



An examination of neurocognition and symptoms as predictors of post-hospital community tenure in treatment resistant schizophrenia



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ABSTRACT

Neurocognition and psychopathology are robust predictors of community functioning and relapse/re-hospitalization in schizophrenia. Existing studies are however limited because they have ignored the most chronic, treatment-resistant patients. Moreover, the prediction of functional outcomes has yet to be extended to the duration of community tenure, an indicator of the capacity of chronically-hospitalized patients to gain traction in the community. The current study examined neurocognition and symptom severity at discharge as potential predictors of community tenure in chronically-hospitalized treatment-resistant patients. The study recruited 90 people with treatment-resistant schizophrenia who received services on an inpatient unit. Participants completed measures of psychopathology and neurocognition prior to discharge. Following discharge, participants were tracked at current residences six months and one year post-discharge to assess community tenure. The percentage of individuals who continued to live in the community at 12-month follow-up was 51%. Severe negative symptoms but not neurocognitive impairment or positive symptoms was a significant predictor of shorter post-hospital community tenure. Of the negative symptoms domain, anhedonia-asociality proved to be the most relevant predictor of community tenure in the sample. The capacity to elicit goal-directed behaviors in response to anticipated physical and social rewards may be an important treatment target for sustaining community tenure.

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1. Introduction

Despite advances in the treatment of schizophrenia, many people with schizophrenia remain symptomatic, functionally impaired, at high-risk for recurrent hospitalizations, and treatment resistant (Kerwin and Bolonna, 2005; Solanki and Singh, 2009). Predicting which patients have better chances of prolonged community tenure after inpatient psychiatric rehabilitation is of critical importance given the changing landscape of treatment and residential settings for people with severe mental illnesses (Ahmed et al., 2013). Decreased inpatient resources including the closing of state hospital beds and the advent of “recovery-focused” treatment model (Anthony, 1993; Bellack, 2006; Ahmed et al., 2011) that emphasizes community integration all contribute for the need to better understand what factors predict community tenure in chronic, treatment-resistant patients.

Variables such as the number of previous admissions (Lin et al.,

2008), comorbid substance use (Hunt et al., 2002; Turkington et al., 2009; Lin et al., 2013), poor medication adherence (Hunt et al., 2002; Bodén et al., 2011), and limited social support (Hultman et al., 1997) have been shown to contribute to the risk of relapse and community tenure in people with schizophrenia. While cognition and clinical symptoms are similarly recognized as predictors of relapse (Perlick et al., 1992; Lipkovich et al., 2009), few studies have actually examined cognition and clinical symptoms at the time of discharge as predictors of community tenure (e.g., Trapp et al., 2013).

Cognitive deficits are common in people with schizophrenia and significantly contribute to the disability associated with the illnesses (Green et al., 2000, 2004; Matza et al., 2006; Ahmed et al., 2014). In fact, cognitive deficits are more functionally debilitating than positive symptoms (Kurtz et al., 2005), and higher neurocognitive scores (particularly verbal memory) at baseline predict greater subsequent improvement in community functioning (Green, 1996; Brekke et al., 2007).

Negative symptoms have similarly profound effects on functional outcomes. The effects of negative symptoms on indicators of community functioning are apparent early in the course of illness (Addington and Addington, 2005; Milev et al., 2005; Whitty et al.,

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2008). The impact of negative symptoms is even more profound in chronic schizophrenia, contributing not only to functional status but relapse and hospitalization (Hughes et al., 2013; Rund et al., 2007, Strassnig et al., 2015). Traditionally, investigations of the impact of negative symptoms on disability in schizophrenia have examined negative symptoms as a unitary construct. These studies often examined the linear association of global negative symptom severity with functional ability and outcomes. Little consideration has been given to the possibility that negative symptoms may be underpinned by specific pathophysiologically-distinct dimensions that may differentially relate to functioning (Kring and Barch, 2014). Indeed, investigations of the latent structure of negative symptoms using advanced multivariate psychometric models strongly favor multidimensional conceptions (Blanchard and Cohen, 2006; Strauss et al., 2012; Ahmed et al., 2012, 2015a, 2015b). Several models converge on a two-factor structure of negative symptoms that comprise an emotional expression factor and an amotivation/anhedonia factor. Moreover, distinct subdomains of negative symptoms appear to have specific associations with aspects of psychosocial functioning. For example, studies suggest that the amotivation/anhedonia factor but not emotional expression predicts effortful behavior and functional impairments (Konstantakopoulos et al., 2011; Hartmann et al., 2015).

