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Availability of HIV-related health services in adolescent substance abuse treatment programs

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Abstract

Given that alcohol and drug abuse heightens the risk of adolescents acquiring HIV, substance abuse treatment programs for youths may represent an important site of HIV prevention. In this research, we explored the adoption of three HIV-related health services: risk assessment during intake, HIV prevention programming, and HIV testing. Data were collection through telephone interviews with 149 managers of adolescent-only substance abuse treatment programs in the US. About half of these programs had adopted HIV risk assessment and HIV prevention. On-site HIV testing was less widely adopted, with only one in four programs offering this service. At the bivariate-level, the availability of on-site primary medical care and the availability of an overnight level of care were positively associated with these three types of services. The association for the measure of an overnight level of care was no longer significant once medical services were controlled. However, in a separate analysis, it was found that programs offering an overnight level of care care were much more likely to offer on-site medical care than outpatient-only facilities. There was also evidence that publicly-funded treatment programs were more likely to offer HIV prevention and on-site HIV testing, after controlling for other organizational characteristics. Much more research about the adoption of HIV-related services in adolescent substance abuse treatment is needed, particularly to offer greater insight into why certain types of organizations are more likely to adopt these health services.

Keywords

substance abuse treatment; HIV prevention; HIV testing; health services research

Introduction

Young people represent about 13% of those diagnosed with HIV/AIDS in the US (CDC, 2005), and many adults with AIDS contracted HIV during adolescence (NIAID, 2006). Youths with substance use disorders (SUDs) are at particularly high risk due to risky sexual behaviors and intravenous drug use (Ammon et al., 2005; Deas-Nesmith et al., 1999; Hou & Basen-Engquist, 1997; St. Lawrence et al., 1999).

The delivery of HIV-related health services within adolescent substance abuse treatment programs is a potential risk reduction strategy. On-site delivery of wraparound services reduces increases utilization more than referral strategies (Friedmann et al., 2000; McLellan

et al., 1993), suggesting that on-site HIV-related services may be more likely to reach at-risk adolescents.

Three important wraparound services are HIV risk assessment, prevention, and testing. Risk assessments can identify specific educational needs, so that interventions are more focused (Thurstone et al., 2007). HIV prevention is particularly needed because adolescents in treatment often continue to engage in high risk sexual behaviors (Deas-Nesmith et al., 1999), in part due to low condom skills (Malow et al., 2001). Prevention approaches combining skill-building with information are more effective than information alone for this population (Ammon et al., 2005; Jemmott et al., 1992; Rotheram-Borus, 2000; St. Lawrence et al., 2002; St. Lawrence et al., 1995). Testing may link HIV-positive individuals more quickly to medical services and reduce risky behaviors (Rotheram-Borus & Futterman, 2000; Weinhardt et al., 1999). The CDC (2006) recommends that substance abuse treatment settings conduct testing as a routine practice.

Little is known about the adoption of these services by adolescent treatment programs. Data from the early 1990s indicated that general education about HIV was more common than risk reduction approaches (Grella et al., 2000; Etheridge et al., 2001). In an analysis of the federal National Survey of Substance Abuse Treatment Services (N-SSATS), Mark and colleagues (2006) found that 28% of facilities with at least 10 adolescent clients offered HIV testing.

The remaining literature on HIV-related services in addiction treatment has not considered whether programs serve adolescents. This distinction is important since nearly half of US facilities do not admit adolescents (SAMHSA, 2004). Chriqui and colleagues (2008) found about 57% of outpatient programs offered education, counseling or support, and 29% conducted on-site testing. Longitudinal research has documented increases in the percentages of outpatient clients receiving prevention (D'Aunno, Vaughn, & McElroy, 1999) and in programs offering testing and acute treatment (Friedmann, Alexander, & D'Aunno, 1999; Friedmann et al., 2003; Pollack, D'Aunno, & Lamar, 2006). Adoption of HIV testing is near 50% in residential programs (Strauss et al., 2003) and in programs associated with the National Drug Treatment Clinical Trials Network (CTN; Brown et al., 2006). None of these studies measured whether programs treat adolescents, making it difficult to ascertain whether adolescents receive these services.

