

Service Models for Assisting Homeless People with Mental Health Problems: Cost-Effectiveness and Policy Relevance²

Robert Rosenheck MD
Northeast Program Evaluation Center (182)
VA Connecticut Health Care System
950 Campbell Ave.
West Haven, CT 06516
TEL:203 937-3850; FAX: 203 937-3433
Robert.Rosenheck@yale.edu

Abstract

This paper reviews research on the effectiveness, cost, and policy relevance of five types of intervention for housing and otherwise assisting homeless people with mental health problems.

1. System Integration. Fragmentation is widely regarded as a major impediment to the functioning of service systems for homeless people. In 1992, a 5-year, 18 site-effort was initiated to integrate homeless service systems and overcome fragmentation. The ACCESS program did improve system integration in the targeted communities but these gains did not improve housing outcomes or reduce psychiatric symptom over a 12-month follow-up study of over 7,000 homeless people with serious mental illness.

2. Supported housing. Supported housing programs, in contrast, integrate housing and clinical case management services directly at the level of individual clients. Two experimental studies have attempted to differentiate the impact of the housing subsidy from that of intensive case-management and suggest that the active ingredient in supported housing is the housing subsidy rather than the intensity of case management. Annual costs tended to be greater in supported housing by several

² VA New England Mental Illness Research, Education and Clinical Center, West Haven CT.; Yale Medical School, New Haven, CT and Rosenheck RA. Service Models for Assisting Homeless People with Mental Health Problems: Cost-Effectiveness and Policy Relevance in Ellen IG and O'Flaherty B (Eds.) How to House the Homeless. New York: Russell Sage Foundation, 2010.

thousand dollars and housing gains are modest in magnitude. Gains were larger in a study of the Housing First model, perhaps because it better targeted high-cost, high-risk clients.

3. Case management alone. Clinical case management programs have proved capable of improving psychiatric symptoms but are less likely to improve housing outcomes in the absence of specific housing resources. These programs remain costly at up to \$7,000–\$9,000/client/year but when targeted at high-cost hospitalized homeless patients they can realize short term savings sufficient to offset their cost. When delivered on a time-limited basis as in the Critical Time Intervention, costs can be contained sufficiently to allow cost-savings after program completion without loss of benefit.

4. Benefits outreach. Since income support is a key to housing, some programs have focused on facilitating access to Social Security or VA disability benefits. These initiatives show modest improvements in access to benefits but intervention costs are substantial and impact on housing outcomes and well-being are modest. Apprehensions that receipt of benefits increases expenditures on alcohol and drugs have not been confirmed among participants in treatment programs. Although assignment of a payee does not seem to reduce substance use, behavioral money management interventions show promise.

5. Supported Employment. Finally, a study of supported employment for homeless veterans showed increases in both employment and days housed in comparison to a control group. But the effect size of these gains was small and must be weighed against costs of several thousand dollars per client annually.

Conclusion. The effectiveness of diverse programs for homeless people with mental health problems has been well demonstrated. But effect sizes are typically modest in magnitude and primarily center in one outcome domain (for example, housing, symptoms, income, or employment) without spreading to others. Program costs can be substantial and are only offset by savings when high-cost, high-risk populations are targeted, or when the duration of treatment is limited. Progress has thus been incremental, and a comprehensive, cost-effective and widely applicable service approach to ending homelessness among people with mental health problems has yet to emerge.

Service Models for Assisting Homeless People with Mental Health Problems: Cost-Effectiveness and Policy Relevance

A recent analysis of data from the National Co-morbidity Study Replication, a representative national epidemiological survey, found that 5 percent of US adults reported a past episode of homelessness lasting a week or more. In comparison to other adults, those who had been homeless were 6 times more likely to have ever had an alcohol or drug problem and 3 times more likely to have had a psychiatric illness (Greenberg and Rosenheck, under review). While it is thus clear that many homeless people have mental illnesses or problems with alcohol or drug use, the link between housing homeless people with such problems and providing them with mental health or social services is not self-evident. One common sense response would be that, just like any other group of homeless people, the central need of homeless people with mental health problems is for a place to live. Mental health care might be needed to address the mental health problems of some homeless people but housing is the logical solution to their homelessness. A logic that could support a more medical treatment model, would argue that effective treatment of psychiatric or addictive disorders would allow recovery and subsequent employment with housing through the private market. Certainly if someone was found on the street having seizures or infected with pneumococcal pneumonia, they would receive treatment for their acute medical crisis before their housing needs would be considered.

In fact, few service initiatives for homeless people with behavioral problems have focused on employment, and most assume that the mental health and addiction problems of homeless people are long term conditions that are not likely to be well enough resolved in the immediate future to allow them to become economically self-sufficient. Rather than a medical model, most specialized service programs for people with mental health or addiction problems follow a tacit social rehabilitation model which assumes that such people suffer from impairments in judgment and in social skills and need active assistance coping with the world around them. Such assistance ranges from: 1) offers of moral support, for example encouragement to make their own choices; to 2) advice on where to seek material assistance; to 3) more active assistance negotiating with landlords for apartments, with public bureaucracies for income supports or housing subsidies, with criminal justice officials for release from jail; or with health systems to obtain medical or mental health services.

Even though rehabilitation models emphasize personal choice, there is also a surveillance or social control function in these services. Judges are more likely to release arrestees to the community, and landlords to accept tenants of questionable reliability, if they “have” a case manager, or rather a case manager “is assigned” to them to “keep an eye on things” and provide assistance if it is needed.

Regardless of the underlying logic, a substantial body of research has attempted to test various service models for homeless people with mental health and addiction problems over the past 20 years with mixed results. This chapter reviews evidence for the effectiveness of five types of intervention: service system integration, supported housing, clinical case management, benefits outreach and supported employment. Because the primary intention of this research is to guide public policy and identify programs capable of solving the social problem of homelessness, emphasis will be placed both on the effectiveness of such services in helping homeless people obtain housing, and on the cost of such services to society. Public programs are ultimately judged by the cost-effectiveness standard, whether benefits and savings together exceed costs, and we will try to address how various initiatives fair by this standard. But first four limitations to the overall enterprise need to be addressed: 1) the constraints imposed by the equipoise standard in human subjects research (the need to avoid depriving comparison subjects of services that meet current standards for adequate care); 2) the generalizability of data from research samples to the general population, 3) the generalizability of findings from research sites to real-world service systems, and 4) need for credible, preferably randomized, control groups.

1. Human subjects constraints. A major limitation of almost all of the research reviewed below is that ethical constraints on human investigation preclude ever testing whether current service models are better than a model of no services at all or sub-standard services. Bare neglect, while regrettably practiced in real-world service systems, violates the demand for equipoise in human research, that no subject should suffer disadvantage as a result of their participation in a study. The only evaluation/research option, therefore, is to test one acceptable service model against another. As a result the apparent magnitude of program benefits is diminished and the question of what minimal set of services should be available to all who need them can never be tested. Serendipitously the national evaluation of the Collaborative Initiative on Chronic Homelessness, discussed below, provides a small window past this barrier.

