Webb, S., Yaguez, L. & Langdon, P.E (2007). Factors associated with multiple re-admission to an acute psychiatric hospital. Journal of Mental Health, 16, 647-661.

Factors associated with multiple re-admission to a psychiatric hospital.

Sheena Webb, B.Sc. (Hons.)., D.Clin.Psy.
Department of Psychology, Henry Wellcome Building, Institute of Psychiatry, King's College London, London, United Kingdom

Lidia Yágüez DiplPsych, VorDiplom, PhD, C.Psychol.
Department of Psychology, Henry Wellcome Building, Institute of Psychiatry, King's College London, London, United Kingdom

Peter E Langdon*, B.Sc.(Hons.), PGCertHE., D.Clin.Psy., C.Psychol., AFBPsS
School of Medicine, Health Policy and Practice, University of East Anglia, Norwich, United Kingdom & Broadland Clinic Forensic Services, Norfolk Learning Difficulties Service, Norwich NHS Primary Care Trust, Norwich, United Kingdom

*Address for Correspondence: Dr Peter E Langdon, School of Medicine, Health Policy and Practice, University of East Anglia, Norwich, NR4 7TJ Telephone: 44 1603 593599 Fax: 44 1603593604 Email: P.Langdon@uea.ac.uk WWW: http://www.med.uea.ac.uk/psychology

TITLE: Factors associated with multiple re-admission to a psychiatric hospital.

Abstract

Background: Previous studies have attempted to identify various demographic and associated factors which place psychiatric service users at risk of re-admission to a psychiatric hospital following discharge.

Aims: To follow-up two years on a group of patients that had been admitted to a psychiatric ward and to investigate possible variables that could determine readmission to hospital.

Method: A cross sectional and a two year longitudinal design were used.

Results: "Revolving-door" service users were more likely to be taking medication, were younger at age of first contact with services, and had been using services for longer. They were also more likely to be living in council housing, which is, housing provided by and subsidised by local government, and have a diagnosis of affective disorder. There were no differences between the previous cohort and the current sample in terms of demographics, and history of contact with services. A larger proportion of service users met the "revolving-door" criteria during the present study as compared to our previous study. There were some differences between the current and previous study in terms of accommodation at discharge, diagnosis, and social living status.

Conclusions: Several variables were shown to predict membership in the "revolving-door" group and findings replicate Langdon et al, (2001), although there were differences. "Revolving-door" patients may have more enduring and chronic mental illnesses, but were similar to their "non-revolving door" counterparts on some variables. Research of this nature is difficult given the cross-sectional nature of studies, and a lack of a clear consensus within the literature as to which factors are associated with "revolving-door" service users remains.

Declaration of Interest: None

KEYWORDS: INPATIENT SERVICES, REVOLVING DOOR, READMISSION, MENTAL HEALTH SERVICES, PSYCHIATRIC SERVICES, RISK FACTORS

Introduction

Some studies have suggested that a small number of patients are receiving a large portion of the resources that are allocated for psychiatric care (Appleby, Luchins, Desai, Gibbons, Janicak & Marks, 1996). These patients are often referred to as 'revolving-door' patients, and a variety of studies have been conducted in an attempt to tease apart factors that place patients at risk of becoming heavy users of inpatient psychiatric services.

However, there is no clear consensus within the literature as to which variables reliably predict multiple re-admission to a psychiatric hospital. As Langdon, Yaguez Brown & Hope (2001) pointed out, there appears to be three main reasons associated with this difficulty. Firstly, the methodology employed by studies may vary considerably (e.g. cross-sectional *vs.* longitudinal). Secondly, there is no consensus within the literature as to the definition of a 'revolving-door' patient. For example, some studies have defined 'revolving-door' patients as those with three or more admissions within their lifetime (Langdon et al., 2001; Vogel & Huguelet, 1997), while other researchers have suggested four or more admissions within their lifetime (Rabinovitz, Mark, Popper, & Slyuzberg, 1995), whiles others still have suggested those re-admitted within three years (Bernardo & Forchuck, 2001) or those re-admitted within 30 days of discharge (Swett, 1995). Further still, Kastrup (1987) identified two patterns of re-admission amongst a large national cohort of psychiatric patients: (a) those with four or more re-admissions within 10 years and, (b) those with four or more re-admissions within 2.5 years.

The third suggested reason for the lack of a consensus within the literature relates to sampling. All of the previous studies have taken place within different countries that

have differing mental health care services which may employ differing diagnostic systems and offer services to differing population groups in terms of, for example, socioeconomic status. Rabinowitz et al., (1995) have previously reported that the average length of hospital admission, substance misuse rates, and the distribution of admissions over time differ in Canada, Denmark, Israel, the United States, and New Zealand. As such, each study has drawn their sample from differing populations and this may provide some explanation for the large number of factors that have been reported to predict re-admission.

