

# An Effectiveness Trial of Group Cognitive Behavioral Therapy for Patients With Persistent Depressive Symptoms in Substance Abuse Treatment

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**Context:** Although depression frequently co-occurs with substance abuse, few individuals entering substance abuse treatment have access to effective depression treatment.

**Objective:** The Building Recovery by Improving Goals, Habits, and Thoughts (BRIGHT) study is a community-based effectiveness trial that compared residential substance abuse treatment with residential treatment plus group cognitive behavioral therapy for depression delivered by substance abuse treatment counselors. We hypothesized that intervention clients would have improved depression and substance use outcomes compared with those of clients receiving usual care.

**Design:** A nonrandomized controlled trial using a quasi-experimental intent-to-treat design in which 4 sites were assigned to alternate between the intervention and usual care conditions every 4 months for 2½ years.

**Setting:** Four treatment programs in Los Angeles County.

**Participants:** We screened 1262 clients for persistent depressive symptoms (Beck Depression Inventory-II score >17). We assigned 299 clients to receive either usual care (n=159) or usual care plus the intervention (n=140). Follow-up rates at 3 and 6 months after the baseline interview were 88.1% and 86.2%, respectively,

for usual care and 85.7% and 85.0%, respectively, for the intervention group.

**Intervention:** Sixteen 2-hour group sessions of cognitive behavioral therapy for depression.

**Main Outcome Measures:** Change in depression symptoms, mental health functioning, and days of alcohol and problem substance use.

**Results:** Intervention clients reported significantly fewer depressive symptoms ( $P < .001$  at 3 and 6 months) and had improved mental health functioning ( $P < .001$  at 3 months and  $P < .01$  at 6 months). At 6 months, intervention clients reported fewer drinking days ( $P < .05$ ) and fewer days of problem substance use ( $P < .05$ ) on days available.

**Conclusions:** Providing group cognitive behavioral therapy for depression to clients with persistent depressive symptoms receiving residential substance abuse treatment is associated with improved depression and substance use outcomes. These results provide support for a new model of integrated care.

**Trial Registration:** clinicaltrials.gov Identifier: NCT01191788

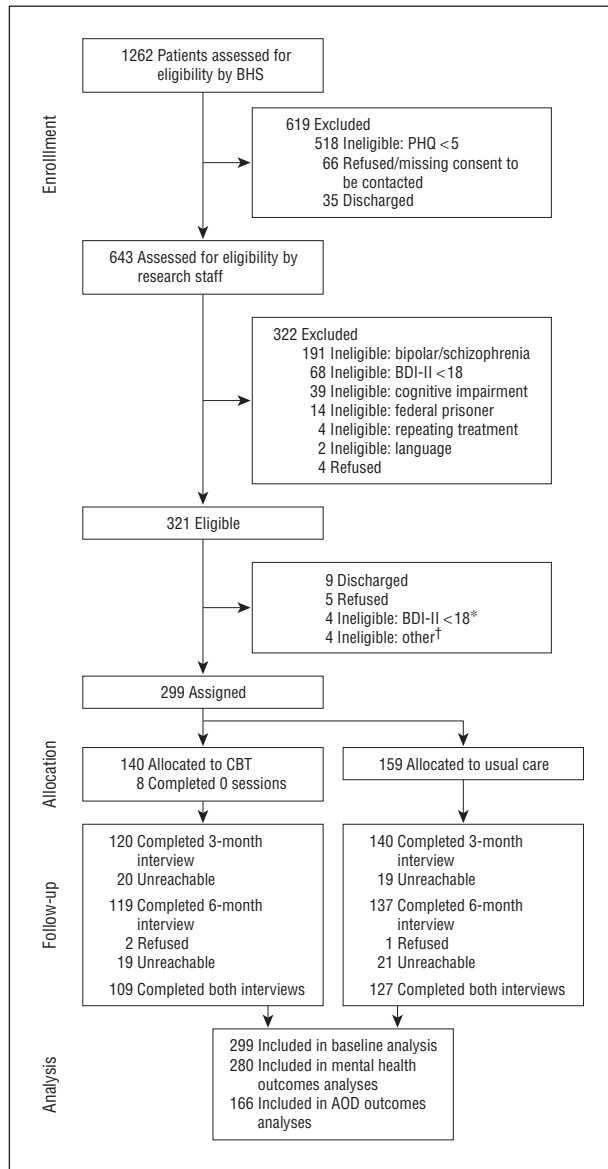
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**D**EPRESSION AND substance abuse are the second and fourth most common mental disorders<sup>1,2</sup> and are the leading causes of disability, reduced quality of life, and adverse social consequences.<sup>3</sup> Although depression and substance abuse frequently occur together, individuals with both disorders rarely receive treatment for both.<sup>4</sup> The consequences of this unmet need are great. Individuals with co-occurring depression and substance abuse overuse high-cost, crisis-oriented services, and the interactive nature of the 2

