



Published in final edited form as:

J Addict Med. 2009 September ; 3(3): 139–150. doi:10.1097/ADM.0b013e31818ebb6f.

Factors Associated With Use of ASAM Criteria and Service Provision in a National Sample of Outpatient Substance Abuse Treatment Units

Emmeline Chuang, BA,

Department of Health Policy and Management, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC

Rebecca Wells, PhD,

Department of Health Policy and Management, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC

Jeffrey A. Alexander, PhD,

Department of Health Management and Policy, School of Public Health, University of Michigan, Ann Arbor, MI

Peter D. Friedmann, MD, and

Rhode Island Hospital, Alpert Medical School of Brown University, Providence, RI

I-Heng Lee, MA

Department of Health Policy and Management, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC

Abstract

Standardized patient placement criteria such as those developed by the American Society of Addiction Medicine are increasingly common in substance abuse treatment, but it is unclear what factors are associated with their use or with treatment units' provision of related services. This study examined these issues in the context of a national survey of outpatient substance abuse treatment units. Regressions using 2005 data revealed that both public and private managed care were associated with a greater likelihood of using American Society of Addiction Medicine criteria to develop client treatment plans. However, only public managed care was associated with a greater likelihood of offering more resource-intensive services. Associations between client population severity and resource-intensive service provision were sparse but positive.

Keywords

substance abuse treatment; patient placement criteria; ASAM; treatment practices; managed care

During the 1980s, rising pressure to increase the efficiency and cost-effectiveness of substance abuse treatment led to the development of between 40 and 50 independent sets of addiction treatment matching protocols.^{1,2} Most of these protocols were created as exclusive efforts by managed care entities, based on criteria that were not publicly available, and used without tests of their effectiveness.³ In an effort to enhance the validity and transparency of these criteria, in 1991 the National Association of Addiction Treatment

Providers and The American Society of Addiction Medicine (ASAM) created the first professional consensus-driven, publicly released set of standardized patient placement criteria (PPC), which have become known as the ASAM-PPC. These guidelines, subsequently revised in 1996 and 2001 to accommodate new developments in the field, are currently the most prominent in substance abuse treatment.⁴ Approximately, 30 state systems and a significant number of managed care companies, covering well over 50 million people, currently use the ASAM criteria when making decisions on what type of addiction treatment to authorize.⁵

Under the ASAM-PPC, clinicians evaluate each client's severity along 6 biopsychosocial dimensions: acute intoxication and/or potential for withdrawal; biomedical conditions or complications; emotional, behavioral, or cognitive conditions and complications; readiness to change; potential for relapse; and recovery environment (Table 1). A fixed combination rule then indicates which level of care is most likely to succeed for that client, ranging from early intervention to medically managed hospital inpatient therapy (Table 2). Appropriate placement of clients into a particular level of care should enhance cost-effectiveness by preventing both harmful under-treatment and resource-inefficient overtreatment. In particular, there are major cost differences between ASAM sublevels II.1 (intensive outpatient) and II.5 (partial hospitalization), and between ASAM Levels III (nonhospital residential/clinically managed) and IV (hospital inpatient/medically managed care).^{2,6}

Prior research indicates that when appropriately implemented, the ASAM-PPC provides valid and cost-effective indications of client treatment needs.^{7,8} However, concerns have been raised about how fully ASAM criteria are being implemented in the field. Previous studies have identified managed care and related third party insurance requirements, conflicting treatment philosophies held by staff and referring agencies, clients' ability and/or willingness to accept treatment recommendations, and units' capacity as factors that may influence substance abuse treatment units' provision of ASAM-recommended levels of care.^{6,9-11} All of these studies used observational or qualitative data collected on small samples of clients and/or treatment units, and only one focused explicitly on identifying potential barriers to implementing the ASAM criteria.

This study contributes to the substance abuse treatment literature by being the first to use data from a nationally representative sample of outpatient units to systematically test the factors associated with greater use of ASAM-PPC and provision of the recommended continuum of services. Outpatient treatment units serve the majority (62%) of people who enter substance abuse treatment in the United States¹²; therefore, understanding the factors that predict these facilities' treatment practices has broad relevance to the overall field of substance abuse prevention. Specifically, this study examines the extent to which client needs and financial factors are associated with these units' use and implementation of the ASAM criteria.

Use of the ASAM Criteria

In the past, substance abuse treatment units were noted for inconsistency in their practice patterns, with many offering multiple treatment alternatives and little consensus as to their respective utility.^{13,14} PPC such as the ASAM-PPC represent a form of clinical standardization expected to reduce these inconsistencies and thereby improve the efficiency and cost-effectiveness of care.¹ PPC are also perceived as being more useful than other clinical standardization tools at helping clinicians make treatment matching decisions because their placement recommendations are based on a wide variety of client-specific and social/environmental factors that allow clinicians to better align treatment plans with each client's needs.¹⁵ As the need for appropriate treatment matching extends across the entire

continuum of client severity—appropriate placement being just as relevant for people with the least severe conditions as for those with the greatest needs—no predictions were made about the association between client population severity and treatment units' use of the ASAM-PPC.

However, previous research indicates that financial factors may affect substance abuse treatment units' likelihood of using the ASAM-PPC. Substance abuse treatment units tend to operate under severe resource constraints that make them extremely sensitive to financial pressures.¹⁶ Evidence suggests that an increasingly large number of payers, particularly managed care organizations, are encouraging or even requiring treatment units to use more standardized clinical tools such as the ASAM-PPC in making placement decisions.¹³ Using the ASAM-PPC to place clients is, in and of itself, very low cost. Therefore, units with more revenues from managed care may respond to these payers' demands by using ASAM-PPC to justify treatment placement. On this basis we predicted that:

Hypothesis 1: Managed care will be positively associated with outpatient substance abuse treatment (OSAT) units' use of the ASAM-PPC.

Provision of ASAM-Recommended Levels of Care

According to proponents of standardized PPC,^{1,17,18} use of the ASAM criteria should increase placement of clients into appropriate, safe, and cost-efficient levels of care. However, appropriate placement of clients under the ASAM-PPC is conditioned on the availability of treatment at the recommended level of care. Previous studies in OSAT settings have shown that barriers such as geographic separation, client disorganization, and lack of insurance make it difficult for clients to keep referral appointments and that on-site provision of services improves client access.^{19,20} Given that referrals often do not translate into receipt of needed services, on-site provision of the full continuum of recommended services can be viewed as an important component of implementation of the ASAM criteria. However, unlike the use of the ASAM-PPC to make treatment decisions, actual provision of the more resource-intensive services along the recommended continuum is very costly. Thus, units may only provide such services when high proportions of their clients demonstrate need for them. To the extent that client needs drive units' implementation of ASAM guidelines:

Hypothesis 2: Client population severity will be positively associated with provision of resource-intensive services on-site.

Although substance abuse treatment units' provision of recommended services should ideally only reflect client needs, financial factors may also play an important role. Because they are generally small organizations or parts of larger agencies, treatment units are highly dependent on external sources for funding, clients, and legitimacy.¹⁶ Substance abuse treatment units are acutely aware of external threats to their survival,^{19,20} and may therefore factor both financial pressures and sources of financial slack into treatment practices.

