

Accessibility of Addiction Treatment: Results from a National Survey of Outpatient Substance Abuse Treatment Organizations

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Objectives. This study examined organization-level characteristics associated with the accessibility of outpatient addiction treatment.

Methods. Program directors and clinical supervisors from a nationally representative panel of outpatient substance abuse treatment units in the United States were surveyed in 1990, 1995, and 2000. Accessibility was measured from clinical supervisors' reports of whether the treatment organization provided "treatment on demand" (an average wait time of 48 hours or less for treatment entry), and of whether the program turned away any patients.

Results. In multivariable logistic models, provision of "treatment on demand" increased two-fold from 1990 to 2000 (OR, 1.95; 95 percent CI, 1.5 to 2.6), while reports of turning patients away decreased nonsignificantly. Private for-profit units were twice as likely to provide "treatment on demand" (OR, 2.2; 95 percent CI, 1.3 to 3.6), but seven times more likely to turn patients away (OR, 7.4; 95 percent CI, 3.2 to 17.5) than public programs. Conversely, units that served more indigent populations were less likely to provide "treatment on demand" or to turn patients away. Methadone maintenance programs were also less likely to offer "treatment on demand" (OR, .65; 95 percent CI, .42 to .99), but more likely to turn patients away (OR, 2.4; 95 percent CI, 1.4 to 4.3).

Conclusions. Although the provision of timely addiction treatment appears to have increased throughout the 1990s, accessibility problems persist in programs that care for indigent patients and in methadone maintenance programs.

Key Words. Substance abuse treatment centers, substance-related disorders, methadone, health services accessibility, waiting lists, refusal to treat, medically uninsured, poverty, managed care programs

The adverse personal, social, and public health effects of addictive disorders are well described (Stein 1999; O'Connor and Schottenfeld 1998). In dollar terms, the consequences of drug abuse alone cost \$143.4 billion in the United States in 1998 (Office of National Drug Control Policy 2001b). An

overwhelming body of literature demonstrates that addiction treatment reduces substance-related consequences and costs to society, including transmission of HIV and crime (Gerstein and Lewin 1990; Metzger et al. 1993; Rosenbaum 1995; Hubbard et al. 1997; Metzger, Navaline, and Woody 1998; Broome, Joe, and Simpson 1999; Leshner 1999; McLellan et al. 2000). However, the access to substance abuse treatment remains a major concern in the United States—fewer than half of addicted persons receive needed treatment (Office of National Drug Control Policy 2001a).

Since the 1980s, physician organizations, AIDS activists, addiction experts, and policymakers have advocated “treatment on demand” as a way to improve the accessibility of needed addiction treatment and slow the HIV epidemic (Metzger, Navaline, and Woody 1998; American Medical Association Council on Scientific Affairs 1989; Presidential Commission on Human Immunodeficiency Virus 1988; McAuliffe et al. 1991; Wenger and Rosenbaum 1994). This strategy “strikes while the iron is hot,” making treatment available as soon as a substance-abusing person expresses readiness. Timely access is not a trivial matter for addicted patients—many are already ambivalent about seeking treatment, have little tolerance for waiting, and will continue to use drugs while on waiting lists (Rosenbaum 1995; Graham, Brett, and Bois 1995; Kaplan and Johri 2000). Studies suggest that 25–50 percent of applicants will drop off a waiting list between initial assessment and treatment entry, and that longer wait times increase attrition (Stark, Campbell, and Brinkerhoff 1990; Donovan et al. 2001; Festinger et al. 1995; Hser et al. 1998). A recent simulation affirmed that even if a drug-using population were to have an average wait tolerance of one month, approximately 40 percent would

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drop off a two-week waiting list for treatment (Kaplan and Johri 2000). The strategy of “treatment on demand” requires treatment capacity sufficient to minimize waiting lists (Sorensen 2000), but current capacity is considered inadequate to meet need in the United States (Guydish and Muck 1999). To this end, several cities, including San Francisco, California, and Baltimore, Maryland, initiated policies in the latter half of the 1990s to expand public treatment capacity with the goal of providing timely treatment entry, preferably within 48 hours (San Francisco Board of Supervisors 1996; Drug Strategies 2000).

At the same time, changes in the delivery system throughout the 1990s, including the market dominance of for-profit behavioral health care, the growing ranks of the uninsured, stringent limitations in coverage for addiction treatment among the insured, and the shift toward managed care, have heightened apprehension about the accessibility of addiction treatment (Weisner and Schmidt 2001; Larson, Samet, and McCarty 1997; Mechanic 1999; Wheeler and Nahra 2000; Galanter et al. 2000). For example, cost containment efforts associated with managed care have dramatically reduced utilization of inpatient addiction care, without evidence of an offsetting increase in outpatient services (Galanter et al. 2000). In addition, the stagnation of public support for methadone maintenance and the reliance on private methadone programs in many communities have raised monetary barriers for many opioid-dependent patients who might benefit from this effective treatment (Rosenbaum et al. 1996). Indeed, some states and municipalities have attempted to cut or eliminate public funding for methadone, most recently in Massachusetts (Abel 2002). Despite these concerns, little is known about how changes in the delivery system have influenced accessibility among addiction treatment units nationwide. Thus, this study uses longitudinal data from the National Drug Abuse Treatment System Survey (DATSS), a nationally representative panel survey of outpatient substance abuse treatment programs, to examine trends in organization-level accessibility to outpatient addiction treatment in the United States during the 1990s, and program characteristics associated with accessibility.