2. Client generalizability. Second, homeless people with mental health and addiction problems are very diverse, among many other things, in 1) how long they have been homeless, 2) how serious and chronic their mental health problems are, 3) how serious their ancillary problems are (for example, criminal justice system involvement, poverty or employability), and 4) their preference for various mental health services. As a result the generalizability of research on one sample to others is usually unknown. One of the major determinants of the cost-effectiveness of policies is the population to which they are targeted (Schuck and Zeckhauser, 2006). The potential for cost-effectiveness of health care interventions is dependent on the potential for cost offsets which is largely shaped by the baseline costs of the target population (Rosenheck and Neale, 1998; Rosenheck et al., 1999). Programs targeted to high-risk high-cost sub-populations are more likely to pass the cost-effectiveness tests than others, but their results are also less generalizable to the population as a whole.

3. Site generalizability. Third, most studies have been conducted at single site under the auspices of the proud progenitor of the program being evaluated. If such programs were implemented through a broad public policy initiative there would likely be an attenuation of fidelity to the original program model as its implementation passed into less experienced (and less loving) hands, with concomitant attenuation of program effectiveness, as well. At a minimum, the generalizability of a single-site programs to other locations is typically unknown.

4. Credible (randomized) comparison groups. Finally, most studies of services for homeless people, and the most positive and most often publicized studies, are pre-post, or uncontrolled studies in which the effect of regression to the mean can not be distinguished from true program impact. Evaluation of program impact requires random assignment to treatment or identification of a well-matched control group. Peter Rossi long ago pointed out that the more rigorous the study design the less likely human service interventions are to show positive benefits (Shadish et al., 1990). Accordingly, this review is limited to studies with reasonably well-designed comparison groups, especially those based on random assignment.

These four caveats in fact compound one another, because once we limit ourselves to controlled studies that include cost data, we increase the chances that the samples are not representative, that the comparison treatments will be of above average intensity and quality, and that generalizability to routine real-world care

will be limited. Nevertheless, as Fitzgerald wrote in *Gatsby*, “.we beat on, boats against the current...”

System Integration

One of the most widely voiced complaints about mental health systems in general and about services for homeless people, in particular, is that they are fragmented, that communication between providers is poor and that service system integration is much needed (New Freedom Commission on Mental health, 2003). HUD’s Continuum of Care initiative (Burt et al., 2002) was designed to reduce fragmentation and increase coordination in such systems. Studies of the impact of service integration initiatives are difficult to conduct because the unit of intervention is the service system and the locus of presumed benefit are the individuals served by the system.

In 1993, the Center for Mental Health Service’s initiated the ambitious Access to Community Care and Effective Services and Supports (ACCESS) program. This 5-year demonstration program, evaluated the impact of efforts to enhance service system integration in 9 communities that received \$250,000/year and extensive technical assistance to bolster system integration through 11 distinct strategies (Randolph et al., 2002). The study also included a matched sample of 9 comparison sites that did not receive funds or technical assistance to implement such strategies. Housing and clinical outcomes of over 7,000 homeless persons with serious mental illness were tracked over 12 months of program participation in 4 annual cohorts (Rosenheck et al. 2002). The results of this study showed that: 1) intervention sites showed greater use of system integration strategies; and 2) greater improvement on measures of system integration (Morrissey et al. 2002), and that 3) many clients successfully exited from homelessness for 30 days or more (Rosenheck et al., 2002). Nonetheless clients at integration sites showed no greater improvement in exiting homelessness or in symptom outcomes across the four client cohorts, as their system became more integrated, than did control sites (Rosenheck et al. 2002). The virtually identical slopes of improvement across all cohorts at both integration and control sites reflect no impact of changes in service system integration on client outcomes. Although ACCESS is just one study, it seems likely that to improve housing outcomes integration needs to occur in the direct provision both housing resources and clinical services to individual clients.

Cost-Effectiveness of Supported Housing

Programs offering such proximal integration of clinical or case management services and augmented housing resources are often called supported housing programs. Although there are many variations, all combine dedicated housing resources or subsidies with human services that represent a combination of community based mental health services and practical assistance of the kind often associated with the social work profession. It is widely believed that these services need to be: 1) intensive representing contact one or more times per week, 2) to be flexible, practical, and community-based rather than office-based, and 3) to be sustained for many years. Only two studies have sought to tease out the specific contribution of housing subsidies and intensive case management: the HUD-VA Supported housing program (HUD-VASH)(Rosenheck et al., 2003) and the San Diego McKinney Demonstration (Hough et al. 1997).

The HUD-VASH program is perhaps the largest of these programs implemented at 34 sites across the country and serving almost 5,000 veterans with access to almost 2,000 Section 8 housing vouchers from 1992 to the present. The program has recently been expanded to 10,000 vouchers that will be linked to more than 200 case managers at over 120 VA facilities.

Four sites in the original 1992 demonstration conducted a cost-effectiveness evaluation in which N=460 homeless veterans were randomly assigned to: 1) HUD-VASH (involving both Section 8 vouchers and case management, N=182); 2) intensive case management provided by the HUD-VASH case managers, but without special access housing subsidies (N=90); and 3) standard, time-limited VA case management service for homeless veterans (N=188).

Over a three year follow-up period the HUD-VASH group was housed 65 percent of nights as compared to 57 percent for case management alone, and 53 percent for the standard care group ($p < .05$)(Rosenheck et al., 2003). The case management-only condition thus had only 4 percent more days housed than the standard care group. The HUD-VASH group also experienced 14 percent total days of homelessness while the control groups each experienced 22 percent days of homelessness ($p > .05$), again with no difference between case management only and standard care. Therapeutic alliance (a measure of treatment satisfaction) was stronger in the HUD-VASH group than the other, groups, and a special analysis that addressed differential data attrition with a technique called multiple imputation,

showed that substance use outcomes were superior in the HUD-VASH group than in the other two (Cheng et al., 2007). These results suggest a significant benefit of modest magnitude associated with the integration of case management and vouchers, but no independent benefit from intensive case management by itself.

On the cost side, from a societal perspective, including all VA and non-VA health costs as well as shelter use, incarceration, administrative costs of transfer payments, *annual* costs for HUD-VASH clients over the three years were \$2,067 greater than standard care, while costs for case management control clients were \$1,167 greater than standard care reflecting both direct case management services and greater use of other health services.

Cost effectiveness-analysis using Incremental Cost-Effectiveness ratios showed increased costs of \$45 per additional day housed (95 percent confidence interval = -\$19-\$108) for HUD-VASH clients as compared to controls. Since societal willingness to pay for a day of housing for a homeless person is unknown, cost-effectiveness acceptability curves can be used to show the likelihood of achieving cost-effectiveness under various shadow prices for a day of housing from the societal perspective (including VA and non-VA health costs, criminal justice system costs, homeless shelter costs, transfer payments and productivity through employment) (Figure 1). Benefits are likely to outweigh costs with a probability of 56 percent if a day of housing is valued at \$50; with a probability of 80 percent if valued at \$75/day; and at 92 percent a \$100/day of housing.

