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Substance abuse treatment in human immunodeficiency virus: The role of patient–provider discussions

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Abstract

Substance abuse treatment is associated with decreases in human immunodeficiency virus (HIV) risk behavior and can improve HIV outcomes. The purpose of this study was to examine factors associated with substance abuse treatment utilization, including patient–provider discussions of substance use issues. We surveyed 951 HIV-infected adults receiving care at 14 HIV Research Network primary care sites regarding drug and alcohol use, substance abuse treatment, and provider discussions of substance use issues. Although 71% reported substance use, only 24% reported receiving substance abuse treatment and less than half reported discussing substance use issues with their HIV providers. In adjusted logistic regression models, receipt of substance abuse treatment was associated with patient–provider discussions. Patient–provider discussions of substance use issues were associated with current drug use, hazardous or binge drinking, and Black race or ethnicity, though substance use was comparable between Blacks and Whites. These data suggest potential opportunities for improving engagement in substance abuse treatment services.

Keywords

HIV; Communication; Health services accessibility; African Americans; Substance-related disorders; Transportation

1. Introduction

The prevalence of drug and alcohol abuse is high among human immunodeficiency virus (HIV)-infected patients, with approximately half of a national probability sample of HIV-infected Americans reporting a history of substance abuse (Bing et al., 2001; Turner et al., 2001). HIV-infected persons with a history of drug use are less likely to receive antiretroviral treatment (Andersen et al., 2000; Fairfield, Libman, Davis, & Eisenberg, 1999; Gebo et al., 2005; Gebo, Fleishman, Reilly, & Moore, 2005; Junghans et al., 1999; Lucas, Chaisson, & Moore, 1999; Mocroft et al., 1999; Murri et al., 1999; Palella et al., 1998; Strathdee et al.,

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1998; Turner et al., 2001), viral load testing (Laine et al., 2001; Raboud et al., 2005), or lipid screening (Korthuis et al., 2004); experience greater HIV-related symptoms (Mathews et al., 2000); and have higher hospitalization rates (Fleishman et al., 2005; Gebo, Diener-West, & Moore, 2001; Schoenbaum, Lo, & Floris-Moore, 2002; Shapiro et al., 1999) compared with men who acquired HIV through sex with other men.

Many studies have previously shown the effectiveness of drug abuse treatment in reducing drug use (General Accounting Office, 1998). Substance abuse treatment also decreases HIV risk behavior and transmission (Banks, Brown, & Ajuluchukwu, 1991; Bastos et al., 2000; Booth, Crowley, & Zhang, 1996; Camacho, Bartholomew, Joe, Cloud, & Simpson, 1996; Hartel et al., 1995; Metzger et al., 1993; Somlai, Kelly, McAuliffe, Ksobiech, & Hackl, 2003; Sullivan, Metzger, Fudala, & Fiellin, 2005). In HIV-infected patients, substance abuse treatment is associated with increased antiretroviral adherence in men (Turner, Laine, Cosler, & Hauck, 2003), decreased repeated emergency department visits (Turner et al., 2003), increased receipt of primary care (Conover & Whetten-Goldstein, 2002; Messeri, Abramson, Aidala, Lee, & Lee, 2002), decreased hospitalizations (Palepu et al., 2001; Turner et al., 2003) and costs (Palepu et al., 2001), and increased dental care (Turner, Laine, Cohen, & Hauck, 2002). Substance abuse treatment, however, is underutilized among HIV-infected persons (Burnam et al., 2001; Palepu, Horton, Tibbetts, Meli, & Samet, 2005; Palepu et al., 2006). These and other studies led the Institute of Medicine to identify substance abuse treatment as a critical component in preventing the spread of HIV infection (Institute of Medicine, 2001).

Studies of non-HIV-infected populations suggest that patient–provider discussions of substance abuse issues are associated with decreased alcohol use, increased substance abuse treatment rates, and improved outcomes (Fleming, Barry, Manwell, Johnson, & London, 1997; Fleming, Manwell, Barry, Adams, & Stauffacher, 1999; Ockene, Adams, Hurley, Wheeler, & Hebert, 1999; Reiff-Hekking, Ockene, Hurley, & Reed, 2005). Despite this, providers discuss substance use issues infrequently and have limited comfort discussing these issues (Aalto, Pekuri, & Seppa, 2002, 2003; Arndt, Schultz, Turvey, & Petersen, 2002; Kaner, Heather, Brodie, Lock, & McAvoy, 2001; McCormick et al., 2006; Taira, Safran, Seto, Rogers, & Tarlov, 1997; Volk, Steinbauer, & Cantor, 1996).