Organizational Characteristics and the Adoption of HIV-Related Services

In addition to measuring availability, it is important to understand the types of organizations that are more likely to offer HIV-related services. Heinrich and Fournier (2004) argue that a key structural characteristic of treatment programs is “publicness,” which encompasses ownership and funding streams. “Publicness” produces variations in service delivery due to varying environmental demands and differing organizational missions (Perry & Rainey, 1988). Research shows that government-owned programs and those dependent on public funding adopt more wraparound services than privately funded programs (Ducharme et al., 2007), while for-profit treatment organizations are less likely to offer wraparound services (Friedmann et al., 2003). Dimensions of “publicness” may be associated with the adoption of HIV-related services.

Organizational size is often correlated with innovation adoption, because larger organizations have slack resources to devote to implementation (Damanpour, 1991; Rogers, 1995). Treatment programs with few staff may be unable to broaden their scope beyond core treatment services (Ducharme et al., 2007). This literature suggests that smaller programs may be less likely to adopt HIV-related services.

Levels of adolescent-only care may be associated with HIV-related services. Programs offering overnight levels of care, such as inpatient or residential treatment, tend to serve adolescents with more severe substance use disorders (Hser et al., 2001) and who engage in riskier sexual behaviors (Tims et al., 2002). HIV-related services may address significant needs within their patient population. In contrast, outpatient-only programs have fewer hours of clinical contact per week (author's identity omitted, in press), restricting their capacity to deliver additional wraparound services.

Finally, the availability of on-site primary medical care may be associated with the adoption of HIV-related services. On-site medical care is indicative of a commitment to dealing with general health. Given that innovations are more likely to be adopted when they are consistent with the other services offered by organizations (Ducharme et al., 2006; author's identity omitted, 2007), on-site medical care may be positively associated with HIV-related services.

In this research, we describe the adoption of HIV risk assessment, prevention, and testing. We then explore whether adoption is associated with basic organizational characteristics.

Methods

Samples and Study Eligibility

Drawing on existing samples of publicly-funded and privately-funded organizations, this research collected data from adolescent-only substance abuse treatment programs. Privately-funded programs received less than half of their revenues from government block grants and contracts, while publicly-funded programs received more than half of their revenues from these sources. This criterion differentiated programs with more stable sources of clients due to governmental contracts from programs that engaged in entrepreneurial efforts to attract clients (Roman et al., 2006). Of eligible organizations, 80% of publicly-funded ($n = 363$) and 88% of privately-funded programs ($n = 403$) participated in these earlier face-to-face interviews. A description of the original sampling methodology can be found in [authors' identities omitted] (2007).

These two samples were re-contacted by telephone for the present study. (A few centers had multiple administratively distinct adolescent-only treatment programs, so the final pool contained 770 treatment centers). Organizations were required to admit clients aged 18 or younger and to offer at least one adolescent-only level of care; about 61.5% ($n = 474$) did not meet these criteria. About 4.8% of the organizations had closed ($n = 37$), 3.9% ($n = 30$) were unable to be contacted so eligibility could not be established, and 9.7% ($n = 75$) refused to participate.

Programs managers were invited to participate in a 30-minute telephone interview. Managers could delegate the interview to another individual with greater knowledge of the adolescent program. These research procedures were approved by the [identifying university information omitted] Institutional Review Board. Of the 229 eligible programs, 154 participated (67.2%) and received a \$30 honorarium. Interviews were conducted between July 2005 and March 2007.

Measures

Program managers were asked about HIV-related services and basic organizational characteristics. These measures appear in Table 1.

