



Effects on Outpatient and Emergency Mental Health Care of Strict Medicaid Early Periodic Screening, Diagnosis, and Treatment Enforcement

Lonnie R. Snowden, PhD, Mary C. Masland, PhD, Neal T. Wallace, PhD, and Allison Evans-Cuellar, PhD

We investigated enforcement of mental health benefits provided by California Medicaid's Early Periodic Screening, Diagnosis, and Treatment (EPSDT) program. Enforcement, compelled by a consumer-driven lawsuit, resulted in an almost 4-fold funding increase over a 5-year period.

We evaluated the impact of enforcement on outpatient treatment intensity (number of visits per child) and rates of emergency care treatment. Using fixed-effects regression, we examined the number of outpatient mental health visits per client and the percentage of all clients using crisis care across 53 autonomous California county mental health plans over 32 three-month periods (quarters; emergency crisis care rates) and 36 quarters (outpatient mental health visits).

Enforcement of EPSDT benefits in accordance with federal law produced favorable changes in patterns of mental health service use, consistent with policy aims. (*Am J Public Health*. 2007; 97:1951–1956. doi:10.2105/AJPH.2006.094771)

FOR THE ROUGHLY 20% OF US children and adolescents who have a mental disorder and whose ability to successfully function is at least mildly impaired, the state–federal Medicaid program is a major source of mental health care financing.¹ Children eligible for Medicaid are especially vulnerable; they include children from families with annual incomes below 100% of the federal poverty

level and those who have been removed from their homes and made dependents of the court. Public social services—especially the child welfare system, which cares for children who have experienced abuse or neglect—are important gatekeepers of the public mental health system.²

Medicaid's Early Periodic Screening, Diagnosis and Treatment (EPSDT) program is an especially important source of public financing of mental health care. Enacted in 1967 as an amendment to Title XIX (Medicaid) and enhanced in 1989 and 1990, EPSDT calls for integrated care covering a wide range of screening, diagnostic, and treatment services for children and youths meeting state Medicaid criteria

(K. Olson, J. Perkins, and T. Pate, unpublished data, 1998). Since its enhancement in 1989, the program is required to pay for comprehensive pediatric screening services, as well as for federally allowable health and mental health care services for conditions detected through EPSDT screening. These latter services must be provided to those younger than 21 years-old and enrolled in Medicaid, regardless of whether or not those services are otherwise reimbursed under the state's Medicaid program.³ States are also required to inform Medicaid recipients about the program and to assist them in making appointments and arranging transportation for EPSDT-related care.⁴



In California, EPSDT is divided into 2 components: (1) early and periodic screens provided through the Child Health and Disability Prevention program and (2) diagnosis and treatment services provided by Medi-Cal (the state's Medicaid program). Child Health and Disability Prevention provides regular preventive health assessments for eligible children and youths for early identification of health problems. Children with suspected medical problems are referred to a Medi-Cal–certified provider for diagnosis and treatment. Children needing specialty mental health care are referred to one of the state's 57 county mental health plans for assessment and treatment.

Historically, California's EPSDT program included restrictions that discouraged its use for mental health treatment. At its inception, the program imposed a 2-session-per-month restriction on outpatient visits and other constraints. Child advocates filed a lawsuit against the state, however, calling for enforcement of federal guidelines for the Medicaid EPSDT program. As a result, in 1995, the California state Medicaid program and its 57 county-operated Medicaid mental health plans were compelled to allow open entitlement (i.e., access unrestricted by administratively imposed limits on utilization) to EPSDT-covered mental health services. There followed a dramatic expansion of EPSDT-financed mental health care, from \$121 million in 1994–1995 to \$446 million in 1999–2000, with an average annual growth rate of 29.7%.

As restrictions on numbers of outpatient sessions were removed, EPSDT was widely expected to increase not only access to mental health treatment but also the intensity of treatment (the number of services per child) through increased emphasis on providing focused treatments for children in their homes, schools, and other settings where problem behaviors take place. It was also expected that EPSDT expansion would lead to fewer mental health crises and lower rates of crisis care treatment because of better screening, increased access, and more intensive outpatient treatment. Such an outcome would be significant because reduced crisis rates suggest earlier access to appropriate routine treatment.⁵

STUDY AIMS

While several studies have evaluated the use of the EPSDT program for general health care, few if any have considered its use for improving access to mental health treatment.^{6–8}

We sought to assess the effect of vigorous enforcement of federal EPSDT law on mental health outpatient and emergency treatment rates in California. California's county mental health plans are relatively autonomous compared to county systems in many other states, because county mental health plans have been given a high level of fiscal, administrative, and programmatic control by the state. By considering the experience of these autonomous plans over 36 quarters spanning nearly a decade, we sought to determine whether the number of

visits per child increased for children already being served by the mental health system, whether increasing numbers of new children were brought into the system, thus expanding access, and whether rates of psychiatric emergency care use decreased. Our results indicate the likely outcome of a more aggressive nationwide implementation of EPSDT and of implementation of other policies designed to increase children's mental health screening, referral, and treatment.

