EXECUTIVE SUMMARY

Dialectical Behavior Therapy: Efficacy, Effectiveness, & Feasibility

Prepared by BTECH and BTECH Research

Brief Overview: Developed by Marsha M. Linehan, Ph.D. at the University of Washington, Dialectical Behavior Therapy (DBT) is an efficacious cognitive-behavioral treatment for difficult-to-treat and severely disordered individuals with borderline personality disorder (BPD). DBT was originally developed for chronically suicidal individuals with BPD – among the highest utilizers of inpatient psychiatric services - up to 40% in some studies [1]. DBT is a comprehensive treatment program comprised of five essential functions: improving client motivation to change; enhancing client capabilities; generalization of new behaviors; structuring the environment; and enhancing therapist capability and motivation. The responsibility for fulfilling these functions is spread among various treatment modes. Standard DBT treatment modes include: individual therapy, group skills training, telephone consultation and therapist consultation meetings. More relevant than the treatment mode itself is the extent to which the mode addresses a particular function. For example, ensuring that new capabilities are generalized from the treatment environment to the client's every day life could be accomplished in various ways based on the treatment setting (e.g., outpatient, inpatient, residential milieu, maximal security prison). Whereas generalization typically occurs via telephone coaching in an outpatient setting, in a milieu setting, the entire staff might be taught to model, coach and reinforce the use of skills. The individual therapist is always the primary treatment provider in DBT, and is responsible (with the help of the client) for organizing the treatment so that all functions are met. When administered in an outpatient setting, DBT is a 12-month treatment.

Summary of Randomized Controlled Trials of DBT: To date, there are nine published randomized controlled trials (RCTs) conducted across five research institutions that support DBT's efficacy across a number of behavioral problems, including suicide attempts and self-injurious behaviors [2-7], substance abuse [8; 9], bulimia [10], binge eating [11], and depression in the elderly [12]. These and other studies also demonstrated the cost-effectiveness of DBT compared to treatment-as-usual (TAU) in reducing hospitalization, emergency room visits, medical severity of suicide attempts, and utilization of crisis/respite beds [13-15]. (See Tab 3 for *Summary of Data on DBT*).

In the initial RCT of DBT, results favoring DBT were found in each DBT target area. Compared to treatment-as-usual (TAU), DBT subjects were significantly less likely to engage in acts of parasuicide during the treatment year. Additionally, DBT subjects reported fewer parasuicide episodes at each assessment point, had less medically severe parasuicides, were significantly more likely to complete treatment (83% vsw. 42%) had fewer inpatient psychiatric days per patient, and improved more on scores of global and social adjustment [4]. DBT subjects also showed significantly more improvement in reducing anger than did TAU subjects; all subjects improved over time on depression, hopelessness, and suicide ideation [16]. Treatment superiority of DBT was maintained. Specifically, during the one-year post-treatment follow up, parasuicide repeat rate was significantly lower for DBT subjects compared to TAU (26% vs. 60%) [14].

A subsequent replication of the original trial was recently completed by Linehan et al. (in press)[5]. In contrast to the initial trial, this study compared DBT to a much stronger control condition – treatment by non-behavioral community experts (TBE) nominated by their peers for their expertise in treating suicidal individuals with BPD. The rigorous design included a number of features to control for known factors that typically contribute to improved clinical outcomes (e.g., availability of group clinical consultation, institutional prestige, assistance connecting to the therapist, etc). Results indicated that DBT was superior to TBE in preventing suicide attempts and that suicide attempts can be reduced by 50% when DBT is used (as opposed to non-behavioral, expert treatment). Like the original study, DBT subjects were significantly less likely to drop out of treatment (25% vs. 59%), had significantly fewer psychiatric emergency room visits and psychiatric hospitalizations; suicide attempts were less medically severe compared to TBE subjects.

