Does Active Substance Use at Housing Entry Impair Outcomes in Supported Housing for Chronically Homeless Persons?

Ellen Lockard Edens, M.D., M.P.E.
Alvin S. Mares, Ph.D.
Jack Tsai, Ph.D.
Robert A. Rosenheck, M.D.

Objective: **Recent clinical and policy trends have favored low-demand housing (provision of housing not contingent on alcohol and drug abstinence) in assisting chronically homeless people. This study compared housing, clinical, and service use outcomes of participants with high levels of substance use at time of housing entry and those who reported no substance use.** ***Methods:*** **Participants in the outcome evaluation of the 11-site Collaborative Initiative on Chronic Homelessness (N=756), who were housed within 12 months of program entry and received an assessment at time of housing and at least one follow-up (N=694, 92%), were classified as either high-frequency substance users (>15 days of using alcohol or >15 days of using marijuana or any other illicit drugs in the past 30 days; N=120, 16%) or abstainers (no days of use; N=290, 38%) on entry into supported community housing. An intermediate group reporting from one to 15 days of use (N=284, 38%) was excluded from the analysis. Mixed-model multivariate regression adjusted outcome findings for baseline group differences.** ***Results:*** **During a 24-month follow-up, the number of days housed increased dramatically for both groups, with no significant differences. High-frequency substance users maintained higher, though declining, rates of substance use throughout follow-up compared with abstainers. High-frequency users continued to have more frequent or more severe psychiatric symptoms than the abstainers. Total health costs declined for both groups over time.** ***Conclusions:*** **Active-use substance users were successfully housed on the basis of a low-demand model. Compared with abstainers, users maintained the higher rates of substance use and poorer mental health outcomes that were observed at housing entry but without relative worsening. (*Psychiatric Services* 62:171–178, 2011)**

Dr. Edens and Dr. Rosenheck are affiliated with the U.S. Department of Veterans Affairs (VA) New England Mental Illness Research, Education and Clinical Center (MIRECC), and the National Center on Homelessness Among Veterans, both in West Haven, Connecticut. Dr. Mares is with the Department of Social Work, Ohio State University, Columbus. Dr. Tsai is with the Department of Psychiatry, Yale University, New Haven, Connecticut, and the National Center on Homelessness Among Veterans. Send correspondence to Dr. Edens, New England VA MIRECC, 950 Campbell Ave., West Haven, CT 06516 (e-mail: ellen.edens@va.gov).

Permanent supported housing has become a favored approach to housing homeless people with serious mental illness with or without a history of comorbid drug or alcohol addiction. Different opinions exist, however, on best practices for individuals actively using substances (1–4). Some recommend that abstinence be required before housing entry or, minimally, during a trial period of residential treatment (1). This model (termed "linear" or "continuum of care") requires that participants complete one phase of treatment (achieving abstinence) before proceeding to the next. Proponents of this traditional approach assert that abstinence-contingent housing supports improved substance use outcomes. The uncertainty in offering housing to homeless parents that is not contingent on abstinence or to those using illegal drugs has also been noted (5). Because mainstream funding sources have provided support with this model, the predominant housing approach remains "linear" (3).

In contrast, programs using a model loosely referred to as "housing first" (including Pathways to Housing in New York City [6]) take a "harm reduction" approach where clients are encouraged but not required to reduce substance use before entering housing. Clients are provided elective treatment, with primary emphasis on avoiding adverse consequences of active use rather than on abstinence. The model postulates that stable housing may—in and of itself—moti-

vate reduced substance use (3), although data supporting this assertion have thus far been limited (7). No studies have reported specific outcomes for populations of homeless individuals who are actively using substances when provided supported housing that is not contingent on abstinence or treatment.

This observational study examined such outcomes with data from 410 individuals participating in a program for chronically homeless adults who reported either a high frequency of substance use or abstinence. Housing, clinical outcomes, service use, and cost data were compared between individuals actively using substances (when entering supported housing) and those not. Although this study did not include a test of harm reduction interventions compared with programs that require abstinence, it did gather basic information on the potential adverse effects of active substance use at time of housing entry, net of other factors.

Methods

Collaborative Initiative on Chronic Homelessness

The Collaborative Initiative on Chronic Homelessness (CICH) was a multisite federally funded demonstration program begun in 2004 to provide permanent supported housing and supportive primary and mental health services to persons experiencing chronic homelessness (8). Through a competitive process, 11 communities were selected for funding (8). They were charged with providing comprehensive health services and linking them to housing and to use of service models that have been proven effective (most notably, intensive case management [9] or a "housing first" housing model [6]). Funding was provided by the U.S. Department of Housing and Urban Development, the Health Resources and Services Administration, the Substance Abuse and Mental Health Services Administration, and the U.S. Department of Veterans Affairs (VA).

Study design

The federal agencies sponsoring the initiative invited the VA Northeast Program Evaluation Center to conduct a national evaluation of CICH client outcomes in order to monitor the initiative's implementation and effectiveness (8). During the 4.5-year data collection period (from February 2004 to September 2008), staff at each site administered assessment interviews to voluntary participants at program entry and quarterly thereafter for up to four years. Because CICH was a service initiative and not a formal research study, there was no systematic inclusion of a comparison group not receiving CICH housing or services (10).

