

Explaining Service Use and Residential Stability in Supported Housing

Problems, Preferences, Peers

Russell K. Schutt, PhD,*†‡ Mark Schultz, PhD,‡ Chantele Mitchell-Miland, MPH,§ Sharon McCarthy, PhD,§ Matthew Chinman, PhD,§|| and Marsha Ellison, PhD‡¶

Background: The behavioral model of health service use identified health needs, service preferences (predispositions), and service availability (enabling factors) as important predictors, but research has not conceptualized consistently each type of influence nor identified their separate effects on use of substance abuse and mental health services or their value in predicting service outcomes.

Objectives: To test hypotheses predicting use of substance abuse and mental health services and residential stability and evaluate peer specialists' impact.

Research Design: Randomized trial of peer support added to standard case management in VA-supported housing program (Housing and Urban Development-VA Supportive Housing program).

Subjects: One hundred sixty-six dually diagnosed Veterans in Housing and Urban Development-VA Supportive Housing program in 2 cities.

Measures: Average VA service episodes for substance abuse and mental illness; residential instability; preferences for alcohol, drug, and psychological services; extent of alcohol, drug, and psychological problems; availability of a peer specialist.

Results: Self-assessed health needs, mediated by service preferences, and assignment to a peer specialist predicted use of VA

behavioral health services and residential stability, as did chronic medical problems, sex, and race.

Conclusions: The behavioral model identifies major predictors of health service use and residential stability, but must recognize the mediating role of service preferences, the differing effects of alcohol and drug use, the unique influences of social background, and the importance of clinical judgment in needs assessment. Service availability and residential stability can be increased by proactive efforts involving peer specialists even in a health care system that provides services without a financial barrier.

Key Words: health services, peer support, supported housing, substance abuse, mental illness

(*Med Care* 2021;59: S117–S123)

Research guided by Andersen and Aday's "behavioral model" has identified needs, predisposing factors, and enabling factors as key influences on health service use.^{1–5} The model's value for improving service use and service outcomes can be further enhanced by identifying the key elements of these 3 influences and by distinguishing their roles in different behavioral health services and in shaping service outcomes.^{2,6}

This research tests the influence of needs, predisposing factors, and enabling factors on use of services for substance abuse and mental illness as well as residential stability among formerly homeless Veterans enrolled in the Housing and Urban Development-VA Supportive Housing program (HUD-VASH). The analysis extends prior research by operationalizing predisposition with direct measures of service preferences, considering case manager as well as Veteran perceptions of support needs, varying service availability in a randomized design, and focusing on the primary goal of service use in this population: housing stability.⁷

INFLUENCES ON USING BEHAVIORAL HEALTH SERVICES

Multiple studies of behavioral health services use among homeless Veterans and others identify health problem severity—"need" in the Anderson and Aday model—as a key predictor.^{2–4,6,8–10} Tests of the Anderson and Aday model also identify "predispositions" as predicting service use when operationalized as preferences for substance abuse and mental

From the *Department of Sociology, University of Massachusetts Boston; †Massachusetts Mental Health Center, Beth Israel Deaconess Medical Center, Harvard Medical Center, Boston; ‡Edith Nourse Rogers Veterans Hospital, Bedford, MA; §VA Pittsburgh Health Care System, Pittsburgh, PA; ||RAND Corporation, Santa Monica, CA; and ¶University of Massachusetts Medical School, Worcester, MA.

Supported by the Department of Veterans Affairs, Veterans Health Administration, Office of Research and Development, Health Services Research and Development, Grant # IIR 10-333-3. The findings and interpretations of the data expressed in this paper are the sole responsibility of the authors and do not necessarily represent the views of the Veterans Health Administration.

The authors declare no conflict of interest.

Correspondence to: Russell K. Schutt, PhD, Department of Sociology, University of Massachusetts Boston, 100 Morrissey Blvd., Boston, MA 02125-3393. E-mail: russell.schutt@umb.edu.

Copyright © 2021 The Author(s). Published by Wolters Kluwer Health, Inc. This is an open access article distributed under the terms of the Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 (CCBY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

ISSN: 0025-7079/21/5904-S117

health services. Although sociodemographic characteristics such as race and sex have also been conceptualized as “predisposing factors,” we do not assume that any association with service use is necessarily due to differences in predispositions.^{2,11}

Behavioral health services are more readily available to Veterans in VA-supported housing than to those who are homeless,⁷ but practical obstacles and competing priorities still limit what Andersen termed “realized access.”² In this research, the influence of service availability on service use is operationalized in relation to the availability of peer specialists—individuals with lived experience “hired to provide direct support to those undertaking mental health or substance use disorder recovery”—who we hypothesize increase service accessibility.^{12–15}

