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Lessening Homelessness Among Persons with Mental Illness: A Comparison of Five Randomized Treatment Trials

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Abstract

We evaluate the influence of housing, services, and individual characteristics on housing loss among formerly homeless mentally ill persons who participated in a five-site (4-city) study in the U.S. Housing and service availability were manipulated within randomized experimental designs and substance abuse and other covariates were measured with a common protocol. Findings indicate that housing availability was the primary predictor of subsequent ability to avoid homelessness, while enhanced services reduced the risk of homelessness if housing was also available. Substance abuse increased the risk of housing loss in some conditions in some projects, but specific findings differed between projects and with respect to time spent in shelters and on the streets. We identify implications for research on homeless persons with mental illness that spans different national and local contexts and involves diverse ethnic groups.

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Keywords

Homelessness; mental illness; substance abuse

Homelessness is associated with mental disorder throughout the world, but both the prevalence of homelessness and the strength of its association with mental illness vary across nations, ethnic groups and service systems (Folsom et al. 2005; Montross et al. 2005; Ran et al. 2006). In countries and at times characterized by extensive mental health services and affordable housing, living with severe mental illness is less likely to mean losing a place in which to live. In ethnic groups characterized by robust systems of social support and accepting cultural norms, those with mental maladies are less likely to become social—and residential—outcasts (Cohen, 1994). No matter what the average risk of homelessness that these macro-social factors create in particular populations, individual characteristics are also a key determinant of which persons with mental illness become homeless (Devine and Wright, 1997; Jencks, 1994; Rossi, 1989). Identifying these influences is critical for improving psychiatric services, since the condition of living on the streets or in shelters diminishes the odds of treatment compliance and efficacy (Padgett et al., 2008).

Inadequate resources, disparate measures, and incomparable service systems and treatment approaches often hinder identification of the influences on housing loss in different groups or settings. We use in this article a unique multi-site investigation of homeless mentally ill persons that lessens some of these problems. The investigation was conducted in four cities and five sites in the United States, with funding and oversight by the National Institute of Mental Health and the Center for Mental Health Services. The five studies, hereinafter termed the “McKinney Projects,” had several design features that facilitate identification of the individual characteristics that influence risk of homelessness in different settings: housing and service options were varied systematically and manipulated within an experimental design; personal characteristics were measured with common interview instruments; samples consisted of mentally ill persons who were already homeless and thus for whom the risk of continuing homelessness or again losing housing was so high that it could be expected to occur with some frequency during followup periods ranging from 1 to 2 years.

1. Risk of homelessness among persons with mental illness

Several studies indicate that providing housing reduces the risk of subsequent homelessness among persons who are severely and persistently mentally ill (Lehman et al., 1997; Lipton et al., 1988; Rosenheck et al, 1995). By contrast, enhancing case management services by itself is not consistently associated with lessened risk of homelessness (Drake et al., 1998; Hurlburt et al., 1996b; Morse et al., 1992).

Several personal characteristics tend consistently to increase the risk of homelessness among seriously mentally ill persons. Substance abuse is most consistently associated with vulnerability to homelessness in the U.S. (Drake and Wallach, 1989; Drake, Wallach, and Hoffman, 1989; Folsom et al. 2005; Hartz, Banys. and Hall, 1994; Linn, Gelberg, and Leake, 1990), in different ethnic groups (Montross et al. 2005), and in countries across Asia (Han et al. 2003; Herrman et al. 1989; Takano et al. 1999; Talukdar et al. 2008). Younger age and male gender are associated consistently with risk of homelessness among mentally ill persons and are themselves highly correlated with substance abuse (Cuffel et al., 1993; Drake and Wallach, 1989; Drake et al., 1989; Kay et al., 1989; Lehman et al., 1993; Mueser et al., 1990). In the U.S., homelessness appears to be more common among African American users of mental health services than among those who are white, and less common

among Asian Americans and Latinos (Folsom et al. 2005)--although the effect of ethnicity has varied across samples (Caton and Goldstein, 1984; Cohen et al., 1997; Uehara, 1994; Wong and Piliavin, 1997). We test the effect of each of these factors in our multi-site sample as well as interactions with race (although in a sample limited to whites, African Americans and Latinos).