METHODS

Sampling

This study used data from the National Drug Abuse Treatment Survey (DATSS), a panel study of outpatient substance abuse treatment programs

conducted in 1988, 1990, 1995, and 2000. The present study included data from 1990, 1995, and 2000. Inclusion criteria targeted facilities in which at least half of all treatment services were provided to persons with substance abuse problems. Veteran's Affairs and correctional programs were excluded. For each wave, large random samples of programs were screened from composite national sample frames (2,440 in 1988; 932 in 1994; 1,339 in 1999); 36 to 40 percent of programs met the inclusion criteria.

Standardized procedures ensured that the composite sampling frame for each wave included the most complete list possible of the nation's addiction treatment units (Adams and Heeringa 2000). The 1988 sampling frame was created from a merger of the National Alcohol and Drug Abuse Treatment Program Inventory of both methadone and hospital-based nonmethadone programs; a census of outpatient drug treatment units in the Institute for Social Research's National Sample Primary Sampling Units; and a list of treatment programs provided by the 50 state governments. In 1988, 889 eligible units were divided into 12 strata along three dimensions: public/private ownership, methadone/nonmethadone, and freestanding mental health center- or hospital-affiliated. Subsampling within these strata selected 645 eligible units; 575 (89 percent) responded. The 1990 survey included the 575 units that had completed interviews in 1988; no new units were selected. Of these units, 550 remained eligible, and 481 (88 percent) participated in the 1990 wave.

For the 1995 survey, 429 panel units from the 1990 survey remained eligible, of which 387 (90 percent) completed interviews. To supplement these panel programs, a new sampling frame was generated through the merger of the National Facilities Register of the Substance Abuse and Mental Health Services Administration (SAMHSA); the American Hospital Association annual survey database; the Food and Drug Administration list of methadone treatment units; and a listing of outpatient drug abuse treatment providers purchased from Survey Sampling Inc. This frame was divided into the same 12 strata as in 1988. From these strata, the supplemental sample of 270 units was randomly selected, of which 231 (86 percent) agreed to participate. Thus, the total sample in 1995 consisted of 618 treatment units (88 percent response).

For the 2000 wave, 535 of these 618 units remained eligible, and 480 (89 percent) completed interviews. Updated versions of the four databases combined in 1990, plus the Uniform Facility Data Set of SAMHSA were again merged into a new sampling frame. This frame was stratified into methadone and nonmethadone units. A new randomly selected subsample of 302 programs supplemented the panel sample; 256 (85 percent) participated, yielding a total sample of 745 programs.

Data Collection

Professional interviewers conducted telephone interviews with each program's director and clinical supervisor. Program directors provided information regarding the program's affiliation, ownership, finances, and managed care involvement, while clinical supervisors provided information on services provided, program staff, and patients. All questions were in reference to the most recent complete fiscal year. Reliability and validity of the DATSS survey instruments have been well documented (Groves et al. 1998; Batten et al. 1993).

Measures

Dependent Variables: Provided "Treatment on Demand," Turned Patients Away

This article focuses on the accessibility of addiction treatment services at the level of the addiction treatment organization. Although accessibility is a multidimensional construct, this investigation's perspective is that the addiction treatment organization has a role in inhibiting or facilitating its prospective patients' timely initiation of substance abuse treatment (McCaughrin and Howard 1996). Since waiting time is a function both of whether prospective patients can get into the queue and how quickly they get off the queue and into treatment, this research evaluates both whether a treatment program turned prospective patients away, and the amount of time applicants waited before treatment entry (Kaplan and Johri 2000). Clinical supervisors reported the percentage of applicants the program turned away. We dichotomized this variable as turning any applicants away versus turning no one away. Clinical supervisors also indicated the average number of days prospective patients had to wait to enter treatment. We dichotomized this variable at 48 hours or less, a proposed goal for "treatment on demand" in several American cities (San Francisco Board of Supervisors 1996; Drug Strategies 2000). Dichotomization at 0, 24, 72, or 96 hours did not alter the results.

Explanatory Variables

Study Year was dummy-coded to examine whether organization-level accessibility of treatment changed in 1995 and 2000; 1990 was the referent year.

Program Ownership was dummy-coded as private for-profit or private not-for-profit, with public ownership as the referent.

Managed Care Involvement was measured through program directors' reports of the percentage of patients in their programs who were members of health maintenance organizations (HMOs) or preferred provider organizations (PPOs), the percentage whose payor required prior authorization, and the percentage whose payor required concurrent review.

