*Brief Report*

# Patient Outcome after Treatment in a Community-Based Crisis Stabilization Unit

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## Abstract

*Community-based residential treatment for acute psychiatric crisis has been proposed as an alternative to inpatient hospitalization, but there is a dearth of adequate outcome studies. We examined naturalistic symptomatic and treatment outcomes in patients admitted to a residential crisis treatment program. The 24-item Brief Psychiatric Rating Scale score dropped from moderately ill (40.5±SD 8.25 points) on admission to mildly ill at discharge (28.7±11.37 points, t= 10.02, P<0.0001). Beck's Depression Inventory also improved greatly, from a significant level of depression of 29.5±11.41 points on admission, to a nearly euthymic level of 10.1±8.60 points at discharge (a difference of 19.4±12.10 points, t= 12.5, P<0.0001). The current study is limited by the lack of a matched comparison group of hospitalized patients. Nonetheless, community-based crisis stabilization units appear to be cost-effective alternatives to inpatient hospitalization for selected patients.*

## Introduction

The cost of healthcare continues to be a significant problem to society.[1,2] Alternatives to high cost services are required. In the 1970s, acute diversion units were established as an alternative to psychiatric hospitalization. These are currently known as crisis stabilization units (CSUs). Some CSUs are structured in such a way as to be subsumed under the larger category of the assertive community treatment (ACT) model. These diversion units follow the ten principles of ACT, specifically: (1) services are targeted to individuals with severe mental illness; (2) services are provided directly by the ACT team (which includes consumers, a psychiatrist, and other mental

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health providers); (3) team members share responsibility for patients served; (4) the staff-to-patient ratio is small (1:4); (5) the range of services are comprehensive and flexible (although services for co-occurring medical problems are not directly addressed); (6) interventions are carried out at the facility rather than the hospital or clinic; (7) no time limit on receiving services (although in the screening process, patients that will need prolonged treatment are excluded); (8) treatment and support services are individualized; (9) services are available 24 h (however, admission to the unit occurs only over the first two shifts); and (10) the team is assertive in engaging patients in treatment and monitoring their progress.[3] While there is great variation within how CSU units operate, the CSU described herein was designed to function within the ACT principles as much as is practical.

Despite their seemingly obvious benefits, data investigating the utility of CSUs are very limited. We reviewed quality assurance data in a CSU to investigate the outcome of patients treated in this setting.

## Methods

### The crisis stabilization unit

The subject of our investigation was a CSU located in Louisville, KY that has been in continuous operation for 10 years. At the time of the study, it was the region's only community-based crisis unit and is operated by an organization called Wellspring.

The CSU is located in downtown Louisville, KY in a remodeled two-story historic home. The house is a non-locked facility. Staff includes a psychiatrist, licensed clinical social workers, art therapists, and peer support counselors. At least two staff members are on site 24 h per day. Visitors are permitted and a separate phone line is available for patients.

Funding for the CSU primarily is from the local community mental health provider, Seven Counties Services. Additional funding is received from Metro United Way, Medicaid, Metro Louisville government, fund raising activities, small grants, and occasionally donations from patients. Most patients admitted to the CSU are not able to pay for the services.

Voluntary, acutely ill psychiatric patients that do not require a locked facility are appropriate for admission to the CSU. Any patient that meets criteria may be admitted, including people not within the community mental health system. While readmissions are allowed, there are no readmissions within this data set.

CSU staff are trained to perform the rating scales presented in this report. While inter-rater performance was not assessed, nearly all the data presented here has been collected by one highly experienced individual.

### Outcome measures

As part of routine quality assurance, every patient admitted to the CSU completes the Beck Depression Inventory (BDI II) and the 24-item Brief Psychiatric Rating Scale (BPRS) on admission and at discharge. Each client has an individualized treatment plan with realistic goals devised in collaboration with the patient. The staff and patient evaluate if the goals are met prior to discharge and consensus by both parties.

## Results

In 2005, the CSU served 261 patients of whom 66% ($n$=172) were women. Average age was 34 years. Caucasians were the most common race ($n$=204, 78%). The majority of patients ($n$=206, 79%) admitted to the CSU had a severe and persistent mental illness (schizophrenia,

schizoaffective, or bipolar illness). The remainder of patients suffered predominately from major depression. The incidence of a co-existing substance abuse disorder was 46% ($n$=120). Forty-four (17%) clients were homeless. The average length of stay was 9 days (range 1–30 days, but over 90% of patients stay less than 2 weeks).

