Inpatient Applications of Cognitive-Behavioral Therapy

A Review of Recent Developments

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The authors review empirical research of the past decade on cognitive-behavioral therapy (CBT) in the treatment of depressed inpatients and offer suggestions for future investigations. CBT appears to offer additive benefits in combination with pharmacotherapy, particularly after the transition from inpatient to outpatient treatment. CBT also holds promise as a primary treatment for inpatients but has not been clearly shown to be as effective as antidepressants. There is as yet no evidence that inpatient CBT is superior to other psychotherapies of comparable intensity or that short-term inpatient CBT has enduring value if not followed by outpatient therapy. Further research is needed to clarify the specific effects of CBT for inpatients and to establish its cost-effectiveness.

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Over the past decade, the role of psychotherapy in the treatment of major psychiatric disorders has been a topic of much discussion and increasingly sophisticated research. Advances in the psychotherapeutic treatment of depressed outpatients have been well documented. By contrast, there has been much less research addressing the efficacy of inpatient psychotherapeutic interventions.

Markowitz[1] has emphasized the need for research in inpatient psychotherapy, which he described as the "meat and potatoes" of psychiatric inpatient care. With progressively shorter hospital stays,[1] it is increasingly important to identify psychosocial interventions that are efficacious, cost-effective, and readily applicable to acute care settings. Cognitive-behavioral therapy (CBT) is particularly well suited for such research, and a number of studies of the use of CBT in the treatment of depressed inpatients have recently been published.[2–4]

In this article, we first describe the essential characteristics of inpatient CBT and consider a typical program in detail. Next,

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treatment trials of inpatient CBT both in combination with medication and as the principal inpatient treatment for depression are critically reviewed. We conclude with a synthesis of findings and recommendations for future research.

A Treatment Model for Inpatient CBT

Several groups have described pilot studies in which the techniques originally developed for use in outpatient CBT have been adapted to the inpatient treatment of depression.[3–5] Wright et al.[6] have written a volume on the integration of CBT into the inpatient therapeutic milieu.

These models of inpatient CBT share characteristics derived from the model of outpatient CBT developed by Beck et al.[7] As in outpatient CBT, the therapist is philosophically and pragmatically responsible for setting the structure, pace, and activity level of the sessions. An agenda is used within sessions, and explicit feedback is sought from the patient at the beginning, during the course of, and at the conclusion of each session. The therapeutic style is one of collaborative empiricism, in which ideas about symptom management are openly raised, discussed, and tested. The therapist thus assumes a posture not unlike that of an understanding and respectful coach or trainer. Homework assignments are also considered a necessary component of inpatient therapy.

In the programs described by these authors, inpatient CBT differs from outpatient treatment in several important ways. *Flexibility* in duration of patient contact is integral to each program, with frequency and content of sessions adapted to the severity of depression experienced by the patient. Although each program encourages the use of individualized treatment plans, all of the programs emphasize the *progressive flow* of therapy from psychoeducation to behavioral interventions (designed to increase activity and reduce hopelessness), followed ultimately by more abstract cognitive interventions. Inpatient CBT typically emphasizes a more explicit *stepwise approach* to identifying, understanding, and lessening component problems rather than addressing broader concepts such as major depression. Although the biomedical model of depressive illness may be invoked, the orientation of the therapy is to help the patient to better cope with the symptoms and problems related to the illness as a means of ultimately overcoming it. Inpatient staff members are used as *adjunct therapists* to reinforce and improve generalization of the gains made in treatment sessions and to facilitate the completion of homework assignments. Patients' families are often enlisted in the treatment as well. Perhaps most importantly, the need for *continuity* of care is explicitly recognized through efforts to have patients continue to use CBT techniques after discharge.

Thase and Wright's[5] CBT treatment manual, which details the most recently developed inpatient CBT program, builds on the earlier work of Shaw[3] and Scott.[4] This manual was developed to guide the treatment of depressed inpatients who are unable to tolerate or unwilling to take antidepressant medication. Thase and Wright suggest, however, that their individual CBT program can also be used with many different types of depressed and anxious patients, and they emphasize that there are no contraindications to the use of CBT in combination with pharmacotherapy. In the terminology of Wright et al.,[6] this program is an example of the "add-on" model, in which a primary therapist joins the inpatient treatment team to work individually with a specific patient. The add-on model is less intensive than what Wright et al.[6] have referred to as a "comprehensive cognitive milieu," in which all staff members have a theoretical commitment to cognitive-behavioral therapy and advanced training in this model. When compared with this type of comprehensive program, the add-on model is easier to implement, less costly, and more compatible with the eclectic nature of con-

temporary inpatient practice.

Thase and Wright's[5] inpatient CBT program has four phases, each lasting from 3 days to a week. Like Scott,[4] Thase and Wright recommend scheduling five CBT sessions per week when inpatient CBT is the principal treatment modality. No fewer than three individual sessions per week are recommended when CBT is used in combination with medication.[6] This dosage is recommended because depressed inpatients typically have more severe symptoms, including poorer concentration, less mood reactivity, greater hopelessness, decreased hedonic capacity, and a much higher frequency of suicidal ideation, than do outpatients. Depressed inpatients are also less likely to have intact social support systems and have a greater likelihood of severe life stress. Consequently, patient problem lists are longer, enculturation into the model of therapy is slower, and fewer problems may be addressed in each session.

Frequent sessions provide a greater opportunity for teaching patients to understand the rationale for CBT and to practice CBT techniques, and they also provide more immediate reinforcement of therapeutic change. The typical hour-long session can be shortened with severely depressed inpatients, who may feel overwhelmed when sessions cover too much material. In our experience, this is particularly true for patients plagued by anxious rumination, psychomotor agitation, or poor concentration.