disorders leads to poorer depression and substance abuse treatment outcomes compared with the outcomes when only 1 disorder is treated.<sup>5,6</sup>

There is a growing consensus that for the large group of individuals whose psychiatric symptoms do not remit with abstinence, treatment for both the substance abuse and the mental disorder should be provided, and the treatments should be integrated at the clinical interface.<sup>7,8</sup> Despite the need for effective treatments, there is little research on psychosocial treatments for patients with comorbid depression and substance use disorders.



**Figure 1.** Study enrollment process. AOD indicates alcohol and drug use; BDI-II, Beck Depression Inventory-II; BHS, Behavioral Health Services; CBT, cognitive behavioral therapy; and PHQ, Patient Health Questionnaire-8. \*If more than 2 weeks passed between the assessment for eligibility by research staff and the baseline interview, clients were reassessed for persistent depressive symptoms using the BDI-II. †If the client had another known commitment (eg, court date, pregnancy, or specialty group) that would prevent him or her from attending the intervention, the client was deemed ineligible.

Group cognitive behavioral therapy (CBT) is an effective treatment for depression.<sup>9,10</sup> The Building Recovery by Improving Goals, Habits, and Thoughts (BRIGHT) study was a nonrandomized community-based effectiveness trial<sup>11</sup> that developed and evaluated a 16-session group CBT for depression. The intervention was designed to be feasible for use in residential substance abuse treatment settings and to be delivered by typical substance abuse counselors. The BRIGHT study compared the effectiveness of residential treatment with that of residential treatment plus the BRIGHT intervention. We hypothesized that clients receiving the intervention would have improved depression and substance use outcomes.

We used a nonrandomized, quasi-experimental design in which cohorts of clients at each of the study sites received residential usual care (UC) treatment or residential treatment enhanced with the BRIGHT intervention (BRIGHT) provided by trained substance abuse counselors during a 2½-year enrollment period. The study sites were the 4 residential sites operated by Behavioral Health Services, one of the largest publicly funded substance abuse treatment providers in Los Angeles County.

## STUDY DESIGN

We used an alternating assignment process. During the first 4-month period, all eligible clients from the largest site were assigned to the experimental condition (BRIGHT), while all eligible clients from the other 3 smaller sites were assigned to the comparison condition (UC). After 4 months this assignment pattern alternated, and all clients from the 3 smaller sites were assigned to BRIGHT, while clients from the largest site were assigned to UC. This alternating pattern continued during a 2½-year enrollment period, with the intervention delivered a total of 15 times. In the last year of the study, for logistic reasons, we centralized the delivery of the intervention at a single site; instead of having the outpatient counselors travel to the residential sites, intervention clients were transported to a single site to receive the intervention. Although a randomized design would have been a stronger test of causality, the logistics of a randomized design were not feasible.

## PARTICIPANTS AND ENROLLMENT

Study recruitment began August 1, 2006, and ended January 31, 2009. During that period, 1262 clients were screened for eligibility and 299 clients with persistent depressive symptoms were enrolled (**Figure 1**). We defined persistent symptoms as symptoms that were measured on 2 separate occasions after at least 2 weeks of sobriety. Clients were first screened by residential staff using the Patient Health Questionnaire-8<sup>12</sup> 14 days after entering treatment. Clients with a score of 5 or higher (corresponding to at least mild depression symptoms) were asked whether research staff could contact them. Fifty percent of the clients screened at 2 weeks scored 5 or higher on the Patient Health Questionnaire-8. Next, the research team conducted a second screening to determine eligibility; 66 clients refused the second screening or their contact information was lost, and 35 were discharged from the program before the second screening. Inclusion criteria at the second stage were (1) Beck Depression Inventory-II (BDI-II) score higher than 17, indicative of moderate to severe depressive symptoms<sup>13,14</sup>; (2) the ability to speak and understand English; and (3) receipt of residential treatment. Exclusion criteria included a positive screen for a self-reported bipolar disorder,<sup>15</sup> schizophrenia (1 item from the Healthcare for Communities Psychoticism screener), and cognitive impairment.<sup>16</sup> We did not enroll clients on federal probation or parole because we were unable to obtain permission from the Federal Parole Board.