METHODS

Overview

To evaluate the effect of enforcement of federal EPSDT requirements on intensity of outpatient treatment and rates of emergency treatment, we used fixed-effects regression employing county dummy variables to control for all static, unique county characteristics; county-level, time-varying covariates to control for changing county caseload characteristics; and a time trend variable to control for extraneous factors showing linear increase with the passage of time. Outpatient treatment intensity was measured by the average number of outpatient visits per client (from birth to age 20 years), calculated for each county and quarter over a 36-quarter period beginning July 1, 1992, and ending June 30, 2001. Emergency treatment rates were measured by the percentage of all clients (from birth to age 20 years) who had received any crisis treatment, calculated for each county and quarter over a 32-quarter period beginning July 1,

1993, and ending June 30, 2001. Only 32 quarters were observed for emergency treatment, because of procedural changes, which made the earlier data found in the state Medi-Cal claims file incompatible with subsequent data.

Enforcement of federal EPSDT benefits allowing unlimited mental health treatment for eligible children began during the third quarter of 1995. We estimated pre- and postintervention (pre–post) effects of enforcement on rates of use of outpatient services and crisis services and the general time trends of these rates; we also estimated variation in caseload characteristics over time, probably occurring as county programs responded to policy initiatives targeting high-priority populations. Interacting EPSDT enforcement and time trend terms allowed us to estimate the initial response of outpatient service use and crisis rates to EPSDT enforcement, as well as long-term pre- and postenforcement trends in these variables.

Data Sources

The California Department of Mental Health provided the study team with deidentified Medi-Cal specialty mental health claims data for all clients aged 21 years and younger who received full Medi-Cal benefits in the state from July 1992 to June 2001. Claims data provided information about service utilization and client characteristics.

Variables

Dependent variables. Using California Department of



Mental Health claims data, we calculated, for each county mental health plan and each quarter, the number of outpatient mental health visits per client and the percentage of clients using crisis care.

Selection of county plans and quarters. We selected 53 of California's 57 county mental health plans for inclusion in the study. Four very small county plans were eliminated because small counts on indicators of interest yielded unstable measures of per-client outpatient treatment intensity and of rates of emergency care use.

In one 4-quarter period before enforcement of EPSDT (1992–1993), rates of crisis care visits differed dramatically from previous and subsequent rates. This anomaly was taken to indicate invalid reporting, and the year in question was eliminated from further consideration. As a result, there are 32 quarters and 1696 observations (32 quarters \times 53 county mental health plans) for our analysis of crisis care and 36 quarters and 1908 observations (36 quarters \times 53 county mental health plans) for our analysis of outpatient treatment intensity.

Independent variables. Fifty-two county dummy variables (county 53 served as a reference group) were used to identify each county individually, to control for all factors unique to each county, and fixed over time. Presence of EPSDT enforcement was measured as “0” for the quarters prior to the 1995 EPSDT legal settlement and “1”

for the quarters following the settlement. A time trend variable was used to control for any systematic changes in outcomes unrelated to EPSDT enforcement. This variable was specified as “0” in the quarter in which EPSDT enforcement was begun (quarter 3 of 1995); the variable took on negative values counting backward to the beginning of the time series (quarter 3 of 1992) and positive values counting forward to the end of the time series (quarter 2 of 2001).

Covariates. For each county mental health system at each quarter, we calculated from California Department of Mental Health claims data the caseload proportion of children aged birth to 5 years old and the proportions of children and youths who were placed in foster care, were designated as disabled, and were female, Latino, Asian, or African American. These proportions were entered in our equations and as time-varying covariates to control for changes in caseload composition.

Analysis

Our goal was to clarify the nature of changes occurring after enforcement of EPSDT and to identify changes most likely indicative of a true, long-term system response. To do so, we exploited our longitudinal design by adding to our models terms that estimate initial changes in dependent variables following EPSDT enforcement, as well as pre–post differences in trends. Our method is less affected by anomalous short-term upturns or downturns attributable to extraneous events

than are approaches in which pre–post averages are compared.

