HRB Research Series

3

Re-admissions to Irish psychiatric units and hospitals 2001–2005

Antoinette Daly, Donna Tedstone Doherty, Dermot Walsh

Improving people's health through research and information

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An Bord Taighde Sláinte

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Published by:

Health Research Board
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ISSN 2009-0242

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The Health Research Board (HRB) is the lead agency supporting and funding health research in Ireland. We also have a core role in maintaining health information systems and conducting research linked to national health priorities. Our aim is to improve people's health, build health research capacity, underpin developments in service delivery and make a significant contribution to Ireland's knowledge economy.

Our information systems

The HRB is responsible for managing five national information systems. These systems ensure that valid and reliable data are available for analysis, dissemination and service planning. Data from these systems are used to inform policy and practice in the areas of alcohol and drug use, disability and mental health.

Our research activity

The main subjects of HRB in-house research are alcohol and drug use, child health, disability and mental health. The research that we do provides evidence for changes in the approach to service delivery. It also identifies additional resources required to support people who need services for problem alcohol and drug use, mental health conditions and intellectual, physical and sensory disabilities.

The **Mental Health Research Unit** gathers data on patient admissions, treatment and discharges from psychiatric hospitals and units throughout Ireland. The data collected have been reported in the Activities of Irish Psychiatric Services since 1965 and continue to play a central role in the planning of service delivery. The unit is extending its service to include information about activity in community care settings in order to reflect the changing patterns of care for patients with a mental illness. Multi-disciplinary experts in the unit carry out national and international research and disseminate findings on mental health and mental illness in Ireland. These findings inform national policy, health service management, clinical practice and international academic research.

The **HRB Research series** reports original research material on problem alcohol and drug use, child health, disability and mental health.

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Acknowledgements

The authors would like to thank our colleagues in the Mental Health Research Unit for their comments and advice on the paper and especially Derek Beattie, Yulia Kartalova O'Doherty and Ros Moran. The authors would also like to thank Dr Declan Patton and Dr Sinéad McGilloway who externally reviewed the paper.

Summary

Introduction: The re-admission rate has been proposed as one indicator of the effectiveness of the transition from in-patient to community care (Lien, 2002), with some studies proposing that the increasing number of re-admissions to psychiatric hospitals is a consequence of the policy of de-institutionalisation and the resulting transition to community care (May, 1976; Kastrup, 1987a; Kastrup, 1987b). Several factors have been found to be predictors of re-admissions.

Aims: The aims of this study were threefold. Firstly, it attempted to identify frequent users (i.e. those with four or more re-admissions) of the in-patient services as a subgroup of all re-admissions. Secondly, it sought to identify factors which may predict re-admissions to Irish psychiatric units and hospitals, and identify the specific characteristics (demographic and clinical) of those who were re-admitted. Thirdly, it looked at whether certain geographical areas of the country were associated with a greater number of re-admissions and whether this in turn was associated with the availability of, or lack of, community psychiatric services and staffing levels in community psychiatric services.

Method: First admissions (N=3,473) to the National Psychiatric In-patient Reporting System (NPIRS) were extracted for 2001 and followed up for the five-year period 2001–2005.

Results: Thirty-seven per cent (1,274/3,473) of first admissions in 2001 had one or more re-admissions during the study period while 7% (n=246) were identified as frequent users. The strongest predictors of re-admission were age, primary diagnosis, gender and having a secondary diagnosis.

Conclusions: Patients with severe psychotic illnesses, because of the nature of their illnesses, will require frequent in-patient admissions; thus re-admissions will continue to be a feature of in-patient services irrespective of any future expansion in community-based services. The high proportion of re-admissions with a diagnosis of alcoholic disorders remains a concern in light of the recommendations of successive policy documents to treat this disorder in community-based settings. The poorer prognosis for the younger age groups with a diagnosis of schizophrenia and drug dependence in terms of becoming revolving door patients warrants further investigation. An examination of community services in terms of service provided, staffing and resources invested therein should be considered to plan rationally and effectively for the future.

Introduction

The movement away from traditional psychiatric hospitals to more community-based facilities has been a feature of the Irish mental health services since the 1960s, when the change from institutional to community-based services was advocated by the *Commission of Inquiry* on *Mental Illness* (Department of Health, 1966). The policy of de-institutionalisation in Irish psychiatric hospitals – along with the decline in the long-stay population of psychiatric hospitals and the development of community services – has resulted in the steep decline in in-patient numbers over the past fifty years i.e. from 19,801 in 1963 to 3,389 in 2006 (Daly and Walsh, 2006). This represents a reduction of 83% in in-patient numbers since 1963 and a reduction of 22% since 2001, when there were 4,321 in-patients. The number of beds in psychiatric units and hospitals decreased by 67% from 1984 to 2004 (Department of Health and Children, 2006). However, the total number of in-patient admissions increased from 15,440 in 1965 to 21,253 in 2005, reaching a peak of 29,392 in 1986 but declining thereafter (Daly *et al.*, 2006). The pattern of re-admissions has not been dissimilar in that the total number has increased considerably 9,230 in 1965 to 15,336 in 2006 (Daly *et al.*, 2006) and also reached a peak in 1986, at 21,141 re-admissions. Similarly, the proportion of all admissions that constitute re-admissions has increased from 60% in the 1960s to over 70% since the 1980s, pointing to an in-patient service based very much on a 'revolving door' process, i.e. patients with multiple admissions (Kastrup, 1987a, 1987b; Lewis and Joyce, 1990; Korkeila *et al.*, 1995).

The re-admission rate has been proposed as one indicator of the effectiveness of the transition from in-patient care to community care (Lien, 2002), with some studies suggesting that the increasing number of re-admissions to psychiatric hospitals is a consequence of the policy of de-institutionalisation (and hence the decreased number of in-patient beds), and the resulting transition to community care (May, 1976; Kastrup, 1987a, 1987b). The decrease in the number of in-patient beds arising from the policy of de-institutionalisation has been associated with a decrease in length of stay and an increase in the number of admissions, most of which are re-admissions (Szmukler and Holloway, 2001).

Re-admissions have been suggested as a proxy outcome indicator of quality of care, with the potential for higher costs and potentially poorer quality of care (Weissman *et al.*, 1994; Roick *et al.*, 2004). Lien (2002) lists the following as factors pertinent to the quality of care in the psychiatric services which may result from a high number of re-admissions: discontinuity of care each time a patient is discharged; feelings of demotivation for staff who see patients returning to hospital repeatedly, leading to resignation and lack of confidence in psychiatric in-patient treatment; bed blocking which prevents the admission of new patients who are waiting to receive treatment,

thus adding to waiting lists. The suggestion that a high number of re-admissions block the admission of new patients is supported by an Irish study (Keogh *et al.*, 1999). This study was carried out in the former Eastern Health Board area of Ireland and found that while there was an adequate number of acute psychiatric beds, an inadequate number of these beds was available for acute psychiatric usage because 45% of the 'acute' beds were occupied by non-acute patients. This report concluded that this practice seriously compromised the quality of care.

In the UK, psychiatric re-admission rates have been proposed as a health outcome indicator, the argument being that inadequate support in the community is reflected in a high rate of emergency re-admissions (Department of Health, 1999). The accumulation of 'new' long-stay patients in acute admission wards or in the 'revolving door' of repeated admission and unstable adjustment in the community has been proposed as a consequence of the failure to provide for the next generation of patients with long-term needs (Shepherd and Murray 2001: 312). Lien (2002) proposed that re-admission rates are an important tool in the planning of mental heath services, by allowing for early and more appropriate identification of those at risk of re-admission, thus enabling better planning of services including improved discharge planning and follow-up. Regarding discharge planning and follow-up within the Irish context, the Inspector of Mental Health Services (Mental Health Commission, 2006) reported (from meetings with representatives of service users) that increased length of stay in admission units, long-stay wards and community residences was the result of inadequate discharge planning, in particular the lack of suitable placements on discharge, particularly in urban areas where some service users are homeless. In addition, service users drew attention to the lack of follow-up on discharge and the lack of out-of-hours services. The recent policy document on mental health in Ireland *A Vision for Change* noted that very little "practical help has been offered to individuals in terms of managing and negotiating their needs 'back in the community'. One consequence of this shortcoming in services has been the high rate of relapse and re-admission" (Department of Health and Children 2006: 93).

