

ORIGINAL ARTICLES

An Observational Study of the Impact of a Rehabilitation Admission on Readmission Data

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Abstract

Background and Aim

Specialist psychiatric rehabilitation services are changing in response to overall redesign of psychiatric services. The assumed therapeutic gains of these services have not been established or quantified, and their role in contemporary practice has not been formally articulated. The aim of this observational study is to examine the impact of an admission to psychiatric rehabilitation wards at the Royal Edinburgh Hospital on readmission data post-discharge.

Method

Thirty-five admissions were included in the sample. Simple measures of outcome were used: the number of days spent in hospital; number of Mental Health Act uses; number of admissions. This information was obtained from case notes and from data collected routinely on the Patient Information Management System. These measures were examined in the two-year periods before and after a rehabilitation admission.

Results

In the two-year period following the index admission there was a significant reduction in all these measures compared to the two-year period before the index admission: mean number of bed days ($p < 0.001$); number of uses of the Mental Health Act ($p < 0.001$); number of readmissions ($p < 0.01$).

Conclusion

There was an improvement in patient outcome measures following a rehabilitation admission.

concerned with a small (but difficult) group of patients who have multiple and complex needs which are not met by available resources and services in the community. They are often vulnerable and not able to ask or use appropriate help.¹

Rehabilitation is a continuous process within a spectrum of settings ranging from hospital to community living. Some services continue to use beds as part of the rehabilitation process. The Royal Edinburgh Hospital has recently completed a five year programme which saw the closure of 92 rehabilitation beds with 75 beds remaining (of those 35 are "active" rehabilitation beds). The joint social/health Community Rehabilitation Team care manage, plan and integrate all services at an individual patient level through in-patient care and community living. Rehabilitation admissions focus on optimising individuals' physical and mental health. By using person-centred planning tools, strategies are developed to maximise independence and implement sustainable discharges from hospital.

Since rehabilitation beds are expensive, it is important to establish that using them is an efficient use of resources. The aim of this observational study was to attempt to establish and quantify the therapeutic outcomes attributable to inpatient rehabilitation. Hospitalisation, in spite of its limitations, has been used as an outcome measure in many previous studies as a proxy for relapse.² In this study, simple outcome measures including hospitalisation were examined in two-year periods before and after an index rehabilitation admission.

Method

Data collected routinely on the Patient Information Management System (PiMS) and some case notes were examined retrospectively. Details of patients who had been admitted in the active rehabilitation wards (35 beds) between 1st January 2000 and 31st December 2003 were obtained. The other 40 beds were excluded because they had a continuing care focus at that time. Admissions to rehabilitation wards for promotion of change were included (index admission). Only those admissions which had a follow-up period for two years were included (ie those who were discharged by 2003). The whole study period was 1998-2005.

For each index admission patient, the following details were recorded: gender; age on admission; primary diagnosis; admission and discharge dates. The following data were collected for the two-year periods immediately before and after the index admission: number of occupied bed days in hospital; number of admissions to hospital; number of uses of the Mental Health Act. The pre-/post- index admission data were compared

Introduction

Supporting people with serious mental illness to lead meaningful lives is often the primary goal of a rehabilitation service. Within the changing climate of service redesign, rehabilitation psychiatry is required to redefine itself and the design of the service it provides. Rehabilitation services have been concerned with resettlement but this process is now coming to an end. Rehabilitation services are now increasingly

using a paired t-test (two-tailed) in order to ascertain whether there was a statistically significant difference between pre- and post-index admission data. These data were further correlated with age (Pearson's), length of admission (Pearson's) and gender (Spearman's) to ascertain statistically significant relationships between age, length of admission and gender. Alpha was set at 0.05.

Results

Thirty-five (N=35) admissions were included in the sample. Data for these patients are detailed in Table I. The ages of the patients were normally distributed ($p > 0.05$; one sample Kolmogorov-Smirnov test).