The first phase of Thase and Wright's[5] inpatient CBT program involves establishing a working alliance between patient and therapist and educating the patient about the cognitive model of depression. A problem list is developed collaboratively with the patient, and work is begun on the most pressing issues on the list. In the first week of therapy, a great amount of time is devoted to helping the patient lessen his or her sense of hopelessness and suicidal ideation. Thase and Wright also emphasize the therapist's use of behavioral interventions in this early phase of inpatient CBT; they suggest using graded task assignments, relaxation training, and scheduled activities to maximize exposure to pleasurable and esteem-enhancing behaviors.

The therapist assigns homework tasks at the end of each session throughout the course of therapy. As in outpatient therapy, assignments are planned to follow logically from the problem list and the material addressed earlier in the session. In a well-functioning milieu, assignments are coordinated with the patient's primary nurse or milieu therapist to facilitate their completion. Nursing staff, in turn, provide feedback to the CBT therapist about the patient's progress. A psychoeducational session with the patient's spouse or significant other is typically conducted during the first week of treatment so that an alliance with the spouse can be developed and pertinent questions about the treatment can be answered.

The second and third phases of treatment are individually tailored to address each patient's problem list. Patients learn to recognize cognitive phenomena such as negative automatic thoughts and distortions of information processing, and they begin self-monitoring assignments intended to elucidate the interrelationship of affect, behavior, and cognition. Patients also learn to examine the objective evidence supporting or refuting their emotionally charged automatic negative thoughts and to formulate more rational responses to rebut their distorted thinking. Shaw[3] notes that this process of developing more rational thinking patterns can be applied to emotionally charged events that occur on the inpatient unit. Patients can then be assisted in generalizing this experience to their environment after their discharge from the hospital.

The fourth and last stage of inpatient treatment involves preparation for discharge. Therapeutic activities include discussion of the transition to outpatient treatment, role-playing of interactions and cognitive rehearsal, and anticipatory problem solving in areas that are likely to be troublesome after discharge. Thase and Wright[5] recommend a

minimum of 6 months of outpatient CBT after discharge, with therapy continuing until patients achieve at least 2 consecutive months of complete remission of symptoms.

Training is emphasized to ensure that all staff members are knowledgeable about the CBT model and can assist in furthering the goals of the patient and the patient's primary CBT therapist. Ancillary staff are trained to assist patients with homework assignments and to reinforce therapeutic progress. Each member of the multidisciplinary team has an important role to play in the patient's treatment. For example, recreational therapists can help to challenge patients' automatic thoughts about their ability to experience pleasure, to plan activities, or to accomplish certain tasks.

In addition to the treatment itself, a number of administrative issues are important. CBT therapists must maintain a close liaison with the inpatient treatment team to minimize miscommunication, splitting, and therapeutic competition. Thase and Wright[5] also recommend that inpatient CBT therapists continue to receive regular supervision with a senior therapist. Continuity of care to an outpatient setting is extremely important as well. Ideally, the same therapist who conducts inpatient CBT will also be responsible for following patients on an outpatient basis after discharge.[8]

Empirical Research

A number of studies of varying degrees of methodologic sophistication address the use of cognitive-behavioral therapy with depressed inpatients. In reviewing them we consider both open and controlled treatment trials of CBT. We focus first on the use of inpatient CBT in combination with pharmacotherapy, then on studies that examine the efficacy of CBT as a primary treatment for depression. Issues such as patient selection, validity of measurement, statistical power, and potential sources of bias are addressed for each study.

CBT in Combination with Antidepressant Medication

Four goals can be conceptualized for adding CBT to a conventional inpatient treatment regimen consisting of milieu therapy and antidepressant medication. The primary goal is *enhanced treatment efficacy*, both in terms of the degree of remission that can be achieved and the speed with which it occurs. A second, equally important goal is *prophylaxis against relapse* once remission from depression has been achieved.[9] A third, narrower goal is *enhancement of compliance* with medication and with treatment in general, both during and after hospitalization. The application of CBT to depressed inpatients may also lead to effects that are specific to CBT; namely, patients' cognitive patterns may be modified. A fourth goal, therefore, concerns the *enhancement of mode-specific effects* of CBT, such as reduction of cognitive distortions and dysfunctional attitudes. Data from the following open and controlled studies will be reviewed with respect to their success in achieving these goals.

Table 1 summarizes empirical research findings from selected studies of combined inpatient CBT and antidepressant medication.

Open Trials: Wright[10] conducted an open treatment trial of inpatient CBT in which 38 depressed inpatients were treated with a combined regimen of CBT and nortriptyline (NTP). Individual CBT sessions were conducted 3 times a week during a hospitalization averaging 4 weeks. Patients were randomly assigned to one of three dosages of NTP: 50 mg, 100 mg, or 150 mg per day. Mean Hamilton Rating Scale for Depression[11] (Ham-D) scores for the entire group dropped from 29.5 to 15.9 after 2 weeks, and to 10.4 after 4 weeks. Roughly one-half of the patients met a widely used criterion for response, namely a reduction of $\geq 50\%$ in Ham-D scores and a final Ham-D score of < 10. Wright found that patients responded

equally well regardless of their NTP dosage and their NTP blood levels. This could suggest that the antidepressant effects of CBT obscured a dose-response relationship for NTP. In other words, the addition of inpatient CBT may have compensated for subtherapeutic NTP plasma levels. However, with only 12 or 13 patients in each treatment cell, it is more likely that the study did not have the statistical power to differentiate small to moderate effect sizes. More definitive conclusions regarding the efficacy of CBT relative to those of NTP or the hospital milieu cannot be drawn without conducting a controlled trial that would include treatment cells in which patients receive CBT and placebo medication or NTP without concomitant CBT.