Studies have defined 'revolving door' or 'heavy users' of the in-patient system as patients who have had four or more admissions during a minimum of a five-year study period (Kastrup, 1987b; Lewis and Joyce, 1990; Korkeila *et al.*, 1995; Gastal *et al.*, 2000). Several factors have been found to be predictors of re-admissions and to be associated with 'revolving door' patients. Many studies have found them to be younger, male, single or divorced, unemployed and in the lower socio-economic groups (Woogh, 1986; Kastrup, 1987a; Weissman *et al.*, 1994; Rabinowitz *et al.*, 1995; Mahendran *et al.*, 2005). Length of stay of first admission and the interval between the first and second admissions have been found to be predictive of frequent re-admissions. For instance, Lien (2002) found that longer length of stay, appropriate discharge planning and

follow-up visits predicted fewer re-admissions, while Figeuroa *et al.* (2004) found that decreasing the length of stay below ten days led to an increase in the re-admission rate during the 30 days after discharge. In contrast, other studies have found that re-admissions were strongly associated with a longer length of stay (Rabinowitz *et al.*, 1995; Korkeila *et al.*, 1998; McGilloway *et al.*, 2000; Feigon and Hays, 2003). Korkeila *et al.* (1998) concluded that a small proportion of patients needed frequent or lengthy hospital treatment and, as such, the development of community services has not diminished the need for hospital treatment, a point also reiterated by Szmukler and Holloway (2001).

Certain diagnoses such as schizophrenia, affective disorders and personality disorders (Sanguineti *et al.*, 1996; Korkeila *et al.*, 1998; Hodgson *et al.*, 2001; Pedersen and Aarkrog, 2001;) were found to be associated with re-admission. Other studies have found a high preponderance of patients with alcohol or substance abuse among revolving door patients, particularly male revolving door patients (Woogh, 1986; Kastrup, 1987a; Lewis and Joyce, 1990; Chang *et al.*, 2001). Woogh (1986) reported that a significant proportion of the revolving door population comprised alcohol dependence in men and neurotic depression in women.

There has been no Irish study on re-admissions to psychiatric units and hospitals to date. However, the annual report *Activities of Irish Psychiatric Units and Hospitals* produced by the Mental Health Research Unit (MHRU) of the Health Research Board (HRB) has reported on the re-admission rate to units and hospitals and the proportion of re-admissions to units and hospitals over the past 40 years. There are wide variations between hospitals and variation in the proportion of re-admissions by hospital type has been noted in the *Activities of Irish Psychiatric Services reports* (Daly *et al.*, 2006); private hospitals have typically had a lower proportion of re-admissions compared with general hospital psychiatric units or psychiatric hospitals, although there is no information on the extent of re-admission of patients first admitted to private hospitals and subsequently admitted to public hospitals. However, admissions to private hospitals tend to have a longer length of stay than those in general hospital psychiatric units or psychiatric hospitals, thereby supporting the view that longer length of stay predicts fewer re-admissions (Lien, 2002).

The MHRU recently undertook a scoping exercise with stakeholders in the services (managerial, administrative, medical, nursing and other multidisciplinary staff) aimed at establishing areas of particular concern to them that required research. The high number of re-admissions to psychiatric units and hospitals, and the reasons for such high numbers, was identified as an area which they felt required further investigation. The lack of published data relating specifically to the frequent users, or relating to those most frequently admitted to the Irish psychiatric in-patient services, highlights

the need to identify the factors associated with frequent re-admission. Moreover, if re-admissions are indeed associated with higher costs and potentially poorer quality of care and are an indicator of the transition from in-patient care to community care, as has been suggested by some authors (May, 1976; Kastrup, 1987a, 1987b; Weissman *et al.*, 1994; Lien, 2002), then the need to examine these predictors is even more compelling. Identifying those at increased risk of re-admission, and the factors that may predict re-admission, is vital for the future development of both in-patient and community services and will result in more cost-effective management of services, allowing resources to be targeted at those with greatest need.

Aims

This study had three main aims. Firstly, it attempted to identify frequent users of the in-patient services as a subgroup of all re-admissions. Secondly, it sought to identify factors which may predict re-admissions to Irish psychiatric units and hospitals and to identify the specific characteristics (demographic and clinical) of those who were re-admitted. Thirdly, it looked at whether certain geographical areas of the country were associated with a greater proportion of re-admissions and whether this in turn was associated with the availability (or lack) of community psychiatric services and staffing levels in community psychiatric services.

Method

Data for this study were obtained from the National Psychiatric In-Patient Reporting System (NPIRS), which is maintained by the Health Research Board. The NPIRS is the national psychiatric in-patient database in Ireland that records all admissions to and discharges (including deaths) from 56 Irish psychiatric units and hospitals. It was established in 1963 with a census of patients in psychiatric hospitals on 31 March of that year. The database records approximately 20,000 admissions and a similar number of discharges from general hospital psychiatric units, psychiatric hospitals, private psychiatric hospitals and child and adolescent units annually. Demographic (age, gender, marital status, occupation, socio-economic group, county, Health Service Executive (HSE) area) and clinical data (date of admission, legal status on admission, admission diagnosis, date of discharge, reason for discharge and discharge diagnosis, if different to admission diagnosis) are recorded for all admissions and discharges. Because there is no unique national patient identifier NPIRS is event-based as opposed to person-based. However, many hospitals use unique patient identifiers based on charts or medical record numbers. These numbers are unique to that hospital only and are not transferable to any other hospital or service. Thus, it is not possible to identify individual patients.

First admissions to the NPIRS for those hospitals using a unique patient number were extracted for 2001 and assessed retrospectively for the five-year period 2001–2005. In 2001, 22 hospitals out of a total of 51 (43%) used a unique patient identifier. The breakdown in this group by hospital type was as follows: 12 general hospital psychiatric units (63% of all general hospital psychiatric units (n=19)); nine psychiatric hospitals (35% of all psychiatric hospitals (n=26)) and one private hospital. Although only one private hospital out of six in Ireland was included in the study, the number of first admissions to this hospital alone accounted for 64% of first admissions to private hospitals in 2001.

A total of 3,662 first admissions to hospitals which used unique patient numbers were extracted initially. A detailed description of first admissions in 2001 can be found in the report *Activities of Irish Psychiatric Services 2001* (Daly and Walsh, 2003). Patients who had no discharge date recorded for their first admission within the five-year period 2001–2005 (n=60), and those with a length of stay of 24 hours or less (0 days) (n=112) and greater than one year (n=17), were excluded from the analysis. The final sample was 3,473 patients with a first admission in 2001. For the purpose of this study, frequent users were defined as those with four or more re-admissions during the study period.

Data were analysed using SPSS V14.

Results

Descriptive data

Fifty-four per cent (n=1,892) of first admissions in 2001 were male. Forty-three per cent were aged 25–44 years; 52% (n=1,811) were single; 31% (n=1,071) were married; 5% (n=172) were widowed, and less than 1% (n=23) were divorced. Eleven per cent (n=389) had non-manual occupations; 10% (n=348) had manual skilled occupations, and 6% (n=211) were lower professionals. Thirty-five per cent (n=1,201) had a primary diagnosis of depressive disorder; 21% (n=727) had a diagnosis of alcoholic disorder, and 11% (n=393) had a diagnosis of schizophrenia. Almost one-third (31%, n=1,065) were resident in Dublin city or county; 11% (n=367) were resident in Galway city or county; 7% each were resident in Cork city and county (n=247) and Donegal (n=248), and 6% (n=209) were resident in Kildare. Forty-two per cent (1,447) of first admissions in 2001 were to general hospital psychiatric units, 35% (n=1,216) were to psychiatric hospitals and 23% (n=810) were to private hospitals.

Table 1 presents the characteristics of those who were re-admitted versus those who had no re-admissions in the five-year study period. As can be seen, the characteristics of those re-admitted versus the single admission group were broadly similar. For example, females comprised a higher proportion (50%) of the re-admitted group compared with the single admission group (43%); 13% of the re-admitted group had a diagnosis of schizophrenia at first admission compared with 11% of the single admission group; 36% of the re-admitted group had a diagnosis of depressive disorders compared with 34% of the single admission group.