Whether conceptualized as an “enabling” or “predisposing” factor, education tends to be positively associated with use of services for substance abuse and mental health problems,^{3,4} while African Americans, men and younger people are less likely to use mental health services than Whites, women, and older persons, respectively.^{3,4,8,16}

INFLUENCES ON RESIDENTIAL STABILITY

Increasing residential stability is the primary goal of housing programs like HUD-VASH, and influences identified in the behavioral model of health services use also predict variation in housing outcomes. Among need indicators, substance abuse is a common predictor of less housing stability after rehousing, but serious mental illness is not.^{17–19} Lack of interest in support services (“predispositions”) predicts less housing stability—but only among those who are judged by case managers as needing more support services.¹⁹ The availability of peer specialists may help overcome these challenges by encouraging behavioral health service use by those at greatest risk of housing instability.^{20,21} As in the prediction of health service use, sociodemographic characteristics help to explain residential stability, with formerly homeless African Americans experiencing more residential instability.²²

THE CURRENT STUDY

Six hypotheses are tested: 3 about predictors of service use and 3 about predictors of residential stability. *Service use*: (1) Higher levels of perceived behavioral health problems predict more use of the corresponding health care services; (2) Higher levels of importance attached to behavioral health care treatment predict more use of the corresponding health care services; (3) Assignment to a peer specialist increases use of behavioral health services compared with those not randomized to a peer specialist; *Residential stability*: (4) More severe substance abuse decreases residential stability; (5) More Veteran disinterest in staff support decreases residential stability if their clinicians rate them as needing more help; (6) Assignment to a peer specialist increases residential stability compared with those not randomized to a peer specialist.

METHODS

A randomized trial evaluated the impact of adding peer specialists to existing HUD-VASH teams. Research participants

had received housing vouchers (Section 8 certificates paying rent above 30% of income) in the HUD-VASH program and were identified by case managers or medical records as having a history of abusing alcohol and/or drugs and of a cooccurring mental illness. Potentially eligible Veterans at 2 VA medical centers (in the Boston and Pittsburgh areas) were informed about the project and those who consented to participate (N = 166) were surveyed at baseline and then randomized to receive either standard HUD-VASH services (N = 81) or these same services enhanced with a peer specialist for a 9-month period (N = 85). Those declining to participate often did not want to work with a peer specialist or believed they already had good housing prospects. Interviews were conducted at baseline and then at ~6 and 9 months after enrollment.

HUD-VASH guidelines require Veterans to have at least 1 contact with their case manager each month for review of their service needs and housing situation, although not for the formal provision of VA mental health or other services (they are eligible for these services but are not required to use them).²³ Those assigned to the experimental condition were expected to meet weekly with their peer specialist over 40 sessions, 20 that involved structured psychoeducation-based discussions and 20 that were unstructured (to focus on issues of current concern), although the median number of sessions was only 12. Although there was some turnover in peer specialists in the early months of the project, 2 peer specialists—1 White and 1 African American—delivered services to most of the Veterans at 1 site and 1 White peer specialist provided most of these services to Veterans at the other site. Peer specialists were assigned to Veterans participating in the research project based on availability, so there was no matching by race or other characteristics. All procedures were reviewed and approved by the Veterans Administration Central Institutional Review Board.

Measures

The dependent variable for hypotheses 1–3 is the number of behavioral service episodes during the 9-month treatment period after randomization. Service records indicating all episodes of health care at the 2 sites were obtained from VA’s National Patient Care Database for all 166 enrolled Veterans. Using VA “stop codes” (Decision Support System Identifiers), 80% of the service records were for substance abuse or mental illness, which are the foci of this analysis (the records did not distinguish integrated services for alcohol and drug abuse or include a dual-diagnosis code). Service episodes were then counted for the 3 months before study enrollment and for the 9 months after enrollment—when most participants completed the project (some continued to receive services for another 3 mo due to interruptions in their period of service caused by peer specialist turnover).²⁴

The dependent variable for hypotheses 4–6 is residential instability. Housing history was collected at each interview with the Residential TimeLine Follow-Back method, focused only on the preceding 30 days.²⁵ Residential instability was measured with a count of days not spent in either HUD-VASH housing or other housing within the past 30 days at baseline and then at both the 6-month and final

project interview (days spent on the streets, in shelters, in a hospital, or in jail)—a measure identified in prior research as a reliable indicator of risk of housing loss.^{26,27} For the outcome analysis, the number of days of residential instability were averaged over the 2 follow-up interviews.