The 3 principle terms in our fixed-effects regression equations were (1) EPSDT enforcement (set to 0 prior to 1995 and to 1 after 1995), quarter (numbered sequentially from –12 to +24, with the quarter at the time of EPSDT enforcement set at 0), and EPSDT enforcement interacted with quarter. This model estimated the impact of each coefficient and controlled for the effect of other coefficients entered into the equation.

In the presence of the interaction term EPSDT enforcement interacted with quarter, the coefficients EPSDT enforcement and quarter received a different interpretation than they would have otherwise; as stated by Cohen et al., “In general, in a regression equation containing an interaction, the first-order regression coefficient for each predictor involved in the interaction represents the regression of Y on the predictor, *only at the value of 0 on all other individual predictors with which the predictor interacts* [italics in original].”^{9(p260)}

Thus, in the present context, the term EPSDT enforcement alone estimates pre–post differences when quarter=0 (i.e., the first quarter of EPSDT enforcement), thereby indicating response in the dependent variable during the first quarter (3 months) of enforcement. The term quarter alone estimates the quarterly trend in the dependent variable at EPSDT enforcement=0—that is, prior to EPSDT enforcement. The term EPSDT enforcement interacted

with quarter indicates the change in any observed quarterly trend in the dependent variable associated with EPSDT enforcement.

RESULTS

Table 1 presents raw data describing annual outpatient visits per client and emergency treatment rates. For ease of interpretation, yearly averages and standard deviations are reported, rather than quarterly indicators used in our principle analysis. Table 2 provides an overview of descriptive characteristics and variation among California counties for fiscal years 1995 and 2000. Table 3 summarizes results from regression analysis, omitting county dummy variable coefficients.

For intensity of outpatient treatment (the average quarterly number of outpatient visits per client per county), there was no statistically significant change immediately following EPSDT enforcement ($\beta = -0.48$, $SE = 0.32$, $P > .05$; Table 3).

The initial decline in intensity of outpatient treatment following EPSDT enforcement, found in the raw data (Table 1), was statistically significant ($\beta = -2.55$, $SE = 0.50$, $P > .01$) in preliminary analyses before covariates measuring changes in caseload were introduced. After the introduction of these covariates, however, the decline was no longer significant.

Prior to EPSDT enforcement, the number of outpatient visits per child was increasing over time ($\beta = 0.11$, $SE = 0.05$, $P < .05$), as seen in the full



TABLE 1—Annual Average Number of Outpatient Treatment Sessions Per Client and Percentage of Clients Using Emergency Services Before and After Enforcement of EPSDT in 1995: California, 1992–2001

	Before Enforcement			After Enforcement					
	1992–1993	1993–1994	1994–1995	1995–1996	1996–1997	1997–1998	1998–1999	1999–2000	2000–2001
No. of per-client outpatient sessions (SD)	7.26 (0.43)	6.72 (0.34)	7.00 (0.33)	6.09 (0.74)	7.36 (0.53)	8.33 (0.76)	10.29 (0.68)	10.92 (0.67)	11.91 (0.70)
Use of emergency services, % (SD)	NA ^a	10.20 (0.43)	10.18 (0.29)	7.88 (0.47)	8.30 (0.13)	7.97 (0.36)	7.99 (0.34)	7.99 (0.28)	7.86 (0.62)

Note. EPSDT = California Medicaid's Early Periodic Screening, Diagnosis and Treatment program. Indicators are averaged over 53 county mental health plans and 4 quarters per year.

^aData not available for this time frame because of procedural changes, which made the data found in the state Medi-Cal claims file incompatible with subsequent data.

TABLE 2—Descriptive Characteristics of California's 57 Counties, 1995 and 2000

Characteristic	1995	2000
Urban vs rural, %		
Urban	44	47
Rural	56	53
Political party, ^a %		
Democratic	32	33
Republican	68	67
Population, %		
<20 000	14	14
20 000–250 000	49	47
>250 000	37	39
Per capita income, %		
<\$20 000	56	16
\$20 000–\$25 000	21	40
>\$25 000	23	44
Hospital bed-days/1000 population, no.	148	106
Long-term-care bed-days/1000 population, no.	50	45

Note. Each percentage represents the proportion of California's 57 counties that have that particular characteristic. Numbers (in the last 2 items) are county averages.

^aDetermined by county vote for state assembly representatives.

