

# Socio-economic deprivation and admission rates to secure forensic psychiatry services

Jeremy W. Coid

Annual admission rates from the North-East Thames Region to maximum- and medium-secure forensic psychiatry services demonstrated a highly significant correlation with social deprivation measured at district health authority level using the Jarman UPA 8. There were specific associations with the number of unemployed persons, overcrowded households, and persons from ethnic minorities in the districts studied. There was a 10-fold difference in treated prevalence rates across the region, indicating that certain purchasing authorities may be seriously underfunded to meet the needs of their catchment area populations for secure forensic psychiatry services. Further research is required into the nature of the association between admissions to these services and social deprivation. It is readily apparent that a new formula is required for the allocation of resources in the face of such wide disparities in demand from different geographical locations.

It is increasingly apparent that there are widely differing admission rates to psychiatric facilities in different geographical locations and that these correlate with measures of social deprivation (Hirsch, 1988; Thornicroft, 1991; Jarman *et al.*, 1992; Thornicroft *et al.*, 1992). There are large discrepancies between the true health care needs of different populations, and demand is considerably increased in socially deprived locations. A literature review by Thornicroft (1991) demonstrated strong associations between treated prevalence rates of mental disorder and social class, gender, marital status, ethnic group, and living alone; and moderate associations with living in inner-city areas and a high degree of social mobility. Jarman *et al.* (1992) developed two statistical models which could be used to predict district psychiatric admissions as an aid to resource allocation, based on national data from the 1981 population census for England and Wales. By combining census data with data from the 1986 Mental Health Inquiry for psychiatric admissions according to district health authority (DHA), it was observed that the actual number of admissions varied from 79% above to 54% below that expected. This has major implications for the funding of services. It

is possible that the financial allocation to some health authorities for mental health could be in excess of their requirements. This would give considerable scope for the shifting of funds from psychiatry into other services. In contrast, under-provision could result in the removal of resources from other services in an attempt to provide the basic minimum standards for the mentally ill. If this was confirmed, it would provide a *prima facie* case that a new formula is specifically required for the allocation of funds for mental health services.

Questions have been raised over whether a combination of inequity in resource allocation to health authorities, inadequate provision of medium secure forensic services, and high-level demand have led to overspending and subsequent financial crisis for certain inner-city purchasers (Murphy *et al.*, 1997). A comparison of forensic admissions from two Thames regions compared to five non-Thames regions over a seven-year period revealed that Thames patients were more likely to be suffering from schizophrenia, committed more serious offences, placed higher levels of demand on security, and required more costly and longer admissions. Despite the level of demand on these services, a substantial proportion of admissions from the Thames regions over the past decade have been to private hospitals owing to the failure of the Thames regional health authorities to develop adequate provision of medium secure beds for inner London. This represents a major disinvestment from forensic services in London and results in the placement of patients a considerable distance from their homes and families in other parts of England and Wales.

There have been no previous published studies which have examined the treated prevalence rates of mentally abnormal offenders admitted to secure facilities from a defined geographical area over a prolonged period. Prior to this study, it had been observed by clinicians in the North-East Thames Region that there appeared to be a disproportionate number of admissions to medium security from a relatively small number of

DHA catchment areas located in the inner-city areas of North and East London. But it remained unclear whether these findings applied equally across the region and whether admissions to maximum security were similarly affected.

### The study

A pilot study was carried out on all admissions to secure psychiatric beds in both maximum (special hospital) and medium security from the 15 district health authorities of the North-East Thames region. The intention of the pilot was to examine the feasibility of a larger, national study which will report in the future. The aim was to obtain the annual rate of admissions per 100 000 population from each district to both levels of security. From the rates obtained, it was intended to measure differences in usage of inpatient forensic psychiatry services by different districts; compare treated prevalence rates in maximum and medium security; and identify what specific factors of social deprivation demonstrated statistical associations with service use.

