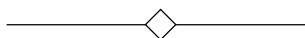


RESEARCH NOTE



Casemix funding in psychiatry: Some problems and common pitfalls

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ABSTRACT

The aims of this study were to evaluate the accuracy of AN-DRG version 2.0 codings. Ninety-two separations, covering three of the most commonly occurring AN-DRGs in psychiatry, were reviewed by a psychiatrist. The AN-DRG diagnosis was then compared to that given by morbidity coders. There was agreement for 69 (79 per cent) separations and disagreement for 18 (21 per cent) separations. Recoding of the 18 separations altered average length of stay data and the funding received. The high error rate of coding stimulated changes to the training of morbidity coders and registrars.

Australian national diagnostic related group (AN-DRG) casemix funding is defined as 'A scientific approach to the classification of patient care episodes, and the development of strategies to use these classifications to manage health care' (Department of Health, Housing, Local Government and Community Services 1993, p 5). It is used by the South Australian Health Commission to reimburse hospitals for clinical services based on an 'output' statistic, namely, the mean length of in-hospital stay for each AN-DRG. There has been much discussion in Australia about casemix-based funding in psychiatry, but there has been little research (Hunter & McFarlane 1994). In particular, there has been a paucity of research in Australia on an important aspect of this funding method, the accuracy of the input data (Westphalen 1993).

Eagar and Hindle (1994b, p 30) have stressed that to achieve high quality data input two criteria must be met: the documentation must be accurate, and the morbidity coders must be proficient. This is more difficult to achieve when morbidity coders and clinicians may be using different classification schemes. This is likely to occur in psychiatry because there are a number of diagnostic schemes used internationally by clinicians. The schemes used are from two lineages. The first is the American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders (DSM), most commonly version III-R (American Psychiatric Association 1987) or version IV (American Psychiatric Association 1994). The second is the World Health Organization ICD Classification of Mental and Behavioural Disorders, most commonly version 9 (World Health Organization 1978), version 9-CM (Clinical Modification; Commission on Professional and Hospital Activities 1978) or version 10 (World Health Organization 1992).

In South Australia a prospective payment system based on AN-DRGs was introduced on 1 July 1994. The calculations for financial reimbursement in this paper were based on a retrospective survey of average length of stay for inpatients at the Royal Adelaide Hospital between July and December 1993. (The Royal Adelaide Hospital is a large teaching hospital affiliated with the University of Adelaide. It has a wide range of specialist surgical and medical services and is located in the central metropolitan area of Adelaide.) This paper presents an audit of the survey's codings of cases for casemix and a discussion of the results in the context of wider issues with respect to casemix funding. The aims were to evaluate the accuracy of DRG codings when made by non-clinical coders and to identify the factors that were important to this process. Average lengths of stay at the Royal Adelaide Hospital were compared with South Australian and national figures.

Methods

Two morbidity coders had surveyed the 134 separations recorded in the Psychiatry Unit of the Royal Adelaide Hospital between July and December 1993. Prior to this they had received training in coding courses in ICD-9-CM conventions run by the National Coding Centre, either with The Health Information Management Association of Australia (which runs a Diploma in Coding) or with the Health Industry Development Council (which runs a correspondence course). Length of stay statistics were calculated for each AN-DRG-based grouping.

Ninety-two (69 per cent) separations from AN-DRG 836 (psychoses), AN-DRG 833 (neuroses except depressive) and AN-DRG 832 (depressive neuroses) were then audited. These were selected as they represented the three largest and most commonly occurring DRGs of psychiatric separations. The audit was undertaken by a psychiatrist who independently documented the diagnoses. The original and psychiatrist diagnoses were then compared and a consensus (psychiatrist and coder) diagnosis and AN-DRG for each case was made based on coding conventions and diagnosis. The AN-DRG, concomitant length of stay statistics, financial costings of the original survey diagnoses and the consensus diagnoses and subsequent costings were then compared. The results were trimmed for separations where the length of stay exceeded three standard deviations from the original mean (giving 87 eligible separations).

Results

The results are summarised in table 1. There was agreement for 69 (79 per cent) separations and disagreement for 18 (21 per cent) separations.

