

Personal view

Inaccurate coding corrupts medical information

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During the past decade much has been written (and more spoken) about the problems inherent in the application of information technology to medical records. Paediatricians have been involved in these deliberations because of the many statutory records kept on children that are eminently suitable for digital storage. Most of the expressed anxieties have concerned confidentiality and security (interestingly, there were fewer complaints about the use of confidential information in computerised payrolls). There has been less consideration of, and little written about, the accuracy of the recorded information.

The medicolegal implications of electronic storage have been dealt with by the Körner Committee.¹ Among other deliberations, this committee has considered the limitations of hospital activity analysis, hospital inpatient enquiry, and the similar maternity and psychiatric systems. Their recommendations should be implemented by April 1987. It has been assumed, however, that operation and clinical diagnoses will be recorded by *medical staff*. The coding of these diagnoses would then be entrusted to skilled, trained coding staff.

Koran reviewed 38 studies which showed that doctors disagree with each other (and themselves) over diagnostic information in about 20% of cases.² It is less widely appreciated that lay coders have far lower degrees of consistency.³ They have guidelines to ensure standardisation of diagnostic coding but inflexible application leads to errors, for example unspecified cardiac valvular disease in children will be coded under rheumatic heart disease rather than (the more probable) congenital malformation.⁴ Although the coding rules may explain some errors, frequently, human fallibility is the only possible explanation for discrepancies. This fallibility seems to be widespread in the coding of children's medical information.

As part of a study into fatal rhesus isoimmunisation, the number of pregnant women with rhesus autoantibodies in one city was sought from the regional maternity hospital activity analysis. The

numbers obtained for the three hospitals involved are given in the Table. The total numbers of deliveries per hospital per year varied between 2000 and 2800. Obstetric colleagues estimated that approximately 100 women per year would be isoimmunised. In the whole city approximately 900 pregnant women per year would be expected to be of the rhesus positive blood group (who cannot become rhesus isoimmunised). There has been selective referral of rhesus isoimmunised women to hospital two but the reason for the 'epidemic' in hospitals two and three is not known. The problem was notified to the relevant community physician and the regional computer centre in 1979. The Table was obtained in 1984.

In a different health region, activity analysis records for one year were searched for children who had been admitted with infantile hypertrophic pyloric stenosis or had had Ramstedt's operation. These were compared with ward admission registers and operating theatre records. Although there were nine children recorded on the computer (eight had surgery), there had been 14 hospital admissions, 12 having surgery. It was postulated that the others might have been entered under peptic ulceration, as 'pyloric stenosis' is a well known complication of the latter in adults. When the missing children were traced, however, they were found to have been miscoded as 'anomalies of tongue' plus 'throat pain', 'unspecified disorders of stomach and duodenum', 'other specified anomalies of upper alimentary

Table Number of isoimmunised pregnant women delivered in three maternity hospitals

Year	Hospital 1	Hospital 2	Hospital 3
1975	54	30	16
1976	?	?	15
1977	68	35	20
1978	43	722	34
1979	49	2109	100
1980	11	2234	203
1981	17	2055	254

tract', 'carcinoma in situ of digestive system' and 'carcinoma of oesophagus'. In all of the cases the correct diagnosis had been entered legibly on the coding sheet by the consultant or a registrar. This renders difficult the interpretation of the recent studies of changing incidence of infantile hypertrophic pyloric stenosis that were based on these records and must raise doubts about all studies where index cases are identified from similar sources.

A review of the parallel systems for notification of malformations in Birmingham led Knox and his colleagues to the conclusion that the accuracy of reporting in the national system was poor and, for certain conditions, 'almost entirely useless'.⁵ Similar problems with mortality records are well known.⁶ An additional hazard with living patients is that repeat hospital admissions or transfers with the same condition can produce misleading statistics.⁷ Miscoding can wreak even greater havoc.

Much epidemiological research is based on central registers that are kept by clerical staff who may be unaware of diagnostic ambiguities (for example omphalomesenteric duct miscoded as anophthalmia).⁵ Potentially misleading conclusions could arise as a result of assuming implicitly that these registers contain accurate information.

An urgent review of coding training and coding procedures is needed. It is possible to program a 'user friendly' system where the diagnosis is entered in English and the machine searches for the matching code or the nearest suitable alternative; the coder (lay or professional) then accepts or refuses the proffered code.

Computer records are increasingly used for audit. Inaccuracies may inflate or depreciate one's

achievements and these data could be used to alter clinical activities. It would seem prudent and in professional self interest to check local output. Clerical errors could be much reduced if there were greater interest and involvement by clinicians. Ultimate responsibility for accurate data rests with clinical staff.

Democracies have long been concerned with the question of where ultimate control of their power lay: 'Quis custodiet custodes?' (who guards the guardians?). Today information is power. Misinformation can be equally powerful and harmful to patients. Although the Romans had no word for 'coder', should we be asking 'Quis custodiet codentes?'.

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