services offered and to the nature of interorganizational relationships in the network of agencies and providers. In the larger evaluation of the ACCESS program, we and our colleagues will seek to identify the impact of such site-level operating characteristics, especially the integration of agencies within the service system (6).

Besides these observations at the community level, several findings at the client level deserve comment. The reduction in the number of barriers associated with more prolonged contact with outreach workers suggests that community outreach efforts can indeed facilitate access to services and help overcome related barriers. In addition, the evidence that those contacted in shelters and street settings and those with more severe psychiatric symptoms encountered more barriers draws attention to the challenge and importance of sustaining outreach efforts to the most severely ill people and to the most underserved people, especially those in nontraditional locations for entry into service systems.

The operation of service systems matters. The full value of the resources that are available for the treatment of homeless mentally ill persons can be realized only to the extent that we can understand and optimize the workings of the service systems through which these resources are deployed. ♦

Acknowledgment

This study was funded under interagency agreement AM9512200A between the Center for Mental Health Services and the Veterans Affairs Northeast Program Evaluation Center.

References

1. Tessler R, Dennis D: A Synthesis of NIMH-Funded Research Concerning Persons Who Are Homeless and Mentally Ill. Rockville, Md, National Institute of Mental Health, 1989
2. Morse GA, Calsyn RJ, Allen G, et al: Experimental comparison of the effects of three treatment programs for homeless mentally ill people. Hospital and Community Psychiatry 43:1005–1010, 1992
3. Rosenheck RA, Frisman LK, Gallup PG: Effectiveness and cost of specific treatment elements in a program for homeless mentally ill veterans. Psychiatric Services 46: 1131–1139, 1995
4. Making a Difference: Interim Status Report of the McKinney Demonstration Program for Homeless Adults With Serious Mental Illness. Rockville, Md, Center for Mental Health Services, 1994
5. Rosenheck RA, Gallup PA, Frisman LK: Service linkage and related costs of an outreach program for homeless mentally ill veterans. Hospital and Community Psychiatry 44:1166–1171, 1993
6. Randolph FL: Improving systems through systems integration: the ACCESS program. American Rehabilitation 21:36–38, 1995
7. Rosenheck RA, Lam J: Homeless mentally ill clients' and providers' perceptions of service needs and clients' use of services. Psychiatric Services 48:381–386, 1997
8. Lehman AF, Ridgely S, Goldman HH, et al: Continuity of care and client outcomes in the Robert Wood Johnson Foundation Program on Chronic Mental illness. Milbank Quarterly 72:105–122, 1994
9. Beiser M, Shore JH, Peters R, et al: Does community care for the mentally ill make a difference? A tale of two cities. American Journal of Psychiatry 142:1047–1052, 1985
10. Provan KG, Milward HB: A preliminary theory of interorganizational network effectiveness: a comparative study of four community mental health systems. Administrative Sciences Quarterly 40:1–33, 1995

The Rate of Public Shelter Admission Among Medicaid-Reimbursed Users of Behavioral Health Services

Dennis P. Culhane, Ph.D.
June M. Averyt, M.S.W.
Trevor R. Hadley, Ph.D.

This study examined the rate of admission to public shelters between 1990 and 1992 among persons who received Medicaid-reimbursed inpatient and outpatient psychiatric services and inpatient substance abuse services in Philadelphia between 1985 and 1993. Results show that 7.5 percent of such persons were admitted to public shelters during the three-year period, nearly 2.7 times the rate of shelter use by the general population (2.8 percent). Medicaid recipients treated for serious mental disorders had a three-year rate of shelter use of 8.4 percent. Those receiving inpatient treatment for substance use disorders, including detoxification services, had a three-year rate of shelter admission of 10.2 percent. (*Psychiatric Services* 48:390–392, 1997)

The epidemiological literature on homelessness and psychiatric and substance use disorders (behavioral health disorders) is based primarily

Table 1

Distribution of diagnoses among 120,366 Medicaid-reimbursed users of behavioral health services[1] in Philadelphia between 1985 and 1993 who did and did not use public shelters between 1990 and 1992, and the three-year rate of shelter admission, in percentages