Problem severity and service predisposition were measured at baseline with questions from the Addiction Severity Index, a widely used instrument with considerable evidence of concurrent and discriminant validity among individuals with substance use and psychiatric disorders.²⁸ The separate ASI questions used to assess severity of alcohol and drug problems were “How many days in the past 30 have you experienced alcohol [drug] problems?” The comparable ASI “past 30 days” question was used to assess severity of “psychological or emotional problems.”

Preferences for behavioral health services were measured with single questions from the ASI about the importance of treatment for alcohol, drug, and mental health problems. Owing to an administrative problem, 18 participants at 1 site were not asked the “treatment importance” questions at baseline, resulting in an effective N of 138–148 for these 3 questions. (These cases did not differ from the rest of the sample in terms of baseline sociodemographic measures.) Severity of physical health problems was measured with the yes/no responses to the ASI question “Do you have any chronic medical problems which continue to interfere with your life?”

Preference for support in housing was measured with a 2-question index extracted from a previously validated instrument of preference for independent or group housing (edited for this population already living in independent housing).²⁹ HUD-VASH case managers assessed participants’ need for support in housing at baseline with a 7-question index ($\alpha=0.83$) derived from a longer index validated in prior research.³⁰ Veterans who rejected support but were rated by their case manager as needing more support were identified with both their support preference index score and their case managers’ support recommendation score. These scores were dichotomized at their median and Veterans who preferred not receiving staff support but were rated by their case managers as needing support were distinguished from others with a dichotomous indicator.

Personal characteristics measured at baseline and controlled in the analysis were age in years, race, and sex. (Ethnic identity was not distinguished, as only 5 respondents self-identified as Hispanic.)

Analysis

As the dependent variables are counts with overdispersion (variance > mean) in the dependent variable,³¹ the multivariate analyses use negative binomial regression.³² Strength of effects are indicated with the exponent of the slope coefficient, interpreted as the expected change in log count of service use incidents with a 1-unit increase in the predictor (values < 1.00 indicate a negative slope).

Effects on service use are specified by entering potential predictors in 3 increasingly inclusive models: (1) service needs, controlling for sociodemographic characteristics; (2) model 1, adding service preferences; (3) model 2, adding assignment to the peer specialist condition (as well as service use before baseline, so that past use is controlled in the prediction of service usage after randomization).

Before the analysis, extreme outliers in the counts of service use were removed from the analysis.³³ As indicated in Figure 1, there were 4 extreme outliers with values above the recommended exclusion criteria (60 instances of service use) in the distribution of substance abuse service use, but just 1 in the distribution of mental health service use.^{33(pp.315–318),34(pp.152–154)} The number of cases in each model is limited to the cases available after listwise deletion of cases missing on any of the importance or other variables, to facilitate comparison between the 3 models for both dependent variables.

For the analysis of housing stability, we again present 3 models of increasing complexity. Model 1: baseline predictors of days homeless reported during the project at both follow-up interviews. Model 2: test of effect of providing a peer specialist by adding this indicator to the model and controlling for baseline days homeless. Model 3: test of peer specialists’ ability to lessen the risk of homelessness due to greater severity of drinking, drug use, and psychiatric problems at baseline by adding multiplicative terms to represent each of these possible interactions to the other predictors in model 2.

RESULTS

Sample Characteristics

Veterans participating in the study were older and largely male, with almost equal proportions African American and White (Table 1). Participants had experienced alcohol and/or drug problems an average of 2–3 out of the previous 30 days,

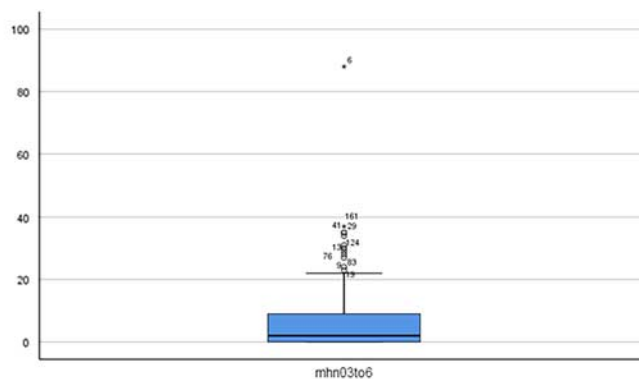
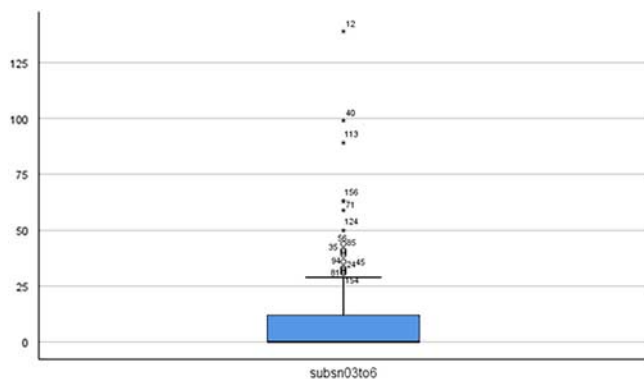


FIGURE 1. Box and Whisker plots of behavioral service use.