Leaving these methodological concerns aside, there is however, a degree of concordance between some studies in terms of the factors associated with re-admission. These factors include: (a) diagnosis of a psychotic illness (Bernardo & Forchuck, 2001; Daniels, Kirkby, Hay, Mowry & Jones, 1998; Hodgson, Lewis & Boardman, 2001; Kastrup, 1987; Lewis & Joyce, 1990; Korkelia, Lehtinen, Tuori & Helenius, 1998; Rabinovitz et al., 1995), (b) being young (Kastrup, 1987; Langdon et al., 2001; Lewis & Joyce, 1990; Vogel & Huguelet, 1997; Woogh, 1986), (c) being male (Appleby et al., 1996; Haywood, Kravitz, Grossman & Cavanaugh, 1995; Kastrup, 1987; Korkelia et al., 1998; Lewis & Joyce, 1990), (d) being divorced or unmarried (Bernardo & Forchuck, 2001; Hodgson et al., 2001; Rabinovitz et al., 1995), (e) substance misuse (Haywood et al., 1995; Langdon et al., 2001; Woogh, 1986), (f) greater symptom severity regardless of diagnosis (Swett, 1995; Postrado & Lehman, 1995; Lyons et al., 1997), (g) unemployment (Bernardo & Forchuck, 2001; Haywood et al., 1995; Rabinovitz et al., 1995), (h) mode of admission (Hodgson et al., 2001; Korkelia et al., 1998; Vogel & Huguelet, 1997), (i) higher level of education (Bernardo & Forchuck, 2001; Rabinovitz et al., 1995), (j) non-compliance with medication (Haywood et al., 1995; Weiden&

Glazer, 1997), (k) quality of life (Postrado & Lehman, 1995), and (l) disruptive behaviours (Sullivan, Young, & Morgenstern, 1997). However, there is also a degree of inconsistency between studies with respect to some factors being associated with re-admission. For example, some studies have reported that 'revolving-door' patients tend to be younger (Kastrup, 1987; Korkelia et al., 1998; Langdon et al., 2001; Lewis & Joyce, 1990; Vogel & Huguelet, 1997; Woogh, 1986, while others have reported that 'revolving-door' patients tend to be older (Haywood et al., 1995; Rabinovitz et al., 1995). Others still have suggested that there may be a relationship between sex and diagnosis which may affect re-admission rates (Daniels et al., 1998; Lewis & Joyce, 1990; Vogel & Huguelet, 1997).

Very few of the previous studies have taken place in the United Kingdom, and the majority of the previous large cohort studies have taken place in countries that maintain a nationwide register of psychiatric admissions (Kastrup, 1987; Lewis & Joyce, 1990; Rabinovitz et al., 1995). Four known previous studies have investigated factors that predict re-admission to a psychiatric hospital within the United Kingdom (Hodgson et al., 2001; Langdon et al., 2001; Dixon, Robertson, George, & Oyebode, 1997; Tyrer, et al., 1995). Hodgson et al. (2001) examined data on admissions in an area of Britain from 1987 to 1993 and reported higher re-admission rates for those who were unmarried, had a diagnosis of psychotic disorder, detained under sections of the Mental Health Act, or had a shorter length of stay during their index admission. Dixon et al. (1997) examined factors that were related to re-admission to hospital within six months of discharge. They reported that having more prior admissions, living alone or with family, and being discharged against medical advice predicted re-admission. Tyrer et

al. (1995) found that a higher number of admissions resulted from the introduction of the care programme approach for vulnerable patients.

Finally, Langdon et al. (2001) examined factors which predicted re-admission amongst a group of patients classed as 'revolving-door' patients. 'Revolving-door' patients were more likely to be living alone, in hostels or private accommodation, and had an earlier age of illness onset along with having been in contact with psychiatric services for a longer period. There were also taking more medication and been diagnosed with psychoactive substance misuse, with relapse of psychosis being the best predictor multiple re-admission to hospital.

Given the differences across countries in terms of their findings as to which factors predict re-admission to hospital, and the limited research in the United Kingdom into factors that place psychiatric patients at risk of multiple re-admission, the current study was undertaken, which aimed to repeat the Langdon et al. (2001) study two years on using the same ward and a similar methodology. As such, data was collected on all admissions from 01 January 1999 to 31 December 1999 to an acute psychiatric ward serving two psychiatric catchment areas in South London. The study aimed to look at variables that have been examined in other studies such as demographic characteristics and diagnosis, but also included less commonly studied variables such as admission routes and medication. This study had two main aims, 1) to examine demographic variables in order to determine whether or not any are associated with patients who are at risk of multiple re-admission to hospital, and 2) to compare the findings of this study to that of a previous study (Langdon et al., 2001)) *and thus follow up over a period of 2 years a small cohort of patients that had been admitted to a psychiatric hospital*.".

Method

Sample

All the patients that had been admitted in 1999 to an acute psychiatric ward of a hospital in South East London, UK were included in the study.

Data Collection

Data were collected from two sources relating to the year 1999, (a) the computerised patient administration system (PAS) of the relevant National Health Service Trust, and (b) the clinical notes. The PAS provided basic demographic information and number of admissions while all further information was gathered from clinical notes.

Demographic data were collected regarding sex, ethnic origin, marital status and employment status. Background data collected included the number of previous admissions to a psychiatric hospital and the age at first contact with psychiatric services. In relation to the most recent admission, data were collected regarding accommodation on admission and discharge (e.g. council or private), age at admission, social living status (i.e. alone or not alone), admission source (e.g. emergency clinic or police), admission route (e.g. self-presented or arrested) and Mental Health Act status.

