An Experimental Comparison of Three Types of Case Management for Homeless Mentally Ill Persons

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Objective: **Three types of case management were compared to determine their relative effectiveness in helping people with severe mental illness who were homeless or at risk of homelessness.** ***Methods:*** **Subjects recruited from a psychiatric emergency room and inpatient units were randomly assigned to one of the three treatment conditions: broker case management, in which the client's needs were assessed, services were purchased from multiple providers, and the client was monitored; assertive community treatment only, in which comprehensive services were provided for an unlimited period; and assertive community treatment augmented by support from community workers, who assisted with activities of daily living and were available for leisure activities. Of 165 subjects recruited, 135 were followed for 18 months.** ***Results:*** **Compared with clients assigned to broker case management, clients assigned to assertive community treatment only and assertive community treatment with community workers had superior outcomes on several variables. They were number of contacts with the assigned treatment program, resource utilization (for example, use of entitlements), severity of thought disorder, activity level, and client satisfaction. Clients in the assertive community treatment only condition achieved more days in stable housing than those in the other two treatment conditions. No significant treatment group effects were found on income, self-esteem, or substance abuse.** ***Conclusions:*** **Assertive community treatment is superior to broker case management in assisting individuals with serious mental illness who are at risk of homelessness.** (***Psychiatric Services*** **48:497–503, 1997)**

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Almost 14 million Americans have been literally homeless—sleeping in shelters, parks, abandoned buildings, bus depots, and so forth—at some point during their lifetime (1). Moreover, nearly a third of the homeless population suffers from severe mental illness (2). In most cases mental illness precedes homelessness; individuals being discharged from psychiatric inpatient facilities are especially at high risk of becoming homeless within six months (3).

Despite the proliferation of programs for homeless mentally ill individuals, few studies have used randomized experiments to evaluate the effectiveness of these programs (4–6). Two of these studies used assertive community treatment, which produced positive outcomes for clients who were homeless (5,6), as it has for other populations of seriously mentally ill persons (7,8).

Broker case management (9,10) is another common approach to serving people with serious mental illness. Broker case managers usually provide relatively few services themselves, but rather assess clients' needs and arrange for services from a variety of providers. To date, minimal empirical support has been found for the effectiveness of broker case man-

agement (11,12). However, broker case management programs remain popular and attractive to mental health policy makers, given the high client-to-staff ratios and low direct costs that are possible under this approach. Although direct costs are relatively low compared with assertive community treatment programs, the philosophy of broker case management treatment is that clients will receive the necessary level of care from community-based providers, such as psychiatrists, day programs, therapists, and others, because broker case managers can vary the mix and frequency of services for each client on an individual basis.

The effectiveness of assertive community treatment compared with broker case management has been tested in only one study (13). That study reported that assertive community treatment produced superior outcomes in terms of rehospitalization, but no differences were found in medication compliance and quality of life. The study reported here expands the small literature on case management approaches and treatment effectiveness for homeless clients by comparing the effectiveness of assertive community treatment and broker case management.

A related question concerns the effectiveness of adding community workers—paraprofessionals who assist clients with recreational and other activities of daily living—to the assertive community treatment team. The potential advantages of adding community workers include reduced operational costs, better integration of clients into the general community, and reduced client dependency (14). Previous investigators have also suggested that lay citizens and paraprofessionals can have positive impacts on the lives of persons with severe mental illness (14–17).

The study reported here used a randomized experiment to compare three treatment approaches, broker case management, assertive community treatment only, and assertive community treatment with community workers. The target population was persons with severe mental illness who had recently been homeless or who had a history of frequent homelessness and who were in acute crisis, as indicated by current treatment in a psychiatric emergency room or hospital unit. Little is known about this group, but their personal histories of homelessness suggest that these individuals should be considered at high risk of future episodes of homelessness, particularly given the high rate of homelessness after hospital discharge (3).