More resource-intensive levels in the ASAM continuum are often perceived by substance abuse treatment units as being more costly to deliver.^{21,22} Given units' uncertain resource environments,²³ financial pressures from payers to minimize costs may discourage units from providing more resource-intensive services. For example, by its very nature, managed care seeks to contain costs of service provision. In practice, this occurs largely through treatment oversight that is administratively burdensome for treatment units.²⁴ Thus, paradoxically, even though treatment units that are more reliant on managed care may be more inclined to use ASAM-PPC to justify the level of treatment they provide, they may also be less inclined to provide more resource-intensive services. This leads to the prediction that:

Hypothesis 3a: Managed care will be negatively associated with treatment units' on-site provision of resource-intensive categories of services.

Conversely, units with more “slack” resources should be better positioned to provide more resource-intensive levels of care, slack being defined as “the difference between the resources of the organization and the combination of demands made on it.”²⁵ Assuming that substance abuse treatment units treat clients to the best of their ability, they will provide more costly services when they have more such financial discretion.^{26,27} This leads to the current study's final prediction, that:

Hypothesis 3b: Treatment units with more slack resources will be more likely to provide resource-intensive categories of services.

MATERIALS AND METHODS

Sample

Data were collected from outpatient drug abuse treatment units surveyed in 2005 as part of the National Drug Abuse Treatment System Survey (NDATSS). The NDATSS is a longitudinal study of OSAT units conducted by the Institute for Social Research at the University of Michigan. In the NDATSS, an OSAT unit is defined as a physical facility in that most resources (>50%) are dedicated to treating individuals with substance abuse problems (including alcohol and other drugs) on an outpatient basis. Despite this restriction, the majority of units within the sample (69%) do offer treatment options more intensive than standard outpatient care. Active duty military, Veteran's Administration, and correctional facility programs are excluded, as are units that treat only alcohol abuse.

The study used a stratified, proportional random sample drawn from the Institute of Social Research's sampling frame of the nation's OSAT units. The sampling method and procedures of the NDATSS have been described previously.²⁸ Briefly, the NDATSS uses a mixed-panel design, which combines elements from panel and cross-sectional designs. Data are collected from the same national sample of OSAT units that have been sampled and screened as part of prior waves of the study. These panel units are replenished in subsequent waves with new groups of OSAT units, randomly selected so that the full sample will be representative of the US outpatient treatment system in a given year. The 2005 sample, representing the sixth and most recent wave of NDATSS data, includes 566 units, reflecting an 88% response rate. Listwise deletion brought the final analytic sample to 472 units.

Data Collection

Data were collected through separate telephone surveys of the administrative director and clinical supervisor at each OSAT unit. Unit directors provided information concerning unit ownership, affiliation with other organizations, and financial pressures faced by the unit. Clinical supervisors provided information about client characteristics and treatment practices.

Experienced staff conducted the survey from the University of Michigan Survey Research Center. Several steps were taken to produce reliable and valid telephone survey data, including 2 pretests, substantial interviewer training, extensive checks for consistency within and between sections of the survey instrument, and when necessary, recontacts with respondents.²⁹

Measures

Outcomes—Treatment units' use of ASAM criteria and their provision of different levels of care were measured using 4 dichotomous variables and 1 categorical variable. The first

was a yes/no response concerning whether the unit routinely used ASAM-PPC to evaluate and place clients in treatment. The next set of dichotomous variables indicated the actual services provided by units beyond ASAM Level I (standard outpatient treatment, which, being virtually synonymous with the selection of the current sample, was excluded from the analysis). These services were categorized according to resource intensity, each of which was separately modeled to discern associations with specific categories of services. More resource-intensive levels of services were measured as: 1) ASAM Level II.1, intensive outpatient therapy, between 9 and 19 hours of skilled treatment services per week; 2) ASAM Level II.5, partial hospitalization treatment, defined as at least 20 hours of skilled treatment services per week; and 3) ASAM Levels III–IV, offering either nonhospital residential therapy involving a planned regimen of care in a 24-hour live-in setting and/or hospital inpatient therapy, involving medically monitored or medically managed intensive inpatient services (Table 2). Although there are important conceptual distinctions between ASAM Levels III and IV, the sample size for units offering the most resource-intensive level of care (Levels III.7–IV, hospital inpatient therapy) was too small to support a separate analysis ($n = 26$, or 5.5% of the final analytic sample). We, therefore, combined the 2 most resource-intensive levels of care, nonhospital residential (ASAM III.1–III.5), and hospital inpatient (ASAM III.7–IV). The total number of units offering at least 1 of these 2 levels of care is 85, or 18% of the sample.

In addition, a multinomial model was used to depict patterns of association with units' provision of increasingly resource-intensive services across a broader continuum of ASAM-recommended services by further aggregating the different types of resource-intensive service provision into 3 categories: 1) the unit offered no levels of care more resource-intensive than standard outpatient; 2) the unit offered 1 level of care more resource-intensive than standard outpatient treatment; and 3) the unit offered 2 or more resource-intensive levels of care. The decision to construct these 3 categories was based on the distribution of service offerings within the sample (Table 3). Approximately, 31% of units in the sample offered only standard outpatient care. Almost all units that offered any services more resource-intensive than standard outpatient care also offered intensive outpatient care (ASAM II.1). Additional service offerings beyond intensive outpatient care were a more diverse mix, none of which was large enough to merit modeling as a separate category. For this reason, we combined them into a third and final group (units offering 2 or more resource-intensive services). Given the focus on treatment units' decision to offer more resource-intensive levels of care, early intervention services and standard outpatient care were also excluded from analysis.

Predictors—Five variables were used as proxies for the biopsychosocial dimensions used by clinicians to evaluate client treatment needs under ASAM-PPC.⁴ These variables included: a) acute intoxication or withdrawal potential, measured as the percentage of clients using heroin, opiates, sedatives, and/or prescription drugs, substances whose withdrawal might require higher levels of services; b) biomedical conditions or complications, for which the best available proxy was the percentage of clients diagnosed with Hepatitis-C; c) emotional, behavioral or cognitive conditions, and complications, measured as the percentage of dually diagnosed clients; d) readiness to change and relapse potential, measured as the percentage of clients with prior substance abuse treatment; or e) recovery environment, measured as the percentage of clients who were homeless upon entry into treatment. The final client population severity variable, percentage of homeless clients, is important not only because alcohol and drug dependence among homeless persons are associated with higher morbidity and mortality rates and elevated rates of high-risk and health-endangering behavior,³⁰ but also because evidence suggests that homeless clients' tenuous recovery environments may necessitate placement in residential treatment, a higher levels of services under ASAM-PPC.¹⁰

Treatment units' financial sources were measured using the following 4 variables: 1) revenue from public managed care, ie, the total percentage of units' revenue from Medicaid and other public managed care sources; 2) revenue from private managed care; 3) revenue from other private insurance; and 4) revenue from other public sources, the total percentage of units' revenue from other public (nonmanaged care) sources, including federal, state, and local funds. Cumulatively, on average, these variables account for approximately 75% of the revenue for the outpatient treatment units in this sample.

