

# General practice morbidity monitoring

J. D. GRENE, M.R.C.S., L.R.C.P.

R. D. JOHNSON, M.Sc., F.I.M.A.

Warwick

**A**NALYSIS of morbidity of hospital inpatients has been available in England and Wales since 1957 where samples of one in ten admissions have been used, whereas in Scotland 100 per cent coverage has been available since 1961 (Kirk 1970).

In contrast morbidity figures for general practice have come from surveys over limited periods. For example a survey (Ashford 1969) is described which covered a year's work of the majority of practitioners in the city of Exeter.

While surveys undoubtedly yield useful information a more reliable picture could be built up from total continuous records. For one thing changes in pattern become easier to forecast and for another comparison between hospital and general practice can be made more meaningful.

Dinwoodie (1970) showed how simplified methods could enable one doctor to record continuously for an unlimited time. In this paper Dinwoodie's methods have been extended to apply to a group general practice.

## Description of the practice

The practice is mainly urban in a county town and covers 9,500 patients served by five doctors. The practice population has no special characteristics which would make it unrepresentative. A full appointments system has been in use for many years. The workload averages 600 services a week, about 3.3 services per patient per year. Visits form 20 per cent of the workload. This figure is significantly lower than three years ago when a determined effort was started to replace visits by consultations.

There is a full reception and secretarial staff consisting of a chief receptionist, two clerk receptionists, and a general secretary. There are attached health visitors, district nurse, midwife and a privately employed nurse. A research secretary supported by a grant from the Regional Hospital Board assisted in the preparation of records.

## Aims of the recording system

A typical record for a consultation or visit session is shown in table 1.

The first three pairs of numbers of the heading denote the date. The next number differentiates between visits and consultations. This is 4 for a visit and 1, 2, 3 for consultations in the morning, afternoon and evening respectively. The next number

TABLE I  
SAMPLE OF DATA

28/03/70		1	6	3
08101	1924	1	510	1
00742	1897	2	215	2
02317	1953	2	375	1
11441	1939	2	275	1
12414	1896	2	134	1
12435	1970	2	999	2
00461	1914	2	256	1
05852	1930	1	085	2
10910	1953	1	304	2
12459	1966	1	086	1
01781	1966	2	241	1
99999				
99999				
99999				

denotes day of the week, 1 for Monday through to 6 for Saturday. The final number, 1-5, denotes the individual doctor.

Each line apart from the heading denotes an individual record giving patient's number, year of birth, sex, a diagnosis and an attendance code. (1 for 'first attendance' and 2 for 'subsequent attendance'). The end of the session is denoted by 99999 in the patient's column. Weekly, quarterly and yearly analyses are produced from these figures.

A typical weekly analysis is shown in table 2. This shows the total workload for the week and compares it with the weekly mean for the previous year. The diseases are sorted out into groups and tested separately so that it can be seen which disease is responsible for any change in total workload.

TABLE II  
WEEKLY ANALYSIS

<i>R.C.G.P. Morbidity Classification</i>	<i>Consults</i>		<i>Visits</i>		<i>Total Per cent</i>	
	<i>New</i>	<i>Old</i>	<i>New</i>	<i>Old</i>		
0 No diagnosis recorded .. ..	0	0	25	0	25	4
1 Communicable disease .. ..	4	6	0	2	12	2
2 Neoplasms .. ..	1	0	0	4	5	0
3 Allergy, endocrine, metabolic .. ..	7	17	1	2	27	5
4 Disorder of blood .. ..	1	6	0	0	7	1
5 Mental and psychiatric .. ..	14	41	0	1	56	10
6 Disorder nervous system .. ..	19	13	1	0	33	6
7 Disorder circulatory system .. ..	8	22	1	14	45	8
8 Disorder respiratory system .. ..	22	14	10	6	52	9
9 Disorder digestive system .. ..	18	13	6	3	40	7
10 Disorder genito-urinary system .. ..	14	15	1	2	32	6
11 Deliveries-compl. pregnancies .. ..	6	28	1	19	54	10
12 Disorders of skin .. ..	19	10	0	1	30	5
13 Disorder bones and joints .. ..	18	22	2	3	45	8
14 Congenital malformations .. ..	0	0	0	0	0	0
15 Disorder of early infancy .. ..	0	0	0	0	0	0
16 Symptoms and undefined conditions	1	0	1	2	4	0
17 Accident, poisoning and violence .. ..	13	5	2	0	20	3
18 Prophylactic procedures .. ..	24	7	0	0	31	5
19 Administrative procedures .. ..	13	9	0	1	23	4
Total diagnosis = 541						
Total attendance = 533						
= 87 per cent last years mean						
Total visits = 111 = 20.8 per cent total services						

The quarterly analysis (table III) reviews these figures again and sorts them into five age groups showing different demands for services. It is at this stage that the distribution of workload between the five doctors is shown.

An annual résumé will be printed in disease order so that the number of items of service under each diagnostic heading can be separately assessed.

#### Materials and methods

The appointments sheets used routinely in the practice were adapted for morbidity recording. The identity number, age and sex were inserted by the reception staff in preparation for the consultation session. The doctor inserted the attendance code and the diagnosis using a code chart on his desk. Recording for visits proved more difficult since details had to be kept for later entry into the file.