Methadone Provision was generated from clinical supervisors' reports of methadone practices. Program supervisors first reported whether their program provided methadone treatment. Those who reported yes were then asked to report how long after being admitted were patients typically encouraged to detoxify. Short-term methadone was categorized as encouraging methadone detoxification after less than one year. Methadone maintenance was defined as providing methadone for one year or longer. These dummy variables indicate programs that offered short-term methadone and methadone maintenance, with no methadone provision as the referent.

Delivery of Indigent Care was examined through program directors' reports of the percentage of patients who were uninsured and unable to pay for their treatment, the percentage who paid a reduced fee for their treatment, and the percentage of patients with Medicaid coverage.

Other Program Characteristics included program age, measured in years; program size, measured as number of patients; and perception of staff caseload, which the clinical supervisor rated on a five-point scale ranging from "much too low" to "much too high."

Patient Characteristics included demographic features such as the percentage of patients who were African American, the percentage of patients who were Hispanic, and average patient age. We also controlled for the percentage of patients with polysubstance abuse. Analyses not shown examined as other control variables: the percentage of female patients, the percentage of patients who were referred from the criminal justice system, the percentage of patients who were with dual diagnoses, and the percentage of patients who had problems with alcohol, cocaine, crack, and heroin. These variables did not contribute to the models and were excluded for parsimony.

Statistical Analysis

Descriptive analyses used standard methods to compare the variables under investigation over the three data time-points. Univariate statistics were weighted to account for the probability of selection (Adams and Heeringa 2000). Generalized estimating equation (GEE) models simultaneously assessed the independent relationship of each of the explanatory variables

with both dependent variables, while controlling for potential confounding. The GEE is a method of analyzing correlated, longitudinal data in which subjects are measured at different points in time (Liang and Zeger 1986). *Stata* 6.0 fit multivariable logistic GEE models with exchangeable correlation structures and robust standard error estimates (Stata Corp. 1999).

RESULTS

Several trends in the characteristics of outpatient substance abuse treatment programs occurred during the 1990s (Table 1). The provision of “treatment on demand” increased while the percentage of programs that turned patients away decreased. “Treatment on demand” and “turning patients away” were significantly correlated in each study year (data not shown).

Program ownership varied over the decade, with increases in private for-profit, and decreases in public ownership. These changes reflect the increase in private-for-profit ownership among units selected for the supplemental samples; few programs in the panel sample changed ownership status. Private for-profit units were also significantly more likely to drop out of the study in subsequent waves than were not-for-profit or public programs (data not shown), thus the supplemental sampling effectively replaced nonrespondent units with similar programs in the latter waves.

Managed care involvement showed surprisingly modest increases in the proportion of patients who were members of an HMO or PPO. Private for-profit programs reported significantly greater levels of managed care involvement and privately insured patients in all three study years ($p < .001$) (data not shown). Regarding methadone treatment, the percentage of methadone programs did not change over the decade, but programs that offered methadone shifted toward longer-term treatment. The percentage of free-care and reduced fee patients remained relatively stable during the 1990s, while the percentage of Medicaid patients dropped between 1990 and 1995, and then stabilized.

Provided “Treatment on Demand”

Compared to 1990, provision of “treatment on demand” increased significantly from 1990 to 1995 ($p = .003$), and to 2000 ($p < .001$) (Table 2). Using 1995 as the referent group, “treatment on demand” did not change insignificantly from 1995 to 2000 (OR, 1.31; 95 percent CI, .71 to 2.42). Private for-profit programs were twice as likely ($p = .002$) to provide

Table 1: Program Characteristics by Study Year*

	1990	1995	2000
<i>N</i>	481	618	745
Program characteristics			
Provided "treatment on demand" % [†]	58.8	68.7	77.0
Turned patients away % [‡]	14.6	12.9	10.6
Ownership %			
Public	30.7	31.6	26.1
Private not-for-profit	59.8	51.8	55.5
Private for-profit	9.5	16.6	18.4
Managed care involvement, mean (SD)			
Percentage of HMO or PPO patients	7.6 (10.2)	10.7 (18.4)	13.7 (21.5)
Percentage of patients whose payor required prior authorization	21.2 (28.9)	18.6 (30.7)	24.6 (34.6)
Percentage of patients whose payor required concurrent review	22.1 (26.6)	20.5 (31.4)	23.9 (32.8)
Methadone provision % [§]			
Methadone not available	87.1	89.4	87.0
Short-term methadone	7.7	5.8	3.0
Methadone maintenance	9.5	4.8	10.0
Delivery of indigent care, mean (SD)			
Percentage of patients who don't pay	23.6 (18.7)	23.4 (29.3)	24.8 (29.7)
Percentage who pay a reduced fee	40.1 (24.3)	42.9 (38.6)	39.8 (35.2)
Percentage of Medicaid patients	26.3 (25.3)	15.4 (24.0)	15.3 (21.8)
Program age, mean (SD)	12.7 (6.0)	12.3 (8.8)	10.8 (11.1)
Number of patients per year, mean (SD)	587 (724)	648 (860)	587 (907)
Perceived staff caseload, mean (SD)	3.3 (.70)	3.3 (.79)	3.2 (.60)
Patient characteristics, mean (SD)			
Average age in years	31.8 (4.1)	32.6 (6.3)	32.3 (5.8)
Race			
Percentage of African American patients	17.8 (19.9)	21.8 (24.9)	22.7 (24.6)
Percentage of Hispanic patients	8.3 (14.6)	12.4 (19.7)	12.7 (19.2)
Percentage of polysubstance-using patients	55.3 (28.2)	69.4 (29.2)	67.0 (26.9)