Clinical information was collected for medication on admission and discharge (number and type), and diagnoses (primary and secondary) made during the most recent admission (based on ICD-10 diagnostic categories).

Finally, on the basis of the information available, the reason for the most recent admission were determined and categorised according to Langdon et al, (2001). A

patient could be categorised as having more than one reason for re-admission (see table 1 for a summary of the categories).

The study was approved by the local research ethics committee and complied with the Data Protection Act, 1998 of the United Kingdom.

TABLE 1 here

Statistical Analysis

Firstly, descriptive statistics were calculated for the relevant variables. Differences between ethnic background and mental health status were analysed using, Pearson Chi Square tests. In the second step, the sample was divided into two groups: (a) 'revolving-door' (RD) and (b) 'non-revolving-door' (NRD) following the criteria of Langdon et al, (2001). Those patients who were found to have had three or more admissions within their lifetime were defined as the RD group; the remainder (<3 admissions) were defined as the NRD group.

Frequencies and descriptive statistics were generated for all variables. To test group differences between the RD and NRD groups, Pearson Chi Square tests were calculated from 2x2 contingency tables for the categorical variables and Mann-Whitney U tests were used for the continuous variables.

In order to examine whether any of the variables investigated predicted RD membership, the variables were entered into a forward stepwise logistic regression analysis. Those variables found to be significant predictors of RD status were then entered into a fitted model to model the probability of being in the RD group. Variables

with high levels of missing data were excluded from the analysis to preserve the validity of the results.

Results

Description and analyses of 1999 Sample

In this sample of 133 patients, 54% were males and 46% females. The vast majority (89%) were unemployed, single (84%) and living alone (74%). The most recent government statistics indicate that within the catchment area studied 32.2% of the population are Caucasians, while 67.8% of the population are from an ethnic minority other than white (ONS, 2001). Within this area, 15.4% of the population are of Black-Caribbean origin and 35.7% of are of Black-African origin (ONS, 2001). In the current study, 52.3% were reported as white, and 47.7% were reported to belong to an ethnic minority other than white, with 14.8% being of Black-Caribbean origin, and 29.9% being of Black-African origin. Comparison with census statistics suggests that the present sample was strikingly over-representative of persons of white origin, and slightly under-representative of people from an ethnicity of Black-Caribbean or Black African origin.

The most common primary diagnosis (in 51% of the cases) was psychosis, followed affective disorder in 46% of the cases. Looking at the type of diagnosis received according to the ethnic background, those of ethnic minorities other than white were significantly more likely to receive a diagnosis of a psychotic disorder (White= 41% vs. Ethnic Minority= 67%; Pearson χ^2 (1)=7.97, p=0.005). On the other hand, Caucasians were significantly more likely to receive a diagnosis of substance misuse (White= 29% vs. Ethnic Minority= 5%; Pearson χ^2 (1) =12.06, p=0.001) or personality disorder (White= 22% vs. Ethnic Minority= 5%; Pearson χ^2 (1) =7.65, p=0.006).

With respect to mental health act status, 33 % of the sample were detained in hospital. Comparing the patients that were detained to those not detained revealed that those with a diagnosis of affective disorder were significantly less likely to fall within the detained group (Pearson χ^2 =, p=0.005), and there was a non-significant trend for those with a diagnosis of psychosis to fall within the detained group (Pearson χ^2 =3.211, p=0.073). Males were significantly more likely to be detained (Pearson χ^2 =3.843, p=0.05), as were those of ethnic minority origin other than white (Pearson χ^2 =9.388, p=0.002). In addition, those admitted via a community route were significantly less likely to be detained (Pearson χ^2 =4.533, p=0.033).

Additionally, patients were more likely to be detained if 'dangerousness' was cited as one of the reasons for admission (Pearson χ^2 (1)=15.369, p=0.001) while they were significantly less likely to detained if 'life events' were cited as one of the reasons for admission (Pearson χ^2 (1)=6.865, p=0.009). Those with 'suicide risk' as a reason for admission also tended not to be detained (Pearson χ^2 (1)=3.249, p=0.071).

RD group vs NRD groups: Demographics

Of the total 133 subjects, 69% (n=92) fell into the RD category. There was no significant difference between the RD and NRD groups in terms of age at most recent admission, gender, ethnic origin or marital status. However, as can be seen in Table 2, there was a non-significant trend for those in the RD group to be unemployed (Pearson χ^2(1)=3.370, p=0.066). The RD group were significantly younger when they first had contact with psychiatric services (Mann-Whitney U=959.0, p=0.000), had significantly more admissions (Mann Whitney U=16.0, p<0.000), and had been in contact with psychiatric services for a longer period (Mann-Whitney U=571.5, p=0.000).

TABLE 2 Here

In both groups, the vast majority of patients were living in council accommodation at the time of their admission. The RD group were significantly less likely to be of no fixed abode (NFA) at the time of admission (Pearson χ^2 (1) =8.201, p=0.004). There was a tendency for the RD patients to be living in council accommodation (Pearson χ^2(1)2.883, p=0.090). With respect to discharge accommodation, the vast majority of patients in both groups were discharged to council housing. However, significantly more NRD patients than RD patients were discharged with no fixed abode (Pearson χ^2(1)4.135, p=0.042). There was no significant difference between the RD and NRD Group in terms of social living status (see Table 2 for a summary of the frequencies).