TABLE 1. Table of Baseline Measures

Measure	μ or %	σ	N
Demographic controls			
Age (y)	52.8	9.0	166
Sex (female)	7.2%	—	166
Race (minority)	45.1%	—	164
Need			
Days in last 30 experienced alcohol problems	2.5	7.1	166
Days in last 30 experienced drug problems	2.9	7.5	166
Days in last 30 experienced psychological problems	10.0	11.8	164
Any chronic medical problems interfere with life	65.5%	—	161
Service preference (0 = not at all; 4 = extremely important)			
Importance of treatment for alcohol problems	1.8	1.8	134
Importance of treatment for drug problems	1.6	1.8	136
Importance of treatment for psychological problems	2.6	1.5	144
Staff help in housing (1 = prefer; 5 = oppose)	2.7	1.1	166
Case manager rated support need (5 = much better with support)	2.5	0.67	164
Service encounters (3 mo average before baseline)			
Substance use	5.4	11.3	166
Mental health	2.6	6.2	166
Residential instability (days not housed in month prebaseline)	1.7	5.8	164

psychological problems an average of 10 days in the last 30, and two thirds reported a continuing chronic medical problem. Veterans rated at baseline the importance of treatment for mental health problems more highly than the importance of treatment for alcohol or drug problems, yet in the 3 months before their study enrollment, they had used VA substance abuse services 5.4 times, on average, and VA mental health services 2.6 times. Veterans' mean preference for staff was just about at the scale midpoint between strongly preferring staff support and strongly preferring no staff support, whereas case managers' mean rating of the Veterans' need for staff support was also about at the midpoint between recommending high and low support. The Veteran and staff ratings of need for support were not correlated ($r = -0.011$). On average, the sample spent just 1.7 days unhoused in the 30 days before baseline.

Predictors of Service Use

Frequency of alcohol use but not frequency of drug use predicted more use of VA substance abuse services (model 1, Table 2). By contrast, the importance attached to services for drinking and drug problems predicted more service use and partially explained the effect of alcohol use (model 2). Those Veterans randomized to peer specialist services subsequently used more VA substance abuse services, even controlling for prior service use (model 3). Controlling for prior service use partially explained the effect of importance attached to treatment for drug use but did not explain the effect of importance attached to treatment for alcohol problems (model 3).

Frequency of psychological problems, having a chronic medical problem, and being female predicted VA mental health service use (see model 1, Table 3). Importance attached to mental health services also predicted use of mental health services and explained somewhat the effect of number of psychological problems (model 2). Veterans randomized to peer specialist services subsequently used significantly more mental health

TABLE 2. Negative Binomial Regression of VA Substance Abuse Services: Baseline to 9 Months (Exp(β))

Baseline	Model 1	Model 2	Model 3
Need indicators			
Days in last 30 experienced alcohol problems	1.04*	1.02	1.05**
Days in last 30 experienced drug problems	1.01	1.00	0.99
Days in last 30 experienced psychological problems	1.01	1.01	0.98
Any chronic medical problems interfere with life	0.71	0.81	1.23
Controls			
Age	0.99	0.98	1.00
Race (White)	0.84	0.96	1.55
Sex (male)	1.83	1.41	1.38
Service preference (0 = not at all; 4 = extremely important)			
Importance of treatment for alcohol problems		1.23***	1.20**
Importance of treatment for drug problems		1.39***	0.98
Test of peer effect			
Substance abuse service use 3 mo prebaseline			1.18***
Randomized to peer specialist			1.71*
Akaike Information Criterion (AIC)	764.86	751.02	755.34
Finite Sample Corrected AIC	766.10	752.95	757.98
Bayesian Information Criterion	787.49	779.30	789.84
N [†]	125	125	125

[†]4 extreme outliers excluded ($x > 60$).

* $P \leq 0.05$.

