

# Three-Year Outcomes of Long-Term Patients with Co-occurring Bipolar and Substance Use Disorders

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*Little is known about the long-term outcomes of patients in the public mental health system who are disabled by co-occurring bipolar and substance use disorders. This article reports on the 3-year course of 51 patients with co-occurring bipolar and substance use disorders in the New Hampshire Dual Diagnosis Study. Participants received integrated dual disorders treatments in the state mental health system and were independently assessed with standardized measures at baseline and every 6 months for 3 years. Though psychiatric symptoms improved only modestly, participants improved steadily in terms of remission from substance abuse (61% in full remission at 3 years); they also achieved greater independent living (average 239 days in third year), competitive employment (49% in third year), regular social contacts with nonsubstance abusers (46% at 3 years), and quality of life (56% satisfied with life at 3 years). Different domains of outcome were only weakly related to each other. Long-term, disabled patients with co-occurring bipolar and substance use disorders have potential for remission from substance abuse and substantial improvements in functioning and quality of life.*

**Key Words:** Co-occurring disorders, bipolar and substance use disorders

Epidemiologic data, reviewed elsewhere in this issue, show clearly that individuals with bipolar disorder have high rates of lifetime and current substance use disorders (Kessler et al 1997; Regier et al 1990). Research also establishes clearly that patients with co-occurring bipolar and substance use disorders are highly prone to adverse consequences, including poor treatment response, relapse of mood symptoms, rapid cycling, and a variety of psychosocial difficulties, such as legal problems, unemployment, and homelessness (Salloum and Thase 2000; Tohen et al 1998).

At the same time, many aspects of co-occurring bipolar disorder and substance use disorders are poorly understood. Because patients with co-occurring disorders have generally been omitted from clinical trials, we have little information about the course of their treatment and outcomes. Studying 70 newly hospitalized or admitted patients with bipolar disorder and alcohol use disorder, Winokur et al (1995) found that 37% had active alcoholism at intake, 23% had active alcoholism at 2-year follow-up, and 5% had active alcoholism at 5-year follow-up. The authors concluded that these patients might be considered to have secondary alcoholism with a more benign course than patients with primary alcoholism; however, their findings of high remission rates could have been due to the brief interval (8 weeks) used to define remission. Data from the National Comorbidity Study (NCS) indicate that 58 (64%) of 91 adults with bipolar disorder also had substance use disorder and that 44 (76%) of these 58 showed active substance use disorder within the past 12 months, suggesting a low rate of full remission (Kessler 2002).

Many people with bipolar illness respond well to treatment and pursue functional lives, albeit with interruptions due to

relapses of illness (Goodwin and Jamison 1990); however, a proportion experience chronic subsyndromal symptoms (Angst and Sellaro 2000; Judd et al 2002), and a significant minority suffer with long-term disability (Coryell et al 1993; Keck et al 1998; Strakowski et al 1998). For example, data from the National Comorbidity Study show that 40 (44%) of 91 patients with bipolar disorder were unemployed and 18 (20%) of 91 were on Medicaid, welfare, or other public assistance (Kessler 2002). The situation may be more complicated and uncertain for patients with co-occurring bipolar and substance use disorders in the public sector, because by definition they have long-term disability.

Because patients with bipolar disorder and substance use disorder present a complex set of interwoven problems, a consensus has developed in favor of integrated mental health and substance abuse treatments (Westermeyer et al 2003). Nevertheless, few data are available on the outcomes of integrated treatment, either related to individuals with recent onset or to those with severe and persistent illnesses. In the only study of integrated treatment that we could identify, Weiss et al (2000) showed that a 20-week relapse prevention group for patients with bipolar and substance use disorders led to improved substance abuse and abstinence outcomes in a quasi-experimental study.