*Weighted to be nationally representative for the study year.

[†]Defined as a supervisor-reported average wait time of 48 hours or less.

[‡]Defined as a supervisor report that any patients were turned away.

[§]Methadone provision was defined as no methadone available, methadone available with detoxification encouraged after less than 12 months (short-term methadone), or methadone for 12 or more months (methadone maintenance).

^{||}The supervisor-rated staff caseload on a five-point scale ranging from "much too low" to "much too high."

"treatment on demand" as publicly owned programs. Managed care involvement also increased the likelihood of "treatment on demand." A 10 percent increase in the percentage of patients who were members of an HMO

Table 2: Multivariable Correlates of Accessibility of Outpatient Addiction Treatment*

	<i>Provided Treatment on Demand[†]</i>		<i>Turned Patients Away[‡]</i>	
	<i>Odds Ratio</i>	<i>95% CI</i>	<i>Odds Ratio</i>	<i>95% CI</i>
Study year				
1990	Referent		Referent	
1995	1.45**	1.13 to 1.88	1.06	.63 to 1.78
2000	1.95**	1.47 to 2.57	.69	.41 to 1.18
Program characteristics				
Ownership				
Public	Referent		Referent	
Private not-for-profit	.85	.64 to 1.14	3.26**	1.48 to 7.03
Private for-profit	2.20**	1.34 to 3.63	7.41**	3.16 to 17.45
Managed care involvement, <i>per 10%</i>				
Percentage of HMO or PPO patients	1.08 [¶]	.99 to 1.18	1.11 [#]	1.02 to 1.22
Percentage of patients whose payor required prior authorization	1.05 [#]	1.01 to 1.09	1.08**	1.02 to 1.16
Methadone provision [§]				
Methadone not available	Referent		Referent	
Short-term methadone	.80	.54 to 1.21	3.26**	1.69 to 6.37
Methadone maintenance	.65 [#]	.42 to .99	2.42**	1.35 to 4.39
Delivery of indigent care, <i>per 10%</i>				
Percentage of patients who don't pay	.97 [¶]	.92 to 1.01	.86**	.78 to .95
Percentage who pay a reduced fee	.95 [#]	.94 to .99	.86**	.83 to .92
Percentage of Medicaid patients	.96 [#]	.92 to 1.00	.93 [¶]	.84 to 1.01
Mean program age, <i>per 10 years</i>	.86 [#]	.75 to .98	.89	.72 to 1.10
Mean number of patients, <i>per 100 patients</i>	.99 [¶]	.97 to 1.00	.99	.97 to 1.01
Perceived staff caseload	.76**	.65 to .89	.80 [¶]	.61 to 1.00
Client characteristics, <i>per 10%</i>				
Average age in years	1.13	.90 to 1.41	1.21	.86 to 1.68
Percentage of African American patients	1.01	.96 to 1.06	1.00	.92 to 1.08
Percentage of Hispanic patients	.99	.92 to 1.05	1.07	.98 to 1.17
Percentage of polysubstance users	.97 [¶]	.93 to 1.00	.97	.92 to 1.03

*From multivariable logistic generalized estimating equations models with exchangeable correlation structures and robust standard errors.

[†]Defined as a supervisor-reported average wait time of 48 hours or less.

[‡]Defined as a supervisor report that any patients were turned away.

[§]Methadone provision was defined as no methadone available, methadone available with detoxification encouraged after less than 12 months (short-term methadone), or methadone for 12 or more months (methadone maintenance).

^{||}The supervisor-rated staff caseload on a five-point scale ranging from “much too low” to “much too high.”

[¶]*p* ≤ .10

[#]*p* ≤ .05

***p* ≤ .01

or PPO and in the percentage of patients who required prior authorization for treatment were associated with an 8 percent increase ($p = .08$) and a 5 percent increase ($p = .04$) in the odds that “treatment on demand” was available, respectively. Programs that offered methadone maintenance were less likely to provide “treatment on demand” ($p = .05$) than nonmethadone programs. Programs that served more indigent patients were also less likely to provide “treatment on demand”: serving greater proportions of patients who don’t pay ($p = .10$), who paid a reduced fee ($p = .05$), or who received Medicaid ($p = .05$) decreased the provision of “treatment on demand.”