Clinical Characteristics

Source and Route to admission

As can be seen in table 3, over half of the patients in both groups were admitted to the ward via the emergency clinic, a 24 hour emergency facility within the hospital. The next most common source for both groups was directly from the community (i.e. person's home or the community team base). In relation to the route to admission; that is, which organisation initiated the admission, the most common route for both groups was via the Community Mental Health Team**.**

Diagnosis

Taking primary and secondary diagnoses together, the most frequent diagnosis in both groups was psychotic disorder. This was followed by a diagnosis of affective disorder. The RD group was significantly more likely to have a diagnosis of an affective disorder (Pearson χ^2 (1)=4.874, p=0.027).

A similar finding exists for the primary diagnoses; the majority of patients had a primary diagnosis of psychosis. In the RD group, there were more patients with a primary diagnosis of Affective Disorder as compared to the NRD group, but this difference was not statistically significant. Only a minimal proportion of patients had a primary diagnosis of Personality Disorder. As can be seen in table 3, the most frequent secondary diagnoses were Substance Misuse (which includes alcohol as well as illicit drugs) and Personality Disorder. Interestingly, a high proportion of RD patients had a secondary diagnosis of organic causes.

TABLE 3 Here

Medication

A significantly greater percentage of RD patients were prescribed medication on admission (RD=85.9% vs. NRD=38.7%, Pearson χ^2 (1)=23.63, p=0.001) and a significantly greater percentage of RD patients were prescribed oral medication (Pearson χ^2 (1)=7.52, p=0.006) only or depot and depot + oral medication (Pearson χ^2 (1)=5.23, p=0.035) compared to the NRD group (see Table 3).

In terms of medication on discharge, the RD group were still significantly more likely to be prescribed medication (Pearson χ^2 (1)=9.36, p=0.002). Of those prescribed medication, there was no significant difference in terms of the amount of medication prescribed (Mann Whitney U=785.5, p=0.617), however, the RD group were significantly more likely to be prescribed depot or depot + oral medication than the NRD group (Pearson χ^2 (1)=6.635, p=0.01).

Mental Health Act

There was no significant difference between the two groups with respect to being detained under a section of the Mental Health Act (Pearson χ^2 (1) =0.002, p=0.965), with 37.8% of RD patients and 38.2% of NRD patients being detained at some point during their admission.

Reason for admission

The RD group had more associated reasons for admission than the NRD group but this was not significant (RD group *M*=1.90 (0.71), NRD group *M*=1.74 (0.67); Mann Whitney U=1167.0, p=0.272). The most common reasons for admission in both groups were relapse of 'psychosis', 'suicide risk', 'non-compliance' and 'dangerousness'. There were no significant group differences for any of the reasons for admissions. There was a non-significant tendency for the NRD group to have been self-neglecting (Pearson χ^2 (1)=3.38, p=0.066).

Predictors of Revolving Door status

The following variables were excluded from the analysis due to high levels of missing data: (a) accommodation, (b) medication, (c) source of admission, (d) route to admission and, (e) reason for admission. The variables included in the forward stepwise logistic regression were: (a) gender, (b) ethnic origin, (c) marital status, (d) social living status, (e) employment, (f) age at first admission, (g) age at most recent admission, (h) mental health act status, and (i) diagnosis. The analysis showed that three variables had predictive power: (a) age at first admission, (b) age at most recent admission, and (c) affective disorder. These three variables were then entered as a fitted model, to determine the predictive power of this model. The results indicated that the odds of

belonging the to RD group were OR:0.842 in relation to the age at first admission (p=0.001). The odds of being in the RD group increased to OR:1.138 when age at most recent admission was included (p=0.002), and increased to OR:3.167 when affective disorder was added to the model (p=0.03). The fitted model correctly categorised 82.8% of the sample.

Thus being of younger age at first contact with psychiatric services, older age at the time of the most recent admission and a diagnosis of affective disorder were all predictive of membership in the RD group.

Comparison with the 1997 Sample (Langdon et al, 2001)

The previous study had a comparable sample size in terms of number of admission to the ward (N=128), but only identified 51% of the sample as meeting the criteria for RD status, while the current study found a marked increased, with 69% of the sample meeting RD criteria. Considering the sample in the study of 1997, only 30 patients (23%) were readmitted in 1999; 22 were identified as RD patients in 1997 and 8 were NRD in the same year. Of the 8 NRD patients that were readmitted in 1999, only one remained NRD, the other 7 having met the criteria for membership of the RD Group in 1999.

The demographic characteristics of the current sample and the previous sample were similar and comparisons did not reveal any significant differences. The RD patients of the 1999 sample were more likely to be discharged to council accommodation, whereas in the sample of 1997, the NRD patients were more likely to be discharged to council accommodation. The route to admission identified during the current study and the

previous study was similar. Diagnosis rates across studies were similar with more RD patients receiving diagnoses of Affective Disorder, along with medication usage being greater amongst the RD group in both studies.

