

Utilization of Medicaid Mental Health Services by Nondisabled Children and Adolescents

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Objective: Mental health service use and costs for nondisabled children and adolescents in the Medicaid programs of Michigan and Tennessee were examined to improve understanding of patterns of service use in this population. **Methods:** Data from the Medicaid Analysis Project for States, sponsored by the Health Care Financing Administration, were examined for nondisabled children and adolescents under 19 years of age who were continuously enrolled in Medicaid in 1990 and who received Medicaid mental health services, including treatment for alcohol and drug abuse. Recipients of mental health services constituted 5 and 7 percent of the nondisabled children and adolescents in the Medicaid programs in Michigan and Tennessee, respectively. **Results:** Total expenditures for mental health care recipients were three or more times higher than the level suggested by their proportion in the general Medicaid nondisabled population. Their psychiatric hospitalizations were much longer, with mean lengths of stay of 44 days in Tennessee and 60 in Michigan. Although inpatient utilization rates were similar in the two states, outpatient utilization differed by type of problem treated, provider, and type of treatment. About a third of mental health recipients received psychotropic drugs; cerebral stimulants were the most commonly prescribed type. **Conclusions:** Results illustrate the need to learn more about Medicaid mental health services for younger children and the use of psychotropic drugs. They also suggest that states reforming their Medicaid programs to contain costs should pay particular attention to the use of mental health services by children and adolescents. (*Psychiatric Services* 48:65-70, 1997)

Medicaid is the largest single payer for health services for children and adolescents. It covers 21.6 percent of the population under age 18 (1). Medicaid is also the largest single mental health program in the nation (2).

Most children and adolescents qualify for Medicaid through the Aid for Families With Dependent Children (AFDC) program (3). Poverty is the chief eligibility criterion for AFDC and an important risk factor for mental health problems (4). For these reasons, any well-informed national

policy should take into account Medicaid's support of mental health services for children and adolescents.

Unfortunately, we know little about mental health services for this group, regardless of payment source. One study showed that 9 percent of hospital discharges for adolescents in 1987 were for mental disorders (5). Of these, the average length of stay was 23 days for those between the ages of ten and 14, and 16 days for those between 15 and 18. An investigation of adolescent psychiatric hospitalization in California in 1987 found an average

length of stay of 26 days (6). Most of these stays were by older adolescents (ages 14 to 17), and most were for affective disorder.

We know less about the use of outpatient services, but a substantial portion of such services are used by children and adolescents. In 1986 persons under age 18 constituted 26 percent of admissions to specialty outpatient psychiatric services (7). They constituted 13 percent of partial care admissions.

Knowledge of mental health service use by the Medicaid population is also limited. Mason and Gibbs (6) found that Medicaid paid for 16 percent of adolescent psychiatric hospitalizations in California in 1987. Children and adolescents in the AFDC program constituted about a quarter of all Medicaid recipients of alcohol, drug abuse, and mental health services in California and Michigan in 1984 (8). However, a study in Hawaii found that Medicaid recipients under age 18 accounted for only 6 percent of psychiatric inpatients and 17 percent of outpatients (9).

Recent efforts by states to restructure their Medicaid programs have increased the need for utilization data, particularly for the nondisabled population. Under sections 1115 and 1915b of the Social Security Act, states are seeking to expand the use of managed care and coverage of the uninsured. Many of these plans focus on persons qualifying for Medicaid through AFDC—that is, the nondisabled population—and exclude those that qualify for Medicaid through disability (10,11). Because studies of children covered by Medicaid have rarely distinguished between disabled and nondisabled individuals, we lack good data to assess such program changes.

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Table 1

Characteristics of nondisabled children and adolescents in the Medicaid programs of Michigan (N=16,544) and Tennessee (N=10,992) who received mental health services in 1990, in percentages

Characteristic	Michigan	Tennessee
Age group		
Less than one year	1	1
One to four years	8	19
Five to nine years	31	30
Ten to 14 years	35	28
15 to 18 years	24	22
Eligibility category		
AFDC	72	75
Poverty related	1	7
Medically needy	27	19
Gender		
Male	60	56
Female	40	44
Race		
White	71	65
Nonwhite	29	35

This study addressed these issues by examining mental health expenditures and use for all nondisabled individuals under age 19 in the Medicaid programs of two states. Data on inpatient, outpatient, and prescription drug use were examined and disaggregated by diagnosis and age group.