2. Methods

This paper combines data from five parallel randomized experiments to test the effectiveness of housing and service interventions for persons with severe mental illness (SMI) who are homeless. All participants were screened for eligibility with a clinical interview—the Structured Clinical Interview for DSM-III-R (SCID) (Spitzer et al. 1992) in four sites and the Diagnostic Interview Schedule (DIS) (Bourdon et al. 1992) in one site (San Diego). Almost all participants received a primary diagnosis of schizophrenia or another nonaffective psychosis (60%), bipolar disorder (15%) or major depression or dysthymia (21%); the rest received a primary diagnosis of substance abuse (3.1%) or panic/generalized anxiety/somatization disorder or hypochondriasis (.5%). All participants in each project had to have been homeless, which in turn indicated a level of functional impairment consistent with a serious mental illness (Kessler et al., 2001). Indicators of homeless status were having spent a significant number of nights on the streets, shelters or temporary residences prior to enrollment or prior to admission to an institution or having no permanent community residence upon discharge (Shern et al., 1997a). The projects differed in the cities in which they were located, in the particular housing and service interventions they tested, in the segment of the homeless mentally ill population that they recruited, and in the length of their follow-up period (Center for Mental Health Services, 1994). A total of 896 participants were studied in the five projects, with an overall 18-month retention rate (12 months in Baltimore) of 79% (Goldfinger et al., 1995).

2.1 Project Design

The primary housing intervention in Baltimore and San Diego was the provision of HUD Section 8 rental vouchers, allowing participants in the experimental condition to secure rental housing for 30% of their income (table 1). Of the 77 participants in the Baltimore experimental condition, 34 (44%) accessed vouchers, reflecting their preferences as well as clinician judgment of their readiness for independent living. The service intervention that distinguished the Baltimore experimental group was assignment to an Assertive Community Treatment team (Stein and Test, 1980) that included psychiatric, medical, social work and nursing professionals, as well as case managers, consumer advocates, and family liaisons. The San Diego project varied experimentally both the provision of comprehensive case management services and the provision of Section 8 vouchers in a 2x2 factorial design (Hurlburt et al., 1996b). Half the participants were given access to a Section 8 certificate¹ and half received comprehensive case management; a team with a caseload of 22 available around-the-clock. Others were randomized to receive no housing voucher and/or traditional case management with individual caseloads of 40 and only weekday availability.

Experimental participants in the New York Street Outreach study were offered a psychiatric rehabilitation program that included assertive outreach and engagement activities, preferential access to a service oriented drop-in center, church-based respite housing and rehabilitation counseling services (Shern et al., 1997b). In the New York Critical Time Intervention project (CTI), both experimental and control participants were placed in

¹Twelve percent did not complete the application process, even with case management assistance, and so did not actually obtain a certificate.

community housing and then the experimental participants were assigned to a special treatment team providing intensive transitional services for up to nine months. In the Boston project, experimental group participants received staffed, group homes, while the others were placed in independent apartments; all had clinical case managers.

Recruitment in the projects targeted different segments of the homeless mentally ill population (Shern et al., 1997a). The New York Street Outreach Project recruited homeless persons from the street, while the Baltimore project recruited homeless persons who were not seeking mental health services in various settings. The CTI and Boston projects drew homeless persons from service-oriented shelters open only to those diagnosed as mentally ill, while the San Diego project received referrals from mental health service providers. Both the Boston and San Diego projects screened out persons who were identified as at high risk for endangering themselves or others if they were to live independently.

The sociodemographic and clinical characteristics of the total sample are similar to those reported in other studies of homeless mentally ill persons (Tessler and Dennis, 1989). Over half were black (44%) or Hispanic (10%), while 41% were white, but very few were Asian-American; almost all participants in the New York CTI Project were minority males. Most had experienced psychiatric hospitalizations, had a primary diagnosis of psychotic illness, and between half and three-quarters in each project were diagnosed as substance abusers.

2.2 Measurement

Participants were interviewed at six-month intervals during followup periods ranging from 12 months (Baltimore), to 18 (Boston, NY CTI), and 24 months (San Diego and NYC Street). To enhance comparability in our analyses, we focus on outcomes by 18 months (except for Baltimore). We use three indicators of housing outcome: percent of followup days spent living on the streets, percent of followup days living in shelters, and the total percent of followup days spent homeless (living on the streets or in shelters).