The conclusions that may be drawn from Wright's[10] study are limited by several factors. First, the results of this clinical trial have not been published in a peer-reviewed journal, which limits the confidence one might place in the findings. Personal communication with the author indicated that all of the patients were suffering from DSM-III[12] major depression (nonpsychotic) of moderate to severe intensity and that therapy was provided by experienced doctoral-level clinicians, but such vital information about the trial is not widely available to the field. Second, there is no information about the extent of the Axis I or Axis II comorbidity within the sample. Third, there are no data regarding the effects of treatment on self-report measures of depression, such as the Beck Depression Inventory[13] (BDI), nor have the effects

TABLE 1. Empirical research: inpatient cognitive-behavioral therapy (CBT) in combination with antidepressant medication

	Patient Population	Design	Treatment	Results
Wright 1987[10]	38 adults with acute depression	Open	CBT with medication	Ham-D ↓ (29.5–10.4)[a]
Scott 1992[15]	16 adults with chronic depression	Open	CBT with medication (inpatient and outpatient)	BDI ↓ (38.7–14.7)[b] Ham-D ↓ (24.5–10.6)[b]
Miller et al. 1985[16]	6 adult females with chronic depression	Random assignment with comparison group	CBT or social skills training with medication	BDI ↓ (25.2–6.3)[a] Ham-D ↓ (23.8–8.7)[a]
Miller et al. 1989[19]	47 adults, depressed	Random assignment with control group	1. CBT with medication	BDI ↓ (25.7–12.5)[c] Ham-D ↓ (23.9–5.3)[d]
			2. Social skills with medication	BDI ↓ (30.6–6.5)[c] Ham-D ↓ (23.3–8.2)[d]
			3. Medication alone	BDI ↓ (29.2–19.2)[c] Ham-D ↑ (22.6–23.8)[d]
Bowers 1990[29]	30 adults, depressed	Random assignment with control group	1. CBT with medication	BDI ↓ (24.2–13.5)[e] Ham-D ↓ (20.7–9.2)[f]
			2. Relaxation training with medication	BDI ↓ (25.8–14.4)[e] Ham-D ↓ (16.5–9.9)[f]
			3. Medication alone	BDI ↓ (31.2–27.1)[e] Ham-D ↓ (22.1–11.5)[f]

Note: Ham-D = Hamilton Rating Scale for Depression; BDI = Beck Depression Inventory; ↑ = increased; ↓ = decreased.
[a]No significance level reported.
[b]$P < 0.001$ for BDI and Ham-D.
[c]None of the groups significantly better on BDI.
[d]Social skills group significantly better than CBT and medication groups ($P < 0.05$) on Ham-D.
[e]CBT and social skills groups significantly better than medication group (P-value not given) on BDI.
[f]None of the groups significantly better on Ham-D.

of treatment on measures of cognitive dysfunction been reported. Finally, the subsequent outpatient course of Wright's patients apparently was not assessed. As a result, it is not clear how robust or generalizable Wright's findings are. In light of these limitations, this study is best viewed as establishing the feasibility of conducting controlled studies of inpatient CBT.

In 1987, Barker et al.[14] described a series of 20 chronically depressed inpatients who were randomly assigned to treatment with an intensive psychopharmacologic regimen (a monoamine oxidase inhibitor, lithium salts, and L-tryptophan). Average duration of illness was 4.6 years, during which the patients had been refractory to multiple antidepressant treatments, including ECT in many cases.

One-half of these patients received up to 15 individual sessions of CBT over a 12-week period, conducted by nurse practitioners and/or a senior clinical psychiatrist. Barker et al.[14] did not provide any information regarding the clinical characteristics of the two groups. The overall sample showed a modest response to treatment, with statistically significant improvement in both Ham-D and BDI scores over the 3 months of inpatient treatment. There were no significant differences between the two groups. Posttreatment scores indicated, however, that most patients remained quite symptomatic. Moreover, although the conclusions were limited by the small number of patients enrolled, there was no evidence that CBT enhanced the speed or degree of remission achieved or that it affected posttreatment course. Potential mode-specific outcomes, such as differential improvements in cognitive symptomatology, were not assessed.

In response to this study, Scott[4] developed a more intensive treatment protocol that used group and thrice-weekly individual CBT sessions. In a subsequent study[15] using this protocol, 16 chronically depressed inpatients were treated with an average of 16 sessions of CBT over a considerably shorter hospitalization. Continued outpatient CBT was provided for at least 6 months by the same therapist who provided the inpatient CBT. At the conclusion of 12 weeks of treatment (covering both inpatient and outpatient treatment), 11 of the 16 patients were considered significantly improved. Moreover, 3 of the 5 inpatient nonresponders improved by the completion of the 6-month outpatient treatment phase.

The conclusions that can be drawn from these two studies[14,15] are limited by several factors. Most importantly, in Scott's 1992 study,[15] improvement in depressive symptoms was documented after patients had received, on average, about 7 weeks of outpatient therapy, making it impossible to ascertain whether CBT was effective in only one or in both of these settings. Further, the results of both studies indicate that most patients did not fully remit from depression following treatment. The markedly chronic nature of these cases limits generalizability to more typical inpatient samples, as does the length of inpatient treatment (12 weeks in the study of Barker et al.[14] and an average of 5 weeks in Scott's[15] report).