Diagnosis	*DSM-III-R* code	Behavioral health services users		Three-year rate of shelter admission (N=120,366)
		Used shelters (N=8,210)	Did not use shelters (N=112,156)	
Psychiatric diagnoses				
Serious mental illnesses				
Schizophrenic disorders	293–299, 311	32.8	28.6	8.4
Affective psychoses	295	19.2	14.3	9.7
Other	296	9.8	10.9	6.7
	293, 294, 297, 298, 299, 311	3.8	3.4	8.2
Adjustment reaction	309	8.7	15.7	4.3
Personality disorders and neurotic disorders	300, 301	9.8	16.4	4.6
Other diagnoses	302, 306–308, 310, 312–319	2.2	6.3	2.7
Total psychiatric diagnoses		53.5	67.0	6.0
Substance-related diagnoses				
Alcohol dependence and alcohol psychoses	291, 303	12.4	9.5	9.6
Drug dependence and drug psychoses	292, 304	31.0	22.2	10.1
Nondependent drug abuse	305	3.1	1.4	15.7
Total substance-related diagnoses		46.5	33.1	10.2
Total psychiatric and substance-related diagnoses		100.0	100.0	7.5

[1] Data for users of outpatient substance abuse services were not included.

on measures of the prevalence of behavioral health disorders among the homeless population (1). These measures have been critical in planning programs for people who are homeless. However, these measures do not allow assessment of the relative risk of homelessness among people with behavioral health problems. Such information is needed for planning and prioritizing homelessness prevention services.

Little previous research on the risk of homelessness among people with behavioral health problems has been conducted (2–7). Previous studies examining the rate of homelessness among people with behavioral health disorders are limited by use of cross-sectional samples from single sites and reliance on subjects' self-reports of homelessness history. The study reported here examined the rate of shelter admission among people being treated for psychiatric and substance use disorders, using longitudinal administrative data on shelter and behavioral health care utilization from the city of Philadelphia.

Methods

After duplicate records were eliminated, data for users of Medicaid-reimbursed behavioral health services in the city of Philadelphia from 1985 to 1993 (N=120,366) were sorted by most frequently occurring diagnosis. Duplicate records were eliminated based on identifiers consisting of first and last names, birth dates, gender, and Medicaid numbers. A comparison of these data against other data sets suggests that despite efforts to eliminate duplication, a 4 percent duplication rate remains (8). Diagnostic groups were based on *DSM-III-R* codes at the integer level, as shown in Table 1.

Both inpatient and outpatient use of psychiatric services was examined. However, data were not included for persons who received Medicaid-reimbursed outpatient substance abuse services and substance abuse services at agencies funded by the city of Philadelphia on a facility basis rather than a client basis. Thus the study undercounted users of publicly funded outpatient substance abuse services. Public shelter admission was determined based on the presence of an admission record from 1990 to 1992 in the client registry system of the Office of Services to the Homeless and Adults for the city of Philadelphia (9,10).

Identifiers from the public shelter registry and the Medicaid service files were matched. Matches were accepted if they had identical Social Security numbers or the same first three letters of the last name, first initial of the first name, date of birth, and gender.

Results

Table 1 shows the three-year rate of shelter admission among the treated Medicaid population. Overall, 7.5 percent of the Medicaid population receiving treatment for a substance use disorder or a psychiatric disorder between 1985 and 1993 used the public shelter system in the three-year study period. A higher proportion of the Medicaid population with a diagnosis of serious mental illness, 8.4 percent, used the shelter system at

The authors are affiliated with the Center for Mental Health Policy and Services Research at the University of Pennsylvania, 3600 Market Street, Seventh Floor, Philadelphia, Pennsylvania 19104. *This paper is part of a special section on mental health treatment of homeless persons with serious mental illness.*

some point between 1990 and 1992. Nearly 10 percent of the Medicaid population treated for schizophrenia between 1985 and 1993 stayed in public shelters between 1990 and 1992. The three-year rate of shelter use was highest among those treated in an inpatient setting for a substance use disorder, 10.2 percent. More than 16 percent of the Medicaid population treated for nondependent drug abuse between 1985 and 1993 used the shelter system in the three-year study period, the highest of any rate among the treated population.