Table 1 Characteristics of those who were re-admitted versus those who were not re-admitted 2001–2005. Numbers and percentages

	Re-admitted group (n=1,274)		Single admission group (n=2,199)	
Gender	N	%	N	%
Male	638	50.1	1,254	57.0
Female	636	49.9	945	43.0
Marital status				
Single	654	51.3	1,157	52.6
Married	410	32.2	661	30.1
Widowed	65	5.1	107	4.9
Divorced	9	0.7	14	0.6
Unspecified	136	10.7	260	11.8

	Re-admitted group (n=1,274)		Single admission group (n=2,199)	
Age				
Under 16	5	0.4	14	0.6
16-19 years	111	8.7	153	7.0
20-24 years	169	13.3	278	12.6
25-34 years	252	19.8	494	22.5
35-44 years	291	22.8	466	21.2
45-54 years	192	15.1	322	14.6
55-64 years	132	10.4	203	9.2
65-74 years	77	6.0	147	6.7
75 years and over	45	3.5	115	5.2
Unspecified	0	0.0	7	0.3
Socio-economic group				
Farmers	33	2.6	77	3.5
Agricultural workers	8	0.6	8	0.4
Higher professional	32	2.5	66	3.0
Lower professional	81	6.4	130	5.9
Employers and managers	34	2.7	83	3.8
Own-account workers	17	1.3	39	1.8
Non-manual	154	12.1	235	10.7
Manual skilled	105	8.2	243	11.1
Semi-skilled	50	3.9	100	4.5
Unskilled	73	5.7	119	5.4
Unspecified	687	53.9	1,099	50.0
Diagnosis				
Organic psychoses	33	2.6	72	3.3
Schizophrenia	163	12.8	230	10.5
Other psychoses	31	2.4	51	2.3
Depressive disorders	455	35.7	746	33.9
Mania	122	9.6	192	8.7
Neuroses	96	7.5	237	10.8
Personality disorders	40	3.1	59	2.7
Alcoholic disorders	248	19.5	479	21.8
Drug dependence	63	4.9	77	3.5
Intellectual disability	5	0.4	13	0.6
Unspecified	18	1.4	43	2.0

Re-admissions

Thirty-seven per cent (1,274/3,473) of first admissions in 2001 had one or more re-admissions in the five-year period 2001–2005. Seventeen per cent (n=591) had one re-admission; 13% (n=437) had two to three re-admissions, and 7% (n=246) had four or more re-admissions and were thus identified as frequent users/revolving door patients (Table 2).

Table 2 Number and proportion of re-admissions by gender 2001–2005

	Male		Female		Total	
	N	%	N	%	N	%
No re-admissions	1,254	66.3	945	59.8	2,199	63.3
One re-admission	314	16.6	277	17.5	591	17.0
Two to three re-admissions	209	11.0	228	14.4	437	12.6
Four or more re-admissions	115	6.1	131	8.3	246	7.1
Total	1,892	100.0	1,581	100.0	3,473	100.0

Gender and age of re-admitted group

Of those who were re-admitted during the five-year period 2001–2005 (n=1,274), there was an equal gender split between males (n=638) and females (n=636). Whilst equal numbers of males and females were re-admitted during the study period, proportionately more females (40%; 636/1,581) were re-admitted than males (34%; 638/1,892) when all admissions were taken into account ($\chi^2(1) = 15.7$, p=0.000). Two-thirds of males (1,254/1,892) had no re-admissions in the five-year period, compared with 60% of females (945/1,581) (Table 2). An almost equal proportion of both males (17%; 314/1,892) and females (18%; 277/1,581) had one re-admission; 11% of males (209/1,892) had two to three re-admissions, compared with 14% of females (228/1,581); 6% of males (115/1,892) had four or more re-admissions, compared with 8% of females (131/1,581).

Almost one-quarter (23%; 291/1,274) of those who were re-admitted were aged 35–44 years at first admission; 20% (252/1,274) were aged 25–34 years, and 15% (192/1,274) were aged 45–54 years. The mean age of the re-admitted group was 39.8 (SD=16.5, range=84). For the purpose of analysis age groups were re-classified into four categories: under 20 years; 20–44 years; 45–64 years, and 65 years and over. There was a statistically significant association between age and the likelihood of being re-admitted ($\chi^2(4) = 11.13$, p=0.025) with a higher proportion of those aged under 20 years (41%; 116/283) re-admitted compared with those in the 45–64-years

(38%; 324/849), 20–44-years (37%; 712/1,950), or 65 years and over age range (32%; 122/384).

Marital status

Fifty-one per cent of the re-admitted group (654/1,274) were single while one-third (32%; n=410) were married. There was no significant association between marital status and the likelihood of being re-admitted or the number of re-admissions during the study period.

Socio-economic group

Occupations were classified into one of 11 socio-economic groups according to the Central Statistics Office classification of occupations (Central Statistics Office, 2003). It must be borne in mind that over half (51%) of first admissions in 2001 had an unspecified or unknown occupation returned thus making assignment to a socio-economic group impossible for these admissions (Daly and Walsh, 2003). Twelve per cent of those who were re-admitted over the five-year period (154/1,274) were in the non-manual socio-economic group; 8% (n=105) were manual skilled, and 6% each (n=81) were lower professional and unskilled (n=73). There was no significant association between socio-economic group and the likelihood of being re-admitted or the number of re-admissions during the study period.

Diagnosis

Over one-third of the re-admitted group (36%; 455/1,274) had a primary diagnosis of depressive disorders at the time of their first admission; one-fifth (n=248) had a diagnosis of alcoholic disorders, and 13% (n=163) had a diagnosis of schizophrenia. There was a statistically significant association between diagnosis and the likelihood of being re-admitted with a higher proportion (45%, n=63) of those admitted with drug dependence re-admitted compared with any other diagnostic group ($\chi^2(10) = 24.201$, $p=0.007$) (Figure 1). However, the proportion of first admissions with a diagnosis of drug dependence in 2001 was quite small, at 4% (140/3,473). In six of the eleven diagnostic categories (schizophrenia, organic psychoses, depressive disorders, mania, personality disorders and drug disorders), over 35% were re-admitted within the five-year period.

Almost two-thirds (61%) of those re-admitted with depressive disorders were female, while over two-thirds (69%) of those re-admitted with alcoholic disorders were male. Sixty per cent of those re-admitted with schizophrenia were male.

Table 3 presents the number of re-admissions 2001–2005 for each diagnostic category. Seven of the eleven diagnostic categories had proportionally more frequent users (four or more re-admissions) (in the range 7–10%) than the others.

Table 3 Number and proportion of re-admissions by primary diagnosis 2001–2005

	Number of re-admissions									
	No re-admissions		1 re-admission		2-3 re-admissions		4 or more re-admissions		Total	
	N	%	N	%	N	%	N	%	N	%
Organic Psychoses	72	68.6	20	19	6	5.7	7	6.7	105	3
Schizophrenia	230	58.5	68	17.3	54	13.7	41	10.4	393	11.3
Other Psychoses	51	62.2	13	15.9	12	14.6	6	7.3	82	2.4
Depressive Disorders	746	62.1	220	18.3	154	12.8	81	6.7	1,201	34.6
Mania	192	61.1	49	15.6	48	15.3	25	8	314	9
Neuroses	237	71.2	47	14.1	32	9.6	17	5.1	333	9.6
Personality Disorders	59	59.6	23	23.2	12	12.1	5	5.1	99	2.9
Alcoholic Disorders	479	65.9	115	15.8	87	12	46	6.3	727	20.9
Drug Dependence	77	55	27	19.3	25	17.9	11	7.9	140	4
Mental Handicap	13	72.2	2	11.1	2	11.1	1	5.6	18	0.5
Unspecified	43	70.5	7	11.5	5	8.2	6	9.8	61	1.8
Total	2,199	63.3	591	17	437	12.6	246	7.1	3,473	100

Ten per cent (132/1,274) of those who were re-admitted had a secondary diagnosis.[1] A statistically significant association was found between those who had a secondary diagnosis at the time of their first admission and the likelihood of being re-admitted ($\chi^2(1) = 4.881$, p=0.016) with a higher proportion of those with a secondary diagnosis (42%; 132/311) more likely to be re-admitted than those who did not have a secondary diagnosis (36%; 1,142/3,162). Those who had a secondary diagnosis had a significantly greater number of re-admissions (n=311; M=1.18; SD=2.28735) than those who did not (n=3,162, M=0.8997; SD=1.91971) (t (354.274) = 2.090, p=0.037, $Eta^2 = .012$).

County and HSE area of residence

Of those who were re-admitted during the five-year period (n=1,274), 41% were resident in counties with large urban centres – Dublin (31%) and Galway (10%) – at the time of first admission. Eight per cent were resident in Cork, 7% were resident in

1 Secondary diagnosis is requested as part of the dataset for the National Psychiatric In-patient Reporting System (NPIRS) but where this data is not completed there is no indication if there is no secondary diagnosis or if it is simply not provided or recorded. Ten per cent of first admissions in 2005 had a secondary diagnosis recorded.

Donegal and 5% were resident in either counties Kildare, Mayo or Westmeath. There were no statistically significant associations between county of residence and the likelihood of being re-admitted or the number of re-admissions during the study period.

The counties from which patients were admitted were classified into one of four Health Service Executive (HSE) areas. Although these areas did not come into existence until 2005, they were used here for comparative purposes and for their relevance to current service planning. Thirty-three per cent (416/1,274) of those who were re-admitted during the five-year study period were resident in HSE West at the time of their first admission; 32% (n=404) were resident in HSE Dublin Mid-Leinster; 26% (n=327) were resident in HSE Dublin North-East, and 10% (n=125) were resident in HSE South. There were no significant associations between re-admissions and HSE area of residence.