At the time of the study, the regional forensic service was divided into three components based in interim units, which were located in Friern, Hackney, and Runwell hospitals. Owing to insufficient regional beds, additional places would be found by clinicians on an extra-contractual referral basis, usually within the private sector, and paid for by the regional health authority. Financial responsibility for such patients was subsequently devolved to the purchasing authorities. Data for medium security therefore included all admissions to the three

interim secure units, to private beds, and to other National Health Service medium-secure units outwith the region during the study period.

Complete data for medium-secure admissions were available from the catchment area DHA's covered by the Friern-based service for 1986–1992, the Hackney service 1988–1991, and the Runwell-based service 1989–1991. Annual admission rates from each district were therefore calculated over a similar time period from the data available for 1988–1992 for Friern, 1988–1992 for Hackney, and 1989–1992 for Runwell. In addition, annual admission rates for each DHA were calculated on the basis of all admissions from the North-East Thames Region to the three special hospitals for the six-year period, 1987–1992. The address of each patient at the time of the index offence was determined from the case notes. If a patient was of no fixed abode then the catchment area was determined by the location of the index offence. Spearman's rank correlation coefficients were carried out between rates of admission to maximum and medium secure beds; rates of admission to maximum- and medium-secure beds (combined) and Jarman UPA 8 deprivation scores for each DHA. Data on the DHA populations and the Jarman indices of social deprivation for each DHA were derived from the 1981 national census.

### Findings

There was a 10-fold difference across the region in the annual rate of admission to secure beds in both maximum and medium security (Table 1). This varied from the highest rates for both

Table 1. Ranked annual rate of admissions to medium- and maximum-secure beds from North-East Thames district health authorities

District	Rate admissions/ 100 000 <sup>1</sup> maximum security	Rate admissions/ 100 000 <sup>1</sup> medium security	Rate admissions/100 000 maximum and medium security	Jarman ranking
City and Hackney	2.0	8.3	10.3	3
Tower Hamlets	1.4	3.7	5.1	1
Haringey	1.5	2.8	4.3	22
Bloomsbury and Islington	0.9	3.4	4.3	8
Hampstead	0.8	3.0	3.8	18
Newham	0.7	2.6	3.3	12
Basildon and Thurrock	0.4	2.5	2.9	98
North-East Essex	0.2	1.8	2.0	97
Mid-Essex	0.0	1.7	1.7	173
Barking, Havering and Brentwood	0.5	0.7	1.2	157
Redbridge	0.3	0.9	1.2	161
Enfield	0.1	1.0	1.1	104
West Essex	0.3	0.8	1.1	178
Southend	0.0	1.0	1.0	139
Waltham Forest	0.1	0.7	0.8	40

1. Spearman's rank correlation coefficient for rates of maximum compared to minimum security,  $R=0.72$ ,  $P=0.002$

maximum and medium security from the City and Hackney district per 100 000 population compared to Waltham Forest which had the lowest. The table also demonstrates the rates of admissions ranked according to district. There was a highly significant correlation between the rates of admission to maximum- and medium-secure services.

Table 2 demonstrates the correlation between the annual rate of admission to maximum and medium-secure beds combined for each DHA with their Jarman 8 deprivation scores. Significant correlations were found between the rate of admissions and persons unemployed; overcrowded households; persons from ethnic minorities; and the overall scores (UPA 8) for deprivation for each district concerned.

### Comment

The study demonstrates a highly significant statistical association between social deprivation at DHA level in North-East Thames Region and the annual rates of admission to secure forensic psychiatry services of residents from these areas. However, the nature of this statistical relationship appears to be complex and not all indicators derived from the census variables which constitute the Jarman UPA 8 score are relevant to secure bed usage. It is also important to bear in mind that deprivation indices are only proxy indicators of need. Factors such as the level of unemployment and overcrowding in a DHA catchment area are unlikely in themselves to have directly influenced the number of individuals admitted to secure facilities. They reflect other features of London's inner-city areas which have a demonstrated higher prevalence of persons with severe mental disorder (Johnson & Lelliott, 1997) and where additional social factors may operate and lead to higher rates of criminal behaviour by mentally disordered persons. The findings correspond to those of previous re-

searchers who have examined admission rates to ordinary psychiatric facilities and have two major implications for future health service research in forensic psychiatry. First, the observed differences in treated prevalence rates between DHA's indicate that there are substantial differences in the level of demand for expenditure on secure hospital placements born by different health authorities and that a new formula is required for more equitable resource allocation; second, the siting of in-patient services and their interface with community-based services to facilitate the treatment and rehabilitation of the maximum number of patients who are most in need is in need of review.