We anticipated that both public and private managed care would prompt units to use ASAM-PPC to justify treatment and constrain them from providing more resource-intensive services. However, we used separate measures of public and private managed care to allow for potentially differential effects, such as varying levels of payment generosity. The total percentage of units' revenue from other private insurance was considered indicative of more "slack" resources because private insurance typically offers the most generous payment and tends to be more supportive of providing more costly forms of care to clients.⁹ Revenue from other public sources was included as a control for other public (nonmanaged care) funding streams that might also influence unit service provision.

Stratification and Other Control Variables—Five facility attributes served as stratification variables and controls for potential confounders of the associations between focal predictors and OSAT units' service provision (Table 3). Two of these were separate dichotomous variables indicating private for-profit and not-for-profit ownership, respectively, each relative to public ownership. Another dichotomous variable reflected whether or not the facility provided methadone treatment, and 2 additional dichotomous variables indicated whether or not each facility was based in or otherwise affiliated with a hospital or a mental health center, respectively. Previous research has shown that provider profit status and unit organizational affiliations may influence OSAT units' ability to offer services and/or the types of services offered.^{22,31-33}

Several other organizational factors that could potentially influence units' service provision were also included as controls. Prior evidence suggests that accreditation is associated with differential service provision by substance abuse treatment units.^{34,35} Therefore, we controlled for the 2 most common types of accreditation, whether the unit was accredited by the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) and whether the unit was accredited by the Commission on Accreditation of Rehabilitation Facilities (CARF), each measured dichotomously.

We also controlled for unit age in years and unit size, measured as the number of active clients treated by the units in the past year, were also included as controls. The unit size variable, the current number of active clients in the OSAT unit, was log-transformed because previous analyses have indicated a nonlinear association between unit size and outcomes of interest.³⁶

Analytic Strategy

NDATSS developed selection weights to adjust for oversampling of certain types of programs and for nonresponse. Using these weights yielded descriptive statistics with generality to the national population of OSAT units, excluding Veteran's Administration and correctional facility programs (Table 4). In the regression models, stratification variables for unit ownership, unit affiliation, and methadone status accomplished the same level of generality. A separate logistic regression analyses were conducted for each of the dichotomous-dependent variables using Stata 9.0. The categorical variable was analyzed using a multinomial logistic regression. The model passed the Hausman test for the

independence of irrelevant alternatives, ie, that the probability of selecting between 2 outcomes is unaffected by additional factors.

The initial set of models yielded null results for all associations between client population severity measures and unit service provision (not shown). Given the large standard deviations and relatively low means of these variables, the detection of 1% differences on the dependent variables may have been too stringent a threshold for these variables associations to achieve. This prompted post-hoc testing to determine if there was a critical mass at which a given client population attribute would affect unit service provision. Based on the distribution of variables, units were coded as having a “high” percentage of clients with any given attribute if they served a percentage greater than the median for units that served any clients with that attribute. This operationalization was a better measure of central tendency than the overall median because it adjusted for sometimes substantial proportions of units that did not provide services to any clients with a given attribute. These models did yield some associations between clients severity and service provision, which are presented in the final results (Tables 6 and 7).

We also ran all of the models with a dichotomous control for the type of treatment modality offered by units in the sample. Using director reports of the percentage of units’ revenue from outpatient care, units were classified as being either outpatient-only or a mix of outpatient and residential/inpatient services. However, this variable was not significant in any of the models and was, therefore not included in the final set of results.

The Huber-White correction was used in all models to ensure regression coefficients with heteroskedasticity-robust standard errors.^{37,38} For ease of interpretation, logistic regression results have been presented as odds ratios (OR) (Tables 5 and 6), and multinomial logistic results as relative risk ratios (RRRs) (Table 7). RRRs are the exponentiated values of β coefficients and in this context indicate the probability of offering more resource-intensive levels of care relative to not offering such care.

Levels of item nonresponse were generally very low, with a maximum of 11% for the client severity variable indicating the percentage of clients diagnosed with Hepatitis-C. Imputation was, thus, not generally warranted. However, when not present in the wave 6 data, unit age was extrapolated from the previous wave, retaining an additional 23 cases for a final analytic sample size of 472.

Bivariate correlations among study variables, followed by tolerance checks for any correlations >0.4 did not indicate any problematic collinearity.

RESULTS

Characteristics of the Sample

More than half of units (57%) reported routinely using ASAM criteria to evaluate and place their clients. Close to a third (31%) of all units did not offer any levels of care more resource-intensive than ASAM I, standard outpatient care. Almost half of units (49%) offered 1 level of care more resource intensive than standard outpatient, and a fifth of units (20%) offered 2 or more levels of care more resource intensive than standard outpatient care. More detailed information about unit service provision is provided in Table 3. Response rates and descriptive statistics for all study variables are presented in Table 4.

Regarding units’ provision of specific levels of care, a majority of units (70%) offered ASAM II.1, intensive outpatient treatment services. As the provision of ASAM levels of care grew more resource intensive, reflecting the hierarchical nature of treatment intensity

across the ASAM-recommended continuum, fewer units actually provided them. Only 13% of units provided ASAM II.5, partial hospitalization services, and only 15% offered at least 1 of the 2 most resource-intensive levels of care, ASAM III.1–.5, nonhospital residential care or ASAM III.7–IV, hospital inpatient therapy.

On average, units indicated that a mean of 20% of their clients were abusing heroin, opiates, sedatives, and/or prescription drugs and that approximately 20% of their clients were diagnosed with Hepatitis-C. Consistent with existing literature on the high co-occurrence of psychiatric disorders in addiction treatment settings,^{39,40} units indicated that an average of 42% of clients were dually diagnosed. Units also saw an extremely high percentage of clients with prior substance abuse treatment, with an average of 67% of clients with prior substance abuse treatment history. On average, 13% of units' clients were homeless, although approximately 25% of units reported that they did not provide services to any homeless clients at all.

On average, treatment units received 60% of their revenue from public sources. Of that revenue, approximately 11% came from public managed care, including Medicaid, and 49% from other public sources. Units reported receiving only about 4% of their revenue on average from private managed care and about 5% of their income from other private insurance sources.

Model Results: Use of the ASAM Patient Placement Criteria

There was strong support for Hypothesis 1 that managed care would be positively associated with routine use of ASAM criteria in developing client treatment plans. The percentages of revenue derived from public and private managed care were both significantly correlated with treatment units' routine use of ASAM criteria (OR 1.010, $P < 0.05$; and OR 1.025, $P < 0.05$, respectively; Table 5).

Among the controls, CARF accreditation was also strongly and positively associated with use of the ASAM-PPC (OR 3.187, $P < 0.01$).

Model Results: Client Population Severity and ASAM-PPC Service Provision

Results provided partial support for Hypothesis 2 that client population severity would be positively associated with more resource-intensive service provision. Although there were no overall associations between client population severity variables and ASAM-recommended service provision, there were some positive associations between high proportions of certain client population attributes and provision of more resource-intensive services in the ASAM-recommended continuum. Treatment units serving a high proportion of clients abusing heroin, opiates, sedatives, or prescription drugs (ie, with high acute intoxication or withdrawal potential) were more likely to provide partial hospitalization care (OR 2.876, $P < 0.05$) (Table 6). Results from the multinomial model examining the spectrum of treatment categories in a single measure indicate that these units were also more likely to provide 2 or more levels of care more resource intensive than standard outpatient (RRR 2.714, $P < 0.05$) (Table 7).