Analysis

Models of the adoption of HIV risk assessment and prevention used logistic regression, while multinomial logistic regression estimated models of the adoption HIV testing (Long, 1997). For each dependent variable, a series of bivariate models were estimated using the five organizational characteristics; significant covariates at $p < .10$ (two-tailed test) was entered into a multivariate model. Predicted probabilities were calculated for the multivariate models, estimating the likelihood of the dependent variable based on varying values of the independent variables (Long, 1997). Complete data were available from 149 programs. All analyses were performed using Stata 10.0 (StataCorp, College Station, TX).

Results

HIV Risk Assessment

Slightly more than half of these adolescent-only substance abuse treatment programs assessed adolescents' HIV risk behaviors during intake (Table 1). Among these, key areas of HIV risk were generally assessed.

At the bivariate level, two organizational characteristics were associated with the adoption of HIV risk assessments (Table 2). Programs offering an overnight level of care (e.g. residential or inpatient treatment) were more likely to conduct HIV risk assessments than outpatient-only programs. Programs with on-site primary medical care were more likely than those without medical services to have adopted HIV risk assessments. When both variables were entered into a multivariate model, only the availability of on-site primary medical care was significant (OR = 3.47, 95% CI: 1.08-11.11, $p < .05$).

The calculation of predicted probabilities provided additional detail about the association between on-site medical care and the adoption HIV risk assessments. Setting the measure of overnight care at its mean, the predicted probability of HIV risk assessments was .78 in programs with on-site medical care compared to .51 in programs without on-site medical care.

Further analysis revealed the relationship between having an overnight level of care and on-site primary medical care. About 54.4% of centers with an overnight level of care offered on-site primary medical care, compared to just 5.7% of outpatient-only centers ($\chi^2 = 46.37$, $df = 1$, $p < .001$).

HIV Prevention

The majority (57.0%) of adolescent-only treatment programs offered HIV prevention (Table 1). Program managers indicated the greatest emphasis was on how HIV is transmitted and the least endorsed topic was condom skill rehearsal.

The bivariate logistic regression models of HIV prevention were fairly similar to the models for HIV risk assessment (Table 3). There were significant bivariate associations for the availability of an overnight level of care and for on-site medical care. Publicly-funded centers trended towards being more likely than privately-funded programs to have adopted HIV prevention. In a multivariate model with these three variables, publicly funded centers were significantly more likely to have adopted HIV prevention (OR = 2.25, 95% CI: 1.12-4.54, $p < .05$). Overnight care and on-site medical care were no longer associated with the adoption of HIV prevention.

Calculating predicted probabilities further elaborated these relationships. The predicted probability of HIV prevention in publicly funded programs was .68 when the other two

variables were set at their means. When the predicted probability was recalculated for privately funded programs, the predicted probability decreased to only .48.

HIV Testing

The availability of on-site HIV testing was quite modest (Table 1). Bivariate multinomial logistic regression models of HIV testing identified several significant covariates (Table 4). In comparing the odds of on-site testing to no testing services (column 1), there were strong bivariate associations for the availability of overnight care and for primary medical care. Smaller programs were less likely to offer on-site HIV testing than larger programs. The second column presents the odds of referral to testing versus the odds of no testing services. Again, programs offering overnight care and primary care were significantly more likely to refer adolescents to external providers for testing, relative to the odds of having no testing services. Funding and ownership trended towards significance ($p < .10$) in the comparison of on-site testing to referrals to external providers (column 3).

The multivariate model included all five organizational characteristics. The odds of on-site HIV testing was greater in publicly-funded programs than in privately-funded programs, relative to the odds of no testing (RRR = 3.10, 95% CI: 1.05-9.20, $p < .05$). On-site primary medical care was positively associated with on-site testing, relative to the odds of no testing (RRR = 6.59, 95% CI: 1.56-27.87, $p < .05$). In comparing the odds of referrals to external providers and no testing, none of the organizational characteristics were significant at $p < .05$, although programs with on-site medical care tended to be more likely to refer (RRR = 3.67, 95% CI: .96-14.02, $p = .057$). None of the organizational characteristics were associated with the odds of on-site HIV testing relative to the odds of referrals to external providers.