The objectives of this study were threefold: (a) to examine factors associated with substance abuse treatment utilization, (b) to specifically evaluate the association between patient–provider discussions of substance use issues and substance abuse treatment, and (c) to determine factors associated with patient–provider discussions of substance use. We framed our research question using the Behavioral Model for Vulnerable Populations, which states that health care utilization is predicted by predisposing and enabling characteristics, as well as medical need (Gelberg, Andersen, & Leake, 2000). We hypothesized that enabling characteristics, such as patient–provider discussions of substance use issues, would be associated with substance abuse treatment utilization after controlling for predisposing characteristics and medical need.

2. Methods

2.1. Sites

The HIV Research Network (HIVRN) is a consortium of 21 sites that provide primary and subspecialty care to HIV-infected adult and pediatric patients. Sites abstract specified data elements from patients' medical records; abstracted data are assembled into a uniform database (Fleishman et al., 2005; Gebo, Fleishman, Conviser, et al., 2005; Gebo, Fleishman, Reilly, et al., 2005; Gebo, Moore, & Fleishman, 2003). In 2003, face-to-face patient interviews were conducted at 14 adult HIVRN sites located in Eastern (6), Midwestern (3), Southern (2), and

Western (3) United States. Seven of the sites have academic affiliations; 7 are community based.

2.2. Participants

Interviews were administered to a convenience sample of 951 adult (≥ 18 years old) HIV-infected patients who volunteered when asked to participate in an interview, as described previously (Josephs, Fleishman, Gaist, & Gebo, 2007). The median sample size per site was 59 patients (range = 38–172 patients). Gender, race or ethnicity, and HIV transmission distributions were similar in the larger population of patients at these sites and in the interviewed sample (gender: 70% vs. 68% male [χ^2 , $p = .153$]; race or ethnicity: 29% vs. 31% White, 48% vs. 52% Black, 20% vs. 14% Hispanic [χ^2 , $p = .213$ for race]; HIV transmission: 16% vs. 16% injection drug use [IDU], 38% vs. 34% men who have sex with men [MSM], 3% vs. 3% MSM/IDU, 32% vs. 30% heterosexual [HET], 6% vs. 8% HET/IDU [χ^2 , $p = .220$ for HIV risk]).

2.3. Data collection

Face-to-face interviews were conducted between December 2002 and December 2003 by professional interviewers trained and supervised by Battelle Corporation (Columbus, OH). The interviews assessed a wide range of HIV-related and substance abuse-related topics. For comparability, interview questions were taken from the interview developed for the HIV Cost and Services Utilization Study (HCSUS; Galvan et al., 2002).

Health Insurance Portability and Accountability Act waivers and institutional review board approval or exemption of the project, including the interview, were obtained by the data coordinating center and each site. In addition, informed consent was obtained from each participant before the start of the interview. Participants were reimbursed \$30 for the approximately 1-hour interview.

2.4. Measures

We collected information on predisposing characteristics, enabling characteristics, and medical need, according to the Behavioral Model for Vulnerable Populations (Gelberg et al., 2000).

Predisposing characteristics included age as of July 1, 2003, calculated from month and year of birth (18–39, 40–49, and 50 years or older), racial or ethnic group (non-Hispanic White, non-Hispanic Black, Hispanic, and other), birth gender (male or female), and highest educational level completed (less than a high school degree, a high school degree or some college, and a 4-year college degree or greater) from the survey data. For this analysis, HIV transmission risk factor was extracted from medical records as IDU versus all others.

