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Predicting treatment response during the acute phase of hospitalization

Mary Peterson and William Michael

Objective: *This study sought to determine if an initial assessment for an acute inpatient population was able to predict treatment response as measured by progress through clinical pathways. In addition, we sought to analyze the impact of comorbidity on treatment response.*

Method: *A total of 170 adults (18–75 years) admitted for an acute inpatient hospitalization, received a full assessment including the Brief Symptom Inventory. Based on assessment results, patients were placed on one of five clinical pathways. Treatment response was measured by the number of days spent on each level of the clinical pathway.*

Results: *Results revealed an unexpected, significant negative correlation between symptom severity on admission and movement through the clinical pathway; that is, patients with more severe symptomatic presentations at assessment made more rapid progress through the clinical pathways. However, comorbidity showed the strongest relationship with treatment response. Taken together, these variables explained 52% of the variance in treatment response.*

Conclusions: *Responsiveness to antipsychotic medications, as well as high levels of subjective distress and the consequent motivation to achieve relief, may help explain the unexpected relationship between symptom severity and treatment response. Findings also demonstrated the utility of an initial assessment in predicting treatment response.*

Key words: *assessment, clinical pathways, comorbidity serious mental illness, treatment response.*

A significant body of research has begun to identify important best practices in psychosocial rehabilitation for persons with serious mental illness. The use of assertive community treatment, social skills training, family involvement, supported employment, and pharmacotherapy are among the best practices that predict improved quality of life and independent functioning for consumers.¹ However, there has been less research regarding effective treatment for persons with serious mental illness during the acute phase of the illness.

The implementation of clinical pathways in a medical setting provides evidence-based care using standardized treatment.² The clinical pathway attempts to optimize patient care by identifying goals, sequence and timing of care and staff responsibilities. Developing a comprehensive clinical pathway requires a collaborative, multidisciplinary effort between physicians, nurses and relevant adjunct therapists. When the concept of clinical pathway is applied to psychiatric care, clinicians clarify treatment interventions and goals in an effort to avoid the use of inefficient therapies during the typically short length of stay of an acute hospitalization.³ Although clinical pathways have been most commonly used in a general medical setting, there has been an increase in the development of clinical

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pathways for the treatment of a variety of psychiatric conditions including suicidal ideation, eating disorders, anxiety and dementia. Additional benefits in the use of clinical pathways include shorter length of stay, cost containment,⁴ reduction in the variance of care, and the feedback to staff regarding the effectiveness of their interventions.⁵ The link between assessment, clinical pathway interventions, and outcome has been less clear. Assessment has been shown to be an important tool in differential diagnosis, the establishment of a baseline in symptom severity, appropriate treatment interventions and predicted response to interventions.^{6,7} However, we were specifically interested in determining if there was a link between a simple, standardized admission assessment and the outcome of a patient's progress through the clinical pathways. We expected to find a positive relationship between symptom severity on admission and progress through the clinical pathway; that is, patients with more severe symptomatology would progress more slowly through the clinical pathway than patients with less severe symptomatology.

Research has shown that comorbid personality pathology also influences treatment outcome,⁸ with a number of studies indicating that the presence of comorbid Axis I or II diagnoses may negatively affect treatment outcome.^{9,10} However, other research has shown that comorbid conditions had no effect on long-term relapse rates of patients hospitalized with alcohol dependency.¹¹ Our second hypothesis was that comorbidity would affect treatment outcome; specifically, we expected that the presence of comorbid psychiatric conditions would negatively affect progress through the clinical pathways.

METHOD

Participants

The participants were 170 adult patients, 18–75 years of age, who were admitted for an acute hospital stay. All patients were assessed for placement on a clinical pathway after having a comprehensive history, physical examination, structured clinical interview by the attending psychiatrist, a complete nursing assessment, and social history. The Brief Symptom Inventory was also administered as part of the routine admission process. After admission data were reviewed, the attending psychiatrist provided the diagnosis and ordered clinical pathway assignment. There were slightly more men than women (57% and 43%, respectively). The length of stay was 3–6 days, with an average length of stay of 4.1 days. Approximately 40% of admissions were involuntary, with the patients having been placed under emergency protective custody. The patients' primary diagnoses included schizoaffective disorder (14%), major depressive disorder (29%), schizophrenia (18%), bipolar disorder (21%), and other (18%). The only persons excluded from the analysis of the archival data were those patients who

did not meet the criteria for a specific clinical pathway. In the 10 months of data collection, 22 patients were not placed on a clinical pathway, and an individualized treatment plan was developed. These patients were not included in this analysis.

