

## Integrated versus parallel treatment of co-occurring psychiatric and substance use disorders

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### Abstract

The study examines 1-year treatment outcomes of 216 individuals with co-occurring severe and persistent mental illness and substance use disorders who were assigned to an integrated or parallel treatment condition. Comparisons indicated that the integrated group achieved greater reductions in the incidence of psychiatric hospitalization and arrest. The results of this study support the enhanced effectiveness of integrated treatment in decreasing the use of higher cost crisis-oriented services in clients with severe mental illness and substance use disorders. © 2006 Elsevier Inc. All rights reserved.

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### 1. Introduction

Individuals with severe and persistent mental illness and substance use disorders present complex treatment needs that are often difficult to address in traditional mental health and substance abuse service systems. Research indicates that this population tends to overutilize higher cost crisis-oriented services, such as psychiatric hospitalization, emergency medical care, and the criminal justice system, and to underutilize more traditional and less costly treatment services, such as case management (Drake, Bartels, Teague, Noordsy & Clark, 1993). Historically, clients with these co-occurring psychiatric and substance use disorders (COPSD) received treatment from two different systems targeting either their psychiatric or substance use issues. This parallel treatment approach neglects the interactive nature of the COPSD client's comorbid disorders and may lead to "revolving door" treatments between the mental health and substance abuse service systems. Recognition of this

deficit in the behavioral health field led to the development of integrated treatment programs that recognize the unique needs of the COPSD population by providing coordinated psychiatric and substance abuse interventions, as well as enhanced case management to obtain adjunct services addressing other social problems common in individuals with co-occurring disorders.

The evolution of integrated treatment programs is well documented in literature reviews by Drake, Mercer-McFadden, Muser, McHugo, and Bond (1998) and Muser, Noordsy, Drake, and Fox (2003). First efforts to address the dual issues of COPSD clients began with adding dual diagnosis or 12-step treatment groups to traditional mental health treatment settings. Studies of these programs revealed few positive effects, indicating that addition of specialty groups was not sufficient to meet the needs of the chronically mentally ill substance user. Early intensive integrated programs resulted in high client dropout rates and the studies of these programs were generally uncontrolled. Those clients who were retained in the intensive programs appeared to benefit during treatment but relapse rates were high after discharge, suggesting that clients were

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unable to maintain the gains achieved in treatment. A number of dual diagnosis demonstration projects were then created to examine the effectiveness of different models of integrated service systems. Although the demonstration studies were not well controlled, the results indicated that integrated programs can be created in a variety of system settings and tend to produce benefits of decreased hospitalization and substance use severity in COPSD clients. In addition, the demonstration projects revealed the inappropriateness of traditional substance abuse treatment paradigms for individuals with COPSD and supported the development of stagewise treatment based on the client's current level of treatment engagement.

Later studies of comprehensive integrated treatment programs reviewed by Drake et al. (1998) and Muser et al. (2003) yielded more promising results. Overall, these outcome studies indicated that participation in integrated treatment, particularly when 18 months or longer, resulted in greater treatment engagement, decreased substance use, increased remission, and decreased hospitalization. Decreases in psychiatric severity were generally not found, with the exception of one program that contained a family component in the treatment process. Further, in those studies with control groups, COPSD clients who received integrated treatment had better outcomes relative to those in the control conditions. Many of these studies were hampered by methodological weaknesses, but in general provided positive evidence for the use of long-term comprehensive integrated treatment relative to the short-term intensive modalities or traditional parallel treatment for COPSD clients with severe mental illness.

More recent studies of integrated treatment for the chronically mentally ill have also revealed positive outcomes. Gonzales and Rosenheck (2002) examined 1-year outcomes of severely mentally ill (SMI) homeless persons who participated in the Access for Community Care and Effective Services and Supports program that was designed to foster cooperation among local service agencies and reduce the fragmentation of service systems. The study compared SMI with COPSD with SMI-only clients. The COPSD clients presented with greater severity at baseline and as a group had worse outcomes relative to the SMI-only group. When service use levels were considered, however, the COPSD clients with high service use demonstrated improvement on clinical symptoms and were equal to the SMI-only group at follow-up on symptoms of depression, number of days of alcohol intoxication, subjective quality of life, and number of incarceration days and arrests. These results suggest that when given sufficient levels of treatment, COPSD clients are able to achieve positive outcomes similar to SMI individuals without co-occurring substance use disorders.