Twenty-four percent of clients assessed were eligible for the study. Participants were enrolled 3 to 4 weeks after admission to residential treatment. Intervention clients started the BRIGHT group within 2 weeks after study enrollment. The study was approved by the RAND Corporation Institutional Review Board, and all participants provided written informed consent.

## ASSESSMENTS

Participants completed a semistructured baseline interview that included an assessment of a current depressive disorder by means of the Composite International Diagnostic Interview.<sup>17</sup> We selected this assessment tool because it does not require clinical training to administer or score. We used the Addiction Severity Evaluation Indices, which gather information about the previous 12-month period, to assess alcohol and drug use severity.<sup>18</sup> The Timeline Followback Method<sup>19</sup> was used to capture past 30-day alcohol frequency and intensity, and questions from the Addiction Severity Index were used to capture past 30-day use of the following substances: heroin, methadone, other opiates/analgesics, barbiturates, sedatives/hypnotics/tranquilizers, cocaine, amphetamines, cannabis/marijuana, hallucinogens, inhalants, and polydrug use. The Timeline Followback Method and Addiction Severity Index have been shown to be reliable and valid measures of alcohol and drug use.<sup>20-24</sup>

We measured functioning using the Short Form-12, version 2 (SF-12).<sup>25</sup> We also measured demographic characteristics, along with mental health and substance abuse treatment use. Race/ethnicity was asked using the categories that conformed to the National Institutes of Health reporting standards. Primary outcomes were change in depression symptoms using the BDI-II and change in mental health functioning measured using the mental health composite score of the SF-12. Primary substance use outcomes included days of alcohol and substance use as a percentage of days available for use (eg, not institutionalized). Participants received \$20 for completing the baseline interview. Extensive contact information and likely places the participant might be found if he or she were to leave treatment were collected to aid in participant tracking.

Three months after the baseline interview, the first follow-up interview was administered by survey field staff, corresponding to the conclusion of the intervention. Because at this time intervention clients were asked additional questions about their experience with the intervention, interviewers were not masked to study condition. At this time, new detailed tracking information was obtained. Three months later (ie, approximately 6 months after the baseline interview and 3 months after intervention completion), a second follow-up interview was administered. Participants received \$30 for completing the 3- and 6-month interviews. In both interviews, baseline measures of study outcomes were repeated.

## INTERVENTION CONDITION

The BRIGHT intervention is a group CBT for depression for clients in substance abuse treatment. It consists of 16 two-hour sessions, divided into 4 modules: thoughts, activities, people, and substance abuse. We adapted the intervention from an existing CBT for depression manual.<sup>9,26,27</sup> Our adaptation sought to improve the intervention's appropriateness for clients in residential treatment and to increase the likelihood that substance abuse counselors could successfully implement the intervention. We integrated examples dealing with alcohol and substance abuse; added the fourth module to focus on the connections between thoughts, behaviors, mood, and substance abuse; and added guidance and structure to the sessions. In addition, we added a 45-minute individual "orientation" session before the start of the group therapy, designed to increase motivation and retention and which included elements of motivational interviewing<sup>28</sup> and role induction.<sup>29</sup> The BRIGHT intervention was delivered 2 times per week; thus, the intervention lasted 8 weeks. Enrollment in the group was semiopen, and new clients could enter the group at the beginning of each of the 4 modules. Previous work indicated that effectiveness was independent of initial treatment focus.<sup>30</sup> While participating in the

BRIGHT group, other Behavioral Health Services group commitments were reduced accordingly (ie, BRIGHT participation counted as 2 Behavioral Health Services groups per week), suggesting that all clients should have received the same number of group sessions per week.

## INTERVENTION DOSAGE

Clients who were assigned to BRIGHT attended a mean (SD) of 10.5 (5.5) sessions, and 69.3% attended at least half of the 16 sessions.