Medical need characteristics included self-reported CD4 nadir (< 50 , 51–199, 200–499, and ≥ 500 cells/mm³), current illicit drug or alcohol use, drug use severity, and hazardous or binge drinking (HBD). The interview protocol did not include a method for making a clinical diagnosis of substance abuse disorder. We inferred problematic use by asking participants about use of each drug “without a doctor’s prescription, in larger amounts than prescribed, or for a longer period than prescribed.” Illicit drug use was defined as use of sedatives, amphetamines, analgesics, marijuana, cocaine, inhalants, LSD or hallucinogens, and heroin. For each class of drugs, respondents were asked whether they had ever used it in their lifetime and, if so, whether they had used it in the past 6 months. Current drug use was defined as using illicit drugs within 6 months of the interview. Former drug use was defined as using illicit drugs greater than 6 months prior to the interview. Twelve people had missing data for some drug classes but reported no use for the remaining classes; we coded these people as nonusers. We assessed drug use severity by assigning a score of 1 for marijuana or analgesics, 2 for other

drugs besides cocaine and heroin, 3 for cocaine and heroin, and summing the scores (possible range = 0–16) as developed by Phin (1978) and adapted by Turner et al. (2001). Increased drug use severity using this measure has been associated with decreased receipt of antiretroviral therapy (Turner & Fleishman, 2006) and nonadherence to antiretroviral therapy (Tucker, Burnam, Sherbourne, Kung, & Gifford, 2003).

Alcohol use was ascertained, as in HCSUS (Galvan et al., 2002), from a series of questions asking (a) how many days in the past 4 weeks the respondent drank alcohol, (b) how many drinks the person consumed on a typical day when drinking, and (c) the number of days the person consumed more than 5 drinks. We defined hazardous drinking as greater than 14 drinks per week for men and greater than 7 drinks per week for women according to National Institute on Alcohol Abuse and Alcoholism (NIAAA, 2005) guidelines. Binge drinking was defined as 5 or more drinks on at least 1 day in the past 4 weeks. We combined hazardous and binge drinkers into one category, with the reference group being nondrinkers or those who drank in moderation.

To assess receipt of substance abuse treatment, we asked the respondents if in the 6 months prior to the interview (a) they had attended meetings of a 12-Step or self-help group such as Alcoholics Anonymous, Narcotics Anonymous, or Cocaine Anonymous; (b) if they were enrolled in a methadone maintenance program; (c) if they received any outpatient treatment for alcohol or drug use; and (d) if they were enrolled in an inpatient treatment program or residential program, halfway house, or therapeutic community for treatment of drug or alcohol problems. For bivariate and multivariate analysis, substance abuse treatment was dichotomized and defined as any self-reported participation in any inpatient or outpatient drug or alcohol treatment or counseling within the last 6 months.

Potential enabling characteristics included insurance (private, Medicaid, Medicare, both Medicaid and Medicare, and no insurance), number of HIV primary care visits (1–2, 3–5, 6–7, and ≥ 8), use of ancillary services (transportation, case management, and other ancillary services), and patient–provider discussions of substance abuse issues (yes or no) in the last 6 months. Current and former users were asked about provider discussions of substance abuse issues by asking, “In the past 6 months, did you talk about your drug/alcohol use with the doctor who’s treating your HIV infection?”

2.5. Data analysis

Analyses were conducted among 674 respondents who reported current or former drug use. To examine bivariate associations between individual predisposing, enabling, and need variables and substance abuse treatment, we performed chi-square tests and simple logistic regression, controlling for site. We used logistic regression to examine multivariate associations with receipt of substance abuse treatment and with substance use discussions, adjusting for site. Multivariate analysis of substance abuse treatment was conducted on 638 cases without any missing data. Factors that were associated with substance abuse treatment in bivariate analyses ($\chi^2, p < .20$) were included in the multivariate model (substance use discussions, race, IDU HIV risk, education, transport assistance, employment status, CD4 nadir, drug use severity, current drug use, HBD, and site). Insurance, gender, and number of primary care visits were retained in the multivariate model due to a priori evidence suggesting their influence on treatment utilization. We then examined factors associated with substance use discussions. Multivariate analysis of substance use discussions was conducted on 636 cases without any missing data. Factors significant in bivariate analyses ($\chi^2, p < .20$) were included in the multivariate model (age, race, IDU HIV risk, education, transport assistance, employment status, drug use severity, current drug use, HBD, and site). Gender was retained in the multivariate model due to a priori evidence suggesting its influence on patient–provider communication. All analyses were performed using Stata 9.0 (Stata, 2005).