McCoy et al. (2003) conducted a retrospective, naturalistic study of 18-month outcomes of COPSD clients participating in a residential integrated treatment program. The sample consisted of 38 COPSD clients who were

primarily schizophrenic (74%) and had a history of homelessness and recurrent hospitalization. Results revealed significant reduction in substance use and positive drug tests from baseline to 18-month follow-up, with the greatest declines in the first 6 months of treatment. Comparisons of hospitalization and employment rates in the 6-month periods preadmission and postdischarge also indicated reduction in the incidence of hospitalization, decreased number of hospital days, and increased employment after treatment. In addition, clients' Substance Abuse Treatment Scale (McHugo, Drake, Burton, & Ackerson, 1995) scores shifted from the late persuasion/early active treatment stages at admission to early active/active treatment stages after 6 months in treatment. Although this study did not have a control group, the within-subject changes indicated positive outcomes after receiving integrated treatment.

Judd, Thomas, Schwartz, Outcalt, and Hough (2003) reported on treatment outcomes and cost analyses of a dual-diagnosis integrated treatment demonstration project for individuals with SMI. The study was designed to measure the progress of 126 clients in multiple domains at 6-month intervals up to 3 years after baseline and included analyses of both project-specific measures of client functioning and state-level administrative data. The longitudinal project-specific data, however, were compromised because of client attrition, with the highest dropout rates by clients with schizophrenia and generalized anxiety disorder. Despite this weakness, the available client functioning data suggested that COPSD clients improved on mental health, substance use, and quality of life measures over time. More compelling evidence of the positive effects of integrated treatment was found using state-level data related to treatment services and legal involvement to assess potential cost savings. In the legal realm, analyses revealed significant reductions in the incidence of felony and misdemeanor arrests, number of arrests, probation violations, convictions, and days of incarceration. Days of substance abuse treatment were also reduced. Health-care and mental health-care costs increased; however, this increase was largely because of the use of more outpatient services, whereas the use of acute and subacute levels of care decreased.

Research assessing the outcomes of integrated treatment for COPSD clients with severe mental illness has suffered from numerous methodological weaknesses and lack of control conditions. Many of these problems are inherent in the study of a chronically ill population, who characteristically drop out of treatment unexpectedly and are difficult to locate for follow-up interviews. As a whole, the extant literature suggests that long-term integrated services produce better outcomes for SMI clients in the form of enhanced treatment engagement and reductions in substance use, acute hospitalization, and arrest. Less evidence exists for the reduction of psychiatric severity after participating in integrated treatment.

The current study examines 1-year treatment outcomes of 216 individuals with co-occurring severe and persistent mental illness and substance use disorders who were assigned to an integrated treatment program or to a control condition consisting of parallel delivery of psychiatric and substance abuse treatment. It was hypothesized that clients receiving integrated treatment would evidence increased engagement in treatment and greater positive outcomes relative to the control group.

## 2. Methods

The sample was obtained from three treatment programs participating in the Texas Dual Diagnosis Pilot Project during the first year of the project. Two of the programs implemented an experimental design that consisted of random assignment of eligible clients to either the integrated treatment program or the traditional parallel services control condition. These two programs were able to institute random assignment because they are located in relatively large urban areas where the number of individuals meeting eligibility requirements greatly exceeded the number of funded treatment slots. In this situation, randomization provided an equitable means by which to distribute treatment slots. The third program provides treatment in two different counties and implemented integrated services in one county and parallel services in the other county. In this program, clients were assigned to treatment groups based on geographical location rather than random assignment, resulting in a nonequivalent control or comparison group.

