Factors Related to Medicaid Payment Acceptance at Outpatient Substance Abuse Treatment Programs

Yvonne M. Terry-McElrath, Jamie F. Chriqui, and Duane C. McBride

Objective. To examine factors associated with Medicaid acceptance for substance abuse (SA) services by outpatient SA treatment programs.

Data Sources. Secondary analysis of 2003–2006 National Survey of Substance Abuse Treatment Services data combined with state Medicaid policy and usage measures and other publicly available data.

Study Design. We used cross-sectional analyses, including state fixed effects, to assess relationships between SA treatment program Medicaid acceptance and (1) program-level factors, (2) county-level sociodemographics and treatment program density, and (3) state-level population characteristics, SA treatment-related factors, and Medicaid policy and usage.

Data Extraction Methods. State Medicaid policy data were compiled based on reviews of state Medicaid-related statutes/regulations and Medicaid plans. Other data were publicly available.

Principal Findings. Medicaid acceptance was significantly higher for programs: (a) that were publicly funded and in states with Medicaid policy allowing SA treatment coverage; (b) with accreditation/licensure and nonprofit/government ownership, as well as mental- and general-health focused programs; and (c) in counties with lower household income.

Conclusions. SA treatment program Medicaid acceptance related to program-, county-, and state-level factors. The data suggest the importance of state policy and licensure/accreditation requirements in increasing SA program Medicaid access.

Key Words. Medicaid, access/demand/utilization of services, state health policies, substance abuse, alcohol/chemical dependency/tobacco

This paper investigates factors related to outpatient substance abuse¹ (SA) treatment program facility acceptance of Medicaid reimbursement during 2003–2006 in the United States. Results can help identify ways to increase SA treatment access among the Medicaid-eligible population.

CONTEXT

Aday et al. (2004) summarized overall health care system goals as quality, cost containment, and access. They further called for health services research to evaluate access equity, noting that “equity is concerned with maximizing the fairness in the distribution of health care (procedural equity) and minimizing the disparities in health across groups (substantive equity)” (p. 189). Medicaid provides medical benefits access to individuals with incomes below specified thresholds as well as some who have no or inadequate medical insurance (Centers for Medicare and Medicaid Services 2005), and it is jointly financed by federal and state governments. While the federal government sets general Medicaid guidelines, specific requirements are defined on a state-by-state basis with significant differences in eligibility requirements, reimbursement rates, and covered services (Centers for Medicare and Medicaid Services 2005).

States currently face contracting budgets, and finding funding for the increasing demands on Medicaid is difficult at best (Medical News Today 2008; Sack and Zezima 2009). Private insurer payment for total SA treatment spending dropped from 30 to 10 percent from 1986 to 2003, while Medicaid payments grew from 10 to 18 percent at the same time (Mark et al. 2007). Estimates place continued and increased responsibility on state and local governments for SA treatment spending—private insurance may be funding only 7 percent of the total by 2014 (Levit et al. 2008).

SA treatment services are an optional benefit that states may choose to cover under “rehabilitative services” (Centers for Medicare and Medicaid Services 2005). Thus, treatment provisions covered under Medicaid differ between states. In a dramatic example of Medicaid’s contribution to SA treatment access, Deck and Gabriel (in press) examined Oregon SA and mental health (MH) outpatient treatment admissions from January 2000 through March 2003 (when the Oregon legislature eliminated SA, MH, and selected benefits from Medicaid-eligible coverage), through August 2004 (when benefits were reinstated but restricted to only individuals who had retained overall Medicaid coverage since March 2003), and through January 2005. Results showed that SA treatment admission rates declined 67 percent following

Address correspondence to Yvonne M. Terry-McElrath, M.S.A., Institute for Social Research, University of Michigan, PO Box 1248, Ann Arbor, MI 48106-1248; e-mail: yterry@umich.edu. Jamie F. Chriqui, Ph.D., M.H.S., is with the Institute for Health Research and Policy, University of Illinois at Chicago, Chicago, IL. Duane C. McBride, Ph.D., is with the Behavioral Sciences Department, Institute for Prevention of Addictions, Andrews University, Berrien Springs, MI.

benefit elimination. Given the freeze on new enrollees accompanying SA and MH benefit reinstatement, no strong increase in treatment admissions was observed following the August 2004 policy change. A similar study examining opioid treatment found that during the time that Oregon removed the Medicaid SA treatment benefit, opioid users presenting to publicly funded treatment were less than half as likely to be placed in an opioid treatment program than before the benefit cut (Deck, Wiitala, and Laws 2006).

Additional examples of Medicaid coverage impact on SA treatment access relate to pharmacological services. In a national treatment facility practice study, state policy limiting Medicaid SA treatment benefits reduced the likelihood of facilities offering naltrexone (used in treating alcohol dependence) (Heinrich and Hill 2008). Similarly, a national study examining Medicaid coverage of buprenorphine (used in the treatment of opioid dependence) found that in states with coverage, programs were more likely to offer the treatment to clients (Ducharme and Abraham 2008). While research indicates that Medicaid relates to SA treatment access, less evidence exists regarding treatment outcomes. A longitudinal study with over 200 Massachusetts adolescents seeking SA treatment showed no difference in treatment outcomes based on Medicaid managed care enrollment versus other publicly funded programs (Harrow et al. 2006). Research with 517 patients admitted to New York hospital inpatient detoxification showed that patients with Medicaid coverage were at higher risk for discharge against medical advice (Blondell et al. 2006). In California, 234 Medicaid recipients had lower odds of starting treatment and higher odds of treatment drop out than non-Medicaid patients (Walter et al. 2002). Thus, the literature does not indicate that Medicaid enrollment guarantees improved SA treatment outcomes. However, it does indicate that Medicaid increases SA treatment access and can result in outcomes on par with those covered by non-Medicaid benefit programs.

A significant concern regarding U.S. health care access is limited provider willingness to accept Medicaid patients (Aday et al. 2004). In 2001, more physicians refused new patients with Medicaid coverage (21 percent) than the uninsured (16 percent). In comparison, only 5 percent of physicians refused privately insured new patients (Cunningham 2002). By 2005, overall acceptance rates had not changed (Cunningham and May 2006). Low reimbursement rates and increased administrative burden often are cited by physicians as reasons for not accepting Medicaid patients (Perloff, Kletke, and Fossett 1995; Jacobs, Wilk, and Rubio-Stipec 2005; Shen and Zuckerman 2005; Wilk et al. 2005). However, other structural and environmental factors influence decisions regarding Medicaid acceptance.

