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Diagnosis-related groups: implications for psychiatry

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The escalating cost of medical care in most industrial countries has given impetus to several different strategies designed to impose limitations on cost and introduce efficiency into health care systems. In the United States of America, legislation was passed in 1983 to introduce a system of prospective payment for Medicare hospital expenditures. This change was a departure from the previous cost based reimbursement method and was based upon a categorisation of medical conditions into discrete groups termed diagnosis-related groups (DRGs). The intention of the American Congress in passing the legislation was to encourage hospitals to reduce cost without sacrificing quality of care.

DRGs were developed as a measure of case-mix in acute in-patient medicine and were expected to have the following attributes: they should be medically meaningful; classes of patients should be grouped together on the basis of variables that are commonly available in hospital discharge abstracts; and there should be a manageable number of diagnostic groups (Fetter *et al*, 1980).

In the USA, under the Medicare prospective payment system, DRGs are used to establish hospital prices on the basis of groupings of patients who require similar treatments. They are derived from a mix of clinical and demographic characteristics which are assumed to have predictive power, i.e. to predict the quantity of hospital resources likely to be consumed on an average hospital stay; the hospital is reimbursed on the basis of this. Each hospital in-patient is assigned to one of 468 DRGs and the hospital is reimbursed one sum which is prospectively determined for each case. If a hospital spends more than the sum determined, it must sustain financial loss; if less, it may keep the difference and achieve a profit.

The critical issues which emerge from the application of DRGs include the accuracy and fairness of DRGs. The former refers to the ability of DRGs to predict accurately the resource utilisation of a particular patient given his DRG assignment and the latter refers to the relationship between payment and actual cost incurred by hospitals (English *et al*, 1986).

Psychiatry was specifically excluded by the legislation introducing DRGs in the USA because of concerns about the appropriateness of the prospective payment system for psychiatric patients. Nonetheless, a number of studies have examined the possible implications of application of DRGs in psychiatry. English *et al* (1986) have shown that DRGs are poor predictors of resource utilisation and that hospitals were likely to be at financial risk if DRGs were applied. In addition, they suggest that this is especially likely if the hospitals treat more severe cases. This finding was confirmed by Mitchell *et al* (1987) who also demonstrated that using alternative strategies, such as the inclusion of a disease staging schema, did not improve the accuracy of predictions appreciably.

The idea of using DRGs has now arrived in the British NHS, and according to Coles (1986) should be added to the list of topics which prospective general managers and aspiring administrators may wish to talk knowledgeably about with the chairmen of their authorities. The Government White Paper *Working for Patients* introduces the idea of an internal market within the NHS; this is seen as a means of developing competition between care providers with the aim of increasing patient choice and promoting efficiency in the use of resources. This initiative is likely to affect the management of clinical activity and DRGs may then be seen by managers as a possible tool for measuring the activity of clinicians and introduced as a basis for service review (Ham & Hunter, 1988). The advantages of a DRG based prospective payment system are being vaunted in management journals: reduction in numbers of hospital admissions, in lengths of stay, in numbers of diagnostic tests and increase in out-patient care. However, these advantages have not been unequivocally demonstrated in the USA and have not been examined critically in this country.

The aim of our study was to investigate the accuracy of DRGs in predicting resource utilisation within psychiatry in Britain, using data from a district psychiatric service.

The study

Data on all patients admitted to a mental health unit providing a district wide service were available from the comprehensive psychiatric case register. We studied all patients admitted into district adult

psychiatric beds in the period April 1987–March 1988 inclusive.

Age, sex, ethnicity, marital status, electoral ward of residence, consultant team responsible for the patient, ICD diagnoses and duration of stay were available from the data base. We derived the appropriate DRGs from the ICD diagnoses. Duration of stay is regarded as the best indication of resource utilisation and the accuracy of DRGs has been examined by its ability to provide a clustering of length of stay around a meaningful average (homogeneity). One measure of homogeneity is called the coefficient of variation (CV) and is calculated by dividing the standard deviation of the length of stay by the mean of the distribution. Low CVs are regarded as indicating homogeneity and by implication accuracy of DRG (English *et al*, 1986).

Findings

Five hundred and fifty-three patients were admitted in the study period of whom 288 (52%) were females; 197 (36.9%) were single and the rest were married, widowed or divorced. The mean age of the sample was 47.5 years (SD 19.6).

The majority of patients (60.7%) were assigned to DRG Number 430 (psychoses). This group included cases of schizophrenia, bipolar affective disorder, psychotic depression, and other psychoses.

The coefficient of variation of each DRG is set out in Table I. All DRGs except one had CVs greater than 1.00; that is, the variability of the length of stay was greater than 100% in all DRGs except one. It is notable that DRG Number 434 (substance abuse) which had a CV of 0.076 had a sample size of 2.