The audit resulted in an increase of \$25 959.80 being calculated for the purposes of casemix-based funding. Following the audit the mean and median length of stay for AN-DRG 836 (psychoses) and AN-DRG 833 (neuroses except depressive) were reduced; the latter was closer to the South Australian and national average lengths of stay (KPMG Peat Marwick 1994). The data for AN-DRG 832 (depressive neuroses) also changed after the audit. The sample size for AN-DRG (depressive neuroses) was, however, reduced to three, which is inadequate for meaningful quality analysis.

There were several sources of error identified. The first was simple typographical error; the correct principal diagnosis had been made but the wrong AN-DRG then listed. This was uncommon. The second source of error was from 'mistranslation' of, for example, DSM-III-R (American Psychiatric Association 1987) diagnoses into the corresponding ICD-9-CM diagnosis. This was commonly due to differences in the use of terms which were a source of confusion to the coders. For example, the ICD-9-CM scheme uses the term 'psychosis' broadly to include disorders that result in 'impairment that grossly interferes with the capacity to meet ordinary demands of life'. The DSM scheme uses the term psychosis more narrowly (American Psychiatric Association 1994, p 273). Another difference in terminology is the use of 'affect' instead of 'mood'. The third main source

Table 1: Comparison of length of stay for diagnostic related groups in psychiatry at the Royal Adelaide Hospital: Before and after clinical audit, and compared with national Australian figures¹

AN-DRG ² no description	Separations pre-audit (trimmed ¹)	LOS ³ -pre audit mean median SD	Separations post-audit (trimmed ¹)	LOS ³ -post audit mean median SD	Casemix LOS ³ (mean)	National ⁴ LOS ³ (mean)
836 Psychoses	65	21.18 18.60 17.60	61	20.18 17.00 16.29	14.70	14.97
833 Neuroses except depressive	14	12.00 13.00 8.58	8	7.63 4.50 8.14	6.77	6.35
832 Depressive neuroses	8	8.50 8.00 8.07	3	3.33 2.00 3.21	7.99	6.50
835 Organic disturbances & mental retardation	na	na	12	17.63 15.00 14.89	15.97	25.70
536 Compulsive nutrition disorder rehabilitation	na	na	1	57.00 — —	27.73	22.42
855 Alcohol abuse or dependence	na	na	1	2.00 — —	4.13	5.07
851 Opioid abuse or dependence	na	na	1	18.00 — —	4.76	5.39
Total	87		87			

1 The figures have been trimmed to within three standard deviations of the mean.

2 DRG = diagnostic related group (see text)

3 LOS = length of stay

4 For public hospitals with greater than 50 beds, from the *Report to the Commonwealth Department of Human Services and Health, National Costing Study*, KPMG Peat Marwick, April 1994.

of error was incorrect ordering of the diagnoses, so that the principal diagnosis was listed second and a diagnosis that was not the condition responsible for admission was listed first. This was most likely to occur where the discharge summary was absent or missing from the case notes.

Discussion

This audit contributed directly to changes in the method of coding psychiatric separations at the Royal Adelaide Hospital. First, a series of sessions was introduced to train psychiatric registrars in the appropriate use of the ICD-9-CM terminology. The morbidity coders now as well have regular liaison with a psychiatrist to discuss and clarify coding problems. In order to ensure the accuracy of AN-DRG codings we plan to continue this type of auditing as part of an ongoing process.

As Westphalen (1993) has reported, not all errors in principal diagnosis necessarily will result in an error in the AN-DRG coding. In their study, error rates in principal diagnosis were much higher than error rates in DRG codings: 27 (33 per cent) compared to 8.1 (9.6 per cent) respectively. However, in our study, errors in principal diagnosis almost invariably caused an error in DRG coding. Westphalen (1993) did not describe the particular sources of error in their study, which was of three hospitals in New South Wales and (we presume) evaluated morbidity codings of medical, surgical and other specialty separations. In the absence of further information it is not possible to explain the difference in findings.