The most commonly identified reason for re-admission in the current study was relapse of psychosis, suicide risk, non-compliance and dangerousness. There were no differences between the RD and NRD groups. This is different from the Langdon et al., (2001) study which identified substance misuse and relapse of psychosis as being more common amongst the RD group. Overall, readmission due to a risk of suicide was much more common in the present study.

Finally, in terms of significant predictors of RD status, the current study found that age at first contact with services, age at most recent admission, and diagnosis of an affective disorder are the most significant predictors. These findings are partially different from the previous study; previously, in addition to age at first contact with services serving as a significant predictor of RD status, relapse of psychosis and taking medication were the strongest predictors of RD status.

Discussion

Over two thirds of the current sample met criteria for revolving-door' status and this is surprisingly a much larger proportion than has been found in the previous study (Langdon et al, 2001). Additionally, only 30 of the original participants in the Langdon et al, (2001) study were admitted to hospital in 1999, and all but one met the criteria for RD status. The differences between the two studies are surprising given that they employed the same methodology, and used the identical catchment area. It is possible that changes relating to the admission policies and procedures of the hospital may relate to these differences, but the authors are unaware of any such changes. Probably there are other factors that affect the rate of admission per year. However with only two observations in two different years it is not possible to establish any specific pattern or causes for such an increase. Hence it is clear that in this respect more research is needed.

In terms of the differences between the RD and the NRD group, the NRD group were more likely to come from and be discharged to 'No Fixed Abode'. This may be for a number of reasons. The NRD group may include many for whom this is the first episode of mental illness and this unexpected, unmonitored breakdown may have resulted in the loss of their job and home. It is not acceptable in the United Kingdom to discharge patients held under sections of the Mental Health Act who do not have accommodation, and because of this those who were discharged to 'No Fixed Abode' must not have been held under section and therefore discharged themselves, thus indicating disengagement with services.. There was a trend for more RD patients to be living in council accommodation on admission which may reflect their prior assistance from services with housing and benefits. Interestingly, Langdon et al. (2001) reported

that RD patients from this catchment area admitted during 1997 were more likely to be living in private accommodation.

A major difference between the RD and NRD groups was in terms of medication. The RD group were more likely to be prescribed medication on admission and discharge than the NRD group. This may be indicative of the severity of their illness but also may reflect their ongoing input from services. On discharge, the RD group were more likely than the NRD group to be prescribed depot medication which may reflect treatment decisions based on suspected non-compliance with oral medication. Langdon et al, (2001) reported a similar finding indicating that RD patients were prescribed more medication. Weiden & Glazer (1997) found that a large proportion of readmission was due to non-compliance or non-response to medication and treatment strategy was then chosen on this basis.

There were no significant differences between the RD and NRD groups in terms of reasons for admission, and Langdon et al. (2001) reported that RD patients are more likely to have been readmitted for substance misuse problems, and relapse of psychosis. Bernardo & Forchuck (2001) found that in 94% of cases clinicians rated 'worsening of symptoms' as a reason for readmission, with the next most common factor being aggression (34%). They found that there were large differences between clinician-rated and patient-rated reasons for admission. They point out that while clinicians identify worsening of symptoms as a trigger for admission, patients describe a more ongoing struggle to cope with symptoms as the main problem. The reasons for readmitting RD patients is not entirely clear as Vogel & Hugeulet (1997) and Korkelia et al (1998) found that RD patients were more likely to be admitted voluntarily while Hodgson et al (2001) found the reverse, which is that RD status was positively associated with

involuntary admission. The current study found no such relation with nearly equal numbers of RD and NRD patients being admitted detained in hospital.

Three variables were found to have significant predictive power and significantly differentiate the RD and NRD groups. These were earlier age of contact with psychiatric services, being older at the time of the most recent admission and having an affective disorder. Although there is a potential degree of co-linearity between earlier age of contact and being older, there was no significant difference between the mean age of the RD and the NRD group, therefore, earlier age of contact with psychiatric services as a variable that significantly predicts membership of the RD group is potentially important in that it suggests that those in the RD group may have illnesses which have had an earlier age of onset, suggesting a more chronic pattern of illness, and possibly more social and functional impairment. This has been previously suggested by Langdon et al. (2001) and there is some evidence that early age of illness onset is associated with a more chronic and severe illness course in psychosis (Suvisaari et al, 1998) and increased likelihood of relapse in depression (Hammen et al, 1992).

It is also possible that earlier age of contact with psychiatric services leads to greater level of engagement with services, closer monitoring and more planned admissions or familiarity with services may lead to a greater use of admission as a way of coping with crisis. However, there was no indication that RD patients were more likely to be admitted via a community route and we did not find that RD patients were more likely than NRD patients to self-present for admission.

Being older at the time of the most recent admission as a predictor of RD group membership does appear tautological, in a similar way to suggesting that the number of previous admissions predicts RD group membership (Rabinowitz et al, 1995). This may well be the case for this variable as the older a person with a psychiatric illness becomes, the more likely they are to have been admitted to a psychiatric hospital more than three times.