Forensic psychiatry services represent low-volume/high-cost care for purchasing authorities. Patients remain for prolonged periods in these facilities and staffing levels are high. The average price of a bed in medium security is currently £95 000 per annum. Beds in special hospitals continue to be funded centrally, but there are proposals that local health authorities should take over the funding of patients in maximum security in the future. This study had demonstrated a correlation between admissions to maximum and medium security. Unless this finding is taken into account, purchasers of secure care for inner-city populations will be further disadvantaged in the future. The 10-fold difference in the rate of admissions across the Region also highlights the paradox that inner London purchasing authorities have experienced a reduction in their funding in recent years, with a redistribution to the outer London authorities and the Shires. For forensic psychiatry, this has placed both financial and managerial strain upon an already unstable and underdeveloped system.

The specific factors which account for these wide discrepancies in demand for secure beds require further study. It remains unclear whether the findings revealed in North-East Thames extend to other regions. It is also unclear whether they largely reflect the epidemiology of different DHA catchment area populations, or whether the level of provision of additional resources, such as the overall number of psychiatric admission beds in a DHA and locked wards, are the more important factors. Unpublished data on crimes known to the police in the London boroughs indicate that all categories demonstrate higher levels in the inner London ring of the most socially deprived boroughs, in contrast to outer London. It is probable that the same social factors which lead to high overall levels of crime in these areas have had some influence on the criminal behaviour of the mentally disordered in these areas. Nevertheless, it is important to bear in mind that the majority of admissions to secure forensic psychiatry

Table 2. Spearman's rank correlation coefficients for Jarman 8 deprivation scores and admission rates to medium- and maximum-secure beds (combined)

	<i>R</i>	<i>P</i>
UPA 8 score	0.75	<0.001
Elderly alone	0.27	<0.320
Children under five years	0.29	<0.285
One parent families	0.49	<0.064
Unskilled workers	0.50	<0.054
Persons unemployed	0.64	<0.010
Overcrowding	0.66	<0.007
Moved house within year	0.41	<0.124
Ethnic minorities	0.51	<0.050

facilities follow the most serious crimes of violence, sexual offences, and arson, together with a smaller proportion of patients who are transferred to these facilities when they cannot be contained in a conventional psychiatric hospital setting. The relationship between these specific behaviours and crime rates, which are primarily constituted by acquisitive offending, may or may not be a direct one. One additional factor requiring further study is the contribution of Afro-Caribbean patients to raised treated prevalence rates from the inner-city DHA's. Murray (1996) demonstrated that Afro-Caribbean patients constituted 40% of the overall population in a national point prevalence survey of all patients in medium-secure facilities in 1991. There is growing evidence that the demand for psychiatric service provision may be especially high in areas characterised by higher proportions of African-Caribbeans (Ineichen *et al.* 1984; McGovern & Cope, 1987; Harrison *et al.* 1988; Owens *et al.* 1991; Davies, 1996; McCreddie *et al.* 1997). Independent of their diagnosis, Black African-Caribbean patients are more likely to have contact with the police and forensic services (McGovern & Cope, 1987), to be treated in intensive care facilities if detained under the Mental Health Act 1983 (Moodley & Thornicroft, 1988), and to have criminal convictions if they are young and male (Wessely *et al.* 1994). Although admission rates in this study correlated with ethnicity at a relatively low level of significance, this finding may have been more robust if data from the 1991 national census had been included. This subdivided ethnicity into several categories in contrast to the 1981 census data which was incorporated into the Jarman UPA 8 score used in this study and which combined all ethnic minorities into one category.

