Original Research

Improvement in Health-Related Quality of Life Among Adults With Serious Mental Illness Receiving Inpatient Treatment: A Prospective Cohort Study

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ABSTRACT

Objective: This study examined changes in healthrelated quality of life in adult inpatients with serious mental illness engaged in a 6- to 8-week intensive treatment program.

Method: Admission and discharge assessment with the MOS 36-item Short-Form Health Survey was completed (June 2010–June 2012) for 410 adults aged 18–68 years. Paired *t* tests and effect size estimates were calculated for the overall sample, and reliable change index scores and clinical significance were calculated to estimate individual-level response and recovery rates. Hierarchical stepwise regression analyses were conducted to explore patient pretreatment characteristics, including total number of *DSM-IV-TR* diagnoses, that influence treatment response.

Results: Large effect size improvements were demonstrated for the Mental Component Summary score (Cohen d = 1.5), including subjective ratings of vitality (Cohen d = 1.1), social functioning (Cohen d = 1.3), role-emotional functioning (Cohen d = 1.3), and mental health (Cohen d = 1.3). Equivocal findings for change in physical health were demonstrated, with the majority of patients demonstrating no significant change in function ($t_{409} = 0.14$, P = .89) but approximately equal numbers of patients demonstrating improvement and deterioration. The pretreatment characteristic of a tendency to be interpersonally distant, cold, and disengaged was predictive of a poorer outcome on Mental Component Summary treatment response (P < .001).

Conclusions: In light of a heavy burden of illness and high psychiatric comorbidity of this sample, treatment response was generally positive for improvement in mental health functioning. This study adds to a growing body of evidence indicating robust treatment response even for those with serious mental illness when treatment is intensive and multimodal.

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Corresponding author: J. Christopher Fowler, PhD, Menninger Clinic, 12301 Main St, Houston, TX 77030 (cfowler@menninger.edu). Submitted: February 5, 2014; accepted May 21, 2014 (doi:10.4088/JCP.14m09041). **M**ental health care delivery and psychiatric services must be driven by objective and standardized measures of clinical outcomes¹⁻³ and an evidence-based practice approach⁴; however, few inpatient psychiatric settings in the United States systematically assess general psychiatric and physical health outcomes. This is particularly problematic given the fact that hospitalized individuals with serious mental illness (SMI) have high rates of emergency department service utilization⁵; generally have poor mental and physical health outcomes,⁶ long-term work incapacity, and lower earning⁷; and in the long term have elevated rates of all-cause mortality.^{8,9} The present study assessed the effectiveness of an intensive, multimodal psychiatric inpatient treatment of 6 to 8 weeks' duration in modifying psychiatric and physical outcomes utilizing a well-established health-related quality of life (HRQOL) measure.

While SMI* negatively impacts many facets of life functioning, treatment efficacy and effectiveness studies tend to emphasize changes in discrete psychiatric symptoms to the relative exclusion of cross-cutting dimensions of psychopathology. HRQOL is one such cross-cutting dimension that is well suited for assessing treatment response because it captures physical as well as mental health functioning and is an important priority in assessment of treatment outcomes. Attending to both elements in outcome is imperative because comorbid medical conditions, many of them preventable, are common among individuals with SMI, and on average these individuals die 25 years younger than their counterparts in the general population.¹⁰ Further, recent findings suggest that physical health may be prognostic of later psychiatric service utilization. Boyer and colleagues¹¹ found that better self-reported physical health among patients with schizophrenia was associated with reduced risk of relapse requiring hospitalization at 24-month follow-up. Physical health symptoms are infrequently assessed among individuals with SMI, and when they are evaluated, they tend to be from treatment providers' perspective as opposed to patients' perspective.

Psychiatric outcome has predominantly been measured from the perspective of the treatment provider: among the most common and widely used measures is the clinician-rated Global Assessment of Functioning.¹² Based on the observation that patients tend to feel more positively about treatment gains than providers,¹³ policy makers in the United States and abroad^{14–16} have called for efforts to obtain the

^{*}Kessler et al³⁹ define SMI as meeting 1 or more of the following criteria during the past 12 months: 1 or more *DSM-IV*/CIDI mental disorders, suicide attempt with serious lethality of intent, work disability, or substantial limitation as the result of a mental disorder, bipolar I disorder, a behavioral disorder with associated serious violence or criminal behavior, or any disorder that resulted in 30 or more days out of role in the year.