Hospital type

Of the 1,274 patients who were re-admitted over the five-year period 2001–2005, 37% (n=476) were admitted to general hospital psychiatric units at first admission; 36% (n=462) were admitted to psychiatric hospitals, and 26% (n=336) were admitted to private hospitals. There was a statistically significant association between hospital type and the likelihood of re-admission ($\chi^2(2) = 17.87$, $p=0.000$), with a higher proportion (42%; 336/810) of those first admitted to private hospitals re-admitted compared with general hospital psychiatric units (33%; 476/1,447) or psychiatric hospitals (38%; 462/1,216).

Of those first admitted to general hospital psychiatric units in 2001, 15% (221/1,447) had one re-admission; 11% (156/1,447) had two to three re-admissions, and 7% (99/1,447) had four or more re-admissions in the five-year period 2001–2005 (Figure 1). Twenty per cent (158/810) of those first admitted to private hospitals in 2001 had one re-admission; 15% (122/810) had two to three re-admissions, and 7% (56/810) had four or more re-admissions. There was no significant association between the number of re-admissions and hospital type.

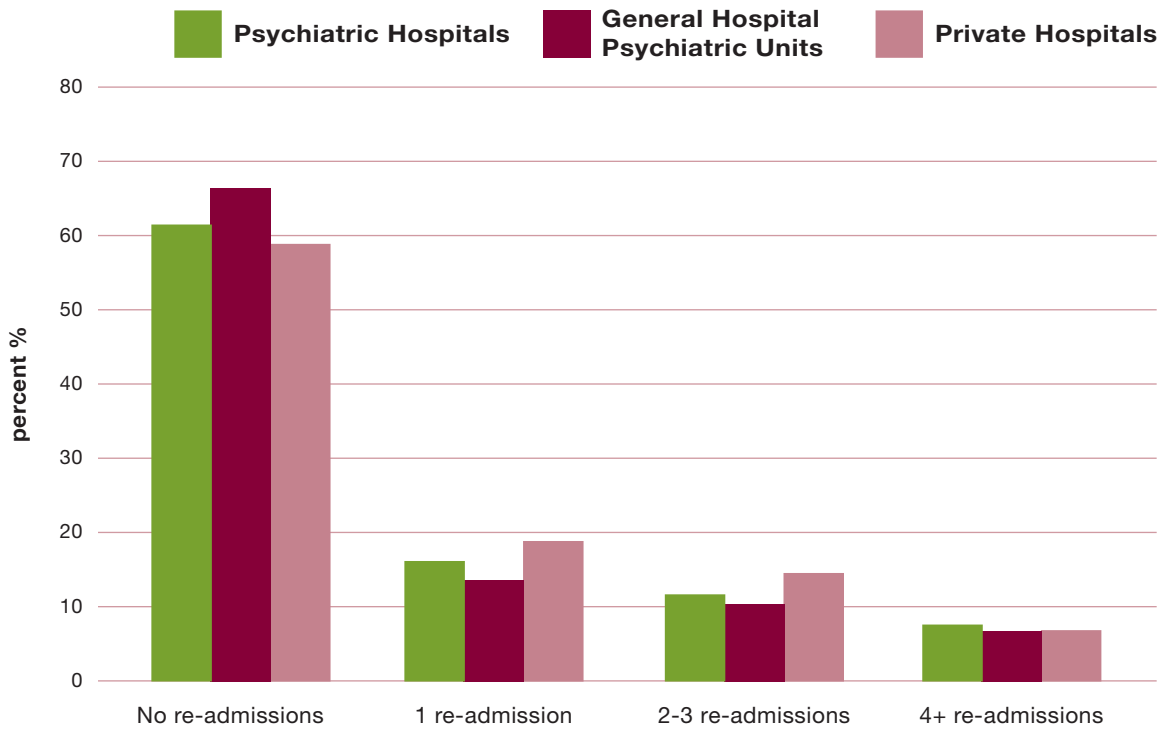

Figure 1 Proportion of re-admissions by hospital type 2001–2005

Frequent users

Seven per cent of first admissions in 2001 (246/3,473) were identified as frequent users (i.e. patients with four or more re-admissions), while 19% of those who were re-admitted (246/1,274) were identified as frequent users. Whilst equal numbers of males and females were re-admitted, females accounted for a higher proportion (53%; 131/246) of frequent users than males (47%; 115/246) ($\chi^2(2) = 17.063$, p=0.000). Forty-six per cent (112/246) of frequent users were single while 36% (89/246) were married. Almost one-quarter (24%; 58/246) were aged 35–44 years; one-fifth (49/246) were aged 25–34 years, and 19% (46/246) were aged 45–54 years. The mean age of frequent users was 39 years (SD=15.853; range=84). A higher proportion of those under 20 years of age were frequent users (10%; 28/283) compared with 8% (69/849) of those aged 45–64 years; 7% (132/1,950) of those aged 20–44 years and 4% (17/384) of those aged 65 years and over.

Diagnosis

Diagnosis was recoded into a new variable, using five categories. It comprised those disorders which accounted for the highest proportion of first admissions in 2001 i.e. schizophrenia, depressive disorders, neuroses and alcoholic disorders. All other disorders were collapsed into the 'other' category as they accounted for less than 10%

of first admissions. A significantly larger proportion (33%; 81/246) of frequent users had a diagnosis of depressive disorders at the time of their first admission compared with 19% (n=46) who had a diagnosis of alcoholic disorders and 17% (n=41) who had a diagnosis of schizophrenia (Figure 2) ($\chi^2(8)=21.196$, p=0.007).

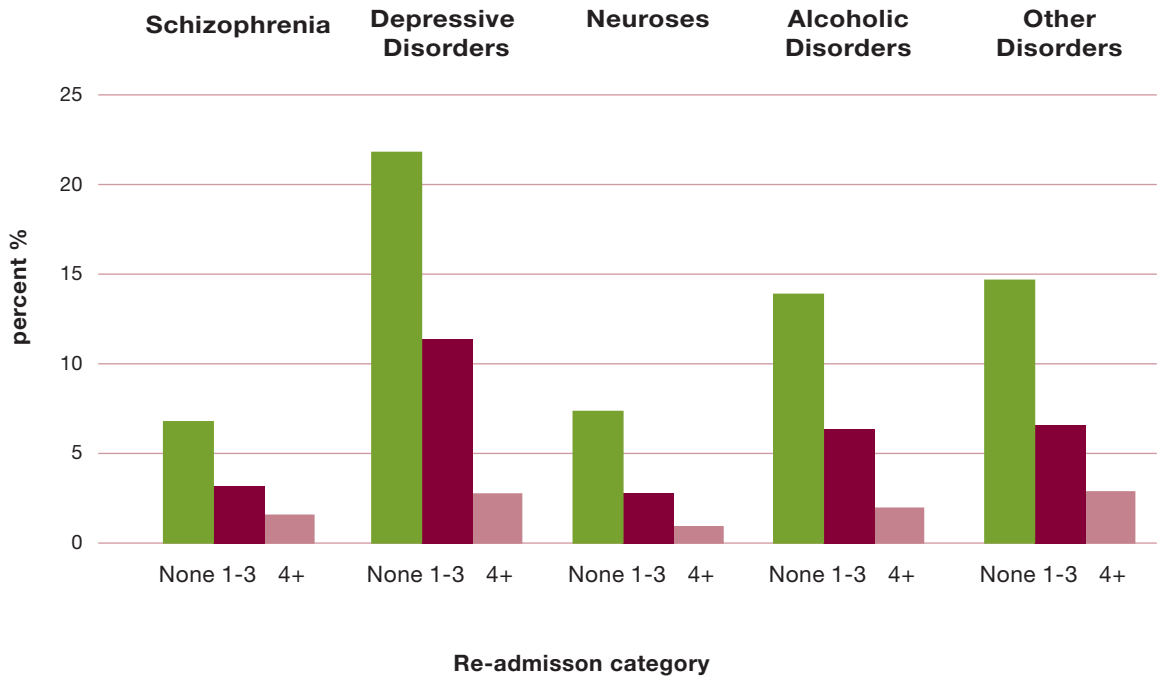

Figure 2 Percentage of low/frequent users by primary diagnosis

Note: one to three re-admissions = low users; four or more re-admissions = frequent users.