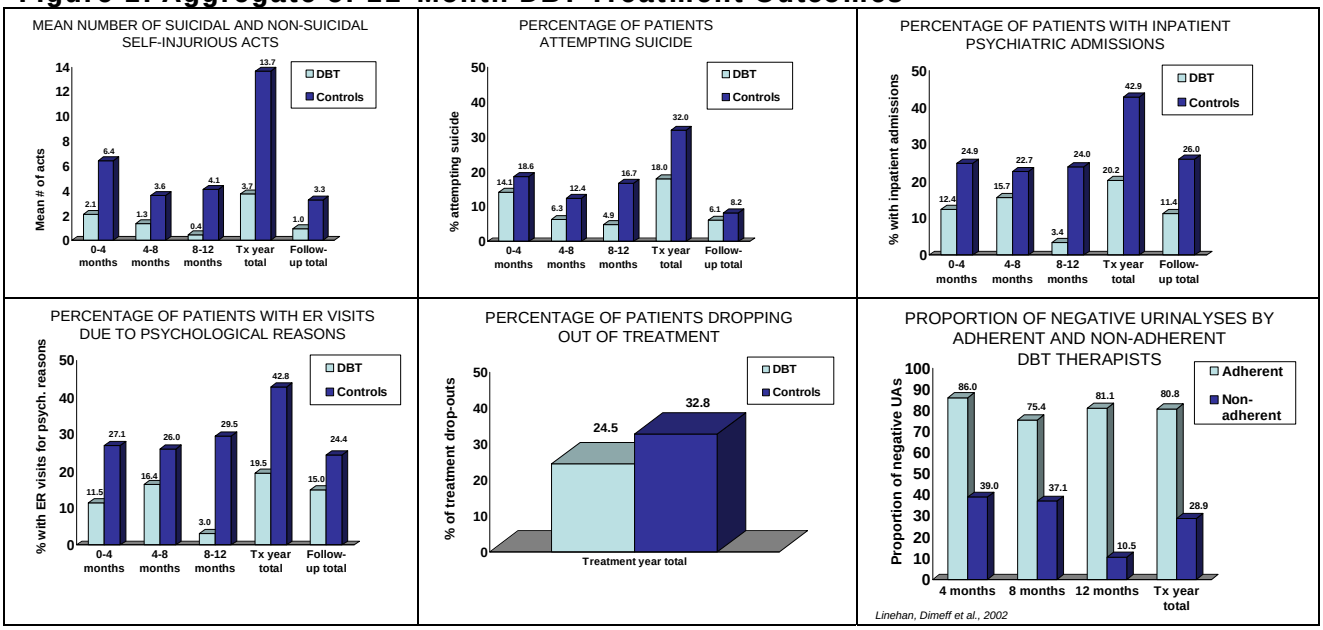
Two additional published RCTs focus on the application of DBT for chronically suicidal BPD clients. Koons et al. [2] found that BPD women in the VA system who were randomly assigned to DBT had greater reductions in depression scores than those assigned to TAU. Furthermore, subjects assigned to DBT (but not to TAU) had significant reductions in number of parasuicide acts and suicidal ideation, hopelessness, anger, hostility, and dissociation. More recently, Van den Bosch, Verheul and colleagues [6; 7; 17] conducted a further replication of Linehan's original 12-month treatment RCT. DBT subjects

showed significantly more reductions in self-mutilation and other impulsive, self-damaging behaviors compared to TAU. DBT subjects were also significantly less likely to drop out of treatment (37% vs. 77%). Positive outcomes favoring DBT were maintained during the six month follow-up post-treatment follow up period for impulsive and self-mutilating behaviors.

An adaptation of DBT for substance abusers with BPD has now been tested in two RCTs. Like the earlier studies by Linehan, both studies included 12 months of treatment followed by an additional 12 months of post-treatment assessment. Subjects in the first trial were randomly assigned to DBT or TAU. DBT subjects had greater reductions in illicit substance use (measured by both structured interview and urinalyses) during treatment and at follow-up, and greater improvements in global functioning and social adjustment at follow-up [8]. In a subsequent RCT involving heroin-dependent BPD patients, Linehan et al. [9] compared DBT to DBT Comprehensive Validation Therapy (CVT) combined with 12-Step. Results of urinalyses indicated that both treatment conditions were effective in reducing opiate use. However, only DBT subjects maintained these reductions during the last four months of treatment. CVT retained all subjects in treatment, compared to a 64% in DBT. Finally, at both post-treatment and at the 16-month follow-up assessment, subjects in both treatment conditions showed statistically significant overall reductions in levels of psychopathology relative to baseline.

Conclusion: DBT is an efficacious behavioral treatment for severely disordered individuals with BPD. Four of the nine RCTs conducted to date on DBT focus specifically on treatment of severely disordered, chronically suicidal and/or self-injurious individuals with BPD; two others target severely disordered, substance-dependent individuals with BPD. Figure 1 aggregates data across all 12-month RCTs on common major outcome variables to illustrate the changes over time among DBT subjects compared to controls.

Figure 1: Aggregate of 12-Month DBT Treatment Outcomes



Summary of Community-Based Studies of DBT: A number of pre/post studies have emerged over the past decade, ranging from informal in-house studies to formal program evaluations, providing further support for the effectiveness of DBT in diverse, real-world settings.