Controlled Trials: Miller and his colleagues have published a series of reports regarding the treatment of depressed inpatients with adjunctive CBT. In a 1985 pilot study,[16] 6 chronically depressed female inpatients were treated in an open trial with a combination of pharmacotherapy and either CBT ($n = 3$) or social skills training[17] ($n = 3$). All met diagnostic criteria for major depressive disorder and had initial BDI scores of > 18 and Ham-D scores of > 16. In addition, all of the patients had failed to respond to past trials of antidepressant medication and psychotherapy. Each had suffered from multiple prior episodes of depression, and 4 had comorbid DSM-III dysthymic disorders. Inpatient therapy sessions were held 5 days a week, followed by 16 weeks of outpatient therapy. An average of 28 sessions were conducted over 22 weeks. Pharmacotherapy administration was stan-

dardized by using an adaptation of the protocol developed for the NIMH collaborative treatment of depression study.[18] All of the patients completed treatment, and 4 of the 6 patients met criteria for remission (BDI < 10 and Ham-D < 8) at termination.

On the basis of this pilot study, Miller et al.[19] subsequently conducted a randomized, controlled treatment trial involving a total of 47 depressed inpatients. All patients met criteria for DSM-III-R[20] major depression, and all had BDI and Ham-D scores > 17 at intake. Nearly one-half of the patients (44%) met DSM-III-R criteria for comorbid dysthymic disorder, and 75% of the patients had failed to respond to at least one trial of antidepressant medication prior to entering inpatient treatment.

Patients were randomly assigned to one of three conditions: standard inpatient treatment (hospital milieu and antidepressant medication), CBT plus standard inpatient treatment, or social skills training plus standard inpatient treatment. The "standard inpatient treatment" was designed to operationalize the treatment typically provided on psychiatric inpatient units. All patients were seen daily, with CBT and social skills training beginning during the second week of the hospitalization. After discharge, patients in the psychotherapy conditions were seen for 20 weekly outpatient sessions. During the hospitalization, all patients received either amitriptyline or desipramine at doses of 150 mg or greater. Antidepressant medication was continued during the 20-week outpatient treatment phase of the study. At the conclusion of outpatient treatment, 36 of 45 patients (80%) were receiving maintenance antidepressant medication at dosages comparable to those used during hospitalization.

At the conclusion of the inpatient treatment phase, all three treatment groups had improved significantly. No significant differences between groups were noted on the BDI. The social skills group, however, was significantly less depressed than the other two groups on the Ham-D. When remission rates (defined as BDI < 10 and Ham-D < 7) were compared, 50% of the patients in both the social skills training group and the standard treatment group had remitted, whereas the CBT group had a 33% remission rate. These rates did not differ significantly.

The inpatient study of Miller et al.[19] is distinguished by a number of methodologic strengths. For example, specific and valid measures of diagnosis and symptomatology were used, as were definitions of outcome that were specified *a priori*. Treatment was provided by skilled therapists, and the "standard treatment" condition provided a very appropriate control group for both the inpatient and outpatient phases of the treatment trial. The results indicate, however, that CBT is not more effective than social skills training as an adjunct to conventional inpatient pharmacotherapy. In fact, the patients receiving CBT generally did not improve as much as those who received social skills training. Further, the patients in this study who received CBT in addition to standard treatment fared no better than those who received no added therapy. Results from the inpatient phase of this trial therefore do not support the routine addition of individual CBT to a well-specified inpatient treatment plan.

Miller et al.[19] also reported on the effects of treatment after outpatient continuation therapy. At the end of the 20-week outpatient treatment phase, there were no differences between treatments in Ham-D scores. The social skills group had significantly lower BDI scores than the standard treatment group, and the CBT group evidenced a similar trend. The social skills group and the CBT group did not differ significantly on BDI scores. When rates of remission (defined as an Ham-D score < 7) were compared, there was a trend toward a higher rate in the CBT group (80%) than the standard treatment group (41%). The remission rate of the social skills group (50%) was intermediate to the other groups.

Patients were reassessed at 6 and 12 months after the completion of outpatient continuation therapy phase by use of a natu-

ralistic follow-up design.[21] For the purposes of this report, the authors pooled the social skills and CBT groups into a single group consisting of patients receiving specialized forms of psychotherapy. Relapse was defined as any Ham-D score > 17, any BDI score > 16, any Modified Scale for Suicidal Ideation[22] score > 7, or rehospitalization due to psychiatric symptoms. There were no significant differences between the pooled psychotherapy treatment groups and the standard treatment group scores on either the Ham-D or the BDI at either 6 or 12 months posttreatment, nor were there differences in the rate of rehospitalization. There was, however, a trend for patients who received either CBT or social skills training to have lower relapse rates than those receiving no adjunctive psychotherapy. Further, the pooled psychotherapy groups evidenced a significantly higher rate of recovery (68%) than the standard treatment group (33%). Recovery was defined by Miller et al. as a Ham-D < 7 and a BDI score < 9 during the active treatment phase.

