INDIVIDUAL STUDY

Computer assisted recording in general practice

J. H. BARBER, M.D., M.R.C.G.P., D.OBST.R.C.O.G.
Midlothian, Scotland

GENERAL practice in Livingston New Town is concerned with two major experiments, the fusion of hospital, local authority and general practice in a unified health service, and the application of computer techniques to practice recording. The first experiment has been fully described by Duncan (1969), and the second has been detailed by Gruer *et al* (1970). This paper describes the computer output for the year 1970 in respect of one of the Livingston practices.

Method

In 1964, two years before the first houses were occupied in the New Town, the Scottish Home and Health Department had recommended that a research study should be planned in the application of computer facilities to general practice medical records. Livingston had certain advantages over other areas as a locale for this study, the New Town was to be built as an entity and not based on an existing community, and the population increase from nought in 1966 to approximately 12,000 in 1970 afforded time to introduce and consolidate the study. At the start, it was hoped that the end result of the study would be a centrally-maintained computer file for each Livingston patient containing information from general practice, hospital and local authority sources. Visual display units would allow instant retrieval of information by the users and the end of the written medical record as we know it. It was soon obvious that this ideal was and would be unobtainable in the forseeable future and that, while this should remain the long-term aim, a less ambitious programme should be attempted. The research objectives were therefore to collect on computer file certain items of information obtained at each doctor–patient contact which would thus be available for morbidity and statistical studies and to use the computer to aid the routine surveillance of certain population groups.

Two computer files were to be used for each patient, one containing certain basic registration data, and the other containing the data gathered at each doctor–patient contact.

Registration data file

Information for this file is collected by the practice receptionist from patients as they register with the group. In the planning which preceded collection of this data, it was decided that information given by the patient which could be confirmed would be used in the file, and that information from the patient of previous illnesses or operations should be excluded as it was inherently inaccurate. As this information is gathered when the patient registers, the patient's medical record envelope is not available for comparison. The registration file contains the patient's name, address, date of birth, sex, marital status, a serial number peculiar to Livingston, and a doctor number related to the patient's new family doctor. Additional information about parity, blood group, and the date of the last negative cervical smear are added at registration if known, or later to update the file. The immunization state of children is added to the file and is automatically updated as the immunization programme is completed. Patients are asked about specific drug allergies, but this information has to be confirmed later at interview as it is frequently inaccurate. All the information collected at the initial interview by the recep-

tionist is coded on to a duplicate form, one part of which is sent to the computer centre, the other being retained in the records. Initially, the patient's occupation was collected and coded, but this information is difficult to obtain in any detail and may be out of date in a matter of weeks. Apart from the ability of the computer to produce the immunization and cytology status of the practice when required, the main use of this file has been in the organization and control of the pre-school immunization and developmental paediatric programme. Until now the computer has sent lists of all children due for stages in this programme, and on receipt of notification of completion of that stage, updates both the registration file and the recall for further immunizations. In the near future all programmes are to be changed from the Elliot 803 computer to an ICL 1902 A computer which will be able to make the appointments for child welfare clinics and ease the work of the practice secretaries.

Episode data file

Collection of information at each doctor–patient contact for inclusion in the episode data file has provided the bulk of the computer output, and has brought about a strict discipline in medical record keeping. The evolution of the system at present used started in 1966 and reached maturity two years later. The first decision was that an entry would be made in the notes, and therefore in the computer file, of each and every patient contact regardless of its site. This was of prime importance if the work-load and morbidity figures processed periodically by the computer were to be accurate and of value. The format for each episode entry became standardized into two parts. The first part, named the 'clinical notes' contains the history and examination findings, sometimes lengthy, sometimes short, which are of value in the short-term care of the patient in that episode of illness. The second part contains all the information for computer input, namely the diagnosis, treatment, investigation, referral, and disposal of the patient. After some experiment with hand-written notes on the standard EC enclosure card a radical change was made and all notes were transcribed by a typewriter from tape recorders on to paper of A4 size in open folder notes. Dictation of a surgery consultation, for example, is done after the patient has left the consulting room, in a strictly standardized form. The date and site of the consultation are given followed by the patient's serial number or name and address. This is followed by the 'clinical' notes, then the word 'diagnosis' is spoken and detailed, followed by treatment, investigations, referral of the patient, certification, and disposal of the patient. At the end of a surgery, the tape used is handed with the notes to the secretary for typing. Notes are typed in the order that they were dictated, and all information after the word 'diagnosis' is coded on to forms which are sent to the computer for input.

