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Trends in comprehensive service availability in outpatient drug abuse treatment

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Abstract

Comprehensive medical and psychosocial services are essential to quality addiction treatment, but their availability declined in the 1980s. To determine whether this downward trend in the availability of comprehensive services continued in the 1990s, we analyzed data from a national panel study of outpatient substance abuse treatment units in 1990, 1995, and 2000. Response rates were greater than 85%. Regarding the availability of comprehensive services, including physical examinations, routine medical care, mental health services, financial counseling and employment counseling, administrators reported whether any substance abuse treatment client received the service in the past year. With the exception of physical examinations, whose reported availability increased from 1990 to 1995, and financial counseling, whose reported availability decreased during the same time, the reported availability of comprehensive services changed little during the 1990s. These findings highlight the continuing need to monitor access to comprehensive services and other quality markers in addiction treatment over time.

Keywords

Health services accessibility; Substance abuse treatment centers; Substance-related disorders; Trends

1. Introduction

Substance abuse harms multiple areas of addicted persons' lives (Anglin, Hser, & Grella, 1997; Gerstein et al., 1997; O'Brien & McLellan, 1996). Substance abuse treatment programs typically provide rehabilitative counseling and/or pharmacotherapy to address the primary substance use problem. Because a range of 'secondary' problems, such as physical

or mental illness, unemployment, and homelessness, contribute to the progression of addictive disorders, substance abuse treatment programs may also make available comprehensive or 'wrap-around' services to address 'secondary' problems (Institute of Medicine, 1990; Moos & Finney, 1995). These problems may cause distress and trigger relapse even among persons who successfully reduce their substance use (Friedmann, Saitz, & Samet, 1998; McLellan & Weisner, 1996), and delivery of comprehensive services to address these issues has been shown to improve functioning, treatment retention, and outcomes (McLellan, Arndt, Metzger, Woody, & O'Brien, 1993; McLellan, Grisson, et al., 1993; McLellan & Weisner, 1996; McLellan et al., 1998). Despite their importance to quality substance abuse treatment (Leshner, 1999; Leukefeld, Pickens, & Schuster, 1992), the availability of comprehensive services declined from 1980 to 1990 (D'Aunno & Vaughn, 1995; Etheridge, Craddock, Duntzman, & Hubbard, 1995; Friedmann, Alexander, & D'Aunno, 1999; McLellan & Weisner, 1996; Widman, Platt, Lidz, Mathis, & Metzger, 1997). The current study examined whether the downward trend in the availability of comprehensive services in outpatient substance abuse treatment programs continued in the 1990s, while accounting for characteristics of these programs and their clientele.

2. Materials and methods

2.1. Study design and sample

The present study used data from the Year 1990, 1995, and 2000 waves of the National Drug Abuse Treatment System Survey (DATSS), a panel study of outpatient substance abuse treatment units. The unit of analysis was the treatment unit, defined as facilities where at least half of all treatment services were provided to persons with substance abuse problems. Veteran's Administration hospitals and programs targeting correctional populations were excluded.

Standardized procedures and the development of three separate sampling frames ensured that each sample was drawn from a universe of the nation's substance abuse treatment units that was as complete as possible (Adams & Heeringa, 2001; Heeringa, 1996). Large random samples of units were screened for eligibility, and 36% to 40% met the inclusion criteria. For the 1990 wave 575 eligible units were contacted for participation and 481 participated (response rate, 88%). Of these units, 429 remained eligible for the 1995 wave, and interviews were obtained for 387 (90%). In addition, a newly selected random subsample of 270 treatment units was contacted, of which 231 units (86%) agreed to participate; thus, the 1995 sample consisted of 618 units. In 2000, the 618 participating units from 1995 were re-contacted, 537 remained eligible, and interviews were obtained for 489 (91%). Again, the sample was supplemented through the random selection of 302 additional eligible units, of which 256 (85%) participated, accounting for the total sample of 745 units in the 2000 survey.

2.2. Data collection

Experienced interviewers conducted telephone interviews with both unit directors and clinical supervisors. Directors provided information regarding the unit's affiliation, ownership, finances and managed-care involvement, while clinical supervisors provided information on services, unit staff and clients. All items referred to the most recent complete fiscal year except where noted.