Turned Patients Away

The multivariate analysis detected no significant changes in the proportion of programs that turned patients away over the study period (Table 2). Similarly, there was no significant change in the proportion of programs that turned patients away from 1995 to 2000 (OR, 0.81; 95 percent CI, .57 to 1.26). Compared to public programs, both private not-for-profit ($p < .001$) and private for-profit ($p < .001$) programs were more likely to turn patients away. Among programs that did turn patients away, the mean (\pm standard deviation) percentage of patients turned away was 11.1 ± 18.0 percent in 1990, 9.9 ± 11.7 percent in 1995, and 10.5 ± 14.8 percent in 2000. Private for-profit programs turned away significantly greater proportions of patients than either private not-for-profit or public programs. For example, in 2000, private for-profit programs turned away 31.1 percent of patients compared to 8.7 percent for not-for-profit and 0.35 percent for public programs.

Programs with greater managed care involvement, either through a greater proportion of patients who were members of an HMO or PPO ($p = .02$) or who required prior authorization ($p = .007$), were also more likely to turn patients away, as were programs that offered short-term methadone ($p < .001$) or methadone maintenance ($p < .001$). Conversely, delivery of more indigent care was a marker of programs that were less likely to turn away patients. Serving a greater percentage of patients who don’t pay ($p = .002$), who paid a reduced fee ($p < .001$), or who had Medicaid coverage ($p = .09$) was associated with decreased likelihood of turning patients away.

DISCUSSION

In this study the overall availability of outpatient substance abuse “treatment on demand” appears to have increased over the 1990s, and the majority of

programs nationwide reported that they provided it. Nonetheless, concerns about the accessibility of addiction treatment remain (Weisner and Schmidt 2001). We expected that private for-profit programs would report more “treatment on demand,” presumably for insured or affluent patients, and would turn away more patients. It is a reasonable conjecture that these programs accept or turn away patients based on their ability to pay. Previous work has suggested that private for-profit centers treat clientele with greater personal resources, accept a lower percentage of nonpaying and reduced fee patients, and turn away more patients (Wheeler, Fadel, and D’Aunno 1992). Because immediate access is desirable to patients seeking treatment, for-profit programs may turn away indigent patients to reserve space for potential paying patients. Barriers for indigent patients may take the form of limitations as to number of treatment slots for underinsured patients, “financial triage” whereby uninsured patients enter a queue while insured patients are admitted expeditiously, and location of the program in exclusive vicinities. One can further speculate that “treatment on demand” has marketing value for private programs competing for paying patients and insurance contracts.

Managed care involvement, which is greater in private for-profit programs (Lemak, Alexander, and D’Aunno 2001), also increased both “treatment on demand” and the practice of turning patients away. Again, it is likely that these programs are primarily turning away nonpaying patients. Managed care creates a disincentive to allow easy access to indigent patients because discounted contracts and utilization management limit the traditional use of “hidden cross-subsidies” to make up losses from uncompensated care (Weisner and Schmidt 2001). Small numbers limit our ability to discern whether this finding applies to public Medicaid managed care, which some have suggested might increase the accessibility of substance abuse treatment (Deck et al. 2000). Contrary to the effects of private for-profit ownership and managed care involvement here, the mission-driven nature of programs that care for indigent patients presumably makes them more averse to turning patients away and, as a possible consequence, less able to provide “treatment on demand.”

It is concerning that methadone maintenance programs were both more likely to turn away potential patients and less likely to provide “treatment on demand.” Evidence supports the effectiveness of methadone maintenance in decreasing risky injection behaviors and slowing the spread of HIV (Metzger et al. 1993; Broome, Joe, and Simpson 1999), in addition to improving crime and substance-related outcomes (Hubbard et al. 1997; Ward, Hall, and Mattick 1999). The recent surge in popularity and purity of heroin and the continued high risk for HIV and hepatitis C infection among drug injectors

have only increased the critical need to expand “treatment on demand” for methadone maintenance (Rosenbaum 1995; Wenger and Rosenbaum 1994).

This study has several limitations. The DATSS includes no patient-level information, only program-level reports. Although the supposition that the addiction treatment organization has a role in inhibiting or facilitating its prospective patients’ timely initiation of treatment has face validity, the DATSS’ data structure constrains inferences to the organization-level, which may not reflect individual-level associations. For example, these findings might be susceptible to ecological bias, in which case cross-level inference from analyses of organizational populations to individual patients might lead to fallacious conclusions (Piantadosi, Byar, and Green 1988). However, ecological analyses like the present one are useful for generating hypotheses that should be tested in future multilevel treatment studies.