Clinical notes. With practice it has been found possible to dictate full and accurate clinical notes at the end of each consultation in a quick and flowing manner. The notes obtained are on the whole more detailed and complete than would have been possible if handwritten, and, being typewritten are naturally more legible.

Diagnosis. A diagnosis is attempted at each doctor–patient contact. Various qualifications of the diagnosis are used—'confirmed' or 'presumptive', 'initial' (being the first known illness of that type in the patient's history), 'recurrent', and 'continuing' (referring to the last similar diagnostic entry). If a firm diagnosis cannot be made, the major or presenting symptom is used as the diagnosis. It has been found of value to the doctor to attempt to rationalize the reason for the patient's consultation, and therefore to justify any treatment given. The codes used for diagnoses and symptoms are those of the International Classification of Diseases (WHO 1968), and additional codes are used for the diagnosis qualifications. The coding forms allow for up to four diagnoses at any one patient contact.

Treatment. The treatment dictated into the tape recorder may be either drug therapy or treatment of some other type. With drug therapy the drug used with its dosage and

the quantity prescribed are detailed, and although this is important in the management of the patient, only the name of the drug is coded for computer input. If a drug is stopped the reason for cessation of treatment is given and coded. This can be 'end of course', 'side effects', 'ineffective', or 'inappropriate'. A computer printout can therefore be obtained of instances of an ineffective drug or those stopped because of side effects, and prescribing habits can be monitored. On the coding forms up to three treatments are allowed for each diagnosis. Treatments other than drugs have been given separate coding numbers, and the range of these treatments can be seen in table VI. Drug treatments are coded by means of the Department of Health and Social Security Drug Index which has both approved and proprietory drug listing.

Investigations. A comprehensive coding list has been prepared covering the investigation of blood, urine, etc, in any hospital laboratory, and is detailed on the tape as 'blood to biochemistry', 'urine to bacteriology', etc. To code and detail the actual test requested would involve a code list of excessive dimensions which would become out of date as new tests are evolved and become standard. The computer output of investigations allows for forward planning of the laboratory facilities required as the New Town grows, and provides a mechanism by which the practitioner can audit his use of these facilities.

Referral. This is concerned with the referral of the patient to some other person or to some hospital speciality, and is detailed on the tape as 'patient to x-ray' etc. The use of referral statistics again allows the practitioner to monitor his use of these facilities, and allows the hospital to see where referral demand might be met by health centre clinics or by the use of the general practitioner/medical assistants in the health centre.

Certification. The number of days off work which the practitioner recommended for a patient, and which was reflected in his insurance certification, was included as a codable factor in an attempt to study the relationship between illness and working time lost. It has not proved of particular value, as the time off work quoted by the practitioner often bears no resemblance to the actual time a patient may stay away from work. At best, it is an indication of the practitioner's opinion of the probable duration of the illness.

Patient disposal. This is simply detailed as 'no further action', 'follow-up appointment', or 'follow-up visit'. An indication is given on tape of the timing of a follow-up contact, and this is of retrospective value in assessing the patient's reaction to this advice. Gruer *et al* (1970) state that 'a periodic recall for assessment of patients . . . can be provided', but this has not been made effective. One of the prime advantages of this computer file would be that routine and long-term follow-up appointments could be made by the computer for patients suffering from chronic diseases. This means a complete computer run-through of all episode files each week, and this is costly in computer time.

Practice organization. The population registered at Craigshill Health Centre, Livingston, is approximately 7,500, and the centre has a complement of five practitioners. Each appointment to Livingston is to a limited general-practice list of 1,500 patients and a five session per week appointment as a medical assistant at the district general or mental hospital. Due to various factors mainly associated with the dual nature of the post, it has been health centre policy that each practitioner undertakes the care of those patients on his list. To enable each doctor to be undisturbed during his hospital sessions, an emergency doctor rota has been evolved in the health centre in addition to the normal night and weekend rota. Apart from emergencies and during holidays, patients are given appointments with their own doctor, and this policy has had the result that computer output from any of the five practices tends to reflect the work-load of one doctor with a settled list of patients. One of the advantages of this is that the computer output from one practice can be compared with that from another, and the work of doctors with differing special interests can be compared. The computer output detailed

in this paper is therefore a reflection of the work-load of the author's practice and will differ in some respects from similar output from other practices.