Based on this multivariate model, predicted probabilities of HIV testing services were calculated (Table 5). The predicted probability of on-site HIV testing in a publicly funded program with on-site medical care (.53) was considerably greater than the probability of on-site HIV testing in a privately funded program without on-site medical care (.10). Among publicly funded programs, the predicted probability in programs without on-site medical care was about half that of those with on-site medical care.

Discussion

These data from 149 adolescent-only substance abuse treatment programs suggest a need for further diffusion of HIV-related health services. About half of these programs engage in HIV risk assessment during intake and deliver HIV prevention services. Even fewer programs have adopted on-site HIV testing. Given that adolescents with SUDs are at heightened risk of HIV infection (Ammon et al., 2005; Hou & Basen-Engquist, 1997; Deas-Nesmith et al., 1999; St. Lawrence et al., 1999), the absence of these services represents a missed opportunity for early intervention.

HIV prevention efforts continue to place greater emphasis on general information than on skill development. This finding echoes the data collected in the early 1990s from adolescent programs (Grella et al., 2000; Etheridge et al., 2001). Given that interventions that include skill development are more effective than information alone (Ammon et al., 2005; Jemmott et al., 1992; Rotheram-Borus, 2000; St. Lawrence et al., 2002; St. Lawrence et al., 1995), it is discouraging that programs still do not place equal emphasis on information and risk reduction skills.

The most consistent finding was the importance of on-site primary medical care. This finding fits with the innovation theory of Rogers (2003), who argued that compatibility

between innovations and other services increases the odds of adoption. HIV-related services are highly compatible with the broader orientation towards health indicated by on-site primary medical care. Organizations with on-site medical care likely have the resources and expertise needed to conduct medical tests. The advent of rapid HIV testing may mean that programs can more easily adopt this technology since rapid tests can be administered by non-medical staff. However, some evidence points to slow diffusion of rapid testing even in hospitals and that implementation remains challenging (Bogart et al., 2008a; Bogart et al., in press).

While HIV-related services were more likely to be found in programs with primary care, the prevalence of medical services was low. Given that substance-abusing adolescents have higher rates of some medical conditions (Mertons et al., 2007), primary care services would likely benefit this population. Unfortunately, the low prevalence of medical services means that many adolescents may lack access to these services.

It has been suggested that residential treatment is an opportune time to intervene with adolescents (St. Lawrence et al., 2002). Our bivariate analyses indicated that programs offering an overnight level of care were more likely to adopt HIV-related services than outpatient-only programs. Given that the vast majority of adolescents are treated in outpatient programs (Dennis et al., 2003), there is a significant disparity in access to HIV-related services based on the type of treatment door—outpatient-only or a program with an overnight level of care—through which adolescents enter. This disparity also reflects the dramatic difference in on-site medical care between outpatient-only programs and those with overnight levels of care.

Multivariate models of HIV prevention and testing demonstrated that programs dependent on governmental funding were more likely to have adopted these services. Brown et al. (2007) found that state reimbursement for HIV-related services dramatically increased the odds of adoption. State and local governments may have a role in the diffusion of HIV-related services, although our data are unable to specify how governments influence adoption.

One limitation of this research was that we did not directly measure the state policy environment. State governments pay for a significant portion of substance abuse treatment in the US (Mark et al., 2005), which gives states financial leverage to influence organizational decisions about service delivery (Chriqui et al., 2008). Furthermore, state governments have regulatory power via their ability to license facilities (Chriqui et al., 2007). State funding and regulations may represent important mechanisms through which states can encourage the adoption of HIV-related services. Brown et al. (2007) found that state policies, regulations, and guidance about HIV were positively associated with the adoption of HIV risk assessment, counseling, and treatment. State policies that link HIV testing and education to program licensure can promote adoption (Chriqui et al., 2008). The roles of state reimbursement strategies and regulations in promoting HIV-related services in adolescent treatment programs are potential directions for future research.