In considering outcomes, the mental health field is in an uncertain state in terms of defining recovery. The medical field tends to define recovery as full remission of illness, and the substance abuse field defines recovery in terms of long-term abstinence from substances of abuse. Mental health consumers, however, in their writings (Deegan 1988; Ralph 2000) and personal testimonies (Consensus Conference of the Depression and Bipolar Support Alliance 2003), assert that recovery involves not just symptom remission but moving beyond illness, succeeding in adult roles, and improving quality of life. Following the lead of consumers, the President's New Freedom Commission defined recovery as living, learning, working, and participating fully in one's community (New Freedom Commission Report on Mental Illness 2003). Similarly, at the Depression and Bipolar Support Association Consensus Conference on Co-occurring Disorders (2003), consumers argued strongly that avoiding disabling symptoms is only part of the meaning of recovery; pursuing normal adult activities, being fully included in communities as participating citizens, and moving beyond illness to develop satisfying lives

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are even more important. Although measuring recovery outcomes in broader terms that are consistent with consumer definitions is fraught with difficulties, we believe that researchers must address these issues.

This report examines the 3-year course of 51 patients with co-occurring bipolar and substance use disorders in the New Hampshire Dual Diagnosis Study. These patients had prolonged disability and were treated in the New Hampshire public mental health system. We specifically address four questions: 1) What was the course of outcomes for these patients? 2) What was the course of their treatment utilization? 3) How are different dimensions of outcome related to one another? and 4) Can we define recovery as a set of positive outcomes that are consistent with consumer definitions?

## Methods and Materials

### Overview

The New Hampshire Dual Diagnosis Study is a prospective, long-term follow-up study of patients with severe mental illness and co-occurring substance use disorder. The participants entered a 3-year randomized controlled trial of two forms of care management between 1989 and 1992 and have been followed yearly since the trial. All participants received integrated dual disorders treatment (Mueser et al 2003) within their respective mental health centers. The study was approved by the Dartmouth and New Hampshire Institutional Review Boards, and all participants signed written informed consents. This analysis examines the initial 3-year course of treatment and outcomes for patients with co-occurring bipolar and substance use disorders.

### Study Group

The original participants included 223 patients with co-occurring disorders from 7 of New Hampshire's 10 community mental health centers. These patients were representative of other patients with severe mental illness in the New Hampshire public mental health system at the time of study entry (Drake et al 1998). They were outpatients living in the community, not patients in an episode of illness. Of the original cohort, 54 were diagnosed with bipolar disorder, and 51 (94.4%) of the 54 completed 3 years in the study. One participant dropped out after the baseline interview, one died after 18 months in the study, and one was lost to follow-up during the third year.

### Procedures

Participants were recruited to the study through informational meetings with patients, families, and mental health professionals. Interested patients met with a research interviewer to confirm eligibility criteria. After providing written informed consent for all research procedures, participants completed baseline assessment procedures and were randomly assigned within the site to one of two forms of care management, assertive community treatment and standard case management, both of which provided integrated mental health and substance abuse treatments (Teague et al 1998). At study entry (baseline) and every 6 months throughout the 3-year follow-up, researchers assessed each participant by administering 1.5-hour structured interviews, collecting clinician ratings of substance use disorder, and conducting urine toxicology tests.

### Measures

Research psychiatrists established diagnoses of co-occurring severe mental illness and substance use disorder by reviewing clinical records and administering the Structured Clinical Interview for DSM-III-R (Spitzer et al 1988). At baseline, the research interview included items from the Uniform Client Data Inventory (Tessler and Goldman 1982) to assess demographic information; the Time-Line Follow-Back (Sobell et al 1980) to assess days of alcohol and drug use over the previous 6 months; the medical, legal, and substance use sections from the Addiction Severity Index (McLellan et al 1980); detailed chronological assessment of housing history and institutional stays using a self-report calendar supplemented by outpatient records and hospital records (Clark et al 1996); the Quality of Life Interview (QOLI) (Lehman 1988) to assess objective and subjective dimensions of quality of life; and the expanded Brief Psychiatric Rating Scale (BPRS) (Lukoff et al 1986) to assess current psychiatric symptoms. We used our own factor analyses of outpatients with severe mental illnesses to develop symptom subscales (Drake et al 1998), because our data did not fit subscales previously developed for inpatients. In addition, we collected management information systems data to assess service utilization and conducted urine toxicology screens in our laboratory using Enzyme Multiplied Immunoassay Technique (EMIT) (Syva-Behring Laboratories, San Jose, California) to assess drugs of abuse. Follow-up interviews contained the same instruments without reassessing demographic and lifetime information. Reliabilities on all scales were satisfactory, with intraclass correlation coefficients ranging from .94 to 1.00 for interrater reliabilities and from .41 to .94 for test-retest reliabilities.