## COUNSELOR TRAINING AND FIDELITY

To reduce contamination, the intervention was provided by Behavioral Health Services outpatient counselors who traveled to the residential sites to deliver the 2-hour intervention and then returned to their outpatient settings. Outpatient counselors had no contact with UC clients and interacted with residential staff only to coordinate care for intervention clients. We trained 5 counselors who had an average of 4 years of experience as counselors; none had specialty mental health credentials. Four counselors were certified by the state of California as substance abuse counselors. Counselors received 2 days of didactic training, followed by practice leading the intervention one time in their outpatient setting, coupled with weekly supervision from a licensed clinical psychologist. This preparation was followed by an additional 1-day booster training before the delivery of the intervention to study participants.

To encourage fidelity, sessions were coded for adherence and competence, with results provided to the supervisors to inform ongoing supervision. All sessions were digitally recorded, and 80 sessions (33%) were coded by at least 1 trained rater using measures adapted for this intervention. The adherence measure is specific to each session and requires ratings on a 4-point scale (ranging from 0 to 3) of how adequately group leaders covered each session element. A score of 2 or higher indicates adequate adherence to each session element. The 12-item competence measure was adapted from the Cognitive Therapy Adherence and Competence Scale.<sup>31</sup> Items are rated on a 7-point scale (ranging from 0 to 6), with an average score of 4 indicating competent CBT delivery. To account for the high proportion of items with high prevalence and for possible disagreement between raters with respect to baseline rates of each measure, we estimated interrater reliability using the prevalence-adjusted bias-adjusted  $\kappa$  (PABAK)<sup>32</sup> based on 33 double-coded sessions (13% of all delivered sessions). The PABAK estimates ranged from 0.33 to 0.88 for adherence items (average, 0.68) and 0.15 to 0.94 for competence items (average, 0.58), indicating moderate to substantial agreement among the 3 raters.<sup>33</sup> The average adherence rate was 94% across all coded sessions, suggesting high adherence to the treatment. The average competence score across all coded sessions was 4.1, indicating counselors were competently delivering CBT.<sup>31</sup>

## USUAL CARE

We conducted annual site visits to assess organizational functioning and to determine whether UC treatment differed across sites. We conducted focus groups with assessment, admission, and counseling staff. Afterward, we administered a pen-and-paper questionnaire<sup>34,35</sup> that staff completed anonymously to assess organizational functioning. We also conducted yearly, semistructured qualitative interviews with agency administrative leaders to ascertain information about staffing and training across sites. Findings from the organizational functioning surveys suggested that, overall, the sites did not significantly differ from each other or across the study years.<sup>36</sup> We

also learned that all staff were required to receive the same agency-wide training. Treatment (ie, UC) across the sites was standardized; clients experienced similar enrollment procedures and participated in individual substance abuse treatment counseling, group therapy, vocational skills training; Alcoholics Anonymous, Narcotics Anonymous, and Cocaine Anonymous meetings; recreational therapy; and family services. Residential staff were instructed to follow their usual mental health care procedures of referring clients with severe mental health conditions to a community mental health provider for evaluation. These results suggested that it may be appropriate to aggregate the data across sites in our analyses of client outcomes.

## DATA ANALYSIS

We analyzed outcomes using an intent-to-treat approach, in which data from all enrolled participants were analyzed. We compared baseline characteristics of clients assigned to the BRIGHT and UC conditions using  $\chi^2$  tests for categorical characteristics and  $t$  tests for continuous variables. Respondents and nonrespondents of both follow-up surveys were also compared. Our primary mental health outcomes were the BDI-II score and SF-12, which we examined at 3 and 6 months after baseline. Each mental health outcome was modeled using mixed-effects regression modeling. Random client effects accounted for the nonindependence, or clustering, of outcomes repeatedly observed for clients at 3 and 6 months after baseline. A multiple membership modeling approach was used to account for the clustering of outcomes among those who attended group CBT sessions together, given the semiopen enrollment, which involved including random CBT session effects in the model and estimating the client-specific session effect as an average of the random session effects for those sessions attended by the client.<sup>37,38</sup> The baseline value corresponding to the outcome was entered into the model as a covariate and centered to have mean zero to allow for interpreting other model coefficients as the effect for a client with average covariate values. For the models of BDI-II and SF-12, an indicator variable of intervention assignment, a follow-up wave (3 or 6 months after baseline), and an interaction of these 2 measures were included as predictor variables. Intervention effects on BDI-II and SF-12 at 3- and 6-month postbaseline interviews were estimated from these coefficients and tested using 2-sided  $t$  tests, and the overall intervention effect during the full follow-up period was tested using a likelihood ratio test.<sup>39</sup>

We used a sensitivity analysis, conducted to determine whether controlling for site changed the statistical significance of treatment effect estimates, to confirm that data across sites could be aggregated for analysis. We also calculated the proportion of clients in each study condition whose depressive symptoms were minimal (BDI-II score  $\leq 13$ )<sup>13</sup> and compared the proportion with minimal symptoms in each condition at the 2 follow-up points.

