

at the Addis Ababa Tuberculosis Centre. They have been treated as outpatients by a simple and effective method, the results of which are analysed.

Medical treatment in hospital in developing countries is expensive; therefore methods of outpatient treatment should be studied and used whenever possible.

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MEDICINE AND THE COMPUTER

II—Running a Mental Health Service *

[FROM A SPECIAL CORRESPONDENT]

Several features make the North-east Region of Scotland a fruitful field for psychiatric research on a population. The latter of $\frac{1}{2}$ million is balanced in composition, being half urban and half rural. Moreover, it is a self-contained, almost captive, one since there is relatively little movement either way across its borders. The area is also served by one integrated mental health service—administered by the North-east Regional Board—with a centralized records system in Aberdeen. Hence it is relatively easy to arrange for the systematic collection of data on almost everybody who is referred to the psychiatric service. Such comprehensive data is just what is needed for long-term longitudinal research into the epidemiology, natural history, and varying social context of mental illness. Nevertheless, it would be impossible to cope adequately with such a rapidly accumulating mass of data using conventional means of data processing, and the help of the computer has therefore been enlisted.

The Psychiatric Register

A psychiatric case register was started by the region's Mental Health Research Unit in 1963. The register accumulates data in personal files about the course of each patient's illness. Typically every patient with mental illness undergoes several complicated sequences of treatment in a number of different treatment units. It is the tracing of this experience to which the register method is particularly suited.

Many of the problems of collecting data for the register have been minimized by the Research Unit. Firstly, the patients' case records have been standardized throughout the region, and they have been designed so that copies of them can be used independently as source documents for punching cards for entry on the computer register. Secondly, four trained interviewers collect most of the patient's details, thereby ensuring that the data are both consistent and reliable. A third feature is the extensiveness of the data collected about each person, particularly about his social background.

When a patient is referred for psychiatric help the medical records office opens a record by entering brief personal details on a contact summary form. Before the patient's first

psychiatric consultation he is seen by one of the special interviewers, who inquires into his personal, social, and previous and current medical and psychiatric history. So far only about 1 in 1,000 patients have been found to refuse this preliminary interview, which benefits both the patient (who is often much more relaxed by the time he sees the psychiatrist) and the psychiatrist (who with the patient's basic information in front of him can often shorten the initial interview by half).

The social and medical data from a patient's forms are punched into a set of cards, each of which is "labelled" with his personal identifying details. These punched cards used to be filed manually and processed by sorter, tabulator, and hand calculator, but now they are dealt with by a computer in Edinburgh, where the register is kept on reels of magnetic film.

The records are stored in sequence according to the patient's registration number, each record being headed by personal identification details. Every month or so the new punched cards produced are sent to Edinburgh and fed into the computer, which brings the register up to date. It does this by matching up the identification details on the incoming cards with those on the register. If a match is found the new details are added to the patient's existing record; if no match is found the data obviously concern a new patient and a new record is set up. Throughout this "updating" extensive error checking is carried out to further ensure reliability.

How the Register Helps

So far the register has been used in three main ways: help for management, help for clinicians, and in research projects. A good example of the first was whether a particular hospital should have a new psychiatric consultant post. The computer was used to answer the question whether, if all the patients who were currently shared between this and another hospital were transferred to the one hospital, it would become overloaded. Another management problem under study is the future demand for mental hospital accommodation. Studies made in the early 1960s in Britain indicated a considerable drop in future demand for beds. Nevertheless, a preliminary study made by Dr. J. A. Baldwin in the North-east Region of

* Part I, "Managing a County Health Service," was printed last week (p. 823).

Scotland did not indicate that such a drastic drop was likely. Further investigation showed a reduction in the number of long-term patients, though admission rates were found to have been increasing rapidly. The Unit concluded, therefore, that there is probably little chance of a reduction in the total number of patients in mental hospitals, though there will eventually be a large reduction in the number of very long-stay patients.

One important use of the register is to provide control populations against which others can be compared. In one project the incidence of vitamin-B₁₂ deficiency is being studied in a group of patients referred over 8 months. The results of serum vitamin-B₁₂ estimations and tests for antigastric antibodies were entered and the data linked to the standard file on each patient. One finding was that the study group had an incidence of 0.8% of avitaminosis B₁₂.

In another study a series of controls matched for sex, age, and area were selected by the computer for comparison of

clinical, social, and demographic features with a cohort of 200 alcoholics. Significant differences were found in several areas.

Research studies in progress include tracing the movement of all patients using the mental health service for the first time to see what proportion were admitted to hospital, and how they differed from patients not admitted. There is also a study of the pattern of demand of one treatment unit upon another, while another is aiming to measure the varying demands made by different sections of the population on different types of service.