3. Results

Of 951 respondents, 674 (71%) reported current or former illicit drug use. Thirty-six percent reported current illicit drug use, 35% reported former drug use but none in the past 6 months, and 29% reported no prior use of drugs. Seventy-three (11%) of 674 illicit drug users reported HBD. Among current illicit drug users, 15% reported HBD, whereas 7% of former users reported HBD. Sixty-eight percent of hazardous or binge drinkers were current illicit drug users.

Table 1 describes the characteristics of substance users. The median age was 45 (range = 20–74) years. The population was predominantly male (71%) and minority race or ethnicity (68%). Thirty-two percent reported IDU as their mode of HIV transmission. Twenty-five percent had less than a high school degree, and 24% were employed. Most had publicly funded insurance (68%); only 10% were uninsured. The median number of primary care visits in the past 6 months was 5 (range = 0–81) visits. Fifty-seven percent reported a CD4 nadir count less than 200 cells/mm³.

Overall, 24% of current or former users reported receiving substance abuse treatment in the preceding 6 months. Only 21% of current users reported receipt of recent substance abuse treatment compared with 27% of former users ($p = .065$). Table 2 reports the type of substance abuse treatment received. Twelve-Step programs were the most frequently reported treatment modality, and former users reported this more commonly than current users (20% vs. 13%, $p = .021$).

Less than half (46%) of current or former users reported discussing substance use issues with their HIV care providers. Current users reported that their providers discussed substance use issues more frequently than former users (56% vs. 35%, $p < .001$). Current users who discussed substance use issues with their providers received treatment more frequently than those who did not (26% vs. 14%, $p = .006$). Likewise, former users who discussed substance use issues with their providers received treatment more frequently than those who did not (38% vs. 21%, $p = .002$).

Table 3 reports bivariate and multivariate models of substance abuse treatment. Provider discussions of substance use issues were associated with receipt of substance abuse treatment (odds ratio [OR] = 2.12, confidence interval [CI] = 1.31–3.41). Receipt of transportation assistance (OR = 1.82, CI = 1.11–2.97) and Black race (OR = 2.06, CI = 1.06–4.01) were associated with increased odds of receiving substance abuse treatment. The odds of receiving substance abuse treatment decreased with increasing educational level despite the fact that substance use was comparable across all educational levels (less than high school, 70%; junior college, 73%; college or greater, 71%; $p = .630$). IDU HIV risk was also associated with greater receipt of substance abuse treatment compared with non-IDU. The odds of substance abuse treatment utilization increased by 19% for every 1-point increase in drug use severity score. Current users, however, were not significantly more likely than former users to receive substance abuse treatment, controlling for other variables.

Table 4 reports multivariate associations with substance use discussions. Patients who reported current drug use, more severe drug use, and HBD had increased odds of reporting discussing substance use issues with their providers (OR = 2.65, CI = 1.81–3.86; OR = 1.06, CI = 1.01–1.11; and OR = 2.89, CI = 1.60–5.25, respectively). Older patients (age ≥ 50 years) had lower odds of discussing substance use issues with their providers compared with younger patients (OR = 0.45, CI = 0.26–0.78), as did employed compared with unemployed patients (OR = 0.61, CI = 0.38–0.99). Although Blacks reported current or former substance use no more frequently than Whites (72% vs. 75%, $p = .279$), Blacks had greater odds of reporting provider discussions compared with Whites (OR = 1.72, CI = 1.05–2.82). Patients reporting six or seven visits with

their primary care provider in the past 6 months had greater odds of reporting provider discussions compared with those with one or two visits (OR = 2.38, CI = 1.38–4.11).

4. Discussion

Although most participants reported current or former illicit drug use, only one in four current or past substance users received substance abuse treatment. Consistent with prior studies (Burnam et al., 2001; Palepu, Horton, et al., 2005; Palepu, Raj, et al., 2005; Palepu et al., 2006), our findings suggest that substance abuse treatment remains underutilized among HIV-infected persons. Importantly, discussion of substance use with a provider was positively associated with treatment. Our findings extend the results of prior studies highlighting the potential role for patient–provider discussions as a facilitator of treatment utilization.