Units serving a high percentage of homeless clients were significantly more likely to provide intensive outpatient care (OR 1.926, $P < 0.01$). Multinomial results indicate that units serving a high proportion of homeless clients also had a significantly higher probability of offering more resource-intensive levels of care than units with lower proportions of homeless clients (RRR 2.127, $P < 0.01$ for 1 additional level of care; RRR 2.204, $P < 0.05$ for 2 or more additional levels of care) (Table 7).

Model Results: Financial Factors and ASAM-PPC Service Provision

Contrary to Hypothesis 3a, the only significant associations between managed care and treatment units' service provision were positive. Based on evidence that more intensive services were seen as less profitable than alternatives,^{21,22} the hypothesized association between financial pressure and provision of resource-intensive services had been negative. However, treatment units with a larger percentage of revenue attributable to public managed care were actually significantly more likely to offer the highest levels of care, nonhospital residential, or hospital inpatient therapy (OR 1.016, $P < 0.01$) (Table 6). The multinomial model also revealed that these units had a higher probability of offering 2 or more resource-intensive levels of care (RRR 1.010, $P < 0.05$) (Table 7).

There was no support for Hypothesis 3b that units with more "slack" resources—here operationalized as percentage of revenue from private insurance—would offer more intensive treatment options. Aside from the associations between public managed care and unit service provision described above, none of the units' financial sources were significantly associated with their provision of more resource-intensive levels of care.

Model Results: Other Correlates of ASAM-PPC Service Provision

A number of controls were significantly associated with units' provision of different ASAM levels of care. There was a positive association between the number of active clients and units' likelihood of providing partial hospitalization (OR 1.611, $P < 0.01$) (Table 6). The number of clients in the unit was also positively associated with the probability of providing 2 or more levels of resource-intensive care (RRR 1.396, $P < 0.05$) (Table 7).

Private for-profit ownership was negatively associated with units' provision of the highest levels of care (OR 0.178, $P < 0.05$; Table 6) and with units' likelihood of providing 2 or more resource-intensive services (RRR 0.301, $P < 0.05$; Table 7). As might be expected, given the types of services involved, hospital affiliation was positively associated with treatment units' provision of partial hospitalization (OR 6.410, $P < 0.01$) and with the highest levels of care, nonhospital residential and/or hospital inpatient (OR 2.530, $P < 0.05$) (Table 6). Finally, provision of methadone maintenance was significantly and negatively associated with provision of any of the more resource-intensive levels of care (OR 0.477, $P < 0.05$ for intensive outpatient care; OR 0.214, $P < 0.01$ for partial hospitalization; OR 0.343, $P < 0.05$ for residential or inpatient therapy) (Table 6). The provision of methadone maintenance was also negatively associated with the likelihood of offering 2 or more resource-intensive levels of care (RRR 0.209, $P < 0.01$) (Table 7).

DISCUSSION

Study findings indicate that while public and private managed care are strongly and positively associated with treatment units' use of the ASAM-PPC, only public managed care was significantly associated with units' actual service provision. Client severity factors displayed some positive associations with treatment units' service provision. Organizational characteristics such as CARF accreditation, size, ownership, and hospital affiliation also seemed to influence treatment units' use of the ASAM-PPC and their provision of ASAM-recommended services.

Use of the ASAM Patient Placement Criteria

The positive associations between both public and private managed care revenue and routine use of ASAM-PCC may reflect a greater emphasis by managed care than other payers on systematic evaluation criteria. It is also possible that treatment units are anticipating such interest through use of ASAM-PPC to justify treatment choices. To the extent that

appropriate evaluation of client needs is important in its own right, the positive associations indicate that all types of managed care may be supporting the diffusion of positive treatment practices. Clinicians may find these findings reassuring, given broad industry trends toward managed care, particularly public managed care.^{41,42} Even when substance abuse treatment units do not offer all recommended services on site, it is possible that identifying treatment needs through ASAM-PPC leads to more appropriate referrals than would otherwise occur, although the current data did not allow us to test the possibility.

Although accreditation was not a focus of this study's hypotheses, the result for CARF merits attention. The strong positive association between CARF but not JCAHO accreditation and use of the ASAM-PPC may reflect the different normative environments of units with these 2 respective types of accreditation. JCAHO-accredited units tend to be affiliated with hospitals and/or other types of healthcare facilities and may seek to legitimize themselves according to hospital standards, which may not include the use of the ASAM-PPC, a placement criteria developed solely for the behavioral health sector. By contrast, CARF accreditation is focused specifically on rehabilitative services such as behavioral health, and directors of units seeking CARF accreditation may also be more likely to use the ASAM-PPC as a way of legitimizing themselves within the behavioral health sector.

Provision of ASAM-Recommended Services

One possible explanation for the positive associations between units serving a high proportion of clients at high risk of acute intoxication/withdrawal and the likelihood of providing partial hospitalization (ASAM II.5) and 2 or more resource-intensive services is that clients using drugs such as heroin and other opiates are more likely to require treatment beyond standard outpatient care, such as partial hospitalization. However, the lack of a significant association between this variable and provision of the most resource-intensive levels of care (nonhospital residential and/or hospital inpatient therapy) also presents an alternative explanation. Although nonhospital residential or hospital inpatient therapy may better match their clients' needs, given the limited resources available to most treatment units, which tend to face worker shortages and inadequate compensation for services,⁴³ units serving high percentages of these high-risk clients may lack the capacity to provide the most resource-intensive types of treatment and may, therefore, settle for either referring clients to other facilities or providing a less costly type of care, such as partial hospitalization.

Similarly, although the positive associations between high proportions of homeless clients and provision of more resource-intensive treatment might also be indicative of units providing services tailored to their typically very substantial needs, previous evidence suggests that lack of insurance coverage and treatment expense often result in under-treatment of this population.^{10,30} Given the lack of stable accommodations for the homeless, the positive association with units' provision of intensive outpatient treatment (ASAM II.1) coupled with a lack of association with either partial hospitalization (ASAM II.5) or the most resource-intensive levels of care (ASAM III–IV) raises some concern.

The ASAM-PPC contains some specifications that allow clinicians to assign clients requiring residential therapy (ASAM III–IV) to a lower level of care, provided that dormitory or other housing arrangements can be made.¹⁵ Although this provision was originally intended to help clinicians accommodate client preferences and/or limitations, it is possible that treatment units are using the flexibility built within the ASAM-PPC to address other factors—such as financial pressures—instead. For example, instead of providing more resource-intensive levels of care, some units caring for the homeless may be shuttling clients to less expensive, community-based housing solutions.