To supplement the substance abuse assessments, clinicians (case managers) rated participants every 6 months on three rating scales: the Alcohol Use Scale (AUS) (Drake et al 1990), the Drug Use Scale (DUS), and the Substance Abuse Treatment Scale (SATS) (McHugo et al 1995). The AUS and DUS are five-point scales based on DSM-III-R criteria for severity of disorder: 1 = abstinence, 2 = use without impairment, 3 = abuse, 4 = dependence, and 5 = severe dependence. The SATS is an eight-point scale that indicates progressive involvement in treatment and movement toward long-term remission from a substance use disorder according to the Osher and Kofoed (1989) model of treatment and recovery: 1–2 = early and late stages of engagement, 3–4 = stages of persuasion, 5–6 = stages of active treatment, and 7–8 = stages of relapse prevention and recovery. This model prescribes that patients are first engaged in a working alliance (engagement stage) and are then helped to develop motivation to acknowledge that substance use disorder is a problem and to accept reduction or abstinence as a goal (persuasion stage); they next participate in actively reducing their substance use to non-harmful levels or to abstinence for longer periods of time (active treatment stage) and finally continue to maintain their recovery process by maintaining awareness of their vulnerability to relapse and addressing other goals in their lives (relapse prevention stage). Both assertive community treatment and standard case management teams used this stage-wise approach in helping patients move through the recovery process.

To establish consensus ratings, a team of three independent raters, blind to study condition, considered all available data on substance use disorder (from interview rating scales, clinician ratings, and urine drug screens) to establish separate

**Table 1.** Baseline Characteristics for 51 Patients with Bipolar Disorder and Co-Occurring Substance Use Disorder

Variables	Mean/Count	Standard Deviation/Percent
Age (years)	37.5	9.6
Race (White)	50	98.0%
Sex (male)	33	64.7%
Marital status (currently married)	5	9.8%
Education (completed high school or higher)	32	62.8%
Age at First Psychiatric Encounter	23.6	8.8
Age of Onset for Alcohol or Drug Abuse	18.6	6.4
Current Alcohol Use Disorder (present)	39	76.5%
Current Cannabis Use Disorder (present)	11	22.5%
Current Cocaine Use Disorder (present)	9	18.4%
Other Drug Use Disorder (present)	5	10.2%
Employment Past Year (yes)	7	14.0%
Public Insurance or Assistance in Past Month	39	76.5%

ratings on the AUS, DUS, and SATS scales, following procedures validated previously (Drake et al 1995). To determine the interrater reliabilities, researchers independently rated a randomly selected subgroup of 32% of the patients (433 observations on 65 patients). Intraclass correlation coefficients were high for all three scales: .94 on the AUS, .94 on the DUS, and .93 on the SATS.

### Recovery

Since there is no consensus definition of recovery and no reliable and valid measure of recovery, we examined different domains of outcome and selected several variables that correspond to consumers' definitions of recovery: symptom control, active participation in managing one's illnesses, independent living, competitive employment, regular contact with friends who do not use alcohol or drugs, and overall satisfaction with life. For each of these variables, we defined a cut point based on the criterion of clinical meaningfulness or common sense. For psychiatric symptoms, absence of clinically significant symptoms (no BPRS subscale average > 3) indicates that the individual has learned to control psychiatric symptoms using medications and other strategies. For substance abuse, having attained the late active treatment stage or better (SATS > 5) indicates that the individual has attained a clinically meaningful remission and has demonstrated that he or she is actively working on or has attained long-term abstinence. For community integration, independent housing (>80% of days residing in one's own housing) means the individual is not just avoiding institutionalization and homelessness but is living independently and is in charge of his or her own housing decisions. Competitive employment (any competitive job in year 3) means working in a job that is in an integrated work setting, that pays at least minimum wage, and that is owned by the worker rather than by a program or mental health agency. Regular contact (at least weekly) with peers who are not substance abusers served as a measure of recovery-oriented social contact. Finally, because most definitions of recovery involve some notion of quality of life, we included expressing general satisfaction with one's life (>5 on the QOLI global satisfaction rating). As a summary of an individual's recovery outcomes, we simply added together the number of scores above threshold on these six items.