Methods

Analyses were based on 1990 data from the Medicaid Analysis Project for States, also known as the Tape-to-Tape project. The Health Care Financing Administration sponsors this project, which constructs uniform, person-based data sets from individual claims data in four states. The data are organized by calendar year using date of service.

Of the four states in the Medicaid project, Michigan and Tennessee were chosen for analysis to explore patterns of care potentially relevant to the overall Medicaid population. The two states were selected because of their high-quality data, demographic diversity, and low penetration of Medicaid managed care in 1990. (The study period preceded Tennessee's large-scale conversion to managed care.)

The study population consisted of nondisabled children and adolescents receiving Medicaid mental health

services, including treatment for alcohol and drug abuse. They were 18 years or younger as of December 31, 1990, and were continuously enrolled throughout the year. Those born during the year also were part of the study group.

Because the study focused on the nondisabled juvenile Medicaid population, individuals who qualified for Medicaid due to eligibility for Supplemental Security Income or who had concurrent Medicare eligibility were excluded. Those with stays in long-term care or who used home health services also were excluded. These criteria eliminated those who were enrolled for only part of the year or who were likely to have severe chronic illness or disability. Children and adolescents enrolled in capitated care for any part of the year also were excluded due to limited data.

Any individual with at least one inpatient or outpatient claim for mental health services during the year was identified as a mental health care recipient. A mental health service was defined as any claim that met at least one of four criteria. The first was presence of a primary or secondary ICD-9 diagnosis code indicating a mental health problem. Codes included the major ones for mental disorders, except for mental retardation and organic mental disorders unrelated to substance use. They also included related codes such as those for interpersonal problems and parent-child conflict.

A second criterion was presence of a service category code indicating mental health care. A third was any provider type code for a mental health professional or facility. Finally, an inpatient ancillary or accommodation code indicating mental health care could identify a claim.

For some comparisons, data were used for all nondisabled Medicaid children and adolescents in the two states, both those who received mental health services and those who did not. This group met all the study criteria but included those who did not receive mental health services. In a previous paper, characteristics of and service use by these individuals have been described (Buck JA, Fitterman LK, Trontell AE, unpublished manuscript, 1996).

Results

Study population characteristics

Table 1 presents data on the age group, eligibility category, gender, and race of individuals in the study population. Overall, those receiving mental health services constituted 5 and 7 percent in Michigan and Tennessee, respectively, of the general nondisabled child and adolescent Medicaid population (both mental health and non-mental-health service recipients). However, these figures can be misleading. Few children under age five receive mental health care, although they account for more than 40 percent of the general nondisabled child and adolescent Medicaid population in each of the two states. In the age range of ten to 18 years, mental health service recipients make up more than 10 percent of the general nondisabled juvenile population in each state.

About three-fourths of the study group in each state qualified for Medicaid through AFDC. Compared with the general nondisabled juvenile Medicaid population in the two states, a higher proportion of the mental health service recipients qualified through programs for the medically needy. In both states the general Medicaid population of nondisabled children and adolescents was nearly equally divided between males and females and between whites and nonwhites (Buck JA and others, unpublished manuscript, 1996). However, mental health service recipients were more likely to be male and white.

Expenditures and utilization

Table 2 displays the percentages of total Medicaid expenditures accounted for by mental health service recipients in the general nondisabled population in Michigan and Tennessee. The percentage of total expenditures for all services to these recipients was at least three times higher than the level suggested by their proportion in the general Medicaid nondisabled population. For instance, although mental health service recipients constituted only 5 percent of nondisabled children and adolescents receiving Medicaid in Michigan, they accounted for 17 percent of expenditures for that group.