Each wave of data collection involved careful steps to assure that the surveys contain high quality, valid, phone-survey data. Prior to each wave, case studies informed survey development. The survey was pretested twice with a national random sample of at least 40 units, experienced professional telephone interviewers were specifically trained in the administration of the survey, and unit directors had received a cover letter explaining the

study and work sheets to prepare their answers. Respondents were guaranteed confidentiality and feedback reports. The interview procedure included in vivo checks, frequent probes and follow-up questions, and post-interview checks with call-backs to settle inconsistencies. In short, DATSS used procedures that research on telephone surveys indicates will produce valid and reliable data (Groves et al., 1988).

The DATSS survey methodology was previously validated through a comparison of the 1990 wave with an independent national study of treatment units and clients conducted in 1990, the Drug Services Research Study (DSRS; Batten et al., 1991). This comparison found a close correspondence between these contemporaneous studies. For example, the 1990 DATSS respondents reported an average treatment duration of 6.1 months, vs. 5.9 months in the national sample of 520 discharge abstracts from 52 treatment units in DSRS. The 1990 DATSS found a mean number of current clients in treatment of 100.3 vs. 100.9 for DSRS, and the number of paid treatment counselors was 8.2 in DATSS and 8.2 in DSRS. Though these comparisons support the validity of administrators' unit-level reports, the reports of comprehensive service delivery were not specifically examined.

2.3. Measures

2.3.1. Dependent variables—This study sought to focus on preventive and routine health care, mental health care, and social services that are not considered part of the traditional core of substance abuse treatment services. In each wave of data collection, dichotomous variables measured the availability of a series of these comprehensive medical and psychosocial services. For each item in the series, supervisors were asked whether any substance abuse treatment clients received the service, either directly from staff or through arrangements with other providers, within the most recent complete fiscal year (Yes/No). A follow-up question then asked about the percentage of clients that received the service in units where the service was available. Table 1 displays descriptive information regarding changes in these measures of reported service availability.

Because of the practical exigencies of competing priorities and respondent burden, not all services were measured in all DATSS waves. For the purposes of studying trends in service availability, five services were selected for closer examination based on their representation of the preventive and routine health care, mental health care, and social services domains and the consistency with which they were asked across the 1990, 1995, and 2000 waves. These comprehensive services are: (a) physical examinations, (b) routine medical care, (c) mental health services, (d) financial counseling, and (e) employment counseling. Given the primary interest in whether the availability of these comprehensive services has changed over time, multivariate models use the dichotomous items measuring receipt of service by any client (i.e. service availability) as dependent variables.

2.3.2. Explanatory variables—Study Year, the primary explanatory variable, was dummy-coded. To examine whether changes occurred in the first or second half of the decade, 1995 was the referent year, and it was compared to both 1990 and 2000.

2.3.3. Control variables—Previous conceptual and empirical work supports that the characteristics of an organization (such as its affiliations, ownership, treatment orientation, etc.), its environment (such as accreditations, funding sources, etc.) and its clients' needs are associated with the extent of service delivery (D'Aunno & Vaughn, 1995; Friedmann, Alexander, & D'Aunno, 1999). In order to examine the trend in services availability across the decade, these analyses control for important organizational features:

Unit Affiliation was dummy-coded as hospital or mental health center, with freestanding or other as the referent.

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

Methadone Availability was derived from clinical supervisors' reports of whether the unit provided methadone treatment (Yes/No).

Joint Commission on Accreditation of Healthcare Organizations (JCAHO) accreditation was taken from directors' reports of accreditation (Yes/No).

Extent of 12-Step Orientation was based on the clinical supervisor's rating of the extent to which they believed 12-Step Models were effective on a five-point scale, ranging from 'not at all' to 'a very great extent.'

Unit age was measured in years.

Client Characteristics, including demographic characteristics and specified substances used, can influence a treatment unit's service patterns (D'Aunno & Vaughn, 1995; Friedmann, Alexander, Jin, & D'Aunno, 1999; Friedmann, Alexander, & D'Aunno, 1999). Demographic characteristics included average client age as well as the percentage of female, African American, Hispanic and uninsured clients. Substance use included the percentage of clients at the unit who used heroin, cocaine, crack and alcohol.

