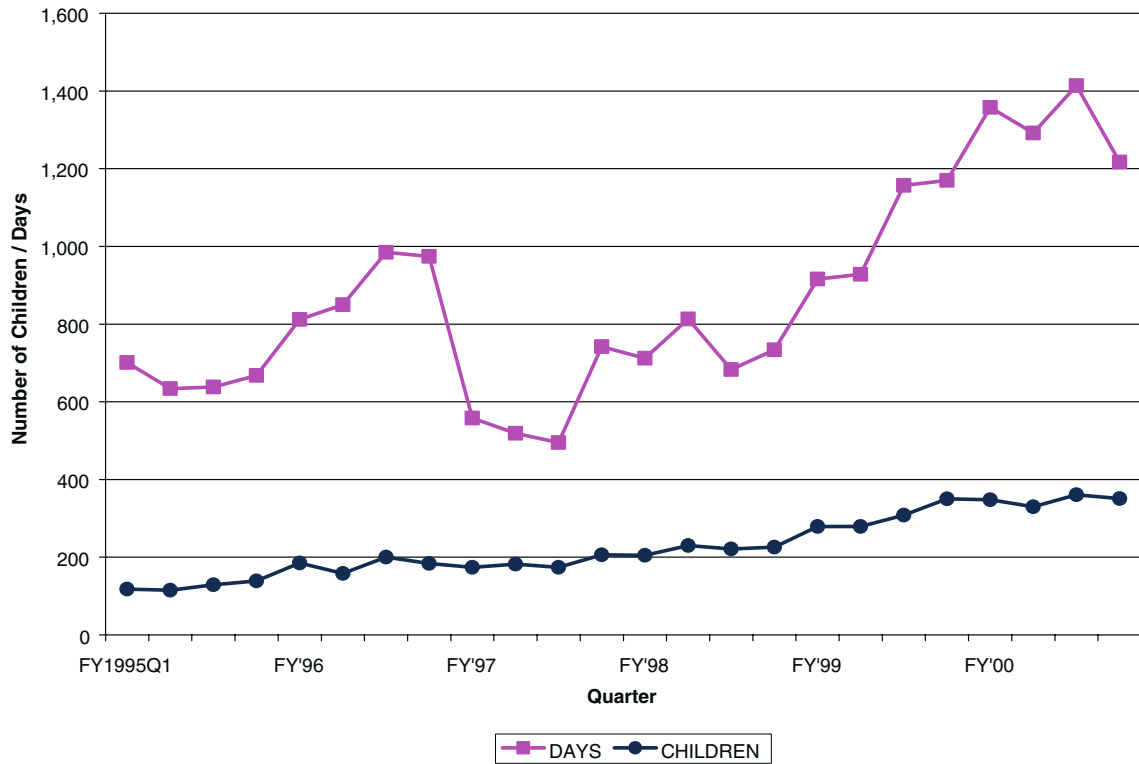


Fig. 2. Number of children who received at least one TennCare service, and total number of TennCare service days, by quarter.

The access rate for children who received a TennCare service with an ASD diagnosis increased 171%, less than the 273% increase reported by the CDHHS (Department of Developmental Services, 1999) but still sizable. The number of service days, however, increased only 74% (see Fig. 2), after a dramatic drop in FY1997 at the onset of the TennCare Partners Program (the behavioral health care carve out). The mean number of service days per child, already infrequent at six per three-month period, decreased about 40% (see Fig. 3).

The time-series regression results for the quarterly access rate indicate a linear growth trend in the rate of autism ($p < .000$) (see Table I). The linear model is also significant overall ($F = 34.73$, $p < .0000$; $R^2 = .7302$). We rejected the hypothesis of autocorrelation in the model (Durbin-Watson d -statistic = 1.37, $p > .05$; Greene, 1997). However, the model reports heteroskedasticity-adjusted standard errors to be as conservative as possible in testing the time-trend variable.

For the average days analysis, the autocorrelation in the error term was significant ($d = 0.72$, $p < .01$) (see Table II). The model presents the results

for a regression with a one-period lagged disturbance. Higher orders of autocorrelation were considered (up to five periods), but the substantive results did not change: children received an average of 4.97 service days per quarter, and that level declined by .08 per quarter ($p < .002$). The model was significant ($F = 12.66$; $p < .0018$).