The percentages were highest for inpatient services and for those be-

Table 2

Percentages of 1990 expenditures for services to nondisabled children and adolescents in the Medicaid populations of Michigan and Tennessee accounted for by mental health care recipients, by service type and age group¹

Service type	Michigan						Tennessee					
	Age group (years)						Age group (years)					
	<1	1-4	5-9	10-14	15-18	Total	<1	1-4	5-9	10-14	15-18	Total
Inpatient	.5	2.9	45.4	77.0	58.7	21.4	1.2	4.5	43.0	77.5	66.8	26.7
Outpatient	.7	3.1	17.9	31.0	27.3	14.0	1.1	20.1	38.5	41.1	40.5	27.4
Prescription drugs	.6	2.4	12.9	18.8	15.2	10.6	1.0	4.7	14.9	19.2	22.1	11.0
Dental	0.0	2.6	7.0	10.5	12.9	8.4	8.8	6.4	9.2	11.5	15.8	10.9
Other	1.4	4.6	17.1	26.0	24.2	15.4	1.8	6.2	13.7	19.8	20.6	11.6
All service types	.6	3.1	22.0	46.2	41.1	17.4	1.2	12.6	32.2	46.5	50.4	24.0

¹ Expenditures are for both mental health and non-mental-health services.

tween the ages of ten and 18. In Tennessee recipients of mental health services accounted for a higher percentage of expenditures than in Michigan, consistent with their higher representation in the general nondisabled Medicaid population in that state.

Inpatient services. The proportion of individuals in the study population with at least one day of inpatient psychiatric care was 7.7 percent in Michigan and 10.8 percent in Tennessee. Of those with inpatient psychiatric stays, 17.1 and 20.1 percent had at least one readmission in Michigan and Tennessee, respectively. In both states, the rate of inpatient utilization and readmission increased with age.

Although inpatient utilization rates in the two states were similar, the cost of an inpatient psychiatric stay was higher in Michigan. The mean cost for psychiatric stays in that state was \$14,740, compared with \$9,288 in Tennessee. Part of this discrepancy resulted from differences in costs for a day of inpatient psychiatric care. In Michigan the mean cost was \$247, while in Tennessee it was \$213.

Differences in patterns of lengths of stay between the two states explained the remainder of the discrepancy in inpatient costs. Although a majority of inpatient stays were shorter in Michigan than in Tennessee, a few were much longer. The mean \pm SD length of a psychiatric stay in Michigan was 59.7 \pm 99 days, while the median was 24 days. The respective figures for Tennessee were 43.5 \pm 48.8 days and 30 days. The 90th percentile in Michigan was 167 days, while it was only 90 days in Tennessee.

Table 3 presents inpatient psychiatric utilization and expenditure data by the most frequent inpatient diagnoses. In both states five diagnoses were most common, although the order varied. They were affective psychoses (ICD-9 code 296), neurotic disorders (ICD-9 code 300), adjustment reaction (ICD-9 code 309), disturbance of conduct not elsewhere classified (ICD-9 code 312), and disturbance of emotions specific to childhood and adolescence (ICD-9 code 313). These diagnoses accounted for 77 percent of inpatient psychiatric stays in Michigan and 72 percent of those in Tennessee.

The mean ages of persons with these diagnoses differed by no more than six months in the two states. However, for two of the diagnoses, the length-of-stay patterns were very different. In Tennessee the median length of stay for persons with an affective psychosis was 42 days, whereas it was only 22 days in Michigan. For disturbance of conduct not elsewhere classified, patients in Michigan had a median length of stay of 42.5 days, while for those in Tennessee it was 27 days.

Inpatient substance abuse treatment. Analyses of inpatient treatment by primary diagnosis may underestimate the prevalence of alcohol and drug disorders, because these diagnoses are often listed as secondary when other conditions are present. Accordingly, inpatient stays in which the patient had either a primary or a secondary diagnosis of substance abuse were identified. In Michigan, only 2.2 percent of stays were in this

category. However, 8.1 percent of the stays in Tennessee were so classified. About two-thirds of them were for drug treatment or drug and alcohol treatment.

Outpatient services. Table 4 presents the percentages of individuals by age group receiving outpatient services within each major service type. The utilization rates were similar in the two states for physician services and outpatient hospital services. However, use of early periodic screening, diagnostic, and testing services was greater in Tennessee, particularly for preschoolers. Medicaid regulations allow states to set their own standards for the frequency of screenings. Therefore, the differences may reflect different screening standards in each state.