Although the relationships between cognition, negative symptoms and functioning are well-supported, most studies do not include cohorts of the most chronic patients, some of whom have been hospitalized most of their adult lives, and do not extend functional outcomes to community tenure after hospitalization. Length of community tenure before re-hospitalization is a discrete and useful functional outcome measure in people with severe mental illnesses. While other common functional outcomes such as skill acquisition, ability to solve interpersonal problems, and social and occupational functioning reflect abilities relevant to those who have stable tenure in the community, the high rates of re-hospitalization and limited lengths of stay in the community make it difficult for patients to gain traction in the community. Further, being in the hospital has great significance on patients' overall recovery and greatly impacts cost of care.

The primary objective of this study was to examine cognition and positive and negative symptoms at discharge to explore their value in predicting community tenure after hospitalization in a social learning program for patients with treatment resistant psychotic illnesses. Treatment resistance status was operationalized as poor response to at least two previous trials of antipsychotics (i.e., less than 20% reduction in symptoms); moderate to severe positive, negative, and/or affective symptoms based on the Brief Psychiatric Rating Scale (BPRS > 45); and a continuous history of poor social and occupational functioning (Conley and Kelly, 2001). Patients were assessed at discharge, at 6 months post-discharge and again at 1 year post-discharge. The study outcome variable was sustained community tenure, defined as remaining in the community one-year post-discharge. We postulated that negative symptoms and cognition would predict sustained community tenure. Positive symptoms were not expected to be associated with re-hospitalization.

2. Method

2.1. Participants

Study participants were 90 patients recruited from the Second Chance Program at the Westchester Division of New York Presbyterian Hospital. The Second Chance program is an inpatient rehabilitation unit that combines psychopharmacology (mostly clozapine with augmenting agents) and a social learning

treatment program for stabilization of symptoms and rehabilitation of treatment resistant patients (Silverstein et al., 2002, 2006). The Second Chance program was specifically developed to provide intermediate to long-term care for individuals with schizophrenia with a history of poor treatment response. The program selects for individuals with moderate to severe levels of positive, negative, and/or affective symptoms. Program participants are often diversionary patients from other inpatient units who have failed at least two previous antipsychotic trials. Second Chance prepares patients for discharge and sustained tenure in less restrictive community settings using token economy to enhance the acquisition and performance of social, functional, and independent living skills that are often diminished after length hospitalizations. All patients carried a diagnosis of schizophrenia or schizoaffective disorder and were between the ages of 21 and 65 years. To increase generalizability, patients were not excluded from the study for any comorbidity. Many patients had histories of substance abuse, criminal activities, mental retardation, and multiple medical problems. In the current study, treatment resistance was operationalized partly based on Conley and Kelly's (2001) criteria—prior history of poor antipsychotic response (at least two previous trials with less than 20% symptom reduction); BPRS > 45; and a sustained history of poor psychosocial functioning. Poor psychosocial functioning was defined as sustained unemployment and few social relationships for at least a year. All patients signed informed consent. Patients unable to understand the informed consent were excluded.

Recruitment for the study was conducted between February 28, 2005 and February 28, 2011, during which time there were 231 discharges. During this period, 141 patients refused to participate in the study, were unable to consent, or were missed due to study team oversight. Of the 90 patients enrolled in the study, 78 were followed longitudinally (see Fig. 1 for study consort diagram). Of the 12 that were not followed, four patients withdrew at baseline, six were administratively withdrawn for distance, and 2 died prior to the first follow-up.

2.2. Procedures

Upon acceptance by a residential program, patients were approached by a researcher about enrolling in the research study. Once consent was obtained, symptoms and cognitive function were assessed (See Measures, below). Patients were contacted at their current residences 6 months post-discharge (Time 1) and 1 year post-discharge (Time 2) in order to assess community tenure. The 6-month follow-up was conducted in order to keep track of all study participants and identify those who may have relocated or have been rehospitalized. When initial contact failed, multiple follow-up attempts were made. Most follow-up assessments were completed at the community residence or community treatment centers. All procedures were approved by the Institutional Review Board of Weill Cornell Medical College.

2.3. Measures

The following scales were administered at discharge:

1. Brief Psychiatric Rating Scale (BPRS), a commonly used 24-item scale for assessing psychotic and general psychiatric symptoms (Ventura et al., 1993). This study uses a four-factor subscale structure (Kopelowicz et al., 2008): positive symptoms, agitation/mania, negative symptoms, and depression/anxiety. The positive, agitation/mania, and depression/anxiety scales along with the BPRS total score were examined as predictors of community tenure in the current study.
2. Scale for the Assessment of Negative Symptoms (SANS), a

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