

## EDITORIAL

### Information systems in psychiatry<sup>1</sup>

For a century and a half there has been statutory collection of mortality and hospital morbidity statistics. The procedure has remained essentially the same, with the main innovation being the separation of first and subsequent admissions. Although hospital records often have contained detailed information on patients, traditionally only a few descriptive items have been reported by the hospitals to government. The data have been published annually in the familiar form of simple cross-tabulations between demographic features, diagnoses, individual hospitals and periods of stay.

As Shepherd (1957) and Richman (1966) have noted, mental hospital statistics have been put to good use in descriptive studies in the United States, Scandinavia and Britain. The figures were used by Goldhamer & Marshall (1953), for example, to show that in Massachusetts the admission rate for the psychoses had been constant for the century starting in 1850; and their systematic reporting enabled Malzberg in New York (1952) and Ødegaard in Norway (1961) to undertake their monumental studies in mental hospitals. The slow passage of the insane through the mental hospitals and their causes of death were well monitored by these statutory information systems. So, while the mental hospital populations reached their peak in the mid-twentieth century, earlier statistics already had revealed altering discharge rates and lengths of stay (Shepherd, 1957).

Despite its demonstrated value, this massive information system has been roundly criticized. It pertains to events or groups of patients and not to individuals, the reliability of demographic and diagnostic data has been uncertain, and the psychiatric information has not been linked with that from medical and social agencies. In reviewing the many government reports published in Britain, Maynard & Tingle (1974) emphasized the limited amount of information published compared with that collected and noted that even elementary statistical manipulations have not been undertaken. Little (1975) reminded us that even serial censuses only afford a picture of usage of resources and not needs of people. It would seem then that, while the psychiatric morbidity statistics have been employed occasionally in the planning and evaluation of mental hospital statistics (Tooth & Brooke, 1961; *Lancet* editorial, 1971), they have not been used routinely in their present form when decisions regarding the allocation of resources are made. It is known that there is lack of uniform methods of data collection (Brooke, 1963; Kramer, 1969), low reliability of assigned diagnosis (Babigian *et al.* 1965; Kendell, 1974) and varying descriptions of first admissions, psychiatric facilities and age groupings (Brooke, 1963; Kramer, 1969). Kramer (1976) has concluded that, since morbidity rates are influenced by so many nosocomial factors and not assessed systematically, the handicap for planners and evaluators can only be lifted by having special research units organize systematic and comparative morbidity statistics. Such units would necessarily obtain more accurate hospital morbidity rates, case fatality rates and population denominators.

To an extent, this has been undertaken by case registers, defined by Richman (1970) as 'systems whereby records from a specified set of psychiatric facilities are collected for individual persons from a defined population and accumulated over time'. They record all psychiatric cases in discrete geographical areas but require a stable population and data in a standard format, preferably collected by trained interviewers (Hailey, 1971; Hall *et al.* 1973). Following their success in cancer and tuberculosis, registers were recommended by the WHO Expert Committee on health statistics, although diagnosis and comprehensiveness of data were noted to be weak points in psychiatry. As a result, registers have been established in several countries. They aim to collect reliable information with protected confidentiality and provide sampling frames for incidence, prevalence and longitudinal

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studies. It is of the greatest importance that registers should shed light on the natural history of disease, identify high-risk groups and indicate how the psychiatric needs of the population are provided for. Nevertheless, Kramer (1969) has emphasized that the development and maintenance of registers is complicated, and Gardner & Bahn (1971) suggest that registers do not have sufficient users to justify costs and that output tends to overwhelm the operators. Another serious handicap of registers is the limitation to specialist-treated illness which, in psychiatry, precludes that major proportion treated by general practitioners or other specialists. Thus, the incidence of anorexia nervosa deduced from case registers as around 1 per 100 000 (Kendell *et al.* 1973) had to be radically changed to 1 per 200 (Crisp *et al.* 1976) when all medical referrals from a school population were studied. While registers have provided sampling frames, their limited geographical size and restriction to specialist care, together with population mobility, have diminished their value.