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Methods

The two assertive community treatment teams were operated by Community Support Systems, a community-based outpatient program affiliated with Malcolm Bliss Mental Health Center and subsequently with St. Louis Mental Health Center. Both mental health centers are operated by the Missouri Department of Mental Health. St. Louis Mental Health Center operated the broker case management program. The two assertive community treatment teams were located in downtown St. Louis, approximately three miles from St. Louis Mental Health Center, and somewhat closer to most other agencies that serve homeless people. Clients were recruited primarily from emergency rooms and inpatient units of Malcolm Bliss Mental Health Center, which functioned as the public acute care psychiatric hospital for the region. The study was conducted from 1990 to 1993.

Treatment programs

Eligible individuals were randomly assigned to one of the three treatment programs described below.

Assertive community treatment only. The assertive community treatment only condition was a replication of a program described elsewhere (5). Treatment principles were similar to those of other assertive community treatment programs (18) and included intensive individualized treatment, responsibility for providing or coordinating all services needed by the client, persistent follow-up, and in vivo service delivery. No time limit was placed on treatment; clients were told that they could remain in the program as long as they wished.

To meet the special problems associated with homelessness, the assertive community treatment approach was expanded and modified in several ways (5). Assertive community treatment staff were instructed to frequent shelters and were trained in homeless outreach and engagement methods (19). Outreach and engagement strategies included focusing on developing a positive relationship with the homeless person and assisting him or her with basic needs such as for food, shelter, and transportation. Emphasis was also placed on developing service plans that followed the priorities stated by each client, which often involved assistance in obtaining housing and entitlements before traditional mental health treatment. The staff also prioritized service activities that would help clients obtain and maintain housing.

The assertive community treatment team consisted of five to seven persons, with backgrounds primarily in psychology, social work, and counseling. The team conducted individual treatment activities, such as building a therapeutic alliance, linking clients with medication services, helping clients cope with symptoms and solve practical problems in daily living, and teaching them community living skills. The team also made interventions to improve clients' social environment and resources. These activities included supporting landlords in solving clients' housing

problems, tracking clients' Social Security and housing applications, and advocating on behalf of clients with staff from other agencies for access to benefits. The team also provided supportive services, such as monitoring medications, providing payee and money management services, and assisting with transportation.

Staffing was intensive, with a 10-to-1 client-to-staff ratio. Notable deviations from standard assertive community treatment projects were that because of limited resources, the team did not have a psychiatric nurse on staff, and a psychiatrist was available only about two hours a week. Most medication services were obtained through linkage with private or clinic-based psychiatrists.

Assertive community treatment with community workers. The approach using community workers operated similarly to the assertive community treatment only condition with one exception. Clients were also assigned a paraprofessional community worker whose role was to assist with activities of daily living and to be available for leisure activities. Typically, the community worker spent more time with the client in the latter phases of treatment, after initial stabilization.

Broker case management. In the broker case management condition, the case manager's role was to develop an individualized service plan for the client, arrange for and purchase mental health and psychosocial services from various service providers, monitor the quality of purchased services, and adjust the mix of services based on the client's changing needs. These case managers were much more office based than case managers on the assertive community treatment teams. Unlike their team counterparts, they rarely went into emergency shelters, made home visits, or accompanied their clients to other agencies and potential housing sites. Staffing was also much less intensive, with a typical staff-to-client ratio of 1 to 85.

Client selection

Study participants had to meet several criteria. They had to be homeless or at risk of homelessness at the time of screening—that is, living on the street or staying in an emergency shelter immediately before screening—or they had to have been homeless ten or more days in the past month, 31 or more days in the past year, or three or more times in their lifetime. Participants had to have a serious *DSM-III-R* axis I diagnosis and be willing to receive assistance in terms of welfare, employment, housing, mental health, or other social services. They had to be willing to participate in a longitudinal evaluation study. They had to be considered not currently dangerous—that is, they had no convictions for homicide, forcible rape, robbery, aggravated assault, or arson within the past year or not more than one conviction for assault in the past two years.