Lifetime substance abuse was identified in each project with the diagnostic interview at baseline. However, in one project (the New York Street project), these interviews could not be conducted with 111 of the 168 participants. For these participants, substance abuse was evaluated with a composite measure of in-project abuse based on McLellan's (1980) self-report Addiction Severity Index (ASI). Individuals were coded as having a lifetime substance abuse problem if their composite ASI score indicated possible abuse during the project. Analysis of multiple measures of substance abuse collected in the Boston project indicated that abuse appeared during the project only among those diagnosed at baseline as having a lifetime substance abuse disorder, but nondisclosure diminished the adequacy of such a measure (Goldfinger et al., 1996).

Symptoms of mental illness were assessed with Shern et al.'s (1994) Colorado Symptom Index, including questions about frequency of worrying, feeling depressed, hearing voices, being indecisive, trouble concentrating, and feeling like hurting others or oneself (Cronbach's $\alpha=.88$). Participants' gender, age, ethnicity, years of education and time homeless were also collected at baseline and are used in the analysis.

2.3 Analysis

We test the effect of treatment on homelessness indicators for each project using independent sample t-tests, separately for substance abusers and non-users. Since we have hypothesized a beneficial effect of the treatment condition, we report p values to the .1 level for treatment (equivalent to .05 in a 1-tailed test). We then use logistic regression analysis to identify the independent effect of treatment, substance abuse and other potential predictors on likelihood of spending time in shelters during the project (over an 18-month period--with

the exception of Baltimore, where data collection ended after 12 months). Separate logistic analyses are conducted for each site in order to take into account the different populations sampled and the different types of intervention tested. We focus on likelihood of spending project time in shelters, rather than spending any time homeless, because the primary focus of the New York Street project was to bring participants off the streets into shelters, rather than to move them into housing (so total time homeless was not affected). Spending time on the streets was a very rare occurrence in all the project samples except the New York Street project. Tests are conducted for independent effects of the interaction of substance abuse and of race (black or, in the case of San Diego, also Hispanic) with treatment condition, but these interactions are not presented unless they are statistically significant (and none were).

3. Results

Each of the projects improved considerably the residential situation of their formerly homeless participants, with Boston, the New York CTI Project and San Diego each keeping participants' nights homeless under 10% of their total time in the project and Baltimore keeping it at 21%. The New York City Street Project was very effective in shifting participants' time from the streets to transitional shelters. The enhanced housing treatment in Baltimore, Boston, and New York CTI projects reduced both total time homeless and days in shelters by a statistically significant amount (table 2). The Section 8 certificates in the San Diego project had such an effect on days in shelters. The enhanced treatment in the New York Street Project decreased days on the streets and increased days in shelters.

These treatment effects varied with substance abuse (table 3). Enhanced treatment was associated with less likelihood of spending time in shelters for substance abusers in Boston and the New York CTI project and for non-abusers in Baltimore and San Diego (table 3). Enhanced treatment in the New York Street project increased the likelihood of spending days in shelters irrespective of substance abuse, but it reduced the likelihood of spending days on the street for substance abusers.²

In the logistic regression analyses, enhanced treatment reduced the likelihood of spending any days in a shelter in Baltimore and Boston, while it increased this likelihood in the New York Street sample (table 4). The effects of enhanced treatment in the New York CTI and San Diego projects that were identified in the t-tests were no longer statistically significant after the personal characteristics were controlled (and there was no significant interaction with substance abuse).

Few personal characteristics had independent effects. In Baltimore, more time homeless at baseline was associated with a higher probability of spending days in a shelter during the project. In Boston, substance abuse increased the likelihood of spending time in shelters, as did minority race (but only marginally so). Being female and having more education were associated with less likelihood of spending time in shelters in San Diego. In the New York Street project, more time spent homeless before the project was associated with less likelihood of spending time in shelters, as were, marginally, being female and younger.