Table I: Patient data

Gender	males =24 females =11
age on admission (years)	mean= 36.26 (S.D.= 11.01; Range 19 to 61)
primary diagnoses	schizophrenia or related disorder (29) mood disorders (2) alcohol/substance misuse or dependence (1) other (3).
number of patients with co-morbid diagnoses	7
length of index admission (days)	mean = 667.91 days (S.D. = 474.73; Range 154 to 2352 days).

Table II shows significant reductions in the number of occupied bed days, Mental Health Act uses and admissions to hospital in the two year period following the index admission compared to the two years before admission.

Table II: Two year pre-/post- index Admission Comparisons for Outcome Measures.

	2 years pre-index admission	2 years post-index admission	paired t-test (two-tailed) value	Significance level
occupied bed days	mean = 478.34 S.D.= 205.16 Range 4 to 731	mean = 115.86 S.D.= 213.39 Range 0 to 731	7.597	$p < 0.001$
number of Mental Health Act uses	mean = 2.09 S.D. = 1.74 Range 0 to 7	Mean = 0.46 S.D. = 0.92 Range 0 to 3	5.452	$p < 0.001$
number of admissions	mean = 2.51 S.D.= 2.54 Range 0 to 13	mean = 1.17 S.D. = 1.82 Range 0 to 8	3.153	$p < 0.01$

The mean number of occupied bed days were reduced from 478.34 days to 115.86 days ($p < 0.001$) and the number of uses of the Mental Health Act was reduced by approximately 75% ($p < 0.001$). The mean number of admissions for the two years post discharge period was 1.17 compared to 2.51 prior to the index admission ($p < 0.01$).

There was no gender difference in occupied bed days or Mental Health Act use (Spearman's). Females, however had fewer readmissions following discharge from the index rehabilitation admission ($p < 0.01$; Spearman's two tailed). Neither age on admission nor the length of index admission had any effect on occupied bed days, Mental Health Act uses or admission rates (Pearson's).

Discussion

There was a significant reduction the number of days spent in hospital, the number of Mental Health Act uses and number of admissions in the two years following admission to a psychiatric rehabilitation ward at the Royal Edinburgh Hospital compared to the two years before admission. The reduction in subsequent admissions following the index admission was greater in females than males. This suggests that patient outcome is improved following a rehabilitation admission.

This study has various limitations. Firstly, a relatively small number of admissions were studied and this limits the conclusions that can be drawn. The large standard deviations for most of the variables recorded indicate that the admissions studied were highly variable. This reflects the varying needs of the individual patients in the group studied. Secondly, many of the patients in this study spent periods of time on a waiting list for in-patient rehabilitation (eg on acute wards) and this may have affected the data. It was not possible to obtain data to determine how long patients had waited to be admitted to the rehabilitation service. There were however, a greater number of admissions to general wards before the index admission which suggests a more chaotic picture ("revolving door") than a single protracted admission while waiting for a rehabilitation admission. Thirdly, it may be that with closure of beds generally, the number of occupied bed days may be reducing throughout all psychiatric services. However, the patients included in this study were some of the most complex and chaotic encountered within psychiatric services. If a person who has this level and nature of need were not in a specialist rehabilitation service, it is likely they would be spending longer occupying beds inappropriately on acute general psychiatric wards where there are sometimes inadequate resources to prepare and plan for successful discharge.³ Fourthly, it should be noted that there have also been major changes in psychiatry within the seven year period studied. These include developments in community care and increased use of the newer antipsychotic drugs and so it would be incorrect to attribute the improved outcomes to the in-patient rehabilitation spells alone. Finally, these results are specific to the Edinburgh rehabilitation service and may not be generalisable to other areas. The resources and configuration that constitute a psychiatric rehabilitation service vary widely throughout the country and are defined largely by the position they occupy in relation to other services. This is often dictated by local history and geography.⁴ Following discharge, this complex and chaotic group of patients would have simultaneously been under the care of many other services/agencies e.g. assertive outreach services, substance misuse, social work, primary care, criminal justice system. Involvement with these agencies and how much this impacts on re-admission rates will vary according to individual patients

and each geographical area. In the Edinburgh service the emphasis is on an integrated approach between all agencies (health, social work and social care providers) co-ordinated through the Community Rehabilitation Team.