** $P \leq 0.01$.

*** $P \leq 0.001$.

TABLE 3. Negative Binomial Regression of VA Mental Health Services: Baseline to 9 Months (Exp(β))

Baseline	Model 1	Model 2	Model 3
Need indicators			
Days in last 30 experienced alcohol problems	1.01	1.01	0.98
Days in last 30 experienced drug problems	1.00	1.00	1.01
Days in last 30 experienced psychological problems	1.02*	1.01	1.00
Any chronic medical problems interfere with life	1.55*	1.62*	1.67*
Controls			
Age	1.01	1.02	1.00
Race (White)	2.37***	2.48***	1.96***
Sex (male)	0.54	0.51*	0.34**
Service preference (0 = not at all; 4 = extremely important)			
Importance of treatment for psychological problems		1.25***	1.18*
Test of peer effect			
Mental health service use 3 mo prebaseline			1.19***
Randomized to peer specialist			1.48*
Akaike Information Criterion (AIC)	832.09	823.55	785.65
Finite Sample Corrected AIC	833.16	824.89	787.65
Bayesian Information Criterion	855.85	850.28	818.32
N [†]	144	144	144

[†]1 extreme outlier excluded ($x > 60$).

* $P \leq 0.05$.

** $P \leq 0.01$.

*** $P \leq 0.001$.

TABLE 4. Negative Binomial Regression of Residential Instability: 9 Months (Exp(β))

Baseline	Model 1	Model 2	Model 3
Need indicators			
Days in last 30 experienced alcohol problems	1.03	1.03	1.15*
Days in last 30 experienced drug problems	0.98	1.01	1.09**
Days in last 30 experienced psychological problems	0.97*	0.96*	0.86***
Any chronic medical problems interfere with life	1.78	4.09***	3.61***
Controls			
Age	0.97	0.65	1.03
Race (Black)	0.21***	0.15***	0.16***
Sex (Male)	0.56	0.88	1.09
Service preference (0 = not at all; 4 = extremely important)			
Importance of treatment for alcohol problems	0.91	0.77*	0.71**
Importance of treatment for drug problems	1.05	0.94	0.88
Importance of treatment for psychological problems	0.96	0.94	1.15
Prefer less staff help	0.56**	0.69	0.72
Reject case manager-identified need for staff help	5.98***	4.52**	4.92**
Test of peer effect			
Substance abuse service use 3 mo prebaseline		1.11***	1.14***
Mental health service use 3 mo prebaseline		1.08	1.00
Days not housed in 1 mo prebaseline		1.02	1.03
Randomized to peer specialist		0.83	0.40
Peer×baseline alcohol problems			0.93
Peer×baseline drug problems			0.81***
Peer×baseline psych problems			1.17***
Akaike Information Criterion (AIC)	452.44	424.83	392.56
Finite Sample Corrected AIC	456.12	431.27	401.69
Bayesian Information Criterion	487.90	471.20	447.11
N [†]	113	113	113

[†]4 extreme outliers excluded ($x > 60$)

* $P \leq 0.05$.

** $P \leq 0.01$.

*** $P \leq 0.001$.

services (model 3). Men also tended to report less service use than women.

Veterans who reported more psychological problems experienced somewhat better residential stability, but other problem severity indicators had no effect (model 1, Table 4). Those expressing disinterest at baseline in staff help in housing but who were rated by their case manager as needing help were almost 6 times more likely to experience residential instability than others (Exp(β) = 5.98); independent of this effect, those who felt less need for staff help were subsequently more residentially stable. By contrast, attaching more importance to treatment for alcohol use problems at baseline predicted more residential stability during the project. African American respondents were more residentially stable than White respondents.

Prior use of more substance abuse services predicted less residential stability, although randomization to a peer specialist had no main effect (model 2). However, residential stability improved among those randomized to a peer specialist if they had reported more drug use at baseline, whereas residential stability

decreased for those randomized to a peer specialist if they had reported more psychiatric symptoms at baseline (model 3). There was no such interaction with baseline frequency of drinking.

DISCUSSION

As predicted by the behavioral model of health service use, service need (problem severity), service preferences (predispositions), and service availability (assignment to a peer specialist) predicted use of health services for substance abuse and psychological problems. Although the strength of these influences varied and some were contingent on other factors, each was at least somewhat independent of the others. Our operationalization of need and predisposing factors with self-report measures of problem severity and treatment interest make these results readily interpretable and replicable, while our randomized design provides compelling evidence of peer specialists' value.

