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Remission and Recovery during the First Outpatient Year of the Early Course of Schizophrenia

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Abstract

Background—Although in the early course of schizophrenia relapse prevention is of paramount importance, there is an increasing emphasis on establishing and maintaining sustained periods of symptom remission. Recovery in the early course of illness is also possible, although the rates of recovery are lower than for symptom remission. Symptom remission and recovery rates vary considerably across recent-onset schizophrenia studies because of lack of consistency in treatment interventions and in applying operational outcome criteria.

Method—Patients who were within two years of their first psychotic episode (N=77) who were treated with continuous antipsychotic medication in conjunction with psychosocial interventions (without targeted work rehabilitation) were assessed during the first outpatient year after hospital discharge. Published operational criteria were used to classify symptom remission and recovery.

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The findings from this study were presented in part at the 11th bi-annual meeting of the International Congress on Schizophrenia Research in a paper by Guzik, L.H., Ventura, J., Subotnik, K.L., Helleman, G.S., and Nuechterlein, K.H. Symptom Remission and Modified Recovery in the Early Course of Schizophrenia. March 28 – April 1, 2009, San Diego, California.

Contributors

Joseph Ventura collected and coded data, supervised the collection of data, conceived of the design for this analysis, conducted literature searches, supervised the conduct of the data analysis, and wrote the manuscript. Ms. Guzik created an initial data set, conducted literature searches, summarized results of previous studies, and presented a conference poster on the initial set of results. Dr. Helleman conducted the data analysis, wrote sections of the results, and commented on drafts of the manuscript. Dr. Subotnik is the Aftercare Clinic Associate Director who supervised part of the treatment intervention and commented on drafts of the manuscript. Ms. Wood reviewed the literature, contributed to the development of the manuscript, coded data, participated in database development and management, and organized the references. Dr. Gitlin, was the Medical Director of the Aftercare Research Program and along with Dr. Nuechterlein was awarded funding to conduct the study, administered medication to the patients, supervised the administration of the medications, and commented on drafts of the manuscript. Dr. Nuechterlein is the study Principal Investigator who conceived of the initial study design, was awarded funding to carry out the study, participated on all phases of the development of this paper, and commented on all drafts of the manuscript. All authors have contributed to and approved the final manuscript.

Conflict of interest

The authors report no conflict of interest

Results—The rate of full symptom remission maintained for 6 months was 36%, while the rate of recovery for 6 months was 10%. When the same criteria were applied for a continuous period of one year, 22% of patients were found to achieve symptom remission but only 1% of patients met recovery criteria. Using multivariate prediction, the WAIS Comprehension score was a significant predictor of 6 months of good functional outcome.

Conclusions—Although some schizophrenia patients can achieve both symptom remission and recovery in the early course of illness, the overall rate of symptom remission during the first post-hospitalization year is much higher than the rate of recovery. This suggests that interventions targeting work and social functioning are likely necessary to raise the chances of recovery. Cognitive factors can be predictive of good functional outcome even in the early course of schizophrenia.

Introduction

Although treatment targets for the early course of schizophrenia have traditionally emphasized relapse, achieving and maintaining periods of sustained remission has been a recent focus (Chue, 2007; Nasrallah and Lasser, 2006). This new focus has been facilitated by the availability of operational criteria which can be extended to early course of the illness (Andreasen et al., 2005; Lasser et al., 2007). The criteria proposed by the Remission in Schizophrenia Working Group require remission for a duration of 6 months in 3 major symptom domains; reality distortion (positive), negative, and disorganized. Symptom remission rates in studies of first episode patients that evaluated illness outcome over an initial 1–2 year period have found that, despite applying the same operational criteria, remission rates can vary from 24% to 78%. Those rates might depend on the medication type and administration mode as well as adherence, duration of follow-up period, and the frequency of measurement (Cešková et al., 2007; Emsley et al., 2008; Emsley et al., 2007; Nasrallah and Lasser, 2006; Petersen et al., 2008; Wunderink et al., 2009). Studies of patients on oral medications reported lower symptom remission rates (24%) than those on injectable medications (52%) (Emsley et al., 2007; Wunderink et al., 2009). Studies with infrequent assessments seem to report on average higher rates of remission (52% and 78%) compared to studies with more frequent and thereby more sensitive assessment schedules (24%, 29%, and 64%); however, the rates can vary considerably (Cešková et al., 2007; Emsley et al., 2008; Petersen et al., 2008). Medication adherence, study measurement schedules, and the length of the follow-up period can influence the observed remission rates even when the same or similar operational criteria were applied.