Sample

Altogether, 756 individuals out of 1,242 program participants (61%) consented to participate in the national program evaluation and were assessed at program entry. Participation was voluntary and did not influence housing placement or other services. Institutional review boards at each participating site approved the informed consent procedures. After complete study description, written informed consent was obtained. Compared with those who did not participate in the national evaluation (N=508, 41%), participants were more likely to be older, male, black, and have medical or mental health problems but were less likely to have substance use problems or be recruited from a community location (streets, parks, or other outdoor areas) (8). Of the 756 evaluation participants, the study's analytic sample was limited to 410 (54%) participants who were housed within 12 months of program entry and completed an assessment interview just after housing placement and at least one additional follow-up assessment. They reported either high (>15 days of use) or no substance use in the month they were housed. Of 62 assessed but not included in the study, 58 (8%) were never placed into housing and four (<1%) were placed after 12 months. Those never placed did not differ significantly from the study group. [An appendix showing participant selection and comparison of baseline characteristics is available as an online supplement to this article at ps.psychiatryonline.org.] The remaining sample (N=694) was restricted to high-frequency substance users (N=120, 16%) and abstainers (N=290, 38%) in order to ensure comparison between an actively using and a low-use group. Intermediate-frequency substance users (one to 15 days of use) (N=284, 38%) did not differ significantly from either high-frequency users or abstainers or fell intermediate to each group (see online appendix).

Data collection

Full-time evaluation assistants were trained at project initiation and regularly throughout data collection. Baseline and follow-up interviews were administered in person, and self-report items were recorded during the interview. Interviewer observations and disabling-condition assessments were then confirmed with program staff. Follow-up interviews were typically administered in person or by phone as needed—for example, if participants had relocated. Thus follow-up assessments continued even if participants had discontinued CICH services.

Measures

Demographic characteristics, eligibility, disabling conditions, and health service access. We assessed at screening and confirmed with clinicians sociodemographic characteristics; eligibility characteristics (that is, the current episode of homelessness had lasted a year or longer versus four or more episodes of homelessness during the past three years); and the presence of disabling medical, mental, and substance use conditions. Baseline data were obtained on health insurance, access to a "usual health care provider," and ability to identify a primary mental health or substance use provider or case manager.

Housing. Participants were asked the number of days during the previous 90 in which they were housed in each of nine settings. Nights spent in shelters, outdoors, or in vehicles or abandoned buildings qualified as being homeless. Being "institutionalized" included halfway or transitional housing, hospitalization, or detention in prison or in jail. Other categories represented being housed.

Clinical status. The Medical Out-

comes Study 12-Item Short Form (SF-12) (11)—a measure including physical and mental health subscales—assessed overall level of functioning in mental and physical domains. Scores range from 0 to 100, with a mean±SD score of 50±10 representing a normal level of functioning in the general population. Higher scores indicate better perceived health. The SF-12 has been validated in homeless populations (12).

Three subscales of the Brief Symptom Inventory (BSI) (13) were selected for measuring domains of subjective distress—psychoticism, depression, and anxiety. Respondents rated on a scale from 0 (never experience) to 4 (very often experience) 16 items, such as "nervousness or shakiness inside" and "the idea that someone else can control your thoughts." The BSI score presented here represents the mean value for responses on these three subscales.

An observed psychotic behavior rating scale (14) included ten psychosis-related symptoms (including hallucinations, delusions, and inappropriate speech) and was rated on the basis of interviewer observations. Each behavior was coded from 0 (not at all) to 3 (a lot). The average score across items constituted the total score.

A participant's subjective quality of life was scored on a standard 7-point scale (from 1, terrible, to 7, delighted), with higher scores indicating greater life satisfaction (15). Interviewers also documented days employed during the previous 30 days.

The Addiction Severity Index (ASI) (16) documented past-month alcohol and drug use; perceived problems with alcohol use, drug use, or both; and substance-related expenditures. Scoring is based on a seven-item alcohol use subscale (ASI-alcohol) and a 13-item drug use subscale (ASI-drugs). Items are combined in a standard composite score ranging from 0 to 1 for each subscale; higher scores reflect more serious substance use. As part of the ASI, participants reported how many days they drank or used specific types of drugs in the past month and how many days they drank to intoxication.