The second part of Table 4 shows the percentages of outpatient visits within each service type associated with a psychiatric diagnosis. (Services such as testing and consultation were counted as visits.) In both states nearly all clinic visits were for psychiatric treatment. In Tennessee very few outpatient hospital visits were for mental disorders, while about a third of physician visits were for such problems. In Michigan the proportion of physician visits and outpatient hospital visits for psychiatric reasons were more similar.

Officials familiar with the Medicaid programs in the two states were questioned about these results. In Michigan the high rate of clinic visits for psychiatric reasons may have been due to that state's inclusion in its clinic services option of clinics offering comprehensive mental health services. However, those familiar with

Table 3

Characteristics of hospital stays of patients with the five most frequent inpatient psychiatric diagnoses among nondisabled children and adolescents in the Medicaid populations of Michigan and Tennessee in 1990

Diagnosis	Michigan							Tennessee						
	N stays	% of total	Mean age	Mean cost per stay ¹	Length of stay (days)			N stays	% of total	Mean age	Mean cost per stay ¹	Length of stay (days)		
					Mean	Median	75th percentile					Mean	Median	75th percentile
Affective psychoses	357	23.1	14.8	\$12,509	49.5	22.0	44.0	249	16.5	14.7	\$10,696	45.2	42.0	62.0
Neurotic disorders	248	16.0	14.1	13,484	56.2	21.0	51.5	171	11.4	14.3	8,870	41.1	29.0	57.0
Adjustment reaction	294	19.0	13.8	11,186	40.7	23.0	42.0	195	12.9	14.3	7,367	35.6	28.0	50.0
Disturbance of conduct not elsewhere classified	160	10.3	13.4	26,352	116.8	42.5	167.5	299	19.9	13.9	9,161	46.4	27.0	56.0
Disturbance of emotions specific to childhood and adolescence	129	8.3	13.1	20,854	90.0	39.0	119.0	176	11.7	13.5	9,876	50.6	37.0	64.5
All psychiatric diagnoses	1,548	100.0	13.7	\$14,740	59.7	24.0	56.5	1,506	100.0	14.2	\$9,288	43.5	30.0	58.0

¹ Amount includes payment by other third-party sources.

Tennessee's program did not have an explanation for the results.

The distribution of outpatient mental health visits by age group is also displayed in Table 4. In both states about a third of total mental health visits were for children between the ages of five and nine years. However, although preschoolers accounted for

another third of visits in Tennessee, they accounted for less than 5 percent in Michigan.

The two states also differed in the rate of outpatient mental health service use. In Michigan the rate was 9.5 visits per person. In contrast, Tennessee had a rate of 20.9 visits. However, these statistics may be mislead-

ing. In Michigan 35 percent of clinic visits and 61 percent of outpatient hospital visits were for day care, for which the "visit" was a half or a whole day. Data for Tennessee did not indicate this type of service. Thus differences in gross utilization rates may mask the fact that although patients in Michigan made fewer visits than

Table 4

Use of outpatient services by nondisabled children and adolescents in the Medicaid populations of Michigan and Tennessee in 1990 who received mental health services, in percentages by age group

Service type	Michigan						Tennessee					
	Age group (years)						Age group (years)					
	<1	1-4	5-9	10-14	15-18	Total	<1	1-4	5-9	10-14	15-18	Total
Percentage of individuals receiving services ¹												
Clinic	15	48	58	59	57	57	42	68	63	65	68	65
EPSDT ²	23	33	22	17	13	19	73	56	34	21	13	30
Outpatient hospital	60	73	52	48	60	54	71	67	54	52	62	58
Physician	94	98	94	90	92	92	91	92	88	85	86	87
Percentage of visits for care of a mental disorder ³												
Clinic	24	76	97	98	90	95	19	93	96	94	89	93
Outpatient hospital	6	12	29	46	35	33	6	3	4	12	12	8
Physician	5	9	19	23	16	18	8	16	31	47	43	35
Percentage of total mental health visits ⁴	<1	3	28	43	25	100	<1	30	33	21	16	100

¹ Percentage of age group with at least one instance of the particular service in the year

² Early periodic screening, diagnostic, and testing services. Because these services screen for a variety of potential health problems, they cannot be identified as psychiatric or nonpsychiatric.