Analysis of the types of services indicates the mix of TennCare services received by children with autism changed dramatically over this 6-year period after the initiation of TennCare. Inpatient hospital days dropped in FY1996 due to missing data, described in the Methods section. However, the FY1997 data are from the new BHO and reflect a drop in inpatient service use experienced across child behavioral health services after the initiation of TennCare Parents that year. Day treatment accounted for most of the service days in FY1995 and FY1996 (see Table III), yet essentially disappeared after the implementation of TennCare Partners. The proportion of children with ASD who received a case management service increased from 1% to 17% (see Fig. 4), and became the service with the most number of days per year (see Table III). Case management is defined as “a series of

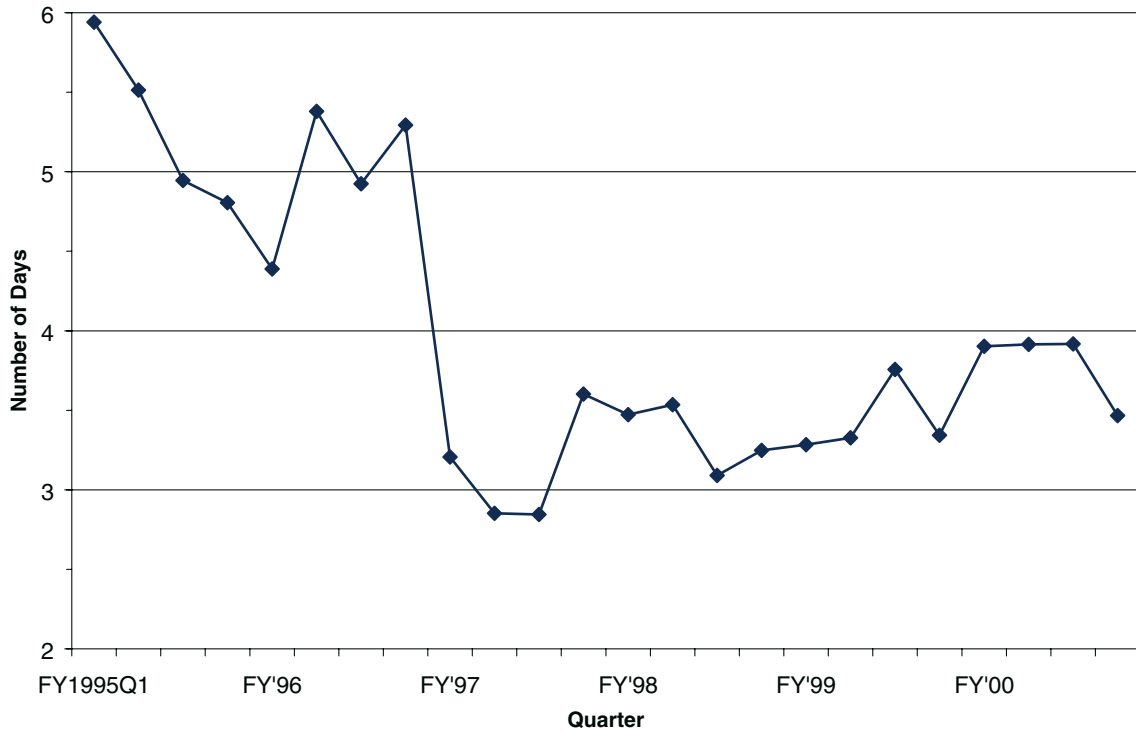


Fig. 3. Average number of days of TennCare services per child with ASD, by quarter.

Table I. Time-series Regression Estimates for Quarterly Access Rates (N = 28)

	β	Newey-West Std. Err.	p
Intercept	-8.695	.129	.000
Time	.040	.007	.000

Note: $F(1,22) = 34.73$; $p > F = 0.0000$; $R^2 = 0.7302$.

Table II. Time-series Regression Estimates for Quarterly Average Service Days (N = 24)

	β	Newey-West Std. Err.	p
Intercept	4.970	.348	.000
Time	-.085	.024	.002

Note: $F(1,22) = 12.66$; $p > F = .0018$; $R^2 = 0.4262$ (from model with zero lags).

actions taken by a team or a single mental health case manager to support clinical services” (Tennessee Department of Mental Health and Mental Retardation, 1996). Individual outpatient therapy, primary care outpatient visits, and speech and language therapy remained at similar proportions of children

served (see Fig. 4); only about 5% of children with ASDs received any speech and language service, but those who did received more days. Medication management also became a prominent service for children, and crisis services increased over 300% (See Table III).