Alternatively, record linkage, described by Acheson (1968) as 'being concerned with integration of data about people, families and communities' may be employed. Computer technology now permits systematic linkage of certain classes of medical records for whole populations, providing prospective information on the person, family and community. Routinely collected government information may be linked by name, age and other demographic factors so that service usage by cohorts of patients may be examined. This approach was the method employed by the extremely influential Tooth & Brooke study in England and Wales (1961) and those of Foster in New Zealand (1964) and Richman in Canada (1966). Such studies are not commonly or readily undertaken since they are laborious, tedious and not easily compared. For example, in Toronto, a cohort study was undertaken by Woogh *et al.* (1977) to clarify why psychiatric hospital readmissions appeared to have doubled in the 1960s to form two-thirds of all admissions. As usual, these figures referred to events rather than individuals, so that 5 admissions could represent 5 patients or 1 patient having 5 admissions. The intention was to trace the subsequent readmissions of all first admissions to the Metropolitan Toronto hospitals in 1969. While the data for the hospitals could be amalgamated and linked, it was realized early that on the average 30 % of so-called first admissions were misreported since individual hospitals often chose to ignore previous admissions elsewhere. This meant that after random sampling each patient's case record had to be checked for verification. This exacting study, however, showed that over a 4-year period 69 % were not readmitted and only 8 % were readmitted 3 or more times. It was not possible to make adequate temporal or international comparisons with previous cohort studies, to put the large-scale pattern of continuous psychiatric care into context, since different countries do not always share the same terminology or criteria.

The difficult and isolated nature of these studies could be relieved by routine central linkage of statutory health statistics. A balance must be struck between the amount and the reliability of the information collected. Only a small amount is essential, and the quality improves as the amount decreases. Massive information systems are beguilingly comprehensive but are frequently deficient in the critical need for reliability. In our present understanding of medical ecology, with the complex interplay of medical, psychiatric and social factors in clinical practice, it seems preferable for central linkage to unite all medical and even social services rather than concentrate on single specialities. In other words, a linked system based upon access to the records of individuals for clinical and research purposes, but available as grouped data for administrative analyses, would permit studies of changes over time, reliable estimates of incidence and prevalence, measures of treatment effectiveness, patterns of health care and manpower distribution, and could lead to better international studies if standard systems were established in several countries.

To link these records an identification number is required. A national unique lifetime personal identifier (NULPI), conferred at birth and adjustable on marriage, is already in use in Scandinavia, France and West Germany, and is advocated in North America. The United Kingdom is an exception in that, while a unique number was implemented during the Second World War for all citizens, the national health service number has had a limited function since. The number is usually some alphanumeric identifier convertible into computer integer representation. It has been hotly debated as to whether the number should be unique to health or a social insurance number linked to other data systems. The social insurance number has usually been adopted, but has been already linked to

income tax and pension systems in several countries. In Sweden, property ownership also has been linked with a system which is then accessible to such government departments as the police and military. In the interests of confidentiality, a unique health number linking hospital, general practice and even social service information has considerable advantages.

It is worth noting that the type of health service influences data reporting. Clearly the efficiency of reporting is potentially greater in countries which have a fee for service rather than a salaried or capitation scheme, since income depends upon supplying information. The strength of such a linked information system lies not only in the accurate monitoring of the increasingly costly health services but also in the increased understanding of health needs. The weakness lies in the inherent problems of reliability, confidentiality and cost, although the last may be modified by subsequent savings due to increased efficiency. Reliability may be improved by regular and consistent training of staff, whose motivation is enhanced by awareness of the purposes and destination of the data, and by the collection of a small amount of data, which is then regularly checked. Confidentiality is a complex and highly sensitive issue but, in brief, access through an independent body, as recommended by Baldwin *et al.* (1976), for example, and access to limited levels of information according to professional status are means of maintaining individual confidentiality and allaying public disquiet.

Rather than mere repositories of information for administrators, computers may be regarded as tools for clinicians to foster efficiency and efficacy of clinical practice. Complex computer technology makes it easier to assemble information systems. Epidemiological, service utilization and outcome studies, of interest to clinicians and administrators alike, should be promoted by better use of statutory reported data linked by unique identifiers. Ongoing studies in psychiatry alone are important because of a need for detailed information on changing service demands stemming from present expectations of psychiatry, the reduction of mental hospital beds and provision of general hospital psychiatric beds and the early discharge policy. It may be argued that failure to develop a large-scale information system could leave us with a complex, arcane health service consuming the largest single proportion of the gross national product, and governed by largely fiscal and not clinical considerations.

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