Managed Care Involvement came from unit directors' reports of the percentage of clients in their units who were members of health maintenance organizations (HMO) or preferred provider organizations (PPO), the percentage who required prior authorization, and the percentage who required concurrent review.

2.4. Analytic approach

Descriptive analyses were weighted to account for the probability of selection at each of the three time points (Adams & Heeringa, 2001). Logistic generalized estimating equation (GEE) models (Liang & Zeger, 1986) assessed the independent relationship of the explanatory variables, including study year, with the availability of five representative services that were asked consistently across the 1990, 1995, and 2000 waves: physical examinations, routine medical care, mental health services, financial counseling, and employment counseling. The profiles of the outpatient substance abuse treatment units and clients changed over the course of the study, so multivariable models controlled for organizational characteristics associated with the extent of service delivery (D'Aunno & Vaughn, 1995; Friedmann, Alexander, & D'Aunno, 1999). Because missing data resulted in listwise deletion of 475 to 503 observations depending on the service, missing explanatory variables were imputed five times using the Markov Chain Monte Carlo method in the multiple imputation procedure of SAS version 8.2 (Rubin, 1987; Schafer, 1997; Yuan, 2000).

3. Results

3.1. Trends in availability of comprehensive services

In descriptive analyses, the availability of physical examinations and routine medical care appeared to increase from 1990 to 1995, then stabilize to 2000 (Table 1). The delivery of physical examinations to clients in units where they were available similarly appeared to increase from 1990 to 1995, then stabilize. The availability of tuberculosis screening appeared to run parallel to that of routine medical care in 1995 and 2000, though the majority of clients received it in units in which it was available. Less than half of units offered screening for sexually transmitted diseases and hepatitis (measured only in 2000),

and even fewer units had treatment available for HIV/AIDS even though its reported availability appeared to increase slightly from 1995 to 2000. The availability of mental health services, which appeared unchanged from 1990 to 1995, seemed to increase slightly from 1995 to 2000, as did the reported percentage of clients who received these services. Financial counseling appeared to become less available from 1990 to 1995, then slightly more available from 1995 to 2000, while its delivery in units with the service available appeared to rise over the decade. Employment counseling's availability appeared stable across the decade, but its delivery in units where it was available seemed to rise. The 1990 wave included a general item regarding legal counseling, which in the 1995 and 2000 waves was divided into separate items regarding legal counseling for criminal charges and for child custody issues. If we assume that the general legal item in 1990 was interpreted primarily as legal counseling for criminal charges, the reported availability of such services (in approximately 40% of units) would appear to have remained level or risen slightly over the decade. The reported availability of legal counsel for child custody issues appears to have increased slightly from 1995 to 2000, while the availability of housing assistance did not seem to change during the same period.

These units changed in other ways from 1990 to 2000 (data not shown). A notable change occurred in ownership distribution, with a decrease in public status (31% in 1990 vs. 26% in 2000) and an increase in private for-profit status (10% in 1990 vs. 18% in 2000). Client profiles also changed, with increases in the percentage of African American (18% in 1990 vs. 24% in 2000), Hispanic (8% in 1990 vs. 13% in 2000) and uninsured (51.3% in 1990 vs. 69.1% in 2000) clients. Clients' patterns of substance use also changed, with increases in heroin (12.9% of clients in 1990 vs. 17.4% in 2000), alcohol (46.1% in 1990 and 65.2% in 2000) and crack (16.7% in 1990 and 46.6% in 2000) use, and decreases in powder cocaine use (25.4% in 1990 and 16.8% in 2000). Managed care involvement also increased, with an increase in the percentage of clients who were members of an HMO or PPO from 8% in 1990 to 14% in 2000.

3.2. Multivariable trends in comprehensive service availability

Multivariable models examined the correlates of the availability of five representative services that were asked consistently across the 1990, 1995, and 2000 waves: physical examinations, routine medical care, mental health services, financial counseling and employment counseling (Table 2). Controlling for multiple organizational characteristics, the availability of physical examinations increased significantly from 1990 to 1995, then stabilized in the latter half of the decade. In contrast, financial counseling decreased over two-fold from 1990 to 1995, then increased from 1995 to 2000. The multivariate models could detect no significant changes in the reported availability of routine medical care, mental health services, or employment counseling over the decade.