Computer output

Data for the following computer output was gathered during 1970 and is part of continuous data collection which started in 1968 and is continuing. As has been mentioned above, there is a strict policy that all doctor–patient contacts are recorded, and the statistical information obtained is therefore an accurate record of practice work. There are two exceptions to this, the antenatal and child welfare clinics where recording is done by hand on special pre-printed forms and do not therefore contribute to the stored data.

Practice population. Figure 1 gives the histogram of the age/sex distribution of the practice during a month in 1970 when the practice list was 1,612 patients. This exemplifies the New Town practice and compares closely with the histogram of the age–sex distribution of the whole group (figure 2). Sixteen per cent of the total practice are under school age and 24·8 per cent are at school. Children under the age of 15 years therefore account for 40 per cent of the practice population. Women of child-bearing age account

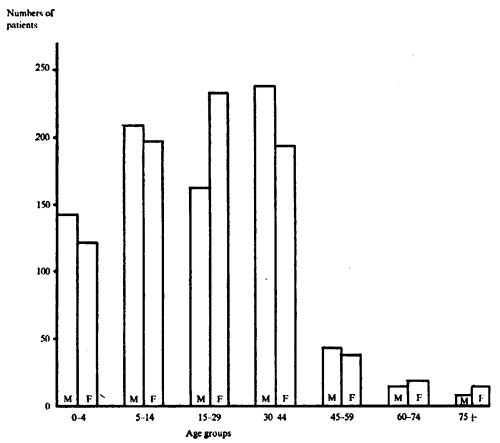

Figure 1
Age/sex distribution of author's practice.
Total number of patients, 1,612

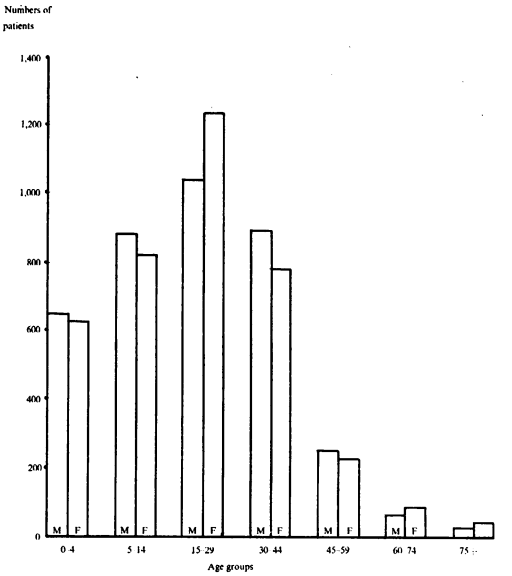

Figure 2
Age/sex distribution of group practice.
Total number of patients, 7,717

for 26 per cent of the practice, and the number of patients of 60 years and over for only 3·2 per cent of the practice. This abnormal age distribution is typical of the Craigshill Group, and presumably of the whole New Town. This bias in the population towards the child and the young will have a bearing on the type and intensity of the demand for medical services.

Site analysis of consultations. Excluding antenatal and child welfare clinics, a total of 6,008 consultations were given in the year, divided into surgery and home consultations, and 'other' representing casual consultations, 'second-hand' consultations, telephone messages and repeat prescriptions. Figures 3, 4, and 5 are histograms of these three types of consultations related to sex and age groups. As would be expected in a high density town with a central health centre, there is a high percentage of surgery consultations (74·1 per cent) with a total number of 4,555. The number of home visits

was 674 (11·2 per cent), and the remaining 14·8 per cent were classified as 'other'. The ratio of all health centre based contacts (i.e., consultations + 'others') to home visits is 7·9:1. This can be compared with a ratio of 5·5:1 recorded by Hardman (1965), 2·7:1 given by Bebbington (1969) from a predominantly rural practice, and 10·1:1 by Morrell (1971) from a high density population. In the year, 82·9 per cent of the practice patients had one or more contact and 275 patients were not seen. This represents a consultation rate of 3·6 per patient at risk, and compares favourably with a rate of 4·7 given by Hardman (1965), 3·4 by Bebbington (1969), and 4·7 by Morrell (1971).