Service use and cost. Participants reported number and type of general

Table 1

Baseline characteristics of abstainers and substance users within 90 days of placement in permanent housing

Variable	Abstainer (N=290)[a]		High-frequency substance user (N=120)[b]	
	N	%	N	%
Demographic characteristic				
Age (M±SD)	45.9±8.9		46.6±8.2	
Education (M±SD years)	11.7±2.7		11.7±2.6	
Age at first time homeless (M±SD)	32.7±12.1		32.0±11.7	
Homelessness over lifetime (M±SD years)	7.7±6.2**		9.7±8.0**	
Jailed in lifetime (M±SD years)	2.8±5.4*		4.2±7.1*	
Sum of childhood traumas (M±SD score, 0–14)	5.7±3.0		6.2±3.0	
Longest period with full-time job (M±SD years)	5.0±5.8		5.1±6.2	
Male	219	76	82	68
In racial or ethnic minority group	177	61	62	52
Never married	91	31*	23	19*
Veteran	88	30	29	24
Held regular job in past 3 years	42	15	18	15
Ever received any public support[c]	170	59**	90	75**
Eligibility characteristic and disabling condition				
Homeless >1 year	250	86	104	87
Homeless for 4 or more periods	196	68	91	76
Mental health problem[d]	230	79	85	71
Schizophrenia[d]	62	21	18	15
Depression[d]	89	31	33	28
Bipolar disorder[d]	53	18	15	13
Posttraumatic stress disorder[d]	15	5*	13	11*
Other psychiatric diagnosis[e]	7	2	4	3
Any medical problem[f]	172	59**	89	75**
Developmental disability	21	7*	17	14*
Alcohol problem[g]	124	43***	78	65***
Drug problem[g]	129	44***	76	63***
Any substance use problem (excluding nicotine)[g]	169	58***	112	93***
Co-occurring substance use and mental disorders	121	42***	79	66***
Health services access				
Uninsured	51	18	26	22
Has primary medical provider	122	42	52	43
Has primary mental health or substance abuse treatment provider	199	69	80	67
Has primary case manager	98	34	46	38
Housing in past 90 days (M±SD days)				
Housed	56.0±31.5		61.0±31.3	
Institutionalized[h]	11.0±23.6**		5.0±14.4**	
Residential treatment	6.0±20.5*		2.9±10.1*	
Hospital stay	1.8±10.1		2.1±10.6	
Detained in prison or jail	1.1±7.9		.0±.0	
Homeless	22.6±29.0		23.8±30.3	
Clinical status				
SF-12 physical (M±SD score)[i]	45.0±10.6		43.8±9.6	
SF-12 mental (M±SD score)[i]	40.6±8.5		40.5±7.8	
Brief Symptom Inventory (M±SD score)[j]	1.3±.9		1.4±.8	
Observed psychosis scale (M±SD score)[k]	.2±.3		.2±.3	
Subjective quality of life (M±SD score)[l]	4.8±1.5		4.7±1.3	
Used illicit drugs in past 30 days	0	—***	90	76***
Days intoxicated in past 30 days	.0±.0***		5.7±9.9***	
Addiction Severity Index–alcohol (M±SD score)[m]	.0±.1***		.2±.3***	
Addiction Severity Index–drugs (M±SD score)[m]	.0±.0***		.1±.1***	
Alcohol expenditures in past 30 days (M±SD $)[n]	1±0***		52±86***	
Drug expenditures in past 30 days (M±SD $)[n]	25±411***		80±211***	
Total expenditures in past 30 days (M±SD $)[n]	26±411***		132±222***	
Employed in past 30 days	42	14	13	11
Service use and cost in past 90 days				
Participant in Alcoholics or Narcotics Anonymous	102	35	47	40
Received any public support in past 30 days[c]	239	82	90	75
General medical outpatient visits	2.3±5.2		3.1±5.7	

Continues on next page

Table 1

Continued from the previous page

Variable	Abstainer (N=290)[a] N	%	High-frequency substance user (N=120)[b] N	%
Mental health outpatient visits	4.2±7.3		3.9±8.5	
Substance abuse treatment outpatient visits	2.9±10.6		13.6±22.2	
Total outpatient visits	9.4±16.1		20.6±26.4	
Medical costs (M±SD $)[n]	2,957±14,828*		5,147±20,160*	
Mental health costs (M±SD $)[n]	2,493±7,905**		1,443±5,211**	
Substance abuse treatment costs (M±SD $)[n]	673±2,424		412±1,008	
Total inpatient, hospitalization day, and residential treatment program costs (M±SD $)[n]	5,045±17,104		6,034± 20,982	
Total costs (M±SD $)[n]	6,123±17,108		7,001± 21,125	

[a] Reported abstaining from alcohol, marijuana, or other illicit substances in the past 30 days
[b] Reported using alcohol, marijuana, or other illicit substance on more than 15 of the past 30 days
[c] Public support included Supplemental Security Income, Social Security Disability Insurance, Temporary Assistance for Needy Families, food stamps, General Assistance, service-connected disability benefits for veterans, and other support.
[d] Respondents were asked, "Has a mental health professional ever told you that you have . . . ?"
[e] Includes personality, anxiety, adjustment, or other psychotic disorder or other mental health problem
[f] Self-reported from a list of 25, including other
[g] Responded yes to "Has a mental health professional ever told you that you have . . . ?" or to "Do you feel you have a problem?"
[h] Includes residential (halfway or transitional) housing, hospitalization, or prison or jail
[i] Medical Outcomes Study 12-Item Short Form. Possible scores range from 0 to 100, with higher scores indicating better perceived health.
[j] Includes subscales to measure depression, anxiety, and psychoticism. Possible scores range from 0 to 4, with higher scores indicating greater subjective distress.
[k] Possible scores range from 0 to 3, with higher scores indicating greater observed psychotic behaviors.
[l] Possible scores range from 1 to 7, with higher scores indicating greater satisfaction with quality of life.
[m] Possible composite scores range from 0 to 1, with higher scores indicating greater addiction severity.
[n] Statistic derived with log-transformed analyses of expenditure and cost data, including for individuals who reported no expenditures or costs
*p<.05
**p<.01
***p<.00