A similar group of studies of first episode patients that did not use a standard set of operational criteria found that positive symptom remission occurs in a larger percentage of patients as compared to negative symptom remission (Addington et al., 2003; Gupta et al., 1997; Malla et al., 2002; Rabiner et al., 1986; Szymanski et al., 1996). Although rates of remission in positive symptoms are relatively high, they can vary from about 50% to 78% (Bachmann et al., 2008; Cešková et al., 2007; Gupta et al., 1997; Lambert et al., 2008; Lehtinen et al., 2000; Malla et al., 2002; Menezes et al., 2009; Nuechterlein et al., 2006; Tohen and Strakowski, 2000). Part of the variation in remission rates stems from the lack of a commonly required criterion of time duration for remission. In fact, some studies simply evaluated remission cross-sectionally at the end of the follow-up period. Variations in antipsychotic medication use may also contribute to the rate of remission observed in a study, as antipsychotic medications work well for controlling positive symptoms. Studies of first episode patients show that medication adherence reduces the rate of psychotic relapse (Subotnik et al., 2011). Although negative symptoms which can remit, they tend to be persistent throughout the first year. These findings highlight the need for applying a standard

set of operational criteria and considering medication conditions to make comparisons across studies more meaningful (Malla and Payne, 2005; Menezes et al., 2006).

Distinct from the concept of symptom remission is the broader notion of recovery from schizophrenia (Andreasen et al., 2005; Insel and Scolnick, 2006; Liberman et al., 2002; Nasrallah and Lasser, 2006; Van Os et al., 2006). The concept of recovery from schizophrenia has evolved over time in several important ways in parallel with a fundamental shift in the field to an interest in a patient's daily functioning (Andreasen et al., 2005; Harrow and Jobe, 2008; Liberman and Kopelowicz, 2005; Liberman et al., 2002; Nasrallah et al., 2005). Although the concept of recovery has mostly been applied to chronic patients, an increasing number of studies have examined first episode patients (Bobes, 2009; Crumlish et al., 2009; Menezes et al., 2009; Robinson et al., 2004; White et al., 2009; Wunderink et al., 2009). Distinctions between good functional outcome and recovery in first episode schizophrenia studies were not clearly defined, making direct comparisons across studies difficult. However, relatively recently, operational criteria have been published that can be applied to the early course of schizophrenia (Harrow et al., 2005; Harrow and Jobe, 2005, 2007). The concept of recovery goes beyond symptom remission to include good functional outcome that must be maintained for a specified duration of time (Harrow et al., 2005; Harrow and Jobe, 2007; Liberman et al., 2002). Operational definitions of recovery can vary in several ways, including the duration requirements for fulfilling the criteria, e.g., six months vs. two years (Liberman and Kopelowicz, 2005; Liberman et al., 2002; Menezes et al., 2006). In first episode patients, the rates of good functional outcome were reported as high as 51%, which is generally higher than the rates of recovery (Lambert et al., 2008; Menezes et al., 2009; Novick et al., 2009). Recovery requires remitted symptoms as well as good functioning over a longer duration (Bobes, 2009; Menezes et al., 2006; Menezes et al., 2009; Petersen et al., 2008; Robinson et al., 2004), so it naturally occurs less frequently.