### Data Analysis

Two sets of data analyses were conducted. First, to examine the course of change, we plotted the mean score of each

outcome over the 3-year study period. The time effects were modeled with generalized estimating equation (GEE) methods (Liang and Zeger 1986) using SAS Proc Genmod procedure (SAS Institute Inc. 2000). Analyses for three living situation variables (jail/prison, homelessness, and independent living) and competitive work status were based on yearly data; other variables were modeled based on semiannual data. Second, the relationships among the six major outcomes were assessed with simple bivariate correlations.

## Results

### Baseline Characteristics

Table 1 shows baseline characteristics of the 51 patients with co-occurring bipolar and substance use disorders who completed 3 years in the study and thus form the core group for these analyses. All but one were white, and over half were male patients. Because these patients were in the public mental health system due to severe and persistent mental illness, their ages were in the 30s and 40s; they had been ill for a considerable length of time (average 14 years); they had low rates of marriage and competitive employment; and they had a high rate of public health insurance or financial assistance. They abused the substances that were most prevalent in New Hampshire at the time (alcohol, cannabis, and cocaine).

### Three-Year Outcomes

Table 2 shows that the patients improved in several areas over time. Psychiatric symptoms improved overall and in some specific areas, but reductions were small and probably not clinically significant because symptoms were already low at baseline. Improvements were more clinically significant in terms of substance abuse. The table shows analyses for the full sample, indicating that nearly two thirds were in full remission at 3 years. Separate analyses (not shown) on the 39 participants with an alcohol diagnosis and the 19 participants with a drug diagnosis revealed that improvements over time were highly significant for these two subgroups. Measures of living situation show significant reductions in hospital days and increases in independent living days. The rates of incarceration and homelessness were small. Participants increased their rates of competitive employment and of regular contacts with nonaddicted friends dramatically over time; however, measures of total daily activities, social contacts, and family contacts from the QOLI remained constant over time. Participants reported greater satisfaction with their lives overall and