The HUD-VASH study was based on random assignment, included a cost component, included a mixture of clients with psychiatric and addiction problems and represented a broad real-world dissemination effort, albeit within the VA system. It showed significant housing benefits, specifically tied to the use of vouchers, but increased costs that would make the intervention less appealing to policy maker. However, with the war in Iraq pushing services for homeless veterans higher on the Congressional agenda, the program is now undergoing a major revival and expansion. It is clear that the increased costs of case management could have been reduced by either lowering the intensity of the case management intervention or shortening its duration. In the new iteration case load expectations are being increased from 25 clients to 35 clients per case manager. What is unknown is whether such cost savings on the delivery of case management services would reduce benefits or, most intriguingly, whether homeless people with mental health and/or

addiction problems could benefit from dedicated vouchers even without any case management.

The second supported housing study that tried to differentiate the benefit of intensive case management from that of housing vouchers was the San Diego Housing Demonstration which used a two-by-two design crossing access to housing vouchers by two levels (high and low intensity) of case management (Hurlburt et al., 1996; Hough et al., 1997). Clients who received rent subsidies were more likely to be independently housed at the end of the 18 month follow-up period but housing outcomes were no better among clients who received high intensity case management than among those who received low intensity case management either with or without vouchers. These findings did not represent clear superiority of either the housing or case management intervention because there were no significant differences between any of the conditions in the number of days of homelessness, and the high intensity case management was, in practice, not as much higher than the standard case management as had been planned. No cost data were obtained but the lack of robust reductions in homelessness would make the results from San Diego less than attractive from a policy perspective.

Housing First is a third, very well-known supported housing initiative which puts a high emphasis on client choice and emphasizes rapid placement in housing severely mentally ill, often dually diagnosed clients, who would otherwise be unlikely to find housing or would find delayed access through multi-stage continuum of care programs (Tsemberis et al., 2004). Housing First has among the most robust improvements in housing in comparison to its randomly assigned control group (60 percent –80 percent of time housed over 6–24 months vs. 12 percent –30 percent time housed for controls ($p < .001$) with similarly robust differences in days of homelessness. Active maintenance of housing units directly by the program, as contrasted with making referrals to Public Housing Authorities, may also facilitate more rapid housing explain the robust findings. There were no benefits in psychiatric or substance abuse outcomes for Housing First clients as compared to controls, although they experience more choice in their programs.

About one third of clients in the Housing First trial entered the program while they were in a psychiatric hospital bed (Gulcur *et al.*, 2003) creating a substantial opportunity for cost savings. There is clear evidence that Housing First clients experienced significantly less use and lower institutional costs during the first 24 months of treatment (Gulcur *et al.*, 2003), although by 24 months there were no

longer significant group differences. A full cost-effectiveness analysis which would include the costs of the of the Housing First intervention itself, has yet to be published, but targeting a high cost sample to begin with increased the chance that Housing First would generate enough savings in institutional care to pay for its own expenses, at least during the first two years. By targeting severely ill clients with dual disorders including many psychiatric inpatients Housing First maximized the opportunity for substantial housing improvements as cost savings, but these findings may not be applicable to less severely impaired populations.

Supported Housing Summary

These studies clearly show the potential benefit of housing subsidies but do not provide distinct evidence for the effectiveness of intensive case management, although they certainly do not rule out a critical role for such services. It is notable that even in the HUD-VASH study, and to a lesser extent in Housing First, clients who did not receive targeted housing services showed decided improvements in their housing status over the follow-up period in both access to independent housing and in reciprocal declines in days of homelessness. Thus in some studies in which interventions improved housing outcomes, difference were not starkly different, although they were most robust in Housing First.

Cost-effectiveness of case management

A review of intensive case management services for homeless people with mental illness identified 10 experimental studies only 3 of which included cost analyses (Morse, 1998). Seven of the ten studies showed fewer days homeless day for case management clients, many of whom received poorly defined housing assistance, as compared to controls but only two showed reduced symptoms. Four studies have been designed to support cost-effectiveness analysis.

A study conducted in St Louis compared two models of intensive case management for homeless people with mental illness (one which included community-workers on the team and one which used only professionals). The intensive case management models cost about \$9,000 per client over 18-months of treatment and were compared with a more standard broker case management model. While the intensive case management conditions showed greater symptom reduction and consumer satisfaction than standard care, there were no differences between groups in days of homelessness, most likely because no specific housing resources

were dedicated to clients in either intensive case management condition. Costs were lowest for the intensive case management program that used community workers (\$39,913/18 months), highest for intensive case management that relied on professionals (\$49,510) and in the middle for standard, brokered case management (\$45,076). The high cost of this program and lack of any greater exit from homelessness does not argue for its policy appeal. It more directly raises doubts about the value of even effective mental health interventions in addressing the problem of homelessness without specific housing resources.

Two more promising intervention studies, one from Baltimore (Lehman et al., 1997, and 1999); and one from New York (Susser et al., 1997; Herman et al., 2000; Jones 2003) illustrate program elements that can improve cost-effectiveness profiles. The Baltimore Assertive Community Treatment study linked a costly case management intervention (\$8,000/year) with section 8 vouchers and found significantly greater improvements in symptoms, life satisfaction and health status and a greater proportion of days in stable housing over a 1-year follow-up period (59 percent vs. 43 percent).

Total health costs were \$50,748 for the experimental condition and \$66,480 for the controls, representing net savings of \$15,732/year. This difference largely reflects 30 fewer inpatient days for the experimental condition during the year generating \$24,519 lower inpatient costs. A key to the favorable cost results was that almost one-third of the sample (29 percent) were recruited from an inpatient unit, thus guaranteeing a high-cost sample, with considerable opportunity for savings. Presumably the availability of housing resources prevented unnecessary extensions of hospital stays. As noted in our summary of study caveats, targeting current inpatients can have an important impact on cost-effectiveness results. While limiting study generalizability, it also illustrates that thoughtful targeting of policy initiatives can improve their cost-effectiveness, at least during the early phase of treatment.

The third program, the New York-based Critical Time Intervention (CTI) represents another modification of the supported housing case management model that improved cost-effectiveness. Unlike most intensive case management interventions discussed above, CTI is a time-limited, 9 month intervention, designed to facilitate the transition from shelter living to community residence, but it did not direct services over the long-term. In an experimental study of CTI and standard care, both groups had access to community housing and thus housing rates were

very high for both over an 18 month follow-up period. CTI clients spent 94 percent of nights housed while controls spent 79 percent of nights housed, a difference of 58 days over 18 months. CTI clients also had lower scores on one measure of psychiatric symptoms.