The importance of the results of this follow-up evaluation is tempered by several factors. Primary among these is the decision to pool the CBT and social skills training groups on the basis that the groups had roughly equal effects at the end of the continuation therapy phase. Although pooling these groups strengthens the power for comparisons against the standard treatment, any long-term effects that may have differentiated between the two adjunctive interventions were obscured by their pooling. In addition, approximately 75% of the patients in the study received additional outpatient treatment during the follow-up period. Although equal percentages of patients in both groups sought additional therapy, the type of therapy received during the naturalistic follow-up was not specified, nor was information regarding the use of medication provided. Because continued use of antidepressant medication has been shown to significantly reduce the risk of relapse and recurrence of depression,[9] information regarding its use is essential to understanding the full impact of psychotherapeutic treatment on subsequent clinical course. A longitudinal design making use of more frequent evaluation points and the more powerful statistical techniques of survival analysis also would have facilitated assessment of the benefits of combined treatment vis-à-vis time to recovery and the relative risk of relapse or recurrence. Moreover, the statistical strategies available for use with survival analysis would have permitted at least a crude assessment of the effects of ongoing maintenance pharmacotherapy.

In contrast to the finding that CBT lacked specific efficacy in the treatment of a general population of inpatients, Miller et al.[23] did find that a subgroup of depressed inpatients were preferentially responsive to the combination of CBT and antidepressant medication. Specifically, patients considered to have "high cognitive dysfunction" (HCD), defined as an elevated score on the Dysfunctional Attitudes Scale,[24] and who were treated with both CBT and medication, had significantly lower BDI and Ham-D scores at the end of the outpatient phase of the protocol than the HCD patients who received standard treatment. HCD patients receiving combined treatment also had a significantly higher rate of remission (57%) than HCD patients receiving pharmacotherapy alone (18%). Patients with lower levels of dysfunctional attitudes did not differ in rates of response to standard treatment (50%) or combined treatment (50%), nor did they differ in posttreatment BDI or Ham-D scores irrespective of the treatment they received. The combination of CBT and pharmacotherapy was also found to result in significantly greater reductions in levels of hopelessness and mode-specific measures of cognitive symptomatology.[25] Although these findings are based on a post hoc stratification of the sample into "high" and "low" cognitive dysfunction groups, the magnitude of the difference in outcome is clinically compelling. The validity of this stratification is supported by a series of analyses in which HCD patients were shown to have multiple indicators of more

severe and persistent affective illness (such as earlier age of onset, more previous depressive episodes, and higher posttreatment levels of symptomatology).[26-28]

In summary, the findings of Miller and associates suggest that both CBT and social skills training may have an impact on the course of depression after hospitalization. Miller et al.[19] posit that beginning CBT during inpatient treatment facilitates continuity of care, a point also emphasized by Shaw,[3] Scott,[4] and Thase and Wright.[5] Although this point may be valid, there are few data from their study that support the contention that cognitive or behavioral therapies must be started during inpatient treatment to enhance subsequent recovery. For example, it may be that a 4- to 6-month course of outpatient therapy after hospitalization would have yielded comparable benefits at a significantly reduced expense. A 2 × 2 factorial design, contrasting CBT exposure (yes or no) and treatment phase (inpatient or outpatient), should be used to resolve this issue.

A second controlled study of adjunctive inpatient CBT was published by Bowers,[29] who reported on a series of 30 inpatients with major depression diagnosed according to DSM-III-R criteria. Patients were treated in an eclectic inpatient milieu and were randomly assigned to one of three treatment conditions: nortriptyline alone, CBT plus NTP, or relaxation training (RT) plus NTP. Patients received 12 sessions of CBT or RT over 3 weeks. At posttreatment, all three groups were significantly less depressed. However, when BDI scores were compared, both of the combined treatment groups were significantly less depressed than the group receiving NTP alone. Moreover, both of the combined treatment groups had significantly greater proportions of remitted patients (defined as BDI < 9) than did the group receiving NTP alone. The CBT + NTP group also had a significantly higher number of patients with Ham-D scores < 7 than did either of the other two groups.

In Bowers's study, only patients with well-defined major depression were included; clear *a priori* criteria for response were established; and appropriate comparison groups were used. However, there was no standardized protocol for medication administration, and both RT and CBT were conducted by the same clinician. The latter fact, coupled with the relatively small cell sizes, might account for the lack of statistical differences between CBT and RT on some measures of outcome. Another plausible interpretation of the data is that the added professional contact with patients, rather than the specific effects of CBT, led to the improved outcomes for patients receiving adjunctive psychotherapy. Other limitations of Bowers's study include the absence of assessment of both cognitive dysfunction and course after hospitalization. Nevertheless, despite these shortcomings, Bowers's findings provide the first prospective support for the hypothesis that the addition of CBT enhances the short-term outcome of depressed inpatients receiving pharmacotherapy.

The results of the studies of inpatient CBT in combination with antidepressant medication suggest that there are several areas in which combined treatment is of benefit to patients. There is fair evidence that combined psychotherapeutic and psychopharmacologic treatment enhances the efficacy of antidepressant treatment, although this effect may not be specific to CBT. For instance, adjunctive treatment with either social skills training[16] or relaxation therapy[29] appears to be as beneficial as adjunctive treatment with CBT. It will be important to ascertain whether relaxation training is really as useful as CBT, particularly if provided in a context other than individual sessions with an experienced psychologist. If relaxation therapy is comparably effective when administered by nurses, social workers, or ancillary therapists, it would be significantly more cost-effective than CBT or social skills training.