In general, clients in both types of assertive community treatment received more assistance from their treatment program than did clients in broker case management.

Of 325 individuals screened for the project, 121 were found ineligible. Failure to meet the homeless criterion (N=45) or the psychiatric diagnosis criterion (N=38) were the primary reasons for ineligibility. Of the 204 eligible individuals, 26 refused to participate in the project, and 13 dropped out of the study before a background interview could be completed. The remaining 165 were randomly assigned to the three treatment conditions.

Fifty-eight percent of the 165 individuals were male. Nearly 45 percent were Caucasian, and 55 percent were African American. The mean± SD age was 34.76±10.41. The sample had the following *DSM-III-R* axis I diagnoses: schizophrenia, 66 percent; recurrent depression, 15 percent; bipolar disorder, 13 percent; atypical psychosis, 12 percent; delusional or paranoid disorder, 3 percent; and dementias, 1.2 percent. Twenty-four percent also had a substance use disorder, and 25 percent had an axis II personality disorder. In the year before program entry, the mean±SD number of days in stable housing was 132.97±137.14, the mean number of days in precarious housing (staying with a friend or relative or residing in an institution such as a jail or mental hospital) was 105.47±114.61, and the mean number of days literally homeless was 126.56±105.46.

Procedure

Eligible individuals were randomly assigned to treatment and were told how to contact their assigned treatment program. Interviewers assisted with transportation or telephone calls to make the first contact with the assigned program. The three programs were also given information on how to contact the clients. Follow-up interviews took place in the research office, psychiatric hospitals, boarding homes, emergency shelters, and clients' apartments. Individuals were paid $5 to $10 depending on the length of the interview.

Treatment activity measures

Data supporting the reliability and validity of the treatment activity and outcome variables have been published elsewhere (20,21).

The mean number of program contacts per month was calculated for three time periods: baseline to six months, seven to 12 months, and 13 to 18 months. For each time period clients were also asked if they had received help in the areas of housing, employment and job training, financial assistance (for example, entitlements and welfare), legal services, mental health services, substance

Table 1

Mean±SD number of total program contacts and services received in four areas among clients in three treatment conditions during three six-month periods[1]

Contacts and services	Assertive community treatment with community workers						Assertive community treatment only						Broker case management					
	0 to six months		Seven to 12 months		13 to 18 months		0 to six months		Seven to 12 months		13 to 18 months		0 to six months		Seven to 12 months		13 to 18 months	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Total contacts	7.92	5.71	6.76	6.15	5.70	5.98	8.48	7.00	8.01	7.42	7.59	7.23	.44	.62	.31	.60	.26	.47
Housing	.49	.35	.35	.36	.35	.38	.66	.34	.49	.34	.39	.37	.44	.33	.34	.39	.31	.39
Financial assistance	.71	.59	.28	.44	.27	.39	.88	.60	.61	.53	.51	.49	.59	.61	.43	.50	.39	.56
Health services	.33	.32	.28	.36	.33	.38	.49	.40	.42	.34	.41	.42	.29	.37	.36	.41	.34	.37
Supportive services	.71	.34	.69	.38	.72	.39	.71	.36	.72	.40	.67	.42	.24	.37	.22	.33	.28	.37

[1] Variables shown are those for which a significant between-group difference was found. For each time period clients reported whether they had received help in the areas of housing, employment and job training, financial assistance, legal services, mental health services, substance abuse treatment, other health services, and supportive services. Scores were 0, no assistance, and 1, assistance.

abuse treatment, other health services, and supportive services (for example, medication and money management, shopping, and apartment maintenance). Scores were 0, no assistance, and 1, assistance. Clients also indicated which specific agency, including the assigned program, had assisted them.

Outcome measures

Client satisfaction. Client satisfaction with treatment was assessed by an eight-item measure that has been used by numerous mental health programs (22).

Income. Clients were asked to estimate their monthly earnings from multiple sources including panhandling, entitlements, and employment.