Among the treated Medicaid population, shelter users were more likely to have a diagnosis of serious mental illness (32.7 percent), particularly schizophrenia (19.2 percent), than those who did not use shelters (28.7 percent for those with serious mental illness and 14.3 percent for those with schizophrenia). In contrast, those who did not use shelters were much more likely to have a diagnosis of adjustment reaction (15.7 percent) or personality disorder (16.4 percent) than the shelter users (8.7 percent and 9.8 percent, respectively). Substance use disorders were a proportionately greater problem among treated shelter users—46.5 percent had a substance-related diagnosis—than among treated Medicaid recipients who did not use shelters, 33 percent of whom had a substance-related diagnosis. Among the treated shelter users, 31 percent had a diagnosis of drug dependence or a drug-induced psychosis; among the treated Medicaid population not using shelters, only 22.2 percent had these diagnoses.

Discussion and conclusions

This study documented the disproportionate rate at which people with both serious mental illness, particularly schizophrenia, and substance use disorders use public shelters. Previous research based on the Philadelphia data found that 2.8 percent of the general population in Philadelphia was admitted to public shelters between 1990 and 1992 (9). Accordingly, it appears that people with substance use disorders and schizophrenia have a higher relative risk for shelter use, with three-year rates of 10.2 percent and 9.7 percent, respectively.

These estimates are not entirely comparable, because rates for the Medicaid population are cumulative over nine years, while rates for the general population are based on a single point in time. The more inclusive denominator is likely to produce an underestimate of the risk of shelter admission among users of behavioral health services. Nevertheless, these data suggest that people with serious mental disorders or substance use disorders should receive priority for homelessness prevention efforts.

This study is limited in that identification of persons who were homeless and who had behavioral health disorders was based on administrative records. The study excluded homeless people who did not use the public shelter system, such as "street homeless" persons and those who used privately funded shelters, which account for 15 percent of the city's shelter bed capacity. Similarly, those receiving treatment for behavioral health conditions outside the Medicaid system and untreated persons were excluded. As noted, the Medicaid claims files also have a 4 percent duplication rate (8).

Future research should attempt to determine the comparable rates of homelessness among people with treated behavioral health disorders in other locales. Such knowledge may enable investigators to study the service system factors that are associated with the risk for homelessness among people with behavioral health disorders. ♦

Acknowledgments

This research was supported by a grant from the Ittleson Foundation, a contract with the Philadelphia Office of Mental Health, and a contract with the Center for Mental Health Services.

References

1. Lehman AF, Cordray DS: Prevalence of alcohol, drug, and mental disorders among the homeless: one more time. Contemporary Drug Problems 20:355–383, 1993
2. Appleby L, Desai P: Documenting the relationship between homelessness and psychiatric hospitalization. Hospital and Community Psychiatry 36:732–737, 1987
3. Bachrach LL, Santiago JM, Berren MR: Homeless mentally ill patients in the community: results of a general hospital emergency room study. Community Mental Health 26:415–423, 1990
4. Caton CLM, Shrout PE, Eagle PF, et al: Risk factors for homelessness among schizophrenic men: a case-control study. American Journal of Public Health 84:265–270, 1994
5. Drake RE, Wallach MA, Hoffman JS: Housing instability and homelessness among aftercare patients of an urban state hospital. Hospital and Community Psychiatry 40:46–51, 1989
6. Mowbray CT, Johnson VS, Solarz A: Homelessness in a state hospital population. Hospital and Community Psychiatry 38:880–882, 1987
7. Susser E, Lin SP, Conover SA: Risk factors for homelessness among patients admitted to a state mental hospital. American Journal of Psychiatry 184:1659–1664, 1991
8. Center for Mental Health Policy and Services Research: Duplication rates between Medicaid service data and the eligibility files in Philadelphia. Working paper. Philadelphia, University of Pennsylvania, Department of Psychiatry, 1996
9. Culhane DP, Averyt JM, Hadley TR: The Treated Prevalence of Behavioral Health Disorders Among Adults Admitted to the Philadelphia Shelter System, and the Rate of Shelter Admission Among Users of Behavioral Health Services: Results From the Integration of Longitudinal Data on Shelter and Behavioral Health Service Use. Rockville, Md, Center for Mental Health Services, 1996
10. Culhane DP, Dejowski EF, Ibanez J, et al: Public shelter admission rates in Philadelphia and New York City: the implications of turnover for sheltered populations counts. Housing Policy Debate 5(2):107–140, 1994