Overall, although the results indicate that client severity does influence service provision to some extent, even the relatively sparse, positive associations between client population severity and on-site provision of intensive services suggest that on-site access to the full continuum of treatment options may remain inadequate for some types of high-risk clients. Many units lack the resources to meet all of their clients' comprehensive treatment needs. Although substance abuse treatment units can refer clients to other units for treatment,⁴⁴ referrals may be infeasible in areas with few providers and/or for uninsured patients. The effectiveness of these referrals is worthy of further examination, as delayed or uncompleted referrals may place clients at risk for withdrawal and relapse. Future research should examine if and how specific client population subgroups access recommended levels of treatment when these services are not available at the units that first see them.

What can clinicians in units with limited on-site treatment options do? Over time, they can improve access for clients through cultivation of relationships with other substance abuse treatment units that provide more intensive services. Of course, these arrangements are often ad hoc, limited in the numbers of clients served, and vulnerable when individuals at either organization leave. A potentially longer-term solution is to advocate with local public officials that services such as intensive outpatient care at substance abuse treatment units cost less than jail and inpatient stays,⁴⁴⁻⁴⁶ and are worthy of public support.

Results did not suggest that financial pressures from managed care reduced the likelihood of offering more resource-intensive levels of care. In fact, the positive associations between units' revenue from public managed care and provision of the most resource-intensive levels of care suggest that public managed care may increase substance abuse treatment units' provision of services on-site, perhaps as a result of state requirements that units receiving public funding provide particular types of care. However, given prior evidence that financial pressures from managed care causes units to reduce treatment hours and/or length of stay,⁶ an alternative explanation could be that treatment units are responding to pressures from public managed care by offering nonhospital residential therapy (ASAM III.1-III.5) instead of hospital inpatient care (ASAM III.7-IV) as a means of cutting costs while still treating clients. Unfortunately, the available data did not include information on state requirements or indicate whether nonhospital residential care was offered in place of more or less resource-intensive alternatives, precluding further exploration of this issue in the current study.

Also contrary to expectation, revenue from private insurance not subject to managed care restrictions was not significantly associated with treatment units' service provision. As private insurance accounted for only a small percentage of treatment units' total revenue (on average approximately 5%) it is possible that this payment source does not adequately capture the sources of financial slack available to outpatient treatment units, and that future research should consider other measures, such as insurance generosity or proportions of billable rates paid for self-paid clients.

Finally, the associations between organizational controls and unit service provision tended to be consistent with the current literature. The fact that larger treatment units were more likely to provide partial hospitalization (ASAM II.5) services and to provide 2 or more resource-intensive services is consistent with previous evidence that larger human service organizations are more likely to have the capacity necessary to offer both a wider range of services and higher, more resource-intensive levels of care.^{26,47}

The negative association between for-profit ownership status and treatment units' provision of the most resource-intensive levels of care (ASAM III-IV) was also consistent with previous literature, suggesting that private sector organizations are more likely to focus on

offering specific sets of “core” services than their public system counterparts and that, controlling for managed care pressures, for-profit organizations tend to offer the narrowest range of services (thus, omitting the highest levels of care within the ASAM continuum), in part because these extraresource-intensive services are perceived as being less profitable.^{21,22}

The consistently negative association between methadone maintenance and provision of more resource-intensive levels of care could be the result of the intensive resource requirements associated with provision of methadone maintenance therapy, which may prevent units from diversifying their services. Treatment units offering methadone maintenance therapy tend to be located in large urban areas and are subject to strict federal regulations intended to prevent the diversion of methadone, including staffing requirements for units to have designated staff available 24 hours a day, 7 days a week.⁴⁸ Given the availability of other treatment options within large urban areas and the high resource costs associated with provision of methadone maintenance therapy, outpatient units offering this treatment option may therefore be focusing their services more narrowly, instead of offering a broader array of services along the ASAM-recommended continuum.

Overall, the current study found that while private and public managed care were positively associated with units’ use of ASAM-PPC, only public managed care seemed to influence units’ actual service provision. A higher percentage of revenue from public managed care was positively associated with treatment units’ likelihood of offering the most resource-intensive levels of care and also their probability of offering 2 or more resource-intensive levels of care.

Limitations

This study had a number of limitations. First, as mentioned previously, the sample included only treatment units in that the majority of resources (>50%) were devoted to outpatient care, which limited the generalizability of findings. Although the majority of these units did offer services more intensive than standard outpatient care, the number of units offering the most resource-intensive levels of care—residential and/or inpatient therapy—was too small to model each separately. The types of units for which more information on these levels of ASAM-recommended service provision would be readily available—specifically, units offering predominantly residential/inpatient or inpatient-only services—were not in the study sample. Given the high cost differential between units’ provision of nonhospital residential and hospital inpatient care and the potential relevance of the ASAM-PPC in justifying this type of costly service provision, this distinction is important and worth examining in future research.

Second, as mentioned previously, although study results indicated a positive association between units’ revenue from public managed care and both use of ASAM-PPC and actual service provision, we could not explicitly control for state requirements for units to use the ASAM-PPC and/or provide specific ASAM-recommended levels of care, and how these requirements may have influenced units’ service provision. These state requirements, particularly when explicitly linked with reimbursement mechanisms, may have a significant impact on service provision and should be examined in more depth.

Another limitation is that the data did not allow full measurement of the capacity of a given treatment unit to provide a particular level of service, and how that might influence units’ service provision independently from financial pressures from payers. For example, to address the high levels of co-occurring substance use and psychiatric disorders in the client population, the most recent ASAM criteria, PPC “PPC2R,” was enhanced to include a taxonomy of treatment programs based on dual diagnosis capabilities: Addiction Only

Services, targeting services to persons with primary substance use disorders who have no or minimal co-occurring problems; Dual Diagnosis Capable, offering services to persons with psychiatric comorbidity but who are relatively stable in symptoms and severity; and Dual Diagnosis Enhanced, programs responsive to persons of varying, including severe, levels of psychopathology, regardless of acuity or stability.⁴ Even when clinically indicated, offering higher levels of dual diagnosis capability is typically cost prohibitive for many programs.³⁹ Future research could further explore the extent to which unit capacity issues influence treatment units' service provision and clients' access to needed services.

Related to the issue of how unit capacity influences service provision, the current study focused exclusively on on-site provision of services and was unable to reveal the extent to which substance abuse treatment units using ASAM-PPC have been addressing client needs more appropriately through referrals even when they have not offered the full range of recommended services on site. Although on-site provision of services is preferred,^{19,20} the reality is that many treatment units simply lack the resources to provide the entire continuum of services on-site. What is unclear is how units using the ASAM-PPC are responding when recommended services are not available on-site; additional research exploring whether these units are choose to provide clients with less intensive services on-site or referring them out to receive needed services could provide important insights into the realities of how the criteria are actually being implemented in the field.

Finally, the cross-sectional design of the data leaves the direction of causality uncertain. Despite the fact that the models controlled for a number of potential confounders, one cannot rule out the possibility that units providing certain levels of care were more likely to attract certain types of clients or be susceptible to certain types of financial pressures. Longitudinal analyses can help discern the extent to which these factors drive treatment units' adoption of PPC and service provision or simply reflect them.