Twelve per cent of frequent users (30/246) had a secondary diagnosis. A significantly higher proportion (10%; 30/311) of those with a secondary diagnosis were frequent users; this compared with those who did not have a secondary diagnosis (7%; 216 /3,162) ($\chi^2(2)=6.138$, p=0.046). Sixty-five per cent (n=53) of frequent users with a diagnosis of depressive disorders were female; 54% (n=22) of frequent users with a diagnosis of schizophrenia were male, and 59% (n=27) of those with a diagnosis of alcoholic disorders were male.

Socio-economic group

Socio-economic group was recoded into a new variable comprising farmers/ agricultural workers, professionals (higher professional and lower professionals), employers and managers/self-employed (own-account workers), non-manual occupations, skilled and semi-skilled occupations, unspecified/unknown and the unskilled category. A significantly larger proportion (13%; 32/246) of frequent users had non-manual occupations; 7% (n=17) had unskilled occupations, and 10% (n=24)

had manual-skilled and semi-skilled occupations ($\chi^2(12)=30.634$, p=0.002). However, it is worth bearing in mind that over half (51%) of all occupations were unspecified or unknown.

County and HSE area of residence

Over one-third (36%; 88/246) of frequent users were resident in Dublin city or county at the time of first admission; 12% (29/246) were resident in Galway city or county and 10% (24/246) were resident in Donegal. The counties from which patients were admitted were classified into one of four Health Service Executive (HSE) areas. A significantly higher proportion (9%; 79/857) of those residing in the HSE Dublin North East area were frequent users compared with those residing in any of the remaining HSE areas ($\chi^2(6) =12.662$, p=0.049) at the time of their first admission (Table 4).

Table 4 Number and percentage of low/frequent users by HSE Area

		No re-admissions	One to three re-admissions	Four or more re-admissions	Total
Dublin Mid- Leinster	N (%)	703 (63.5)	337 (30.4)	67 (6.1)	1,107
Dublin North East	N (%)	530 (61.8)	248 (28.9)	79 (9.2)	857
South	N (%)	197 (61.2)	109 (33.9)	16 (5.0)	322
West	N (%)	749 (64.3)	332 (28.5)	84 (7.2)	1,165
Total	N (%)	2,179 (63.1)	1,026 (29.7)	246 (7.1)	3,451

Length of stay of first admission for re-admissions and for frequent users

Length of stay of first admission was examined for the dichotomous groups re-admitted or not and for the frequent/low users group. The proportion of those re-admitted increased with increasing lengths of stay, for example, 29% (300/1,037) of those with a length of stay of under one week were re-admitted; 36% (238/659) of those in hospital 1-<2 weeks were re-admitted; 38% (259/679) of those in hospital for 2-< 4 weeks were re-admitted; 43% (413/954) of those in hospital for 1-< 3 months were re-admitted and 44% (64/144) of those in hospital for three months to one year were re-admitted ($\chi^2(4) =49.23$, p=0.000) (Figure 3).

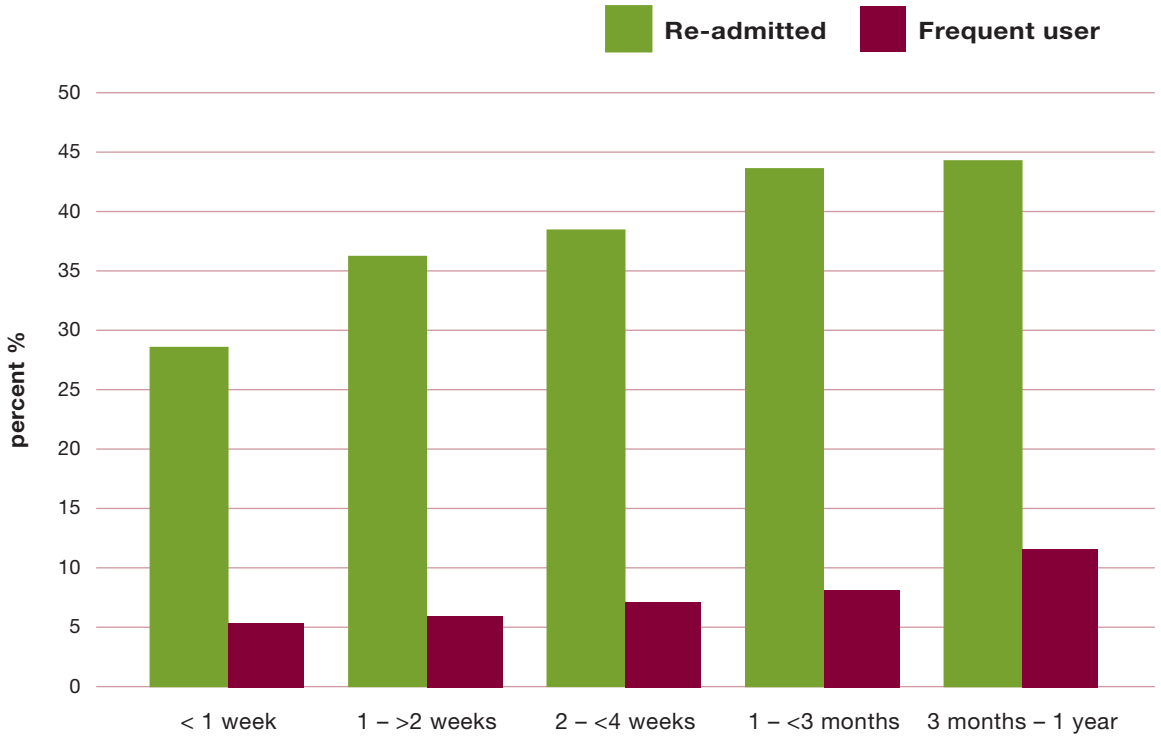

Figure 3 Length of stay by re-admitted and frequent users groups

Similar to those who were re-admitted, the proportion of frequent users increased significantly with increasing lengths of stay ($\chi^2(8) = 53.604$, p=0.000). For example, 6% (59/1,037) of those in hospital for under one week were frequent users; 7% (43/659) of those in hospital for 1-< 2 weeks and 7% (50/679) of those in hospital for 2-< 4 weeks were frequent users; 8% (76/954) of those in hospital for 1-< 3 months were frequent users and 13% (18/144) of those in hospital for three months to one year were frequent users (Figure 3). Length of stay of first admission was significantly longer ($F(2) = 10.056$, p=0.000) for frequent users compared with those who had one to three re-admissions or those with no re-admissions (Table 5). Bonferroni post hoc tests indicated that were differences between lengths of stay for the single admission group and low users (one to three admissions) (p=0.003) and the single admission group and frequent users (four or more re-admissions) (p=0.001).

Table 5 Length of stay by single admission, low users and frequent users groups

	n	Mean length of stay (days)	SD	F	df	p
No re-admissions (single admission)	2,199	23.9154	34.574			
Low users (one to three re-admissions)	1,028	28.1128	30.873	10.056	2	0.000
Frequent users (four or more re-admissions)	246	32.0203	36.673			

Community residence data/staffing data

Data on the number of community residences (high, medium and low support)[2] and the number of places in community residences (high, medium and low support) were obtained from the Department of Health and Children end-of-year returns for 2001 (Department of Health and Children, 2002), along with data on the number of day hospitals and day hospital places; the number of day centres and day centre places, and the number of out-patient clinics. Data on staffing levels (nursing staff numbers and total staff numbers) within community residences; day hospitals (nursing staff and medical staff); day centres (nursing staff and total number of staff), and each hospital included in the study (nursing, medical and paramedical staff) were also obtained.

There were no significant correlations ($p>0.05$) between the number of each type of community residence (i.e., high, medium or low) or the number of places in each type of residence and the number of re-admissions; the number of frequent users or the length of stay of first admission in each hospital. Likewise, no significant correlations ($p>0.05$) were found between each type, number and number of places in each facility (day hospital, day centre and outpatient clinic) and the number of re-admissions; the number of frequent users or the length of stay of first admission in each hospital. No significant correlations ($p>0.05$) were found between staffing levels for day hospitals or day centres and the number of re-admissions; the number of frequent users, or the length of stay of first admission in each hospital.

A series of correlation analyses was undertaken to examine associations between staffing levels for each hospital (i.e., nursing staff, medical staff and paramedical staff) and a number of key variables. The results showed moderate negative correlations between the number of medical WTE (whole time equivalent) staff in each hospital and the number of re-admissions ($r=-.499$, $p=0.018$); the number of frequent users ($r=-.490$; $p=0.021$) and the length of stay of first admission ($r=-.468$, $p=0.028$). This indicates that higher medical (doctors) staff numbers were associated with less re-admissions, fewer frequent users and a shorter length of stay; this suggests that an increase in human

2 Community residences are residences which provide accommodation for long-stay patients with varying needs of dependency.

resources may lead to a more efficient provision of services to service users thereby resulting in the need to re-admit less frequently.