DISCUSSION

Because Medicaid is the largest public payer of behavioral health services, evaluating the impact of MMC programs on the behavioral service patterns of children with complex developmental disorders is essential. The purpose of this study was to describe the service access patterns of children with ASDs by examining the number and types of services provided in the TennCare program and discussing this information within the context of published standards of care. The main findings were that although the number of children who received a service increased, the rate of children served was only one-tenth of expected estimates, and the mean number of services provided per child decreased. The range of services provided narrowed and more costly services such as day treatment disappeared while case management

Table III. Annual Number of Days of TennCare Service by Service Type from FY1995 to FY2000

	FY1995	FY1996	FY1997	FY1998	FY1999	FY2000	FY95 to FY00 % Change
BH inpatient/residential	335	16	136	205	349	391	16.7
BH rehabilitation	85	194	0	0	3	185	117.6
BH medication Mgmt/Path/Lab	29	75	229	397	495	621	204.1
BH case management	21	34	268	418	587	963	448.6
BH day treatment	1098	1269	31	102	0	1	-99.9
BH family therapy	10	38	77	96	125	122	112.0
BH group therapy	80	189	40	60	90	129	61.3
BH individual therapy	320	652	383	475	596	682	113.1
BH crisis	6	2	11	18	13	29	383.3
BH other outpatient treatment	101	125	148	180	205	237	134.7
Primary care outpatient visit	158	237	254	294	482	431	172.8
Speech/hearing therapy	22	104	132	252	442	547	2386.4
Other medical-related	253	440	387	315	662	842	232.8

Note: BH refers to a behavioral health related service.

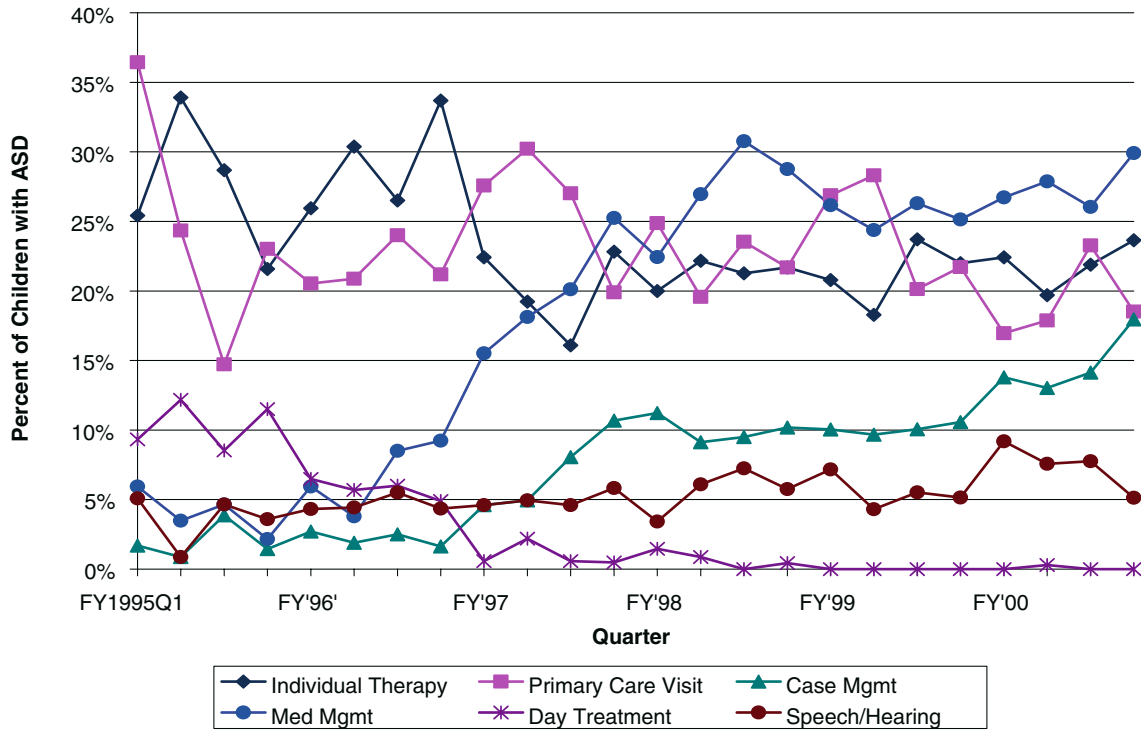


Fig. 4. Percent of children with ASDs who received specific TennCare services, by quarter.

and medication management increased. Possible explanations for these findings are provided.

Provider Factors

Providers may be identifying and treating children with ASDs but not using ASD codes in their claims. They may also not refer children for

behavioral health services because they perceive such services as the responsibility of the educational system or the managed care firms exert pressure on the provider. Finally, they may want to refer children for services but lack referral sources or experienced providers. A recent report from the Autism Interagency Study Group of Tennessee compiled by van Eys and McLaughlin (2002) provides evidence to all

of these claims. The report states primary diagnoses of autism and mental retardation are specifically excluded in the contract between TennCare and the BHOs. If behavioral issues appear to be “autism-related” and not specific to a mental illness (e.g., bipolar disorder), then the BHO declines responsibility for payment. Thus, providers have no incentive to include an ASD diagnosis when filing claims and may rely instead on other diagnoses for reimbursement. Further, the report goes on to state that even if a child is identified and served for having a dually diagnosed mental illness, the BHO does not have contracts with autism-specific service providers or service delivery systems due to a lack of specialists in the networks.