CONCLUSIONS

Given the increasing use of patient practice criteria in substance abuse treatment, it is important to understand how these criteria are being used and the factors influencing the provision of the recommended range of services. The current study suggests that both public and private managed care are associated with greater use of PPC, and that public managed care might facilitate units' provision of the recommended continuum of services. Given the enormous individual and societal costs of substance abuse, and the importance of reducing access barriers, these results suggest the need for additional research in this area to further explore what policy makers and managers can do to expand service offerings in response to client needs.

Acknowledgments

The authors thank Prof. Marisa Domino and Prof. E. Michael Foster for their technical expertise. The views expressed here are those of the authors and do not necessarily reflect those of NIDA.

Supported by The National Institute on Drug Abuse from Grant 5 R01 DA003272.

REFERENCES

1. Gastfriend DR, Lu S, Sharon E. Placement matching: challenges and technical progress. *Subst Use Misuse*. 2000; 35:2191–2213. [PubMed: 11138721]
2. Center for Substance Abuse Treatment. Treatment Improvement Protocol (TIP) Series 13: The Role and Current Status of Patient Placement Criteria in the Treatment of Substance Use Disorders. US

Department of Health and Human Services, Substance Abuse and Mental Health Services Administration; 1995.

3. Turner WM, Turner KH, Reif S, et al. Feasibility of multi-dimensional substance abuse treatment matching: automating the ASAM patient placement criteria. *Drug Alcohol Depend.* 1999; 55:35–43. [PubMed: 10402147]
4. Mee-Lee, D.; Shulman, GD.; Fishman, M., et al. ASAM Patient Placement Criteria for the Treatment of Substance-Related Disorders, Second Edition-Revised (ASAM PPC-2R). American Society of Addition Medicine, Inc; Chevy Chase, MD: 2001.
5. Mee-Lee D. ASAM's placement criteria: what's new. *Behav Health Manag.* 2005; 25:32–34.
6. Levine HJ, Turner W, Reif S, et al. Determining service variations between and within ASAM levels of care. *J Addict Dis.* 2003; 22(suppl 1):9–25. [PubMed: 15991587]
7. Sharon E, Krebs C, Turner W, et al. Predictive validity of the ASAM patient placement criteria for hospital utilization. *J Addict Dis.* 2003; 22(suppl 1):79–93. [PubMed: 15991591]
8. Magura S, Staines G, Kosanke N, et al. Predictive validity of the ASAM patient placement criteria for naturalistically matched vs. mismatched alcoholism patients. *Am J Addict.* 2003; 12:386–397. [PubMed: 14660153]
9. Kosanke N, Magura S, Staines G, et al. Feasibility of matching alcohol patients to ASAM levels of care. *Am J Addict.* 2002; 11:124–134. [PubMed: 12028742]
10. O'Toole TP, Freyder PJ, Gibbon JL, et al. ASAM patient placement criteria treatment levels: do they correspond to care actually received by homeless substance abusing adults? *J Addict Dis.* 2004; 23:1–15. [PubMed: 15077836]
11. Heatherton B. Implementing the ASAM criteria in community treatment centers in Illinois: opportunities and challenges. *J Addict Dis.* 2000; 19:109–116. [PubMed: 10809524]
12. Treatment Episode Dataset (TEDS). National Admissions to Substance Abuse Treatment Services, Chapter 3: Characteristics of Admissions. US Department of Health and Human Services, Substance Abuse and Mental Health Services Administration; 2005.
13. Steenrod, S.; Brisson, A.; McCarty, D., et al. Effects of managed care on programs and practices for the treatment of alcohol and drug dependence. In: Galanter, M., editor. *Services Research in the Era of Managed Care: Organization, Access, Economics, and Outcomes.* Springer; New York: 2001. p. 51-70.
14. Harrison PA, Hoffmann NG, Hollister CD, et al. Determinants of chemical dependency treatment placement: clinical, economic, and logistic factors. *Psychotherapy.* 1988; 25:356–364.
15. Rubin, A.; Gastfriend, DR. Patient placement criteria and their relation to access to appropriate level of care and engagement in alcoholism treatment. In: Galanter, M., editor. *Services Research in the Era of Managed Care: Organization, Access, Economics, and Outcomes.* Springer; New York: 2001. p. 157-176.
16. Hasenfeld, Y. *Human Service Organizations.* Prentice Hall; Englewood Cliffs, NJ: 1983.
17. Mee-Lee, D. The ASAM patient placement criteria. New research findings on validity and new clinical implementation issues; Paper presented at: American Society of Addiction Medicine 31st Medical-Scientific Conference; Chicago, IL. 2000;
18. Gastfriend DR, McLellan AT. Treatment matching: theoretic basis and practical implications. *Med Clin North Am.* 1997; 81:945–966. [PubMed: 9222262]
19. Friedmann PD, Alexander JA, Jin L, et al. On-site primary care and mental health services in outpatient drug abuse treatment units. *J Behav Health Serv Res.* 1999; 26:80–94. [PubMed: 10069143]
20. Umbricht-Schneiter A, Ginn DH, Pabst KM, et al. Providing medical care to methadone clinic patients: referral vs. on-site care. *Am J Public Health.* 1994; 84:207–210. [PubMed: 8296941]
21. Ducharme LJ, Mello HL, Roman PM, et al. Service delivery in substance abuse treatment: reexamining “comprehensive” care. *J Behav Health Serv Res.* 2007; 34:121–136. [PubMed: 17390225]
22. Olmstead TA, Sindelar JL. Does the impact of managed care on substance abuse treatment services vary by provider profit status? *Health Serv Res.* 2005; 40:1862–1880. [PubMed: 16336553]
23. Thompson, J. *Organizations in Action.* McGraw-Hill; New York: 1967.