Our service use findings also suggest new considerations for research and policy based on the Anderson and Aday model. Service preference was a much stronger predictor of service use for both substance abuse and psychological problems than was problem severity. Preference should therefore be included in any test of the Anderson and Aday model and motivational interviewing or similar approaches using peer specialists are likely to be effective for increasing behavioral health service use.³⁵

Influences on mental health service use were more complex than anticipated by the Anderson and Aday model. While importance attached to treatment was a strong independent predictor, the effect of self-reported mental health problems was only of marginal significance—and much weaker than that of chronic medical problems—possibly reflecting the frequency of somatization of mental health problems in the United States.³⁶ Additional research is needed to determine why psychiatric symptoms themselves had little effect on mental health service use, but anecdotal reports from local staff suggest that the specific mental health services available at these sites did not match Veterans' expectations. Conversely, a separate analysis showed that worse psychiatric symptoms at baseline (objectively measured) predicted greater engagement with the peer specialists themselves, presumably because these peers' services did match expectations.³⁷ The greater propensity of White and female Veterans to use mental health services was independent of the other influences and consistent with findings of other research.^{5,8}

Extension of the Anderson and Aday model to the prediction of residential stability improves understanding of the meaning of service use. Those who rated treatment for alcohol problems as more important may have been more oriented to help-seeking and therefore more stable in housing, whereas the reverse was true for those who rejected staff help recommended by their case managers. Our research design did not permit identification of reciprocal effects between service use and residential stability during the project, but the value added by our peer specialists indicates that services can improve residential stability. The higher levels of residential stability experienced by those with more psychiatric

symptoms at baseline were not predicted, but are consistent with the results of research on Housing First approaches that indicate serious mental illness does not preclude residential stability when confounding effects of substance abuse are controlled.^{19,38,39}

Including peer specialists in the model also clarified the role of severity of behavioral health problems. Veterans with more severe alcohol or drug problems at baseline were subsequently less residentially stable only if they had not been assigned to a peer specialist. Drug problems in particular increase legal and financial challenges to housing retention that could have increased receptivity to and effectiveness of peer support.

In contrast, those with more psychiatric symptoms experienced more residential instability if they were randomized to a peer specialist. Anecdotal reports indicated that peer specialists facilitated hospitalization or temporary placement in VA group living quarters for Veterans experiencing psychiatric crises, which may have accounted for the association with more time unsheltered. Our research design did not permit specification of the timing of the services relative to variation in residential stability, so we could not distinguish instances of increasing service use due to worsening behavioral health problems from instances of proactive help-seeking in order to resolve those problems.

The higher levels of residential stability experienced by African American Veterans suggest that the HUD-VASH program has eliminated (at least at these 2 locations) the elevated risk of housing insecurity that African Americans have faced due to discriminatory practices, even in supportive housing programs.²² This would be consistent with the earlier Boston McKinney Project's finding that randomization to group housing uniquely improved housing stability among African American homeless persons with serious mental illness compared with those randomized to independent apartments.¹⁹

Three measurement limitations should be addressed in future research. More refined measures of health problems than our single questions from the ASI could help to specify the effects of needs, while the influence of case manager ratings of support needs is one clear indication of the importance of a multidimensional approach to identifying needs.⁴⁰ The differences we found in relation to alcohol and drug use also make it clear that separate measures and hypotheses are needed to predict service use for both types of substance abuse—and we recommend that the VA make this distinction in its centralized service records.

We also recommend a longer follow-up period than the 9 months of our project to identify predictors of housing instability.^{19,41,42} Of course, generalization of our results must be limited to those in the VA health care system and to services accessible within that system,⁴³ but the value of peer specialists for increasing service use that we have identified is consistent with findings outside the VA-supported housing program.^{7,10–13,15,20,44}

Both the Center for Medicare and Medicaid Services and the Department of Veterans Affairs recommend consumer choice and using peer specialists in behavioral health services.^{45–48} Our research supports these recommendations: consumers who prefer behavioral health services are more likely to receive them, their preferences are consistent with their self-assessed behavioral health needs, and peer

specialists can increase consumers' use of available services.²⁰ In addition, we have shown that peer specialists' help can improve residential stability among those with more drug problems, while disinterest in support is a strong indicator of subsequent residential instability. Given that patients tend to feel more open, accepted, and hopeful when working with peer specialists compared with traditional clinical providers, peer specialists may also better improve treatment interest and connect preferences to needs in a way that improves residential stability.^{44,49}

We urge consideration of more use of peer specialists, more intensive programs to reduce use of addictive substances—including more training for peer specialists in coping with substance abuse among those they serve, more programs like motivational interviewing⁹ to increase service interest, and ongoing research that can better track Veterans' specific behavioral health care needs, interests, and supports.⁵⁰

ACKNOWLEDGMENTS

The authors thank the research assistance of Alexandra Howard, Kristina Jensen, and Mala S. Shah and the comments of Robert E. Rosenheck, MD, Philip Brenner, Mark Glickman, Linda Valeri, and the anonymous reviewers.