- Patients with serious mental illness experience clinically significant improvement in mental health functioning when treatment is intensive and multimodal.
- Return to healthy functioning was achieved in approximately 38% of patients within 6–8 weeks of intensive inpatient treatment, yet durability of those gains is unknown at the present time.
- Individuals with a cold/distant interpersonal style require greater attention to developing a treatment alliance and greater time in treatment to experience benefit.

patient's unique perspective in assessing efficacy of health care. Patient satisfaction is the most commonly used measure of patient-reported outcomes^{17,18}; however, satisfaction with services may not be associated with improvement in overall functioning or symptomatic relief. Furthermore, there has been limited attention in psychiatric practice to patient-related outcomes as they relate to HRQOL, which summarizes the combined impact of disease and treatment and the trade-off between the two.^{19,20} At present there is no unified definition for HRQOL; nonetheless, the construct is frequently conceptualized as subjective and multidimensional, encompassing physical and occupational functioning, psychological state, social interaction, and somatic sensation.²⁰

As a broad outcome metric, HRQOL has been used as primary endpoint assessment in general medical specialties for decades. Almost 30 years ago, the Oncologic Drugs Advisory Committee of the US Food and Drug Administration recommended that HRQOL as an endpoint could serve as the basis for approval of new oncology drugs. Further, HRQOL is a necessary component of costeffectiveness analyses, a growing area of attention and significance as efforts are directed toward reducing overall health care costs.²¹ Moreover, routine assessment of patientrelated outcomes and utilization of those data to inform treatment decisions have been shown to improve treatment decisions and outcomes in general.²²⁻²⁵ Despite calls for increased utilization of the patient's perspective in health care decisions in conjunction with empirical support of its utility in improving outcomes, integration of outcomes assessment in clinical practice is challenging and tends to be the exception rather than standard of care.²⁶⁻²⁸

The present study was designed to evaluate the effectiveness of an intensive, multimodal inpatient psychiatric treatment for patients with SMI, employing a self-report measure of quality of life initially developed for the Medical Outcomes Study (the MOS 36-item Short-Form Health Survey [SF-36]²⁹). Our study investigated improvement in quality of life for a large cohort of inpatients assessed at admission and discharge and employed a methodology to go beyond customary evaluations of overall improvement at the group level to investigate change at the individual level. Overall change—or lack of it—in the cohort can obscure patterns of improvement and deterioration at the individual level, potentially yielding a misleading impression of outcomes. Finally, the study explored a number of factors potentially influencing extent of improvement, including baseline levels of severity, length of stay, gender, age, number of psychiatric diagnoses, extent of prior treatment, and problems in interpersonal functioning.

METHOD

Participants

Participants were 410 individuals admitted to a specialized psychiatric hospital (June 2010-June 2012) with length of stay of 14 days or greater (mean = 51.2, SD = 15.1). Gender distribution was relatively even: 218 were women (53%), and 192 were men (47%). The mean age was 32.4 years (SD = 13.6). The majority of participants were single and never married (61.2%), followed by married (21.2%), divorced (9.5%), separated (4.4%), and widowed (1.7%). Two respondents had missing data. Participants were Caucasian (92.0%), multiracial (4.1%), African American (1.2%), Asian (1.2%), or American Indian (0.5%) or declined to indicate racial background (1.0%). Fourteen patients identified as being of Hispanic or Latino ethnicity (3.5%). Education level was above the national average, with 88% indicating some college experience. A majority (62.4%) of participants were not working prior to admission.

Treatment Setting and Procedures

The Menninger Clinic is a fully voluntary, nonprofit inpatient psychiatric hospital that admits individuals from national and international referral sources. Payment mix is approximately 57% insurance/self-pay, 33% self-pay, 5% insurance, and 5% scholarship and pro bono. Typical lengths of stay in the hospital range from 4 to 8 weeks. Treatment included general psychiatric and medical care, continuous nursing care, medication management, health promotion, physical exercise, individual and group psychotherapy, psychoeducational groups, family work, and leisure-time social/recreational activities. These interventions were employed in the context of a therapeutic milieu that included patient government and ample opportunity for spontaneous interactions among patients.

Data were collected as part of the hospital's Adult Outcomes Project, described in detail elsewhere.¹ All participants were assessed using validated measures at admission and were reassessed periodically over the course of treatment. Assessments were conducted via a hospitalwide web survey on laptop computers. This project was a clinical outcomes project, conducted with all patients. Use of the data was approved by the Baylor College of Medicine Institutional Review Board. Baseline measures were collected within 72 hours of admission, followed by readministration of selected measures at point of discharge.