Finally, having a diagnosis of an affective disorder also predicted RD group membership, and contrary to numerous other studies (Bernardo & Forchuck, 2001; Daniels et al, 1998; Hodgson et al, 2001; Kastrup, 1987; Korkelia et al, 1998; Langdon et al, 2001; Lewis & Joyce, 1990; Rabinowitz et al., 1995) no association was found between RD status and psychotic disorder. However, others have reported that having an affective disorder is associated with RD status (Havassy & Hopkin, 1989; Lewis & Joyce, 1990). The current results were largely due to a greater number of people in the RD group with a diagnosis of bipolar disorder. This deviation from other findings may reflect differing diagnostic classification, differences in method of diagnosis or differences in the way disorders were grouped. In the current study personality disorder and substance misuse were common secondary diagnoses. There were no significant differences between the RD and NRD groups in terms of secondary diagnoses.

Within the current study relatively few variables predicted RD status and these results differ from Langdon et al. (2001) who used patients admitted two years previously. Langdon et al., (2001) reported that younger age at first contact with psychiatric services, relapse of psychosis, and taking medication were significant predictors of RD group membership. Within the current study younger age at first contact with psychiatric services, diagnosis of an affective disorder, and being older during the most

recent admission predicted RD status. It is important to note that in the present study some variables were not included in the analysis due to missing values which complicated the longitudinal aspect of the study; this made comparisons across the two time points difficult. However, younger age at first contact with services seems to be a fairly robust predictor of further readmissions.

In the current study it was remarkable how similar the two groups are across many variables and these findings echo previous findings that few features are consistently found to differentiate RD patients from Non-Revolving Door patients. Practically, the current study suggests that RD patients are more likely to be suffering from more chronic and enduring mental health problems, and as a consequence may require appropriate extra support in order to reduce the risk of relapse and subsequent readmission.

Nevertheless, it could well be that research in this area as a whole has been looking for differences in the wrong places. It is possible that it is not diagnoses or demographic characteristics that cause vulnerability to multiple admissions, but other categories of behaviour or levels of functionality independent of core symptoms. Postrado & Lehman (1995) found that re-hospitalisation was predicted by symptom severity not diagnosis and Sullivan et al (1997) found that ratings of paranoid behaviour better predicted re-hospitalisation than non-compliance or substance misuse. In the study by Lyons et al (1997), impairment in self care was a significant predictor of rapid readmission and Walker et al (1996) found similar effects for functional disability, while Swett (1995) also found that self-neglect was a significant predictor of readmission. In addition there might be other factors that have not been studied

systematically, such as for instance the duration of untreated illness. Thus it is evident that more research needs to be done.

Given these difficulties, what can be concluded about the Revolving Door phenomenon is that the results of the present study are consistent with many findings in this area that suggest that an underlying distinguishing feature is often severity of illness. The earlier contact with services and greater use of medication suggests that the RD group consists of patients whose illnesses are so severe, that even with medication and management from community teams, relapse occurs a number of times. In addition, this chronic population is probably more susceptible to the neurodegenerative aspects of the illness (Chen et al., 2002; Velakoulis et al., 2000), which probably increases the risk of readmission, although there is still some controversy in this respect (e.g. Allin & Murray, 2002). This is consistent with our previous study (Langdon et al, 2001). Bernardo & Forchuck (2001) describe these as patients with 'complex, recurring problems that are not easily ameliorated and that leave individuals vulnerable to further crises and hospitalisations', p1101. Another consideration however, is the level of engagement with and dependence on services. Given that over a third of the admissions were instigated by the community team, it follows that those who are frequently monitored by the community team may have more planned admissions. For example, Tyrer et al. (1995) found that the implementation of the Care Programme Approach led to an increase in admission rates. However, the provision of adequate resources for mental health services in the community will impact the ability of services to provide effective evidence-based treatments that help to manage and prevent recurrent readmissions to hospital. Should these resources be inadequate, they may serve to create situations where admission to hospital is the only way of providing treatment for

mental health problems, thus increasing the number of potential admissions and contributing to increases in the costs associated with inpatient hospital care. In the present study we found a significant increase in the number of patients that had become "Revolving Doors" patients within a brief period of two years. It is not possible with the present data to make any conclusion about the reason for this increase, however, it could well be that the above mention issues can explain to a certain extent the found increase.

Allin M & Murray R (2002) Schizophrenia: A neurodevelopmental or neurodegenerative disorder?. *Current Opinion in Psychiatry*. 15 (1), 9-15.

Appleby L, Luchins DJ, Desai PN, Gibbons RD, Janicak PG, & Marks R (1996). Length of inpatient stay and recidivism among patients with schizophrenia. *Psychiatric Services, 47(9),* 987-990.

Bernardo AC, & Forchuck C. (2001). Factors associated with readmission to a psychiatric facility. *Psychiatric Services , 52(8),* 1100, 1102.

Chen EYH, Kwok CL, Au JWY, Chen RYL, Lau BST (2202). Progressive deterioration of soft neurological signs in chronic schizophrenic patients. *Acta Psychiatr Scand*; 102:342-349.

Daniels BA, Kirkby KC, Hay DA, Mowry BJ, & Jones IH. (1998). Predictability of rehospitalisation over 5 years for schizophrenia, bipolar disorder and depression. *Australian & New Zealand Journal of Psychiatry, 32(2),* 281-286.