Cunningham and Nichols (2005) summarized several studies examining physician willingness to accept Medicaid and found the following factors were significant: type of physician practice, physician race/ethnicity and specialty, and community characteristics (income, patient insurance status). Descriptive research with national physician samples has shown that overall Medicaid patient acceptance is shifting away from (a) solo/small group practices to medium/large group practices and institutions, (b) general internists and family practitioners to pediatricians and specialists, and (c) large metropolitan areas to smaller metropolitan and rural areas (Cunningham and May 2006). When comparing the effects of Medicaid fees versus the above factors, Cunningham and Nichols (2005) found that Medicaid fees had only indirect effects on patient access to care by influencing acceptance rates; in contrast, acceptance rates themselves had significant, direct effects on care access equity. Thus, practice structure and community characteristics may play key roles in access to care for Medicaid populations.

The literature discussed above has looked at the health care system in general. No available studies have examined factors related to SA treatment facility Medicaid acceptance. The current paper expands traditional research on health services access, cost, and quality issues (Aday et al. 2004) by examining U.S. outpatient SA treatment facility Medicaid acceptance for SA treatment services from 2003 to 2006. Program-, county-, and state-level factors that may relate to SA treatment program Medicaid acceptance are examined.

DATA AND METHODOLOGY

Data Sources

Outpatient SA treatment program data for 2003–2006 were obtained from the Substance Abuse and Mental Health Services Administration's (SAMHSA) National Survey of Substance Abuse Treatment Services (N-SSATS) (U.S. Department of Health and Human Services [USDHHS] 2007). N-SSATS is an annual survey of the location, characteristics, services, and number of clients enrolled in U.S. public and private SA treatment facilities as of March 31 of each year. N-SSATS' sampling universe includes all active treatment facilities in the Inventory of Substance Abuse Treatment Services and other facilities that are discovered during the first 3 weeks of the survey or added by state SA agencies. N-SSATS has a 95 percent response rate (USDHHS 2005) and has been shown to provide a satisfactory national sampling frame having accurately identified 70 percent of all SA facilities in a mid-size city (Carise et al. 2005).

Data from 53,296 treatment program cases were obtained from N-SSATS data from the 50 states for the years 2003–2006. Publicly available N-SSATS datasets do not include unique treatment program identifiers; it is not possible to identify specific treatment programs across time. Thus, we refer to “program cases” as opposed to “programs.” Program cases not reporting standard or intensive outpatient treatment services were excluded (11,889). Also excluded were hospital-based program cases, those not accepting adults, and tribal or federally operated program cases, resulting in a final sample size of 31,129. Outpatient facilities were selected for analysis because, as the 2007 full N-SSATS data show, the vast majority of U.S. treatment programs offer standard outpatient (74 percent) or intensive outpatient (44 percent) services as compared with residential (27 percent), day treatment (15 percent), detoxification (21 percent), methadone maintenance (11 percent), or hospital inpatient (7 percent) services (USDHHS 2009). Five percent of program cases included in the current analyses offered methadone maintenance; however, all offered some level of additional services (comprehensive assessment; individual, family, or group counseling, etc.). N-SSATS data were merged with state- and county-level policy and sociodemographic data using Federal Information Processing Standards codes (standardized numeric codes issued by the National Institute of Standards and Technology to enable uniform identification of geographic entities).

Variable Definition

Dependent Measure. A 0, 1 indicator of Medicaid payment acceptance was obtained from N-SSATS: “Which of the following types of payments are accepted by this facility for *substance abuse treatment*? Medicaid.”

Independent Measures. Independent measures included program-, county-, and state-level measures.

Program-Level Predictors. All program-level predictors originated from N-SSATS and included (a) primary focus (SA treatment/mixed SA and MH with neither being primary, MH services, general health care, other), (b) accreditation (programs could report multiple organizations), (c) program licensure/certification by state SA agency, (d) ownership type, (e) acceptance of public funding, (f) outpatient client counts, (g) payment assistance availability, (h) if services were provided in languages other than English, (i) total count of clients under age 18, and (j) if population-specific programming was offered for the following groups: adolescents, criminal justice clients,

dual-diagnosis clients, gays/lesbians, persons with HIV/AIDS, pregnant or postpartum women, and groups specifically designed for both adult men and adult women.

County-Level Predictors. The total number of N-SSATS SA treatment program cases included in the current analyses per county per year was calculated in order to examine whether SA treatment program density was related to Medicaid acceptance. Additional county-level predictors were obtained from the Health Resources and Services Administration Primary Care Service Areas, 2003 edition, and are based on the 2000 U.S. Census. Variables included continuous measures of the percent black in county population, percent Hispanic, median household income (in thousands), and total population per square mile (in thousands). Median household income was further dichotomized such that 1 = low income ($\leq$ U.S.\$31,066) and 0 = other ($>$ U.S.\$31,066) (specific quartile values calculated using the income distribution of only counties included in the analyses).

State-Level Predictors. State-level data included population characteristics, governmental composition, SA treatment indicators, and Medicaid policy and usage. Data on the percent of non-Hispanic white population was obtained from the U.S. Census (using 2006 estimates).² Distribution of total population under 100 percent of the federal poverty level for 2006–2007 was obtained from The Henry J. Kaiser Family Foundation's statehealthfacts.org based on the Census Bureau's March 2007 and 2008 Current Population Survey.

Per capita expenditures on SA treatment for each federal fiscal year of interest were calculated by first obtaining data on annual Substance Abuse Prevention and Treatment Block Grant allocations by state from the annual SAMHSA Congressional Budget Justifications (see, e.g., page 115 of the following: <http://www.samhsa.gov/Budget/FY2008/SAMHSA08CongrJust.pdf>). Allocations were then divided by annual population estimates of the total state population obtained from the U.S. Census. The treatment gap measure (the discrepancy between needed and obtained treatment for illicit drug use in the past year) was obtained using annualized 2-year state estimate data from the National Survey on Drug Use and Health (NSDUH) (e.g., see <http://www.oas.samhsa.gov/2k4/State/AppB.htm#TabB.21>). NSDUH estimates annualizing 2003 and 2004 were assigned to N-SSATS data for those respective years. NSDUH estimates annualizing 2005 and 2006 were assigned to N-SSATS data for those respective years.