Measures

Demographic variables and history of psychiatric hospitalization and psychiatric service usage were assessed

using a standardized patient information survey.¹ Psychiatric disorders including personality disorder diagnoses were assessed using the research versions of the Structured Clinical Interview for DSM-IV Disorders (SCID-I/II). The SCID-I³⁰ and SCID-II³¹ were performed by master's-level researchers after reviewing pertinent psychiatric and psychosocial evaluations as well as consulting with the attending psychiatrist as needed. Interpersonal functioning was assessed utilizing the Inventory of Interpersonal Problems (IIP-32),^{32,33} a 32-item self-report measure assessing an array of interpersonal problems for which patients commonly seek psychotherapy. The measure is based on a circumplex model of interpersonal behavior with 8 scales: Domineering/ Controlling, Vindictive/Self-Centered, Cold/Distant, Socially Inhibited, Nonassertive, Overly Accommodating, Self-Sacrificing, and Intrusive/Needy. Scores for each scale are calculated as item sums (range, 0-16), with higher values indicating greater interpersonal difficulty. Evidence for reliability and validity is extensive and thoroughly reviewed by the developer.32

The SF-36²⁹ allows for a common metric to evaluate clinical outcomes across different disease contexts and psychiatric diagnoses. It is a brief, multipurpose, reliable, valid, and widely used measure of HRQOL.^{34,35} The 36 items measure 8 constructs: (1) physical functioning, (2) limitations in typical role activities secondary to physical health problems, (3) bodily pain, (4) general physical health, (5) vitality (energy and fatigue), (6) social functioning, (7) limitations in typical role activities secondary to emotional problems, and (8) general mental health. These 8 domains collapse to provide 2 summary scales, the Physical Component Summary (PCS) and the Mental Component Summary (MCS), composed of the first 4 and second 4 aforementioned domains, respectively. Subscale and summary scales are norm-adjusted, resulting in t scores with a mean of 50 and a standard deviation of 10.36

Data Analysis

Analyses were conducted using SPSS for Windows, version 21 (IBM). Paired t tests were used to assess average change in MCS and PCS scores and to estimate effect size change between admission and discharge. While mean change scores are the primary summary score in most efficacy and effectiveness trials, comparing average prepost change across all patients obscures patient-level rates of change and deterioration. In addition, presenting raw pre-post change can be somewhat misleading and unreliable due to measurement error in the form of poor test-retest reliability and sample artifacts such as regression to the mean in highly symptomatic patient samples. To address these potential shortcomings, reliable change index (RCI) scores and return to healthy functioning rates were calculated for each patient. Briefly, RCI relates to individual patient functioning that is statistically reliable such that change between pretreatment and posttreatment scores reflects true change rather than an artifact of measurement error. While there are several formulas for computing

Table 1. Descriptive Statistics for a Sample of 410 Adults With
Serious Mental Illness Receiving Inpatient Treatment

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Variable	Minimum	Maximum	Mean	SD			
Length of stay, d	14	132	51.2	15.1			
Age, y	18	68	32.4	14.6			
Total DSM-IV Axis I/II diagnoses	0	13	3.6	2.0			
No. of prior hospitalizations	0	155	2.6	8.4			
No. of prior outpatient trials	0	32	6.4	4.5			

RCI, the Edwards-Nunnally formula³⁷ is a conservative method that corrects for regression toward the mean. The Edwards-Nunnally RCI formula requires the following computations: (1) adjusting for regression to the mean by computing adjusted pretreatment mean (X_{adipre} = test-retest reliability × [individual's score - mean of group] + mean of group), (2) standard error of measurement (SE = SD $\sqrt{1-\text{test-retest reliability}}$, (3) standard error of the difference between the 2 test scores ($S_{diff} = \sqrt{2}$ [SE²]), and (4) reliable change index (RCI = $X_{post} - X_{adjpr}/S_{diff}$) where X_{adjpre} is the adjusted pretest score, X_{post} is the posttest score, and S_{diff} is the standard error of the difference between the 2 test scores. Two-week test-retest reliability of the SF-36 summary scores for PCS (r=0.87) and MCS (r=0.74) reported by Ware et al³⁶ was used in the RCI computations. An RCI score equal to or greater than 1.96 indicates statistically reliable change. Given that SF-36 subscales and summary scales are norm-adjusted, we present further indices of return to healthy functioning as indicated by patient MCS and/or PCS scores at or above the 50th percentile. Clinical improvement (RCI score \geq 1.28) and a more liberal estimate of return to healthy functioning (patient scores \geq 25th percentile) were reported because hospitalized populations often have high prevalence rates of treatment-resistant disorders, and more liberal cut scores can detect a treatment response in such populations.³⁸