24. Lemak CH, Alexander JA, Campbell C. Administrative burden and its implications for outpatient substance abuse treatment organizations. *Psychiatr Serv.* 2003; 54:705–711. [PubMed: 12719502]
25. Cohen MD, March JG, Olsen JP. A garbage can model of organizational choice. *Adm Sci Q.* 1972; 17:1–25. [Quote from pg. 12].
26. Nohria N, Gulati R. Is slack good or bad for innovation? *Acad Manage J.* 1996; 39:1245–1264.
27. Bourgeois LJ. On the measurement of slack. *Acad Manage Rev.* 1981; 6:29–39.
28. Heeringa, SG. *Outpatient Drug Abuse Treatment Studies: Technical Documentation.* Institute for Social Research, University of Michigan; Ann Arbor: 1996.
29. Groves, RM.; Biemer, PP.; Lyberg, LE. *Telephone Survey Methodology.* Wiley; New York: 1988.
30. Reid SD. Drug use, sexual behavior, and HIV risk of the homeless in Port-of-Spain, Trinidad. *West Indian Med J.* 1999; 48:57–60. [PubMed: 10492603]
31. Wells R, Lemak CH, D’Aunno T. Insights from a national survey into why substance abuse treatment units add prevention and outreach services. *Subst Abuse Treat Prev Policy.* 2006; 1:21. [PubMed: 16887037]
32. Friedmann PD, Alexander JA, D’Aunno TA. Organizational correlates of access to primary care and mental health services in drug abuse treatment units. *J Subst Abuse Treat.* 1999; 16:71–80. [PubMed: 9888124]
33. D’Aunno T, Vaughn TE. An organizational analysis of service patterns in outpatient drug abuse treatment units. *J Subst Abuse.* 1995; 7:27–42. [PubMed: 7655310]
34. Wells R, Lemak CH, Alexander JA, et al. Do licensing and accreditation matter in outpatient substance abuse treatment programs? *J Subst Abuse Treat.* 2007; 33:43–50. [PubMed: 17588488]
35. Friedmann PF, Alexander JA, D’Aunno TA. Organizational correlates of access to primary care and mental health services in drug abuse treatment units. *J Subst Abuse Treat.* 1999; 16:71–80. [PubMed: 9888124]
36. Lemak CH, Alexander JA. Managed care and outpatient substance abuse treatment intensity. *J Behav Health Serv Res.* 2001; 28:12–29. [PubMed: 11329996]
37. Long, JS.; Freese, J. *Regression Models for Categorical Dependent Variables Using Stata.* 2nd ed.. Stata Press; TX: 2006.
38. Wooldridge, JM. *Introductory Econometrics.* 3rd ed.. Thomson Press; 2006. p. 272-278.
39. McGovern MP, Xie H, Acquilano S, et al. Addiction treatment services and co-occurring disorders: the ASAM-PPC-2R taxonomy of program dual diagnosis capability. *J Addict Dis.* 2007; 26:27–37. [PubMed: 18018806]
40. Minkoff K, Zweben J, Rosenthal R, et al. Development of service intensity criteria and program categories for individuals with co-occurring disorders. *J Addict Dis.* 2003; 22(Suppl 1):113–129. [PubMed: 15991593]
41. Kaiser Family Foundation. Trends and indicators in the changing health care marketplace, section 2: trends in health insurance enrollment. Available at: <http://www.kff.org/insurance/7031/print-sec2.cfm>.
42. Hurley RE, Draper DA. Medicaid confronts a changing managed care marketplace. *Health Care Financing Review.* 2002; 24:11–25. [PubMed: 12545597]
43. Substance Abuse and Mental Health Services Administration. Report to congress: addictions treatment workforce development. US Department of Health and Human Services; 2006.
44. National Drug Abuse Treatment System Survey (NDATTS). Institute for Social Research; Ann Arbor, MI: 2005.
45. Mears, DP.; Winterfield, L.; Hunsaker, J., et al. *Drug treatment in the criminal justice system: the current state of knowledge.* Report by the Urban Institute; 2003.
46. Legislative Analyst’s Office (LAO). Substance abuse treatment in California: services are cost-effective to society, 1999. Available at: <http://www.lao.ca.gov/>.
47. Durkin EM. An organizational analysis of psychosocial and medical services in outpatient drug abuse treatment programs. *Soc Serv Rev.* 2002; 76:406–429.
48. Wechsberg, WJ.; Kasten, JJ.; Berkman, ND., et al. *Methadone Maintenance Treatment in the US, Chapter 4: Methadone Maintenance Treatment Program Characteristics.* Springer Publishing Company; New York: 2007.

TABLE 1

ASAM PPC-2R Assessment Dimensions

Dimension		Assessment
Dimension 1	Acute intoxication and/or withdrawal potential	Significant risk of severe withdrawal symptoms or seizures
Dimension 2	Biomedical conditions and complications	Any acute or chronic medical illness that might interfere with the current treatment episode
Dimension 3	Emotional, behavioral, or cognitive conditions and complications	Any psychiatric issues, including behavioral or emotional problems that might impede the treatment process
Dimension 4	Readiness to change	Patient's openness to treatment, acceptance of addiction, readiness for change, and motivation for compliance
Dimension 5	Relapse, continued use, or continued problem potential	Patient's ability to cope with cravings, comprehension of relapse triggers, and ability to abstain
Dimension 6	Recovery environment	Current living situation, adequacy of social support network, financial resources, etc.

TABLE 2

ASAM Levels of Care

ASAM Level of Care		Definition
Level .5	Early intervention	Preventive services for those at-risk or without sufficient information to document disorder
Level I	Standard outpatient	<9 hr of skilled treatment services per week
"Resource intensive" levels of care modeled in this study		
Level II.1	Intensive outpatient	9–19 hr of skilled treatment services per week
Level II.5	Partial hospitalization	20 hr of skilled treatment per week
Level III.1–III.5	Non-hospital residential therapy	Clinically managed treatment, involving a planned regiment of care in a 24-hr live-in setting
Level III.7	Hospital inpatient therapy, medically monitored	Hospital inpatient treatment on a 24-hr basis, including medical monitoring by an interdisciplinary staff
Level IV	Hospital inpatient therapy, medically managed	Intensive hospital inpatient care, involving 24-hr medical and nursing care and potentially 24-hr psychiatric care as well

ASAM, American Society of Addiction Medicine.

TABLE 3

Types of Resource-Intensive Services Provided by Units Within the Sample (N = 472)

	Sample (N)
Offered only ASAM I (standard outpatient)	150
Offered only ASAM II.1	217
Offered only ASAM II.5	2
Offered only ASAM III.1–III.5	10
Offered only ASAM III.7–IV	3
Offered 2 resource-intensive services	
Offered ASAM II.1 AND ASAM II.5	21
Offered ASAM II.1 AND ASAM III.1–III.5	35
Offered ASAM II.1 AND ASAM III.7–IV	5
Offered ASAM II.5 AND ASAM III.1–III.5	1
Offered ASAM III.1–III.5 AND ASAM III.7–IV	1
Offered 3 resource-intensive services	
Offered all categories EXCEPT ASAM II.5	2
Offered all categories EXCEPT ASAM III.1–III.5	5
Offered all categories EXCEPT ASAM III.7–IV	15
Offered all 4 resource-intensive services	
Offered all ASAM-recommended services	9

ASAM, American Society of Addiction Medicine.

TABLE 4

Study Variable and Descriptive Statistics (n = 472)

Measure	Mean	SD	Min	Max
Client population severity				
Percent of clients abusing heroin, opiates, sedatives, or prescription drugs	20.18	0.94	0	100
Percent of clients diagnosed with Hepatitis-C	20.47	1.21	0	100
Percent of clients dually diagnosed	41.89	1.09	0	100
Percent of clients with prior substance abuse treatment	67.26	2.92	0	100
Percent of clients homeless upon entry	10.24	0.75	0	100
Financial pressure				
Percent revenue from Medicaid managed care and other public managed care	11.54	2.87	0	100
Percent revenue from private managed care	3.76	0.59	0	100
Financial slack				
Percent revenue from other private insurance	5.45	1.69	0	89
Other controls				
Percent revenue from other public sources	48.77	5.22	0	100
JCAHO-accreditation	0.17	0.04	0	1
CARF-accreditation	0.15	0.03	0	1
Unit age	17.47	1.13	1	45
Unit size (current number of active clients)	560.48	109.10	1	17329
Stratification variables				
Private for-profit	0.26	0.05	0	1
Private not-for-profit	0.51	0.06	0	1
Hospital-affiliated	0.09	0.03	0	1
Mental health-center affiliated	0.17	0.04	0	1
Methadone status	0.13	0.02	0	1
Outcome variables				
Routine use of ASAM criteria	0.57	0.06	0	1
Intensive outpatient (ASAM Level II.1)	0.70	0.05	0	1
Partial hospitalization (ASAM Level II.5)	0.13	0.04	0	1
Nonhospital residential and/or hospital inpatient care (ASAM III-IV)	0.15	0.04	0	1
Number of more resource-intensive services offered (None, 1, or 2+)	0.96	0.07	0	2

Weighted to adjust for sampling stratification and unit nonresponse.