**Table 2.** Three-Year Outcomes for Patients with Bipolar Disorder and Substance Use Disorder

Variables	Baseline Mean (SD)/ Count (%)	6-Month Mean (SD)/ Count (%)	12-Month Mean (SD)/ Count (%)	18-Month Mean (SD)/ Count (%)	24-Month Mean (SD)/ Count (%)	30-Month Mean (SD)/ Count (%)	36-Month Mean (SD)/ Count (%)	Level of Significance for Time Effect
<b>Symptoms of Bipolar Illness</b>								
BPRS <sup>a</sup> -total score	40.02 (9.29)	39.07 (11.83)	38.40 (4.19)	41.26 (9.96)	37.20 (8.84)	37.27 (7.98)	36.24 (7.71)	<sup>k</sup>
BPRS-affect	2.64 (1.05)	2.37 (1.16)	2.63 (1.06)	2.73 (1.26)	2.55 (1.30)	2.59 (1.10)	2.28 (1.01)	ns
BPRS-anergia	1.63 (.71)	1.56 (.87)	1.39 (.63)	1.60 (.88)	1.43 (.70)	1.36 (.68)	1.41 (.69)	ns
BPRS-thought disorder	1.52 (.77)	1.59 (.83)	1.29 (.58)	1.43 (.62)	1.22 (.48)	1.33 (.52)	1.27 (.58)	<sup>k</sup>
BPRS-activation	1.41 (.62)	1.47 (.68)	1.31 (.49)	1.47 (.73)	1.28 (.50)	1.28 (.52)	1.32 (.71)	ns
BPRS-disorganization	1.13 (.31)	1.14 (.30)	1.05 (.18)	1.11 (.36)	1.01 (.07)	1.03 (.16)	1.05 (.26)	<sup>k</sup>
<b>Substance Abuse</b>								
AUS <sup>b</sup>	3.25 (1.03)	2.67 (1.31)	2.53 (1.35)	2.46 (1.29)	2.50 (1.22)	2.39 (1.23)	2.22 (1.18)	<sup>l</sup>
Days of alcohol use	52.34 (54.05)	41.25 (51.75)	37.70 (52.79)	35.98 (55.01)	35.60 (52.97)	37.25 (58.44)	30.08 (49.28)	<sup>k</sup>
ASI alcohol composite <sup>c</sup>	.25 (.22)	.22 (.24)	.22 (.21)	.22 (.23)	.20 (.24)	.20 (.23)	.16 (.18)	<sup>l</sup>
DUS <sup>d</sup>	2.13 (1.25)	2.11 (1.30)	1.93 (1.24)	1.91 (1.29)	1.84 (1.09)	1.81 (1.20)	1.82 (1.21)	<sup>l</sup>
Any drug use (yes)	20 (43%)	21 (44%)	20 (40%)	17 (34%)	20 (40%)	18 (35%)	16 (31%)	ns
ASI drug composite- dichotomized (yes) <sup>e</sup>	31 (62%)	25 (54%)	24 (48%)	26 (52%)	23 (47%)	21 (42%)	22 (43%)	
Full remission <sup>f</sup> in past 6 months	3 (6%)	20 (42%)	25 (50%)	23 (46%)	26 (52%)	27 (53%)	31 (61%)	<sup>l</sup>
SATS <sup>g</sup>	3.06 (1.42)	4.19 (1.61)	4.62 (1.97)	4.88 (2.07)	5.14 (2.00)	5.23 (2.08)	5.59 (2.13)	<sup>l</sup>
<b>Living Situation</b>								
Hospital stay past 6 months (yes)	34 (67%)	23 (45%)	17 (33%)	9 (18%)	15 (29%)	12 (24%)	6 (12%)	<sup>l</sup>
Jail/prison past year (yes)	6 (12%)		6 (12%)		11 (22%)		9 (18%)	ns
Homeless past year (yes)	17 (33%)		10 (20%)		8 (16%)		3 (6%)	<sup>l</sup>
Days of independent living past year <sup>h</sup>	191.78 (149.32)		200.90 (141.62)		218.08 (147.20)		238.73 (160.32)	
<b>Functional Status</b>								
Competitive job past year (yes)	7 (14%)		14 (27%)		18 (35%)		25 (49%)	<sup>l</sup>
Social contact with nonabusers (yes)	7 (14%)	13 (28%)	14 (28%)	18 (37%)	20 (39%)	27 (54%)	23 (46%)	<sup>l</sup>
QOLI <sup>i</sup> -daily activities (0–1)	.52 (.16)	.53 (.13)	.51 (.17)	.49 (.14)	.51 (.16)	.52 (.13)	.51 (.15)	ns
QOLI-social contact (1–5)	2.81 (.79)	2.82 (.91)	2.60 (.93)	2.71 (.93)	2.81 (.98)	2.78 (.96)	2.71 (1.06)	ns
QOLI-family contact (1–5)	3.71 (.87)	3.53 (1.04)	3.31 (1.12)	3.40 (1.04)	3.53 (.91)	3.50 (.95)	3.56 (.86)	ns
<b>Quality of Life<sup>j</sup></b>								
QOLI-general life satisfaction	3.53 (1.44)	4.15 (1.53)	4.16 (1.48)	4.21 (1.41)	4.22 (1.35)	4.49 (1.38)	4.74 (.95)	<sup>l</sup>
QOLI-satisfaction with housing	4.88 (.94)	4.89 (1.16)	5.12 (.97)	5.06 (1.02)	4.98 (1.23)	5.17 (.99)	5.31 (.76)	<sup>k</sup>
QOLI-satisfaction with social relations	4.03 (1.05)	4.31 (.93)	4.22 (.95)	4.35 (1.01)	4.34 (.98)	4.52 (.98)	4.50 (.87)	<sup>l</sup>
QOLI-satisfaction with family relations	4.18 (1.36)	4.12 (1.49)	4.74 (1.24)	4.44 (1.38)	4.65 (1.34)	4.71 (1.18)	4.83 (1.07)	<sup>l</sup>
QOLI-satisfaction with leisure	3.83 (1.10)	4.15 (1.12)	4.32 (.94)	4.34 (1.09)	4.38 (1.05)	4.40 (.98)	4.46 (.74)	<sup>l</sup>

N = 51.