Our primary substance use outcomes were number of days of alcohol use as a percentage of days available and self-reported use of problem substances as a percentage of days available for use (ie, when client was not institutionalized) during the previous 30 days. We examined these outcomes only at the 6-month follow-up because most participants (70.4%) were institutionalized (mostly in the residential treatment program) at the 3-month postbaseline time point. Analyses of number of days of alcohol use as a percentage of days available and self-reported use of problem substances as a percentage of days available for use were performed only on clients with any days available for use in the 30-day window (64.8% of the sample). We conducted a  $\chi^2$  test to compare the percentage of clients in BRIGHT vs UC having zero days available for use to assess the

comparability of alcohol and other drug users in BRIGHT vs UC. We compared 6-month postbaseline alcohol and other drug use measures for BRIGHT vs UC conditions using  $t$  tests because the estimated variance component for CBT session attendance from the mixed regression model was zero and regression diagnostics of regression models that included baseline alcohol and other drug use as covariates indicated severe violations of key model assumptions that were not corrected by data transformations.<sup>40</sup>

## RESULTS

### CHARACTERISTICS

No statistically significant differences between the UC and BRIGHT condition were found on demographic, mental health, or substance use characteristics. Participants were ethnically diverse (22.4% African American, 33.8% white, 30.1% Hispanic, and 13.7% other/mixed), and 51.8% were male. The mean (SD) age was 36.2 (10.3) years. Most clients were single (81.6%), with a mean (SD) number of years of education of 11.9 (2.0). Most participants were unemployed (83.6%), and 18.4% reported being arrested in the month before treatment entry.

Mean (SD) BDI-II scores were in the clinically severe range (33.5 [9.2]), and 45.8% had a past 12-month depressive disorder. Mental health functioning (SF-12) scores were almost 2 SDs below the population norm (mean [SD], 31.9 [11.0]). Nineteen percent of the cohort reported taking antidepressant medication, and 12.7% reported receiving individual psychotherapy in the month before entering residential treatment.

Sixty-six percent of the sample reported problem alcohol use. The mean (SD) number of drinks on a drinking day was 7.1 (range, 0-49.1). The sample reported using a problem substance a mean (SD) number of 16.3 days (11.9) in the month before entering treatment. The most commonly reported substance was amphetamines (36.8%), followed by cocaine (20.4%), alcohol (15.4%), and heroin (12.4%). The mean (SD) Addiction Severity Index alcohol evaluation score was 54.1 (9.8) and the mean (SD) Addiction Severity Index drug evaluation score was 47.5 (7.5). Evaluation indices are transformed such that mean (SD) is 50 (10), indicating that the substance abuse severity of the sample is typical of other patients entering substance abuse treatment.<sup>20</sup>

Two hundred sixty clients (87.0%) and 256 clients (85.6%) completed 3- and 6-month postbaseline surveys, respectively. Response rates for clients in UC vs BRIGHT did not significantly differ at either wave ( $P=.55$  and  $P=.77$ , respectively) (UC, 88.1% and 86.2%, respectively, and BRIGHT, 85.7% and 85%, respectively). Responders were not significantly different from nonresponders at either wave with respect to baseline characteristics. Treatment effects did not significantly vary across the 4 sites.

### DEPRESSION OUTCOMES

At the 3- and 6-month postbaseline interviews, BRIGHT clients reported significantly fewer depressive symptoms; the **Table** shows the difference between BRIGHT



**Table. Effect of Group Cognitive Behavioral Therapy vs Usual Care on Outcomes**

Variable	Intervention Effect			Variance Components for Random Effects		
	At 3 mo	At 6 mo	LLstat, 2 df	Intercept, Client	Session	Residual
Mental health outcome, change in score						
BDI-II	-6.3 <sup>a</sup>	-5.6 <sup>a</sup>	16.3 <sup>a</sup>	64.2 <sup>a</sup>	106.2	72.3 <sup>a</sup>
SF-12	6.3 <sup>a</sup>	4.6 <sup>b</sup>	16.3 <sup>a</sup>	47.7 <sup>a</sup>	94.3	92.2 <sup>a</sup>
Substance use outcome, change in % of available days in previous 30 days in which substance was used <sup>c</sup>						
Alcohol	NA	-8.9 <sup>d</sup>	NA	NA	0	800.6 <sup>a</sup>
Problem substance	NA	-11.6 <sup>d</sup>	NA	NA	0	975.3 <sup>a</sup>