Several additional limitations must be noted. First, these analyses are based on cross-sectional data, so causality cannot be established. Second, these data are only representative of US treatment organizations with at least one adolescent-only program. The decision to focus on adolescent-only programming was based on CSAT's (1999) recommendation that adolescents should be separated from adults. Third, all data were self-reported by program managers which raises potential bias due to invalid recall and over-reporting. While self-reports are consistent with federal surveys (e.g. N-SSATS) and other health services research (Brown et al., 2006; Chriqui et al., 2008; Friedmann et al., 2003), there is no way to

fully eliminate the risk of bias. Fourth, these quantitative data cannot provide much explanation for why certain variables were statistically significant. Future research might integrate qualitative approaches in order to better explain significant associations.

A substantial limitation was the modest sample size, which reflects the sizeable proportion of ineligible facilities and the response rate. For these reasons, the findings should be interpreted with caution. Notably, non-responding programs did not differ from participating programs on basic organizational characteristics (author's identity omitted, 2009).

It should be noted that substance abuse treatment itself is a method for preventing the acquisition of HIV (Sorensen & Copeland, 2000). Adolescents in treatment who have made clinical improvements in their substance use tend to report lower HIV risk behaviors (Joshi et al., 2001). However, HIV interventions have added benefits in reducing risky behaviors beyond that of drug treatment alone (Prendergast, Urada, & Podus, 2001).

Substance-abusing adolescents are an important target for HIV prevention. These data suggest gaps in the availability of HIV-related health services in adolescent treatment programs. While this research identified characteristics of organizations offering HIV-related, future research should continue to investigate the mechanisms through which additional adoption can be accomplished. More research is needed on whether organization-level interventions and changes to regulatory and funding systems can promote the adoption of these services. Continued research is warranted, particularly in terms of developing a deeper understanding of how organizational and state policy factors may facilitate adoption.

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TABLE I

Adoption of HIV services and organizational characteristics of adolescent-only substance abuse treatment programs (n = 149).

Variable	% (N)	Mean (SD)
<i>HIV-Related Services</i>		
Program conducts HIV risk assessment	55.7% (83)	
<i>For programs conducting HIV risk assessments, assessments calculate risk based on...</i>		
Frequency of intravenous drug use	86.1% (69)	
Severity of substance abuse/dependence	77.1% (64)	
Number of sexual partners	88.0% (73)	
Frequency of unprotected sexual intercourse	90.4% (75)	
Program offers HIV prevention	57.1% (85)	
<i>For programs offering HIV prevention,</i>		
Average hours of HIV prevention received by adolescents		4.40 (4.93)
Extent to which HIV prevention emphasizes... How HIV/AIDS is transmitted ^a		4.95 (0.27)
The development of safer sex skills ^a		4.52 (1.02)
Skill rehearsal of correct condom use ^a		3.01 (1.92)
Practicing communication strategies to stop verbal coercion to engage in unsafe sex ^a		3.58 (1.43)
Practicing partner communication and negotiation skills about safer sex practices ^a		3.32 (1.53)
<i>HIV Testing</i>		
On-site testing	22.8% (34)	
Referral to external providers	27.5% (41)	
No testing services	49.7% (74)	
<i>Organizational Characteristics</i>		
<i>Sample type</i>		
Privately-funded treatment center sample	53.0% (79)	
Publicly-funded treatment center sample	47.0% (70)	
<i>Ownership</i>		
Privately-owned non-profit	69.1% (103)	
Government-owned	16.1% (24)	
For-profit	14.8% (22)	
<i>Adolescent program size</i>		
Fewer than 10 employees	43.6% (65)	
At least 10 employees	56.4% (84)	
<i>Levels of care</i>		
Program offers overnight level of care	30.2% (45)	
Program only offers outpatient care	69.8% (104)	
<i>Primary medical care</i>		
Program offers on-site medical care	19.5% (29)	
Program does not offer on-site medical care	80.5% (120)	

^aResponses ranged from 0 (no extent) to 5 (very great extent).