Analyses also included state-level variables focused on Medicaid policy and usage. A dichotomous 0, 1 measure indicating if state Medicaid benefits

covered outpatient SA treatment was obtained through primary legal research examining state Medicaid-related statutes/regulations and Medicaid plans for each state in effect as of January 1, 2006. State policy requirements generally are mandated for programs receiving state authorization, and this includes all programs receiving state funding (Chriqui et al. 2008). Thus, an interaction term was created to capture the likely importance of program cases reporting receiving public funding which were also located in states where Medicaid benefits covered outpatient SA treatment. The statutory and regulatory provisions were obtained through primary legal research conducted by staff at The MayaTech Corporation using searches of the relevant Westlaw state policy databases (detailed information on the policy data collection process can be found in Chriqui et al. 2007, 2008). State Medicaid plans were obtained in electronic file format directly from the Centers for Medicare and Medicaid Services under special use agreement to the study team. Two additional state-level Medicaid-related measures were obtained from The Henry J. Kaiser Family Foundation's statehealthfacts.org: 2006–2007 percent of state Medicaid insurance coverage for nonelderly adults (aged 18–64), and SFY2006 percent of general fund spending on Medicaid.

Analytical Methods

After removing program cases with missing data on program-, county-, or state-level variables (other than special population programs), a total of 27,381 treatment program cases remained for analysis. These program cases were located in 2,110 counties and all 50 states, with an average of 548 program cases per state (range 86–3,379). As noted previously, publicly available N-SSATS datasets do not include a unique program identifier, and thus it is not possible to track individual facilities across time. Pooled cross-sectional analyses are thus complicated by the inability to control for the likelihood of having multiple observations for the same facility across time. The number of program cases per year ranged from 6,502 to 7,339, thus allowing overall analyses to be completed within a single year of data and then repeated by year to test for stability of results over time.

Analyses were conducted using *svy* commands in *Stata* v.10.1, specifying state as strata and county as the primary sampling unit to account for the lack of independence between program cases within the same county and state. The *svy: mean* command was used to obtain descriptive statistics, and the *svy: logistic* command was used for all multivariate models. Four multi-

variate models (one for each of the 4 years) focused on predicting the odds of treatment program case acceptance of Medicaid for SA treatment while simultaneously controlling for all program-, county-, and state-level predictors other than special population programs. Additional models investigating the relationship between special population programming and Medicaid acceptance were run for each special population program separately by year (also simultaneously controlling for all other program-, county-, and state-level predictors; nine special population programs each run separately for the 4 years = 32 models). In order to control for unmeasured state-level factors, state fixed effects were also included in all models.

RESULTS

Table 1 provides descriptive information on all variables for all years combined. Just over half (55 percent) of all program cases reported accepting Medicaid for SA treatment services. Seventy-eight percent of program cases were located in states where Medicaid policy specifically allowed for SA treatment benefits. The average share of state Medicaid coverage devoted to nonelderly adults was 41 percent based on included program cases, while the average share of state general fund spending on Medicaid was 17 percent (averages based on total program cases in the analytical sample).

Table 2 presents odds ratios predicting Medicaid acceptance for SA treatment from yearly multivariate models. For 2003 only, Table 2 also shows differences in the percent of program cases with Medicaid acceptance based on predictor status for dichotomous controls, and differences in means of continuous controls based on treatment program Medicaid acceptance. Percentage data should be read as follows: 53 percent of program cases without Commission on Accreditation and Rehabilitation Facilities (CARF) accreditation reported accepting Medicaid for SA treatment compared with 74 percent of program cases with CARF accreditation. Mean data should be read as follows: Program cases without SA treatment Medicaid acceptance were located in counties where the percentage of the population reporting Hispanic ethnicity averaged 15 percent compared with 10 percent for program cases with Medicaid acceptance.

Regarding program-level relationships that remain stable across years analyzed, all accreditation types were associated with increased odds of Medicaid acceptance, as was state SA agency licensure/certification. Compared with for-profit ownership, Medicaid payment acceptance was higher for both

Table 1: Sample Descriptives

	<i>%/Mean</i>	<i>SE</i>	<i>Range</i>
Outcome			
Medicaid acceptance	0.553	0.0137	0, 1
Program-level predictors			
Accreditation, ownership, and public funding			
Program accreditation			
CARF	0.162	0.0060	0, 1
COA	0.054	0.0038	0, 1
JCAHO	0.123	0.0054	0, 1
Licensed/certified by state substance abuse agency	0.867	0.0055	0, 1
Ownership			
Private for-profit	0.336	0.0097	0, 1
Government	0.108	0.0053	0, 1
Private not-for-profit	0.556	0.0114	0, 1
Receive public funds	0.642	0.0080	0, 1
Client-related factors			
Outpatient client count quartiles			
0–15	0.254	0.0052	0, 1
16–40	0.245	0.0044	0, 1
41–90	0.244	0.0042	0, 1
91+	0.258	0.0058	0, 1
Payment assistance	0.815	0.0061	0, 1
Provision of services in language other than English	0.473	0.0107	0, 1
Total clients under age 18			
0	0.529	0.0093	0, 1
1–10	0.253	0.0074	0, 1
11–666	0.218	0.0045	0, 1
Facility primary focus			
Substance abuse treatment services or a mix of mental health and substance abuse services (neither is primary)	0.616	0.0091	0, 1
Mental health services	0.082	0.0038	0, 1
General health care	0.287	0.0069	0, 1
Other	0.016	0.0011	0, 1
Special population programming			
Adolescents (<i>N</i> = 16,338)	0.634	0.0080	0, 1
Criminal justice clients (<i>N</i> = 25,108)	0.372	0.0074	0, 1
Dually diagnosed (<i>N</i> = 24,593)	0.398	0.0060	0, 1
Gay/lesbians (<i>N</i> = 26,216)	0.061	0.0032	0, 1
Persons with HIV/AIDS (<i>N</i> = 25,707)	0.103	0.0061	0, 1
Pregnant/postpartum women (<i>N</i> = 23,843)	0.172	0.0058	0, 1
Seniors (<i>N</i> = 24,385)	0.077	0.0032	0, 1
Other groups for women (<i>N</i> = 24,854)	0.381	0.0060	0, 1
Other groups for men (<i>N</i> = 24,365)	0.272	0.0062	0, 1
County-level predictors			
Median household income (in U.S.\$1,000s)	43.016	0.4998	16.27–82.93

continued

Table 1. *Continued*

	%/Mean	SE	Range
Median household income, first quartile (≤ U.S.\$31,066)	0.107	0.0118	0, 1
Percent population African American	10.909	0.7180	0.00–78.97
Percent population Hispanic	11.859	1.2366	0.29–97.54
Population density per square mile (in 1,000s)	2.136	0.6312	0.00–66.94
Total substance abuse treatment programs (in 10s)*	2.871	0.8366	0.10–29.00
State-level predictors			
Population characteristics			
Percent population white	68.878	0.9629	23.71–96.20
Percent state population below federal poverty level	16.497	0.1215	8.50–27.40
Substance abuse treatment indicators			
Per capita state expenditure on substance abuse treatment	3.985	0.0369	2.97–6.27
Treatment gap	2.704	0.0116	2.04–3.48
Medicaid policy and usage			
Medicaid covers outpatient substance abuse treatment	0.780	0.0155	0, 1
Medicaid coverage of nonelderly adults	40.759	0.2797	22.30–59.50
Percent of general fund spending on Medicaid	17.450	0.2609	3.90–40.20
Year			
2003	0.245	0.0019	0, 1
2004	0.238	0.0015	0, 1
2005	0.268	0.0015	0, 1
2006	0.249	0.0018	0, 1

Notes. *N* for all variables other than special population programs = 27,381. *N*s for special population programs reported separately.

