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ORIGINAL PAPER

Reducing Length of Acute Inpatient Hospitalization Using a Residential Step Down Model for Patients with Serious Mental Illness

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Abstract Psychiatric inpatient bed numbers have been markedly reduced in recent decades often resulting in long emergency department wait times for acutely ill psychiatric patients. The authors describe a model utilizing short-term residential treatment to substitute for acute inpatient care when the barrier to discharge for patients with serious mental illness (SMI) is finding appropriate community placement. Thirty-eight patients (community hospital (n = 30) and a state hospital (n = 8)) were included. Clinical variables, pre-/post-step down length of stay, and adverse outcomes are reported. Thirty of the 38 patients completed treatment on the residential unit and were discharged to the community. Five of the patients required readmission to an inpatient unit and the other three had pre-planned state hospital discharges. The majority of patients with SMI awaiting placement can be stepped down to residential treatment, potentially freeing up an inpatient bed for an acutely ill patient. Reforms in healthcare funding are necessary to incentivize such an approach on a larger scale, despite likely cost savings.

Keywords Residential treatment · State hospitals · Step down · Serious mental illness (SMI) · Length of stay

Introduction

Historically, individuals with serious mental illness (SMI) who have acute exacerbation of symptoms have been treated in community inpatient hospitals or state psychiatric hospitals. Over the past several decades, deinstitutionalization across the nation has led to markedly fewer inpatient psychiatric beds (Lamb and Bachrach 2001). In North Carolina, for example, the number of state hospital beds decreased from 1717 beds in 2000 to 866 beds in 2014 (North Carolina General Assembly 2014). The impact of the reduction of beds is most evident in hospital emergency rooms, where patients wait many hours or even days for transfer to a psychiatric unit (Nolan et al. 2015; Weiss et al. 2012; La et al. 2015).

Given budget constraints on increasing the number of acute inpatient beds, one potential strategy to increase available inpatient space is to utilize a short-term residential level of care for patients that have stabilized and are awaiting placement, yet too ill to be discharged without appropriate community support in place. Studies have shown that residential units yield similar levels of improvement as hospital-based care, yet are less costly and have higher patient satisfaction scores (Slade et al. 2010; Hawthorne et al. 1999, 2005, 2009; Thomas and Rickwood 2013; Fenton et al. 1998, 2002).

The goal of this project is to characterize the patients who participated in the step down program, evaluate successes and failures, and estimate the number of acute inpatient bed days potentially saved and thus available for acutely ill patients waiting in emergency departments.

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Methods

Patients (n = 38) were stepped down from a community-based inpatient unit (UNC Hospitals, Raleigh, N.C. and Chapel Hill, N.C.) and a state hospital unit (Central Regional Hospital, Butner, N.C.) to a community residential unit, from September, 2014 to August, 2015. The residential unit is a locked, 24-hour, 16-bed unit which serves as an alternative to hospitalization for adults with mental health and substance use disorders. A full description of this service is described elsewhere (North Carolina Department of Health and Human Services 2015). The unit can accept voluntary or involuntary patients but cannot utilize restrictive interventions (e.g., seclusion, restraint, or physical holds) and cannot administer medications against a patient's will. Patients have their own rooms but use shared bathrooms. Compared to an acute inpatient unit there are fewer documentation and staffing requirements, a lower level of reimbursement is provided, and voluntary patients are able to go off the unit on passes with family or outpatient teams.

The admission criteria for the step down program were: (1) a diagnosis of a serious mental illness, and (2) patients who were psychiatrically stable but for whom a safe placement was not readily available, or who needed additional time for psychiatric stabilization prior to discharge to the community. Patients were admitted either on a voluntary basis or involuntarily depending on their clinical circumstances. All patients were evaluated by the referring team with the Level of Care Utilization System (LOCUS) assessment (Adult Version 2010), a tool to help guide level of care placement decisions (American Association of Community Psychiatrists 2009). A LOCUS score of 3 indicates need for high intensity community based services, a score of 4 indicates need for medically monitored non-residential services (e.g. partial hospitalization or assertive community treatment), and a score of 5 indicates need for medically monitored residential services (akin to the residential unit in this study). A score of 6 equates to an inpatient level of care. The LOCUS was not used as an entry criterion, but rather as an objective measure to support whether step down candidates on the inpatient units could be managed at a lower level of care.

Data for each step down patient was compiled with approval from the University of North Carolina Office of Human Research Ethics (IRB #15-1696), including age, sex, referral source, pre-admission (inpatient) length of stay (LOS), admission (residential) LOS, and discharge location. The sum of the admission LOS was estimated to be the number of inpatient bed days made available using the step down approach.