One of the main sources of error identified in this study would be directly addressed by the casemix system basing its AN-DRGs on the ICD-10 rather than the ICD-9-CM classification scheme. However, there are no specific plans for this and it is thought unlikely that ICD-10 would be introduced for use in morbidity statistics before 1995 (Innes, Moss & Eagar 1994, p 31). (This change has not occurred to date.) This would greatly facilitate accuracy as the ICD-10 and DSM-IV schemes were designed to be compatible schemes, and there was an expressed intent to 'reduce meaningless differences in wording between the two systems' (American Psychiatric Association 1994, p xxi). Thus errors of 'translation' should be much less.

In addition to the accuracy of input data it is important that the AN-DRGs are 'resource homogenous', that is, there is little variability in the resource requirements of different patients within the same AN-DRG. The AN-DRG should also be clinically meaningful and in any one clinical area

there will be an optimal number of DRGs (Eagar & Hindle 1994a, pp 2–3). In psychiatry, however, it is difficult for these premises to be met. There is increasing evidence of considerable variability in resource requirements of psychiatric patients who fall within the same DRG (Caton & Gralnick 1987; Schumacher et al. 1986; McGuire & Bender 1994; Faulkner, Tobin & Weir 1994; Mitchell et al. 1987; English et al. 1986).

This lack of resource homogeneity by diagnostic group in psychiatry is well recognised (Eagar & Hindle 1994b, pp 40–3). The AN-DRG system as presently applied in South Australia is also based on a classification scheme, the ICD-9-CM, which has since undergone considerable revision (World Health Organization 1992). This reduces considerably the ‘clinical meaningfulness’ of the system. A further problem is the combining of psychiatric diagnoses with a wide range of severity within a relatively small number of DRGs. For example, there is one category for ‘all neuroses except depressives’ and one category for psychotic disorders. In one Australian study over 80 per cent of psychiatry cases were classified into four DRGs and nearly 50 per cent of cases were in the DRG for psychoses (McGuire & Bender 1994).

The development of more clinically relevant casemix classifications, such as that outlined by Ben-Tovim and Elzinga (1994), would improve the resource homogeneity of AN-DRGs. Innovative classification systems that take account of other factors such as severity of illness, and thus account for a greater proportion of the variation in length of stay, for example, those described by Ashcraft and colleagues (1989) and Taube, Lee and Forthofer (1984), may eventually supersede the AN-DRG scheme. In these modified classification schemes the prediction of length of stay was increased from 3 to 11 per cent and 12 to 21 per cent respectively. Similarly, Faulkner, Tobin and Weir (1994) improved predicted length of stay by adding three variables – age, origin and destination – to the diagnosis.

This audit found great variability and a non-normal distribution of length of stay per AN-DRG in the Royal Adelaide Hospital, as shown by the wide standard deviations and differences between the median and means. This result may have been expected given the weaknesses of the AN-DRG-2 scheme and the small sample size. The median length of stay figures for the largest DRG (AN-DRG 833 – psychoses) were closer to both the South Australian and the national means. Therefore, it may be that for small general hospital units (the Royal Adelaide Hospital at the time of the study had only 24 inpatient psychiatric beds) the median is a more stable and valid statistic to use for casemix-based funding.

DRG-based funding may have negative effects on standards of care. For example, clinicians may attempt to reduce bed stays inappropriately, resulting in an increase in readmission rates (Rosenheck & Massari 1991). Another effect may be for psychiatric units in general hospitals to alter their 'casemix' and to reduce their services to those patients with more complex problems, such as those with combined medical-psychiatric problems (English et al. 1986). There are, however, potential positive effects of AN-DRG-based funding. These may include a more critical appraisal of discharge planning and closer liaison with community carers, both clinical and non-clinical. Ongoing monitoring of the effects following the introduction of casemix funding in the psychiatric wards of the Royal Adelaide Hospital and other hospitals in South Australia is important. The Royal Adelaide Hospital has thus planned a prospective collection of data within psychiatry to measure the impact of DRG-based funding.

In conclusion, the present study has evaluated an often neglected area of casemix funding, namely, the accuracy of input data, and found it wanting. The errors in input had a notable negative effect on funding. While this problem can be addressed by training and education, other problems with casemix funding in psychiatry that were discussed are less readily addressed and require much more research.