The DATSS’ program-level data collection has been validated against chart-abstracted data for several measures, including patients’ average length of stay and methadone dosage (Batten et al. 1993), but measurement error remains a possibility. Regarding wait times, the 1996 supplement to the Treatment Episode Data Set noted that 71 percent of addiction treatment episodes were preceded by no patient-reported waiting time, a finding that approximates the DATSS’ 1995 result (Substance Abuse and Mental Health Services Administration 1998). Nonetheless, social desirability bias might have diminished reports of wait times and of patients turned away in the DATSS. Nonresponse bias also remains possible, despite the DATSS’ 80–90 percent response rate; the supplemental sampling procedure was not specifically designed to compensate for possible nonresponse bias. In addition, the DATSS studied only outpatient addiction treatment programs, the predominant form in the United States (Gerstein and Lewin 1990); hence, these findings might not generalize fully to residential treatment programs. The lack of quality of care measures is a further limitation. Finally, these analyses cannot determine causal direction, although most of the explanatory variables were relatively fixed organizational characteristics.

Although the growth of the private for-profit sector and managed care has improved the accessibility of substance abuse treatment throughout the 1990s, we assume, but cannot prove, that these gains are limited to insured or affluent patients (Wheeler and Nahra 2000; Zuvekas 2001). Sufficient treatment capacity appears to exist in many private for-profit programs to allow “treatment on demand,” but accessibility problems seem to persist among programs that care for the indigent. This finding is concerning because addiction is a disease whose very nature induces indigence: addicted patients

frequently lose their jobs and their health insurance, their homes, and the support of their families.

Opioid-dependent patients who seek methadone maintenance appear to face even greater barriers—a greater likelihood both of being turned away and of waiting. Expansion of the accessibility of methadone maintenance poses unique challenges, because regulatory barriers and community opposition have limited methadone clinic growth in the United States. Current efforts to expand opioid maintenance capacity in the United States therefore focus on the promise of opioid maintenance therapy in physicians' offices as a way to reduce stigma and free scarce slots in methadone specialty clinics for less stable patients (Clark 2001; Fiellin and O'Connor 2002). Future research should determine whether this strategy is successful in expanding the accessibility of opioid maintenance therapy.

As part of their separate initiatives to enhance treatment accessibility, San Francisco and Baltimore have both achieved dramatic and sustained increases in funding for substance abuse programming, which have augmented public treatment capacity (Guydish et al. 2000; Drug Strategies 2000; Gleghorn 2002). Entry into publicly funded treatment within 48 hours of request has been difficult to attain (Drug Strategies 2000), but these "treatment on demand" initiatives have been associated with decreases in drug-related emergency visits from 1996 to 2001, unintentional poisonings (primarily heroin overdose), and hospital admissions for injection-related soft tissue infections (Gleghorn 2002; Substance Abuse and Mental Health Services Administration 2002). Future studies should examine the present study's implication that universal insurance for private addiction treatment might be a reasonable alternative to block grants and expansion of public treatment slots as a means of improving treatment accessibility. Whether greater accessibility of addiction treatment improves community-level substance use, risky behavior, and other social outcomes, such as crime, also warrants further investigation (Sibthorpe et al. 1996).

REFERENCES

- Abel, D. 2002. "Twist of the Hook: State Budget Ax Poised over Methadone Clinics." *Boston Globe*, 13 May, Metro/Region Section, B1.
- Adams, T. K., and S. G. Heeringa. 2000. *Outpatient Substance Abuse Treatment System Surveys (OSATSS)*. Technical Documentation for OSATSS-5. Ann Arbor, MI: Survey Design and Analysis Unit, Survey Research Center, Institute for Social Research.