BPRS, Brief Psychiatric Rating Scale; AUS, Alcohol Use Scale; ASI, Addition Severity Index; DUS, Drug Use Scale; SATS, Substance Abuse Treatment Scale; QOLI, Quality of Life Interview; ns, not significant.

<sup>a</sup>Brief Psychiatric Rating Scale (24–168).<sup>b</sup>Alcohol Use Scale (1–5).<sup>c</sup>Addition Severity Index-Alcohol Composite (0–1).<sup>d</sup>Drug Use Scale (1–5).<sup>e</sup>Addition Severity Index-Drug Composite (0–1).<sup>f</sup>Both AUS and DUS scores less than 3.<sup>g</sup>Substance Abuse Treatment Scale (1–8).<sup>h</sup>Independent Living consists of the following residential settings: House/Trailer, Apartment, Rooming House, Family of Origin, Group Home.<sup>i</sup>Quality of Life Interview.<sup>j</sup>QOLI Satisfaction scales (1–7).<sup>k</sup>p < .05.<sup>l</sup>p < .01.

**Table 3.** Outpatient and Inpatient Service Utilization in Each Year

Variables	Baseline Year Mean (SD)	Year 1 Mean (SD)	Year 2 Mean (SD)	Year 3 Mean (SD)	Level of Significance for Time Effect
Case Management (hours)	13.61 (19.82)	63.96 (43.00)	74.98 (73.19)	64.84 (81.72)	<i>a</i>
Medication Visits (hours)	8.54 (12.07)	16.51 (19.73)	20.97 (26.73)	17.50 (25.71)	<i>a</i>
Partial Hospitalization (hours)	35.29 (69.28)	100.02 (201.18)	118.78 (220.82)	73.86 (168.50)	ns
Hospitalization (days)	36.47 (51.06)	18.24 (29.08)	8.78 (21.12)	7.86 (23.16)	<i>a</i>

*N* = 51.

ns, not significant.

<sup>a</sup>*p* < .01.

in specific areas. There were no significant differences in outcomes based on the random assignment to different forms of care management (not shown in table).

Progress in substance abuse treatment, assessed with the SATS, fluctuated over time. At the beginning of the study, many of the participants were not yet engaged in treatment, and almost all were in premotivational stages of change with respect to their substance abuse. By 6 months, all but 10% were engaged in treatment, and most were moving into active attempts to achieve abstinence. Thereafter, the participants gradually moved through persuasion stages, participated in active treatments aimed at recovery, and attained relapse prevention or recovery stages. As Table 2 shows, the average participant was in active treatment by 3 years, and almost two thirds were in full remission. Attempts to recover from substance abuse were, however, marked by continued fluctuations of remissions and relapses. Over the course of 3 years, 37 (72.5%) of the 51 patients entered full remissions (defined by DSM-III-R as at least 6 months without any signs of abuse or dependence), but over one third of these (12 of 33 = 36.4%) relapsed within 1 year of gaining full remission (4 patients did not have sufficient follow-up time after attaining full remissions to be followed for one year).

### Service Utilization

Table 3 shows the pattern of inpatient and outpatient service utilization over time. Participants decreased their inpatient service utilization steadily, while outpatient utilization showed a curvilinear pattern. That is, participants decreased their use of the hospital as they became engaged in outpatient services and increased their outpatient service utilization dramatically. They remained fairly constant in their use of services for 2 years and began to taper off during the third year. The patterns for individual outpatient services, such as partial hospitalization, case management services, and medication visits, followed the same curvilinear pattern.

### Relationships Between Outcomes

Table 4 shows a correlation matrix based on selected end point variables to illustrate the relationships between different domains of outcomes. Most of the correlations are in the expected directions, but the intercorrelations are small and only a few are significant. The relationships among performance outcomes (work, independent living, and regular contacts with nonsubstance abusers) are small but significant, and symptom total shows a small correlation of similar magnitude with overall life satisfaction. Otherwise, the relationships are nonsignificant.