medical and dental, mental health, and substance use treatment visits made during the prior three months. From this information, health service costs were estimated for medical and dental, mental health, and substance use services, and the total for all three service groups. Emergency department, inpatient, and outpatient costs were differentiated within each of the aggregate services. Estimates were computed by multiplying the number of visits or days of care by standard estimates of unit cost for each type of care. Unit costs were estimated with data compiled for a recent cost-effectiveness study of schizophrenia treatment funded by the National Institute of Mental Health (17). Participants also reported public support received in the past 30 days, including Supplemental Security Income (SSI), Social Security Disability Insurance (SSDI), state or local general assistance (GA), food stamps, or VA pension and service-connected disability benefits.

Statistical analysis

Because participant substance use at the precise time of entry into supported housing was not measured, we used data from the ASI (taken during the first assessment after housing entry) to identify high-frequency substance users, defined as those reporting more than 15 days of alcohol, marijuana, or other substance use during the month in which they were housed (N=120, 29%). Abstainers reported no substance use and constituted the comparison group (N=290, 71%).

Because high-frequency and abstinent participants may have differed in ways that could confound outcome comparisons, significant baseline group differences were identified by using chi square and independent-sample t tests. Excepting substance use variables, these differences were included as covariates in outcome comparisons.

Mixed linear regression models were used to test differences between the high-frequency and abstinent groups over time, with controls for the baseline value of the dependent variable, site, and previously identified baseline covariates. The significance of main effects for time, group, and group × time interaction was evaluated. Least-squares means of the outcome measures for each group averaged over all time points were calculated, as were least-squares means at each time point. Cost and expenditure variables were log-transformed to better normalize the data for statistical analysis. All analyses were carried out in SPSS version 16.0 (18).

No significant group difference in follow-up rates was found. The mean duration of follow-up was 17.9 months, with over 50% of participants actively participating in the evaluation two years after baseline.

Results

Group differences at baseline

Despite similar age at the onset of homelessness among abstainers and users, high-frequency users reported more lifetime years homeless (Table 1). They also reported more years in jail and were more likely to have received public support (through SSI, SSDI, or GA) and to have a diagnosis of posttraumatic stress disorder (PTSD), developmental disability, a medical problem, an alcohol or drug problem, or co-occurring mental and substance use problems. All of these issues suggest poorer overall adaptation or greater addiction severity. Having never been married was less common among high-frequency users. There were no other significant differences on baseline demographic characteristics, eligibility criteria, or health services use (Table 1).

Table 2

Effects of abstinence versus high-frequency substance use at time of housing entry on outcomes at follow-up time points[a]

Variable	Abstainer (N=290)[b]		High-frequency substance user (N=120)[c]		Main effect		
	LSM	SE	LSM	SE	Time	Group	Group × time
Housing in past 90 days							
Days housed	81.0	.8	79.8	1.3	<.001	ns	ns
Days institutionalized[d]	4.6	.5	6.0	.9	ns	ns	ns
Days of residential treatment	2.5	.4	3.2	.6	ns	ns	ns
Days of inpatient hospitalization	1.6	.3	1.0	.5	ns	ns	ns
Days in prison or in jail	.6	.2	1.3	.3	ns	<.05	ns
Days homeless	3.6	.5	4.6	.8	<.001	ns	ns
Clinical status							
SF-12 physical[e]	43.4	.3	43.6	.5	ns	ns	ns
SF-12 mental[e]	41.8	.3	39.4	.4	ns	<.001	ns
Brief Symptom Inventory[f]	1.1	.0	1.4	.0	<.001	<.001	<.05
Observed psychosis scale[g]	.21	.0	.25	.0	ns	<.05	ns
Subjective quality of life[h]	4.9	.1	4.4	.1	ns	<.001	ns
Days intoxicated in past 30 days	1.0	.2	3.1	.3	ns	<.001	<.001
Used illicit drugs in past 30 days	.2	.0	.5	.0	<.01	<.001	<.001
Addiction Severity Index–alcohol[i]	.1	.0	.2	.0	ns	<.001	<.001
Addiction Severity Index–drugs[i]	.0	.0	.1	.0	ns	<.001	<.001
Alcohol expenditures in past 30 days[j]	9	2	53	5	ns	<.001	<.001
Drug expenditures in past 30 days[j]	15	7	55	16	ns	<.001	<.01
Total expenditures in past 30 days[j]	24	8	106	16	ns	<.001	<.001
Any employment in past 30 days	.2	.0	.1	.0	ns	ns	ns
Service use and cost in past 90 days							
Participant in Alcoholics or Narcotics Anonymous	.3	.0	.4	.0	ns	ns	ns
Received any public support in past 30 days[k]	.8	.0	.8	.0	ns	ns	ns
Medical outpatient visits	2.7	.2	2.5	.3	ns	ns	ns
Mental health outpatient visits	3.1	.2	3.4	.3	<.01	ns	ns
Substance abuse treatment outpatient visits	2.8	.4	8.8	.8	<.05	<.001	ns
Total outpatient visits	8.5	.6	15.1	.9	<.01	<.001	ns
Medical costs ($)[j]	2,156	334	1,629	562	<.05	ns	ns
Mental health costs ($)[j]	1,317	190	1,053	317	<.001	ns	ns
Substance abuse treatment costs ($)[j]	482	115	1,285	193	ns	ns	ns
Total inpatient, hospitalization day, and residential treatment program costs ($)[j]	3,069	414	3,245	693	ns	<.05	<.05
Total costs ($)[j]	3,928	418	4,039	700	<.01	ns	ns