³ Percentage of visits for which a diagnosis of mental disorder (other than dementia or retardation) was given

⁴ Percentage of all outpatient psychiatric visits accounted for by the age group

Table 5

Distribution of psychotropic drug prescriptions among nondisabled children and adolescents in the Medicaid populations of Michigan and Tennessee in 1990 who received mental health services, in percentages by age group

Variable ²	Michigan					Tennessee				
	Age group (years) ¹					Age group (years) ¹				
	1-4	5-9	10-14	15-18	Total	1-4	5-9	10-14	15-18	Total
Psychotropic prescriptions ³	1.6	38.5	45.4	14.4	100.0	6.0	38.8	33.9	21.3	100.0
Drug type										
Antidepressant	3.5	12.7	17.9	40.4	19.0	9.9	25.3	40.2	44.8	33.6
Antipsychotic	26.8	8.3	8.9	20.9	10.6	42.8	13.1	14.2	25.7	18.0
Cerebral stimulant	27.0	74.5	69.5	23.1	64.0	16.0	54.0	36.4	8.4	36.1
Antimanic	0.0	0.1	1.3	7.1	1.7	0.1	0.7	1.0	6.4	2.0
Anxiolytic, sedative, or hypnotic	42.6	4.4	2.4	8.5	4.7	31.2	6.8	8.2	14.7	10.4

¹ Groups do not include children less than one year old. Psychotropic drug prescriptions for this group constituted .1 percent or less of the total in both states, and these data were not judged to be meaningful.

² Drug categories are derived from the American Hospital Formulary System (AHFS). The AHFS codes used were 28:16:04, 28:16:08, 28:24:08, 28:24:92, 28:20, and 28:28.

³ Percentage of the total number of psychotropic prescriptions in the state accounted for by the age group. Percentages are based on a total of 30,805 psychotropic drug claims in Michigan and 15,108 in Tennessee.

those in Tennessee, their visits were of longer duration. The higher use of physician care in Tennessee may also have contributed to this finding.

In both states four diagnoses accounted for 79 percent of outpatient mental health visits—adjustment reaction, disturbance of conduct not elsewhere classified, disturbance of emotions specific to childhood and adolescence, and hyperkinetic syndrome of childhood. The relative frequency of these diagnoses varied by state and age group. In Michigan adjustment reaction was the most frequent outpatient diagnosis in each age group, accounting for 38 percent of all visits. In Tennessee this diagnosis was the second most common, accounting for 21 percent of visits. The most frequent diagnosis in Tennessee in all but the 15- to 18-year age group was disturbance of emotions specific to childhood and adolescence, accounting for 38 percent of all visits. In the 15- to 18-year age group, disturbance of conduct not elsewhere classified was the most frequent diagnosis.

Three of the four most frequent outpatient diagnoses were also among the most frequent inpatient diagnoses. The fourth—hyperkinetic syndrome of childhood—accounted for 14 percent of outpatient visits in Michigan, 11 percent in Tennessee, and less than 7 percent of inpatient stays in each state. In contrast, affective psychoses and neurotic disorders, which each

accounted for between 11 and 23 percent of inpatient stays, accounted for 5 percent or less of the outpatient visits in either state.

Alcohol- or drug-related outpatient visits were identified in the same manner as for inpatient stays. Such visits constituted less than 1 percent of total outpatient mental health visits in both states. However, this finding may be due partly to the absence of secondary diagnoses in the outpatient data.

Prescription drugs. Prescription drug claims were examined to identify those receiving psychotropic drugs and to determine drug use patterns. Claims were limited to outpatient prescriptions and did not include drugs used during inpatient stays. Drugs were classified using the categorization scheme of the American Hospital Formulary Service. Psychotropic drugs included the categories of antidepressants, antipsychotics, cerebral stimulants, antimanics, anxiolytics, sedatives, and hypnotics.