Stepwise hierarchical regression analyses (significance level set at P < .01) were utilized to assess potential predictors of discharge component scores and subscales of the SF-36. Independent variables were entered in separate blocks in the following sequence:

- Block 1: baseline score for the dependent variable; Block 2: days in hospital, gender (dummy coded), and age;
- Block 3: total number of Axis I *DSM-IV-TR* diagnoses, number of past psychiatric hospitalizations, number of outpatient trials; and
- Block 4: IIP octant scores. Variables from the separate blocks significantly associated with the dependent variable produced a final model consisting of β , R, R^2 , ΔR^2 .

RESULTS

Psychopathology and Level of Impairment

Diagnostic profiles and past psychiatric history (Table 1) indicated high levels of functional impairment and comorbidity consistent with severe mental illness.³⁹ Eightyeight percent of patients in the sample were diagnosed with at least 2 co-occurring psychiatric disorders (mean = 3.6,

Table 2. SF-36 Subscale and Summary Scores From Admission and Discharge (mean \pm SD)

Variable	Admission	Discharge	
Physical Functioning	50.55 ± 8.83	53.10±6.55	
Role-Physical	43.12 ± 16.29	51.88 ± 10.51	
Bodily Pain	48.18 ± 10.87	52.97 ± 9.34	
General Health	44.38 ± 11.13	50.67 ± 9.28	
Vitality/Energy	36.73 ± 10.98	48.74 ± 10.72	
Social Functioning	29.89 ± 11.98	44.93 ± 10.72	
Role-Emotional	20.08 ± 15.73	40.86 ± 18.73	
Mental Health	28.65 ± 12.08	44.79 ± 11.15	
Physical Component Summary	56.06 ± 11.35	55.99 ± 8.47	
Mental Component Summary	19.10 ± 14.13	40.60 ± 15.22	
Abbreviation: SF-36 = MOS 36-item Short-Form Health Survey.			

Table 3. Rates of Change in SF-36 Mental Component Summary and Physical Component Summary (N=410)^a

	Improved, n (%)	Deteriorated, n (%)
Mental Component Summary (MCS)		
RCI ≥ 1.96	274 (66.8)	5 (1.2)
MCS > 49	158 (38.5)	
RCI ≥1.28	308 (75.1)	10 (2.4)
MCS > 37	264 (64.4)	
Physical Component Summary (PCS)		
RCI ≥1.96	75 (18.3)	76 (18.5)
PCS > 49	346 (84.4)	
RCI ≥1.28	108 (26.3)	122 (29.8)
PCS > 37	396 (96.6)	

^aRCI scores ≥ 1.96 indicate statistically reliable change; RCI scores ≥ 1.28 indicate clinical improvement. MCS and PCS cut points refer to normative scores at the 50th (>49) and 25th (>37) percentiles. Abbreviations: RCI = reliable change index, SF-36 = MOS 36-item

Short-Form Health Survey.

SD = 2.0). Sixty-five percent manifested a major depressive disorder; 61%, an anxiety spectrum disorder; 57%, a substance use disorder; 19%, a bipolar spectrum disorder; and 6%, a psychotic spectrum disorder. Personality disorders were present in 34% of the sample, including borderline (20%), avoidant (14%), obsessive-compulsive (6%), narcissistic (4%), antisocial (3%), personality disorders not otherwise specified (1%), and schizotypal (0.7%). Other markers indicative of severe mental illness included a relatively high number of previous psychiatric hospitalizations (mean = 2.6, SD = 8.4) and a high number of failed outpatient trials (mean = 6.4, SD = 4.5).

Change in Mental Health Functioning

Patients with treatment duration of at least 14 days completed admission and discharge SF-36 and all baseline assessments (100% completion of surveys). Admission and discharge scores on the SF-36 are displayed in Table 2. Assessment of change for MCS score across all patients produced statistically significant improvement ($t_{409} = -26.1$, P < .001; Cohen d = 1.5). There was significant improvement from admission to discharge across all 4 MCS subscales: Vitality ($t_{409} = -20.8$, P < .001; Cohen d = 1.1), Social Functioning ($t_{409} = -23.2$, P < .001; Cohen d = 1.3), and Mental Health ($t_{409} = -24.9$, P < .001; Cohen d = 1.3). Results