*Number of treatment programs reported in N-SSATS data included in the current analysis sample.

CARF, Commission on Accreditation and Rehabilitation Facilities; COA, Council on Accreditation for Children and Family Services; JCAHO, Joint Commission on Accreditation of Healthcare Organizations.

government and private, not-for-profit ownership. Large programs (>90 clients), those offering payment assistance and non-English language services, and those with clients under age 18 all had increased odds of Medicaid payment acceptance for SA treatment. Primary focus was also strongly related to Medicaid acceptance, with MH- and general health-focused program cases much more likely to report accepting Medicaid for SA treatment than either SA treatment- or combined SA/MH treatment-focused program cases.

Turning to county- and state-level predictors, the odds of Medicaid acceptance increased if a program case was located in a county with low median household income (below U.S.\$31,066).

Table 2: Results from Multivariate Models Predicting Outpatient Substance Abuse Treatment (OP SA Tx) Program Medicaid Acceptance, 2003–2006

	2003 Only % Program Cases or Mean ^a			2003 Only			2004 Only			2005 Only			2006 Only			
	Without	With		OR	p	95% CI	OR	p	95% CI	OR	p	95% CI	OR	p	95% CI	
Program-level predictors																
Program accreditation (%)																
CARF	52.5	73.8	2.89	.000	.000	2.26–3.69	3.00	.000	.000	2.42–3.73	2.38	.000	1.93–2.93	2.91	.000	2.34–3.62
COA	54.1	78.4	1.57	.005	.000	1.15–2.14	2.33	.003	.000	1.32–4.09	2.02	.000	1.38–2.94	1.60	.042	1.02–2.53
JCAHO	53.0	73.4	2.52	.000	.000	1.98–3.21	2.81	.000	.000	2.20–3.58	2.42	.000	1.91–3.06	2.61	.000	2.02–3.37
Licensed/certified by state SA agency (%)	47.3	56.7	1.63	.000	.000	1.28–2.08	1.47	.001	.001	1.17–1.84	1.24	.034	1.02–1.51	1.51	.000	1.22–1.87
Ownership (%)																
Private for-profit	67.6	30.6	(ref)				(ref)					(ref)			(ref)	
Government	53.7	70.9	2.85	.000	.000	2.07–3.93	2.94	.000	.000	2.16–4.00	2.90	.000	2.14–3.92	2.87	.000	2.13–3.86
Private not-for-profit	40.7	66.9	2.44	.000	.000	2.00–2.98	2.29	.000	.000	1.86–2.82	2.27	.000	1.88–2.73	2.29	.000	1.91–2.75
Receive public funds	33.9	66.9	1.15	.439	.000	0.81–1.64	1.37	.068	.000	0.98–1.93	1.44	.025	1.05–1.98	1.26	.153	0.92–1.73
Outpatient client count quartiles (%)																
0–15	58.2	47.6	(ref)				(ref)					(ref)			(ref)	
16–40	57.2	50.6	0.96	.608	.000	0.80–1.14	0.89	.212	.000	0.73–1.07	0.90	.331	0.73–1.11	1.00	.987	0.83–1.20
41–90	54.9	57.4	1.01	.895	.000	0.83–1.24	1.09	.451	.000	0.88–1.35	1.18	.069	0.99–1.42	0.96	.659	0.78–1.17
91 +	51.8	66.0	1.26	.022	.000	1.03–1.53	1.50	.000	.000	1.21–1.87	1.34	.005	1.09–1.64	1.36	.004	1.10–1.68
Payment assistance (%)	28.6	61.2	1.72	.000	.000	1.41–2.09	1.84	.000	.000	1.48–2.27	1.82	.000	1.49–2.21	2.20	.000	1.79–2.70
Non-English language services (%)	50.9	61.2	1.57	.000	.000	1.36–1.82	1.48	.000	.000	1.29–1.71	1.49	.000	1.31–1.69	1.63	.000	1.41–1.89
Total clients less than age 18 (%)																
0	66.1	46.2	(ref)				(ref)					(ref)			(ref)	
1–10	53.8	61.1	1.61	.000	.000	1.33–1.95	1.39	.000	.000	1.17–1.64	1.32	.000	1.14–1.53	1.43	.000	1.21–1.70
10–666	50.8	71.6	1.91	.000	.000	1.58–2.31	1.99	.000	.000	1.65–2.42	2.10	.000	1.73–2.55	2.23	.000	1.85–2.69
Facility primary focus (%)																
SA treatment/mixed mental health and SA	65.8	49.0	(ref)				(ref)					(ref)			(ref)	
Mental health services	53.4	77.4	5.32	.000	.000	4.04–7.01	4.69	.000	.000	3.40–6.46	4.33	.000	3.25–5.77	4.95	.000	3.56–6.89