Managed Care Factors

Hutchinson and Foster (2003) hypothesize that MMC will reduce overall expenditures in mental health care and shift care from inpatient to outpatient settings. This hypothesis is supported by the data. Although a larger number of children were served over time, the number of services provided per child decreased and more expensive services such as day treatment disappeared. These changes in service patterns may likely be a result of several additional factors. Using a definition of medical necessity that is too broad and lacks guidance (Department of Health, 1999; Ireys, 1999) allows BHOs and MCOs to refuse services to children due to disagreements over whether ASDs are behaviorally or medically based disorders (Chang *et al.*, 1998). Also, the language in TennCare’s contract with BHOs is contradictory. It *excludes* mental retardation and developmental disabilities from the category of covered mental illnesses, but explicitly *includes* coverage of behavioral health services categorically to special populations (van Eys & McLaughlin, 2002). Cost shifting to other service sectors such as schools (Hutchinson & Foster, 2003) adds an additional source of redirection and diffusion of responsibility. The van Eys and McLaughlin report (2002) also identified a lack of clarity regarding which services should be provided by what systems. For example, responsibility for specialized and habilitative services such as speech therapy, occupational therapy, and physical therapy is unclear. Although when medically necessary these services fall under the auspices of covered health benefits, MMC however may refuse to pay for children with autism, claiming that these specialized services should be delivered by the educational system.

The argument is that the services are “educationally related” rather than “medically necessary.” Because children with autism often need such services intensively and early, there may be both an educational and medical need. The lack of clarity gives room for debate between systems. Children have been caught between systems as they try to obtain needed services, often losing precious time and obtaining the “legal minimum” of a service rather than the appropriate “dosage” of various services. (p. 11)

Finally, failing to provide incentives for BHOs to provide appropriate treatments and appropriate risk adjustment (Hutchinson & Foster, 2003) may also be a factor. Capitated MMC programs without risk adjustments that protect the managed care firm’s financial interests are particularly problematic for the quality of care for children (Hutchinson & Foster, 2003).

Parent Factors

Lastly, parents and caregivers may choose not to access behavioral health services because children are receiving school-based services. Under IDEA (U.S. Department of Education, 1997), schools are required to provide individualized educational and intervention plans. Also included is a provision for related services, which includes social work services and parent counseling and training (section §300.24 of IDEA). The parent training includes information on the nature of their child’s problems and strategies to promote the implementation of their child’s individual education plan in the home environment. The Tennessee Department of Education (DOE) counted the number of children who received services under the eligibility category of autism; during the 2000 to 2001 school year, a total number of 1242 children were reported (State of Tennessee, 2001). This number reflects about half of the expected number based on calculations using the 2000 census (Ruble, 2002). On the other hand, for those children enrolled in TennCare, 14% of the expected number of children with autism received a service. The implication is that a larger proportion of children receive school services under the label of autism as compared to those who are eligible for TennCare services. Thus, system training may prevent parents of children with ASD from pursuing services through the Medicaid system even when qualified to receive them. Regardless of the range of possible explanations for the under identification of children with ASDs and underutilization of services, the most important implication is the unknown

impact of a reduction in services on developmental and behavioral outcomes. One of the key problems in using administrative data sources is the lack of systematic data on outcomes such as functioning and symptomatology. Steps by states to incorporate outcomes monitoring, or even systematic monitoring of basic statistics like counts of children with ASDs (as USDOE requires states to report), would be beneficial for research and policy planning.

These trends in service usage are inconsistent with reports from other child service sectors (Department of Developmental Services, 1999; U.S. Department of Education, 1999). Further, the types of services provided seem not to conform to published standards of care for this population (American Academy of Pediatrics, 2001; Committee on Children with Disabilities, 2001; Dawson & Osterling, 1997; National Research Council, 2001). Speech and language therapy, for example, was provided to only an extremely small percentage of children, which was surprising given that communication is a core aspect of the disability and a prime therapeutic intervention target (National Research Council, 2001). Also, medication is considered an adjunctive therapy (Ruble & Brown, 2003); behavioral interventions are considered as the preferred treatment modality.

These findings lend support to the claim that service utilization patterns of children with complex disorders, such as ASDs, are sensitive to financial incentives under MMC. Children with ASDs are an under identified and underserved group of children whose behavioral health needs are unmet. More research is needed evaluating the impact of MMC on children's developmental outcomes and ways to effectively serve a growing population of children with complex and costly needs, through multiple service agencies such as schools, private and public health care organizations, and other state agencies. Specifically, research that examines parent and caregivers experiences accessing Medicaid behavioral health services and outcomes of these services, the impact of quality and quantity of services on child and family outcomes, and the extent to which families actually receive Part B services under IDEA and chose to not access Medicaid behavioral health services is also necessary.

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