Stable housing. Clients reported how many days they were literally homeless, precariously housed, and stably housed in a boarding home, public housing, or their own apartment. The mean number of days in stable housing per month was used as the outcome variable in this study.

Psychiatric symptoms and self-esteem. The 24-item version of the Brief Psychiatric Rating Scale (BPRS) (23) was used to rate psychiatric symptoms. Based on a confirmatory factor analysis (24), items were grouped into five scales: anxiety-depression, hostility-suspicion, thought disorder, withdrawal–elevated mood, and unusual activity level (for example, hyperactivity and odd gestures). The short form of the Rosenberg scale was used to assess self-esteem (25).

Substance abuse. Five indexes from the Addiction Severity Index (26) were used to measured substance abuse—the number of days that alcohol or substances were abused in the past month, the client's rating of the need for alcohol treatment, the client's rating of the need for drug abuse treatment, the interviewer's rating of the need for alcohol treatment, and the interviewer's rating of the need for drug abuse treatment.

Data analysis strategy

A 3 × 3 factorial design was used to analyze the treatment activity variables. Treatment group (assertive community treatment only, assertive community treatment with community workers, and broker case management) was a between-groups factor, and time was a within-groups factor. Data were aggregated for three time periods—baseline to six months, seven to 12 months, and 13 to 18 months.

We used analysis of covariance to analyze data for most of the outcome variables. Treatment condition was a between-groups factor in the design; the baseline level on each outcome variable was used as the covariate; the 18-month score was the dependent variable. The Newman-Keuls procedure was used for post hoc comparisons, with significance set at the .05 level.

Results

The sample size was reduced from 165 to 135 due to attrition. The rate of attrition from the study did not significantly differ across the three treatment conditions. Comparison of clients who remained in the study and those who dropped out revealed no significant differences in background characteristics or scores on the dependent variables at baseline.

Treatment activity

Table 1 displays group means and standard deviations for significant effects on the treatment activity variables. In general clients in both assertive community treatment only and assertive community treatment with community workers received more assistance from their treatment program than clients in the broker condition. Both assertive community treatment only and assertive community treatment with community workers provided clients with significantly more service contacts than

Table 2

Mean±SD values on outcome variables among patients in three treatment conditions at baseline and 18 months

Variable	Assertive community treatment with community workers				Assertive community treatment only				Broker case management			
	Baseline		18 months		Baseline		18 months		Baseline		18 months	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Satisfaction[1]	—	—	3.03	.85	—	—	3.40	.59	—	—	2.92	.51
Monthly income	309.60	269.51	508.23	215.41	267.86	275.15	523.57	244.37	386.45	325.66	506.21	496.68
N days in stable housing in past month	4.72	10.46	18.98	13.89	6.80	11.78	23.70	11.42	6.29	11.66	16.02	14.77
Brief Psychiatric Rating Scale score												
Anxiety-depression[2]	12.80	4.93	9.85	4.75	14.33	5.84	11.49	5.73	12.49	6.19	11.39	5.21
Hostility-suspicion[3]	7.04	3.83	5.36	2.47	6.79	2.77	5.60	2.67	7.44	3.42	6.18	3.28
Thought disorder[2]	12.19	6.90	8.29	4.28	9.79	5.86	7.42	3.86	11.28	5.69	10.44	6.26
Withdrawal–elevated mood[4]	13.51	6.03	9.91	3.37	11.21	3.99	9.19	2.76	10.95	3.41	10.59	3.77
Unusual activity level[2]	11.07	5.38	7.58	3.31	9.40	4.79	7.30	2.73	9.95	4.44	8.97	3.96
Self-esteem score[5]	1.83	.52	1.98	.59	1.73	.51	1.89	.48	1.93	.49	1.84	.51
N days abused substances in past month	4.18	8.12	1.71	4.92	4.30	8.20	3.05	6.05	6.59	9.91	4.24	7.50
Client-rated need for treatment[6]												
Alcohol	.31	1.04	.18	.83	.33	.89	.51	1.26	.76	1.37	.56	1.25
Drug	.29	1.01	.18	.83	.35	1.00	.26	.95	.49	1.12	.34	.96
Interviewer-rated need for treatment[7]												
Alcohol	1.87	2.63	1.28	1.24	1.93	2.60	1.20	1.90	3.44	2.92	2.42	2.82
Drug	1.78	2.42	1.71	2.79	1.05	1.88	.84	1.62	2.49	2.93	1.78	2.62