Hospital-affiliated units were less likely to have physical examinations available, but they and mental health center-affiliated programs were more likely to offer mental health care than freestanding units. Private for-profit units were significantly less likely to offer most of these services than were public units. Methadone availability and JCAHO accreditation were positively associated with the reported availability of physical examinations and routine medical care. Older units were more likely to have employment counseling available. Units with a stronger 12-step orientation were less likely to have mental health services available, as were programs with more Hispanic clients. Programs that served more uninsured clients appeared less likely to have physical examinations available. Regarding the pattern of substance use, programs with a greater percentage of heroin-using clients were more likely to have employment counseling available, those with more cocaine-using clients were more likely to offer financial counseling, and programs with more crack-using clients were more likely to perform physical examinations. Routine medical care was less likely to be available

in programs with a greater percentage of alcohol-abusing clients. Finally, though managed care did not exert consistent effects on comprehensive service availability, serving a greater percentage of clients whose insurance required concurrent review was associated with greater reported availability of mental health services. Similarly, greater use of prior authorization was positively related to the availability of routine medical care.

4. Discussion

Comprehensive service delivery declined in the 1980s (D'Aunno & Vaughn, 1995; Etheridge et al., 1995). The current study could not detect changes in the reported availability of most medical and psychosocial services during the 1990s, despite research demonstrating the benefit of these services (McLellan, Arndt, et al., 1993; McLellan et al., 1997). One exception was physical examinations, whose reported availability increased in the early 1990s, confirming earlier findings (Friedmann, Alexander, & D'Aunno, 1999); however, that increase leveled off from 1995 to 2000. In contrast, after a decline in the early part of the decade, the availability of financial counseling appeared to increase modestly in the late 1990s.

We acknowledge that these data may overestimate absolute levels of service delivery. DATSS investigators have recently compared data from the 2000 wave to unit-level reports in the public use file of the 1997 Alcohol and Drug Services Study (ADSS; Lee, Reif, Ritter, Levine, & Horgan, 2001). In the ADSS, only 17% of nonresidential programs reported that they offered medical services; 27% offered tuberculosis screening, 57% mental health care and 32% employment services, compared to 61%, 63%, 88% and 73%, respectively, in the DATSS 2000 wave (J. Alexander, H. Pollack, & T. Nahra, personal communication). These differences in reports are likely the result of differences in the manner in which questions were asked. DATSS phrasing regarding service availability (Did any substance abuse treatment client receive the service either directly from staff or through arrangements with other providers?) was broader than that employed in ADSS (Did the substance abuse treatment facility offer the service to any substance abuse clients). Thus, the responses to DATSS may reflect community availability of the service to a greater extent. Social desirability bias on the part of DATSS respondents may have also contributed to these overestimates, but the modest reports of the proportion of clients who received services suggests that respondents are willing to provide unflattering information about their units. Finally, missing data in DATSS could have biased its estimates upward if programs with lower service levels were more reluctant to respond.

Despite the possible overestimation of absolute service levels, there is no reason to believe that the trends over time are spurious. Even if supervisors' reports are an imprecise measure of absolute service delivery, they still represent the unit's propensity to link its clients with services, a propensity that apparently has not increased in the 1990s. There is no reason to believe that systematic reporting bias (i.e. overestimation) would change over time. Which is to say, if comprehensive service delivery is actually declining and respondents are overestimating service levels, the magnitude of overestimation would have to increase over time, otherwise this analysis would detect these declines. On the contrary, given widespread concern regarding the adverse effects of constraints on public funding and managed care on the addiction field, one might have expected increasingly pessimistic reporting (i.e. underestimation) about service delivery over the 1990s. This study thus appears consistent with other research that could not detect unredeemably negative trends in access to and quality of behavioral health care over the 1990s (Beinecke, Shepard, Tetreault, Hodgkin, & Marckres, 2001; Deck, McFarland, Titus, Laws, & Gabriel, 2000).