Several key premorbid characteristics have been identified as predictors of outcome in first episode schizophrenia patients (Davidson and McGlashan, 1997; Harrison and Mason, 1993). A growing number of first episode patient (FEP) studies report on predictors of 1 – 2 year outcomes during the initial outpatient years, but there is a lack of consistency in the predictor variables across these studies (Malla and Payne, 2005). Predictors that appear to have a relatively consistent relationship to poor outcome in FEP include: longer duration of untreated psychosis (DUP), poor premorbid level of adjustment, earlier onset age, male gender, higher initial negative symptoms, and lower levels of baseline cognitive functioning. Perhaps some of the inconsistency results from the lack of operational criteria requiring sustained remission or recovery, different lengths of follow-up, and lack of consistent medications (Menezes et al., 2006).

The aim of this study was to apply recently published operational criteria for classifying symptom remission and for evaluating recovery in the period following a first episode of schizophrenia. In this study, after an acute hospitalization, data were collected longitudinally on early course schizophrenia outpatients who were on consistent medication during their first outpatient year. We also examined whether demographic, premorbid psychosocial, duration of untreated psychosis, or baseline cognitive and symptom variables could be used as predictors of symptom remission and good functional outcome.

Methods

Subjects

Our sample involved 77 schizophrenia patients who had an initial onset of psychosis within two years prior to study entry. Subjects were participants in the initial sample of the Developmental Processes in Schizophrenic Disorders Project and were followed clinically in

the UCLA Aftercare Research Program, which specializes in the treatment of recent-onset patients. The patient characteristics and research protocol are well described elsewhere, so will only be briefly reviewed (Nuechterlein et al., 1992; Nuechterlein et al., 2006). Diagnostic, demographic, psychiatric, and social history data were collected at study entry, usually immediately following a psychiatric hospitalization. The sample involved 83% males, with a mean age of 23.6 years ($SD=4.5$), mean education of 12.5 years ($SD=1.8$), and a mean number of months since psychosis onset of 8.0 ($SD = 6.4$). All patients received a DSM-IV diagnosis of either schizophrenia (66%), schizoaffective disorder, depressed type (10%), or schizophreniform disorder (24%). Raters trained to criterion levels of interrater reliability administered an expanded version of the Present State Exam (Wing et al., 1974). The data were collected over a 10 year period from 1981 through 1991. Additional inclusion and exclusion criteria are provided elsewhere (Nuechterlein et al., 1992).

After discharge, the patients were treated by a team of psychiatrists, psychologists, and social workers. A point of outpatient medication stabilization (but not necessarily clinical remission) was established an average of three months after hospital discharge. For this analysis, we used symptom ratings from the point of outpatient medication stabilization, which were assessed every two weeks using the Brief Psychiatric Rating Scale (Ventura et al., 1993). Functional outcome data were collected with the Strauss–Carpenter Rating Scale (Strauss and Carpenter, 1972) every three months during the 12 month follow-through period. All patients completed an informed consent process and signed UCLA IRB approved informed consent documents.

Treatment Protocol

Each patient received individual, behaviorally-oriented treatment and group therapy conducted by a case manager focusing on social skills and psychoeducation, while working within the context of a treatment team. Patients were seen weekly initially and then at two-week intervals. Family members were provided with psychoeducation. Medication treatment for all patients involved the administration of a standard starting dosage of injectable maintenance antipsychotic medication, 12.5 mg fluphenazine decanoate, every two weeks, with adjustments in the 6.25 mg to 12.5 mg range if intolerable side effects developed. Increased doses above 12.5 mg were given if clinically necessary to control psychotic symptoms. Refusals of antipsychotic injections were rare, so participants were on continuous antipsychotic medication for all or nearly all of the follow-up period. However, two definitions of medication interruption were calculated for predicting symptom remission and good functional outcome. Based on data on plasma level decreases (Gitlin et al., 2000), patients were considered to be off medication if more than six weeks had elapsed since their last dose of injection of fluphenazine decanoate was due (9%) and were considered to have a brief medication interruption if more than four weeks had elapsed since their last dose was due (27%). In this sample, we did not use specific work or school training or vocational rehabilitation interventions, such as Individual Placement and Support (Becker and Drake, 2003). Rather, patients were encouraged to use the Los Angeles County Department of Vocational Rehabilitation Service after a period of convalescence.