References

- American Psychiatric Association 1987, *Diagnostic and Statistical Manual of Mental Disorders*, 3rd edn revised, American Psychiatric Association, Washington, DC.
- American Psychiatric Association 1994, *Diagnostic and Statistical Manual of Mental Disorders*, 4th edn, American Psychiatric Association, Washington, DC.
- Ashcraft MLF, Fries BE, Nerenz DR, Falcon SP, Srivastava SV, Lee CZ, Berki SE & Errera P 1989, 'A psychiatric patients classification system. An alternative to diagnosis-related groups', *Medical Care*, vol 27, pp 543–57.
- Ben-Tovim D & Elzinga RH 1994, 'Making casemix work for psychiatry', *The Medical Journal of Australia*, vol 161, pp S33–S36.

- Caton CLM & Gralnick A 1987, 'A review of issues surrounding length of psychiatric hospitalization', *Hospital and Community Psychiatry*, vol 38, pp 858–63.
- Commission on Professional and Hospital Activities 1978, *The International Classification of Diseases*, 9th Revision, Clinical Modification, Commission on Professional and Hospital Activities, Ann Arbor, Michigan.
- Department of Health, Housing, Local Government and Community Services 1993, *A background to casemix and the National Casemix Education Series*, Commonwealth of Australia, Canberra.
- Eagar K & Hindle D 1994a, *A short introduction to casemix. The National Casemix Education Series, Number 1*, Commonwealth of Australia, Canberra.
- Eagar K & Hindle D 1994b, *Casemix in Australia; an overview. The National Casemix Education Series, Number 2*, Commonwealth of Australia, Canberra.
- English JT, Sharfstein SS, Scherl DJ, Astrachan B & Muszynski IL 1986, 'Diagnosis-related groups and general hospital psychiatry', *The American Journal of Psychiatry*, vol 143, pp 131–9.
- Faulkner PA, Tobin MJ & Weir MA 1994, 'Predicting the unpredictable. Issues for output-based funding in psychiatric services', *Australian Health Review*, vol 17, pp 86–113.
- Hunter CE & McFarlane AC 1994, 'DRGs and Australian psychiatry', *The Australian and New Zealand Journal of Psychiatry*, vol 28, pp 114–20.
- Innes K, Moss E & Eagar K 1994, *Generating and using patient information. The National Casemix Education Series, Number 5*, Commonwealth of Australia, Canberra.
- KPMG Peat Marwick 1994, *Report to the Commonwealth Department of Human Services and Health, National Costing Study*, KPMG Peat Marwick, Adelaide.
- McGuire TE & Bender JA 1994, 'Analysis of change proposals for AN-DRG, version 3. Mental health disorders. Drug & alcohol disorders', Presentation to the Sixth National Casemix Conference 'Casemix for Clinicians', Hobart.

- Mitchell JB, Dickey B, Liptzin B & Sederer LI 1987, 'Bringing psychiatric patients into the Medicare prospective payment system: Alternatives to DRGs', *The American Journal of Psychiatry*, vol 144, pp 610–15.
- Rosenheck R & Massari L 1991, 'Psychiatric inpatient care in the VA: Before, during, and after DRG-based budgeting', *The American Journal of Psychiatry*, vol 148, pp 888–91.
- Schumacher DN, Namerow J, Parker B, Fox P & Kofie V 1986, 'Prospective payment for psychiatry – Feasibility and impact', *The New England Journal of Medicine*, vol 315, pp 1331–6.
- Taube C, Lee EU & Forthofer RN 1984, 'Diagnosis-related groups for mental disorders, alcoholism, and drug abuse: Evaluation and alternatives', *Hospital and Community Psychiatry*, vol 35, pp 452–5.
- Westphalen JB 1993, 'Diagnosis related groups: The effect of input error', *Australian Clinical Review*, vol 13, pp 127–31.
- World Health Organization 1978, *Mental disorders: Glossary and guide to their classification in accordance with the ninth revision of the international classification of diseases (ICD–9)*, World Health Organization, Geneva.
- World Health Organization 1992, *The ICD–10 Classification of Mental and Behavioural Disorders. Clinical descriptions and diagnostic guidelines*, World Health Organization, Geneva.