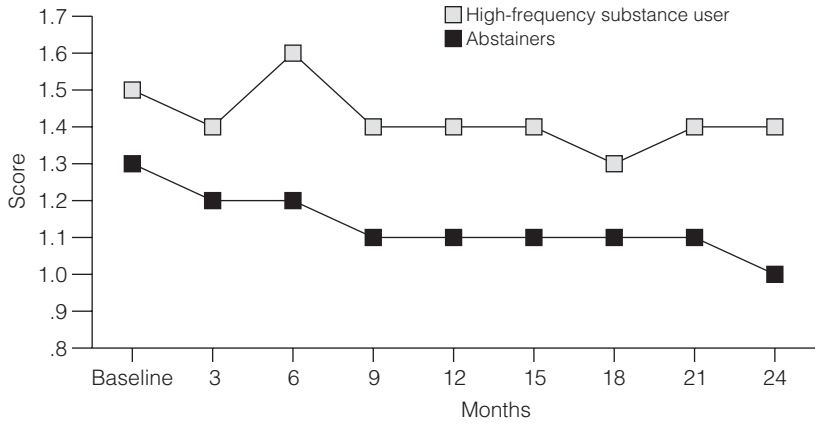
[a] Least-squares means (LSMs) were adjusted for baseline value of dependent variable, site, and baseline between-group differences (see Table 1).
[b] Reported abstaining from alcohol, marijuana, or other illicit substances in the past 30 days
[c] Reported using alcohol, marijuana, or other illicit substance on more than 15 of the past 30 days
[d] Includes residential (halfway or transitional) housing, hospitalization, or prison or jail
[e] Medical Outcomes Study 12-Item Short Form. Possible scores range from 0 to 100, with higher scores indicating better perceived health.
[f] Includes subscales to measure depression, anxiety, and psychoticism. Possible scores range from 0 to 4, with higher scores indicating greater subjective distress.
[g] Possible scores range from 0 to 3, with higher scores indicating greater observed psychotic behaviors.
[h] Possible scores range from 1 to 7, with higher scores indicating greater satisfaction with quality of life.
[i] Possible composite scores range from 0 to 1, with higher scores indicating greater addiction severity.
[j] Statistic derived with log-transformed analyses of expenditure and cost data, based on past-90-day reports, including for individuals who reported no expenditures or costs
[k] Public support included Supplemental Security Income, Social Security Disability Insurance, Temporary Assistance for Needy Families, food stamps, General Assistance, service-connected disability benefits for veterans, and other support.

At housing entry, neither number of days housed nor days homeless in the previous 90 days differed significantly between groups (Table 1). High-frequency users reported fewer days institutionalized—with half as many residential treatment days. Because this study's baseline assessment occurred within three months of receiving housing, the number of days housed in the past 90 days was higher than one might otherwise expect for a chronically homeless population. Baseline clinical status measures not related to addiction did not differ significantly between groups, including for the SF-12, BSI, observed psychosis scale, subjective quality of life, and percentage reporting past month employment (Table 1).

Consistent with group definitions, high-frequency users averaged drinking to intoxication on six days of the past 30, and 76% reported illicit drug