Measures and Variables Used in the Prediction Model

Psychiatric and Social History Schedule—Demographic, e.g., patient education, gender, and premorbid history data were collected at intake using a form created by the study team. Data included age, patient level of education, gender, first appearance of psychotic and prodromal symptoms, and prior psychiatric treatments including antipsychotic medications and hospitalizations. A Diagnostic Timeline along with parts of the Psychiatric and Social History Schedule were used to code the Duration of Untreated Psychosis (DUP).

UCLA Social Attainment Survey (UCLA SAS)—The UCLA SAS (Goldstein, 1978) contains seven 5-point anchored ratings on different components of premorbid social functioning (e.g., heterosexual relationships, friendships, leadership, and participation in group activities). The UCLA SAS was used as the primary measure of premorbid social competence because of its relevance for this young schizophrenia patient sample.

Symptom Assessment

Brief Psychiatric Rating Scale (BPRS): Each patient was rated on an expanded version of the BPRS (Lukoff et al., 1986) during the baseline diagnostic evaluation, at the initial cognitive battery assessment points, and every two weeks during the follow-up period by a trained rater who was also the patient's case manager. Each BPRS rater achieved a median Intraclass Correlation Coefficient (ICC) of .80 or higher across all items compared with the criterion ratings, and participated in a quality assurance program (Ventura et al., 1993).

Cognitive Measures

Attentional Functioning and Information Processing

Memory-Load Continuous Performance Test (3–7 CPT): In this fast-paced visual vigilance task, subjects are asked to respond with a button-press each time that a 7 follows a 3 in a continuous sequence of single digits presented 1 sec apart for 40 msec each. This 3–7 adaptation of the traditional A-X version of the CPT (Rosvold et al., 1956) uses briefer stimulus duration and more partial targets to increase difficulty level (Nuechterlein et al., 1986).

Degraded-Stimulus CPT (DS-CPT): This CPT adaptation (Nuechterlein et al., 1986) was developed to be more sensitive than the traditional CPT to subtle deficits (Nuechterlein et al., 1983). Images of digits are highly blurred to create a high perceptual load and to produce very rapid sensitivity decrements over time for efficient measurement of sustained focused attention. Unlike the 3–7 CPT, a short-term memory load is not prominent.

Forced-Choice Span of Apprehension Procedure (SPAN): This task requires only the recognition of a T or an F in each visual array and is viewed as a measure of the efficiency of early stages of visual information processing (Asarnow and MacCrimmon, 1978; Neale, 1971). Accuracy for the 10-letter arrays was used.

To reduce the predictors to a few dimensions, we standardized the primary score from the 3–7 CPT, DS-CPT, and SPAN, and then used the mean of these z-scores as the index of attention and early visual processing.

Subtests of the Wechsler Adult Intelligence Scale (WAIS): The Vocabulary and Comprehension subtests were administered.

Shipley-Hartford Institute of Living Scale: The Shipley-Hartford Institute of Living Scale (Shipley, 1940) uses Vocabulary and Abstraction subtests to assess general verbal intelligence and "intellectual efficiency." The intellectual efficiency variable is called the Conceptual Quotient.

Functional Outcome Assessment

Strauss-Carpenter Outcome Scale: (Strauss and Carpenter, 1972). This scale contains four discrete dimensions of outcome rated from "0" = most impaired level of functioning to "4" = least impaired level of functioning. For the current study, the three dimensions most relevant to functional outcome were the frequency of social contacts, amount of school

participation or useful work, and the amount of time spent in a psychiatric hospital. The Strauss-Carpenter scale was administered after a period of medication stabilization during the first post-hospitalization year and at 3, 6, 9, and 12 months, and covered the previous three-month period.