Total costs from the societal perspective were \$725 greater for CTI clients than for controls during the 18 month follow-up period. However, because CTI is a time-limited intervention, while costs were \$2,263 greater during the first 9 months (similar to HUD-VASH) they were \$1,613 lower during the second 9 months, after the intervention was over. Thus while the incremental cost-effectiveness ratio was \$94/night housed during the first nine months of the study, it was only \$13/night housed during the entire study period. Cost-effectiveness acceptability curves showed that CTI was 95 percent likely to be cost effective if a day of housing is valued as \$457 during the first 9 months, \$120 during the second nine months and \$152 over the entire study period. CTI cost-effectiveness results are thus similar to those of HUD-VASH, except that costs dropped sharply after the supported housing intervention ended, and overall housing rates are higher for both experimental and control groups.

In this review of cost-effectiveness studies three points deserved further emphasis. First, that it appears that the availability of dedicated housing resources appears to be a critical ingredient for housing homeless people with mental illness and that intensive case management by itself does not seem to improve housing outcomes. Second, the differences between experimental and control conditions in the studies reviewed are not very large, 66 percent vs 53 percent of days housed in HUD-VASH, no difference in the San Diego or St. Louis projects; 59 percent vs 43 percent in Baltimore and 94 percent vs 79 percent in CTI but with larger differences in Housing First. Third while some models were associated with increased costs others showed cost savings, largely reflecting variability in the baseline costs of the target population and the duration of the intervention. Finally, while these interventions all generate some benefits, from the policy perspective they are not robustly cost-effective and do not provide an exceptionally appealing case for comprehensive implementation.

As we noted in our preliminary caveats, differences between experimental and control conditions may be minimized in random assignment studies because of the ethical equipoise requirement that no treatment group be deprived of effective services. To bracket this possibility we present preliminary data on housing out-

comes from the Collaborative Initiative on Chronic Homelessness (CICH)(Mares and Rosenheck, 2007), a demonstration program jointly funded by HUD, HHS and VA. The CICH evaluation is a non-experimental study primarily focusing on consumers who received CICH services, a rich array of housing and health care services using a diversity of case management models. Five of the 11 participating sites voluntarily recruited samples of chronically homeless people from a different part of the city, where the enriched services were not available. Baseline data suggest that the CICH sample had more serious health problems than controls and adjustment was made for these using regression models. These data show more robust differences in housing outcomes (68 percent –90 percent of days housed vs. 31 percent –55 percent days housed over the first 12 months of service)(Figure 2) and modest differences in health costs (Figure 3) and suggest that the impact of supported housing may, in fact be greater, than observed in experimental studies, although the risk of selection biases in the absence of random assignment is, of course greater.

Case Management Summary: Case management programs alone, are capable of improving mental health symptoms but seem less likely to improve housing in the absence of specific housing resources. These programs remain costly at up to \$7,000–\$9,000/client/year but when targeted at high cost hospitalized patients can realize short term savings sufficient to offset their cost. When delivered on a time limited basis, costs can be contained sufficiently to allow cost-savings after discharge.

Benefits Outreach, Payeeship and Behavioral Money Management

It is well established that diminished access to public support payments increases the risk of homeless among people with mental health and addictions problems and is a more important risk factor than lack of access to mental health treatment (Sosin and Grossman, 1991). While facilitating access to income supports is regarded as one of the services routinely provided by case management teams, several initiatives have been developed improve access to VA income benefits and have shown that 15 percent –22 percent of veterans contacted through outreach programs received new benefits over 12 months (Chen et al., 2007, Greenberg et al., 2007). However, in the absence of comparison groups it is difficult to know how much to attribute these gains to the outreach efforts, since many clients would have received their benefits on their own initiative.

A joint benefits outreach project conducted by VA clinical staff in collaboration with co-located Social Security field office staff did obtain data that allowed for such a comparison. The adjudication of benefits claims can be time consuming and complex, requiring assertiveness at multiple levels of appeal and deft knowledge of how to develop medical evidence of disability. Project staff included both outreach workers, to organize claims, and doctoral level professionals who could develop necessary medical evidence (Rosenheck et al., 1999). The evaluation design compared receipt of social security benefits at VA homeless program sites that were involved in the joint project and comparison sites that were not. Comparing applications for SSA benefits at the demonstration sites in the years before and after the project was initiated shows a sharp increase in applications from 8–10 percent of homeless veterans in the years before the project was initiated to 23 percent in the years after, with a small secular upward drift to only 10–12 percent at the control sites. Since the rate of award remained the same over these years at both types of site, the net award rate increased modestly from 5 percent to 13 percent of veterans (Figure 4) while the rate of award among homeless veterans entering VA homeless programs at control sites drift upward from 6 percent to 7 percent . This net increase in the proportion of awardees attributable to the program by about 8 percent, came at an estimated cost of \$1,700 – \$3,200 per award (Rosenheck et al., 1999).

A further study of outcomes in the same initiative compared a subgroup of veteran applicants for SSI or SSD payments who received benefits (N=50) and those who did not (N=123). In the 3 months after the awards, beneficiaries reported significantly higher total incomes (\$735 vs. \$458 $p<.001$), higher quality of life (2.96 vs. 2.67 on a 1–7 terrible to delighted scale, $p<.004$) and marginally fewer days of homelessness (9.37 vs. 31.8, $p=.11$) but also lower employment earnings (\$19 vs \$108, $p=.013$).

Since receipt of benefits can be a trigger for substance use (Shaner et al., 1995; Phillips et al., 1999) it is notable that new beneficiaries reported no expenditures on alcohol or drugs while non-recipients reported only \$5 expenditure ($p=ns$), although beneficiaries did spend significantly more money on tobacco products (\$31.77 vs \$20.28, $p<.007$)(Rosenheck et al., 2000).

Whether the benefits in quality of life and housing are worth the not insubstantial investment in benefits outreach is unclear from these data and would require follow-up information well beyond the first three months after the award.

Concerns about misuse of income benefits for substance abuse have also been widespread and studies have clearly demonstrated a substantial “check effect” with increased use of illegal drugs after receipt of benefit checks (Shaner et al., 1995; Philips et al., 1999). However, several studies of participants in VA homeless programs (Rosenheck and Frisman 1996; Frisman and Rosenheck 1997) and in ACCESS (Rosen et al., 2005) have failed to find such effects among clients involved in treatment. A common intervention to curtail such risks, assignment of a representative payee does not seem to have a significant beneficial effect (Rosenheck et al., 1997; Rosen et al., in press). However, a recently developed behavioral intervention called Advisor-Teller-Money Manager (ATM) that is designed specifically to enhance abstinence among drug users by teaching them to better manage their funds, shows some promise in reducing substance use (Rosen et al., 2003; Rosen et al., in press).

Benefits Outreach Summary. Benefits outreach to facilitate access to entitlements has been subject to only one controlled study which revealed some evidence of at least short term benefit but at substantial cost. Additional research is needed of this intuitively appealing area, but the evidence is too thin to support policy action at present.