REFERENCES

- Andersen RM, Aday LA. Access to medical care in the U.S.: realized and potential. *Med Care*. 1978;16:553–546.
- Andersen RM. Revisiting the behavioral model and access to medical care: does it Matter? *J Health Soc Behav*. 1995;36:1–10.
- Fleury MJ, Grenier G, Bamvita JM, et al. Determinants and patterns of service utilization and recourse to professionals for mental health reasons. *BMC Health Serv Res*. 2014;14:161.
- Wenzel SL, Bakhtiar L, Caskey NH, et al. Homeless veterans' utilization of medical, psychiatric, and substance abuse services. *Med Care*. 1995;33:1132–1144.
- Villatoro AP, Mays VM, Ponce NA, et al. Perceived need for mental health care: the intersection of race, ethnicity, gender, and socioeconomic status. *Soc Ment Health*. 2018;8:1–24.
- Hawkins EJ, Malte CA, Baer JS, et al. Prevalence, predictors, and service utilization of patients with recurrent use of Veterans Affairs substance use disorder specialty care. *J Subst Abuse Treat*. 2012;43:221–230.
- Gabrieli S. VA Health service utilization for homeless and low-income veterans. *Med Care*. 2014;52:454–461.
- Fasoli DR, Glickman ME, Eisen SV. Predisposing characteristics, enabling resources and need as predictors of utilization and clinical outcomes for veterans receiving mental health services. *Med Care*. 2010;48:288–295.
- Wu LT, Ringwalt CI, Williams CE. Use of substance abuse treatment services by persons with mental health and substance use problems. *Psychiatr Serv*. 2003;54:363–369.
- Tsai J, Stefanovics E, Rosenheck RA. Predictors of attendance in a group-based model of case management for supported housing. *Psychiatr Rehabil J*. 2014;37:324–328.
- Weisner C, Mertens J, Tam T, et al. Factors affecting the initiation of substance abuse treatment in managed care. *Addiction*. 2001;96:705–716.
- Chinman M, Lucksted A, Gresen R, et al. Early experiences of employing consumer-providers in the VA. *Psychiatr Serv*. 2008;59:1315–1321.
- Chinman M, Young AS, Hassell J, et al. Toward the implementation of mental health consumer provider services. *J Behav Health Serv Res*. 2006;33:176–195.
- Besio S, Mahler J. Benefits and challenges of using consumer staff in supported housing services. *Hosp Community Psychiatry*. 1993;44:490–491.
- Craig T, Doherty I, Jamieson-Craig R, et al. The consumer-employee as a member of a mental health assertive outreach team. I. Clinical and social outcomes. *J Ment Health*. 2004;13:59–69.