Procedure

On admission, following the intake interview, patients completed the Brief Symptom Inventory,¹² which assesses nine primary symptom dimensions and three global indices. The global indices are: (i) a measure of intensity of distress (PSDI); (ii) a measure of overall number of symptoms (PST); and (iii) a combined score including both number of symptoms and intensity of distress (GSI).

Based on the results of the intake interview, the Brief Symptom Inventory results and the patients' clinical histories, the subjects were placed on one of five clinical pathways (depression, bipolar, psychosis, substance abuse or anxiety.) If the patients' diagnoses did not match any of the five clinical pathways, individualized treatment plans were developed for them and the patients were not included in the study.

The clinical pathways had three different levels, with treatment interventions developed for each discipline including psychiatry, nursing, psychology and recreational therapy within a multi-disciplinary team.

The patient's movement through the clinical pathway, assessed by number of days spent at each level, was correlated with their intake scores on the global indices to determine if the initial assessment data could predict the treatment outcome, measured by the number of days spent on Level 1 before progressing to Level 2.

RESULTS

Our results yielded some unexpected findings. Patients' scores on the global indices were significantly correlated with their progress through the clinical pathways. However, the correlation was negative, with greater symptom severity at intake (as reported on the Brief Symptom Inventory) predicting more rapid progress through the clinical pathways than less severe symptoms ($r(169) = -0.327$, $p < 0.001$). The patients who reported the highest level of distress on admission (as measured by T scores on GSI scale) actually progressed more quickly through the clinical pathways (measured by number of days spent at Level 1 before progressing to Level 2, a full day of treatment programming constituting a treatment day) during the acute hospitalization stay. In an effort to predict progression on the clinical pathways, a stepwise regression analysis was performed with comorbidity entered as the first variable ($\beta = 0.694$, $p < 0.001$) and the GSI score on admission entered as the second variable ($\beta = -0.21$, $p < 0.001$). The results of the regression showed that the strongest predictor of

successful treatment outcome (as measured by movement through the clinical pathways) was comorbidity (1, 168) $R^2 = 0.48$ for Step 1, the addition of the GSI score added to the predictive ability $F(2, 167) \Delta R^2 = 0.04$, adjusted $R^2 = 0.52$, for Step 2, ($p < 0.001$).

Additional analyses did not reveal a significant relationship between type of diagnosis and movement through the clinical pathway (1, 168) $R^2 = 0.005$.

DISCUSSION

Why would the patients with higher symptom severity move through the clinical pathways with greater success than those with fewer or less severe symptoms? In an attempt to answer that question, we considered two explanations: responsiveness to antipsychotic medication and a high subjective level of distress.

Responsiveness to antipsychotic medication

The patients experiencing the most distress endorsed significantly more severe symptoms, including paranoia and psychoticism. Severe symptoms of psychosis often begin to resolve quickly with the initiation of an appropriate antipsychotic medication and a structured milieu. One of our staff therapists described the changes as a 'transformation' that occurred during a typical 4-day stay. The immediate quieting of the most disturbing symptoms may allow the person to move successfully through the clinical pathway. In contrast, if a person's distress is not as severe, their responsiveness may be complicated by a variety of factors, including personality disorders or substance abuse problems, which may not have the strong initial response to treatment.

High subjective level of distress

A second consideration may be that patients have an increased motivation secondary to a high level of subjective distress. If individuals are experiencing significant distress, they may be more motivated to participate in treatment that will alleviate that distress. The endorsement of severe symptoms may be their cry for help, which is answered in part through the milieu treatment and medication.

Findings concerning comorbidity

The results showed that both comorbidity and symptom severity were significant predictors of treatment outcome; however, the predictive response was bidirectional. While high comorbidity predicted a slower treatment response, high symptom severity predicted a

more rapid treatment response. Comorbidity appeared to be the more powerful predictor; that is, patients with high comorbidity and high symptom severity responded more slowly than patients with high symptom severity and less comorbidity. These results support earlier research that found comorbid conditions impact upon treatment response.^{8,9}

Future research may choose to examine long-term treatment effects to elucidate the relationship between movement through clinical pathways and symptom stabilization. Is the initial positive response to treatment predictive of longer periods of stabilization than a slower response? Some diagnoses may also be more suited to clinical pathway interventions than others. Similarly, some comorbid conditions may have a differential impact on both treatment response and longer term adjustment. In particular, the powerful influence of a substance abuse diagnosis, including chronicity and severity, requires additional research.

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