Supported Employment

We turn, finally, to supported employment, an approach that seeks to return homeless people, many with addiction problems, directly to the labor market. The model of supported employment that has been most carefully evaluated is the Individual Placement and Support (IPS) model (Becker and Drake, 2003). IPS emphasizes rapid job placement, a focus on competitive jobs, ongoing support without a time limit, client choice of jobs, integration of vocational support and clinical care, and openness to all who want to work, regardless of clinical status or past work experience.

In 2000, a demonstration was implemented at 9 VA programs serving homeless veterans that were provided with educational support and funds to hire and train an employment specialist who would provide IPS services (Rosenheck and Mares, 2007). Individual client outcomes were assessed with a pre-post non-equivalent control group design. From 6-12 months before IPS became available, a cohort of 30 homeless veterans newly entering the program and who expressed an interest in employment, was recruited at each site, and followed through quarterly interviews for two years (Phase 1 cohort: N=308). Once the employment specialist

was hired and trained, a second cohort of 35 veterans was recruited and also followed for two years (Phase 2 cohort: N=322). As noted above this kind of comparison, involving real-world, large scale dissemination without randomization, more closely follows the situation of actual policy implementation (albeit with human subjects committee approval and written informed consent).³

Controlling for significant baseline differences veterans in Phase 2 had 13.7 percent more days per month of competitive employment on average (least square means =8.4 vs. 7.4 days; $F=16.5$, $p<.0001$). Among workers in either group there were no significant differences in hourly wage (\$8.51 vs \$8.08; $f=3.2$; $p=.07$) or monthly earnings (\$1,238 vs \$1,142; $F=3.1$, $p=.08$). Average annualized employment income among all participants was \$1,299 greater for those in the phase 2 group (\$8,889 compared with \$7,590; $F=4.5$, $df=1$ and 596, $p=.01$). There was only one significant difference in any non-employment outcome: veterans in Phase 2 had a significant, if modestly, greater average numbers of days housed in the previous 90 days (least square means=34.0 vs. 29.6; $F=4.5$; $p=.03$) for an annualized difference of 16 days housed or only 4 percent per year (Figure 5).

This intensive, highly individualized intervention was not inexpensive with annualized costs for employment specialist services averaging \$2,063/client month (site range=\$1,400-\$2,700), although this was partially offset by greater annual earnings (social productivity) of \$1,299.

This study suggests that IPS can be implemented in an organization with no previous experience with this model through a modestly intensive, but sustained, training effort guided by a single outside expert (Rosenheck and Mares, 2007). Increases in days of competitive employment were observed at eight of nine sites and were statistically significant overall. However, these gains are substantially smaller than those reported in other studies. In Bond's (2007) review of research on IPS, almost 2.9 times as many clients in the IPS groups were employed, as compared with those in the control groups (56 percent compared with 19 percent), while in another large study, the Employment Intervention Demonstration Program (Cook et al, 2005), 1.6 times as many clients in the supported employment group (experi-

³ Because the Phase 2 comparison group was not identified through random assignment participants in the two phases were compared on baseline measures revealing that participants in the IPS phase had fewer lifetime years of homelessness, were more likely to have worked in the previous 3 years (but not in the previous 30 days), had fewer psychiatric symptoms and better physical health, but did not differ on major psychiatric diagnoses or in substance abuse problems. Adjustment for these characteristics was made in subsequent analyses.

mental model) were employed as clients in the control group (55 percent compared to 34 percent). These are much larger effects than the 15 percent gain in days competitively employed found in this study. It is possible that group differences were small in this study because training was insufficiently intense; because the focus was on a homeless sample that included many clients with substance abuse problems rather than on domiciled people predominantly with severe mental illness; or because effectiveness was attenuated in this fairly large-scale real-world dissemination.

Supported Employment Summary

As in our consideration of other interventions for homeless people with special needs, we find evidence of modest effectiveness for supported employment but also for increased costs. Rough calculation of incremental cost-effectiveness ratios suggests \$129/night housed for the supported employment intervention, but only \$48 per night housed if we consider productivity gains as offsetting intervention costs. These incremental cost-effectiveness ratios are similar to those observed in HUD-VASH (\$45/night housed) and during the active treatment phase of CTI (\$94/night housed), but are not likely to be especially attractive to policy makers with tight budgets.

Conclusion

Controlled research has evaluated the effectiveness and cost of several types of program intended to meet the needs of homeless people with psychiatric and addictive disorders. While significantly superior to control treatments, their effects are most often modest in magnitude and primarily center on a single outcome domain such as housing, symptoms, benefits, or employment. No single intervention seems to spread substantial benefit across multiple life domains. Program costs can be substantial but may be offset by more refined specification of high-cost target populations or in limiting the duration of active treatment, albeit with some risk of loss of effectiveness and applicability to the broader population of homeless people with mental health problems.

While these programs provide meaningful, if incremental, benefits they do not yet offer a service armamentarium which can be deployed on a large scale in expectation of efficiently eliminating the problem of homelessness among people with mental illness. While incremental progress is clearly in evidence in these stud-

ies, progress remains to be made to improve their effectiveness, their efficiency, and their potential for widespread dissemination.

References

Becker D.R. and Drake RE. 2003. *A working life for people with severe mental illness*.

New York: Oxford University Press.

Bond G.R. 2004. "Supported employment: evidence for an evidence-based practice." *Psychiatric Rehabilitation Journal* 27(4):345-59.

Burt, Martha, Pollack, Dave, Sosland, Abby, Mikelson, Kelly, Drapa, Elizabeth, Greenwalt, Kristy and Sharkey, Patrick. 2002. *Evaluations of Continuums of Care for Homeless People*. Washington D.C.: U.S. Department of Housing and Urban Development Office of Policy Development and Research.

Chen J.H., Rosenheck R.A., Greenberg G.A., Seibyl C. 2007. "Factors Associated with Receipt of Pension and Compensation Benefits for Homeless Veterans in the VBA/VHA Homeless Outreach Initiative." *Psychiatric Quarterly* 78:63-72..

Cheng A-L, Lin H, KasproW, Rosenheck R.A. 2003. "Impact of Supported Housing on Clinical Outcomes: Analysis of a Randomized Trial Using Multiple Imputation

Technique." *Journal of Nervous and Mental Disease* 195 (1):83-88..

Cook J.A., Leff H.S., Blyler C.R., Gold, P.B., Goldberg R.W., Mueser K.T., Toprac M.G., McFarlane, W.R., Shafer M.S., Blankertz L.E., Dudek, K. Razzano, L.A. Grey D.D., Burke-Miller J. 2005. "Results of a multisite randomized trial of supported Employment interventions for individuals with severe mental illness." *Archives of General Psychiatry* 62(5):505-12..

Culhane, D.P., Metraux, S., and Hadley, T. 2002. "Public service reductions associated with placement of homeless people with severe mental illness in supportive housing." *Housing Policy Debate*. 13(1):107-163.