- The Mental Health Center of Greater Manchester, New Hampshire demonstrated significant clinical improvement and cost-savings in 14 subjects during the year DBT was provided compared to service utilization the year prior to commencing DBT [13]. Overall, treatment costs were reduced by $372,000 (an average of $26,571 per client) during the DBT year.
- DBT has been implemented successfully at Echo Glen Children's Center, a juvenile detention facility in Washington State. Youth receiving DBT for one year (n=42) had significantly lower recidivism rates than youth who were assigned to the unit before DBT was implemented (N=116)[18]; savings produced from the clinical improvements resulted in a net benefit of $31,243 per youth[19].

- At Harborview Medical Center, a community mental health center in Washington State, a pre/post evaluation of DBT program for clients with either a history of chronically suicidal behavior and/or multiple treatment failures (n=24) was conducted [20; 21]. Findings parallel those from RCTs following one year of DBT: clients showed a significant decrease in the number and severity of medically treated self-inflicted injuries, psychiatric-related emergency room visits, psychiatric inpatient admissions and days in the hospital, and number of crisis systems engaged[20]. Clients offered a second year of advanced DBT also demonstrated a significant increase in productivity (i.e., paid work, enrollment in school) and beliefs in their own survival and coping skills[22]. In the year following treatment, clients continued to show reductions in median number of medically treated self-inflicted injuries, inpatient psychiatric admissions, emergency room visits, crisis systems used, and cost of inpatient and emergency room visits[21].
- Park Center, Inc. in Fort Wayne, Indiana has also demonstrated the effectiveness of DBT to significantly improve client outcomes, reduce homelessness, and increase productivity, while significantly reducing total treatment costs [23]. By the end of the initial year, 16 were engaged in productive community activities (i.e., 8 were employed, 7 were volunteering, 1 was in school) resulting in $99,532 return to the workforce.

Evidence of Cost-Savings of DBT: The greatest health care costs associated with BPD are due to lengthy & repeated psychiatric hospitalizations [14]. Two studies have been published to date demonstrating the significant cost savings from DBT to public sector systems [13-15]. In the seminal randomized controlled trial of DBT, Linehan et al. found that DBT saved $9,000 per patient during the initial treatment year compared to TAU [14; 15]. (See Figure 2).

Figure 2: Cost Analysis DBT vs. TAU

ONE YEAR HEALTH CARE COSTS PER PATIENT

	DBT	TAU
Individual Psychotherapy	$3,885	$2,915
Group Psychotherapy	$1,514	$147
Day Treatment	$11	$876
Emergency Room Visits	$226	$569
Psychiatric Inpatient Days	$2,614	$12,008
Medical Inpatient Days	$360	$1,094
TOTAL	**$8,610**	**$17,609**

Linehan et al., 1991

Figure 3: Cost comparison Pre/During DBT

Mental Health Center of Greater Manchester, New Hampshire's DBT Program
Recipient of APA Gold Award (1998)

	Pre Tx.	During Tx.	Percent Decrease
Hospitalization Days	**479**	**85**	**77%** ⇩
Partial Hospital. Days	**173**	**42**	**76%** ⇩
Crisis Beds	**170**	**73**	**56%** ⇩
ER Visits	**61**	**12**	**80%** ⇩
Total Treatment Costs	**$645,000**	**$273,000**	

Data from the Mental Health Center of Greater Manchester in New Hampshire also demonstrated significant cost savings and improvements in clinical outcomes [13]. Pre-post data for patients (n=14) completing a year of DBT showed significant decreases in psychiatric service utilization when compared to the prior year: 77% decrease in hospitalization days, 76% decrease in partial hospitalization days, 56% decrease in crisis beds, and 80% decrease in emergency room contacts were reported. Total service costs also fell dramatically – from $645,000 to $273,000 (Figure 3).

