

represents one card. Data has to be written onto this paper taking care to get the right information in the right column. This is done by using a cardboard ruler the length of the width of the paper, the four edges of which have been marked off to correspond with the data to be recorded under the four headings already mentioned.

Cards are punched from the manuscript coding sheets and are then ready to enter the machine. The first programme reads one card at a time (at 300 per minute), checks that the information that it contains is reasonable and if satisfied writes a facsimile of that card onto magnetic disc. Finally this programme will sort these records into the same order that the patient records appear in the master file.

The second programme accepts this checked and validated data from the magnetic disc and incorporates it into the master file of the practice which itself finally emerges as a reel of magnetic tape. Each record occupies about one centimetre of tape and each tape is long enough to hold about 10,000 records. These can be scanned in about five minutes.

The object of the exercise has been to create a workable simple system for use in the practice and to gain some familiarity with the up and coming world of the computer. The immediate task ahead is to complete the master tape by entering the contents of all the medical record envelopes. The next task is to obtain registers of the complete practice and to use them in a useful manner. The master file will also be suitable for statistical analysis in a number of ways. Its scope could be enlarged to include such things as surgery attendance, prescribing habits and medical, social, obstetric, family history. It has already been suggested that a map reference of the patient's home would be a worthwhile addition and this has been incorporated so that possible geographical influences on disease can be studied.

The system described above has been introduced and is now working in a second general practice and the possibilities of increased sophistication and the employment of ancillary help for locating and investigating areas of hidden morbidity are to be explored.

The ethical problems inherent in the preparation of a magnetic tape file have been considered and personal ownership of the tapes and programmes is a valuable safeguard to confidentiality. The complexity of the programmes is itself a protection. The material contained in manuscript in the medical record envelopes of the practice would be more readily understood by anyone with little conscience about breaking and entering the practice office.

#### Summary

A short description of the development of a very simple system for register maintenance in general practice using an ICL 1905 computer.

#### Acknowledgements

I have had much advice and encouragement from a number of people. In particular I would like to acknowledge the help of Messrs Elliott Automation Ltd. at *University College Hospital*, the Research Committee of the Royal College of General Practitioners, the Department of Mathematics at the Norwich City College and the Computing Centre at the University of East Anglia. The School of Social Studies at the University of East Anglia are presently helping in a most practical manner.

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#### PERSONAL POINTS OF VIEW

### *Retrieval of information from medical journals*

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RETRIEVAL OF INFORMATION IS ONE OF the problems facing all of us. With the advances in all areas of medicine there is an increasing number of periodicals, both in specialist and general medical fields. The majority of doctors receive journals, and of these a variable number is read. We have probably all experienced difficulty in tracing references to recent journals.

If journal reference is required one can obtain this either from a journal to which one

subscribes, or from one to which one does not. In the latter case the *Index Medicus*, or assistance from a medical library, is invaluable. My present concern is to assist a practitioner in the retrieval of information from journals to which he subscribes.

Several possible systems are available for retrieval of references (De Alarcon 1969). The unco-ordinated method is simply to enter references in alphabetical cards according to personal preference. In some circumstances computer storage provides an ideal solution.

For the small library a co-ordinated system is simple and efficient to use. A co-ordinated index could be made by writing out as many copies of a reference card as are required for filing under various concept headings, but the time involved would make this impracticable. A second method using edge-punched cards may be suitable for research where there is a small number of cards in a limited field. The accession number co-ordinated system requires two separate filing cabinets, one containing a reference card for each single journal reference and its author, allocated with a number in serial order. The serial number is recorded on the keyword card in the second cabinet. For example, the keyword card for myocardial infarction would contain a list of serial numbers each referring to a reference card in the first cabinet. The reference cards are then selected for the journal references. This method is efficient, but it requires a lot of index space, information retrieval is slow, and Brown has shown that a mean time of 6.97 minutes is taken over making each entry. The system I use lacks efficiency only in that the author is not entered on the index cards, but the time taken for each entry is only two minutes, and retrieval of information is rapid.

In 1963, using an unco-ordinated system, I entered the titles and references of relevant articles in a small box of 3 in. × 5 in. ruled index cards, under headings which developed as the need arose. The two points which emerged were that I could now retrieve information on articles which I may or may not have read, and the action of entering the title gave me the memory that such an article existed.

In 1970 this index amounted to 1,000 cards. My subject headings were in many cases illogical, though I had the potential of a reference system usable by other people in my partnership.

A more co-ordinated system of reference was devised, the means of standardization of headings being supplied by the Alphabetical List of Subject Headings in Me.S.H. I read through this, underlining the headings I would require, and cards were typed out with these titles. Certain modifications were made. Drugs are better grouped under their own classification rather than individually scattered through the alphabet. The Pharmacological Page Index in MIMS is an excellent classification, and 'DRUGS' is subdivided by cards numbered 1a, 1b, etcetera, as in MIMS, while a page index is pasted inside the cover of Me.S.H.