Predicting re-admissions

A logistic regression analysis using the forward likelihood ratio model was employed to predict the factors associated with re-admission. Gender, age, diagnosis, the presence of a secondary diagnosis, hospital type (public or private), socio-economic group and length of stay were used in the model predicting re-admissions, as these variables were significant ($p<0.025$) when entered into the model on their own. Diagnosis was recoded into six categories; schizophrenia, depressive disorders, alcoholic disorders, neuroses, drug dependence and all other disorders. Age and socio-economic group were recoded as reported earlier. Hospital type was recoded into public or private hospital.

The Hosmer-Lemeshow (H-L) goodness-of-fit test yielded a $\chi^2(8)$ of 5.275 and was not significant ($p>.05$), suggesting a good fit. The final model predicted 4.57% of the variance in re-admissions (Nagelkerke ($r^2=0.0457$); Cox and Snell ($r^2=0.0330$)). Overall the model predicted 63% of cases.

The variables left in the final step of the model (step 4) were gender, age, length of stay, primary diagnosis and having a secondary diagnosis (Table 6). Significant interaction effects were observed for age and primary diagnosis. The likelihood of being re-admitted for those less than 20 years of age with a diagnosis of schizophrenia or drug dependence was much higher than for other disorders and other age bands; those less than 20 years with a diagnosis of schizophrenia were five times more likely to be re-admitted (OR 5.046, 95% CI 2.396–10.627), while those less than 20 with a diagnosis of drug dependence were four times more likely to be re-admitted (OR 4.088, 95% CI 1.579–10.579). Those aged 20–44 years with a diagnosis of drug dependence were over one and a half times more likely to be re-admitted (OR 1.656, 95% CI 1.092–2.514). In contrast those aged 20–44 years with a diagnosis of neurosis were almost one and a half times less likely to be re-admitted (OR 0.0690, 95% CI 0.494–0.964).

Length of stay was also a significant predictor of re-admission with those with a length of stay of less than one week at first admission less likely to be re-admitted than those with a length of stay of three months or more. Gender was also a significant predictor of re-admission with females more likely than males to be re-admitted (OR 1.346, 95% 1.163–1.558. Having a secondary diagnosis was also a strong predictor of re-admission (OR 1.382, 95% CI 1.083–1.764); those with a secondary diagnosis were 1.3 times more likely to be re-admitted than those without a secondary diagnosis.

Table 6 Significant predictors from logistic regression analysis of re-admitted or not

Predictor	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
							Lower	Upper
Gender								
Female	0.297	0.075	15.817	1	0.000	1.346	1.163	1.558
Secondary diagnosis								
Yes	0.324	0.124	6.775	1	0.009	1.382	1.083	1.764
Length of stay			41.789	4	0.000			
< 1 week	-0.64	0.186	11.793	1	0.001	0.527	0.366	0.76
1–2 weeks	-0.306	0.191	2.578	1	0.108	0.736	0.507	1.07
2–4 weeks	-0.244	0.188	1.669	1	0.196	0.784	0.542	1.134
1–3 months	-0.024	0.183	0.017	1	0.896	0.976	0.682	1.397
Age by Diagnosis			46.313	15	0.000			
< 20 yrs by Schizophrenia	1.619	0.38	18.137	1	0.000	5.046	2.396	10.627
< 20 yrs by Depressive disorders	0.295	0.26	1.288	1	0.256	1.343	0.807	2.237
< 20 years by Alcoholic disorders	-0.412	0.445	0.856	1	0.355	0.662	0.277	1.585
< 20 years by Neuroses	-0.474	0.322	2.165	1	0.141	0.622	0.331	1.171
< 20 years by Drug Dependence	1.408	0.485	8.422	1	0.004	4.088	1.579	10.579
20-44 years by Schizophrenia	0.256	0.152	2.835	1	0.092	1.292	0.959	1.742
20-44 years by Depressive disorders	0.144	0.109	1.743	1	0.187	1.154	0.933	1.428
20-44 years by Alcoholic disorders	0.145	0.129	1.257	1	0.262	1.156	0.897	1.49
20-44 years by Neuroses	-0.371	0.171	4.738	1	0.03	0.69	0.494	0.964
20-44 years by Drug dependence	0.505	0.213	5.627	1	0.018	1.656	1.092	2.514
45-64 years by Schizophrenia	0.035	0.241	0.021	1	0.883	1.036	0.645	1.663
45-64 years by Depressive disorders	0.188	0.135	1.927	1	0.165	1.206	0.926	1.572
45-64 years by Alcoholic disorders	0.113	0.151	0.561	1	0.454	1.12	0.833	1.506
45-64 years by Neuroses	0.096	0.299	0.104	1	0.747	1.101	0.613	1.977
45-64 years by Drug dependence	0.178	0.549	0.105	1	0.746	1.195	0.407	3.506

Overview of main findings

Thirty-seven per cent of first admissions in 2001 had one or more re-admission in the five-year period 2001–2005. Seven per cent were frequent users (four or more re-admissions). A higher proportion of those who were re-admitted were female, young, single, had non-manual occupations, had a primary diagnosis of depressive disorders at first admission, were resident in counties with larger urban centres at the time of their first admission and had a secondary diagnosis at first admission. Frequent users were more likely to be female, younger, single, had a primary diagnosis of depressive disorders, had a secondary diagnosis, had non-manual occupations and were resident in counties with larger urban centres at first admission.

Length of stay of first admission was significantly longer for frequent users compared with those who had one to three re-admissions (low users) or those who had no re-admissions.

Overall staffing levels in community services plus the number of community residences and the number of places in such residences did not appear to be associated with the number of in-patient re-admissions. However, the moderate negative correlation between the number of medical WTE (whole time equivalent) staff in each hospital and the number of re-admissions; the number of frequent users, and the length of stay of first admission indicates that decreased medical staffing levels in hospitals led to increased re-admissions, an increased number of frequent users and a longer length of stay.

The most significant predictors of re-admission were age and diagnosis with those less than 20 years of age with a diagnosis of schizophrenia and drug dependence more likely to be re-admitted. Females and those with a secondary diagnosis were also more likely to be re-admitted. Length of stay was also a significant predictor of re-admission with those who had a shorter length of stay at first admission less likely to be re-admitted than those with a longer length of first admission.

Discussion

Lien (2002) proposed that the re-admission rate was one indicator of the effectiveness of the transition from in-patient care to community care. During the past 20 years, mental health services in Ireland have been characterised by a decrease in the number of admissions to psychiatric hospitals with a corresponding increase in the proportion admitted to general hospital psychiatric units; a decrease in the number of patients resident in Irish psychiatric units and hospitals, and a decrease in the number of beds (Daly *et al.*, 2006; Daly and Walsh, 2006; Department of Health and Children, 2006). Despite a reported three-fold increase in the provision of community residential places and day facilities (Department of Health and Children, 2006), re-admissions to Irish psychiatric hospitals and units have accounted for over 70% of all admissions since the 1980s, pointing to an in-patient system still based very much on a 'revolving door' system. The absence of any reduction in re-admissions as a proportion of all admissions during the past number of years seems at odds with the increased provision of community services in recent years. If, as Lien (2002) suggests, the re-admission rate is an indicator of the successful transition to community care, the high re-admission proportion points to a mental health system where in-patient admission is still the norm and community care facilities are not functioning yet at the capacity to which they were intended, and as has been recommended in successive policy documents. The recent policy document *A Vision for Change* alludes to this, 'It is... questionable whether the spirit of the community-oriented model has been fully implemented, that is, whether the main provision of care has fully moved from in-patient settings to the community.' (Department of Health and Children 2006: 56).

However, some studies (Korkeila *et al.*, 1998; Langdon *et al.*, 2001) have pointed out that due to their severity, certain disorders, particularly psychotic illnesses, render people vulnerable to repeated admissions. Thus, there will always be a need for in-patient treatment for those diagnosed with certain disorders; the development of community services as such will not eliminate the need for in-patient treatment for this group of people (Korkeila *et al.*, 1998; Szmukler and Holloway, 2001; Thornicroft and Tansella, 2004). Thus, hospitalisation will continue to feature prominently in treatment programmes for psychiatric patients with disorders that are enduring and recurrent. This study found that depressive disorders was the most common diagnosis (at first admission) among those re-admitted and among the frequent users group, while alcoholic disorders and schizophrenia were also common disorders (at first admission) among those who were re-admitted. Thus, depressive disorders and schizophrenia because of their nature and severity may require more frequent admissions, supporting the finding of other studies (Korkeila *et al.*, 1998; Szmukler and Holloway, 2001).