Despite these limitations, the finding of improved outcome following an inpatient rehabilitation admission has important implications since specialist psychiatric rehabilitation services (and beds in particular) are under threat for various reasons. Mental health services are being increasingly redesigned into functional teams with emphasis on crisis, acute care and assertive outreach teams. Since inpatient beds are costly, it is tempting to redesign services to reduce the overall bed complement and to move care towards community settings. However, as traditional mental hospitals close, acute beds are increasingly filled and then blocked with people with complex and longer-term mental health care needs who have protracted stays.³

A common understanding of the function of rehabilitation services is that they help people with schizophrenia (and other disorders) to function optimally and independently with the impairments they have. Development of skills is important. This aspect of rehabilitation may occur in any setting and the community is often the best location for this process with outreach and other support. However, the reduction in bed usage after an inpatient rehabilitation care spell presented in this study supports a general perception that a small subset of complex and difficult patients appear to do better following an inpatient rehabilitation spell. What therefore is unique to inpatient psychiatric rehabilitation? In-patient rehabilitation services increase therapeutic engagement through developing longer-term therapeutic relationships with patients and their families in such a way as to enhance their strengths and resilience.¹ The knowledge gained by these relationships through a comprehensive, holistic assessment is essential to understand reasons for poor previous engagement with community services. Once knowledge of this process is shared by the team, it becomes easier to intervene early at future potential breakdown. Essentially, this process is about developing good discharge planning and strategies to identify and manage early relapse.

There is sometimes an assumption that the rehabilitation process does not impact on the disease process itself. However, Strauss⁵ argued that rehabilitation is a treatment in itself. People with severe mental illness play a large part in the way they select the kind of help they get. An inpatient unit is sometimes essential to support patients to develop goal directed activity. Poorly motivated and chaotic people sometimes require the containment of an inpatient setting to encourage this activity. Recovery of meaningful activity and community participation facilitates self determination. By examining motivating factors, the ability to self monitor and develop proactive strategies to prevent relapse are enhanced.⁶ Integration is facilitated and connections are made which support the development of identity and meaning. This allows individuals to lead satisfying and fulfilling lives, with or without symptoms.⁷

This study supports the continued need for specialist rehabilitation services and highlights the need for adequate numbers of in-patient rehabilitation beds. This may be cost effective in keeping acute beds available for those who require brief admissions. This planning is an essential aspect of the whole system approach to recovery from mental health.⁸ A longer follow up period could demonstrate whether gains made in the two years post discharge are sustained.

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Declaration of interest

None

References

1. Rehabilitation and Recovery Now. Royal College of Psychiatrists Council Report, 2004.
2. Burns T. Hospitalisation as an outcome measure in schizophrenia. *B J Psychiatry* 2007; 191(supp 50): 37-41
3. Lelliott P, Wing J, Clifford P. A national audit of new long stay psychiatric patients. I: Method and description of the cohort. *B J Psychiatry* 1994; 165: 160-169.
4. Mountain DA. Rehabilitation Psychiatry. *Irish J Psychol Med* 2001; 18: 140-141.
5. Strauss JS. What does rehabilitation accomplish? *Schizophr Bulletin* 1986; 12: 720-723.
6. Wilken JP, Den Hollander D. Rehabilitation and Recovery: a comprehensive approach. Amsterdam: SWP, 2005.
7. Bradstreet S. Elements of Recovery: International learning and the Scottish context. (SRN Discussion Paper Series; Report No.1. eds S. Bradstreet & W. Brown) Glasgow: Scottish Recovery Network, 2004.
8. Killaspy H, Harden C, Holloway F et al. What do mental health rehabilitation services do and what are they for? A national survey in England. *J Mental Health* 2005; 14: 157-165.