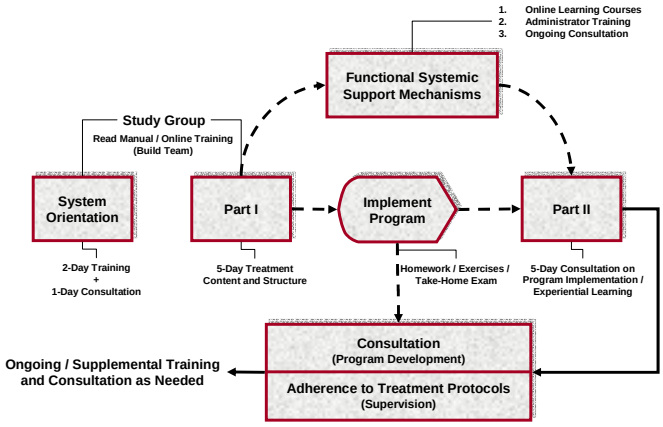
Relationship Fidelity and Outcomes: To date, two studies have evaluated the relationship of DBT fidelity to treatment outcome [24]. The first study [25] evaluated *program fidelity* to DBT in a small (n=19) RCT to evaluate whether patients could benefit from DBT skills [26] when removed from the comprehensive DBT program. Specifically, individuals receiving outpatient non-DBT individual therapy were randomly assigned to receive DBT skills (n=11) or a wait list control (n=8). At post-treatment, no significant differences were detected on any variable. Additionally, the means did not suggest that the failure to detect a difference between conditions was not due to a small sample size. A second study conducted by Linehan [9] examined the relationship of *treatment adherence* to clinical outcomes (drug-free urinalyses) in a sample of substance dependent individuals with BPD assigned to a DBT program. In comparison to clients assigned to non-DBT adherent therapists (n=3), clients of therapists who were adherent to the treatment manual (n=4) had significantly more "clean" urinalyses throughout the treatment year ($F=5.71$; $p>.038$) and at 12-month post treatment assessment ($F=9.6$; $p>.018$).
Conclusions: Both studies provide evidence for the importance of program fidelity *and* treatment adherence to clinical outcomes. Specifically, offering clients DBT skills as an additive non-DBT treatment had no effect. This underscores the importance of fidelity to comprehensive DBT for severely disordered BPD clients. Additionally, adherence by clinicians to the treatment manual is directly

associated with client outcomes: clients with adhering therapists have better outcomes compared to those assigned a clinician who does not adhere to the treatment.

Methods of Dissemination & Implementation at BTECH & BTECH Research: Behavioral Tech, LLC (BTECH) and Behavioral Tech Research, Inc. (BTECH Research) are the companies founded by Marsha M. Linehan, Ph.D. to meet the demand for DBT from the community and to ensure high quality implementation. We offer a variety of integrated services to disseminate and implement DBT in a variety of treatment settings, including state and county public health systems, forensic and correctional facilities, as well as private hospitals and treatment centers. We combine our expertise in dissemination, systems implementation and consultation, training, product development, computer-based training, and federal grant acquisition to help individuals and systems learn and implement DBT and other evidence-based behavioral therapies. We rely on our infrastructure, network and experience to bring science to practice. Achieving true implementation of any EST requires a significant commitment of time and resources from dedicated staff, often spanning the range from high-level administrators within a particular agency or system to program directors and front-line clinicians. It also typically involves creative problem-solving and persuasion about how to simultaneously address the system needs and real-world structure while maintaining treatment fidelity, as the system/clinic realities may be very different from the academic institution where the treatment was developed and evaluated.

Whether the goal is raising the level of staff clinical skills, building a continuum of care for a specific client population, or responding to the demands of a licensing or legal entity, we work to design an effective training and implementation package that is tailored to the needs of the system. Depending on outcome goals, funding and staff to support the initiative, full implementation can take anywhere from one and half to three years, and cost anywhere from $30,000 to $200,000 depending on size and scope. Implementation starts with orientation training and consultation, followed by in-depth Intensive Training, and ends with targeted skill building training and consultation to solidify learning and practice. Consultation with a DBT expert is strongly recommended throughout the process to ensure that clinical adherence and program fidelity to the treatment manual is achieved. Figure 4 illustrates our systems implementation model and highlights the types of training interventions recommended along the way.

Figure 4:
Systems Implementation Model for Dialectical Behavior Therapy



Costs of Implementation: Training and implementation needs depend entirely on the needs of the system. Typically, the process is divided into two distinct phases: implementation and maintaining program implementation over time. Standard costs for each phase are detailed in Table 1 below.

Table 1
PHASE I: BTECH MODEL OF IMPLEMENTATION

• Two-day Orientation Training (participants from across the system) • One Day Consultation (senior administrative and clinical staff)	$19,500
• Intensive Training two five day trainings separated by six months 8 treatment teams with up to 8 members each	$112,500
• Supportive Consultation 1 hour per team per month support for teams going through Intensive Training	$24,000 8 teams receiving one hour of consultation per month for 12 months
• Clinical training/advanced programmatic consultation	$15,000

PHASE II: SUSTAINING PROGRAMS	
• Team Needs Assessment	$15,000
• Targeted Consultation for teams	$250 per hour
• Targeted Clinical Case Consultation adherence ratings for specific clinicians	$250 per hour
• Targeted Supportive Training	Determined based on scope and duration – typically $7500 per day

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