16. Ojeda VD, McGuire TG. Gender and racial/ethnic differences in use of outpatient mental health and substance use services by depressed adults. *Psychiatr Q*. 2006;77:211–222.
17. Gonzalez G, Rosenheck RA. Outcomes and service use among homeless persons with serious mental illness and substance abuse. *Psychiatr Serv*. 2002;53:437–446.
18. Montgomery AE, Cusack M, Szymkowiak D, et al. Factors contributing to eviction from permanent supportive housing: lessons from HUD-VASH. *Eval Program Plann*. 2017;61:55–63.
19. Schutt RK, Goldfinger SM. *Homelessness, Housing and Mental Illness*. Cambridge, MA: Harvard University Press; 2011.
20. Chinman M, George P, Dougherty RH, et al. Peer support services for individuals with serious mental illnesses: assessing the evidence. *Psychiatr Serv*. 2014;65:429–441.
21. Weissman EM, Covell NH, Kushner M, et al. Implementing peer-assisted case management to help homeless veterans with mental illness transition to independent housing. *Community Ment Health J*. 2005;41:267–276.
22. Goldfinger SM, Schutt RK, Tolomiczenko GS, et al. Housing placement and subsequent days homeless among formerly homeless adults with mental illness. *Psychiatr Serv*. 1999;50:674–679.
23. O'Connell M, Kaspro W, Rosenheck RA. National dissemination of supported housing in the VA: model adherence versus model modification. *Psychiatr Rehabil J*. 2010;33:308–319.
24. Ellison ML, Schutt RK, Yuan L-H, et al. Impact of peer specialist services on residential stability and behavioral health status among formerly homeless veterans with co-occurring mental health and substance use conditions. *Med Care*. 2020;58:307–313.
25. Tsemberis S, McHugo G, Williams V, et al. Measuring homelessness and residential stability: the residential time-line follow-back inventory. *J Community Psychol*. 2007;35:29–42.
26. Pearson C, Montgomery AE, Locke G. Housing stability among homeless individuals with serious mental illness participating in Housing First programs. *J Community Psychol*. 2009;37:404–417.
27. Lennon MC, McAllister W, Kuang L, et al. Capturing intervention effects over time: reanalysis of a critical time intervention for homeless mentally ill men. *Am J Public Health*. 2005;95:1760–1776.
28. McLellan AT, Kushner H, Metzger D. The fifth edition of the Addiction Severity Index. *J Subst Abuse Treat*. 1992;9:199–213.
29. Schutt RK, Goldfinger SM. Housing preferences and perceptions of health and functioning among mentally ill homeless persons. *Psychiatr Serv*. 1996;47:381–386.
30. Schutt RK, Weinstein B, Penk WE. Housing preferences of homeless veterans with dual diagnoses. *Psychiatr Serv*. 2005;56:350–352.
31. Cameron AC, Trivedi PK. *Regression Analysis of Count Data*, 2nd ed. Cambridge: Cambridge University Press; 2013.
32. Jamil SAM, Abdullah MAA, Long KS, et al. Detecting overdispersion in count data: a zero-inflated Poisson regression analysis. *J Phys Conf Ser*. 2017;890:012170.
33. Rosner B. *Fundamentals of Biostatistics*, 8th ed. Boston: Cengage Learning; 2015.
34. Warner RM. *Applied Statistics: From Bivariate Through Multivariate Techniques*. Thousand Oaks, CA: Sage Publications; 2008.
35. Stobbe J, Wierdsma AI, Kok RM, et al. Lack of motivation for treatment associated with greater care needs and psychosocial problems. *Aging Ment Health*. 2013;17:1052–1058.
36. Keyes CLM, Ryff CD. Somatization and mental health: a comparative study of the idiom of distress hypothesis. *Soc Sci Med*. 2003;57:1833–1845.
37. Chinman M, McCarthy S, Bachrach R, et al. Investigating the degree of reliable change among those assigned to mental health peer specialist services. *Psychiatr Serv*. 2018;69:1238–1244.
38. Henwood BF, Dichter H, Tynan R, et al. Service use before and after the provision of scatter-site Housing First for chronically homeless individuals with severe alcohol use disorders. *Int J Drug Policy*. 2015;26:883–886.
39. Stefanic A, Tsemberis S. Housing First for long-term shelter dwellers with psychiatric disabilities in a suburban county: a four-year study of housing access and retention. *J Prim Prev*. 2007;28:265–279.
40. Kessler RC, Aguilar-Gaviola S, Berglund PA, et al. Patterns and predictors of treatment seeking after onset of a substance use disorder. *Arch Gen Psychiatry*. 2001;58:1065–1071.
41. Rosenheck R, Kaspro W, Frisman L, et al. Cost-effectiveness of supported housing for homeless persons with mental illness. *Arch Gen Psychiatry*. 2003;60:940–951.
42. Kaspro WJ, Rosenheck RA, Frisman L, et al. Referral and housing processes in a long-term supported housing program for homeless veterans. *Psychiatr Serv*. 2000;51:1017–1023.
43. Kline A, Callahan L, Butler M, et al. The relationship between military service eras and psychosocial treatment needs among homeless veterans with a co-occurring substance abuse and mental health disorder. *J Dual Diagn*. 2009;5:357–374.
44. Walker G, Bryant W. Peer support in adult mental health services: a metasynthesis of qualitative findings. *Psychiatr Rehabil J*. 2013;36:28–34.
45. Ellison ML, Belanger LK, Niles BL, et al. Explication and definition of mental health recovery: a systematic review. *Adm Policy Ment Health*. 2018;45:91–102.
46. Lunt A. The implications for the clinician of adopting a recovery model: the role of choice in assertive treatment. *Psychiatr Rehabil J*. 2004; 28:93–97.
47. U.S. Department of Veterans Affairs. Whole Health, The Veterans Experience. 2018. Available at: https://www.va.gov/PATIENTCENTEREDCARE/features/Whole_Health_The_Veterans_Experience.asp. Accessed July 10, 2018.
48. U.S. Department of Veterans Affairs. Whole Health for Life, 2018. Available at: <https://www.va.gov/patientcenteredcare/index.asp>. Accessed July 10, 2018.
49. Sells D, Black R, Davidson L, et al. Beyond generic support: incidence and impact of invalidation in peer services for clients with severe mental illness. *Psychiatr Serv*. 2015;59:1322–1327.
50. Gabrielian S, Young AS, Greenberg JM, et al. Social support and housing transitions among homeless adults with serious mental illness and substance use disorders. *Psychiatr Rehabil J*. 2018;41:208–215.