Figure 1

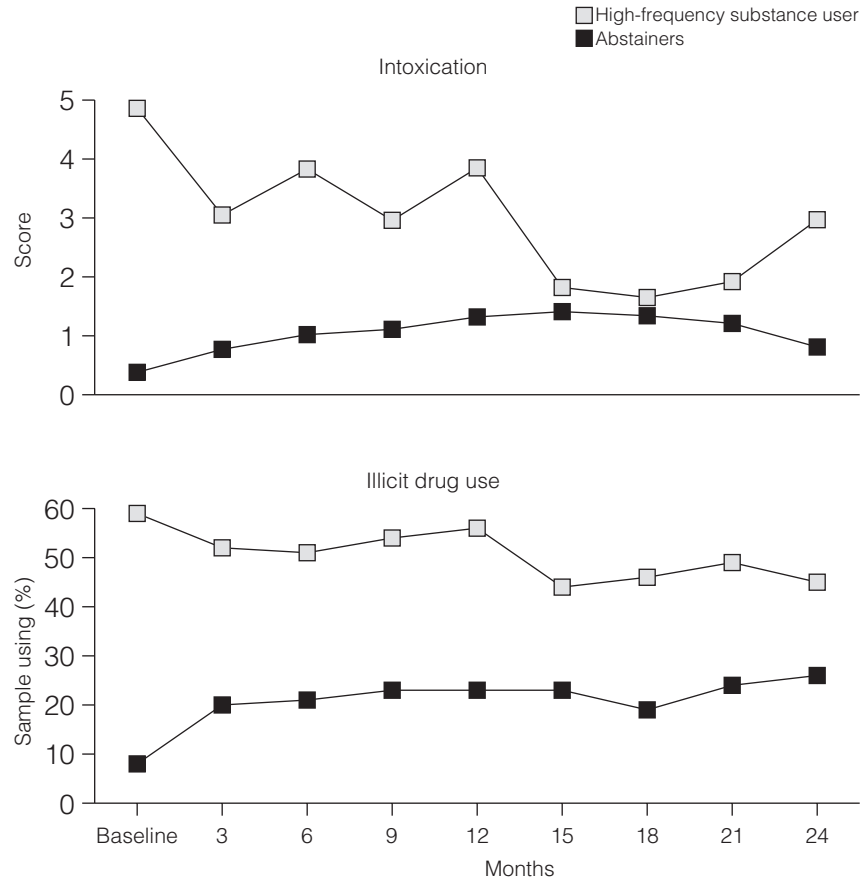
Past-90-day Brief Symptom Inventory score of abstainers and high-frequency substance users assessed over 24 months[a]



[a] Values are least-squares means. Possible scores range from 0 to 4, with higher scores indicating greater subjective distress.

Figure 2

Past-30-day substance use of abstainers and high-frequency substance users assessed over 24 months[a]



[a] Values are least-squares means for alcohol intoxication (top) and illicit drug use, including marijuana (bottom), with adjustments for the baseline value of the dependent variable, site, and baseline group differences.

use in the month before the baseline assessment at time of housing placement (Table 1). Within this high-use group, 40% (N=48) met the >15 day threshold for alcohol use only, 14% (N=17) for marijuana only, 31% (N=37) for other illicit drugs only, and 15% (N=18) for any combination. Indeed, 40% reported using illicit drugs other than marijuana on most days in the past month, indicating significant severity (not shown in table). The ASI-alcohol and ASI-drug scores were substantially greater among the high-frequency users than the abstainers, as were past 30-day alcohol and drug expenditures, reflecting recent active use (Table 1).

There were no significant differences in outpatient medical, mental health, substance use, or Alcoholics Anonymous or Narcotics Anonymous service use (Table 1). At baseline, high-frequency users had accrued higher past-90-day medical costs but lower mental health costs (Table 1).

Outcomes

Housing. Throughout follow-up, both groups showed dramatic increases in average number of days housed in the past 90 (Table 2). Compared with abstainers, high-frequency users spent more days in prison or jail. There were no group × time interactions on housing outcomes during follow-up, suggesting no adverse effect of high-frequency substance use on housing (Table 2).

Clinical status. High-frequency users had poorer overall group mean scores on the three mental health measures (SF-12 mental component, BSI, and observed psychosis) and the subjective quality-of-life measure (Table 2). They also showed significantly less improvement over time on the BSI (Figure 1). Employment status did not change, and outcomes were not different between groups.