Results

Thirty-eight patients were stepped down from an inpatient to residential level of care. Demographic and clinical characteristics are presented in Table 1. Eight patients were admitted from the state psychiatric hospital and 30 from a community inpatient unit. Twenty patients were admitted voluntarily (including those who had a legal guardian appointed) and 18 patients were admitted under an involuntarily commitment. All patients were either publicly insured (Medicare and/or Medicaid) or uninsured. Nineteen patients had a LOCUS score of 5, 6 patients had a score of 4, and 13 patients had a score of 3. Median measurements were calculated due to the small cohort size and presence of outlier values in each group. Patients coming from the state hospital had a median pre-admission LOS of 55.5 days (SD 99.8 days) and median residential LOS of 33 days (SD 28.7 days). Patients admitted from UNC Hospitals had a median pre-admission LOS of 17.5 days (SD 8.8 days) and median residential LOS of 13 days (SD 35.3 days).

Of the 38 patients in the program, 5 were re-hospitalized due to an acute need for a higher level of care. Of these, two were discharged due to violence, one due to acute suicidality, and two due to worsening psychosis. Four of these five patients had a co-morbid diagnosis of antisocial personality disorder, and the other had a co-morbid diagnosis of intellectual disability. Another patient was discharged but then readmitted back to the residential unit in the same episode of care due to worsening psychosis. Of the 30 patients who completed the program, 15 were discharged to a private residence, 7 to a group home, 4 to a homeless shelter, 2 to assisted living facilities, and 2 to other residences. Three patients who stepped down from the inpatient unit had already been referred to the state hospital for longer-term rehabilitation, and were stepped down while they awaited transfer. The four patients discharged to a homeless shelter either did not have the income or health insurance (i.e., Medicaid) to support alternative placement, or had declined alternative placement.

Discussion

In this study, we describe the use of a short-term residential unit as a step down unit for community-based and state hospital inpatients. Of patients who stepped down, 30 of 38 (79%) were discharged back to the community, consistent with previous studies on alternatives to inpatient admission (Fenton et al. 1998). The rate of patients who had to return to inpatient care is also similar to 30-day readmission rates for behavioral health patients with Medicaid (Mark et al. 2013), and consistent with the higher rate of relapse for individuals with more complex illnesses. The feasibility

Table 1 Patient demographic and clinical characteristics

Characteristic	Median ± SD	
Age (years)	44.5 ± 13.6	
Pre-admission LOS, UNC (days)	17.5 ± 8.8	
Pre-admission LOS, state hospital (days)	55.5 ± 99.8	
Admission LOS, UNC (days)	13 ± 35.3	
Admission LOS, state hospital (days)	33 ± 28.7	
	N	%
Male	25	66
LOCUS score		
3	13	34
4	6	16
5	19	50
Primary psychiatric diagnosis		
Psychotic disorder	20	53
Mood disorder	7	18
Personality disorder	5	13
Other	6	16
Type of insurance		
Private	0	0
Public	22	58
Uninsured	16	42
Commitment status		
Voluntary	20	53
Involuntary	18	47

of the program is in accord with patients' LOCUS assessments, half of which indicated the adequacy of a residential level of care (level 5), and half of which recommended intensive outpatient services (levels 3 and 4). Despite the fact that all patients came from inpatient units, no patient had a LOCUS score of 6 which would recommend an inpatient level of care.

The potential advantages of a step down model include reduced system costs and more efficient bed utilization, allowing psychiatric inpatient beds to be used for more acutely ill psychiatric patients, and emergency department beds for those with medical emergencies. In addition, in the case of state hospital patients, they were also able to return to their home county, resulting in more visitations by family and outpatient teams, and improved efficiency in securing appropriate housing.

There are several challenges and impediments to the step down approach we describe. The biggest is financial, whereby Medicare and most private insurers do not cover residential services. As such, all of the patients admitted to our program had either Medicaid or were uninsured and funded through public monies. Furthermore, the North Carolina public reimbursement rate for residential treatment is quite low, making it difficult to sustain this model without additional financial support.

This study's findings should be interpreted in the context of several limitations. There was no control group for patients who stepped down, so we are unable to comment on whether this approach leads to improved outcomes when compared to treatment as usual. We also do not have data on post-discharge outcomes such as hospital readmission, engagement with outpatient treatment, or adverse events. Furthermore, we do not have any data to help us understand the patient perspective on this model. Lastly, the generalizability of the data may be limited to uninsured or publicly-insured individuals with SMI, given that privately-insured individuals were not represented.

Conclusions

The majority of patients who no longer need an inpatient psychiatric level of care, but who cannot be discharged due to either lack of appropriate housing or inadequate community supports, or both, can be stepped down to a lower level of care. This model may offer an alternative, less costly approach to increasing acute psychiatric bed capacity for the seriously mentally ill, and may reduce emergency department overcrowding. However, the financing of residential psychiatric treatment beds will need to be reformed in order to expand and incentivize these types of practical approaches.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. For this type of study formal consent is not required.

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