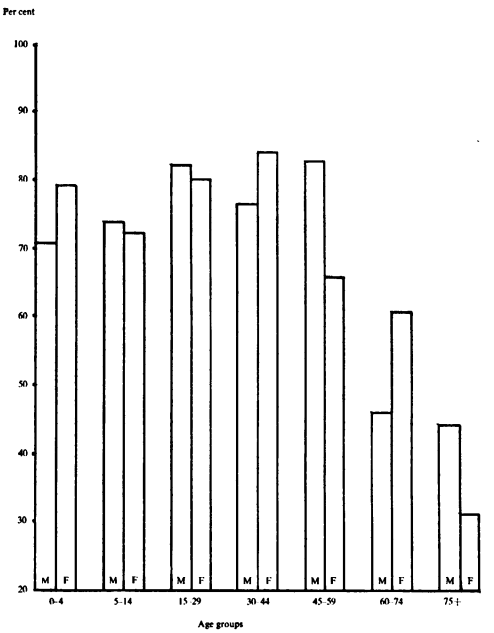

Figure 3
Percentages of surgery consultations related to age group and sex of patient

Figure 3 shows the rates of surgery consultations related to age and sex, and shows a uniformly high rate in those under the age of 60 years, with a fall-off in those older. This is as expected but the analysis of home consultations (figure 4) does not show the rise that would have been expected in the older age groups. As expected, there is a higher incidence of home visits in children than in adults. Figure 5 shows the analysis of telephone calls, repeat prescriptions, and casual consultations, and this gives a steep rise in incidence in patients above the age of 60 years. The author often reviews patients with chronic illnesses at regular intervals, allowing repeat prescriptions between consultations, and this tendency seems to be revealed in this histogram.

Table I shows the percentage of male patients in each age group related to their consultation rate. A steady percentage of patients in each age group had from one to five doctor contacts in the year with 14·1 per cent of patients in the age group 45 to 59 years

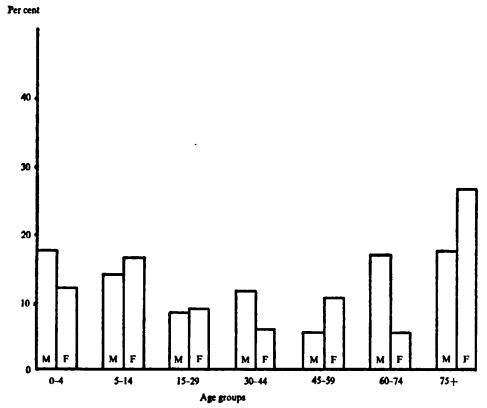

Figure 4
Percentages of home visits related to age group and sex of patient

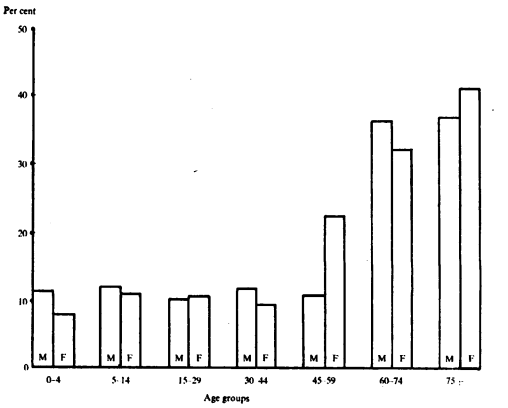

Figure 5
Percentages of episodes (telephone calls, repeat prescriptions, etc.) related to age group and sex of patient

having more than ten contacts in the year, and 35·7 per cent in the 60 to 75 age group, but 16·6 per cent of males in the age group 45 to 59 years were not seen in 1970.

Table II shows the numbers of consultations related to age groups in female patients. There are some striking contrasts between the consultation rates of the two sexes. In the age group 15–29 years 36·3 per cent of male patients were not seen, while the corres-

TABLE I
PERCENTAGE OF PATIENTS (MALE) IN EACH AGE GROUP RELATED TO DOCTOR CONTACTS

Age groups	*Consultations per year*			
	0	*1–5*	*6–10*	*10+*
0–4 years ..	*14·0*	*63·0*	*14·0*	*9·0*
5–14 years ..	*14·2*	*67·6*	*11·3*	*6·9*
15–29 years ..	*36·3*	*49·6*	*10·1*	*4·0*
30–44 years ..	*21·3*	*58·7*	*14·6*	*5·4*
45–59 years ..	*16·6*	*52·7*	*16·6*	*14·1*
60–74 years ..	*0*	*35·5*	*28·6*	*35·9*
75+ years ..	*0*	*50·0*	*25·0*	*25·0*

TABLE II
PERCENTAGE OF FEMALES IN EACH AGE GROUP RELATED TO NUMBER OF DOCTOR CONTACTS

Age groups	*Consultations per year*			
	0	*1–5*	*6–10*	*10+*
0–4 years ..	*12·4*	*67·1*	*15·4*	*5·1*
5–14 years ..	*21·7*	*61·4*	*11·1*	*5·8*
15–29 years ..	*13·3*	*52·5*	*24·1*	*10·1*
30–44 years ..	*14·2*	*41·7*	*29·9*	*14·2*
45–59 years ..	*15·1*	*39·3*	*12·1*	*33·5*
60–74 years ..	*14·2*	*21·4*	*36·0*	*21·4*
75+ years ..	*0*	*36·3*	*18·1*	*45·6*

ponding figure for females was 13·3 per cent. In the age group 30 to 44 years, 29·9 per cent of females had six to ten consultations, with a figure of 14·6 per cent in males. The percentage of females between the ages of 15 and 59 years who had more than ten contacts is much higher than for the males.