Fifteen symptoms or signs, such as 'anaemia', 'epilepsy', 'diabetes', etcetera, required their own subclassification, so each of these disease titles is followed by Facet cards with the following headings: aetiology, cases, complications, diagnosis, epidemiology, and treatment. Each card is supplied with nine lines, so that a maximum of nine references can be entered per card. When a card is full it is numbered '1' and a second headed card placed in front.

To find a reference the subject is found in Me.S.H. where it is either underlined, or it is followed by an underlined related heading prefixed by the Me.S.H. code 'XU', meaning 'see under'. This may in turn be followed by a further heading prefixed by 'XR', meaning 'see related'. The heading that is underlined is found in the card index and the references extracted. Further references may sometimes be found by referring to the 'XR' heading.

For example, 'Myocardial infarction' is underlined and followed by the word 'facets', indicating a general card followed by the six facet cards. Beneath it Me.S.H. shows 'XR Angina', indicating a card showing further references. 'Noise' is not underlined, but it is followed in Me.S.H. by 'XU Sound' underlined, so reference to noise is found on the card headed 'Sound'.

The time involved is small. On many occasions I have found references and scanned through articles while the patient is dressing in the examination room. As familiarity with the card index develops one can often select the headings without referral to Me.S.H.

From the seven journals to which I subscribe 770 entries were made each year, that is 30 per cent of the total number of articles. For individual journals the percentage of totals

entered was as follows: *Proceedings of the Royal Society of Medicine* 12½ per cent, *Journal of the Royal College of General Practitioners* 20 per cent, *British Heart Journal* 20 per cent, *British Medical Journal* 30 per cent, *Practitioner* 50 per cent, *Prescribers Journal* 76 per cent, and *Update* 77 per cent. I try to select those articles which may be relevant to general practice, though there is some bias directed by my own specific interests.

My secretary takes half an hour a week making entries from the titles that I have underlined in the journals, and if necessary have written in the heading or facet. As the various numbers of each volume arrive the journals *Practitioner*, *British Heart Journal*, *Journal of the Royal College of General Practitioners*, and *Royal Society of Medicine*, are kept loose in the bookshelves, while *British Medical Journal*, *Update*, and *Prescribers Journal* are fitted into temporary wire Easibind binders. As a volume is completed it is bound and returned to the shelves. Book-binding is a hobby of mine so I use the method of unsewn binding at a cost of 10p per volume (for information—Dryad, Northgates, Leicester) but many firms will bind at £2 per volume.

As journal indexes arrive they are kept in a separate wire binder for retrieval of information that has not been entered in the card index. These are rarely used.

Since space is usually at a premium and journals older than five years are seldom used, I may have to discard some older journals. The space occupied in five years by *British Medical Journal* is 40 in. (20 in. since the new weight of paper was introduced), *Royal Society of Medicine* 13 in., *Journal of the Royal College of General Practitioners* 10 in., *Practitioner* 18 in., *Update* 10 in., *British Heart Journal* 12 in., and *Prescribers Journal* 2 in. The nine feet of bookshelves form a compact library of easily retrievable up-to-date information, and has proved valuable in advising patients, reaching diagnoses, evaluating therapy, gaining information on practice management, discussing drugs with representatives, and continuing postgraduate education.

#### Acknowledgements

I am most grateful to Mr Tabor, the librarian at Southampton University, for his advice on subject headings, to my secretary for her untiring assistance, and Dr George Adams for his encouragement in writing this article.

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#### CLINICAL NOTES

### ***Lactobacillus casei* Tablets in the Treatment of Intestinal Infection**

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THE USE OF LACTOBACILLUS PREPARATIONS in medicine is not new but there has been progress since Metchnikoff's day and Servier Laboratories, Harrow, Middlesex supplied a new formulation of *Lactobacillus casei* for trial. There has been extensive research in France on this subject and each tablet contained, with excipients, 250 million live lyophilized *Lactobacillus casei*. These tablets have the advantage over *Lactobacillus acidophilus* powder in that the *Lactobacillus casei* are not released until they reach the small intestine. They were made to look exactly like Servicin Lactotetracycline tablets. The consultant in infectious diseases, Dr S. R. Jamieson, at Castle Hill Infectious Diseases Hospital, Cottingham, kindly agreed to co-operate in a small trial with this essentially harmless preparation.

*Shigella sonnei* cases (10)

*Criterion of "cure"*: Clinical cure and three negative daily faecal swabs at the end of one week's treatment.

J. ROY. COLL. GEN. PRACTIT., 1971, 21, 623