Interestingly, this study found a high proportion of those diagnosed with alcoholic disorders (at first admission) among those re-admitted (20%) and among frequent users (19%). Woogh (1986) found that over half (53%) of patients with repeated admissions suffered from non-psychotic illnesses, primarily alcoholism (and/or personality disorders). The study by Woogh advocated that this group continued to be admitted time and time again even though they were least likely to benefit from admission. Policy documents in Ireland (Department of Health, 1984; Department of Health, 1992; Department of Health and Children, 2006) have repeatedly called for the treatment of non co-morbid alcoholic disorders in community-based facilities rather than on an in-patient basis, which has been deemed inappropriate. Admissions for alcoholic disorders in Ireland in 2005 accounted for 14% of all admissions to in-patient facilities (Daly *et al.*, 2006). This proportion remains quite high despite recommendations to treat this disorder in community-based services. It appears that continued repeated in-patient admissions for alcoholic disorders may work in the short term i.e. for the duration of the treatment and shortly thereafter but, given the high number of re-admissions, they appear to offer little long-term rehabilitative benefits. More progress on the treatment of alcoholic disorders on an out-patient basis needs to be made to end the 'revolving' door process for those with alcoholic disorders and to enable the recommendations of successive policy documents to be fully implemented.

Length of stay of first admission in this study was found to be significantly longer for frequent users, a finding similar to other studies (Rabinowitz *et al.*, 1995; Korkeila *et al.*, 1998; Feigon and Hays, 2003). However, other studies (Lien, 2002; Figuero *et al.*, 2004) found that longer length of stay predicted fewer re-admissions. Given that almost half of those in the study who had been re-admitted had a diagnosis of depressive disorders and schizophrenic disorders – which tend to be more enduring and/or recurrent than other disorders – indicates perhaps that more lengthy treatment periods may be needed for some patients. Other studies have examined length of stay of first and subsequent admissions and the interval between the first and second admissions (Gastal *et al.*, 2000; Lien, 2002; Duncan *et al.*, 2002), reporting an increased likelihood of re-admission, with a shorter interval between first and second admissions. Naji *et al.* (1999) reported that the peak period for re-admission is within the first month of discharge while Caton *et al.* (1985) and Boydell *et al.* (1991) reported that between 20–40% of patients are re-admitted within six months of discharge. A further analysis of data needs to be carried out to examine the relationship between length of stay of subsequent admissions and the likelihood of being re-admitted, in order to establish if a longer length of stay is linked to greater chronicity or recurrent illnesses. Moreover, the finding that a significantly higher proportion of those with a secondary diagnosis were more likely to be re-admitted – and to be frequent users as well as having a greater number of re-admissions than those without a secondary diagnosis – may also

suggest that those with an additional secondary diagnosis may require more frequent admissions due to greater chronicity.

The finding in this study that a higher proportion of those less than 20 years of age at first admission were re-admitted and were frequent users supports the findings of previous studies (Woogh, 1986; Kastrup, 1987a; Weissman *et al.*, 1994; Rabinowitz *et al.*, 1995; Mahendran *et al.*, 2005). In addition, 9% of those who were re-admitted in the five year period were aged 16–19 years at first admission. Daly *et al.*, (2006) reported that in 2005 there were 39 admissions to Irish psychiatric units and hospitals for persons under 16 years of age and 723 admissions for 16–19 year olds. This highlights the importance of early intervention services for this particularly vulnerable group of young people to prevent those who are admitted to in-patient services at an earlier age becoming 'revolving door' patients. A recent Irish study (Clarke *et al.*, 2006) on the duration of untreated psychosis highlighted the possible benefits of early intervention services and added that such services should also include the education of general practitioners in their ability to recognise psychosis in its early stages. A recent study on psychological well-being and distress in the Irish population (Tedstone Doherty *et al.*, 2007) found that most of those who had sought help for mental health problems in the previous year had done so from a general practitioner (GP), highlighting the importance of GPs in the assessment and treatment of mental health problems and their role in early intervention. The policy document *A Vision for Change* (Department of Health and Children, 2006) recommended appropriate training in mental health for general practitioners and the availability of appropriately trained staff at primary care level to provide programmes to prevent mental health problems and to promote well-being.

A significantly higher proportion of first admissions to private hospitals were found to have been re-admitted compared to general hospital psychiatric units or psychiatric hospitals. This is an interesting finding which possibly reflects differences in admission practices. Typically, private psychiatric hospitals have been found to have a longer average length of stay in comparison to general hospital psychiatric units or psychiatric hospitals (Daly *et al.*, 2006), however, the proportion of re-admissions overall in 2005 to private hospitals was found to have been lower. Walsh and Daly (2004) found profound differences in admission rates between the public and private sectors which they believe point to the link between poverty and disadvantage and the incidence and prevalence of mental illness. A further exploration of admissions by hospital type is recommended to tease out possible differences in admission practices versus real differences in morbidity between those admitted to the public versus private models of in-patient care.

The most significant predictors of re-admission were age and primary diagnosis at first admission. It is clear from the data presented in this study that the youngest and most vulnerable persons with a diagnosis of schizophrenia and drug dependence had a poorer prognosis in terms of becoming revolving door patients, a finding reported by other studies (Kastrup, 1987a, 1987b; Lewis and Joyce, 1990;). The finding of being female as a significant predictor of re-admission is in contrast to the findings of some studies (Woogh, 1986; Kastrup, 1987a; Weissman *et al.*, 1994; Rabinowitz *et al.*, 1995; Sanguineti *et al.*, 1996; Korkeila *et al.*, 1998; Hodgson *et al.*, 2001; Pederson and Aarkrog, 2001; Mahendran *et al.*, 2005), which found that being male was more likely to predict re-admission. However, other studies have found that women with 'neurotic depression' constitute a large proportion of the revolving door population (Lewis and Joyce, 1990) while Korkeila *et al.* (1995) found that women accounted for a larger proportion of re-admissions but not that of revolving door. The current study found that over one-third of those re-admitted had a primary diagnosis of depressive disorders and 61% of those were female. Thus, it is no surprise that being female emerged as more likely to predict re-admission.

Dublin and Galway, counties with large urban centres, were found to have more re-admissions in this study when compared with other counties in Ireland; there was a significantly higher proportion of frequent users living in the HSE Dublin North East area compared with those living in other HSE areas. However, these findings need to be interpreted with caution given the fact that not all hospitals were included in the study and thus all areas were not covered. A recent study by Fotheringham *et al.* (2006) reported that most of the psychiatric hospitals in the country are located in major towns and cities (see Map 1 in Appendix) and those areas which were isolated from hospital services were catered for by day services. This highlights the importance of the expansion of local community psychiatric facilities to ensure the widest possible availability of services to the local community. The MHRU is working in collaboration with the HSE – Mental Health and ICT Directorates - to develop and roll out an information system, NPIRS/COMCAR, to record data on mental health activity in both inpatient and community care settings. The development and roll-out of the NPIRS/COMCAR database from 2008 by the MHRU will enable future explorations of community care data and a future analysis of in-patient re-admissions versus community care data in this regard is recommended.

Korkeila *et al.* (1998) concluded from their study that the need for in-patient treatment was not diminished by the expansion of psychiatric out-patient facilities. They reported that the number of visits to out-patient care almost doubled during the study period but that this was not borne out in any decrease in re-admissions. While the current study did not have access to data on out-patient facilities, no association was found between each type of community residence or the number of places in community

residences and the number of re-admissions or frequent users. Likewise, no association was found between community staffing levels and the number of re-admissions. Thus, overall staffing levels plus resources in community services did not appear to be associated with the number of in-patient re-admissions. However, the moderate negative correlations between the number of medical WTE (whole time equivalent) staff in each hospital and the number of re-admissions; the number of frequent users, and the length of stay of first admission indicates that decreased medical staffing levels led to increased re-admissions, an increased number of frequent users and a longer length of stay, suggesting inadequate resources to deal effectively with disorders that present to in-patient services. Walsh and Daly (2004) commented on the increase in spending in the psychiatric services by €367 million in the 14-year period from 1988 to 2002. However, they noted that during this time, expenditure as a percentage of all health expenditure almost halved from 12.5% in 1988 to 6.9% in 2002, while in-patient numbers fell by 58%. This report queried how a country with a minimal in-patient base manages to consume an estimated 40% of the psychiatric services revenue when there has been such a huge impetus into providing community-based facilities. With the increased provision of community psychiatric services little evaluation has taken place to establish the efficacy of such services apart from a recent study on community residential mental heath services (Tedstone Doherty *et al.*, 2007).