Morbidity. The identification of exact morbidity in general practice is fraught with difficulties. Many conditions presenting to the practitioner cannot be accurately diagnosed and in many instances different labels will be attached to the same condition by

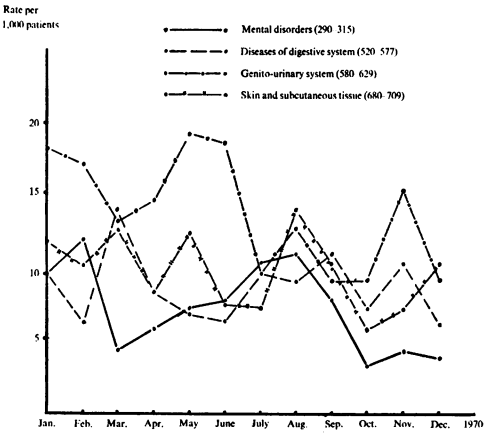

Figure 6a
Consultation rates for various disease groups, monthly

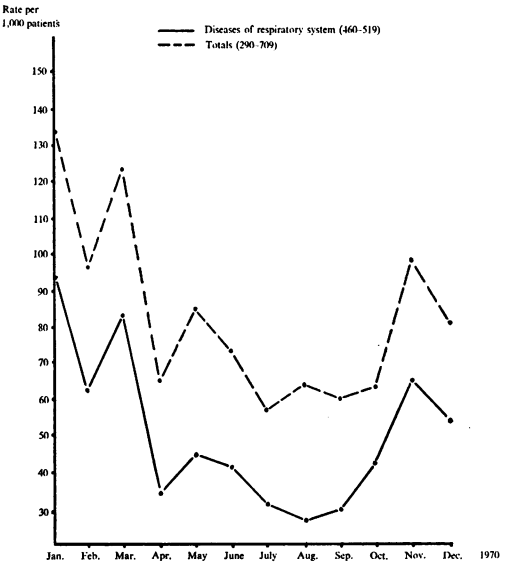

Figure 6b
Consultation rates for various disease groups, monthly

different practitioners. To ease the comparison of morbidity figures from different Livingston practices, it is policy to group the computer output into the ICD diagnostic

groups. Despite this, the morbidity figures will be biased by the individual practitioner's view of disease.

In the recording of doctor–patient contacts, a firm diagnosis was attempted at each contact. Where this was not possible, the most significant symptom was given as the diagnosis. Analysis of the diagnoses given are shown in table III. At each consultation multiple diagnoses were allowed if it was considered that they were truly independent. A total of 6,008 consultations produced a total of 6,970 diagnoses (1·15 diagnoses per consultation). Of these, 581 (8·3 per cent) were presumptive, the remainder being regarded as confirmed. Consultations such as severe and persisting dyspepsia or symptoms suggestive of a urinary tract infection were coded as presumptive pending the results of investigations.

TABLE III
CONSULTATIONS AND CONSULTATION RATES

I.C.D. No.	*Disease group*	*Total consultations*	*Consultation rate per thousand*	*Percentage of total consultations*
001–136 ..	Infective	453	288·72	*6·59*
140–239 ..	Neoplasms	18	11·47	*0·26*
240–279 ..	Endocrine/nutritional	174	110·90	*2·53*
280–289 ..	Blood	84	53·54	*1·22*
290–315 ..	Mental disorders	574	365·84	*8·36*
320–389 ..	Nervous system	473	301·47	*6·89*
390–458 ..	Circulatory	239	152·33	*3·48*
460–519 ..	Respiratory	1,554	990·44	*22·62*
520–577 ..	Digestive system	317	202·04	*4·61*
580–629 ..	Genito-urinary	557	355·00	*8·11*
630–678 ..	Complications of pregnancy	33	21·03	*0·48*
680–709 ..	Skin	393	250·48	*5·72*
710–738 ..	Musculo-skeletal	242	154·24	*3·52*
740–759 ..	Congenital anomalies	25	15·93	*0·36*
760–779 ..	Perinatal morbidity	3	1·91	*0·04*
780–796 ..	Symptoms, ill-defined	819	521·99	*11·92*
E800–999 ..	Accidents	5	3·19	*0·07*
N800–999 ..	Violence	262	166·99	*3·81*
Y000–200 ..	Supplementary	645	411·09	*9·39*