JCAHO, Joint Commission on the Accreditation of Healthcare Organizations; CARF, Commission on Accreditation of Rehabilitation Facilities; ASAM, American Society of Addiction Medicine.

TABLE 5

Factors Associated With Routine Use of ASAM-PPC (Logistic Regression)

Measure	ASAM Use Routine Use of ASAM PPC (n = 470)	
	Odds Ratio	Robust S.E.
Client population severity		
High percent of clients abusing heroin, opiates, sedatives, or prescription drugs	0.813	0.211
High percent of clients diagnosed with Hepatitis-C	0.915	0.232
High percent of clients dually diagnosed	1.048	0.228
High percent of clients with prior substance abuse treatment	0.926	0.215
High percent of clients homeless upon entry	1.303	0.339
Financial pressure		
Percent revenue from Medicaid managed care and other public managed care	1.010 [*]	0.005
Percent revenue from private managed care	1.025 [*]	0.010
Financial slack		
Percent revenue from other private insurance	0.999	0.009
Other controls		
Percent revenue from other public sources	0.994	0.004
JCAHO-accredited	1.237	0.408
CARF-accredited	3.187 [†]	1.059
Unit age	1.013	0.012
Unit size (log of current number of active clients)	1.121	0.110
Stratification variables		
Private for-profit	1.306	0.512
Private not-for-profit	1.207	0.325
Hospital-affiliated	0.931	0.390
Mental health-center affiliated	2.072	0.771
Methadone status	0.801	0.287

JCAHO, Joint Commission on the Accreditation of Healthcare Organizations; CARF, Commission on Accreditation of Rehabilitation Facilities; ASAM, American Society of Addiction Medicine.

* $P < 0.05$

† $P < 0.01$.

TABLE 6
Factors Associated With Provision of ASAM-Recommended Levels of Care (Logistic Regression)

Measure	ASAM Level II.1 Intensive Outpatient (n = 472)		ASAM Level II.5 Partial Hospitalization (n = 472)		ASAM Level III-IV Nonhospital Residential, Clinically Managed to Hospital Inpatient, Medically Monitored or Medically Managed (n = 472)	
	Odds Ratio	Robust S.E.	Odds Ratio	Robust S.E.	Odds Ratio	Robust S.E.
Client population severity						
High percent of clients abusing heroin, opiates, sedatives, or prescription drugs	1.487	0.387	2.876*	1.401	1.488	0.480
High percent of clients diagnosed with Hepatitis-C	0.740	0.197	1.318	0.537	1.575	0.489
High percent of clients dually diagnosed	0.749	0.160	1.049	0.358	1.247	0.333
High percent of clients with prior substance abuse treatment	0.817	0.189	1.311	0.454	1.146	0.324
High percent of clients homeless upon entry	1.926 [†]	0.478	1.294	0.477	1.218	0.379
Financial pressure						
Percent revenue from Medicaid managed care and other public managed care	0.999	0.005	1.010	0.006	1.016 [†]	0.006
Percent revenue from private managed care	1.011	0.010	1.012	0.008	1.001	0.008
Financial slack						
Percent revenue from other private insurance	1.011	0.010	0.971	0.017	1.002	0.014
Other controls						
Percent revenue from other public sources	1.002	0.004	0.995	0.006	1.006	0.006
JCAHO-accredited	1.283	0.479	0.714	0.345	0.847	0.351
CARF-accredited	0.760	0.221	1.218	0.536	1.746	0.623
Unit age	0.988	0.011	1.004	0.016	1.007	0.014
Unit size (log of current number of active clients)	1.215	0.133	1.611t	0.243	1.146	0.165
Stratification variables						
Private for-profit	0.904	0.371	0.446	0.295	0.178*	0.125
Private not-for-profit	1.399	0.398	0.617	0.246	1.192	0.383
Hospital-affiliated	1.096	0.532	6.410t	3.644	2.530*	1.249
Mental health-center affiliated	0.718	0.231	1.552	0.760	0.525	0.232

Measure	ASAM Level II.1 Intensive Outpatient (n = 472)		ASAM Level II.5 Partial Hospitalization (n = 472)		ASAM Level III-IV Nonhospital Residential, Clinically Managed to Hospital Inpatient, Medically Monitored or Medically Managed (n = 472)	
	Odds Ratio	Robust S.E.	Odds Ratio	Robust S.E.	Odds Ratio	Robust S.E.
Metadone status	0.477*	0.171	0.214†	0.122	0.343*	0.148

JCAHO, Joint Commission on the Accreditation of Healthcare Organizations; CARF, Commission on Accreditation of Rehabilitation Facilities; ASAM, American Society of Addiction Medicine.

* $P < 0.05$

† $P < 0.01$.

TABLE 7

Factors Associated With Provision of More Resource-Intensive Services (Multinomial Logistic Regression)

Measure	Offer 1 More Resource-Intensive Level of Care (vs none) (n = 470)		Offer 2+ More Resource-Intensive Levels of Care (vs. none) (n = 470)	
	Relative Risk Ratio	Robust S.E.	Relative Risk Ratio	Robust S.E.
Client population severity				
High percent of clients abusing heroin, opiates, sedatives, or prescription drugs	1.247	0.343	2.714*	1.066
High percent of clients diagnosed with Hepatitis-C	0.814	0.239	1.125	0.410
High percent of clients dually diagnosed	0.661	0.155	0.884	0.267
High percent of clients with prior substance abuse treatment	0.719	0.177	1.105	0.350
High percent of clients homeless upon entry	2.127 [†]	0.590	2.204*	0.755
Financial pressure				
Percent revenue from Medicaid managed care and other public managed care	1.002	0.005	1.010*	0.005
Percent Revenue from private managed care	1.015	0.012	1.016	0.013
Financial slack				
Percent revenue from other private insurance	1.011	0.011	1.005	0.015
Other controls				
Percent revenue from other public sources	1.004	0.004	1.003	0.006
JCAHO-accredited	1.091	0.437	1.150	0.569
CARF-accredited	0.617	0.199	1.308	0.521
Unit age	0.990	0.012	0.995	0.014
Unit size (log of current number of active clients)	1.134	0.127	1.396*	0.235
Stratification variables				
Private for-profit	1.093	0.483	0.301*	0.194
Private not-for-profit	1.543	0.486	1.398	0.522
Hospital-affiliated	0.851	0.462	2.399	1.458
Mental health-center affiliated	0.624	0.220	0.585	0.264
Methadone status	0.538	0.215	0.209 [†]	0.104

JCAHO, Joint Commission on the Accreditation of Healthcare Organizations; CARF, Commission on Accreditation of Rehabilitation Facilities.

* $P < 0.05$ [†] $P < 0.01$.