### Recovery

The relative independence of outcomes in Table 4 indicates that recovery is a multidimensional concept. Recovery in one domain does not necessarily transfer to other domains. The rates of recovery on individual items at 3-year follow-up, based on a priori definitions of consumer goals, were as follows: psychiatric symptom control = 72%; actively managing substance abuse = 53%; independent living = 57%; competitive employment = 49%; regular contact with nonsubstance-abusing friends = 46%; and expresses overall satisfaction with life = 56%.

Figure 1 indicates that at baseline only 9 (17.6%) of the 51 participants with bipolar disorder were successful in three or more areas, whereas at the 3-year evaluations 37 (72.5%) of the 51 participants were successful in three or more areas. Even at year 3, however, few participants had achieved successful recovery in all areas; the typical participant had success in three or four areas.

### Discussion

The 3-year outcomes for disabled participants with co-occurring bipolar disorder and substance use disorders receiving integrated dual disorder treatments were clearly positive for a large proportion. Despite prolonged disability, many of these individuals were able to achieve control of both disorders, to be successful in independent community functioning, and to attain what they perceived as a better quality of life. Because of the lack of a control or comparison group, we are unable to infer that the positive outcomes reported here were due to the availability of integrated substance abuse and mental health treatments. One data set for comparison comes from the Collaborative Program to Prevent Homelessness (Rickards et al 1999). In that project, four separate studies assessed housing and treatment programs for severely mentally ill persons at risk for chronic homelessness, many of whom were dually diagnosed with mood and substance use disorders, and found improvements in housing but little change in substance abuse over 12 months (Sacks et al 2003).

While many participants had positive outcomes, others clearly had persistent difficulties, despite remaining in the treatment system for 3 years. These individuals often fluctuated between remissions and relapses, and many remained in the persuasion stage of treatment. Structured dual diagnosis housing programs are often helpful for such individuals (Brunette et al, in press), but such programs were generally unavailable in New Hampshire during the time of this study.

In the current study, the observed weak relationships between outcomes from multiple domains indicate that the

**Table 4.** Pearson Product Moment Correlations Between Indicators of Recovery for Bipolar Patients at 36 Months

	BPRS <sup>b</sup> Total Score	SATS	Independent Living	Contact with Nonabusers	Competitive Work
SATS <sup>c</sup>	-.15	-			
Days of Independent Living (past 6 months)	.03	-.09	-		
Frequency of Social Contact with Nonabusers	-.11	.11	.29 <sup>a</sup>	-	
Any Competitive Work (past year)	-.13	.08	.32 <sup>a</sup>	.32 <sup>a</sup>	-
QOLI <sup>d</sup> -General Life Satisfaction	-.34 <sup>a</sup>	.15	.13	.23	.03

*N* = 51.

BPRS, Brief Psychiatric Rating Scale; SATS, Substance Abuse Treatment Scale; QOLI, Quality of Life Inventory.

<sup>a</sup>*p* < .05.

<sup>b</sup>Brief Psychiatric Rating Scale.

<sup>c</sup>Substance Abuse Treatment Scale.

<sup>d</sup>Quality of Life Inventory.

domains are relatively independent. The strongest relationships were between different measures of community role performance (independent housing, working, socializing with nonsubstance abusers) and between quality of life and symptoms, but even these relationships were small. Strauss and Carpenter (1974) and Gurel and Lorei (1972) found similar weak relationships among outcome domains for schizophrenia patients many years ago. The current study extends these findings to bipolar patients and to substance abuse and quality of life outcomes. In part, the independence of outcome domains reflects the clinical observation that long-term patients progress slowly and differentially in multiple areas, according to their goals and levels of motivation for change in these different domains (Mueser et al 2003). Thus, if recovery is a valid concept as an outcome, the measurement of recovery needs to be multidimensional.