Finally, while the evidence base for the efficacy of expanded community services in reducing re-admission may be equivocal the nature of such services as currently conceived and deployed needs critical examination. *A Vision for Change* advocated community initiatives that were readily accessible and quickly responsive. They should comprehensively and readily embrace the requirements of service users, primary carers and other community agents through an outreach philosophy and practise. Community psychiatric teams should be multidisciplinary in composition and specialised in function so as to provide for crisis intervention in the deteriorations of clinical and functional status occurring in those with severe and enduring illness. Issues of treatment compliance as a preventive measure and the avoidance of re-admission may thus be addressed without the restrictive constraints of imposing community treatment orders as in other jurisdictions (i.e., England and Wales, Mental Health Act 2007). In parallel, an increase of specialised rehabilitation teams, imbued with a recovery perspective, from the five current and incomplete teams to the 39 recommended by *A Vision for Change* must collectively impact on a re-admission rate now standing at 70%.

Strengths and Limitations

The current study has examined in-patient re-admissions for the first time in an Irish context. The study highlighted the disorders which were most frequently admitted and the characteristics of those re-admitted over a five-year period. It also highlighted the fact that a small proportion of patients are using in-patient resources. Furthermore,

factors predicting re-admissions to Irish psychiatric units and hospitals for the study period were identified.

This study was constrained by the absence of a national unique patient identifier which would have allowed ease of access to a patient's record over the study period. This constraint resulted in data for many hospitals (57%) being excluded because of the inability to follow up patients for the study period.

This was a retrospective study which was carried out without access to case notes or records. Thus, no additional diagnostic, familial or discharge information was available other than that presented. Some studies have cited the importance of psychoeducation of families and their relatives with a mental illness (including compliance with medication) in reducing re-admissions (Bridge and Barbe, 2004; Cassidy *et al.*, 2001; Ran *et al.*, 2003; Pitschel-Walz *et al.*, 2006; Bäuml *et al.*, 2007). Appropriate discharge planning and follow-up procedures (Lien, 2002; Department of Health and Children, 2006), have been also been reported as important factors in reducing re-admissions. Other studies have reported that the period immediately following discharge as critical (Walker *et al.*, 2002) with patients at high risk of re-admission (Caton *et al.*, 1985; Boydell *et al.*, 1991; Naji *et al.*, 1999;) and highlighted the need for appropriate discharge planning and follow-up. A recent Irish study on the experiences, needs and support requirements of families with enduring mental illness (Kartalova O'Doherty *et al.*, 2006) also reported that lack of discharge planning, lack of community services and follow-up treatment was a major problem for families and their relatives with mental illness.

A further limitation was the non-validation of first admissions. There was no way of knowing how many of those admissions which were recorded as a first admission were, in fact, 'true' first admissions i.e. that the person was never admitted to any psychiatric unit or hospital previously. The validity of first admissions has been questioned previously (Walsh and Daly, 2004) and is something that warrants further examination. Furthermore, there was no way of knowing what proportion of those originally admitted to a private hospital were subsequently re-admitted to a public hospital and registered incorrectly in that hospital as a first admission. In Ireland admissions to private psychiatric hospitals are somewhat limited by medical insurance cover which provides cover for a specified number of days only and thus, once this cover has expired, it is unknown how many of these patients are subsequently admitted as public patients.

A further limitation of the study was the lack of available data on community psychiatric services with which to compare in-patient data. However, the NPIRS/ COMCAR database which is being developed by the HRB in collaboration with the HSE and stakeholders will enable future analysis and comparisons of in-patient and community care data.

Conclusions

In-patient psychiatric treatment continues to play an important role in the overall treatment of those with mental illness, particularly those with severe psychotic illnesses. The expansion of community-based services to date has not diminished the need for in-patient treatment for those with enduring and/or recurrent illnesses; thus re-admissions will continue to be a feature of in-patient activity.

The high proportion of re-admissions with a diagnosis of alcoholic disorders remains a concern in light of the recommendations of successive policy documents to treat this disorder in community-based settings.

The high proportion of young people among those re-admitted and among the frequent users is a concern and one which needs to be addressed. In addition, the highlighted poorer prognosis for the younger age groups with a diagnosis of schizophrenia and drug dependence in terms of becoming revolving door patients warrants further examination. Prioritising the full range of mental health care, from primary care to specialist mental health services for children and adolescents was recommended by the policy document *A Vision for Change* (Department of Health and Children, 2006) and this should remain a priority for service planners into the future.

Data on community mental health services has been seriously lacking in Ireland in the past and the planned roll-out of the NPIRS/COMCAR database is an exciting development for the mental health services and one which will allow evidence-based data to be used in the planning and implementation of services in both in-patient and community mental health services. A further exploration of in-patient admissions and data on community services and resources should be further examined when NPIRS/COMCAR becomes operational. In addition, an examination of the quality of, and resources invested in, community services should be considered to plan effectively for the future of the psychiatric services.

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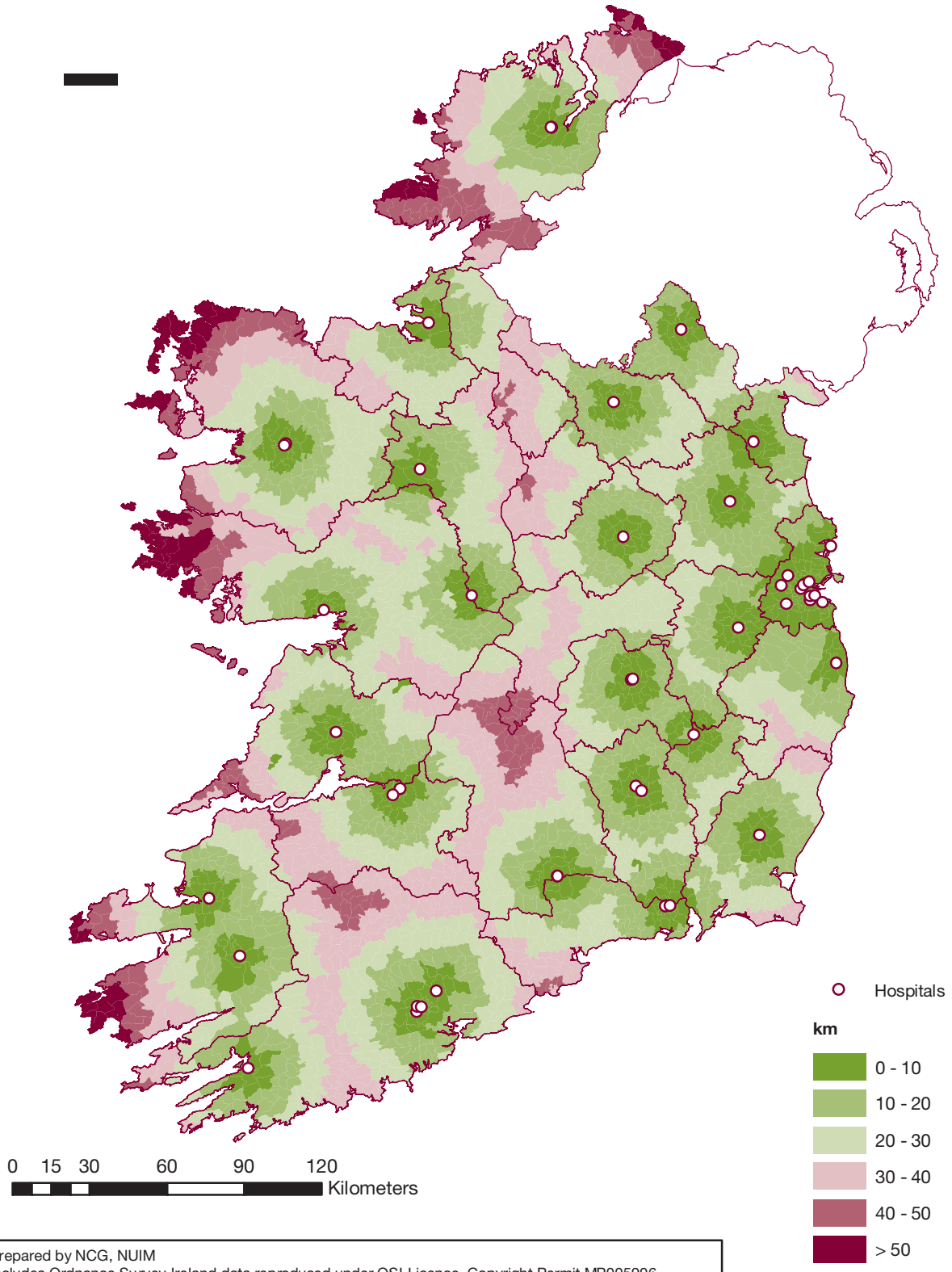
Appendix

Distance to Nearest Hospital



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