Definition of Symptom Remission

Our symptom remission criteria were taken from published criteria (Andreasen et al., 2005). Positive symptom remission was defined as a rating of ≤ 3 on each of two BPRS reality distortion symptoms (Delusions and Hallucinations), each of two disorganization symptoms (Conceptual Disorganization and Mannerisms and Posturing), and one negative symptom (Blunted Affect). These criteria had to be met continuously for at least 6 months. In this study we evaluated a remission period of any 6 months during the follow-up year, as well as the entire 12 month follow-up period.

Definition of Recovery

Symptom Remission—We used published operational recovery criteria (Harrow and Jobe, 2007) which specify that the patient must be free of positive and negative symptoms. Being free of positive and negative symptoms was operationalized based on BPRS ratings made every two weeks using published symptom remission criteria (Andreasen et al., 2005)

Functional Outcome—The recovery criteria require good or adequate social functioning, which was defined as a ≥ 2 on the frequency of Social Contact item of the Strauss-Carpenter Outcome Scale. Adequate work functioning was defined as ≥ 2 on the Amount of Useful Work item of the Strauss-Carpenter Outcome Scale. To qualify for recovery, patients could not have any hospitalization days, so the Hospitalization item of the Strauss-Carpenter Outcome Scale must have been rated no lower than a “4.”

Patients who met the Symptom Remission and Functional Outcome criteria during the follow-up period were considered to be recovered. We classified patients based on two levels of recovery. Those who met criteria for recovery for any 6 months during the 12-month outpatient follow-through, and the more strict criterion of being recovered for the entire 12 months. We also examined the percentage of patients who met recovery criteria for individual functional outcome domains, i.e., social functioning, work functioning, and rehospitalization (Table 1).

Predictors of Symptom Remission and Functional Recovery

First we determined which patients met symptom remission criteria for any 6 months of the 12-month follow-up period and then those patients who met those criteria for the entire 12 months. We then determined which patients met good functional outcome or recovery criteria for any six months of the follow-up period, and those patients who met the criteria for the entire 12 months. For prediction of symptom remission and good functional outcome, specific demographic, psychosocial, and cognitive factors were examined including age of illness onset, gender, premorbid educational level, premorbid social functioning, highest level of education achieved by either parent (mother or father), duration of untreated psychosis (DUP), symptom change from the inpatient to the outpatient stabilization point, Shipley-Hartford Conceptual Quotient (CQ), WAIS Comprehension raw score, WAIS Vocabulary raw score, and a CPT/SPAN composite score (derived from the mean z-score of the 3–7 CPT, DS-CPT, and SPAN). The change in BPRS score was computed for each participant for the three symptoms types used in the definition of symptom remission (Andreasen et al. 2005). Hierarchical logistic regression was used to determine if demographic, premorbid, clinical, and cognitive factors significantly predicted symptom

remission. We planned to examine predictors of recovery as well, but determined that there were too few patients meeting recovery criteria for any 6 months to yield reliable predictors.

Results

Symptom Remission and Good Functional Outcome

Using the criteria of Andreasen et al. (2005), we found for our patient sample a full symptom remission rate of 36% when considering any 6 month period within the first outpatient year of follow-through (see Table 1). The symptom remission rate was 22% when the duration criteria involved remission that was maintained throughout the first outpatient year. The rates of reality distortion, negative symptoms, and disorganization are also presented in Table 1, with disorganization showing the highest rate of remission and negative symptoms showing the lowest. The rates of good functional outcome in this sample were 25% for any 6-month period and only 7% for the full 12-month period. As shown in Table 1, good social functioning was more common than good work functioning. However, there was no association between symptom remission and good functional outcome (Table 2).