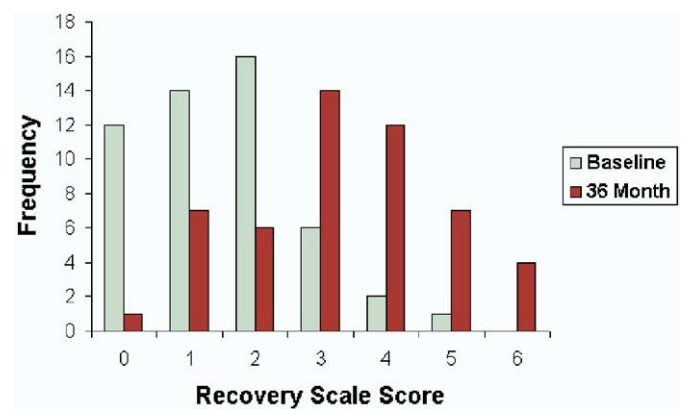
The relationship between treatment and recovery is less clear. Overall, the data show that participants with co-occurring bipolar and substance use disorders rapidly decreased their use of hospitals and used outpatient services at a relatively high level for 2 years before beginning to taper their service use. This would be consistent with the clinical observation that patients making progress in recovery begin to use less services. Quality of services may also be important. In a separate analysis using the larger study group, we found that in centers where the assertive community treatment model was implemented with high fidelity, substance abuse outcomes were dramatically better than in centers with poor implementation (McHugo et al 1999). We also found that the use of the antipsychotic medication, clozapine, was associated with substance abuse remission for schizophrenia patients (Drake et al 2000). As yet, we have no data on medication compliance, specific medications, and other treatment dimensions for the bipolar patients. There was some indication that Alcoholics Anonymous and other peer support groups were helpful (Noordsy et al 1996).

The concept of recovery continues to be difficult to define and measure. We used consumer reports to select outcome variables that correspond to the positive behaviors that consumers identify, such as illness control, independent functioning in the community, and quality of life. Independent living, competitive employment, and having regular contacts with friends who do not abuse drugs all showed dramatic improvements in this study group, consistent with consumer reports of recovery. Including subjective measures of quality of life is somewhat controversial because these measures tend to be

stable over time as people readjust their expectations (Diener 2000), but we found consistent improvements in reported quality of life. Other concepts that are often identified by consumers and could be included in future indices of recovery include the attitudes of hope, self-esteem, and empowerment (Ralph 2000).

Several caveats deserve mention. This study group did not approximate a representative sample of patients with bipolar disorder and did not typify other state treatment systems. As described above, data from the National Comorbidity Study indicate that only a minority of persons with bipolar disorder are severely disabled, but those who receive services in the public mental health system have, by definition, severe illnesses and long-term disabilities. Thus, the severely disabled participants in our study group were drawn from only a minority of those with bipolar disorder. Further, if their positive outcomes were due to integrated treatment, it must be acknowledged that New Hampshire, at least during the mid-1990s, had one of the only state mental health systems that provided integrated dual disorders treatment. Many other states are now in the process of developing similar integrated treatment programs (Drake et al 2001).

Assessing substance use disorder among severely ill patients in the community is difficult (Drake et al 1993). Our study used multiple perspectives and consensus ratings, and we are therefore confident that the substance abuse ratings were as accurate as can be attained in community settings.



**Figure 1.** Frequency distribution of composite recovery scores at baseline and 36 months for bipolar patients with co-occurring substance use disorders (*n* = 51).

We have no data on episodes of mania and depression to sort out the relationships between relapses of mental illness and substance abuse. In fact, our measurement of symptoms using the BPRS was generally viewed as inadequate for several reasons. Participants were interviewed in the community, while the BPRS was developed for hospitalized patients. We interviewed participants when stable to maximize the validity of the interviews, which minimized the attention to episodes of decompensation. Finally, we made no effort to track or measure symptoms during relapses. We also do not have good measures of medications, adherence, and blood levels, and we are therefore unable to comment on many important aspects of treatment.

Nevertheless, the data shown here do provide a rare longitudinal view of long-term, disabled patients with co-occurring bipolar and substance use disorders. Our data show that when these patients receive integrated dual disorders treatments, their outcomes in several important domains, particularly substance abuse and functional performance, improve steadily. The findings regarding competitive employment and regular contacts with nonsubstance abusers are particularly striking and may be partially related to the emphasis on supported employment that began during these years in New Hampshire (Becker and Drake 2003). Also striking is the extent to which improvements extended into all areas of perceived satisfaction with life.

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