Table 4. Stepwise Linear Regression Predicting Change in SF-36 Mental Component Summary and Subscales (N=410)

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Criterion	_				
Variable	Dependent				
and Block No.ª	Variable	β	R	R^2	ΔR^2
MCS					
1	Baseline MCS	0.29	0.35	0.12	0.03
2	Days in hospital	-0.17	0.39	0.15	0.03
4	IIP-32 Cold/Distant	-0.17	0.42	0.18	0.04
Vitality					
1	Baseline Vitality	0.38	0.41	0.17	0.02
2	Days in hospital	-0.17	0.45	0.21	0.01
3	Age	0.14	0.48	0.23	0.02
4	IIP-32 Cold/Distant	-0.12	0.49	0.24	0.06
Role-Emotional					
1	Baseline Role-Emotional	0.21	0.21	0.05	0.04
2	Days in hospital	-0.16	0.27	0.07	0.02
Social Functioning					
1	Baseline Social Functioning	0.27	0.33	0.11	0.01
4	IIP-32 Cold/Distant	-0.25	0.41	0.17	0.03
Mental Health					
1	Baseline Mental Health	0.31	0.34	0.12	0.03
2	Days in hospital	-0.18	0.39	0.16	0.04
4	IIP-32 Cold/Distant	-0.15	0.42	0.18	0.02
4	IIP-32 Self-Sacrificing	0.13	0.44	0.19	0.01

^aInventory of Interpersonal Problems (IIP-32): block 1 = baseline score for dependent variable; block 2 = days in hospital, gender (dummy coded), and age; block 3 = total number of *DSM-IV-TR* diagnoses, number of past psychiatric hospitalizations, and number of outpatient trials; block 4 = IIP-32 octant scores.

Abbreviations: MCS = Mental Component Summary, SF-36 = MOS 36-item Short-Form Health Survey.

of analyses of reliable and clinically relevant individualized change at the more (RCI \geq 1.96) and less (RCI \geq 1.28) conservative levels, as well as results relative to normative scores (at the 50th and 25th percentiles), appear in Table 3. Conservatively, two-thirds of patients improved, and over one-third were in the healthy range of functioning at discharge. A more liberal estimate indicated that threefourths of patients improved and a majority were in the healthy range. Both criteria revealed minimal deterioration.

The hierarchical regression analysis (Table 4) demonstrated that improvement in MCS was associated with greater baseline severity, shorter lengths of hospital stay, and a lower level of proclivity to behave in a cold, distant fashion ($F_{3,386} = 27.97$, P < .001). Improvement in Vitality was associated with greater baseline severity, shorter lengths of hospital stay, lower age, and a lower level of proclivity to behave in a cold, distant fashion ($F_{3,386} = 30.36$, P < .001); improvement in Role-Emotional was associated with greater baseline severity and shorter lengths of hospital stay ($F_{3,386} = 14.68, P < .001$). Improvement in Social Functioning was associated with greater baseline severity, shorter lengths of hospital stay, and a lower level of proclivity to behave in a cold, distant fashion $(F_{3.386} = 39.26, P < .001)$. Improvement in Mental Health was associated with greater baseline severity; shorter lengths of hospital stay; a lower level of proclivity to behave in a cold, distant fashion; and greater propensity to behave in a selfsacrificing manner ($F_{3,386} = 22.87, P < .001$).

Change in Physical Health

Assessment of change from admission to discharge for PCS was not significant ($t_{409} = 0.14$, P = .89); hence, further analyses of the PCS subscales were not conducted. Results of analyses of reliable and clinically relevant change at the more (RCI \geq 1.96) and less (RCI \geq 1.28) conservative levels as well as results relative to normative scores (at the 50th and 25th percentiles) appear in Table 3. Consistent with the lack of overall change in the cohort, the individualized change indices revealed that a substantial proportion of patients showed neither improvement nor deterioration. Among those who showed RCI change, equal proportions showed improvement and deterioration (about 18% by conservative criteria and about 26% and 30%, respectively, by less conservative criteria). Some deterioration notwithstanding, PCS scores at discharge were in the normal range for the vast majority of patients by more conservative and less conservative criteria (about 84% and 97%, respectively).

CONCLUSIONS

Quality health care for individuals with SMI is a challenge in most of the United States¹⁰ in part because the resources needed to treat psychiatric comorbidity and physical illness are often beyond the scope of single health care providers.^{40,41} While most patients with psychiatric disorders can be effectively treated with lower cost outpatient services, those with SMI often require more comprehensive services due to the severity, persistence, and complexity of the disorders. Comprehensive health care models recognize the necessity of inpatient services,^{42,43} despite the limited data on the effectiveness of intensive hospital-based treatments in improving HRQOL.