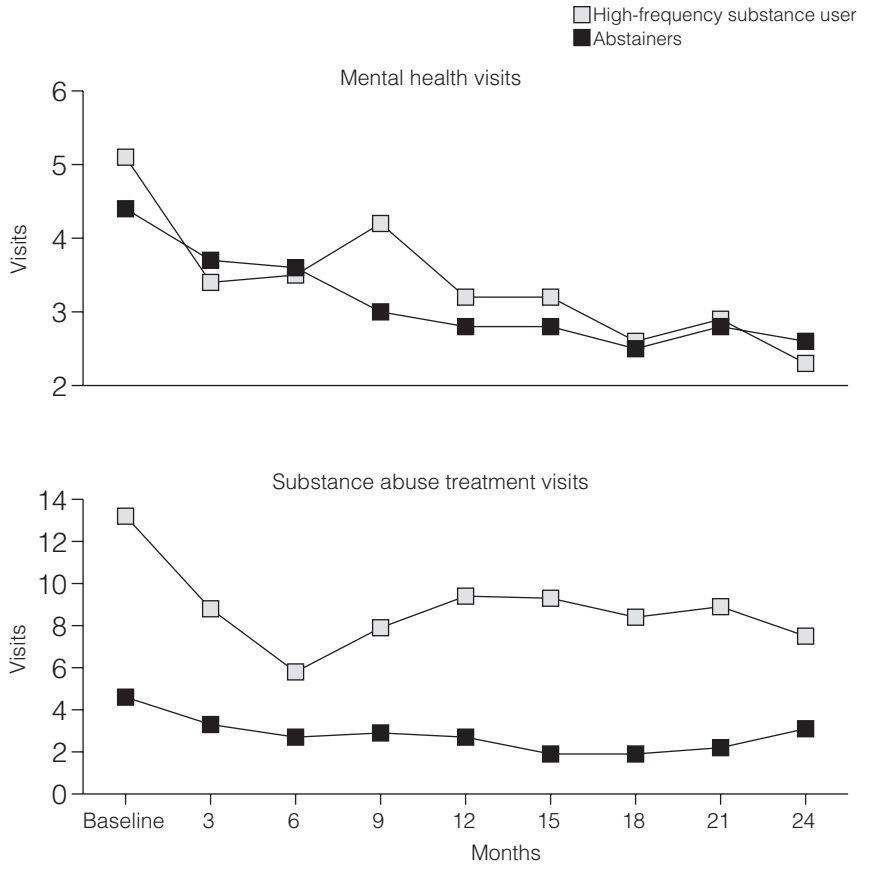
All measures of substance use were higher among high-frequency users than among abstainers during the entire follow-up period, including average number of days intoxicated, percentage using illicit drugs in the past month, and ASI-alcohol and ASI-drug composite scores (Table 2). Nonetheless, high-frequency users substantially decreased drug and al-

cohol use (whereas abstainers increased drug use slightly) throughout the two-year follow-up, with a group × time interaction on all substance use measures (Table 2 and Figure 2). Throughout, expenditures for alcohol and drugs remained higher among high-frequency users, even while declining (Table 2).

Service use and cost. Both groups reported decreasing mental health outpatient visits over time, and high-frequency users dropped 50% in number of substance use outpatient visits by six months followed by a slight increase and a plateau by study's end (Table 2 and Figure 3). In contrast, abstainers retained a low, steady rate of outpatient substance use treatment visits. There was evidence of lower total costs over the follow-up period without significant group differences.

Figure 3

Past-90-day outpatient service use of abstainers and high-frequency substance users over 24 months[a]



[a] Values are least-squares means for number of mental health visits (top) and number of substance abuse treatment visits (bottom).

Discussion

This study addressed an emerging question in the debate surrounding services for chronically homeless people: can active users of substances be housed successfully via a low-demand housing model? Prior studies have demonstrated success in housing disabled individuals with and without a history of substance use problems (3) and individuals with severe alcohol dependence (7) when compared with generally available housing and treatment services. This study is, to our knowledge, the first evaluation of housing and clinical outcomes comparing individuals with and without active drug or alcohol use at the time of housing entry in which both groups had access to full-service supportive housing. In short, our results show equal two-year success in housing high-frequency users and abstainers. This finding is hopeful for policy makers and advocates whose primary goal is to house the homeless population and suggests that requiring abstinence is not necessary for successful independent housing outcomes. It does not, however, address whether substance use or other clinical outcomes would be different with required abstinence.

Also promising, and consistent with a growing literature, is the finding that health service costs diminish when individuals are stably housed, although in the absence of a control group this cannot be causally attributed to treatment (7,19).

Generally, alcohol and drug use patterns showed some limited positive change over time when high-frequency users were stably housed. This finding may lend support to the hypothesis that housing alone may motivate reduced substance use (3). However, caution is warranted given high rates of past-30-day drug use and days intoxicated throughout follow-up. To be explicit, stable housing is not substance use treatment. Use or availability of evidence-based substance use treatments among study participants is not known but could improve these outcomes.

Moreover, the abstainers increased illicit drug use over time. Although this result might be expected given addiction's chronic nature, it raises questions about whether abstinence-contingent housing might mitigate this finding and be useful for subgroups of homeless persons. Indeed, as noted by Kertesz and colleagues (4) and others (20), the relevant policy question should perhaps be not "what works?" but "what works for whom?"

Also of potential concern is our finding that high-frequency users had poorer mental health status scores and subjective quality of life than abstainers. BSI scores showed improvement among the abstainers. No such positive change was seen among the high-frequency users, although there was no evident deterioration. These results deserve attention, particularly given effective evidenced-based treatments for substance dependence that may simultaneously benefit mental health outcomes.

Several limitations bear on the interpretation of these results. First,

the CICH project was not an experimental research study, and there may be additional unmeasured differences between groups (such as antisocial personality or drug craving) that confounded our analysis. Although it seems unlikely that such characteristics would artificially increase housing success among high-frequency users, they may offer an explanation for poorer mental health and substance use outcomes. Although our results are primarily descriptive, we used multiple-regression mixed models to adjust for all measured, potentially confounding factors.