4. Discussion

These treatment effects indicate that even among those who are particularly vulnerable to homelessness due to mental illness and prior experience of homelessness, improving

²Most shelter stays involved residence in a shelter that was run in church basements exclusively for participants in the experimental program. As such, these shelter stays represented an important step in an engagement process that was intended to lead to community housing.

housing availability can lessen substantially the likelihood of continued homelessness. Total days homeless were reduced in the enhanced housing condition in three projects, days in a shelter were reduced in all four projects in which shelter time was a negative outcome, and days on the street were reduced in the one project (the NY Street Project) in which that was the focus of concern.

The effect of enhanced services is less clear. In the New York Critical Time Intervention project both groups received housing; enhancing initial support services in the experimental group then reduced the number of days spent back in shelters for substance abusers. In Boston, placement in staffed group housing reduced subsequent homelessness more than did placement in independent apartments. The outreach services and transitional shelter facilities provided in the New York Street project succeeded in moving more participants from streets to shelters. However, in the San Diego project service intensity was manipulated independently of housing availability, so the lack of an effect of comprehensive case management when an indicator of this manipulation was added to the San Diego logistic regression deserves particular attention. These negative results also parallel the null findings of Drake et al.'s (1998) experimental comparison of Assertive Community Treatment with regular case management for dually diagnosed clients.

These results suggest that enhanced services may aid housing retention only when housing is also provided. These results also underscore the importance of understanding homelessness among persons with mental illness in the context of housing availability and service systems in the particular countries, locales and time periods investigated.

A detrimental effect of substance abuse was anticipated in prior research, but its effect in this analysis varied across projects and conditions. In Boston and the New York CTI project, substance abusers were aided by enhanced services, while non-abusers were not. By contrast, in Baltimore and San Diego, it was non-abusers who benefited from enhanced services. What can explain these disparate interactions with substance abuse? Both Boston and the CTI project recruited participants from mental health shelters and placed them initially in housing—with enhanced support in the experimental condition. Thus, substance abusers were likely to have been somewhat stabilized and treatment compliant at the time of recruitment (due to the rules of living in service-oriented shelters) and benefited when special services continued after housing placement. In addition, there was a pattern of benefit for non-abusers from enhanced services, but there was not sufficient power to identify this effect as statistically significant due to a small number of cases and a ceiling effect (there was virtually no homelessness among the non-abusers in the enhanced treatment condition, and very little among those in the control condition).

In Baltimore and San Diego, where it was the non-abusers who benefited from enhanced treatment, participants were recruited from diverse settings and the enhanced condition (as we have operationalized it in this analysis) involved receipt of Section 8 certificates (although not to all experimental participants in Baltimore). We presume, therefore, that substance abusers in these two projects were not as likely to be maintaining sobriety at baseline as in Boston and the CTI project, and they were more on their own when they moved into housing (not having on-site staff as in the Boston enhanced treatment condition nor intensive staffing for the first 6 months as in the CTI project). So we surmise that enhanced services are most needed to maintain substance abusers in housing, at least after they have maintained their sobriety for a time, while independent housing is more likely to be beneficial for non-abusers who have not been in a relatively stable setting.

Of course the post hoc interpretations of the interactions we identified can only be tentative, but we believe they are consistent with Kertesz et al.'s (2009) conclusion, after a careful

review of other research, that independent housing has only been shown to benefit non-substance abusers. We also believe that these findings indicate the importance of taking into account the extent of treatment resistance in the population to be served and tailoring the service intervention to take this characteristic into account (Holmes et al. 2006). The impact of substance abuse and its moderation of effects of enhanced treatment also indicates the critical importance of taking account of both participant and site characteristics in comparative research. Since the prevalence and types of substance abuse, as well as cultural norms concerning substance use vary between nations and ethnic groups (Herrman et al., 1989; Montross et al. 2005; Shrestha, 1992; Talukdar et al. 2008), identifying the role of substance abuse is essential for developing valid comparative cross-national and cross-ethnic generalizations about homelessness and mental illness.