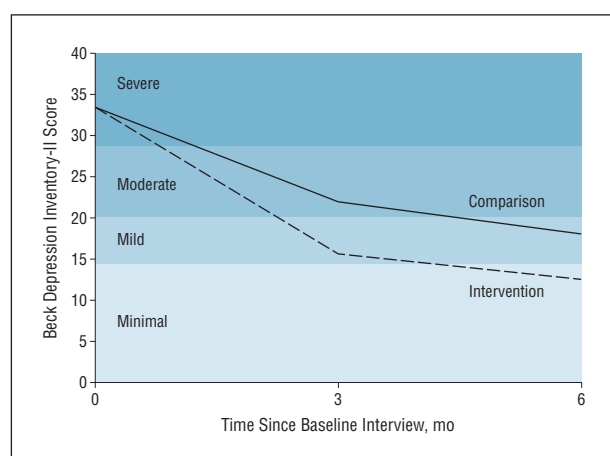
Abbreviations: BDI-II, Beck Depression Inventory-II; LLstat, log-likelihood ratio statistic for testing the total intervention effect for outcomes examined at 3 and 6 months; NA, not available; SF-12, Short-Form 12, version 2.

<sup>a</sup>  $P < .001$ .

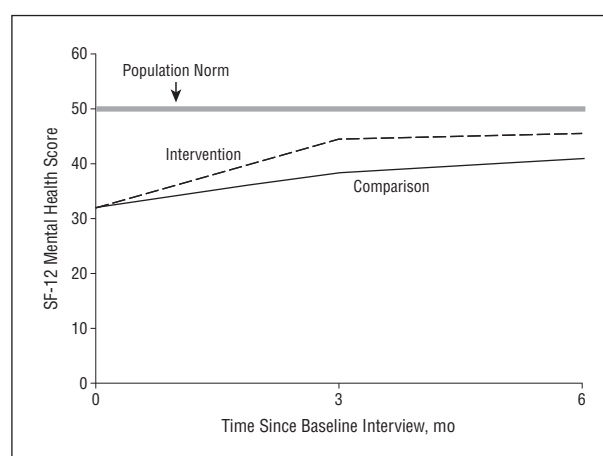
<sup>b</sup>  $P < .01$ .

<sup>c</sup> For clients for whom substance was available 1 day or longer.

<sup>d</sup>  $P < .05$ .



**Figure 2.** Conditional change in Beck Depression Inventory-II score over time.



**Figure 3.** Conditional change in Short Form-12 (SF-12) mental health score over time.

and UC clients on average BDI-II score at each follow-up. The intervention was associated with increased overall mental health functioning. **Figure 2** and **Figure 3** show the change over time of these 2 measures for the intervention and comparison conditions, conditional on a client starting at baseline with average scores on these measures. Inclusion of antidepressant medication use as a covariate did not alter the statistical significance of these treatment effects. Clients in the 2 conditions did not differ in terms of their self-reported receipt of individual counseling for a mental or emotional problem outside of substance abuse residential treatment at the 3- and 6-month postbaseline interviews (3-month: CBT=20.8% vs UC=28.6%,  $P = .20$ ; 6-month: CBT=19.3% vs UC=25.6%,  $P = .29$ ). At the 3-month postbaseline interview, BRIGHT clients had depressive symptoms in the mild range (mean BDI-II, 15.6), whereas UC clients were in the moderate range (mean BDI-II, 21.9). Symptoms continued to decrease in both conditions at 6-month postbaseline interviews.

At both the 3- and 6-month postbaseline interviews, more BRIGHT clients had minimal symptoms compared with the UC group (3-month: 55.8% vs 33.6%;  $P < .001$ ; 6-month: 63.9% vs 43.8%,  $P < .001$ ).