Primary care providers are accustomed to managing patients with chronic relapsing conditions such as substance use disorders and are well positioned to engage patients in treatment (O'Connor & Samet, 2002), to improve linkages between addiction treatment and medical care (Friedmann, Lemon, Stein, Etheridge, & D'Aunno, 2001), and to facilitate relapse prevention for patients completing treatment (Friedmann, Saitz, & Samet, 1998; Yamada, Chen, & Yamada, 2005). Opportunities for addressing substance use issues are particularly salient for HIV providers, who are often primary care providers (Bozzette et al., 1997; Kitahata et al., 1996; Kitahata et al., 2003) and serve an HIV-infected population whose prevalence of substance use exceeds that of general medical populations (Bing et al., 2001; Turner et al., 2001).

In our study, patient–provider discussions of substance use issues within the past 6 months were strongly associated with receipt of substance abuse treatment utilization but occurred for less than half of patients overall, and only for one in five patients reporting current drug use. Brief provider discussions have been shown to be effective in reducing subsequent alcohol abuse (Fleming & Manwell, 1999; Fleming et al., 1997; Ockene et al., 1999; Reiff-Hekking et al., 2005; Whitlock, Polen, Green, Orleans, & Klein, 2004) and smoking (Ahluwalia, Dang, Choi, & Harris, 2002) in general medical populations. As with our population, however, many high-risk patients do not receive provider-delivered counseling. Kaner et al. (2001) estimated that only half of excessive drinkers received brief interventions in a community-based setting. Arndt et al. (2002) estimated that 28% of excessive drinkers reported that their primary care providers discussed concerns regarding alcohol use. Taira et al. (1997) reported that 53% of smokers and only 39% of at-risk drinkers reported discussing substance abuse issues with their primary providers. Among Finnish general medicine patients exiting their physician's office, 11.6% reported that their providers discussed alcohol issues, and 81% said such discussions were useful (Aalto & Seppa, 2004). This is consistent with previous observations that physician knowledge of a patient was associated with adherence to substance abuse treatment recommendations (Safran et al., 1998). Previous studies of barriers to provider discussions of substance use issues found that many providers are cautious or uncomfortable discussing substance use issues with patients (Aalto et al., 2003; Aira, Kauhanen, Larivaara, & Rautio, 2003; Kaner et al., 2001; McQuade, Levy, Yanek, Davis, & Liepman, 2000; Volk et al., 1996). A recent qualitative study of audiotaped patient–provider discussions during visits with at-risk drinkers revealed that providers were uncomfortable discussing alcohol issues, avoided direct discussions even when patients raised the subject, and gave advice that was vague or tenuous (McCormick et al., 2006). Despite this, patients with current substance use and those who reported problematic alcohol consumption were more likely to report discussing substance use issues with their providers, possibly indicating increased provider sensitivity to those with the most immediate substance use issues.

Older patients were less likely to discuss substance use issues even after controlling for former use. This is consistent with Kaner et al. (2001), who noted a 3% decrease of odds of receiving provider-based brief interventions for alcohol abuse for every 1 year increase in age. This finding underscores the need for continued provider attention to substance use issues as the HIV-infected population ages (Grabar, Weiss, & Costagliola, 2006).

The odds of substance use discussions increased with increasing number of outpatient visits in the previous 6 months, except for patients with more than seven visits. This may be explained by increased opportunities for discussions with increased contact. Similarly, increased number of outpatient visits is associated with receipt of opportunistic infection prophylaxis (Gebo et al., 2005b) and highly active antiretroviral therapy (Gebo et al., 2005a) in the HIVRN. Patients who receive care from more experienced HIV providers, as are many HIVRN providers, have more primary care visits (Kitahata et al., 2003), which may afford additional opportunities for substance use discussions. Patients with greater than seven visits may have had competing medical issues that limited opportunities for discussions of substance use issues.