General health care	52.0	64.7	2.24	.000	1.89-2.65	2.32	.000	1.95-2.76	2.14	.000	1.80-2.55	2.66	.000	2.24-3.17
Other	56.1	28.7	0.41	.000	0.26-0.66	1.12	.654	0.69-1.81	0.39	.001	0.22-0.69	0.50	.016	0.28-0.88
County-level predictors														
Median household income	54.1	66.8	1.42	.006	1.11-1.81	1.52	.000	1.21-1.93	1.61	.000	1.29-2.01	1.28	.021	1.04-1.58
($\leq$ U.S.\$31,066) (%)														
% African American (mean)	10.7	11.4	1.00	.505	0.99-1.01	0.99	.138	0.98-1.00	1.00	.570	0.99-1.01	1.00	.747	0.99-1.01
% Hispanic (mean)	14.5	9.8	1.01	.259	1.00-1.02	1.00	.819	0.99-1.01	1.00	.941	0.99-1.01	1.00	.944	0.99-1.01
Population density (mean)	1.6	2.8	1.00	.744	0.99-1.02	1.00	.830	0.99-1.02	1.00	.735	0.99-1.02	1.02	.059	1.00-1.04
Total SA Tx programs (in 10s) ^{\$} (mean)	3.8	2.4	0.97	.001	0.96-0.99	0.99	.305	0.97-1.01	0.99	.230	0.97-1.01	0.97	.000	0.96-0.99
State-level predictors														
% White (mean)	66.1	72.2	1.07	.000	1.05-1.09	1.05	.001	1.02-1.08	1.09	.000	1.06-1.12	1.09	.000	1.07-1.11
% Population < federal poverty level	16.7	16.5	1.12	.002	1.04-1.21	1.15	.005	1.04-1.26	1.15	.002	1.06-1.26	1.14	.000	1.07-1.22
(mean)														
Per capita U.S.\$ on SA Tx (mean)	4.1	4.0	0.71	.016	0.54-0.94	0.87	.503	0.59-1.30	0.61	.022	0.40-0.93	0.76	.119	0.53-1.07
Treatment gap (mean)	2.8	2.7	2.45	.050	1.00-5.98	5.92	.007	1.62-21.67	1.35	.415	0.65-2.80	1.49	.223	0.79-2.81
Medicaid covers OP SA Tx (%)	50.3	57.0	1.88	.069	0.95-3.73	1.51	.217	0.78-2.91	2.40	.064	0.95-6.05	2.40	.033	1.07-5.37
Medicaid coverage of nonelderly adults	39.6	41.9	1.07	.007	1.02-1.12	1.01	.832	0.95-1.07	1.06	.078	0.99-1.12	1.11	.005	1.03-1.20
(mean)														
% General fund U.S.\$ on Medicaid (mean)	16.4	18.6	0.99	.565	0.96-1.02	1.04	.007	1.01-1.08	0.97	.229	0.92-1.02	0.98	.278	0.95-1.01
State-program interactions														
Medicaid OP SA Tx coverage and public	41.7	68.9	2.26	.000	1.47-3.45	1.66	.021	1.08-2.55	1.90	.002	1.27-2.84	1.94	.002	1.29-2.93
funding (%)														

Notes. Reported OR from models simultaneously controlling for all covariates noted above as well as state fixed effects using individual state dummies.

^aIf percent: percent of program cases with Medicaid acceptance with and without predictor. If mean: mean of predictor with and without program Medicaid acceptance.

^{\$}Number of treatment programs reported in N-SSATS data included in the current analysis sample.

CARF, Commission on Accreditation of Rehabilitation Facilities; COA, Council on Accreditation for Children and Family Services; JCAHO, Joint Commission on Accreditation of Healthcare Organizations; OR, odds ratios.

Medicaid acceptance also was significantly and positively associated with the percentage of the state population reporting white race and the percent of the state population below the federal poverty level. The remainder of county- and state-level predictors showed no or inconsistent relationships with Medicaid acceptance.

The interaction of state Medicaid policy and program case acceptance of public funds was strongly and consistently related to Medicaid acceptance. Program cases accepting federal, state, county, or local government funding that were located in states with Medicaid coverage of SA treatment had higher odds of accepting Medicaid for such services. To further examine this interaction, a pattern variable was created identifying program cases as (1) neither publicly funded nor in a Medicaid SA treatment coverage state (7 percent of all program cases; 28 percent of which reported accepting Medicaid for SA treatment); (2) publicly funded, but not in a Medicaid SA treatment state (15 percent of all program cases; 61 percent of which reported accepting Medicaid), (3) not publicly funded but in a Medicaid SA treatment state (29 percent of program cases; 35 percent of which accepted Medicaid), or (4) both publicly funded and in a Medicaid SA treatment state (49 percent of program cases; 69 percent of which accepted Medicaid). One multivariate logistic regression model was run to examine the odds of Medicaid acceptance based on the pattern variable categories (due to the small percentage of program cases that neither accepted public funds nor were located in a Medicaid SA treatment coverage state, all years were combined in this model and year dummies were included to control for time). Results showed that program cases that both accepted public funds and also were located in a Medicaid SA treatment state had significantly higher odds of Medicaid acceptance than all other categories.

Table 3 presents odds ratios from multivariate models predicting Medicaid acceptance where special population programming was the main predictor of interest. Separate models were run for each type of special population (controlling for all other variables previously discussed). Results showed that the odds of Medicaid acceptance increased across all years with offering special programming for dual-diagnosis clients and pregnant/postpartum women.

DISCUSSION

We examined factors related to Medicaid payment acceptance for U.S. outpatient SA treatment program cases from 2003 to 2006. Program-, county-,

Table 3: Results from Models Predicting Outpatient Substance Abuse Treatment Program Medicaid Acceptance by Special Population Program Availability, 2003–2006

	2003 Only % of Program Cases ^a			2003 Only			2004 Only			2005 Only			2006 Only		
	Without	With	OR	p	95% CI	OR	p	95% CI	OR	p	95% CI	OR	p	95% CI	
Adolescents	57.2	65.3	1.32	.008	1.07–1.61	1.18	.140	0.95–1.46	1.07	.492	0.88–1.32	1.00	.999	0.81–1.24	
Criminal justice clients	58.8	53.8	0.92	.280	0.79–1.07	0.74	.000	0.63–0.86	0.72	.000	0.63–0.82	0.82	.016	0.70–0.96	
Dually diagnosed	54.1	67.0	1.45	.000	1.24–1.69	1.33	.000	1.15–1.53	1.31	.000	1.14–1.50	1.33	.000	1.14–1.57	
Gays/lesbians	56.5	51.2	1.01	.967	0.75–1.34	0.70	.008	0.54–0.91	1.02	.873	0.79–1.31	0.74	.025	0.57–0.96	
Persons with HIV/AIDS	56.1	62.6	1.36	.010	1.08–1.72	1.07	.646	0.79–1.46	1.13	.271	0.91–1.40	0.98	.855	0.80–1.21	
Pregnant/postpartum women	55.4	66.0	1.63	.000	1.30–2.04	1.75	.000	1.36–2.25	1.59	.000	1.32–1.91	1.68	.000	1.39–2.03	
Seniors	54.9	59.2	1.15	.296	0.88–1.51	0.93	.591	0.73–1.20	0.98	.892	0.76–1.26	0.84	.193	0.64–1.09	
Adult women	51.5	63.1	1.38	.000	1.18–1.62	1.09	.273	0.93–1.28	1.22	.005	1.06–1.41	1.16	.113	0.96–1.41	
Adult men	53.8	58.4	1.18	.043	1.01–1.39	0.84	.041	0.71–0.99	0.84	.020	0.72–0.97	0.81	.029	0.67–0.98	

Notes. Models run separately for each special program population listed by year. Reported OR from models simultaneously controlling for all program-, county-, and state-level covariates as well as state fixed effects using individual state dummies. Model N's ranged as follows: adolescents 3,863–4,408; criminal justice clients 5,966–6,740; dually diagnosed 5,790–6,655; gays/lesbians 6,151–7,085; persons with HIV/AIDS 6,104–6,952; pregnant/postpartum women 5,607–6,411; seniors 5,794–6,584; other women 5,760–6,649; other men 5,664–6,501.