Of all consultations 22·6 per cent are concerned with the respiratory system, and 11·9 per cent of all contacts could not be accurately diagnosed and were coded as the dominant symptom. Close behind these two categories are conditions in the supplementary classification such as normal pregnancy, investigation of symptoms such as deafness, follow-up consultations after hospital discharge, and mental and genito-urinary systems with eight per cent of contacts.

Certain diagnostic groups, respiratory, skin, genito-urinary, mental, and digestive systems, were studied in relation to the consultation rate per 1,000 and the months of the year. The results are plotted in figure 6. The high incidence of consultations for diseases of the respiratory system in January, February, March and November is to be expected, with an anticipated fall-off in these conditions between the months of April and October. The consultation rate for mental disorders shows little seasonal variation although minor peaks are recorded in January and February, and again in mid-summer. Except for a high peak of incidence in March, the consultation rate for digestive disorders parallels that of mental diseases in an interesting fashion. Diseases of the genito-urinary system shows little seasonal variation in incidence, and the rate for skin conditions shows a marked increase in the period April to June.

Referral of patients. Statistical figures for the referral of patients from general

practice in Livingston are almost certain to be different from comparable figures obtained from other, more traditional, practices. Each practitioner in Livingston holds a five-session appointment as a medical assistant in the district general or mental hospital. This will produce a bias both in the diagnosis he attaches to each consultation and will vary the referral trend in his practice with a possible reduction in the numbers of patients he has to refer to a consultant in his own speciality. Figures for the referral of patients in the year 1970 are given in table IV. No referrals were made to a diabetic clinic, chest clinic, or to venereal diseases or rheumatology. The author holds an appointment in general medicine and therefore shows a small referral figure to general medicine with no referrals of allied conditions such as diabetes, rheumatology, or chest disease. These figures are the total of both emergency and outpatient referrals. Similar tables from other practitioners in Livingston are awaited with interest.

TABLE IV
ANALYSIS OF PRACTICE REFERRALS

Speciality	*No. of consultations*	*Rate per thousand*
General medicine ..	4	2·55
Cardiology	1	0·64
Diabetes	0	0·00
Neurology	1	0·64
Dermatology	12	7·64
Geriatrics	2	1·27
Paediatrics	5	3·19
Psychiatry	4	2·55
Chest diseases	0	0·00
Venereology	0	0·00
General surgery	27	17·20
Ear, nose and throat ..	31	19·75
Ophthalmology	8	5·10
Gynaecology	21	13·38
Orthopaedic surgery ..	6	3·82
Casualty	10	6·37
Radiology	149	94·91
Physiotherapy	15	9·56
Rheumatology	0	0·00
Dentist	19	12·10
Optician	42	26·75
Dietician	7	4·46
Other (social work, etc.) ..	4	2·55

TABLE V
ANALYSIS OF INVESTIGATIONS

	Total number	*Rate per thousand patients*
Blood to { biochemistry ..	42	26·75
Blood to { bacteriology ..	37	23·57
Blood to { haematology ..	166	105·74
Blood to { transfusion, etc... ..	4	2·55
Urine to { pathology ..	0	0·00
Urine to { bacteriology ..	221	140·78
Urine to { biochemistry ..	1	0·64
Faeces to { biochemistry	0	0·00
Faeces to { bacteriology	8	5·10
Faeces to { pathology ..	2	1·27
Sputum to { pathology ..	0	0·00
Sputum to { bacteriology	1	0·64
Sputum to { haematology	1	0·64
Throat swab to bacteriology	19	12·10
Nasal swab to bacteriology	1	0·64
Rectal swab to bacteriology	1	0·64
Vaginal swab to bacteriology	11	7·01