Conrad, K., Hultman, C.I., Pope, A.R., Lyons, J.S., Baxter, W.C., Daghestani, A.N., Lisiecki J.P., Elbaum P.L., McCarthy, M., Manheim, L.M. 1998. "Case managed residential care for homeless addicted veterans: Results of a true experiment." *Medical Care* 36(1):40-53.

Frisman L.K., and Rosenheck, R.A. 1997. "The Relationship of Public Support Payments to Substance Abuse Among Homeless Veterans." *Psychiatric Services* 48:792–795

Greenberg, G., Chen, J., Rosenheck, R.A., Kaspro, W. 2007. "Receipt of Disability through an Outreach Program for Homeless Veterans." *Military Medicine* 172(5):461-465..

Greenberg, G. and Rosenheck, R.A. (under review). "Mental Health Correlates of Past Homelessness in the National Comorbidity Study Replication."

Gulcur, L., Stefancic, A., Shinn, M., Tsemberis, S., & Fischer, S. 2003. "Housing, hospitalization, and cost outcomes for homeless individuals with psychiatric disabilities participating in continuum of care and housing first programmes." *Journal of Community & Applied Social Psychology* 13: 171-186.

Herman, D., Opler, L., Felix, A., Valencia, E., Wyatt, R., Susser, E. A. 2000 "Critical time intervention with mentally ill homeless men: impact on psychiatric symptoms. *Journal of Nervous and Mental Disease* 188: 135–140.

Hough R.L., Wood, P.A., Hurlburt, M.S., Tarke, H.R., Quinlivan, R., Yamashiro, S., Crowell, A., Morris, E. 1997. *Housing, Quality of Life and Mental health Outcomes in an Evaluation of Supported Housing for Homeless Mentally Ill Individuals*. San Diego: San Diego State University..

Hurlburt, M.S., Wood, P.A., Hough, R.L. 1996. "Effects of substance abuse on housing stability of homeless mentally ill persons in supported housing." *Psychiatric Services* 47:731–736.

Jones, K., Colson ,P.W., Holter, P.W., Lin, S., Valencia, E., Susser, E., Wyatt, R.J. 2003. "Cost-Effectiveness of Critical Time Intervention to Reduce Homelessness Among Persons with Mental Illness." *Psychiatric Services* 54(6):884–890.

Lehman A.F., Dixon, L.B., Kernan, E., DeForge, B.R., Postrado, L.A. 1997. "Randomized trial of Assertive Community Treatment for Homeless Persons With Severe Mental Illness." *Arch Gen Psychiatry* 54:1038–1043.

Lehman A.F., Dixon, L., Hoch, J.S., DeForge, B., Kernan, E., Frank, R. 1999. "Cost-effectiveness of assertive community treatment for homeless persons with severe mental illness." *Br J Psychiatry* 174:346–352

Mares, A.S., and Rosenheck, R.A. 2007. *HUD/HHS/VA Collaborative Initiative to Help End Chronic Homelessness National Performance Outcomes Assessment Preliminary Client Outcomes Report*. West Haven, CT: Northeast Program Evaluation Center.

Morse G. A. 1999. "Review of Case Management for people who are Homeless: Implications for Practice, Policy and Research" in Forsberg, L.B. and Dennis, D.L. (Eds.) *Practical Lessons: The 1998 National Symposium on Homelessness Research*. Washington, DC: US Department of Housing and Urban Development, US Department of Health and Human Services.

Morse, G.A., Calsyn, R.J., Allen, G., Templehoff, B., Smith, R. 1992. "Experimental comparison of the effects of three treatment programs for homeless mentally ill people." *Hosp Community Psychiatry*. 43:1005-1010.

Morrissey, J.P., Calloway, M.O., Thakur, N., Cocozza, J., Steadman, H.J., Dennis, D.2002. "Integration of service systems for homeless persons with serious mental illness through the ACCESS program. Access to Community Care and Effective Services and Supports." *Psychiatric Services*.53(8):949-57.

New Freedom Commission on Mental Health. 2003. *Achieving the Promise: Transforming mental health care in America; Final Report*. DHHS Pub. No. SMA 033-832. Rockville MD.

Phillips, D. P., Christenfeld, N., Ryan, N. M. 1999. "An Increase in the Number of Deaths in the United States in the First Week of the Month -- An Association with Substance Abuse and Other Causes of Death." *New England Journal of Medicine* 341: 93-98.

Randolph, F., Blasinsky, M., Goldman, H.H., Morrissey, J, Rosenheck, R.A., Cocozza, J. and the ACCESS National Evaluation Team.2002. "Overview of the ACCESS Program". *Psychiatric Services* 53(8):945-948.

Rosen, M.I., McMahon, T.J., Lin, H., Rosenheck, R.A. 2005. "Effect of Social Security Payments on Substance Abuse in a Homeless Mentally Ill Cohort." *Health Services Research* 41(1): 173-191.

Rosen, M., McMahon, T, Rosenheck, R.A. (in press). "Does Assigning a Representative Payee Reduce Substance Abuse?" *Drug and Alcohol Dependence*

Rosen, M., Bailey, M., Rosenheck, R.. 2003. "Principles of money management as a therapy for addiction." *Psychiatric Services* 54(2):171-173.

Rosen, M.I., Carroll, K.M., Stefanovics, E.A., Rosenheck, R.A., and the VA New England VISN 1 MIRECC Study Group (in press) "A Randomized Controlled Trial of a Money-Management Based Intervention Targeting Substance Use." *Psychiatric Services*

Rosenheck R.A., Lam, J., Morrissey, J.P., Calloway, M., Stolar, M., Randolph, F., Blasinsky, M., Johnsen, M., Steadman, H., Coccozza, J., Dennis, D.D., Goldman, H.H. 2002. "Service systems integration and outcomes for mentally ill homeless persons in the ACCESS program. Access to Community Care and Effective Services and Supports. Evidence from the ACCESS Program." *Psychiatric Services* 53(8):958-966

Rosenheck, R.A. and Mares, A.S. 2007. "Implementation of Supported Employment for Homeless Veterans with Psychiatric or Addiction Disorders: Two-Year Outcomes." *Psychiatric Services* 58: 315-324.

Rosenheck, R.A., Kaspro, W., Frisman, L.K., Liu-Mares, W. 2003. "Cost-effectiveness of Supported Housing for Homeless Persons with Mental Illness." *Archives of General Psychiatry* 60: 940-951.

Rosenheck, R.A., Frisman, L.K., Kaspro, W. 1999. "Improving Access to Disability Benefits among Homeless Persons with Mental Illness: An Agency-Specific Approach to Services Integration." *American Journal of Public Health* 89(4):524-528.

Rosenheck, R.A., Dausey, D., Frisman, L.K., Kaspro, W., 2000. "Impact of receipt of social security benefits on homeless veterans with mental illness." *Psychiatric Services* 51(12):1549-1554.

Rosenheck, R. and Frisman, L.K. 1996. "Do Public Support Payments Encourage Substance Abuse?" *Health Affairs* 15 (3):192-200.