The ability of providers to target individuals for substance use discussions is mixed. Patients with more severe substance use as evidenced by increased drug use severity scores had greater odds of both discussing these issues with their providers and receiving substance abuse treatment, suggesting that providers in our sample may be appropriately directing these conversations at patients most in need of behavioral change. Black patients, however, reported increased odds compared with Whites of their providers discussing substance use issues with them despite having substance use patterns similar to Whites. Profiling of minority patients for substance use discussions has been documented in emergency room visits (James, Feldman, & Mehta, 2006) and primary care clinics (Oliver, Goodwin, Gotler, Gregory, & Stange, 2001). Likewise, patients of higher educational level were far less likely to receive addiction treatment services than those with less than a high school education despite similar levels of self-reported drug and alcohol use, as previously reported (Kaner et al., 2001). Others have noted that patients of higher social class are less likely to receive provider counseling regarding alcohol abuse (Aira et al., 2003; Volk et al., 1996). These findings suggest that HIV providers may erroneously risk-stratify some groups when prioritizing substance use discussions and referrals for treatment.

Most patients who reported utilizing substance abuse treatment services participated in 12-Step programs. Similarly, (Burnam et al., 2001) demonstrated that self-help groups were the most prevalent form of substance abuse treatment in a national probability sample of HIV-infected persons with 12.4% of HIV-infected persons reporting participation. This may reflect the ready availability of such programs in most communities compared with other treatment modalities. Former users were more likely to report participation than current users, possibly because former users may rely on such groups for ongoing relapse prevention many years after achieving sobriety.

Availability of transportation assistance was another important correlate of substance abuse treatment utilization. This is consistent with the study of Strathdee et al. (2006), where transportation assistance was a key facilitator of engagement in substance abuse treatment for IDUs in Baltimore. In HIV-infected populations, transportation assistance is also associated with primary care utilization (Conover & Whetten-Goldstein, 2002; Conviser & Pounds, 2002; Sherer et al., 2002) and retention in care (Magnus et al., 2001).

Results of this study should be interpreted in light of several potential limitations. First, although patients reported whether discussions of substance use took place, we were unable to ascertain who initiated these discussions or their content. If a significant proportion of conversations were started by patients, our results may underestimate the need to improve

provider communication skills regarding substance use issues. Further studies that directly observe patient–provider communication regarding substance use issues are required. Second, we were limited by self-reported measures of substance use, treatment, and provider discussions in this analysis. Although this may introduce misclassification bias, reliance on self-reported data greatly increases the feasibility of such studies. Self-reported substance use as a surrogate for clinically diagnosed substance use disorders may also overestimate the need for substance abuse treatment but not patient–provider substance use discussions. Third, we cannot infer causality in observed associations with substance abuse treatment in view of the cross-sectional study design. For example, receiving substance abuse treatment might promote subsequent discussions with the provider. Our findings do, however, suggest candidate interventions that may improve substance abuse treatment utilization in prospective studies. Fourth, the HIVRN is not a national probability sample. Although its population is similar to that of a 1996 nationally representative sample of persons in care for HIV infection (Bozzette et al., 1997; Shapiro et al., 1999), we are cautious about generalizing our findings to the entire U.S. HIV-infected population. Finally, it is possible that our convenience sample may be subject to selection bias. Our sample did, however, reflect the demographics of the larger HIVRN population, lessening the likelihood of potential selection bias.

This study suggests that substance abuse treatment is underutilized among HIV-infected persons reporting current or former substance use, particularly among college-educated and unemployed patients. Patient–provider discussions of substance use issues, however, were associated with increased utilization of addiction services. HIV providers are particularly well positioned to address the overlapping epidemics of substance use and HIV infection. Interventions that improve patient–provider communication regarding substance use issues may increase substance abuse treatment utilization.

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Appendix A

Participating sites

Alameda County Medical Center, Oakland, CA (Silver Sisneros, D.O.)

Children's Hospital of Philadelphia, Philadelphia, PA (Richard Rutstein, M.D.)

Community Health Network, Rochester, NY (Roberto Corales, D.O.)

Community Medical Alliance, Boston, MA (James Hellinger, M.D.)

Drexel University, Philadelphia, PA (Peter Sklar, M.D.)

Henry Ford Hospital Detroit, MI (Norman Markowitz, M.D.)

Johns Hopkins University, Baltimore, MD (Kelly Gebo, M.D. and Richard Moore, M.D.)