- American Medical Association Council on Scientific Affairs. 1989. "Reducing Transmission of Human Immunodeficiency Virus (HIV) among and through Intravenous Drug Users." *AIDS Public Policy* 4 (4): 142-51.
- Batten, H. L., C. H. Horgan, J. M. Prottas, L. J. Simon, M. J. Larson, and E. A. Elliot. 1993. *Drug Services Research Survey. Phase I Final Report: Non-Correctional Facilities*. Waltham, MA: Brandeis University Institute for Health Policy.
- Booth, R. E., C. Kwiatkowski, M. Y. Iguchi, F. Pinto, and D. John. 1998. "Facilitating Treatment Entry among Out-of-Treatment Injection Drug Users." *Public Health Reports* 113 (1, supplement): 116-28.
- Broome, K. M., G. W. Joe, and D. D. Simpson. 1999. "HIV Risk Reduction in Outpatient Drug Abuse Treatment: Individual and Geographic Differences." *AIDS Education and Prevention* 11 (4): 293-306.
- Clark, H. W. 2001. "A New Era in Opioid Dependency Treatment. Recent Law Allows Qualified Physicians to Provide Care in Office Setting." *Postgraduate Medicine* 109 (6): 15-25.
- Deck, D. D., B. H. McFarland, J. M. Titus, K. E. Laws, and R. M. Gabriel. 2000. "Access to Substance Abuse Treatment Services under the Oregon Health Plan." *Journal of the American Medical Association* 284 (16): 2093-9.
- Donovan, D. M., D. B. Rosengren, L. Downey, G. B. Cox, and K. L. Sloan. 2001. "Attrition Prevention with Individuals Awaiting Publicly Funded Drug Treatment." *Addiction* 96 (8): 1149-60.
- Drug Strategies. 2000. "Baltimore's Commitment to Treatment," in *Treating Baltimore's Drug Problem* [accessed on 10/02/2002]. Available at http://www.drugstrategies.org/Baltimore/BaltCh_3.html.
- Festinger, D. S., R. J. Lamb, M. R. Kountz, K. C. Kirby, and D. Marlowe. 1995. "Pretreatment Dropout as a Function of Treatment Delay and Client Variables." *Addictive Behaviors* 20 (1): 111-5.
- Fiellin, D. A., and P. G. O'Connor. 2002. "Clinical Practice Office-Based Treatment of Opioid-Dependent Patients." *New England Journal of Medicine* 347 (11): 817-23.
- Galanter, M., D. S. Keller, H. Dermatis, and S. Egelko. 2000. "The Impact of Managed Care on Substance Abuse Treatment: A Report of the American Society of Addiction Medicine." *Journal of Addictive Diseases* 19 (3): 13-34.
- Gerstein, D. R., and L. S. Lewin. 1990. "Treating Drug Problems." *New England Journal of Medicine* 323 (12): 844-88.
- Gleghorn, A. A. 2002. "Substance Abuse Policy: The San Francisco Perspective. A Report to the Little Hoover Commission" [accessed on October 5, 2002]. Available at <http://www.bsa.ca.gov/lhcdir/drug/gleghornapr25.pdf>.
- Graham, K., P. J. Brett, and C. Bois. 1995. "Treatment Entry and Engagement: A Study of the Process at Assessment/Referral Centers." *Contemporary Drug Problems* 22 (1): 61-104.
- Groves, R. M., P. P. Biemer, L. E. Lyberg, J. T. Massey, W. L. Nichols II, and J. Waksberg. 1998. *Telephone Survey Methodology*. New York: Wiley.
- Guydish, J., L. Moore, A. Gleghorn, T. Davis, C. Sears, and J. Harcourt. 2000. "Drug Abuse Treatment on Demand in San Francisco: Preliminary Findings." *Journal of Psychoactive Drugs* 32 (4): 363-70.

- Guydish, J., and R. Muck. 1999. "The Challenge of Managed Care in Drug Abuse Treatment." *Journal of Psychoactive Drugs* 31 (3): 193–5.
- Hser, Y. I., M. Maglione, M. L. Polinsky, and M. D. Anglin. 1998. "Predicting Drug Treatment Entry among Treatment-Seeking Individuals." *Journal of Substance Abuse Treatment* 15 (3): 213–20.
- Hubbard, R. L., S. G. Craddock, P. M. Flynn, J. Anderson, and R. M. Etheridge. 1997. "Overview of One-year Follow-up Outcomes in the Drug Abuse Treatment Outcome Study (DATOS)." *Psychology of Addictive Behavior* 11 (4): 261–78.
- Kaplan, E. H., and M. Johri. 2000. "Treatment on Demand: An Operational Model." *Health Care Management Science* 3 (3): 171–83.
- Larson, M. J., J. H. Samet, and D. McCarty. 1997. "Managed Care of Substance Abuse Disorders." *Medical Clinics of North America* 81 (4): 1053–69.
- Lemak, C. H., J. A. Alexander, and T. A. D'Aunno. 2001. "Selective Contracting in Managed Care: The Case of Substance Abuse Treatment." *Medical Care Research and Review* 58 (4): 455–81.
- Leshner, A. I. 1999. "Science-Based Views of Drug Addiction and Its Treatment." *Journal of the American Medical Association* 282 (14): 1314–6.
- Liang, K. Y., and S. L. Zeger. 1986. "Longitudinal Data Analysis Using Generalized Linear Models." *Biometrika* 73 (1): 13–22.
- McAuliffe, W. E., P. Breer, N. W. Ahmadifar, and C. Spino. 1991. "Assessment of Drug Abuser Treatment Needs in Rhode Island." *American Journal of Public Health* 81 (3): 365–71.
- McCaughrin, W. C., and D. L. Howard. 1996. "Variation in Access to Outpatient Substance Abuse Treatment: Organizational Factors and Conceptual Issues." *Journal of Substance Abuse* 8 (4): 403–15.
- 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.
- Mechanic, D. 1999. "The State of Behavioral Health in Managed Care." *American Journal on Managed Care* 5 (special issue): SP17–21.
- Metzger, D. S., H. Navaline, and G. E. Woody. 1998. "Drug Abuse Treatment as AIDS Prevention." *Public Health Reports* 113 (1, supplement): 97–106.
- Metzger, D. S., G. E. Woody, A. T. McLellan, C. P. O'Brien, P. Druley, H. Navaline, D. DePhillippis, P. Stolley, and E. Abrutyn. 1993. "Human Immunodeficiency Virus Seroconversion among Intravenous Drug Users In- and Out-of-Treatment: An Eighteen-Month Prospective Follow-up." *Journal of Acquired Immune Deficiency Syndrome* 6 (9): 1049–56.
- O'Connor, P. G., and R. S. Schottenfeld. 1998. "Patients with Alcohol Problems." *New England Journal of Medicine* 338 (9): 592–602.
- Office of National Drug Control Policy. 2001. *National Drug Control Strategy: 2001 Annual Report* [accessed on August 20, 2001]. Available at <http://www.whitehousedrugpolicy.gov/policy/ndcs.html>.
- . 2001. *The Economic Costs of Drug Abuse in the United States, 1992–1998*. Publication no. NCJ-190636. Washington, DC: Executive Office of the