[1] Scores range from 1 to 4, with higher scores indicating greater satisfaction.
[2] Scores range from 5 to 35, with higher scores indicating more symptoms.
[3] Scores range from 3 to 21, with higher scores indicating more symptoms.
[4] Scores range from 6 to 42, with higher scores indicating more symptoms
[5] Scores range from 0 to 3, with higher scores indicating greater self-esteem.
[6] Scores range from 0 to 4 , with higher ratings indicating more treatment needed.
[7] Ratings range from 0 to 9, with higher ratings indicating more treatment needed.

the broker condition (F=32.01, df= 2,132, p<.001).

Multivariate analysis of variance (MANOVA) also indicated a significant treatment group effect on the resource utilization variables (F=3.77, df=22,220, p<.001). Inspection of the individual ANOVAs indicated significant treatment group effects on housing (p<.03), financial assistance (p<.01), health (p<.03), and supportive services (p<.001). More clients in assertive community treatment only and assertive community treatment with community workers reported receiving assistance in all of these areas than clients in the broker condition. Post hoc analyses revealed that both assertive community treatment only and assertive community treatment with community workers provided significantly more assistance than broker case management in the areas of housing, financial assistance, and supportive services. Assertive community treatment only provided significantly more assistance for health services than the other two programs.

No significant group-by-time interaction was found on the resource utilization variables. However, MANOVA revealed a significant time effect (F=3.22, df=22,504, p<.001). More specifically, the percentage of clients receiving housing (p<.001), financial assistance (p<.001), and hospital contacts (p<.002) decreased over time, presumably because clients had already received the services that they needed.

Treatment outcomes

Table 2 displays group means and standard deviations for all of the outcome variables for the three treatment groups at baseline and at 18 months.

Client satisfaction. A significant treatment group effect was found on the client satisfaction measure (F= 11.46 df=2,122, p<.001). Post hoc analyses revealed that clients assigned to the two assertive community treatment teams were more satisfied with their treatment program than clients in the broker case management condition.

Stable housing and income. A significant treatment group effect was also found on days in stable housing (F=3.54, df=2,129, p<.032). Post hoc analysis revealed that clients in assertive community treatment only averaged more days in stable housing at 18 months than clients in both broker case management and assertive community treatment with community workers. No significant differences were found between the treatment groups on the income variable.

Psychiatric symptoms and self-esteem. Significant treatment group effects were noted for two scales of the BPRS—thought disorder ($F=3.91$, $df=2,123$, $p<.023$) and activity level ($F=3.61$, $df=2,123$, $p<.03$). A marginally significant treatment group effect ($p<.065$) was also noted on the withdrawal–elevated mood scale. Post hoc analyses indicated that clients in both assertive community treatment conditions had fewer symptoms in the areas of thought disorder and unusual activity than clients in the broker case management condition. No significant treatment group differences were found on the anxiety-depression scale, the hostility-suspicion scale, or the self-esteem scale.

Substance abuse. No significant treatment group differences were found on any of the five substance abuse variables.

Discussion and conclusions

Assertive community treatment versus broker case management

The results provide substantial, although not complete, support for the study's most central prediction: assertive community treatment is a more effective intervention for people with serious mental illness who are at risk of homelessness than is broker case management. More specifically, the treatment activity results clearly support the prediction that people with serious mental illness received more intensive and comprehensive services in the assertive community treatment programs than in the broker case management program.