TABLE 3—Regression Analysis of the Number of Outpatient Mental Health Treatment Sessions Per Client and Percentage of Clients Using Emergency Mental Health Services: 1992–2001

	Regression Model Dependent Variables	
	No. Outpatient Visits per Client (n = 1908)	% Clients Using Emergency Services (n = 1696)
Intercept	7.30	9.57
Independent variables, B (SE)		
Quarter (previous trend)	0.11* (0.05)	–0.01 (0.07)
EPSDT (initial change)	–0.48 (0.32)	–1.09** (0.45)
EPSDT × quarter (pre- to postenforcement trend shift)	0.17** (0.05)	–0.01 (0.07)
Covariates, B (SE)		
% caseload aged birth–5 y	–0.01 (0.02)	–0.20** (0.03)
% caseload in foster care	0.01 (0.01)	0.02 (0.02)
% caseload designated as disabled	0.06** (0.01)	0.04** (0.01)
% caseload female	–0.01 (0.01)	0.08** (0.01)
% caseload minority	0.07** (0.01)	0.02 (0.01)
R ²	.67	.21

Note. EPSDT = California Medicaid's Early Periodic Screening, Diagnosis and Treatment program.

* $P < .05$; ** $P < .01$.

regression model (Table 3). This increasing trend, however, was not apparent in the raw data (Table 1) nor in our preliminary analyses, which did not include covariates measuring changes in caseload. This trend significantly accelerated following EPSDT enforcement ($\beta = 0.17$, $SE = 0.05$, $P < .01$; Table 3).

Before EPSDT enforcement, the proportion of children using crisis care was declining at a very slight and statistically insignificant rate. In the first quarter following EPSDT enforcement, this proportion significantly decreased ($\beta = -1.09$, $SE = 0.45$, $P < .01$), but after this initial downturn it remained fairly constant over time.

DISCUSSION

In 1995, California vigorously enforced federal EPSDT requirements following a consumer-led lawsuit, thus greatly expanding EPSDT funding for public mental health services. Immediately following enforcement, rates of

emergency service use declined and then leveled off over time. In contrast, the number of outpatient visits per client did not immediately change following enforcement but did significantly increase over time. EPSDT's impact went beyond what would have been expected from concurrent



changes in the composition of caseloads.

In the first quarter after EPSDT enforcement, the intensity of outpatient treatment did not change from its preenforcement levels despite the lifting of limitations on the frequency and intensity of treatment. This lack of an initial response may have resulted from an increase in new clients who were identified through increased screening and who required treatment (L. Snowden and M. Masland, unpublished data, 2004). New clients identified for treatment competed with existing clients for a fixed number of treatment slots because treatment capacity had not yet expanded. As a result, the number of visits per client remained constant as new clients were being brought in for treatment. Perhaps, as reported by key informants, county mental health plans concentrated their initial efforts on expanding access to new groups of children, through collaborations with schools and other organizations serving children, thus enrolling new clients who required mental health treatment.¹⁰ After the initial expansion, however, county mental health plans appear to have increased the intensity of outpatient treatment.

During the initial transition period, county mental health plans generally appeared to have addressed 2 factors restricting their ability to increase the intensity of outpatient treatment. One step was to increase treatment capacity by finding new personnel and developing new services, thus allowing plans to serve more clients, and in novel ways. To support these

personnel and service increases, county mental health plans developed new strategic interagency collaborations and billing procedures that would maximize their receipt of federal EPSDT funds. There was an increased use of therapeutic behavioral services, for example, which provided in-home monitoring of children whose condition necessitated more oversight and supervision.

In the initial quarter after enforcement, the proportion of children having crisis care episodes significant declined. Some children taken to the psychiatric emergency room—an important component of the crisis treatment system—have life-threatening problems: physical threats and aggression, oppositional behavior and defiance reaching unmanageable proportions, and suicidal thoughts and attempts.¹¹ These emergencies can be prevented; accordingly, rates of emergency care use have been described as “a gauge of how well a mental health system manages behavioral disorders.”^{5(p351)} To judge from this single dimension of quality, EPSDT enforcement was initially successful.

After falling from 10% to 9% in the first quarter after enforcement, however, rates of emergency room visits did not continue to decline. Nor did this initial decline in use of emergency services coincide with a period of increased intensity of outpatient treatment. Instead, it coincided with a period of decline in intensity of outpatient treatment, and the portion of clients using emergency mental health services showed no continuing decline as intensity rose.

Conceivably, the initial improvement in use of emergency services is accounted for by the enrollment of new clients who had entered crisis care without previous contact with the mental health treatment system. In any event, it appears that the capacity to prevent emergency care, at least through measures encouraged by EPSDT enforcement, is limited and was reached early in the process of capacity expansion.