The Texas Dual Diagnosis Pilot Project consisted of a joint effort by the state-funded mental health and substance abuse treatment agencies to provide integrated treatment for individuals with co-occurring disorders. The admission criteria for entry into the dual diagnosis program were as follows:

1. Meet *Diagnostic and Statistical Manual, Fourth Edition (DSM-IV; American Psychiatric Association, 1994)* criteria for a substance abuse or substance dependence diagnosis;
2. Documented use of substances during the 6 months before program entry; and
3. Meet criteria for inclusion in the Texas Department of Mental Health and Mental Retardation (TDMHMR) adult priority population (i.e., be diagnosed with a severe and persistent mental illness, such as schizophrenia, major depression, manic depressive disorder, or other mental disorder resulting in severe and chronic impairment).

Three pilot sites located in west, central, and east Texas participated in the current study. In each of these sites, a regional state-funded substance abuse treatment and mental health service provider formed a coalition to develop an

integrated treatment program based on the following principles of the Drake model (Drake et al., 1993):

1. Assertiveness to encourage client engagement in treatment, including providing in vivo services and concrete assistance in a variety of life domains (e.g., medication management, helping the client locate suitable housing, skills training, assistance applying for Medicaid or SSI benefits, and working with members of the client's support system including family members, landlords, employers);
2. Close monitoring to encourage treatment compliance, including frequent contact with clinicians, supervised living situations, drug testing, payeeships, court commitment, or establishing treatment as a condition of probation or parole;
3. Integration of mental health and substance abuse interventions in a concurrent and coordinated fashion;
4. Comprehensive treatment addressing a wide range of skills, activities, relationships, and supports beyond the immediate manifestations of the dual diagnosis disorder (e.g., living situation, family/support relationships, vocational skills, interpersonal skills);
5. Stabilization of the client's living situation to ensure housing that provides safety, freedom from alcohol and drugs, positive social support, and companionship;
6. Flexibility and specialization among clinicians in acquiring new beliefs, skills, and therapeutic approaches appropriate for treatment of COPSD clients;
7. Treatment tailored to the client's stagewise level of treatment engagement, including engagement, persuasion, active treatment, and relapse prevention;
8. A longitudinal perspective with treatment provided continuously over years rather than episodically or during crises; and
9. Maintenance of optimism regarding treatment outcomes, recognizing that client motivation is likely to increase as treatment progresses.

Each of the three pilot sites developed an integrated treatment program based on these features of the Drake model within the context of their local treatment system characteristics and community resources. State evaluation and technical assistance site visits were conducted during the first year of the project to ensure implementation of the elements of integrated treatment in the programs. In each site, a dual diagnosis treatment team was established to provide treatment oversight and case management for COPSD clients. The dual diagnosis team in two of the sites consisted of both mental health and substance abuse treatment clinicians who were colocated in the mental health clinic, whereas the third program's team was composed of mental health clinicians who had obtained licensed chemical dependency counselor training. Dual diagnosis treatment team members in all of the sites had received training on

stagewise integrated treatment and fundamental issues unique to COPSD populations. Integrated treatment plans addressing both substance abuse and mental health issues and regularly scheduled staffings to review client progress existed at all three sites. Although the service array differed among the sites, each program provided access to the continuum of substance abuse treatment, psychiatric services, individual therapy, and specialized groups tailored to COPSD client issues, including good chemistry, dual diagnosis education, coping and relationship skills development, and relapse prevention. Other integrated treatment elements, such as assertive engagement and in vivo services, were present at all three sites but to varying degrees. Further, the programs also varied in the extent to which they had established broader community networks with ancillary service providers and continued to face system barriers of different levels. In particular, although all programs were able to access education, employment, and housing resources to some extent, these resources were often limited and insufficient to meet the immediate needs of all clients.

Clients in the parallel treatment condition received traditional independent substance abuse and mental health treatment by separate clinics. Service provision was not coordinated between the treatment programs and lacked a centralized case management component overseeing all aspects of client care. Further, treatment was not provided within the context of a stagewise client level of engagement paradigm.