One can speculate several possible reasons why the reported availability of medical services changed little in the late 1990s after becoming more available in the first half of the decade. First, a federal initiative to improve linkages to primary care ended in the early 1990s (Levin, Trumble, Edmunds, Statman, & Peterson, 1993). One could reasonably expect that any gains in medical service availability in substance abuse treatment would have tapered off once funding ended (Kunnes et al., 1993). The growth of managed care in the mid-1990s (Horgan, Reif, Ritter, & Lee, 2001), in which most clients would be assigned a medical provider outside of the substance abuse treatment system, is another possible explanation. However, a strong relationship between managed care involvement and the availability of services was not detected here, with the countervailing exception being that serving more clients whose insurers required prior authorization was associated with greater reported availability of routine medical care. Finally, the movement toward accreditation of addiction treatment programs may have increased the availability of medical services across the treatment system (Institute of Medicine, 1995).

This study also supports previous work that organizational characteristics are associated with the types of services available in specialty substance abuse treatment facilities (Durkin, 2002; Friedmann, Alexander, & D'Aunno, 1999; Lee et al., 2001). The lower propensity of private for-profit units to deliver comprehensive services is well-established (Friedmann, Alexander, & D'Aunno, 1999; Friedmann, Alexander, Jin, & D'Aunno, 1999; Lee et al., 2001). Because for-profit programs are more likely to serve insured clients (Wheeler & Nahra, 2000), one might argue that these programs are responding appropriately to a lower demand for comprehensive services among their clientele. The rising number of for-profit programs relative to public and nonprofit providers over the past decade, however, raises some concern about the current availability of comprehensive services to populations that might have greater need for them. That is to say, if the relative availability of public and not-for-profit treatment slots is declining, then needy clients might have more difficulty accessing treatment programs that offer comprehensive services.

These results also support earlier work that suggested that methadone units and JCAHO-accredited units offer more medical services, which is likely the result of external requirements and biomedical orientation (Friedmann, Alexander, & D'Aunno, 1999; Polinsky, Hser, Anglin, & Maglione, 1998). However, methadone units and JCAHO-accredited units are no more likely to make social services available. Because the regulatory system for methadone programs is converting towards an accreditation-based system (for which JCAHO is one accrediting organization), these findings imply that the availability of a range of comprehensive services should be monitored closely (Durkin, 2002).

In an unexpected finding, clinical supervisors reported that physical examinations were less available in hospital-affiliated programs than in freestanding programs. However, in hospital-affiliated programs that offered physical examinations, a greater proportion of clients received these services than in freestanding programs that offered these services (data not shown). One can speculate that an organizational distance exists between substance abuse treatment programs and traditional medical institutions like hospitals. However, once this organizational distance is overcome, geographic proximity between a hospital and its treatment unit might have facilitated successful linkage to services (Samet, Friedmann, & Saitz, 2001). However, affiliation with a mental health center had the expected effect on service availability: programs with such an affiliation were twice as likely to offer mental health care. This result, which is more consistent with the idea that a program's treatment orientation is related to service availability (Lee et al., 2001), suggests that substance abuse treatment programs and mental health treatment organizations, both of which fall under the contemporary rubric of 'behavioral health', might not operate with the same degree of

organizational distance as that found between addiction treatment programs and their medical affiliates.

Treatment programs that serve greater percentages of uninsured clients were more likely to report that physical examinations were available. Given that lack of insurance impedes access to health care, organizations managing clients with few health care opportunities might find it relatively easy to provide medical services of minimal scope, such as physical examinations. The data suggest, however, that these organizations remain limited in their ability to provide most routine medical care on an ongoing basis.

This study has several limitations. It includes only program-level reports and no client-level information about services actually received. Though some DATSS domains have been validated against chart-abstracted data (Batten et al., 1991), the dimensions of comprehensive service delivery have not been specifically validated against independent client-level sources. A lack of information regarding client-level need for services is another limitation, one that constrains our ability to determine whether the leveling-off of the availability of services was the appropriate result of a leveling-off in clients' needs. Other research has documented a substantial burden of unresolved medical and psychosocial problems among addiction treatment clients (Etheridge et al., 1995; McLellan & Weisner, 1996), and no evidence suggests an improvement in these issues in the 1990s. Finally, though these results do not generalize to inpatient or residential programs, the overwhelming majority (approximately 90%) of addiction treatment clients are in outpatient programs (Horgan et al., 2001).