- President. Available at <http://www.whitehousedrugpolicy.gov> [accessed on September 28, 2002].
- Piantadosi, S., D. P. Byar, and S. B. Green. 1988. "The Ecological Fallacy." *American Journal of Epidemiology* 127 (5): 893–904.
- Presidential Commission on the Human Immunodeficiency Virus. 1988. *Report of the Presidential Commission on the Human Immunodeficiency Virus Epidemic*, J. D. Watkins, Chairman. Submitted to the President of the United States, June 24, 1988. U.S. Government Printing Office publication no. 1988 O-214-701: QL3. Washington, DC: United States Government Printing Office.
- Rosenbaum, M. 1995. "The Demedicalization of Methadone Maintenance." *Journal of Psychoactive Drugs* 27 (2): 45–9.
- Rosenbaum, M., A. Washburn, K. Knight, M. Kelley, and J. Irwin. 1996. "Treatment as Harm Reduction, Defunding as Harm Maximization: The Case of Methadone Maintenance." *Journal of Psychoactive Drugs* 28 (3): 241–9.
- San Francisco Board of Supervisors. 1996. *Substance Abuse Treatment on Demand Resolution*. Resolution 10-55-96, Code 30-96-20.
- Sibthorpe, B., D. Fleming, H. Tesselaar, J. Gould, and L. Nichols. 1996. "The Response of Injection Drug Users to Free Treatment on Demand: Implications for HIV Control." *American Journal on Drug and Alcohol Abuse* 22 (2): 203–13.
- Sorensen, J. L. 2000. Evaluating "Treatment on Demand" in San Francisco: Do Waiting Lists Contract? [abstract, accessed on August 20, 2001]. American Public Health Association 128th Annual Meeting and Exposition, November 15, 2000, Boston, MA. Available at http://apha.confex.com/apha/128am/techprogram/paper_14481.html.
- Stark, M. J., B. K. Campbell, and C. V. Brinkerhoff. 1990. "Hello, May We Help You? A Study of Attrition Prevention at the Time of the First Phone Contact with Substance-Abusing Clients." *American Journal on Drug and Alcohol Abuse* 16 (1–2): 67–76.
- Stata Corp. 1997. *Stata Statistical Software*. Release 6.0. College Station, TX: Stata Corporation.
- Stein, M. D. 1999. "Medical Consequences of Substance Abuse." *Psychiatric Clinics of North America* 22 (2): 351–70.
- Substance Abuse and Mental Health Services Administration, Office of Applied Studies. 1998. "National Admissions to Substance Abuse Treatment: Treatment Episode Data Set (TEDS) 1992–1996" [accessed on October 10, 2002]. Available at <http://www.samhsa.gov/oas/teds/teds96htm/Tbl311.htm>.
- . 2002. *Emergency Department Trends from the Drug Abuse Warning Network, Final Estimates 1994–2001*. DAWN Series D-21, DHHS publication no. (SMA) 02-3635. Rockville, MD: U.S. Department of Health and Human Services. Available at <http://www.samhsa.gov/oas/dawn/Final2k1EDtrends/PublishedTables/PubTablesCh13.xls> [accessed on October 2, 2002].
- Ward, J., W. Hall, and R. P. Mattick. 1999. "Role of Maintenance Treatment in Opioid Dependence." *Lancet* 353 (9148): 221–6.
- Weisner, C., and L. A. Schmidt. 2001. "Rethinking Access to Alcohol Treatment." *Recent Developments in Alcoholism* 15 (1): 107–36.

- Wenger, L. D., and M. Rosenbaum. 1994. "Drug Treatment on Demand—Not." *Journal of Psychoactive Drugs* 26 (1): 1–11.
- Wheeler, J. R., H. Fadel, and T. A. D'Aunno. 1992. "Ownership and Performance of Outpatient Substance Abuse Treatment Centers." *American Journal of Public Health* 82 (5): 711–8.
- Wheeler, J. R., and T. A. Nahra. 2000. "Private and Public Ownership in Outpatient Substance Abuse Treatment: Do We Have a Two-Tiered System?" *Administrative Policy on Mental Health* 27 (4): 197–209.
- Zuvekas, S. H. 2001. "Trends in Mental Health Services Use and Spending, 1987–1996." *Health Affairs* 20 (2): 214–24.