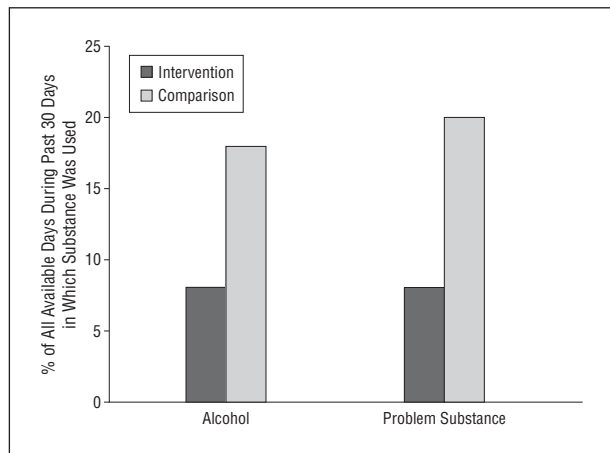
In addition to BRIGHT clients reporting significantly fewer depressive symptoms than UC clients, it is also notable that all clients reduced their depressive symptoms from baseline. At the 6-month interview, the mean BDI-II score of BRIGHT clients went from 33.5 to 12.5 and scores of UC clients went from 33.5 to 18.1, using the sample mean estimated from the model.

## SUBSTANCE USE OUTCOMES

The UC and BRIGHT conditions had similar percentages of clients having no days available for substance use at 6 months (36.5% vs 33.6%;  $P = .63$ ). Among the clients with days available, BRIGHT clients reported fewer drinking days at 6 months and fewer days of problem substance use compared with the corresponding values for UC clients (Table). The percentage of available days marked by substance use for BRIGHT and UC groups at each follow-up is shown in **Figure 4**.

## COMMENT

The BRIGHT trial has several important findings. We show that providing group CBT for depression to clients with



**Figure 4.** Alcohol and problem substance use at 6 months.

persistent depressive symptoms receiving residential substance abuse treatment is associated with better improvement in both depression and substance use outcomes. Although all clients in our study, regardless of study condition, reduced their levels of depressive symptoms, intervention clients experienced greater decreases and their mental health functioning approached population norms. Among clients who had the opportunity for substance use at the 6-month postbaseline interview, intervention clients reduced their use by more than half compared with that of UC clients. It is notable that despite being a specific treatment for depression, the intervention was associated with clinically and statistically significant improvements in both mental health and substance use outcomes.

Few studies focus on the treatment of individuals with depression entering substance abuse treatment, and the majority of these examine pharmacotherapy.<sup>41</sup> To our knowledge, this is the first large-scale trial of a psychosocial treatment for depression provided within standard substance abuse treatment, and it adds to the small volume of literature on effective treatments for individuals with co-occurring affective and substance use disorders. Apart from 1 study of interpersonal psychotherapy with 26 patients and another study of individual CBT with 35 patients, previous studies of psychosocial treatments have all included pharmacotherapy provided by a psychiatrist, a resource unavailable to most publicly funded substance abuse providers.<sup>42-45</sup> Although the CBT study found that individual CBT significantly lowered both drinking outcomes and depressive symptoms among persons with an alcohol dependence, the sample was less severely ill; for example, baseline BDI-II score was 10 or higher (vs >17 in our study), and only a single participant met criteria for major depression.<sup>42</sup> Our findings extend these findings to include a group format, drug users in addition to persons with a dependence on alcohol, and clients with severe depressive symptoms.

Our study addresses a critical need to develop and test integrated models of care suitable for the public-sector substance abuse treatment system. Lack of access to efficacious depression treatment for substance abusers is an important public health problem. Rates of current ma-

jor depression are 2 to 4 times higher among substance abusers than in the general population,<sup>1,46</sup> affecting 15% to 35% of people seeking substance abuse treatment.<sup>47</sup> Persons with comorbid depression and substance use disorders experience greater impairment<sup>48</sup> and worse outcomes than persons with only 1 of these disorders.<sup>49-51</sup> Although current guidelines state that services for individuals with comorbid substance use and mental disorders should be available regardless of setting, studies have shown that few public-sector substance abuse treatment organizations are able to provide for the mental health needs of individuals with comorbid disorders.<sup>52,53</sup> Fewer than 9% of US adults with a probable co-occurring disorder were able to access both mental health and substance abuse treatment.<sup>54</sup>