Rosenheck, R.A., Lam, J. and Randolph, F. 1997. "Impact of Representative Payees on Substance Use Among Homeless Persons Diagnosed with Serious Mental Illness and Substance Abuse." *Psychiatric Services* 48:800–806

Rosenheck, R.A. and Neale, M.S. 1998. "Cost-Effectiveness of Intensive Psychiatric Community Care for High Users of Inpatient Services." *Archives of General Psychiatry* 55(5):459–466.

Rosenheck, R., Cramer, J., Allan, E., Erdos, J., Frisman, L.K., Xu, W., Thomas, J., Henderson, W., and Charney, D. 1999. "Cost-Effectiveness of Clozapine in Patients With High and Low Levels of Hospital Use." *Archives of General Psychiatry* 56(6):565–572.

Schuck, P.H., Zeckhauser, R.J. 2006. *Targeting in Social Programs*. Washington DC: The Brookings Institution.

Shadish, W.R., Cook, T.D., Leviton, L. 1990. *Foundations of Program Evaluation: Theories of Practice*. Newbury Park, CA: Sage Publications, p. 377 ff.

Shaner, A., Eckman, T.A., Roberts, L.J., Wilkins, J.N., Tucker, D.E., Tsuang, J.W., Mintz, J. 1995. "Disability income, cocaine use, and repeated hospitalization among schizophrenic cocaine abusers--a government-sponsored revolving door?" *New England Journal of Medicine* 333:777–783

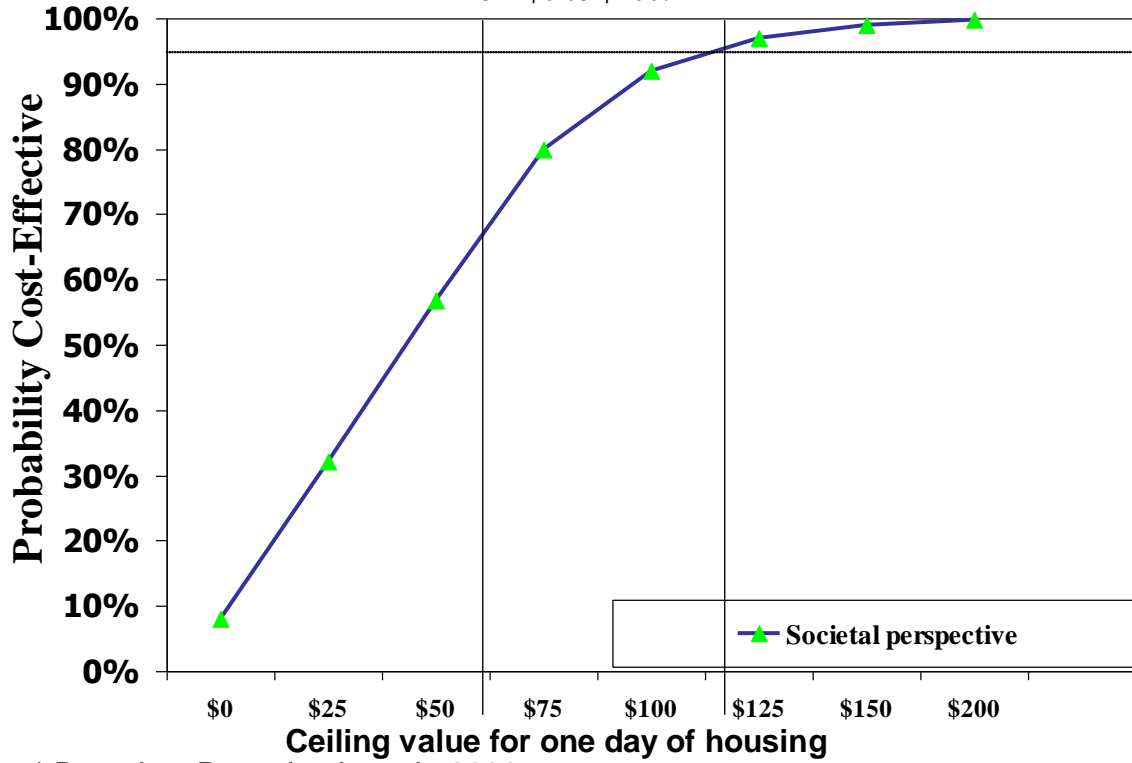
Sosin, M.R., Grossman, S. 1991. "The mental health system and the etiology of homelessness: a comparison study." *J Community Psychol* 19:337–350.

Susser, E., Valencia, E., Conover, S., Felix, A., Tsai, W., Wyatt, R.J. 1997. "Preventing Recurrent Homelessness among Mentally Ill Men: A "Critical Time" Intervention after Discharge from a Shelter." *Am J Public Health* 87(2):256–262.

Tsemberis, S., Gulcur, L., Nakae, M. 2004. "Housing First, consumer choice, and harm reduction for homeless individuals with a dual diagnosis." *Am J Public Health* 94(4):651–6.

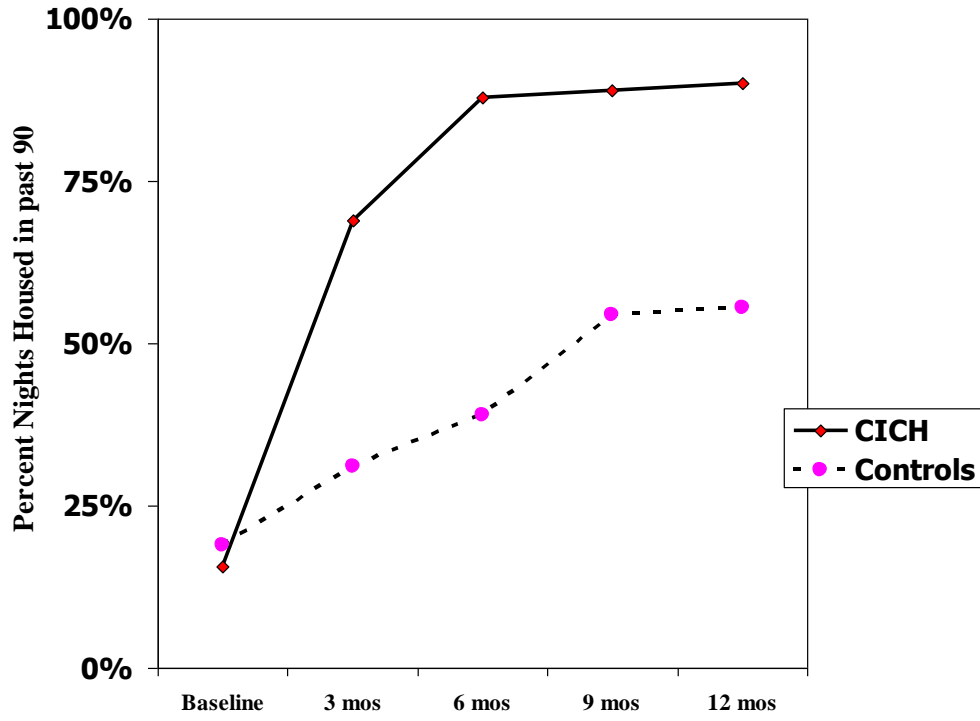
Wolfe, N., Helminiak, T.W., Morse, G.A., Calsyn, R.J., Klinkenberg, W.D., Trusty, M.L. 1997. "Cost-effectiveness evaluation of three approaches to case management for homeless mentally ill clients." *Am J Psychiatry* 154:341–348.