Second, there were no formal structured diagnostic assessments or toxicology assessments of substance use. There may have been underreporting of substance use by either group. Limiting the analysis to groups at either extreme of substance use, however, reduced the likelihood that the groups were not actually different. Third, with design and real-world constraints, we relied heavily on self-report for housing and clinical outcomes, as is typical in homelessness services research (3,7). Fourth, we examined multiple outcomes with liberal use of the .05 alpha criterion, thereby increasing risk of spurious findings and suggesting even fewer significant group differences.

Finally, there remains uncertainty about generalizability. The high-frequency users identified at CICH sites who agreed to participate in the national evaluation, despite their heavy substance use, may have been more motivated to remain housed than other groups of substance-using individuals. Indeed, individuals not participating in the national evaluation were more likely to have substance use problems and be recruited from streets, parks, and other outdoor sites than evaluation participants, potentially indicating greater addiction severity and overall poorer functioning. In addition, CICH sites were competitively selected for funding and may represent best-case scenarios for implementation of supported housing and retention. Nonetheless, by setting such high thresholds for inclusion into the high-frequency use group, our findings suggest that high levels of substance use, including nonmarijuana illicit drug use, provide little to no interference with housing outcomes among voluntary participants in real-world supported community housing programs.

Conclusions

Homeless individuals who are actively using substances may be successfully housed with the use of a low-demand model. Our analyses showed no substantial adverse impact on substance use outcomes, although substance-using individuals showed poorer—but not declining—status on mental health outcomes compared with abstainers.

Acknowledgments and disclosures

This research was supported by the Advanced Fellowship Program in Mental Illness Research and Treatment of the U.S. Department of Veterans Affairs Office of Academic Affiliations.

The authors report no competing interests.

References

1. Milby JB, Schumacher JE, Wallace D, et al: To house or not to house: the effects of providing housing to homeless substance abusers in treatment. American Journal of Public Health 95:1259–1265, 2005
2. Ashcraft L, Anthony WA, Martin C: Home is where recovery begins. Behavioral Healthcare 28:13–15, 2008
3. Tsemberis S, Gulcur L, Nakae M: Housing First, consumer choice, and harm reduction for homeless individuals with a dual diagnosis. American Journal of Public Health 94:651–656, 2008
4. Kertesz SG, Crouch K, Milby JB, et al: Housing first for homeless persons with active addiction: are we overreaching? Milbank Quarterly 87:495–534, 2009
5. Kertesz S, Weiner S: Housing the chronically homeless: high hopes, complex realities. JAMA 301:1822–1824, 2009
6. Tsemberis S, Eisenberg RF: Pathways to housing: supported housing for street-dwelling homeless individuals with psychiatric disabilities. Psychiatric Services 51: 487–493, 2000
7. Larimer ME, Malone DK, Garner MD, et al: Health care and public service use and costs before and after provision of housing for chronically homeless persons with severe alcohol problems. JAMA 301:1349–1357, 2009
8. Mares AS, Rosenheck RA: Twelve-month client outcomes and service use in a multisite project for chronically homelessness adults. Journal of Behavioral Health Services Research 37:167–183, 2009
9. Stein LI, Test MA: Alternative to mental hospital treatment: I. conceptual model, treatment program, and clinical evaluation. Archives of General Psychiatry 37: 392–397, 1980
10. Rickards LD, McGraw SA, Araki L, et al: Collaborative initiative to help end chronic homelessness: introduction. Journal of Behavioral Health Services Research 37:149–166, 2009
11. Ware JE, Kosinski M, Keller SE: How to Score the SF-12 Physical and Mental Health Summary Scales, 3rd ed. Lincoln, RI, Quality Metric, Inc, 1998
12. Larson CO: Use of the SF-12 instrument for measuring the health of homeless persons. Health Services Research 37:733–750, 2002
13. Derogatis LR, Spencer N: The Brief Symptom Inventory: Administration, Scoring, and Procedure Manual. Baltimore, Johns Hopkins University Press, 1982
14. Dohrenwend B: Psychiatric Epidemiology Research Interview (PERI). New York, Columbia University, Social Psychiatry Unit, 1982
15. Lehman A: A quality of life interview for the chronically mentally ill. Evaluation and Program Planning 11:51–62, 1988
16. McLellan AT, Luborsky L, Woody GE, et al: An improved diagnostic evaluation instrument for substance abuse patients: the Addiction Severity Index. Journal of Nervous and Mental Disorders 168:26–33, 1980
17. Rosenheck RA, Leslie DL, Sindelar J, et al: Cost-effectiveness of second-generation antipsychotics and perphenazine in a randomized trial of treatment for chronic schizophrenia. American Journal of Psychiatry 163:2080–2089, 2006
18. SPSS. Chicago, SPSS, Inc, 2007
19. Sadowski LS, Kee RA, VanderWeele TJ, et al: Effect of a housing and case management program on emergency department visits and hospitalizations among chronically ill homeless adults: a randomized trial. JAMA 301:1771–1778, 2009
20. Caton C, Wilkins C, Anderson J: People who experience long-term homelessness: characteristics and interventions; in National Symposium on Homelessness Research. Edited by Dennis D, Locke G, Khadduri J. Washington, DC, US Department of Health and Human Services, 2007