At this time, the conclusion that adjunctive inpatient CBT is of potential value in

preventing relapse and recurrence of depression rests on a single study.[21] This is an important public health issue, since relapse occurs frequently after severely depressed patients are discharged from inpatient treatment. Similarly, evidence supporting CBT's possible mode-specific advantage in lessening cognitive dysfunction is limited to one study.[23]

An area of research as yet untapped concerns the use of adjunctive CBT to enhance medication compliance and aftercare attendance. Thus far, inpatient protocols combining CBT and pharmacotherapy have not used strategies that specifically address attitudinal and symptomatic issues directly related to pharmacologic treatment, such as automatic negative thoughts or dysfunctional beliefs about taking medication that may subsequently affect medication compliance. Addressing topics such as patients' concerns about weakness, addiction, stigma, or loss of control may provide a fertile ground for CBT interventions, as may therapeutic strategies intended to improve coping with medication side effects.[30]

CBT as a Primary Treatment Modality

In contrast to adjunctive CBT, which can be "added on" to existing treatments for depression, primary inpatient CBT for depression must be examined for effectiveness when used alone. Evidence of such effectiveness would include general symptom relief and the achievement of remission from depression. From a scientific standpoint, clinical evidence of effectiveness from open (nonblinded) trials is necessary before primary inpatient CBT is subjected to the rigors of a controlled clinical trial. In short, CBT should be observed to show promise under relatively favorable conditions before time, energy, and money are devoted to establishing its efficacy under stricter levels of experimental control.

Described below are the "open-label" and controlled studies examining CBT as a primary treatment. Table 2 summarizes the findings from these studies.

Open Trials: The first open trial of inpatient CBT was reported by Shaw[31] in 1980. Eleven unmedicated depressed inpatients were assigned to treatment with CBT at an average of 3 sessions per week. Unfortunately, a full report of this trial has not yet been published; as a result, a number of important characteristics about the sample are not available. For example, diagnostic criteria for entrance into or exclusion from the treatment trial, prevalence of diagnostic comorbidity, and the length of medication-free status have not been reported. Consequently, it is not clear whether the research subjects represent a "good-prognosis" sample (first episode, acute and/or stress-related onset of depression) or a "poor-prognosis" sample (multiple prior episodes of depression, chronicity, and/or failure to respond to prior antidepressant trials). The patient population studied obviously bears greatly on the evaluation of response to treatment. For example, if only chronic or treatment-resistant cases are studied, inpatient CBT may appear less effective than it would in a consecutively assigned series. Conversely, if more complicated or severe cases are systematically excluded, results may present inpatient CBT in an unrealistically favorable light.

Shaw[31] reported that 10 of 11 patients experienced "significant improvements" over an average of 8 weeks of treatment. Mean BDI scores dropped from 29.8 at admission to 15.6 at discharge from the hospital. Outcome on the Ham-D was not reported. Follow-up data at 4 to 6 weeks after discharge indicated that these patients had maintained their level of improvement (mean BDI score of 13.5). However, it is not clear whether CBT was routinely provided after discharge. Although average posttreatment BDI scores indicate that most patients continued to have a significant level of residual symptoms after discharge, the level of improvement would be clinically significant for a chronic or treat-

ment-refractory patient group. Conversely, the use of 8 weeks of inpatient treatment to achieve a mean 50% reduction in symptomatology would be a disappointing outcome if a patient group with a relatively good prognosis was studied. Correspondence with the author yielded his impression that the sample was composed largely of chronic, tricyclic-resistant cases (B. Shaw, personal communication, November 10, 1993).

Thase et al.[32] reported on an initial pilot series of 16 medication-free depressed inpatients openly assigned to treatment with CBT. All patients met criteria for DSM-III-R major depression, with index episodes of less than 2 years' duration. Further, all patients met Research Diagnostic Criteria[33] (RDC) for probable or definite endogenous major depression, and all had persistent Ham-D scores of 15 or more after their initial week of hospitalization. Exclusion criteria included active substance abuse, borderline personality disorder, primary DSM-III-R Axis I diagnoses other than major depression, and medical disorders that may cause depression. Only 3 of the first 16 patients were known to be resistant to antidepressant medications.

Patients were treated according to the CBT protocol of Thase and Wright.[5] Treatment included daily individual CBT sessions for up to 4 weeks; the average number of sessions received was 12.8. Patients received no psychotropic medication during the trial. Outpatient CBT was recommended for successfully treated patients after discharge from the hospital.

Thirteen of 16 patients (81%) met criteria for response (defined as a reduction in Ham-D score of more than 50% and a final score of less than 10) at the completion of inpatient treatment. Highly significant improvements in Ham-D, BDI, and Global Assessment Scale[34] scores were noted. Nine responders received outpatient continuation CBT; of these, only 1 (14%) relapsed during the 4 months immediately following discharge. In contrast, 3 of 4 responders (75%) who elected not to receive outpatient treatment relapsed within the same time frame. One of these patients required hospitalization after a suicide attempt.

In a subsequent report describing an enlarged, more heterogeneous sample of 30 unmedicated depressed inpatients,[6] a response rate of 70% was observed. Thus, 8 of the 14 patients (57%) in the second wave of protocol participants were CBT responders, a proportion similar to inpatient response rates observed by Wright,[10] Scott,[14] and Miller et al.[19] Pretreatment Ham-D scores > 25 and

TABLE 2. Empirical research: inpatient cognitive-behavioral therapy (CBT) as primary treatment

	Patient Population	Design	Treatment	Results
Shaw 1980[31]	11 adults, depressed	Open	CBT alone	BDI ↓ (29.8–15.6)[a]
Thase 1991[32]	16 adults, depressed	Open	CBT alone	BDI ↓ (32.4–6.9)[b] Ham-D ↓ (21.7–7.7)[b]
DeJong 1986[35]	30 adults with chronic depression	Random assignment with control group	1. CBT alone	BDI ↓ (29.1–12.1)[c] Ham-D ↓ (26.6–10.8)[d]
			2. Cognitive restructure alone	BDI ↓ (27.9–22.4)[c] Ham-D ↓ (23.5–10.2)[d]
			3. Outpatient treatment alone	BDI ↓ (31.1–23.0)[c] Ham-D ↓ (25.5–17.5)[d]

Note: Ham-D = Hamilton Rating Scale for Depression; BDI = Beck Depression Inventory; ↑ = increased; ↓ = decreased.