In both states more than three-quarters of the study group received some kind of medication during the year. In Michigan about a third received a psychotropic medication, while about a quarter of the Tennessee group received such drugs. In both states these drugs were most likely to be given to individuals between five and 14 years old. In Michigan 39 percent of this age group received a psychotropic drug, while 32 percent re-

ceived such drugs in Tennessee. Less than 10 percent of the entire group in either state were given more than one psychotropic drug during the year. Thus problems with polypharmacy, if they existed at all, would not affect many individuals.

Table 5 presents the distribution of psychotropic drug claims by type. It shows that the kinds of psychotropic medications that were administered differed considerably, both by state and by age group. In both states cerebral stimulants constituted the largest class of psychotropic medications, while antimanics were the smallest. However, in Michigan cerebral stimulants accounted for nearly two-thirds of total claims for psychotropic drugs, while they were only about a third of the total in Tennessee. The proportions of claims for antidepressants, antipsychotics, and the category including anxiolytics, sedatives, and hypnotics were all larger in Tennessee than in Michigan.

Several differences were also notable by age group. The proportion of claims for antidepressants and antimanics increased with age. This result is consistent with previous findings that affective disorders are more prevalent among adolescents than among younger children (12). Anxiolytics constituted a much larger share of psychotropic medications for preschoolers than for other age groups, but this finding means less

due to the low overall rate of psychotropic drug prescriptions for this age group.

The highest percentages of cerebral stimulants were for children between the ages of five and 14. Such drugs are likely to be prescribed for attention deficit disorder, a syndrome that is most noticeable in the school environment. The observed pattern correlates with the ages when children are most likely to be in school.

Discussion and conclusions

This study examined mental health service use among nondisabled children and adolescents enrolled in Medicaid in Michigan and Tennessee. Medicaid is the largest single mental health program in the nation and the most important source of health care for children and adolescents.

In gross measures of use, the two states were roughly similar. Mental health care recipients constituted between 5 and 7 percent of all nondisabled children and adolescents in the two Medicaid programs. Between 8 and 11 percent of the study groups had a psychiatric hospital stay. About a third received some type of psychotropic drug.

However, more detailed measures showed notable differences in the types of problems treated, providers, service types, and costs. For instance, among the nondisabled Medicaid population, mental health care recipients accounted for a greater proportion of total program costs in Tennessee than in Michigan. Frequencies of inpatient and outpatient diagnoses differed, and in Michigan there was much greater use of cerebral stimulants. The degree to which such differences are due to population, programs, or treatment practices is unknown, but certainly these differences merit further study.

Several other findings of this study also have research or policy implications. First, the results illustrate the need to include preadolescents in studies of mental health service use. Up to half of the mental health care recipients in the two states were under age ten, and they accounted for a major proportion of total mental health service use. Second, issues in the use of psychotropic medication

for this population must be better understood. About a third of the study group was treated with psychotropic medications. Of these, children between five and nine years old accounted for nearly 40 percent of psychotropic drug use. Further, although cerebral stimulants were the most frequently prescribed psychotropic drug, 30 to 50 percent of prescriptions were for antidepressants and antipsychotics.

Finally, the results of this study suggest issues that should be examined as states propose changes to their Medicaid programs. Many such proposals focus on the AFDC population or acute care. These proposals apparently assume that the need for extended services is limited to those who qualify for Medicaid through disability. However, the findings demonstrate that this assumption is not warranted, and that members of the nondisabled group may also have high service utilization rates.

Nondisabled mental health care recipients may be particularly affected by cost-containment efforts, because total expenditures for their care in this study were three times or more what their representation in the general nondisabled Medicaid population would suggest. Psychiatric hospitalizations for this group were much longer than those for the general child and adolescent population (6). Thus this area may be targeted by managed care organizations entering the Medicaid program for the first time. Some states appear to be sensitive to these issues and have created separate benefits or programs for children with serious emotional disturbances. However, these programs must be carefully managed if individuals are to be effectively identified and enrolled in them.

Interest in the mental health treatment of children and adolescents has risen considerably in recent years. Yet we still lack basic information by which to assess the quality of services and access to care. Concerns about these limitations take on greater urgency with health care reform proposals that would change the financing and delivery of services. More studies such as the one described here are needed, both before and after such

changes, if we are to assess their impact and ensure appropriate care for those who need it. ♦

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