TABLE II

Unadjusted logistic regression models of HIV risk assessments (n = 149).

HIV Risk Assessments vs. No Assessments Odds Ratio (95% CI)	
<i>Model 1</i>	
Publicly-funded (vs. privately funded)	1.25 (.65-2.38)
<i>Model 2</i>	
Government-owned (vs. non-profit)	.99 (.41-2.42)
For-profit (vs. non-profit)	1.47 (.57-3.80)
<i>Model 3</i>	
< 10 employees (vs. at least 10 employees)	.63 (.33-1.21)
<i>Model 4</i>	
Program offers overnight level of care	2.97 ** (1.38-6.38)
<i>Model 5</i>	
Program offers on-site primary medical care	4.96 ** (1.78-13.87)

Note: [†]p<.10, *p<.05

***p<.001 (two-tailed tests).

**
p<.01

TABLE III

Unadjusted logistic regression models of HIV prevention (n = 149).

HIV Prevention vs. No Prevention Odds Ratio (95% CI)	
<i>Model 1</i>	
Publicly-funded (vs. privately funded)	1.76 ⁺ (.91-3.39)
<i>Model 2</i>	
Government-owned (vs. non-profit)	1.35 (.54-3.35)
For-profit (vs. non-profit)	1.17 (.46-2.97)
<i>Model 3</i>	
< 10 employees (vs. at least 10 employees)	.71 (.37-1.37)
<i>Model 4</i>	
Program offers overnight level of care	2.37* (1.12-5.02)
<i>Model 5</i>	
Program offers on-site primary medical care	2.84* (1.13-7.16)

Note:

**p<.01

***p<.001 (two-tailed tests).

⁺ p<.10

* p<.05

TABLE IV

Unadjusted multinomial logistic regression models of HIV testing services (n = 149).

	On-site Testing vs. No Testing Odds Ratio (95% CI)	Referrals to Testing vs. No Testing Odds Ratio (95% CI)	On-site Testing vs. Referrals to Testing Odds Ratio (95% CI)
<i>Model 1</i>			
Publicly-funded (vs. privately funded)	2.01 (.88-4.60)	.80 (.37-1.73)	2.52 ⁺ (.99-6.42)
<i>Model 2</i>			
Government-owned (vs. non-profit)	2.75 ⁺ (1.00-7.59)	.79 (.23-2.73)	3.50 ⁺ (.96-12.76)
For-profit (vs. non-profit)	1.22 (.34-4.41)	1.96 (.70-5.50)	.62 (.17-2.31)
<i>Model 3</i>			
< 10 employees (vs. at least 10 employees)	.32 [*] (.13-.79)	.64 (.29-1.37)	.51 (.19-1.36)
<i>Model 4</i>			
Program offers overnight level of care	5.17 ^{***} (2.07-12.88)	3.31 ^{**} (1.37-7.98)	1.56 (.62-3.92)
<i>Model 5</i>			
Program offers on-site primary medical care	7.53 ^{**} (2.39-23.73)	5.71 ^{**} (1.84-17.67)	1.32 (.50-3.49)

Note:

⁺ p<.10^{*} p<.05^{**} p<.01^{***} p<.001 (two-tailed tests).

TABLE V

Predicted probabilities of HIV testing services by sample type and on-site primary medical care (n = 149).

	Predicted Probability of On-site Testing	Predicted Probability of Referral to Testing	Predicted Probability of No Testing
Publicly-funded center with on-site primary medical care	.53	.31	.16
Publicly-funded center without on-site primary medical care	.25	.26	.49
Privately-funded center with on-site primary medical care	.30	.42	.28
Privately-funded center without on-site primary medical care	.10	.26	.64

Note: Calculation of these predicted probabilities reflects the setting of ownership, program size, and availability of an overnight level of care at their respective means.