[a]No significance level reported.

[b]$P < 0.0001$ for BDI and Ham-D.

[c]CBT group significantly better than cognitive restructuring and outpatient groups ($P < 0.5$) on BDI.

[d]None of the groups significantly better on Ham-D.

elevated 24-hour urinary free cortisol levels were associated with significantly poorer outcomes. The 7 patients with comorbid Axis I diagnoses also had significantly poorer responses.[6]

The findings of Thase et al.[32] cannot definitively answer the question of whether or not CBT is efficacious as a primary treatment for depressed inpatients, since no randomized comparison groups were used. However, the reported 70% response to CBT alone suggests that controlled studies are warranted.

Controlled Trials: DeJong et al.[35] have published the only controlled study in which inpatient CBT was used as the principal treatment for unmedicated depressed patients. In this study, 30 chronically depressed inpatients meeting DSM-III criteria for both major depression and dysthymic disorder were enrolled. All patients had a history of nonresponsiveness to antidepressant medication, psychotherapy, or both. Patients diagnosed with melancholia were excluded, as were patients with a family history of affective disorder, clear-cut prior episodes of unipolar depression, or prior favorable responses to tricyclic antidepressants or electroconvulsive therapy. The sample was thus markedly skewed in the direction of chronicity and nonendogenous or "neurotic" symptomatology.

Patients were randomly assigned to one of three treatment conditions, all of which excluded concomitant psychotropic medication. The first group received an inpatient treatment program consisting of individual sessions of activity scheduling and cognitive restructuring exercises, as well as social skills training in a group therapy format—in essence, CBT treatment that approached the breadth and intensity of the programs described by Scott[4] and Thase and Wright.[5] The second inpatient treatment group received only individual cognitive restructuring sessions. Patients in the third group served as waiting-list control subjects and were treated only with outpatient supportive psychotherapy every 10 days. All groups were treated for a maximum of 6 weeks.

Six of 10 inpatients receiving CBT, 3 of 10 inpatients in the cognitive restructuring therapy, and 1 of 10 patients in the waiting list control group were classified as responders to treatment. The response rate in the CBT group was statistically superior when compared with the other two groups. Response was defined as a BDI score of < 15 or a 50% reduction in symptoms. The improvement in the BDI scores of patients treated with CBT also was significantly greater than in the other two groups. When Ham-D scores were compared, however, there were no significant differences between the two inpatient groups, and there was only a trend for the two inpatient groups to outperform the waiting list group.

DeJong et al.[35] conclude that inpatient CBT is an effective treatment for chronic, nonmelancholic depression. This conclusion may be overly optimistic for several reasons. First, Ham-D scores did not differentiate between treatments, suggesting that the CBT package was not differentially effective on the more somatic symptoms of depression. Moreover, the criteria for "response" used in this study were not at all stringent; patients had only to have a BDI score of < 15 or a 50% reduction in their pretreatment score. It is unclear how many of the patients actually experienced remission from depression according to more conventional criteria (Ham-D < 7). Second, it is extremely important that the control group used in this study consisted of *outpatients* on a waiting list. As a result, the nonspecific factors associated with the hospital milieu were present only in comparisons of CBT and the low-contact cognitive restructuring condition. That inpatients receiving the full CBT package did not fare substantially better than the inpatients receiving only cognitive restructuring when Ham-D scores were compared suggests that other nonspecific factors associated with hospitalization may account for a large portion of the improvement noted.

CONCLUSIONS AND DIRECTIONS FOR FUTURE RESEARCH

CBT is presently the best-studied form of inpatient psychological treatment. With a few exceptions, CBT is in fact the only form of contemporary psychotherapy for depressed inpatients that has been subjected to empirical evaluation. From this vantage point, what has been accomplished in a little more than 10 years of research is noteworthy.

The available evidence suggests that there are benefits to be derived from the use of CBT with depressed inpatients. Thase et al.[32] have provided evidence that inpatient CBT in lieu of antidepressants may be beneficial for selected patients. Bowers[29] has shown that inpatient CBT has a modest additive effect when used with antidepressant medication. Miller et al.,[21] although failing to establish acute additive efficacy, found that CBT yielded significant improvement in patients' clinical course following hospitalization. In addition, Miller and associates' findings suggest that a subgroup of patients characterized by high levels of cognitive dysfunction may respond preferentially to CBT in combination with antidepressant medication.[23] The apparent effectiveness of inpatient CBT suggested by these treatment trials provides a useful foundation for future research using randomized assignment and controlled comparison groups.

Although controlled trials of inpatient CBT as a primary treatment modality are warranted, it is likely that CBT's use in combination with antidepressant medication has greater public health significance, in view of the current medical economic pressure on treatment teams to initiate antidepressants early in the hospital course. In an era offering a progressively larger array of less toxic antidepressants, the need for an alternative nonsomatic therapy for medication-intolerant patients is decreasing. However, the posthospitalization course of depressed patients treated with pharmacotherapy leaves much room for improvement, and this is an area in which CBT has been shown to be of benefit. We suggest that trials of CBT alone (that is, in unmedicated inpatients) be restricted to relatively uncomplicated, first-episode cases. Intensive CBT would also be appropriate for the small minority of patients who cannot tolerate or who refuse to take antidepressants.