Montefiore Medical Group, Bronx, NY (Robert Beil, M.D.)

Montefiore Medical Center, Bronx, NY (Lawrence Hanau, M.D.)

Nemechek Health Renewal, Kansas City, MO (Patrick Nemechek, D.O.)

Oregon Health and Science University, Portland, OR (P. Todd Korthuis, M.D.)

Parkland Health and Hospital System, Dallas, TX (Philip Keiser, M.D.)

St. Jude's Children's Hospital and University of Tennessee, Memphis, TN (Aditya Gaur, M.D.)

St. Luke's Roosevelt Hospital Center, New York, NY (Victoria Sharp, M.D.)

Tampa General Health Care, Tampa, FL (Charurut Somboonwit, M.D. and Jeffrey Nadler, M.D.)

University of California, San Diego, La Jolla, CA (Stephen Spector, M.D.)

University of California, San Diego, CA (W. Christopher Mathews, M.D.)

Wayne State University, Detroit, MI (Lawrence Crane, M.D.)

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Agency for Healthcare Research and Quality, Rockville, MD (Fred Hellinger, Ph.D., John Fleishman, Ph.D., and Irene Fraser, Ph.D.)

Health Resources and Services Administration, Rockville, MD (Alice Kroliczak, Ph.D., Robert Mills, Ph.D., and Richard Conviser, Ph.D.)

Substance Abuse and Mental Health Services Administration, Rockville, MD (Laura House, Ph.D. and Joan Dilonardo, Ph.D.)

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Table 1
 Characteristics of patients reporting illicit drug use ($N = 674$)

Characteristic	<i>n</i> (%)
Age	
18–39	168 (25)
40–49	340 (51)
≥50	163 (24)
Race	
White	218 (32)
Black	350 (52)
Hispanic	79 (12)
Other	27 (4)
Male gender	476 (71)
HIV risk	
IDU	213 (32)
Non-IDU	401 (60)
Unknown or missing	60 (9)
Education	
<High school degree	169 (25)
High school graduate/junior college	412 (61)
College/postcollege	89 (13)
Insurance	
Private	153 (23)
Medicaid	258 (39)
Medicare	68 (10)
Medicaid/Medicare	124 (19)
None	63 (10)
No. of visits within 6 months	
1–2	171 (25)
3–5	173 (26)
6–7	154 (23)
≥ 8	176 (26)
Transport assistance	227 (34)
Case management	408 (61)
Other ancillary services	331 (49)
Employed	160 (24)
Discussed substance use issues	303 (46)
CD4 nadir	
0–49	181 (27)
50–199	199 (30)
200–499	188 (28)
500 or more	77 (11)
Unknown/missing	29 (5)
Current use	344 (51)
HBD	76 (11)
Drug use severity	
0–2	159 (24)
3–5	215 (32)
6–8	136 (20)
≥9	164 (24)

Table 2

Substance abuse treatment modality according to any, current, or former drug use

Treatment category	Any drug use (<i>N</i> = 674)	Current drug use (<i>n</i> = 344)	Former drug use (<i>n</i> = 330)
Any drug or alcohol treatment	159 (24)	71 (21)	88 (27)
12-Step program	112 (17)	46 (13)	66 (20)
Methadone maintenance	28 (4)	11 (3)	17 (5)
Outpatient	29 (4)	17 (5)	12 (4)
Residential/inpatient	40 (6)	25 (7)	15 (5)

Note. Substance abuse treatment categories are nonmutually exclusive. Values are expressed as number (percentage).