Excluding radiology, which should perhaps be classed with the patient investigations, 219 referrals are made from 6,008 consultations—3·6 per cent of doctor–patient contacts resulted in a referral. This figure can be compared with a rate of ten per cent given by Fry (1966), 3·5 per cent by Hull (1969), and 2·4 per cent by Morrell (1971). These other papers did not include referrals to dentists and opticians, which account for 27·9 per cent of the referrals from this practice. In the table of practice referrals (table X), the greatest number is to the optician (42) with ENT coming second with 31 referrals. It is perhaps to be expected that these referrals would be common in a predominantly young community. Psychiatry, with only four referrals from a total of 574 consultations in that group of diseases, reflects the volume of minor psychiatric work that is handled in general practice. A total of ten referrals were made to the hospital accident department. This bears out the feeling that the presence of a well equipped health centre reduces the workload on the casualty department, as the majority of accident trauma cases are handled by the practitioner and the nursing team. The relatively high number of referrals to the dentist is probably due to the presence of a dental department in the health centre with a

resulting ease of contact. Of all referrals, 14·1 per cent were to the ENT department, and if this figure is typical of the group practice as a whole, would mean a total of 155 patients referred each year. The question then arises as to whether a monthly ENT clinic in the health centre would be practical. A total of 174 consultations were given for conditions in ICD group 240–279 (endocrine, nutritional and metabolic diseases), with the low figure of four referrals to a dietician. This is partly explained by the dietetic clinic being closed for some months in 1970, but shows that there is a real need for a dietician in a group practice situation.

It is necessary to mention certain additional facts to clarify the above figures. The health centre has an open access physiotherapy department and a fortnightly clinic by a dietician. During 1970 both these departments were out of action for long periods, and the figures do not reflect the real demand for these departments.

Investigations. All Livingston practices enjoy open access to the hospital laboratory departments. The usage of these departments is coloured by the fact that the practitioners work in hospital and are therefore more conscious of investigations that are available. Table V shows the numbers and types of investigations with the rate per 1,000 patients. In the author's practice, the types of investigations are dominated by urines sent to bacteriology and bloods to haematology. The total number of investigations sent in the year is 515, and with a total number of contacts of 6,008, this represents a significant demand on laboratory services (one investigation per 11 consultations).

Treatments. In recording each doctor–patient contact treatments were coded either as 'drug' or 'other'. When a drug was stopped, the reason was coded, and the results

TABLE VI
ANALYSIS OF TREATMENTS

Total number of diagnoses		6,970
Total number of drug treatments	5,204	
Total number of non-drug treatments	963	6,167
Number of drugs stopped:		
'ineffective'		131
'side effects'		64
'drug changed'		46
'course completed'		4,961 (presumed)

TABLE VII
DRUGS STOPPED BECAUSE OF SIDE EFFECTS

Name of drug	*No. of times stopped*
'Aludrox'	1
'Anovlar 21'	1
'Aprinox 2·5mg'	1
'Banystil 20mg'	1
Codeine Linctus	1
'Cycloserine 250mg'	2
Chlorpromazine 25mg	1
'D.F. 118'	1
'Duogastrone'	1
'Gynovlar 21'	1
'Isogel'	1
'Lyndiol 2·5'	2
'Mandrax'	1
'Minovlar'	1
'Norgesic'	1
'Norinyl 1'	18
'Orthonovin 1/50'	15
'Orthonovin 1/80'	2
'Phenergan 25mg'	1
Penicillin 250mg	1
'Ponderax'	2
'Pregfol'	2
'Sennokot'	1
'Sequens'	1
'Tryptafen D.A.'	1
'Tryptizol 10mg'	1
'Valium 2mg'	1
'Valium 5mg'	1

TABLE VIII
NON-DRUG TREATMENTS

Treatment	*No. of cases*
Advice	779
Ear syringe	12
Dressings	63
Sutures	7
Removal of foreign body	3
Rest	10
Hygiene	1
Removal of sutures	2
Exercises	6
Diet	63
Observation	16
Excision	1

are shown in table VI. The names of drugs which were stopped due to the occurrence of signs or symptoms considered to be side effects of the drug are listed in table VII. An alteration in treatment was coded as 'drug changed' on 46 occasions. This refers exclusively to the change which took place in 1970 from the high oestrogen oral contraceptives to lower dosage pills, and the reason for change was given a special code of 'possible side effects'.

As has been mentioned, other therapy apart from drug therapy was given and figures were kept of their type and number. Table VIII gives the breakdown of these figures.

In a year of 6,008 consultations 779 (12·9 per cent) received 'advice' as part of or all of their treatment. Some of the above figures may not be wholly accurate. Some dressings, ear syringings, and removal of sutures would have been done by the practice nurses without reference to the doctor, and are missing from the statistics.