^aPercent of program cases accepting Medicaid for substance abuse treatment with and without predictor.

OR, odds ratios.

and state-level factors all significantly related to Medicaid payment acceptance for SA treatment services. Medicaid plays a key role in health care access for individuals seeking SA treatment; increased understanding of the factors related to program-level Medicaid acceptance may prove important in understanding and planning for how demand for such services may be met in the future.

A key finding was that just under half of all outpatient treatment program cases in the sample (12,234, or 45 percent) did not accept Medicaid for SA treatment. Seventy-five percent of such program cases were located in states where Medicaid policy *did* allow for outpatient SA treatment services and yet these program cases chose not to accept Medicaid. To the extent that Medicaid plays a significant role in equity of health care access (Aday et al. 2004), it is somewhat telling that individuals seeking outpatient SA treatment under Medicaid would either be turned away at one out of two treatment programs, or the facility would admit them but would then have to attempt to access other funding to reimburse treatment costs (in publicly funded programs, “other funding” would likely mean additional grant or contract funding). Such actions likely result in reduced potential treatment capacity and may affect access equity. Of the 9,233 program cases that reported not accepting Medicaid but that were located in states with Medicaid policy coverage of outpatient SA treatment services, 45 percent reported receiving public funds. Such apparent refusal to access available Medicaid reimbursement would appear to be poor policy. If a large percentage of these providers are not eligible to bill Medicaid for some reason, it may be important to evaluate whether they should receive public funding for addiction treatment services.

Given the recent passage of the Patient Protection and Affordable Care Act of 2010 (111 HR 3590; PL 111–148), the lack of Medicaid acceptance for SA treatment services among program cases located in states with policy allowing such coverage is of particular concern. Estimates have stated that by 2019, the Act will expand Medicaid coverage by up to 15.9 million new enrollees (Holahan and Headen 2010). Thus, SA treatment services for many of those currently uninsured may be reimbursed through Medicaid in the future. Further, the 2010 National Drug Control Strategy specifically calls for increased SA screening and early intervention in all health care settings, as well as expanding high-quality addiction treatment into general health care settings and increased use of mandated treatment for SA-using criminal offenders (Office of National Drug Control Policy 2010). SA treatment programs that do not accept Medicaid where state policy permits may simply not survive, and the treatment field cannot afford the resulting potential reduction in capacity at a time when demand will likely increase strongly.

Also important was the percentage of program cases that reported accepting Medicaid for SA treatment services but were not located in states with policy that allowed such coverage. Seventy-eight percent of all program cases were located in states where Medicaid policy specifically allowed for SA treatment services. However, of the remaining 6,034 program cases that were not located in such states, 50 percent (3,033) reported accepting Medicaid for SA treatment. This can be partially explained by recognizing that while all program cases were required to provide outpatient or intensive outpatient SA treatment services, some offered additional residential services. However, this was the case for only 27 percent of the 3,033 program cases that reported accepting Medicaid for SA treatment services in nonpolicy supporting states. The remainder (2,211 or 8 percent of the total sample) that did not offer any such services were primarily SA treatment focused (80 percent), not-for-profit (72 percent), reported receiving public funds (82 percent), and were spread out across 19 states. Whether these program cases represent billing for a service such as MH treatment, reporting error or inappropriate Medicaid use is unknown.

Program-level factors were strongly associated with Medicaid acceptance. Accreditation and licensure/certification by state SA agency were consistently associated with increased odds of Medicaid acceptance. This suggests that programs accepting Medicaid for SA treatment services may have more of a quality orientation by virtue of the fact that they have taken the extra step of obtaining national accreditation or licensure/certification—an entirely voluntary step found to relate to higher odds of offering wrap-around and continuing care services, all associated with improved long-term SA treatment outcomes (Chriqui et al. 2007). The increased likelihood of Medicaid acceptance at programs with large client counts is in line with previously discussed studies (Cunningham and May 2006), and increased Medicaid acceptance at government and not-for-profit program cases (versus for-profit) is in line with findings related to decreasing private funding of SA treatment (Levit et al. 2008) and other ongoing research (McBride et al. 2008). Decreased Medicaid acceptance at private, for-profit programs may also help explain research finding decreased initial SA treatment access and shorter stays in treatment for clients unable to pay (Friedmann et al. 2003; Nahra, Alexander, and Pollack 2009). Importantly, program cases that reported a primary focus of mental or general health were significantly and consistently more likely to accept Medicaid for SA treatment services than program cases focused on SA treatment. It is probable that non-SA treatment focused programs are more likely to accept Medicaid due to Medicaid's emphasis on providing health care for low-

income and needy individuals. However, even when looking only at states allowing Medicaid to be used for SA treatment, only 52 percent of programs with a primary focus of either SA or combined SA/MH reported accepting Medicaid for SA treatment services compared with 74 percent for MH-focused and 65 percent for general health-focused programs. Clearly, more could be done to increase Medicaid acceptance for SA treatment in programs where such services are the main focus.

While proximal program factors had stronger relationships with Medicaid acceptance for SA treatment services than did more distal county- and state-level population characteristics, some key findings emerged. Program cases in counties with lower median household income showed higher odds of Medicaid acceptance, indicating that Medicaid indeed may be key in improving the equity of needed SA treatment access for those with few financial resources. State-level factors consistently and significantly related to Medicaid acceptance focused on poverty and the interaction between Medicaid policy and program acceptance of public funds. While mean state-level poverty levels did not differ numerically between program cases with and without Medicaid acceptance, controlling for program ownership allowed the direct effect of state poverty levels to significantly relate to increased Medicaid acceptance. SA treatment programs may be more likely to rely on Medicaid in states where poverty is especially high once program ownership is accounted for. Results also indicated that where state policy allows Medicaid to cover outpatient SA treatment, publicly funded facilities are more likely to accept such payments. Thus, one method of expanding service provision might be to encourage all states to allow Medicaid outpatient SA treatment payments in policy language. However, state efforts to cut overall costs may negatively affect the likelihood of such policy efforts. In addition, because of current and anticipated state reduction of Medicaid cost reimbursements, SA treatment programs may be less willing to accept Medicaid clients. It may be important for future research to examine what factors relate to state decisions to allow SA treatment coverage at the state level for Medicaid policy if equity of access is to be increased or maintained.