**Figure 1. Cost Effectiveness Acceptability Curve:
HUD-VASH vs Standard Care at ceiling values for one day of housing
from \$0 to \$200.***



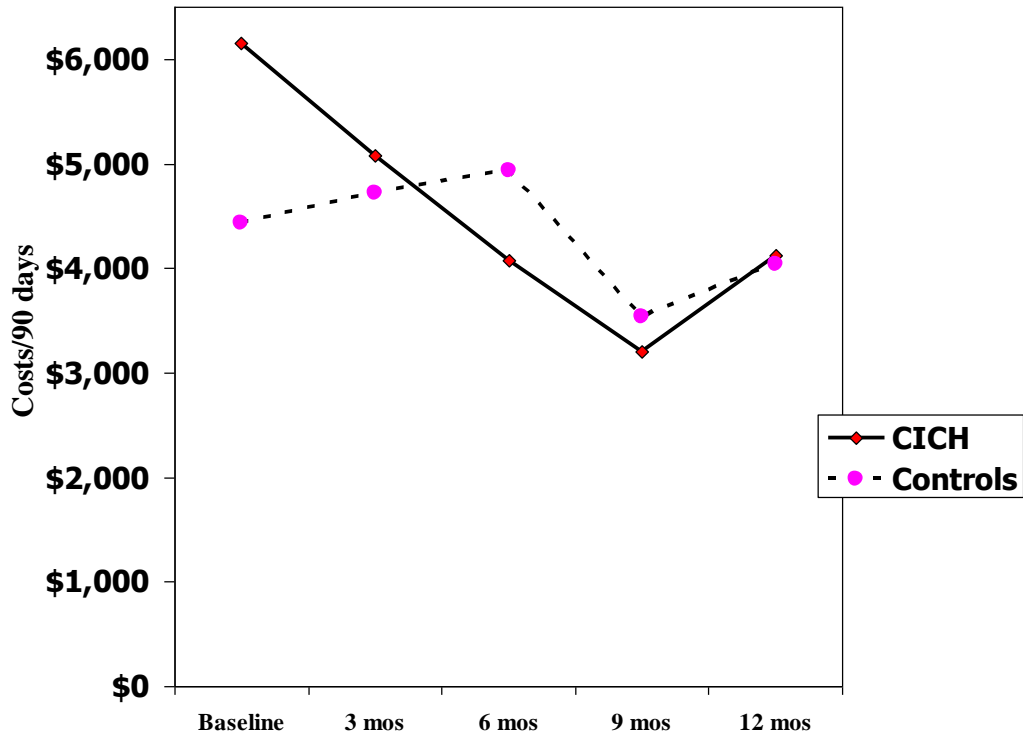
* Based on Rosenheck et al., 2003.

**Figure 2. Outcomes in the CICH Supported Housing Program:
Percent Nights Housed in Past 90***



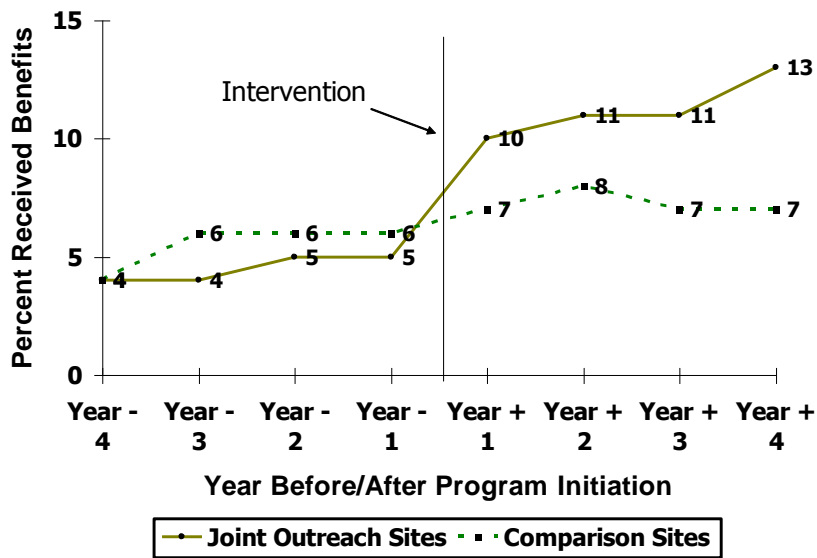
* Based on Mares and Rosenheck, 2007.

Figure 3. Health Costs for Past 90 days in the CICH Supported Housing Program*



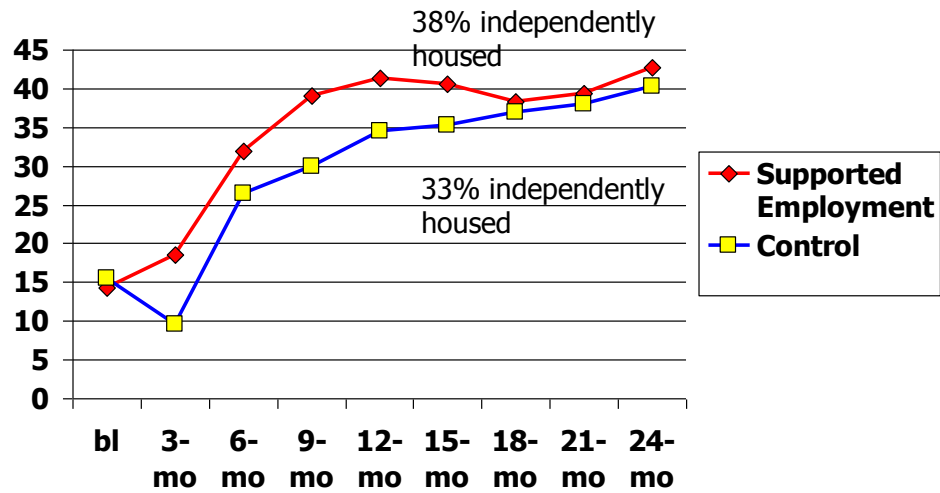
* Based on Mares and Rosenheck, 2007.

Figure 4. SSA-VA Joint Outreach: Rates of Award Among All Outreach Veterans (N=34,431).*



* Based on Rosenheck RA, Frisman LK, KasproW W, 1999

Figure 5. Days Housed in past 90 (Least Square Means)*



* Based on Rosenheck and Mares, 2007.