After identifying patients who met criteria for symptom remission and good functional outcome for at least 6 months we used forward selection hierarchical logistic regression to evaluate the potential predictors of these favorable outcomes. The predictor variables were demographic (age, gender, premorbid social attainment, highest grade achieved, parental education), cognitive (CPT/SPAN, WAIS Comprehension, WAIS Vocabulary, and Shipley CQ), early symptom change (reality distortion, negative, and disorganization), and clinical (age of onset of psychotic symptoms, duration of untreated psychosis). Hierarchical logistic regression (HLR) was not able to identify any statistically significant predictors of symptom remission. However, by using HLR we were able to predict good functional outcome for a 6 month duration, with the WAIS Comprehension score as the only significant predictor in the logistic model with an R^2 of .10 ($p=.04$).

Recovery

Using the criteria of Harrow and Jobe (Harrow and Jobe, 2007), we found a recovery rate of 10% when considering any 6 month period within the first outpatient year of follow-through for our early course schizophrenia patients (see Table 1). The recovery rate was 1% when the duration criteria involved recovery that was maintained throughout the first outpatient year immediately following a psychotic episode. Resumption of work or education appears to be the limiting factor in meeting recovery criteria. Recovery for one year or even six months was too uncommon during the early course of schizophrenia to predict reliably, and therefore formal statistical testing was not attempted. However, we note that none of the patients who maintained full recovery during any 6 months discontinued medications for more than 42 days, while 9% of the rest of the sample discontinued medication for at least 42 days.

Discussion

Consistent with previous findings for early course patients, the percentage of patients in this sample showing favorable outcomes varied markedly depending on the domain that was examined. The overwhelming majority of patients experienced no hospitalization during the first outpatient year, while all patients had a period of at least 6 months without any hospitalization. For symptom remission of at least 6 months, the rate of remission for disorganization was extremely high, and remission from reality distortion was very common. Negative symptom remission was also common, but relatively lower than the two

domains of positive symptoms. When considering all three symptom domains, one third of the patients fulfilled the Andreasen et al. criteria for symptom remission for at least 6 months. Only 22% of patients continued to meet symptom remission criteria in all three symptom domains for a full 12 months. Regarding recovery after a recent psychotic episode, as expected, the percentage of patients meeting Harrow and Jobe recovery criteria for one full year was very low, although the recovery rate was somewhat higher when the criteria only required recovery during any 6 months of the first outpatient year. Thus, under these treatment conditions, we found that a lack of hospitalization and positive symptom remission were very common, but broader recovery that included good functional outcome was relatively rare.

The strengths of this study are that the patients were assessed very frequently while on a consistent dose of antipsychotic medication, and received individual case management during the follow-through period. The rate of 6 month symptom remission in the current study was slightly lower than the prior studies that used the Andreasen et al. (2005) remission criteria in early course patients. Our study design was most similar to Emsley et al. (2008). In both studies, medication conditions were controlled and symptom ratings were completed relatively frequently. However, in the Emsley study the remission rate was higher (64%). There are at least two possible explanations. Firstly, our symptom assessments were conducted every 2 weeks, whereas in the Emsley study the assessment schedule started at 2 week intervals but became less frequent over time, allowing for possible assessment gaps in which patients had symptoms that were subsequently not reported. In addition, the patients in the Emsley study were followed for 2 years as compared with 1 year in the current study. The rate of remission is generally higher in studies of first episode patients with longer follow-up periods, suggesting that sustained full symptom remission may take time to develop for some patients. However, even within one year, 65% of our patients met the definition of remission from reality distortion. This positive symptom rate is consistent with previous studies that did not control medication type or medication adherence and used ad hoc definitions of remission.