The majority of the patients (251/261, 96%) reported that they felt better at the time of discharge. Treatment goals were met by 214 clients (82%) and 217 (83%) felt they were more psychiatrically stable at the time of discharge.

Symptom ratings as measured by the BPRS and the BDI II are presented in Table 1. Most subscales of the BPRS, including thought disturbance, anxiety, social withdrawal, and hostility, and the suicide item from the BDI II are also presented in Table 1. All items, except hostility, improved significantly from baseline at the time of discharge.

Since the average costs for only 1 day of patient care in the CSU is $160 compared to $400 per day at the local and state hospital for 2004—assuming the same length of stay in the hospital as the CSU—that is a saving of $240 a day, or $2,160 per patient. Since 95% ($n$=248) of these patients would have been hospitalized if the CSU was not available, over an entire year, the CSU may have saved $563,760. While the average length of stay in the state hospital for acute admissions is much greater than in the CSU, the level of severity of patients in the hospital is generally greater. To determine the true cost savings, a prospective comparison study in which patients are matched must be performed.

## Discussion

There were dramatic reductions in the severity of a wide range of psychiatric symptoms. Patient satisfaction with the CSU tended to be high. The cost of the CSU was significantly less than inpatient hospitalization.

The data in the current study were naturalistic and not controlled. This limits the conclusions that can be drawn. Since the CSU required patients to be voluntary and able to contract for safety, this may inadvertently have selected a subgroup of patients that would have done well in any setting. Thus, the dramatic improvements in symptom ratings may be a reflection of patient characteristics, not CSU efficacy. Without a comparison group, it is impossible to determine definitively if the CSU is at least equivalent to inpatient hospitalization. Similarly, cost savings are only estimates and not definitive. A prospective, random-assignment study is required to determine the actual cost savings. Additionally, the symptom ratings were performed in an open fashion, by the clinicians

**Table 1**

Changes in symptom ratings from admission to discharge in the BPRS and its subitems and the BDI II and the suicide item

| Item | Baseline±SD | At discharge±SD | Effect size | *t* | *P* |
|---|---|---|---|---|---|
| Total BPRS | 40.5±8.25 | 28.7±11.37 | 1.04 | 10.02 | <0.0001 |
| Thought disturbance | 11.7±6.04 | 9.7±5.79 | 0.35 | 3.82 | 0.0003 |
| Anxiety | 9.5±3.05 | 6.2±3.11 | 1.06 | 7.22 | <0.0001 |
| Social withdrawal | 6.0±3.18 | 4.5±2.54 | 0.59 | 4.46 | <0.0001 |
| Hostility | 8.24±2.93 | 8.12±5.06 | 0.02 | 0.18 | 0.86 |
| BDI total | 29.5±11.41 | 10.1±8.60 | 2.26 | 12.5 | <0.0001 |
| Suicidal ideation | 1.4±0.69 | 0.67±0.52 | 1.40 | 5.70 | <0.0001 |

Ratings are presented as means±SD

Effect size, *t* statistic, and probability values are also presented for each item

providing the clinical care. This increased the likelihood of the introduction of bias in the exit ratings. Furthermore, while all raters were intensively trained, there were no measures of inter-rater reliability. This potential source of variability was reduced by the fact that one clinician performed most of the ratings. Despite these limitations, this study demonstrates that the CSU may be an important option for a subgroup of severely and persistently mentally ill patients in acute psychiatric crisis.

While several studies have reviewed multiple aspects of assertive community treatment,[4,5] there are few studies investigating CSU-type programs. The current study provides the first systematic data for this form of hospital diversion care. Nonetheless, a randomized assignment trial is required to determine the true benefit of the CSU. Furthermore, comparative studies examining other forms of hospital diversion programs need to be examined in a randomized manner with blinded raters whose training has been validated.

## Implications for Behavioral Health

CSU care appears to be a cost-effective alternative to inpatient hospitalization in a subgroup of severely and persistently ill psychiatric patients. Expansion of such services can serve to dramatically reduce the cost of acute mental health services. Randomized trials are required to determine how this form of assertive community treatment compares with inpatient hospitalization. Additionally, while not the purpose of the current study, the current report supports the use of using routine outcome measures to achieve evidence-based practice.

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