Future controlled trials of inpatient CBT should use rigorous methodology, including established and valid diagnostic methods, well-defined measures of symptomatic and categorical outcome, and clearly defined groups of patients with homogeneous diagnoses. Controlled studies of CBT's efficacy in combination with antidepressant medication should be designed analogously to the stepwise phasing of pharmacotherapy trials. From this perspective, Phase I studies suggesting efficacy have been completed, and it is now time for a series of Phase II trials to be implemented in which the independent variable is the presence or absence of CBT. These Phase II studies need not control for the amount of therapy contact received by the "treatment as usual" control group because the question to be answered is simply, "Does the addition of CBT make a difference?" Independent replication should be accomplished before moving to more sophisticated designs. Subsequent Phase III trials can be conducted that control for therapy contact and expectancy. In this type of trial, the alternative therapy could be either a competing treatment or a "generic" therapy that simply allows for equivalent levels of expectations and therapist contact. If the alternative therapy is to be a competing one, it is important that it be conceptually different from CBT so that comparisons between the two therapies, particularly with respect to specific effects, are feasible. Either time-limited psychodynamic therapy or interpersonal therapy[36] would seem well suited for condensation as credible, alternative inpatient treatments.

At either the Phase II or Phase III level, the relative efficacy of CBT in different treat-

ment settings (inpatient versus postdischarge treatment) should be established. A classic factorial design could be used in which assignment to inpatient CBT, outpatient CBT, or both are the independent variables. This design, although labor-intensive, allows for preplanned comparisons of the full CBT package (consisting of inpatient and outpatient CBT) with the control condition (neither inpatient nor outpatient CBT), as well as comparisons regarding the additive value of CBT delivered in only the inpatient or outpatient setting.

Future comparative studies must be large enough to afford adequate statistical power to detect realistic differences between treatments. Although studies with sample sizes of 10 to 15 patients per treatment cell typically have sufficient power to detect within-subject change, they are inadequate to detect differences between active treatments. Each of the studies conducted to date has had the power to detect differences between an active treatment and an inactive one, whether it be a placebo or a waiting-list control, but cell sizes have not permitted reliable differentiation of two or more active treatments, leaving interpretations subject to potential Type II errors. Assuming that a standard inpatient milieu program using antidepressant medication could be expected to result in a 50% remission rate and final Ham-D and BDI scores on the order of 10 ± 7 points, cell sizes of 40 or even 50 patients would be necessary to distinguish a moderate additive effect size (that is, a 75% remission rate and/or final Ham-D and BDI scores of 6.5 ± 7.0). Substantially larger sample sizes would be needed to reliably detect more modest advantages (for example, with a 65% remission rate for combined treatment, cell sizes of > 100 patients would be needed).

Several other important issues remain to be addressed in future research. Among these is the dosage of CBT, both in terms of the frequency of sessions and the duration of therapy. The importance of determining the optimum frequency of sessions for inpatients is highlighted by the labor intensity of providing CBT. Given the expense involved in the delivery of inpatient CBT and the limited number of trained CBT therapists, it would be of considerable interest to ascertain whether group CBT is as effective as individual CBT for depressed inpatients. A group format would have many advantages with respect to convenience, cost efficiency, and integration within the overall hospital milieu. Although some outpatient studies suggest that the efficacy of group CBT may approach that of individual therapy, the utility of group CBT with inpatients remains unstudied.

The duration of outpatient CBT needed to significantly reduce the risk of relapse after a course of inpatient CBT is not yet clear. Miller et al.[19] found that the major beneficial impact of CBT in combination with pharmacotherapy was evident only after 4 to 6 months of outpatient treatment. The results of the study by Thase et al.[32] indicate that CBT should be continued for at least 4 months after discharge when CBT is used as the primary treatment. It is not yet clear, however, that CBT can be safely discontinued after 4 to 6 months; the more recent clinical experience of Thase et al.[32] suggests that a sizable proportion of patients will relapse unless provided even longer courses of CBT aftercare.

Future research should also include investigation of the use of CBT with inpatients whose depression is complicated by comorbid diagnoses, including dysthymia, substance abuse, anxiety disorders, and personality disorders. Such depressed patients are notoriously less responsive to conventional pharmacologic interventions, and appropriate modifications of Beck's model of CBT have already been introduced for treatment of outpatients with some of these comorbid disorders. A form of CBT tailored for use with patients with borderline personality disorder, for instance, has shown promise in small outpatient studies.[37,38] Patients suffering from these chronic and complex conditions are in great need of effective and empirically verified psychosocial interven-

tions that can be used alone or added to pharmacologic treatments. The response of treatment-resistant depressed patients to combined CBT-pharmacotherapy regimens should also be an area of inquiry in the future, as suggested by the initial study of Miller et al.[16] and the more recent reports of Scott[14] and Thase and Howland.[39]

At present, a course of inpatient CBT in combination with pharmacotherapy can reasonably be recommended for many patients with major depression, particularly since there are no contraindications to its use. On the basis of the data of Thase et al.[32] and DeJong et al.,[35] inpatient treatment with CBT in lieu of pharmacotherapy appears to be more beneficial for relatively uncomplicated nonpsychotic, nonbipolar patients with mild to moderate symptomatic severity (Ham-D scores < 25). There is good evidence that such inpatient treatment must be followed by continued treatment on an outpatient basis. Data at present suggest that outpatient CBT should be continued for at least 6 months to provide maximum protection against relapse.

Although much work remains to be done, there appears to be sufficient promise to warrant continued investigation into the use of CBT with depressed inpatients. With further research, CBT may well become the first form of inpatient psychotherapy empirically demonstrated to be efficacious.

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