Despite its limitations, this study suggests that the availability of comprehensive services for addiction treatment clients changed little in the 1990s. When viewed in light of the concurrent heroin epidemic, with its predictable adverse effects on medical and psychosocial status, and a 7-to 10-year delay before treatment entry (Hser, Anglin, Grella, Longshore, & Prendergast, 1997), the need for medical and psychosocial services should increase in the early part of the current decade. Future work should continue to monitor the extent to which clients can obtain comprehensive services in substance abuse treatment and other quality markers, the trends in access and quality of these services over time, and the client, organizational, and environmental factors that influence their delivery (Moos & Finney, 1995).

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Table 1

Availability of comprehensive services, by study year*

Type of service	Percentage of units in which any client received service			Mean percentage (standard deviation) of clients who received service in units where service was available			Median percentage (interquartile range) of clients who received service in units where service was available		
	1990	1995	2000	1990	1995	2000	1990	1995	2000
Physical examination	55.5	78.0	75.9	29.1 (29.6)	55.5 (38.4)	54.8 (39.5)	18.5 (3, 50)	50 (20, 100)	50 (15, 100)
Routine Medical Care	55.7	59.2	60.5	51.0 (40.6)	46.6 (35.9)	44.7 (34.5)	40 (10, 100)	40 (13, 80)	35 (12, 75)
Tuberculosis Screening	...	58.2	62.7	...	55.8 (41.7)	67.5 (41.2)	...	75 (10–100)	100 (25–100)
STD Screening	...	...	46.9	...	...	51.5 (40.0)	...	...	40 (10–100)
Hepatitis Screening	...	...	43.3	...	...	41.7 (36.6)	...	...	30 (5–100)
HIV/AIDS Treatment	...	20.8	28.0	...	8.5 (11.9)	12.9 (20.7)	...	3 (1–10)	3 (1–10)
Mental Health Care	83.5	83.9	88.2	28.4 (29.9)	25.7 (23.7)	29.3 (24.2)	15 (10, 30)	20 (10, 30)	24 (10, 40)
Financial Counseling	62.9	43.9	49.9	27.9 (31.3)	30.2 (34.4)	32.3 (33.8)	15 (5, 40)	15 (5, 50)	20 (8, 50)
Employment Counseling	71.7	73.3	73.5	30.7 (29.4)	32.6 (32.4)	37.0 (31.3)	20 (10, 40)	20 (10, 50)	25 (10, 50)
Legal Counseling (general item)	40.5	...	...	25.4 (27.2)	...	...	10 (5–40)	...	...
Legal Counseling re: Criminal Charges	...	38.6	41.5	...	27.8 (26.1)	20 (5–40)	...	20 (5–40)	20 (10–50)
Legal Counseling re: Child Custody	...	37.7	43.4	...	13.1 (17.5)	20.4 (21.3)	...	5 (3–5)	10 (3–20)
Housing Assistance	...	42.5	42.1	23.1 (27.1)	23.1 (27.1)	22.2 (21.9)	...	10 (5–20)	10 (5–23)

* Weighted in each year to represent substance abuse treatment programs nationally.

Table 2

Multivariable trends in the availability of comprehensive services, by type of service *