Outpatient SA treatment program cases offering programming for groups traditionally supported through Medicaid (dual-diagnosis clients and pregnant/postpartum women) did show higher odds of accepting Medicaid for SA treatment. In contrast, Medicaid acceptance was less likely for SA treatment program cases offering special programming for criminal justice clients from 2004 to 2006. Most states (90 percent) withdraw Medicaid enrollment when an individual is incarcerated (Wakeman, McKinney, and Rich

2009). However, for nonincarcerated individuals with justice system contact such as drug court clients, Medicaid remains the primary resource for health care payment (Nolan 2002).

These findings should be viewed within their limitations. N-SSATS data are cross-sectional and cannot investigate causality. Further, since N-SSATS publicly available data do not include unique facility identifiers, individual client data (such as that from the public use Treatment Episode Data Set) cannot be matched with N-SSATS data to investigate whether Medicaid acceptance for SA treatment services relates to improved treatment outcomes. Finally, the present analyses have not exhaustively investigated all possible factors that might relate to treatment program decisions related to Medicaid acceptance for SA treatment services. However, the use of state fixed effects will have controlled for unobserved state-level factors.

CONCLUSION

The burden on the Medicaid system of providing SA treatment is significant. A study of Medicaid expenditures in six states showed that individuals with an SA diagnosis had significantly higher expenditures for physical health problems, and medical costs increased with age (Clark, Samnaliev, and McGovern 2009). However, providing SA treatment can relate to significantly reduced overall medical costs (McLellan et al. 2000; Fleming et al. 2002), which could, in turn, reduce the burden on state Medicaid budgets. The current analyses indicate that program-, county-, and state-level factors all relate to the likelihood of outpatient SA treatment programs accepting Medicaid for SA treatment. With the expected increase in Medicaid coverage resulting from the passage of the Patient Protection and Affordability Care Act and 2010 National Drug Control Strategy's call for increased SA treatment services provision across health care settings, it is crucial for the treatment field to move toward expanding Medicaid acceptance for SA treatment services. Efforts to increase Medicaid acceptance among outpatient SA treatment facilities—and thus ultimately improve equity of access for clients most in need of SA services—may be strengthened by (a) addressing state policy allowing coverage for SA treatment services under Medicaid, (b) increasing accreditation and licensure/certification requirements, and (c) focusing on reducing the barriers smaller programs face to accepting Medicaid.

ACKNOWLEDGMENTS

Joint Acknowledgment/Disclosure Statement: We would like to acknowledge the contributions of Mesfin Mulatu and Shelby Smith Edison, both of whom contributed significantly to data acquisition. Support for this project was provided by the Robert Wood Johnson Foundation Substance Abuse Policy Research Program Grant No. 59271.

Disclosures: None.

Disclaimers: None.

NOTES

1. Substance abuse refers here primarily to drug and alcohol abuse (not tobacco).
2. State-level examination of race/ethnicity focused on differences between any minority versus majority white. The more proximal county-level measures focused on differences related to specific minority groups.

REFERENCES

- Aday, L. A., C. E. Begley, D. R. Lairson, and R. Balkrishnan. 2004. *Evaluating the Healthcare System: Effectiveness, Efficiency, and Equity*. 3rd Edition. Chicago, IL: Health Administration Press.
- Blondell, R. D., A. Amadasu, T. J. Servoss, and S. J. Smith. 2006. "Differences among Those Who Complete and Fail to Complete Inpatient Detoxification." *Journal of Addictive Diseases* 25 (1): 95–104.
- Carise, D., A. T. McLellan, D. S. Festinger, and H. D. Kleber. 2005. "Identifying United States Substance Abuse Treatment Programs: A Test in One Mid-Sized City." *Substance Abuse* 25: 21–8.
- Centers for Medicare and Medicaid Services. 2005. *Medicaid At-a-Glance, 2005*. Baltimore, MD: Department of Health and Human Services, Centers for Medicare and Medicaid Services, Center for Medicaid and State Operations [accessed on January 16, 2010]. Available at <http://www.cms.hhs.gov/MedicaidGenInfo/Downloads/MedicaidAtAGlance2005.pdf>
- Chriqui, J. F., Y. M. Terry-McElrath, D. C. McBride, and S. S. Edison. 2008. "State Policies Matter: The Case of Outpatient Drug Treatment Program Practices." *Journal of Substance Abuse Treatment* 35: 13–21.
- Chriqui, J. F., Y. M. Terry-McElrath, D. C. McBride, S. S. Edison, and C. J. VanderWaal. 2007. "Does State Certification or Licensure Influence Outpatient Substance Abuse Treatment Programs?" *Journal of Behavioral Health Services and Research* 34 (3): 309–28.