The rate of service contact for the broker case management condition was also reduced by the fact that 33 percent of the clients assigned to this condition were never seen by the program, despite efforts by the interviewers at baseline to link the clients through personal transportation and telephone calls. Many clients did not receive services because the broker program had waiting lists of three to four months. During this waiting period, many clients forgot appointments, became lost, were denied treatment, or ultimately refused services.

The data on utilization of service resources also indicated that the assertive community treatment approaches were far more effective than broker case management in helping clients obtain services and resources needed by homeless people with serious mental illness. In addition, other evidence indicated that this study underestimated the effectiveness of assertive community treatment compared with broker case management in helping clients obtain resources. For example, at six months, 95 percent of the clients in the broker condition who reported obtaining housing assistance received that assistance from an agency other than the assigned treatment program, compared with only 20 percent of the clients in the two assertive community treatment conditions. Similar results were noted for entitlements.

Assertive community treatment was also more effective than broker case management in producing positive client outcomes. Clients in both assertive community treatment conditions increased their time in stable housing more than clients in broker case management, although the difference between assertive community treatment with community workers and broker case management was not statistically significant.

To our knowledge, this is the first study of assertive community treatment other than the studies of the Program for Assertive Community Treatment in Madison, Wisconsin, and a replication in Australia (7,12) to show superior outcomes over other treatments in the area of psychiatric symptoms. The significant reductions in symptoms in this study compared with those in a previous study of assertive community treatment with homeless clients (5) may reflect this study's longer assessment period, an assessment method that relied on interviewer ratings rather than self-reports, and the greater experience of the treatment staff.

Like previous investigations of assertive community treatment (7,12), this study did not find significant treatment group differences on other variables. The lack of significant treatment effects on clients' income may reflect a community service system that has become fairly adept at helping homeless people obtain entitlements. Assertive community treatment programs could probably increase clients' income if more vocational training and employment interventions were used (27). Similarly, the lack of difference between treatment groups in substance abuse outcomes also suggests the need for targeted interventions. Integrated treatment approaches (28), especially those that incorporate substance abuse treatment for dually diagnosed persons within assertive community treatment (29,30), seem particularly promising.

Study limitations and future research

Although some anecdotal reports testified to the value of the community workers in this study, the few significant differences between the two assertive community treatment programs indicated that the addition of community workers was associated with less effectiveness. Implementation difficulties may partly explain the disappointing results. One-third of the clients in the program with community workers were not assigned to a worker because not enough were available. Thus more research is needed before drawing firm conclusions about the value of adding community workers to assertive community treatment teams.

Most clients improved over time on many variables (Table 2). However, because this study did not use a no-treatment control group, spontaneous remission can be offered as a rival explanation for the significant improvement. Nevertheless, the results of this study and other research (12) indicate that both assertive community treatment and broker case management can be of some assistance to clients if they are contacted by outreach and linked to a mental health agency, although the assertive community treatment approach is clearly more effective. ♦

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Video Library Adds 20 New Videos; Free Catalog Available on Request

Almost 20 new videos have been added to the video rental library maintained by the Psychiatric Services Resource Center, one of the most extensive collections of psychiatric–mental health videos in the nation. Free copies of the new 1997 video catalog are available on request.

Among the topics covered by the new videos are brief psychotherapy, electroconvulsive therapy, homelessness, communicating with people with disabilities, and attention-deficit/hyperactivity disorder in children.

The videos can be rented by staff members in facilities that are members of the Resource Center and by members of the American Psychiatric Association for $25 per title, which includes shipping and handling. Other mental health professionals may rent the videos for a $65 fee. Because of customs regulations, videos cannot be shipped to other countries, including Canada. The rental period is four days.

A copy of the catalog was mailed in February to each member organization of the Resource Center and others who requested catalogs within the past year. Other persons may obtain a free copy of the catalog by contacting Letha Muhammad, Psychiatric Services Resource Center, American Psychiatric Association, 1400 K Street, N.W., Washington, D.C. 20005; telephone, 800-366-8455; fax, 202-682-6189.