TABLE I
Mean length of stay, coefficient of variation for each DRG

DRG	*DRG number*	*Mean (days)*	*CV*
Acute adjustment reaction ($n=2$)	425	22	1.16
Depressive neuroses ($n=25$)	426	45.48	1.9
Neuroses except depressive ($n=27$)	427	24.1	1.04
Personality disorders ($n=22$)	428	28.3	1.55
Organic disturbance ($n=53$)	429	87.2	2.89
Psychoses ($n=336$)	430	81.14	3.29
Other diagnoses of mental disorder ($n=22$)	432	21.3	1.17
Substance use and organic disorder ($n=3$)	433	6	1.45
Substance abuse ($n=2$)	434	37	0.076
Alcohol dependence ($n=29$)	436	30.8	2.1
Ungroupable ($n=5$)	470	4.6	1.54

TABLE II
Association of variables with duration of stay

Variables	*F-ratio*	*Significance level*
Sex	0.001	0.9730
Ethnicity	0.263	0.9678
Marital status	3.160	0.0139
Electoral ward	4.747	0.00001
Consultant team	0.392	0.9249

We then examined which parameters were significantly associated with duration of stay by analyses of variance. The results are set out in Table II. Significant associations were found for marital status ($P=0.0139$) and electoral ward of residence ($P<0.00001$), but surprisingly not for individual consultants.

The high coefficient of variation gives a strong indication that there is little commonality of in-patient resource use among patients within a given psychiatric DRG. This echoes the findings of the American studies (English *et al*, 1986; Mitchell *et al*, 1987). Our study therefore adds weight to the existing evidence that the accuracy of DRGs in predicting resource utilisation in psychiatry is poor.

Comment

The underlying assumption of DRGs that diagnoses determine resource utilisation must now be declared erroneous for psychiatry. Our finding that marital status and electoral ward of residence are associated significantly with duration of hospital stay suggests that factors exogenous to the clinical organisation may have more influence on the course and outcome of psychiatric conditions. This view accords with clinical impression.

The application of DRGs also assumes that differences in the comparative costs of treating similar conditions between clinical teams reflect inefficiencies in the practice of one team. This is obviously not necessarily so. Coles (1987) has argued, quite correctly in our view, that the fact that Dr X is cheaper than Dr Y does not necessarily imply Dr Y's inefficiency. The final outcome of care needs to be considered as does the quality of the process of care; it is possible, for instance, to be efficient from a financial point of view, yet to produce poor clinical outcomes. Coles (1987) also states (and here we disagree with him) that it is a myth that DRGs cannot be used because a single cost for each group cannot reflect adequately the enormous variation that occurs between patients even with the same diagnosis. In our opinion the fact that there is so much variation

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between patients with similar diagnosis underlines the inappropriateness of DRGs in psychiatry.

We have argued elsewhere (Garden *et al*, 1989) that standardisation of psychiatric care by devising uniform protocols may be premature, especially as it may produce a rigid adherence to dogma without much scientific foundation. The inability of DRGs to predict accurately duration of stay and by implication resource utilisation could be perceived as a healthy sign as it demonstrates that psychiatric care has not yet become monolithic in character.

In the context of an internal market where competition between hospitals is essential, there will be a need for an instrument such as DRGs. If DRGs are not fair in the reimbursement of costs incurred by hospitals during the provision of care, the risk of financial loss is likely to alter the admission and transfer practices of hospitals in order to reduce their financial risk. The critical question is therefore whether hospitals can receive, select or recruit patients who have treatment requirements lower than the national average or simply refuse to accept patients with more extensive treatment needs (English *et al*, 1986). This scenario is undesirable and should be avoided.

A number of alternatives to DRGs have been proposed (Mitchell *et al*, 1987; Dorwart & Chartock, 1988) but none of these has proved to be substantially superior to DRGs. It is clear from the work that has been done so far that modifications are needed to make DRGs relevant to psychiatry. There are suggestions that recognising psychiatric procedures such as rehabilitation, detoxification and intensive in-patient care as classification variables for psychiatric DRGs in the same way that surgical procedures are recognised in medical and surgical DRGs may improve the accuracy of DRGs (Anon, 1986). This proposal has still to be demonstrated.

It is certain that in the current financial climate, medical audit, quality assurance and other strategies to instil cost awareness and efficiency into the consciousness of clinicians will continue to be pursued vigorously by managers. It is essential that clinicians participate in this process by collaborating with managers, if only to ensure that the variables and factors used to assess the quality and cost of work done reflect accurately and fairly the clinical reality.

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"Bizarre illnesses may require bizarre treatment, and in psychiatry they often get it. They show so often a stubbornness and resistiveness to treatment, they expose so clearly the ignorance of their pathology and aetiology, that they arouse aggressive reactions in the baffled and frustrated therapist."

MAURICE PARTRIDGE

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