Important questions remain. A more comprehensive understanding of the issues affecting EPSDT enforcement and expansion are critical. EPSDT has several components and includes sequential steps. Eligible children are screened and referred for treatment when mental health problems are identified. They are then assessed within the specialty mental health system and treated for their mental health problems. Little is known about the flow of children through this process. We have not yet determined which eligible children are screened or how they are referred for screening. Nor have we documented procedures and outcomes from mental health screening or clarified who is subsequently referred and who follows through with treatment. Little is understood about treatment patterns and outcomes or about how mental health treatment systems respond. Nor do we know enough about how mental health treatment systems respond. No study, including the present one, has documented the personnel and programs created by county mental health plans with EPSDT funding or determined which plans are effective and how.

Nevertheless, when it was implemented on a large scale and over widely varying local conditions, EPSDT enforcement and expansion was associated with measurable changes in patterns of the use of mental health services. As expected, intensity of outpatient treatment increased over the long term and rates of emergency care declined, at least initially. To this extent, it appears that EPSDT enforcement achieved important objectives set by advocates and public mental health authorities. ■

About the Authors

Lonnie R. Snowden is with the School of Social Welfare and the Center for Mental Health Services Research, Institute of Personality and Social Research, University of California, Berkeley. Mary C. Masland is with the Center for Mental Health Services Research, Institute of Personality and Social Research, University of California, Berkeley. Neal T. Wallace is with the Division of Public Administration, Mark O. Hatfield School of Government, Portland State University, Portland, Ore. Allison Evans-Cuellar is with the Department of Health Policy and Management, Joseph P. Mailman School of Public Health, Columbia University, New York, NY.

Requests for reprints should be sent to Lonnie R. Snowden, PhD, School of Social Welfare, University of California, Berkeley, 200 Haviland MC 7400, Berkeley, CA 94720-7400 (e-mail: snowden@berkeley.edu).

This essay was accepted October 17, 2006.

Contributors

L. R. Snowden framed the policy issues and drafted the article with assistance from M. C. Masland and N. T. Wallace. M. C. Masland oversaw the study data collection and analysis and wrote the final project report for the foundation. N. T. Wallace provided expertise in econometric analysis through all phases of the project. All authors originated the project and interpreted results.



Acknowledgments

This study was funded by the California Health Care Foundation. Data was provided by the California Department of Mental Health.

We gratefully acknowledge Yifei Ma for SAS programming, Elizabeth Ciemens for assistance with data collection, and Stephen Mayberg, John Landsverk, John Hatakeyama, and Dane Cervine for assistance with conceptualizing the study and interpreting results.

References

1. US Dept of Health and Human Services. *Mental Health: A Report of the Surgeon General*. Rockville, Md: US Public Health Service; 1999.
2. Farmer E, Burns B, Chapman M. Use of mental health services by youth in contact with social services. *Soc Serv Rev*. 2001;75:605–624.
3. Fox H, McManus M, Almeida R, Lesser C. Medicaid managed care policies affecting children with disabilities: 1995–1996. *Health Care Financ Rev*. 1997;105:23–36.
4. Riportella-Muller R, Selby-Harrington M, Richardson L, Donat P, Luchok K, Quade D. Barriers to the use of preventive health care services for children. *Public Health Rep*. 1996;111:71–77.
5. Catalano R, McConnell W, Forster P, McFarland B, Thornton D. Psychiatric emergency services and the system of care. *Psychiatr Serv*. 2003;54:351–355.
6. Smith K. EPSDT and health care reform. *Pediatr Nurs*. 1994;20:66–67.
7. English A. Early and periodic screening, diagnosis, and treatment program (EPSDT): a model for improving adolescents' access to health care. *J Adolesc Health*. 1993;14:524–526.
8. Irwin P, Conroy-Hughes R. EPSDT impact on health status: estimates based on secondary analysis of administratively generated data. *Med Care*. 1982;20:216–234.
9. Cohen J, Cohen J, West S, Aiken L, eds. *Applied Regression/Correlation Analysis for the Behavioral Sciences*. Mahwah, NJ: Lawrence Erlbaum Associates; 2003.
10. California Dept of Mental Health. Utilization of the Medi-Cal EPSDT benefit: a report to the legislature in response to the Supplemental Report of the 2001 Budget Act. 2002. Available at: www.dmh.ca.gov/Reports/default.asp. Accessed January 22, 2007.
11. Sills M, Bland S. Summary statistics for pediatric psychiatric visits to US emergency departments, 1993–1999. *Pediatrics*. 2002;110(4):e40.