Future plans include an expansion of the psychiatric register to include a deviance register. The latter will include data about every patient who is brought before the courts. In this way it is hoped not only to obtain a composite picture of a particular patient's contacts with the law and the mental health service, but also to study possible correlations between mental illness and deviant behaviour.

CONFERENCES AND MEETINGS

Cardiac Dysrhythmias—Symposium at Institute of Cardiology

[FROM A SPECIAL CORRESPONDENT]

The Institute of Cardiology held a symposium on cardiac dysrhythmias at the Royal College of Physicians on 21 June. At the first session, which was devoted to the electrochemical basis of dysrhythmias, Dr. E. VAUGHAN WILLIAMS (Oxford University) described factors determining the excitability of myocardial cells. Quinidine and other anti-arrhythmic compounds appeared to reduce excitability by altering the sodium ion permeability of the cell membrane and thus prolonging the interval between one action potential and release of the next. Sympathetic stimulation and adrenaline exerted the opposite effect. Professor PETER HARRIS (Institute of Cardiology) suggested that quinidine might act by inhibiting the adenosine triphosphate system, which provided energy for the "sodium pump"—the mechanism by which cells expelled unwanted sodium ions to maintain their internal environment.

Dr. THOMAS JAMES (Henry Ford Hospital, Detroit) stressed that all normal heart beats originated in the pacemaker cells of the sinus node, which also acted as intermediary between body needs and heart action. The sinus node artery—a branch of the right coronary or sometimes of the left circumflex—always passed directly through the node, providing its blood supply before continuing into the myocardium. Heart rate was determined by pulse rate, the flow in, and the calibre of this artery, which appeared to act with the sinus node itself as a stabilizing mechanism under the control of the autonomic system.

Ventricular Dysrhythmias

At the second session—on supraventricular and ventricular dysrhythmias—Dr. BERNARD LOWN (Harvard University)

described research which might lead to a new method for controlling digitalis dosage. When a very small current was passed through the chest, characteristic electrocardiographic changes (repetitive ventricular response) were precipitated in digitalized patients. In non-digitalized subjects, on the other hand, a much greater current was required to produce the same response.

Describing a trial of quinidine during conversion of patients with dysrhythmias to normal rhythm, Professor LARS WERKO (Göteborg) reported that the drug did no harm but gave no better results than direct-current shock alone. Nevertheless, long-term quinidine therapy could help to prevent relapse after conversion to normal rhythm. Patients with rheumatic heart disease benefited most, but cardioversion was not indicated in arrhythmias established for more than six months. Quinidine was worth giving only to patients who could tolerate long-term therapy with at least 1.2 g. daily, and care was needed with digitalis, diuretics, and in maintenance of potassium balance.

Dr. Lown reported the use of cardioversion under diazepam in an outpatient clinic, the patients being allowed home soon after the procedure. In his view a three-week course of anticoagulants was desirable in all cardioversion cases to reduce the small risk of embolism.

Dr. LAWSON McDONALD (Institute of Cardiology) discussed the problem of dysrhythmia after cardiac infarction, and pointed out that the onset of irregularity was often within an hour or two of the attack, while the patient was still at home. Loss of normal rhythm, which might be precipitated by catecholamines (adrenaline and noradrenaline) released after an infarct, added greatly to the danger. Dr. McDonald hoped that present research would yield some simple means—possibly barbiturates

or diazepam—to prevent the onset of dysrhythmia after coronary thrombosis. In reply to a question, he recommended giving 100 mg. lignocaine intramuscularly before admission to a coronary unit, while Dr. Lown favoured 50 mg. intravenously and added that lignocaine should not be given to patients with bradycardia, in whom it sometimes actually induced arrhythmias.

In the subsequent discussion several speakers agreed with Dr. Werko that ventricular tachycardia was best treated by intravenous lignocaine drip. Dr. McDonald suggested giving procaine amide in addition, while Dr. Lown preferred supplements of lignocaine itself by intravenous injection. When intravenous therapy failed to control tachycardia, this was usually a sign of severe ventricular damage and pacemaking might be required—sometimes at high rates.

Action of Catecholamines

Professor J. QUILLIAM (St. Bartholomew's Hospital) opened the afternoon session with an account of catecholamine action, and outlined the concept of alpha and beta receptors on which adrenaline (α and β), noradrenaline (mainly α), and isoprenaline (mainly β) exerted their effect. Alpha receptors served mainly motor functions, and were blocked by ergot compounds, phenoxybenzamine, and phentolamine. Beta receptors were concerned predominantly with inhibitory functions, but also stimulated the myocardium; their effects were abolished by beta-blockers, such as propranolol and H. 5628.

Turning to the practical application of beta blockade in dysrhythmias, Dr. EDGAR SOWTON (Institute of Cardiology) noted that quinidine usually increased heart rate, while beta-blocking agents lowered it. Propranolol