### 2.1. Participants

The sample consisted of 216 clients who were randomly assigned to either an integrated treatment program (IT,  $n = 123$ ) or to a parallel treatment control condition (PT,  $n = 93$ ). Clients signed informed consent agreeing to participate in the evaluation of the pilot project services. Analyses of demographic variables indicated that the two treatment groups were not significantly different on sex, age, or race/ethnicity (see Table 1). The groups were approximately 50% male, primarily White, and had a mean age of 37 years. *DSM-IV* multi-axial diagnostic characteristics are also presented in Table 1. The predominant diagnoses in both groups were major depression, schizophrenia, and bipolar disorder and were not significantly different. The groups also did not differ on the total number of Axis I and Axis II comorbid diagnoses, the number or type of Axis IV conditions, or the Axis V Global Assessment of Functioning scores. Average Global Assessment of Functioning scores reflected severe symptom levels and serious impairment in psychosocial functioning in both groups. Both groups had equivalent levels of employment and did not differ on incidence of arrest or number of arrests in the 12 months prebaseline.

The groups were also not significantly different in the incidence of psychiatric hospitalization, number of admissions, or number of hospital days during the 12 months

Table 1  
Demographic and diagnostic characteristics of integrated treatment and parallel treatment groups

Variable	Treatment group		df	$\chi^2/t$ value	p
	Integrated treatment ( $n = 123$ )	Parallel treatment ( $n = 93$ )			
Sex (%)					
Male	45	55	1	2.42	ns
Mean age (years)	36.5	36.6	213	0.07	ns
Race/ethnicity (%)					
Black	16	12			
Hispanic	13	21			
White	69	66			
Other	2	1	3	2.93	ns
Principal diagnosis (%)					
Schizophrenia	23	18			
Major depression	35	34			
Bipolar disorder	19	22			
Alcohol use disorder	2	3			
Drug use disorder	5	11			
Other disorders	16	12	5	4.43	ns
Total number of Axis I and Axis II diagnoses	2.3	2.5	213	1.06	ns
Total number of Axis IV psychosocial stressors	2.2	2.3	195	0.56	ns
Global Assessment of Functioning Score	48.7	49.0	195	-0.21	ns

before admission. Although these differences between the groups were not statistically significant, comparison of the groups' apparent values on these variables indicated that the IT group had nearly twice the percentage of hospitalizations, number of admissions, and hospital days relative to the PT group. To assess the extent to which these actual differences may indicate lack of group equivalency at baseline, a propensity score analysis (Rosenbaum & Rubin, 1983) using logistic regression was conducted to determine if the hospitalization variables predicted group membership. Results revealed that the three variables did not significantly predict IT or PT membership,  $\chi^2(3, N = 216) = 2.18, ns$ ; consequently, propensity weighting to control for group nonequivalency was not indicated.

### 2.2. Analyses

The treatment groups were compared on two outcome variables, psychiatric hospitalization and arrest rates. Continuous outcome variables were analyzed using analysis of variance with repeated measures and between-groups factors. Weighted least squares methods for modeling categorical repeated measures data with a between-groups design were used to examine categorical outcome variables. Outcome data for psychiatric hospitalization and arrest were obtained from state-level data systems for all clients through interagency agreements. Measures of 1-year follow-up of psychiatric severity, treatment engagement, and employment were available for a subset of clients; however,

Table 2  
Treatment outcomes at 1-year follow-up of integrated treatment and parallel treatment groups

Outcome measure	Treatment group				<i>df</i>	$\chi^2/F$ value	<i>p</i>
	Integrated treatment ( <i>n</i> = 123)		Parallel treatment ( <i>n</i> = 93)				
	Pre-BL	Post-BL	Pre-BL	Post-BL			
<i>Psychiatric hospitalization past 12 months</i>							
Any hospitalization (%)	12.2	3.3	6.5	10.8	1	21.17	.0001
Number of hospitalizations	0.17	0.08	0.09	0.16	1	1.33	.06
Hospital days	5.7	2.4	2.5	6.1	1	4.28	.04
<i>Arrests past 12 months</i>							
Any arrest (%)	11.4	7.3	10.8	9.7	1	4.34	.04
Number of arrests	0.13	0.11	0.13	0.15	1	0.27	<i>ns</i>

Pre-BL = prebaseline; Post-BL = postbaseline.

the follow-up rates on these measures were too low to be considered representative, precluding the use of these variables in outcome analyses. Data on these measures are missing because of inconsistent use of measures in the treatment programs at the start of the project, changes in domain measures over the course of the project, or inability to contact clients.