Dixon M, Robertson E, George M, & Oyebode F. (1997). Risk factors for acute psychiatric readmission. *Psychiatric Bulletin, 21,* 600-603.

Hammen C, Davila J, Brown G, & Ellicott A. (1992). Psychiatric history and stress: Predictors of severity of unipolar depression. *Journal of Abnormal Psychology,101(1),* 45-52.

Havassy TW, & Hopkin, JT. (1989). Factors predicting utilization of acute psychiatric inpatient service by frequently hospitalized patients. *Hospital and Community Psychiatry, 40,* 820-823.

Haywood TW, Kravitz HM Grossman LS, & Cavanaugh JL. (1995). Predicting the 'revolving door' phenomenon among patients with schizophrenic, schizoaffective and affective disorders. *American Journal of Psychiatry,152(6),* 856-861.

Hodgson RE, Lewis M, & Boardman A.P. (2001). Prediction of readmissions to acute psychiatric units. *Social Psychiatry and Psychiatric Epidemiology, 36(6),* 304-309.

Kastrup M. (1987).Who became revolving door patients? Findings from a nation-wide cohort of first time admitted psychiatric patients. *Acta Psychiatrica Scandinavia, 76,* 80-88.

Korkelia JA, Lehtinen V, Tuori T, & Helenius H. (1998). Frequently hospitalised psychiatric patients: A study of predictive factors. *Social Psychiatry and Psychiatric Epidemiology, 33(11),* 528-534.

Langdon PE, Yaguez L, Brown J, & Hope A. (2001).Who walks through the 'revolving door' of a British psychiatric hospital? *Journal of Mental Health, 10(5),* 525-533.

Lewis T, & Joyce PR. (1990).The new revolving-door patients: results from a national cohort of first admissions. *Acta Psychiatrica Scandinavia, 82,* 130-135.

Lyons JS, O'Mahoney MT, Miller SI, & Neme J. (1997). Predicting readmission to the psychiatric hospital in a managed care environment: Implications for quality indicators. *American Journal of Psychiatry, 154(3),* 337-340.

Office of National Statistics. Census (2001): *Key statistics for urban areas in England and Wales. 2004*. London: TSO.

Postrado LT, & Lehman AF (1995). Quality of life and clinical predictors of rehospitalization of persons with severe mental illness. *Psychiatric Services, 46(11),* 1161-1165.

Rabinovitz J, Mark M, Popper M, & Slyuzberg M. (1995). Predicting revolving-door patients in a 9-year national sample. *Social Psychiatry and Psychiatric Epidemiology, 30(2),* 65-72.

Sullivan G, Young AS, & Morgenstern H. (1997). Behaviours as risk factors for rehospitalization: Implications for predicting and preventing admissions among the seriously mentally ill. *Social Psychiatry and Psychiatric Epidemiology, 32(4),* 185-190.

Suvisaari JM, Haukka J, Tanskanen A, & Lonnqvist JK. (1998). Age at onset and outcome in schizophrenia are related to the degree of familial loading. *British Journal of Psychiatry, 173,* 494-500.

Swett C. (1995). Symptom severity and number of previous psychiatric admissions as predictors of readmission. *Psychiatric Services, 46(5),* 482-485.

Tyrer P, Morgan J, Van Horn E, et al.(1995). A randomised controlled study of close monitoring of vulnerable psychiatric patients. *Lancet, 345,* 377-392.

Velakoulis D, Wood SJ, McGorry PD, Pantelis C (2000). Evidence for progression of brain structural abnormalities in schizophrenia: beyond the neurodevelopmental model. *Aust NZ J Psychiatry*; 34 (suppl):S113-S126

Vogel S, & Huguelet P. (1997). Factors associated with multiple admissions to a public psychiatric hospital. *Acta Psychiatrica Scandanavia, 95(3),* 244-253.

Weiden P, & Glazer W. (1997). Assessment and treatment selection for 'revolving door' inpatients with schizophrenia. *Psychiatric Quarterly, 68(4),* 377-392.

Woogh CM. (1986). A cohort through the revolving door. *Canadian Journal of Psychiatry, 31,* 214-221

Table 1: The reasons for re-admission categorisation developed by Langdon et al. (2001).

Category	Definition
Substance misuse	Excessive or dangerous use of substances (including alcohol) or a sudden increase in the amount of substances taken at or around the time of admission.
Relapse of psychosis	Re-emergence or worsening of psychotic symptoms at the time of admission.
Life events	Occurrence of significant and potentially distressing life events at the time of admission.
Crisis at the weekend	Admission due to temporary crisis.
Suicide risk	Having significant thoughts, plans or voices regarding suicide. Having attempted suicide or significant self-harm just prior to admission. Posing significant risk to self.
Dangerousness	Having committed acts of violence or aggression towards others. Having significant thoughts, plans or voices regarding harming others.
Neglect	Significant neglect of self-care (personal hygiene, nourishment, health, home).
Relapse of non-psychotic disorder	Re-emergence or worsening of non-psychotic disorder at the time of admission.
Non-compliance with medication	Non-compliant with medication at time of admission.
Assessment	Subject referred specifically for assessment.
Other	Any other identifiable precursor to admission.

Table 2: Demographic characteristics of the RD and NRD groups.