Table 3
Bivariate and multivariate associations between receipt of substance abuse treatment and patient characteristics, adjusted for site

Patient characteristic	Bivariate analysis, OR (95% CI)	Multivariate analysis, OR (95% CI)
Age		
18–39	1.0 (ref)	—
40–49	0.96 (0.61–1.53)	—
≥50	1.45 (0.86–2.44)	—
Race		
White	1.0 (ref)	1.0 (ref)
Black	1.84 (1.10–3.08)	2.06 (1.06–4.01)
Hispanic	1.44 (0.70–2.97)	1.71 (0.69–4.26)
Other	1.45 (0.51–4.09)	1.41 (0.39–5.18)
Male gender	1.01 (0.67–1.51)	1.53 (0.93–2.52)
HIV risk		
Non-IDU	1.0 (ref)	1.0 (ref)
IDU	4.96 (3.24–7.58)	3.57 (2.18–5.83)
Missing or unknown	2.35 (1.16–4.73)	2.20 (0.96–5.04)
Education		
<High school degree	1.0 (ref)	1.0 (ref)
High school graduate/junior college	0.70 (0.46–1.07)	0.56 (0.34–0.94)
College/postcollege	0.31 (0.14–0.67)	0.31 (0.11–0.83)
Insurance		
Private	1.0 (ref)	1.0 (ref)
Medicaid	2.62 (1.41–4.88)	1.96 (0.87–4.37)
Medicare	1.17 (0.55–2.50)	1.42 (0.56–3.59)
Medicaid/Medicare	1.46 (0.73–2.92)	1.28 (0.53–3.10)
None	2.33 (1.05–5.17)	1.69 (0.63–4.54)
No. of visits within 6 months		
1–2	1.0 (ref)	1.0 (ref)
3–5	1.27 (0.74–2.17)	1.07 (0.56–2.09)
6–7	1.04 (0.58–1.86)	0.72 (0.36–1.46)
≥8	1.63 (0.95–2.82)	1.47 (0.77–2.82)
Transport assistance	2.32 (1.56–3.44)	1.82 (1.11–2.97)
Case management	1.42 (0.93–2.16)	—
Other ancillary services	1.26 (0.87–1.83)	—
Employed	0.80 (0.50–1.26)	1.64 (0.89–3.04)
Discussed substance use issues	1.89 (1.29–2.76)	2.12 (1.31–3.41)
CD4 nadir		
0–49	1.0 (ref)	1.0 (ref)
50–199	1.44 (0.85–2.43)	1.12 (0.60–2.08)
200–499	1.73 (1.03–2.91)	1.53 (0.82–2.88)
≥500	2.22 (1.16–4.25)	1.97 (0.91–4.23)
Missing	1.28 (0.46–3.53)	1.05 (0.29–3.79)
Drug use severity score	1.20 (1.14–1.26)	1.19 (1.12–1.26)
Current use	0.75 (0.52–1.09)	0.89 (0.56–1.43)
HBD	0.69 (0.36–1.31)	0.58 (0.27–1.25)

Note. N = 638. Analyses conducted on patients who currently or formerly used substances. ORs for site indicators are not reported.

Table 4
Multivariate associations between patient-provider substance use discussions and patient characteristics, adjusted for site

Patient characteristic	Odds ratio (95% Confidence interval)
Age, in years	
18–39	1.0 (ref)
40–49	0.67 (0.43–1.03)
≥50	0.45 (0.26–0.78)
Male gender	1.17 (0.77–1.77)
HIV risk	
Non-IDU	1.0 (ref)
IDU	1.01 (0.66–1.55)
Missing/unknown	1.47 (0.75–2.90)
Race/ethnicity	
White	1.0 (ref)
Black	1.72 (1.05–2.82)
Hispanic	0.99 (0.49–1.98)
Other	1.61 (0.57–4.58)
Educational attainment	
<High school degree	1.0 (ref)
High school grad/junior college	1.25 (0.81–1.92)
College/postcollege	0.67 (0.33–1.35)
Insurance	
Private	1.0
Medicaid	0.93 (0.50–1.74)
Medicare	0.90 (0.43–1.87)
Medicaid/medicare	0.67 (0.35–1.31)
None	1.84 (0.85–3.98)
Number of primary care visits within six months	
1–2	1.0
3–5	1.56 (0.93–2.62)
6–7	2.38 (1.38–4.11)
≥8	1.12 (0.66–1.92)
Transportation assistance	1.35 (0.89–2.04)
Employed	0.61 (0.38–0.99)
Current use	2.65 (1.81–3.86)
Hazardous/binge drinking	2.89 (1.60–5.25)
Drug use severity score	1.06 (1.01–1.11)

N = 636. Analyses conducted on patients who currently or formerly used substances. Odds ratios for site indicators are not reported.