Public-sector programs typically do not provide mental health services because few substance abuse providers have qualified mental health professionals on staff,<sup>8,55</sup> and most do not have the funding mechanisms or resources to hire mental health professionals. To increase access and to improve outcomes for individuals with comorbidity, interventions that use available resources need to be developed and evaluated. Because BRIGHT was implemented using typical substance abuse counselors, we address a critical limitation of the current system.<sup>8</sup> A cost analysis will be reported elsewhere. The study demonstrates that it is possible to develop the capacity of substance abuse programs to deliver evidence-based mental health care by enhancing the skills and expanding the clinical roles of substance abuse counselors. If more broadly implemented, this approach could increase access to effective mental health care for the many individuals who enter the substance abuse treatment system with co-occurring persistent depressive symptoms. Moreover, because most substance abuse treatment occurs in a group format, our adaptation of group CBT for depression is consistent with providers' expectations of what a usable treatment looks like.

Results from our study should be generalizable to the large population of individuals with persistent depressive symptoms entering residential treatment. Our study population included diverse cultures and ethnicities, and study sites were geographically spread across Los Angeles County. Participants were typical of clients enrolled in public-sector treatment because most were single, unemployed, and indigent. To increase generalizability, we included clients with a range of severity and disorders and had few exclusion criteria. Approximately half had a current major depressive disorder. We also included individuals who were receiving antidepressant medication as long as they continued to experience depressive symptoms. Given the difficulty of distinguishing between a substance-induced depressive disorder and an independent depressive disorder, initiating a treatment that is effective for both and that does not have the liability of medication adverse effects is advantageous.

The observed rates of CBT treatment attendance and completion in the absence of external incentives suggest that clients and staff perceived the treatment to be acceptable and that the intervention is feasible. For example, we relied on the residential staff, who did not receive any training or exposure, to ensure that clients as-

signed to the BRIGHT condition received the intervention. In practice, this meant they had to remind clients, reschedule appointments, and ensure clients were on time. In addition, residential staff had to keep track of clients entering treatment to screen and enroll all eligible clients. Continued support for screening and client participation in the intervention was demonstrated by our low refusal rates and high attendance in the intervention groups. Consistent with the improvement in outcomes, counselors without previous exposure to CBT for depression or to other depression treatments were able to deliver the treatment with acceptable levels of adherence and competence.

Our study has several limitations. Despite our efforts to develop and evaluate a treatment tied to the available resources of substance abuse providers, additional resources were required. Counselors went through significant training and weekly supervision by a PhD-level psychotherapist, which may be more training and supervision than public programs can provide. BRIGHT was led by 2 counselors, and the group size was limited to 10, which also increase the resources needed. We did not conduct a randomized trial, although our quasi-experimental study design, in which sites were assigned to alternate between the intervention and the UC conditions, minimized the chance of unmeasured site or subject characteristics influencing outcomes, and we did not observe differences by either site or intervention status. In the last year of the study, we centralized the delivery of the intervention; clients were transported to a single site to receive the intervention. Although this could have resulted in contamination, there were no differences in treatment attendance or outcomes associated with this change, and we continued to see a difference between our intervention and comparison conditions. We tested BRIGHT in a residential setting in which clients were expected to stay 3 to 6 months, and it is unknown whether the intervention will be feasible in 28-day programs or effective in outpatient settings. Small residential programs may not have sufficient clients to support a group. More work is needed to test the feasibility of BRIGHT in different settings.

We did not confirm self-report with urinalysis or a clinical interview, and the lack of more thorough screening for comorbid conditions is a limitation. Also, follow-up assessments were unmasked to treatment allocation. Participants may have underreported their substance use or depression, although previous studies suggest the validity of self-reported mental health and substance abuse outcomes in similar populations, and the measures we used are based on previously validated scales.<sup>21,22,56-59</sup> We do not know whether the treatment influenced both depression and substance abuse directly or whether the improvements in depression led to the improvements in substance use. This is an important area for further study. Although all clients should have received the same amount of total residential treatment, it is probable that BRIGHT clients perceived themselves to be receiving increased clinical attention.

Taken together, our results provide support for a new model of integrated care suitable for substance abuse programs. Integration exists on a continuum, ranging from

the colocation of mental health and substance abuse providers to integrated treatment teams staffed by experts in both disciplines. However, colocation has not been shown to be effective,<sup>7</sup> and integrated treatment teams are expensive to deliver and may not be cost-effective for individuals with less severe mental disorders. Future studies should include longer follow-up times and address the challenges of more broadly implementing this model of integrated care.

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