	OR (95% CI)			
	Physical examination	Routine medical care	Mental health care	Employment counseling
Study Year				
1990	0.30 (0.17, 0.55) [‡]	1.11 (0.64, 1.90)	0.72 (0.33, 1.58)	2.12 (1.27, 3.54) [‡]
1995	Referent	Referent	Referent	Referent
2000	0.75 (0.55, 1.02)	0.94 (0.72, 1.21)	1.09 (0.74, 1.60)	1.33 (1.04, 1.71) [‡]
Control Variables				
Unit Affiliation				
Freestanding/Other	Referent	Referent	Referent	Referent
Hospital	0.55 (0.36, 0.83) [‡]	0.83 (0.60, 1.15)	2.21 (1.29, 3.79) [‡]	0.71 (0.48, 1.04)
Mental health center	0.86 (0.58, 1.27)	1.02 (0.72, 1.33)	1.94 (1.17, 3.21) [‡]	0.81 (0.57, 1.17)
Unit Ownership				
Public	Referent	Referent	Referent	Referent
Private not for profit	0.81 (0.58, 1.15)	0.98 (0.74, 1.29)	0.96 (0.61, 1.52)	0.81 (0.59, 1.13)
Private for profit	0.39 (0.24, 0.65) [‡]	0.49 (0.32, 0.75) [‡]	0.49 (0.27, 0.91) [‡]	0.80 (0.52, 1.22)
Methadone available	18.38 (7.39, 45.69) [‡]	2.47 (1.47, 4.15) [‡]	1.65 (0.81, 3.42)	1.57 (0.97, 2.56)
JCAHO Accredited	2.80 (1.85, 4.22) [‡]	1.38 (1.01, 1.89) [‡]	1.18 (0.74, 1.87)	0.91 (0.68, 1.20)
Unit age, per 10 years	0.96 (0.80, 1.15)	1.08 (0.93, 1.25)	1.05 (0.84, 1.31)	1.10 (0.95, 1.26)
Greater 12-step orientation	0.88 (0.76, 1.03)	0.99 (0.87, 1.12)	0.81 (0.66, 0.99) [‡]	0.95 (0.84, 1.07)
Client Characteristics				
Age, per 10 years	1.21 (0.93, 1.58)	1.08 (0.86, 1.37)	0.93 (0.65, 1.33)	0.93 (0.76, 1.15)
Percentage of Women, per 10%	0.94 (0.80, 1.10)	0.90 (0.78, 1.05)	0.99 (0.80, 1.23)	0.99 (0.87, 1.14)
Race, per 10%				
Percentage African-American	1.02 (0.95, 1.08)	1.01 (0.96, 1.06)	1.04 (0.96, 1.13)	0.99 (0.95, 1.04)
Percentage Hispanic	1.02 (0.94, 1.10)	1.02 (0.95, 1.09)	0.86 (0.79, 0.92) [‡]	0.99 (0.93, 1.06)
Percentage uninsured, per 10%	0.96 (0.91, 1.00) [‡]	0.97 (0.94, 1.01)	0.97 (0.91, 1.02)	1.00 (0.97, 1.04)
Substance Use, per 10%				0.99 (0.95, 1.03)

OR (95% CI)					
	Physical examination	Routine medical care	Mental health care	Financial counseling	Employment counseling
Percentage who use heroin	1.02 (0.90, 1.14)	1.02 (0.95, 1.09)	0.97 (0.88, 1.06)	0.98 (0.92, 1.04)	1.09 (1.01, 1.18) [†]
Percentage who use cocaine	0.99 (0.92, 1.07)	1.04 (0.98, 1.11)	0.95 (0.87, 1.03)	1.06 (1.00, 1.12) [†]	1.06 (0.99, 1.13)
Percentage who use crack	1.06 (1.01, 1.13) [†]	1.02 (0.98, 1.06)	1.02 (0.96, 1.09)	1.01 (0.98, 1.05)	1.03 (0.98, 1.08)
Percentage who use alcohol	1.00 (0.95, 1.05)	0.96 (0.92, 1.00) [†]	0.96 (0.90, 1.03)	1.04 (1.00, 1.08)	0.98 (0.93, 1.03)
Managed Care, per 10%					
Percentage of HMO or PPO clients	1.00 (0.92, 1.09)	0.99 (0.92, 1.06)	1.04 (0.92, 1.16)	1.03 (0.96, 1.10)	0.96 (0.89, 1.04)
Percentage of clients for whom concurrent review required	1.01 (0.96, 1.07)	1.00 (0.96, 1.05)	1.08 (1.01, 1.17) [†]	1.02 (0.98, 1.06)	1.02 (0.96, 1.08)
Percentage of clients for whom prior authorization required	1.04 (0.98, 1.11)	1.06 (1.01, 1.12) [†]	0.95 (0.88, 1.03)	1.02 (0.97, 1.07)	1.03 (0.97, 1.09)

* From generalized estimating equation logistic regression models controlling for the variables listed.

[†] $p < .05$.

[‡] $p < .01$.