Contrary to expectation based on the literature, we found that none of our selected premorbid and demographic variables predicted symptom remission. This might be because the patients were on a consistent dose of neuroleptic medication, i.e. injectable fluphenazine (Prolixin) decanoate, during most or all of the study period. This raises the possibility that adherence to a consistent type and dose of medication might “trump” some of the usual demographic and premorbid adjustment predictors found in the literature because one of the strongest determinants of symptom remission or relapse is medication adherence (Bachmann et al., 2007; Lieberman et al., 1993; Rabiner et al., 1986; Robinson et al., 1999; Subotnik et al., 2011; Subotnik et al., in press). In addition, combining positive symptoms (including disorganization) and negative symptoms into a single category might also obscure the identification of predictors of symptom remission. However, we did find that good functional outcome for a 6 month duration was predicted by a cognitive measure, the Comprehension score from the WAIS. This is consistent with prior studies linking cognitive factors to functional outcome (Green et al., 2000; Leeson et al., 2009; Robinson et al., 2004).

Our findings are consistent with other studies in that the rates of symptom remission in general are relatively higher than rates of good social and work functioning (Menezes et al., 2009; Petersen et al., 2008; Tohen and Strakowski, 2000; Wunderink et al., 2009). In addition, most studies find that the rates of recovery in the early course are relatively low (Gupta et al., 1997; Lambert et al., 2008; Robinson et al., 2004) as is the case in some chronic samples as well (Harrow and Jobe, 2010). In addition, the sample contained a high percentage of male patients for whom outcomes tend to be poorer than in females (Abel et

al., 2010). Our finding that the rates of negative symptom remission are lower than for other symptom types suggests that negative symptoms are the “rate limiting” factor for symptom remission. Recovery requires good work and social outcomes in addition to symptom remission. The rate of work recovery observed in this study was particularly low, and was lower than the rate of social recovery. Indeed, the absence of a positive work outcome is what most prevents patients from meeting criteria for recovery. These observations indicate that good work outcomes are particularly difficult to achieve in the early course of schizophrenia. In fact, we noted that none of the patients who were recovered for any 6-month period met the criterion of greater than 42 days off medication. We believe that more positive work outcomes did not occur in this sample, despite active case management, because there was an absence of targeted work rehabilitation efforts. This underscores the importance of interventions such as Individual Placement and Support (IPS) that specifically target the goal of returning patients to work or school (Becker and Drake, 2003; Killackey et al., 2008; Nuechterlein et al., 2008a; Nuechterlein et al., 2008b).

One of the main study limitations is the use of data from patients that were all treated with the typical antipsychotic fluphenazine decanoate. We cannot completely rule out the possibility that the results here are in part medication specific. However, according to the Clinical Trials of Antipsychotic Treatment Effectiveness (CATIE) study, typical antipsychotic medications showed little difference compared to atypical medications in their treatment efficacy and side-effect profiles (Lieberman et al., 2005).

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Table 1

Percent of Patients Meeting Operational Criteria for Symptom Remission and Recovery in the Early Course of Schizophrenia (n = 77)

Symptom Remission ¹ and Recovery ² Categories	Patients meeting criteria for any 6 months	Patients meeting criteria for all 12 months
No Hospitalizations	100%	83%
Symptom Remission ¹	36%	22%
Disorganization Symptoms	93%	82%
Reality Distortion	65%	48%
Negative Symptoms	55%	40%
Good Functional Outcome ²	25%	7%
Social Functioning	60%	40%
Work Functioning	38%	10%
Recovery ³	10%	1%

¹ Andreasen et al (2005) Symptom remission criteria that includes three symptom groups, reality distortion (positive), negative symptoms, and disorganization rated as mild or less for a duration of six months.

² Combined social and work functioning used to define good functional outcome.

³ Harrow and Jobe (2007) Requires no hospitalizations, good or adequate social and work functioning, and symptom ratings of mild or less for a period of one year.

Table 2

Cross-tabulation of Patients Meeting Operational Criteria for Symptom Remission and Good Functional Outcome in the Early Course of Schizophrenia (n = 77)

Good Functional Outcome	Symptom Remission	
	No	Yes
No	35 (74%)	21 (70%)
Yes	12 (26%)	9 (30%)

Note: There was no association between symptom remission and good functional outcome ($\chi^2(\text{df})=0.18$, $p=.67$)