Future study will require a considerably larger sample and should cover a larger geographical area than a single region before a new formula can be proposed for the reallocation of funding. It will also need to take into account the level of provision of other psychiatric facilities locally to avoid penalising areas that have developed a wider range of services, such as locked wards, and have reduced inappropriate demand on a higher level of security. For example, Table 1 indicates that two districts deviated considerably from the general trend. Haringey was higher in the table than might have been expected from its Jarman ranking and Waltham Forest was considerably lower. This posed the important question of whether poor quality local provision for mentally abnormal offenders in the Haringey district and contrasting good provision within Waltham Forest could have influenced treated prevalence rates in the forensic psychiatry services. This highlights the complexity of the

interaction between the epidemiology of a catchment area population, which may determine its true level of need, and additional psychiatric service provision, a combination of which may ultimately determine the level of demand on secure forensic psychiatry services.

## References

- DAVIES, S., THORNICROFT, G., LEESE, M., *et al.* (1996) Ethnic differences in risk of compulsory psychiatric admission among representative cases of psychosis in London. *British Medical Journal*, **312**, 533–536.
- HARRISON, G., OWENS, D., HOLTON, A., *et al.* (1988) A prospective study of severe mental disorder in Afro-Caribbean patients. *Psychological Medicine*, **8**, 643–657.
- HIRSCH, S. (1988) *Psychiatric Beds and Resources: Factors Influencing Bed Use and Service Planning*. London: Gaskell.
- INEICHEN, B., HARRISON, G. & MORGAN, H. G. (1984) Psychiatric hospital admissions in Bristol. 1. Geographical and ethnic factors. *British Journal of Psychiatry*, **145**, 600–611.
- JARMAN, B., HIRSCH, S., WHITE, P., *et al.* (1992) Predicting psychiatric admission rates. *British Medical Journal*, **304**, 1146–1151.
- JOHNSON, S. & LELLIOTT, P. (1997) Mental health services in London: Evidence from Research and Routine Data. In *London's Mental Health, The Report to the King's Fund Commission* (eds S. Johnson, R. Ramsay, G. Thornicroft, C. *et al.*). London: King's Fund.
- MCCREDDIE, R. G., LEESE, M., TILAK-SINGH, D., *et al.* (1997) Nithsdale, Nunhead and Norwood: similarities and differences in prevalence of schizophrenia and utilisation of services in rural and urban areas. *British Journal of Psychiatry*, **170**, 31–36.
- MCGOVERN, D. & COPE, R. (1987) The compulsory detention of males of different ethnic groups, with special reference to offender patients. *British Journal of Psychiatry*, **150**, 505–512.
- MOODLEY, P. & THORNICROFT, G. (1988) Ethnic groups and compulsory detention. *Medicine, Science and the Law*, **28**, 324–328.
- MURPHY, E., COID, J. & BOA, W. (1997) Security cheques. *Health Service Journal*, 9 January, 28–29.
- MURRAY, K. (1996) The use of beds in NHS medium secure units in England. *Journal of Forensic Psychiatry*, **7**, 504–524.
- OWENS, D., HARRISON, G. & BOOT, D. (1991) Ethnic factors in voluntary and compulsory admissions. *Psychological Medicine*, **21**, 185–196.
- THORNICROFT, G. (1991) Social deprivation and rates of treated mental disorder. Developing statistical models to predict psychiatric service utilisation. *British Journal of Psychiatry*, **158**, 475–484.
- , MARGOLIUS, O. & JONES, D. (1992) The TAPS project. 6: New long-stay psychiatric patients and social deprivation. *British Journal of Psychiatry*, **161**, 621–624.
- WESSELY, S. C., CASTLE, D., DOUGLAS, A. J., *et al.* (1994) The criminal careers of incident cases of schizophrenia. *Psychological Medicine*, **24**, 483–502.

Jeremy W. Coid, *Professor of Forensic Psychiatry, Academic Section of Forensic Psychiatry, 2 Crozier Terrace, London E9 6BE*