Variable	**RD**		**NRD**	
	%	**N=**	**%**	**N=**
Sex				
Male	53.3	49	53.7	22
Female	46.7	43	46.3	19
Ethnic origin				
White	54.4	49	47.4	18
Black-African	18.9	17	28.9	11
Black-Caribbean	15.6	14	13.2	5
Black-Other	3.3	3	5.3	2
Other	7.8	7	5.3	2
Marital status				
Single	62.2	56	70.0	28
Separated	8.9	8	10.0	4
Divorced	14.4	13	15.0	6
Widowed	1.1	1	2.5	1
Total	86.6	78	97.5	39
Married	13.3	12	2.5	1
Employment status				
Unemployed	94.4	85	84.6	33
Employed	5.6	5	15.4	6
Admission accommodation				
Council	75.3	61	58.6	17
Hostel	7.4	61	58.6	17
Private	13.6	11	13.8	4
NFA	3.7**	3	20.7	6
Social living status				
Alone	60.7	51	65.7	23
Not alone	39.3	33	34.3	12
Discharge accommodation				
Council	54.8	40	38.7	12
Hostel	17.8	13	29.0	9
Specialist	15.1	11	9.7	3
Private	9.6	7	9.7	3
NFA	2.7	2	12.9	4

Variable	**RD** ***M* (SD)**	**N=**	**NRD** ***M* (SD)**	**N=**
Age at most recent admission	38.90 (10.47)	92	36.20 (11.08)	41
Number of previous admissions	6.84 (6.38)*******	92	0.44 (0.55)	41
Age at first contact with services	24.90 (9.91)**	92	31.08 (9.06)	41
Length of contact with services (years)	14.40 (10.60)**	92	5.28 (8.42)	41
Length of first admission (days)	61.00 (79.73)	92	77.20 (76.30)	41

*p<0.05
**p<0.01
***p<0.001

Table 3: Further Demographic characteristics of the RD and NRD groups.

Variable	RD		NRD	
	%	N=	%	N=
Source of Admission				
Emergency Clinic	51.9	41	51.3	20
Community	22.8	18	25.6	10
Police or Prison	7.6	6	5.1	2
Other Hospital	17.7	14	17.9	7
Admission Route				
Emergency Clinic (Self or with Family)	20.8	29	34.3	12
Community	37.7	16	17.1	6
Arrested	20.8	16	22.9	8
Other Hospital	20.8	16	25.7	9
All Diagnoses				
Affective	44.4*	40	23.7	9
Psychotic	50.0	45	60.5	23
Substance Misuse	16.7	15	15.8	6
Organic	10.0	9	15.8	6
Personality Disorder	13.3	12	13.2	5
Primary Diagnoses				
Affective	42.2	38	21.1	8
Psychotic	50.0	45	60.5	23
Substance Misuse	3.3	3	2.6	1
Organic	2.2	2	13.2	5
Personality Disorder	2.2	2	2.6	1
Secondary Diagnoses				
Affective	30.0	9	27.2	3
Psychotic	0	0	0	0
Substance Misuse	40.0	12	45.5	5
Organic	30.0	9	18.2	2
Personality Disorder	33.3	10	36.4	4
Medication at Admission				
No Medication	14.1	10	61.3***	19
Oral	64.8**	46	35.5	11
Depot or Depot+Oral	21.1*	15	3.2	1
Medication at Discharge				
No Medication	4.3	3	24.2	8
Oral	57.1	40	66.7	22
Depot or Depot+Oral	38.6*	27	9.1	3
Mental Health Section				
Yes	37.8	31	38.2	13
No	62.2	51	61.8	21

*p<0.05
**p<0.01
***p<0.001

Table 4: Reasons for admission for the RD and NRD groups.

Reason for Admission	RD		NRD	
	%	N=	%	N=
Substance Misuse	21.8	17	14.7	5
Relapse of Psychosis	32.1	25	29.4	10
Life Events	16.7	13	17.6	6
Crisis at the Weekend	1.3	1	0	0
Suicide Risk	28.2	22	32.4	11
Dangerousness	28.2	22	17.6	6
Self Neglect	6.4	5	17.6	6
Relapse of a Non-Psychotic Illness	10.3	8	8.8	3
Non-Compliance with Treatment	30.8	24	23.5	8
Assessment	7.7	6	5.9	2
Other	5.1	4	2.9	1

*p<0.05
**p<0.01
**p<0.001

Table 5: Differences between voluntary patients and patients held under a section of the Mental Health Act (MHA).

	MHA Section		No Section	
Variable	**%**	**N=**	**%**	**N=**
Diagnosis				
Psychosis	63.6	28	46.5	33
Affective	22.7**	10	53.5	38
Gender				
Male	65.9*	63	47.2	34
Female	34.1	15	52.8	38
Ethnic Origin				
White	32.6	14	62.3	43
Ethnic Minority	67.4*	29	37.7	26
Reason for Admission				
Dangerousness	46.3***	19	12.9	9
Suicide Risk	19.5	8	35.7	25
Life Events	4.9**	2	24.3	17
Route to Admission				
Community	25.0*	10	45.6	31.
Non-Community	75.0	30	54.4	37

*p<0.05
**p<0.01
**p<0.001