Discussion

Work-load and morbidity in general practice have often been described, but the use of the computer to produce a more detailed and continuing record of general practice work is relatively new. This is understandable, as the economics of computer facilities on this scale are such that it is only with government help that a computer assisted record system becomes possible. A notable exception to this rule is described by Dinwoodie (1969), who has collected morbidity information from all his patient contacts, and uses a computer to process the figures. Abrams *et al* (1968) have described a computer record file to and from which there is instant access, and which does away with the written record. The importance of the medical record, and the lamentable state that some are in, has been fully documented by Cormack (1970) who has stressed the need for change in the medical record envelope, both to allow for better patient management and to facilitate morbidity studies. The 'F' Book provides an excellent tool for research into family morbidity, but will always be used by the enthusiast and not by the large majority of general practitioners. The computer assisted system described above has two major advantages. First, it allows for the continuing collection of a vast amount of data of use in research, practice management, and patient care, and by the mechanism of the standard format of each contact entry encourages a strict discipline in the assessment of each consultation. It has been shown that the recording of each consultation in the way described in no way adds to surgery time (Gruer *et al* 1970), and with the extension of computer facilities to other practices a mass of morbidity and work-load statistics could be gathered automatically without additional work for the individual doctor.

Summary

A computer assisted medical record system in general practice is described, in which information concerning the diagnosis, treatment, investigation and disposal of each doctor–patient contact is added to a computer file. Analysis of the information collected from one practice of approximately 1,600 patients in Livingston New Town is presented. It is recognized that the age–sex structure of the practice is unusual, and that the information cannot be easily compared with similar information from other practices. It is believed, however, that the information is of value both for practice management, and for the forward planning of the medical services required in a New Town.

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NAME THIS CHILD

It has been the practice of the Governors, from the earliest period of the Hospital to the present time, to name the children at their own will and pleasure, whether their parents should have been known or not.

At the baptism of the children first taken into the Hospital, which was on the 29th March, 1741, it is recorded, that "there was at the ceremony a fine appearance of persons of quality and distinction: his Grace the Duke of Bedford, our President, their Graces the Duke and Duchess of Richmond, the Countess of Pembroke, and several others, honouring the children with their names, and being their sponsors."

Thus the register of this period presents the courtly names of Abercorn, Bedford, Bentinck, Montague, Marlborough, Newcastle, Norfolk, Pomfret, Pembroke, Richmond, Vernon, etc., etc., as well as those of numerous other living individuals, great and small, who at that time took an interest in the establishment. When these names were exhausted, the authorities stole those of eminent deceased personage their first attack being upon the church. Hence we have a Wickliffe, Huss, Ridley, Latimer, Laud, Sancroft, Tillotson, Tennison, Sherlock, etc., etc. Then come the mighty dead of the poetical race, viz.—Geoffrey Chaucer, William Shakespeare, John Milton, etc. Of the philosophers, Francis Bacon stands pre-eminently conspicuous. As they proceeded, the Governors were more warlike in their notions, and brought from their graves Philip Sidney, Francis Drake, Oliver Cromwell, John Hempden, Admiral Benbow, and Cloudesley Shovel. A more peaceful list followed this, viz.—Peter Paul Rubens, Anthony Vandyke, Michael Angelo. and Godfrey Kneller; William Hogarth, and Jane, his wife, of course not being forgotten. Another class of names was borrowed from popular novels of the day, which accounts for Charles Allworthy, Tom Jones, Sophia Western, and Clarissa Harlowe. The gentle Isaac Walton stands alone. The last child received under the parliamentary system alluded to at page 14 was named *Kitty Finis.*

So long as the admission of children was confined within reasonable bounds, it was an easy matter to find names for them; but during the "parliamentary era" of the Hospital, when its gates were thrown open to all comers, and each day brought its regiment of *infantry* to the establishment, the Governors were sometimes in difficulties; and when this was the case, they took a zoological view of the subject, and named them after the creeping things and beasts of the earth, or created a nomenclature from various handicrafts or trades.

In 1801, the hero of the Nile and some of his friends honoured the establishment with a visit, and stood sponsors to several of the children. The names given on this occasion were Baltic Nelson, William and Emma Hamilton, Hyde Parker, etc.

Up to a very late period the Governors were sometimes in the habit of naming the children after themselves or their friends; but it was found to be an inconvenient and objectionable course, inasmuch as when they grew to man or womanhood, they were apt to lay claim to some affinity of blood with their nomenclators. The present practice therefore is, for the Treasurer to prepare a list of ordinary names, by which the children are baptized.

JOHN BROWNLOW. *The history and design of the Foundling Hospital.* 1848. P. 40.