A recent Australian study⁴⁴ demonstrated clinically significant improvement among hospitalized adults on the SF-36 mental health subscales. The current findings demonstrated that adults with SMI receiving inpatient treatment at a specialty hospital in the United States evidenced significant improvement in quality of life from admission to discharge. A majority of severely mentally ill patients (67%) showed marked improvement in mentalhealth component scores, with over a third of the patients (38.5%) achieving mental-health component scores in the normative range. The fact that patients improve substantially in all mental health domains is consistent with the conceptual aims of the treatment program. The Menninger Clinic's intensive treatment program has been demonstrated to improve depression substantially,45 and this improvement is extended in the current findings of improved HRQOL, a broad-based outcome metric that cuts across all psychiatric disorders and is relevant for SMI populations. We propose that the combination of full engagement in this intensive multimodal treatment, with its focus on relationships, improves role functioning, mood, and overall psychological well-being.

Three factors influenced extent of improvement. First, higher levels of severity at admission were associated with greater improvement, a counterintuitive finding that is emerging in a number of open clinical trials^{46–48} as well as randomized controlled trials of depression.⁴⁹ While it would be tempting to assume that improvement in SF-36 scores is a function of regression toward the mean, the results of RCI analyses indicate robust improvement in functioning even when RCI is adjusted for regression toward the mean. Second, greater improvement was associated with fewer days in the hospital. Post hoc analysis indicated that among patients with an average length of stay of 60 days or greater (75th percentile for length of stay), only 15% achieved return to healthy functioning at discharge compared to 29% of those with length of stay below 60 days ($\chi^2 = 11.13$, *P*<.001). This implies that patients whose quality of life did not improve rapidly were more likely to have a delayed discharge and that therefore the lack of improvement was a consequence of clinical course rather than a consequence of treatment dose. Third, more interpersonally detached patients (ie, relatively cold and distant) showed less improvement. This finding may be related to the difficulty such patients have in developing a therapeutic alliance. In a study of adherence to diabetic treatment protocols, distant and detached patients experienced greater dissatisfaction and had difficulty forming collaborative relationships with health care providers, with poorer adherence to exercise and medication.⁵⁰ It is possible that detached patients experience difficulty tolerating the relatively intense interpersonal focus of the nursing, milieu, group, and individual therapy components of the treatment. Notably, although statistically significant, length of stay and interpersonal functioning accounted for relatively small increments of explained variance above and beyond the other independent variables.

The contrast in findings between the physical and mental health scales is particularly noteworthy. Given the psychiatric focus of the treatment and the admission criteria that exclude medically unstable individuals, it is not surprising that patients showed far greater impairment in mental than physical health at admission. The relatively good physical health of these inpatients may have created a ceiling effect. The person-level findings attest to the value of utilizing methodologies that assess individualized change; overall equivalence at admission and discharge obscured roughly equivalent levels of improvement and deterioration. Although the findings of physical functioning within the normal range preclude major physical deterioration, some patients experienced a lowering of their level of physical well-being, a finding that merits further exploration.

The findings of substantial improvement in mental health attest to the value of intensive inpatient psychiatric treatment of several weeks' duration for improving quality of life; although this treatment duration could be considered long-term hospitalization by contemporary standards wherein acute hospital stays are the norm, it is relatively short in relation to the severity and chronicity of patients' illnesses. This study has important limitations that bear mention. First, although the treatment as a whole can be characterized, the treatment was not manualized, and specific interventions and dosages were not measured (eg,

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including psychotropic medication), such that improvement could not be linked directly to specific treatments delivered. Second, whereas psychiatric diagnoses were aggregated for the study, general medical conditions were not included in the database. Third, the study did not randomize patients to the inpatient treatment, and the absence of a comparative treatment-as-usual arm limits the conclusions regarding the general treatment effects. While the results indicate dramatic improvement during the course of treatment, follow-up data were not available for this cohort of patients; a recently launched follow-up study will provide data on the durability of these gains at 2, 12, 24, and 52 weeks postdischarge. Finally, the sample of SMI patients with high degrees of psychiatric comorbidity may not be generalizable to all residential settings; nonetheless, the present study does address a demand for outcomes research on SMI given its association with its high prevalence, cost, and burden.^{51,52}

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