Another analysis of the Baltimore data also suggests that there may be benefits to group living arrangements that are not restricted to substance abusers: Almost all clients who received Section 8 vouchers in the Baltimore study and moved into independent apartments were significantly stressed by loneliness and social isolation (Dixon et al., 1994). Any such efforts must recognize and respect the preference of a majority of homeless persons with mental illness to live independently even while making the case for potential advantages of to encourage group living arrangements (Schutt and Goldfinger 1996). We believe that the group living arrangements, like those in Boston, reduced such feelings. While there was not an effect of such loneliness on repeated homelessness after 18 months, it may explain the failure of many homeless persons with serious mental illness to maintain independent apartments over longer periods (Kaspro et al. 2000).

Blacks and Hispanics as a group were not more likely to spend time on the streets or in shelters than whites and did not benefit differentially from the enhanced treatment conditions except to a marginal degree in Boston, and so this analysis does not indicate that variable local attitudes toward and behaviors of different ethnic groups influence service effectiveness. However, this general lack of effects does not preclude identification through more intensive analyses of the process of housing loss of unique ethnic effects in some settings. For example, we found in Boston a much stronger risk of housing loss among African Americans compared to whites if they living in independent apartments and also abused substances (Goldfinger et al. 1999).

We believe that our findings can be generalized beyond treatment compliant individuals, since we found benefits of housing and services in Baltimore, where study subjects had not been seeking services, as well as in Boston and New York's CTI project, where subjects had been living in service-oriented shelters. There was also a positive effect of Section 8 housing certificates in San Diego, where many subjects had been living on the streets when they were recruited, even though they were referred by service providers. The New York Street project focused on the most treatment-resistant street-living homeless persons with serious mental illness and the services it provided brought more of its subjects from the streets into shelters.

However, even though we have studied an unusually large and varied sample of homeless mentally ill persons, differences in subject recruitment and in eligibility requirements as well as the focus on U.S. cities make it important to consider these as limitations on generalizability. Boston and San Diego used a safety screening process that may have reduced the proportion of participants who were treatment resistance. In addition, our limited focus on whites, African Americans and Hispanics in the U.S. precludes confident generalization of our findings to other groups or nations. More systematic comparative research across even more diverse settings than ours will be required to test our explanations for the variable patterns we found between sites.

Several measurement differences between our projects also limit the confidence that can be placed in our results. We had to use for this analysis a different procedure to identify substance abuse in the New York Street project to compensate for missing data, the diagnoses (including of substance abuse) were obtained with the DIS rather than—as in the other projects—with the SCID, and the Baltimore project only had a 12-month followup interval rather than the 18 month period we were able to use with the other projects. Our cross-site data also lacked direct measures of some concepts like treatment compliance, social support and level of functional disability that might be important in explaining housing loss (Hawkins and Abrams 2007; Holmes et al. 2006; Seidman et al. 2008). Nonetheless, our five projects were much more parallel in their measurement approach and other design features than most other projects whose results have been analyzed in some pooled way (cf., Kaspro et al. 2000; Gulcur and Tsemberis 2006).

We conclude that housing itself is a necessary condition for reducing the risk of homelessness, but it is often insufficient to prevent homelessness among impoverished persons with mental illness who abuse substances. Housing models that provide roommates and encourage the development of non-professional forms of social support may also be more successful in preventing homelessness among individuals who would be socially isolated in independent apartments. Programs that seek to reduce the risk of homelessness among individuals with severe mental illness should thus offer different residential and service options for different subgroups and take into account national and cultural differences.

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Table 1

McKinney Project Features: Intervention & Recruitment

Project	Housing	Services	Recruitment	Followup
Baltimore	Vouchers for 44%	ACT team	Diverse settings	12 months
Boston	Group (or Independent)	House staff, self-help	MH shelters (& safety screen)	18 months
NY CTI	Multiple placements	Transitional help	MH shelters	18 months
NY Street	Multiple options	Drop-in center	Street	24 months
San Diego	Vouchers	Intensive CM	MH referrals (& safety screen)	24 months