- Clark, R. E., M. Samnaliev, and M. P. McGovern. 2009. "Impact of Substance Disorders on Medical Expenditures for Medicaid Beneficiaries with Behavioral Health Disorders." *Psychiatric Services* 60 (1): 35–42.
- Cunningham, P. J. 2002. *Mounting Pressures: Physicians Serving Medicaid Patients and the Uninsured, 1997–2001. Tracking Report No. 6*. Washington, DC: Center for Studying Health System Change.
- Cunningham, P. J., and J. May. 2006. *Medicaid Patients Increasingly Concentrated among Physicians. Tracking Report No. 16*. Washington, DC: Center for Studying Health System Change.
- Cunningham, P. J., and L. M. Nichols. 2005. "Effects of Medicaid Reimbursement on the Access to Care of Medicaid Enrollees: A Community Perspective." *Medical Care Research and Review* 62 (6): 676–96.
- Deck, D. D., and R. M. Gabriel. In press. "Impact of Eliminating Medicaid Treatment Benefits." In *Medicaid and Treatment for People with Substance Abuse Problems*, edited by B. H. McFarland, D. McCarty, and A. E. Kovas. Hauppauge, NY: Nova Science Publishers.
- Deck, D. D., W. L. Wiitala, and K. E. Laws. 2006. "Medicaid Coverage and Access to Publicly Funded Opiate Treatment." *Journal of Behavioral Health Services and Research* 33 (3): 324–34.
- Ducharme, L. J., and A. J. Abraham. 2008. "State Policy Influence on the Early Diffusion of Buprenorphine in Community Treatment Programs." *Substance Abuse Treatment, Prevention, and Policy* 3 (17): 1–10.
- Fleming, M. F., M. P. Mundt, M. T. French, L. B. Manwell, E. A. Stauffacher, and K. L. Barry. 2002. "Brief Physician Advice for Problem Drinkers: Long-Term Efficacy and Benefit-Cost Analysis." *Alcoholism: Clinical and Experimental Research* 26 (1): 36–43.
- Friedmann, P. D., S. C. Lemon, M. D. Stein, and T. A. D'Aunno. 2003. "Accessibility of Addiction Treatment: Results from a National Survey of Outpatient Substance Abuse Treatment Organizations." *Health Services Research* 38 (3): 887–903.
- Harrow, B. S., C. P. Tompkins, P. D. Mitchell, K. W. Smith, S. Soldz, L. Kasten, and K. Fleming. 2006. "The Impact of Publicly Funded Managed Care on Adolescent Substance Abuse Treatment Outcomes." *American Journal of Drug and Alcohol Abuse* 32 (3): 379–98.
- Heinrich, C. J., and C. J. Hill. 2008. "Role of State Policies in the Adoption of Naltrexone for Substance Abuse Treatment." *Health Services Research* 43 (3): 951–70.
- Holahan, J., and I. Headen. 2010. *Medicaid Coverage and Spending in Health Reform: National and State-by-State Results for Adults at or Below 133% FPL, Executive Summary (Report No. 8076-ES)*. Washington, DC: Kaiser Family Foundation, Kaiser Commission on Medicaid and the Uninsured [accessed on August 16, 2010]. Available at <http://www.kff.org/healthreform/upload/Medicaid-Coverage-and-Spending-in-Health-Reform-National-and-State-By-State-Results-for-Adults-at-or-Below-133-FPL-Executive-Summary.pdf>
- Jacobs, S. C., J. E. Wilk, and M. Rubio-Stipec. 2005. "Psychiatrists' Acceptance of Medicaid Patients." *Psychiatric Services* 56 (11): 1461.

- Levit, K. R., C. A. Kassed, R. M. Coffey, T. L. Mark, E. M. Stranges, J. A. Buck, and R. Vandivort-Warren. 2008. "Future Funding for Mental Health and Substance Abuse: Increasing Burdens for the Public Sector." *Health Affairs (Millwood)* 27 (6): w518–22.
- Mark, T. L., K. R. Levit, R. Vandivort-Warren, R. M. Coffey, J. A. Buck, and SAMHSA Estimates Spending Team. 2007. "Trends in Spending for Substance Abuse Treatment, 1986–2003." *Health Affairs* 26 (4): 1118–28.
- McBride, D., J. Chiqui, M. Mulatu, and Y. Terry-McElrath. 2008. *The Role of Medicaid in Service Provision and Access to Services for African Americans*. Paper presented at the 2008 Substance Abuse Policy Research Annual Grantee Meeting, Tucson, AZ, December 15–16.
- McLellan, A. T., D. C. Lewis, C. P. O'Brien, and H. D. Kleber. 2000. "Drug Dependence, a Chronic Medical Illness: Implications for Treatment, Insurance, and Outcomes Evaluation." *Journal of the American Medical Association* 284 (13): 1689–95.
- Medical News Today. 2008. "States See Higher Medicaid Enrollment as Economic Downturn Persists, Study Finds" [accessed on January 16, 2010]. Available at <http://www.medicalnewstoday.com/articles/123665.php>
- Nahra, T. A., J. Alexander, and H. Pollack. 2009. "Influence of Ownership on Access in Outpatient Substance Abuse Treatment." *Journal of Substance Abuse Treatment* 36 (4): 355–65.
- Nolan, J. L. (ed). 2002. *Drug Courts in Theory and in Practice*. New York: Walter de Gruyter, Inc.
- Office of National Drug Control Policy. 2010. *National Drug Control Strategy: A New Balanced Approach, Highlights*. Washington, DC: ONDCP [accessed on August 16, 2010]. Available at http://www.whitehousedrugpolicy.gov/strategy/highlight_brochure.pdf
- Perloff, J. D., P. Kletke, and J. W. Fossett. 1995. "Which Physicians Limit Their Medicaid Participation, and Why." *Health Services Research* 31 (1): 7–26.
- Sack, K., and K. Zezima. 2009. "Growing Need for Medicaid Strains States." *New York Times*, January 21: A25 [accessed on January 15, 2010]. Available at http://www.nytimes.com/2009/01/22/us/22medicaid.html?_r=4&ref=todayspaper
- Shen, Y.-C., and S. Zuckerman. 2005. "The Effect of Medicaid Payment Generosity on Access and Use among Beneficiaries." *Health Services Research* 40 (3): 723–44.
- U.S. Department of Health and Human Services (USDHHS). 2005. *National Survey of Substance Abuse Treatment Services (N-SSATS): 2004. Data on Substance Abuse Treatment Facilities. DASIS Series: S-28, DHHS Publication No. (SMA) 05-4112*. Rockville, MD: USDHHS, SAMHSA, OAS.
- U.S. Department of Health and Human Services (USDHHS). 2007. *National Survey of Substance Abuse Treatment Services, 2002 through 2006*. Princeton, NJ: Mathematica Policy Research Inc. [accessed on January 7, 2009]. Available at <http://webapp.icpsr.umich.edu/cocoon/SAMHDA-SERIES/00058.xml>
- U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. 2009. *National Survey*

- of Substance Abuse Treatment Services (N-SSATS), 2007 [United States] [Computer file]. ICPSR23540-v1.* Ann Arbor, MI: Inter-University Consortium for Political and Social Research [distributor], January 2007, doi:10.3886/ICPSR23540.
- Wakeman, S. E., M. E. McKinney, and J. D. Rich. 2009. "Filling the Gap: The Importance of Medicaid Continuity for Former Inmates." *Journal of General Internal Medicine* 24 (7): 860–2.
- Walter, L. J., S. Parthasarathy, S. Allen, and L. Ackerson. 2002. "Medicaid Patients in a Private Health Maintenance Organization: Patterns of Chemical Dependency Treatment." *Journal of Behavioral Health Services and Research* 29 (1): 1–14.
- Wilk, J. E., J. C. West, W. E. Narrow, D. W. Rae, and D. A. Regier. 2005. "Access to Psychiatrists in the Public Sector and in Managed Health Plans." *Psychiatric Services* 56 (4): 408–10.

SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Appendix SA1: Author Matrix.

Please note: Wiley-Blackwell is not responsible for the content or functionality of any supporting materials supplied by the authors. Any queries (other than missing material) should be directed to the corresponding author for the article.