### 3. Results

Treatment outcome analyses are reported in Table 2. State-level administrative data for psychiatric hospitalization and arrest were available for 100% of the clients. Comparisons of psychiatric hospitalization rates in the 12 months before and after baseline assessment revealed a significant treatment group by time interaction effect. Exploration of this interaction indicated that the IT group demonstrated greater reduction in the incidence of any hospitalization, falling from 12.2% to 3.3%, whereas the PT group evidenced an increase from 6.5% to 10.8%. Analyses of the total number of psychiatric hospitalization days in the 12 months pre- and postbaseline also indicated a significant treatment group by time interaction, with the IT group displaying a reduction in total days from 5.7 to 2.4 and the PT group an increase from 2.5 to 6.1 days. Similarly, a nonsignificant trend was found suggesting a decrease in the total number of hospital admissions for the IT group with a concurrent increase for the PT group.

Analyses of arrest rates 12 months pre- and postbaseline revealed a significant treatment group by time interaction, consisting of a reduction in the incidence of any arrest in the IT group from 11.4% to 7.3% relative to a marginal decrease in the PT group from 10.8% to 9.7%. No group differences were found in the frequency of arrests during these 12-month periods.

### 4. Discussion

The results of the current study indicate that in this sample of COPSD individuals with severe mental illness, clients who received integrated treatment services achieved more

positive outcomes than those receiving traditional parallel services in the control condition. Analyses of baseline characteristics indicated that the treatment groups were not significantly different on demographic and diagnostic characteristics, psychiatric severity, hospitalization rates, employment, and incidence of arrest. Consequently, we believe that differences in outcomes cannot easily be explained by differences in pretreatment characteristics.

In the area of psychiatric hospitalization, the IT group demonstrated significant reduction in both the incidence of any hospitalization and in the number of hospital days, whereas the PT group had increases on these measures. Decreased acute psychiatric hospitalization appears to be one of the most consistent outcome findings in studies of integrated treatment. Reduced hospitalization was a frequent outcome in a majority of studies reviewed by Drake et al. (1998) and Muser et al. (2003) and was also found by McCoy et al. (2003) and Judd et al. (2003) in their respective studies of integrated treatment. In the current study, the PT control group had increases in hospitalization, suggesting that components of integrated treatment may assist COPSD clients with severe mental illness in avoiding crisis-oriented care.

Improvements in the legal domain also appear to be associated with integrated treatment. In the current study, the IT group evidenced significant reduction in the incidence of arrest during the 12 months pre- and postbaseline whereas the PT group's arrest rate remained essentially unchanged. Gonzales and Rosenheck (2002) and Judd et al. (2003) also reported decreases in arrest and other types of legal involvement in their evaluation of integrated treatment outcomes. Decreases in both acute psychiatric hospitalization and legal involvement not only indicate improved quality of life for the clients, but also are beneficial to society at large in the form of reduced use of higher cost crisis-oriented services commonly overused by COPSD clients with severe mental illness.

We also collected data on other domains, such as Brief Psychiatric Rating Scale (Overall & Gorham, 1962) scores, and Substance Abuse Treatment Scale (McHugo et al., 1995) stage of change ratings, and employment status. Although we saw similar differences in improvement between the

groups favoring the IT clients, poor and potentially non-representative follow-up contact rates prevent us from reporting those analyses.

The results of the current study provide additional evidence of enhanced effectiveness of integrated treatment relative to parallel treatment of SMI COPSD clients in the areas of reduced psychiatric hospitalization and decreased incidence of arrest. However, the results of this study are limited by methodological weaknesses similar to other past studies of integrated treatment. Incomplete data in certain outcome domains in this sample limit the strength of the results; however, findings in these areas do support trends suggested in the literature assessing integrated treatment outcomes. Further, the study does not include outcome measures in the substance use domain, an essential area of evaluation of integrated treatment. Future controlled studies are needed with more complete data in a comprehensive set of outcome domains and with longer follow-up periods to replicate and enhance the generalizability of these results.

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