Table 2

Percent of Days Homeless Indicators by Project and Treatment Group

	% Days Homeless Indicator			
Project/ Group	Streets	Shelter	Total Homeless	N of Cases
<i>Baltimore</i>				
Control	4.8	22.8	27.4	64
Enhanced	1.9	13.7	15.5	71
t-test (1-tailed)	t=1.57, NS	t=2.06, p<.05	t=2.56, p<.01	
<i>Boston</i>				
Control	.0	10.9	11.0	49
Enhanced	.2	4.4	4.6	57
t-test (1-tailed)	t=-1.06, NS	t=1.89, p<.05	t=1.85, p<.05	
<i>NYC CTI</i>				
Control	2.3	11.0	13.3	44
Enhanced	2.1	4.3	6.4	46
t-test (1-tailed)	t=.12, NS	t=1.89, p<.05	t=1.74, p<.05	
<i>NYC Street</i>				
Control	54.4	8.2	62.6	66
Enhanced	34.4	29.6	64.0	88
t-test (1-tailed)	t=3.10, p<.01	t=-5.59, p<.001	t=-.23, NS	
<i>San Diego</i>				
Control	6.5	3.5	10.1	168
Enhanced	5.2	1.7	6.9	170
t-test (1-tailed)	t=.72, NS	t=1.81, p<.05	t=1.48, NS	

Table 3

Percent of Days Homeless Indicators by Project, Treatment Group, Substance Abuse

		% Days Homeless Indicator							
Project/Group	Streets	Substance Abuse		Shelter		Total Homeless		N of Cases	
	No Abuse	Substance Abuse	No Abuse	Substance Abuse	No Abuse	Substance Abuse	No Abuse	Substance Abuse	
Baltimore	$t=-1.0$	$t=1.3$	$t=3.0^{**}$	$t=.6$	$t=3.1^{**}$	$t=1.1$			
Control	1.6	5.9	32.9	19.4	34.5	25.1	16	48	
Enhanced	.0	2.7	7.9	16.1	7.9	18.7	21	50	
Boston	$t=-.9$	$t=-1.9$	$t=1.3$	$t=1.9^I$	$t=1.1$	$t=2.0^I$			
Control	.05	.02	2.7	17.0	2.8	17.2	21	28	
Enhanced	.51	.07	.0	6.6	.5	6.6	19	38	
NYC CTH	$t=.9$	$t=.3$	$t=1.0$	$t=1.7^I$	$t=.9$	$t=1.5$			
Control	3.7	2.0	3.7	12.9	7.4	14.9	9	35	
Enhanced	.2	2.7	.1	5.4	.4	8.1	8	36	
NYC Street	$t=1.0$	$t=3.4^{***}$	$t=-2.4^*$	$t=-5.3^{***}$	$t=-.7$	$t=.5$			
Control	40.6	62.9	10.5	6.8	51.1	69.7	25	41	
Enhanced	30.3	36.2	28.4	30.2	58.7	66.4	27	61	
San Diego	$t=1.0$	$t=-1$	$t=2.1^*$	$t=.4$	$t=2.0^*$	$t=-1$			
Control	7.7	5.3	4.7	2.4	12.6	7.6	83	85	
Enhanced	4.6	5.6	1.3	2.0	5.8	7.7	76	94	

¹ *p* < .1 (.05 in 1-tailed test).* *p* < .05.** *p* < .01.*** *p* < .001.

Table 4
Logistic Regression Analysis of Percent Days in Shelter by Project, Treatment Group, and Personal Characteristics

Predictor	Baltimore	Boston	NY CTI	NY Street	San Diego
Female	-.60	-.30	---	-.98 [†]	-.85 [*]
Age	.03	.01	.01	.04 [†]	-.02
Minority (Black)	.64	.951	18.48	.21	.24
Hispanic	--	--	--	--	.17
Married	-.27	-.98	-.93	.75	.15
Education	.05	.22	.12	-.04	-.38 ^{**}
Mental Health	-.32	-.19	.10	-.33	.20
Time Homeless	.39 ^{**}	.06	.17	-.52 [*]	.07
Substance Abuse	-.01	1.57 ^{**}	1.11	-.40	-.29
Treatment	-.72 [†]	-.98 [*]	-.25	2.10 ^{***}	-.47
Cox & Snell R ²	.13	.17	.07	.29	.05
Nagelkerke R ²	.17	.24	.10	.38	.09
N	132	114	91	135	354

[†] p<=.1 (.05 in 1-tailed test).

^{*} p<=.05.

^{**} p<=.01.

^{***} p<=.001.