The short form of the International Classification of Diseases as modified by the Royal College of General Practitioners was used with a few additions to the 510 standard three figure codes. This proved adequate in practice and full International Classification was abandoned after a short trial.

The serial number used to identify the patients had already been established as a by-product of a separate exercise, the production of an age-sex register of patients by punched cards and computer.

The records of consultations and visits were converted to punched paper tape for use with local computing facilities. At first this was done on a blind punch and verified. The error rate was unacceptably high and a change was made to a new machine producing visible copy. Using standard spacing mispunching was easily revealed. The copy was also useful as a reference file. The error rate also fell when the doctors stopped punching the tape themselves and left it to one operator—the research secretary.

TABLE III  
QUARTERLY ANALYSIS

						<i>Doctor</i>			
						<i>One</i>	<i>Two</i>	<i>Three</i>	<i>All</i>
<b>Male</b>									
0—5	..	..	..	..	..	20	39	63	215
6—15	..	..	..	..	..	19	57	70	248
16—45	..	..	..	..	..	102	264	201	1056
46—65	..	..	..	..	..	63	185	184	814
65+	..	..	..	..	..	26	53	48	221
<b>Female</b>									
0—5	..	..	..	..	..	19	48	48	188
6—15	..	..	..	..	..	12	69	76	281
16—45	..	..	..	..	..	143	382	609	1952
46—65	..	..	..	..	..	81	190	239	838
65+	..	..	..	..	..	47	59	95	291
<b>Total</b>	..	..	..	..	..	532	1346	1633	6104

### Results

From the weekly analysis (table II) the workload for the week can be compared with the mean workload for the previous year. In this way trends in the disease groups will show up and in particular the onset of an epidemic can be forecast. Previously such information if obtained at all by pen and paper methods would come too late to be useful. As an illustration of trends a graph is given in figure 1 of diseases of the respiratory system and communicable diseases through the period of the influenza epidemic. For comparison the total visiting load is also shown.

The quarterly analysis can show the different patterns of diagnosis between doctors. This is of interest to the doctors of the group and perhaps can reveal hidden biases for further investigation. The different rates of usage by different age groups is also shown, information which is most useful for patient management.

The annual analysis which is not yet available is expected to give a measure of the workload by disease group. It will also provide a quicker way of obtaining statistics of practice working which in the past have been gathered laboriously by pen and paper methods.

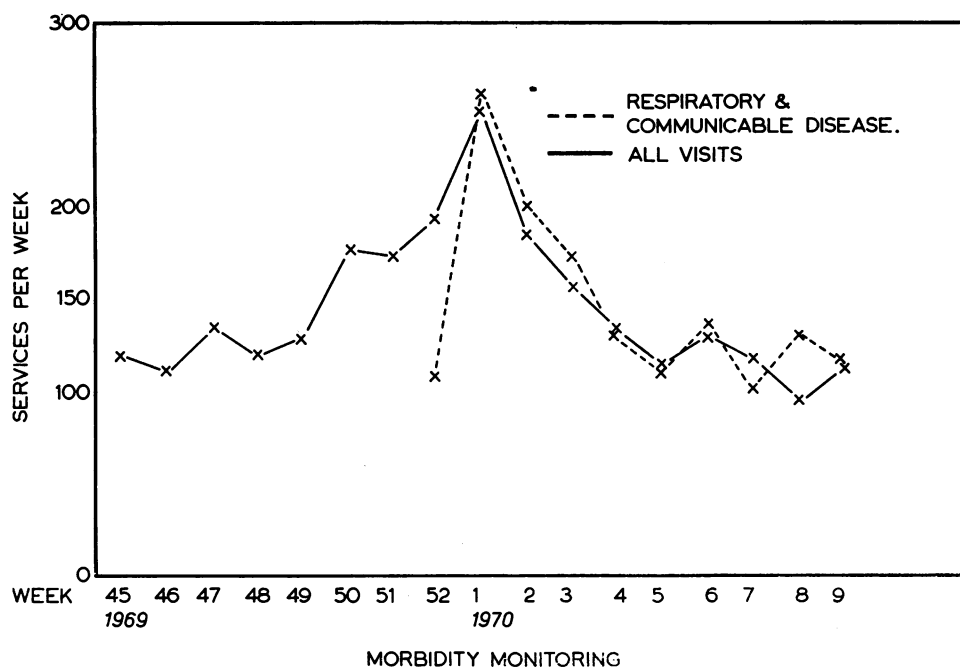


Figure 1  
Respiratory and communicable disease

### Discussion

Continuous recording is only feasible by careful design of methods, so that recording becomes part of routine work without placing unduly heavy burdens on busy doctors and with minimal outlay on staff, equipment and computer facilities.

The recording system actually used is deficient in one respect. In theory the age and sex need not be entered in each individual record since this information can be recovered from knowledge of patient's number. To obtain the quarterly analyses however it would be necessary to extract age and sex from a master file of patients, but this complication would be worthwhile to minimize the burden of recording. The main lesson from the exercise is the extent of the discipline required to make a complete record.

The computer facilities used were quite minimal comprising paper tape input and output with no backing store. The programme was written in Fortran which is generally available. For input to the computer punched cards could be used equally well as the punched paper tape actually used. Thus it can be fairly said that provided computer facilities are available their specification is not critical.

Further prospects are being considered. The use of statistical theory could help in detecting significant changes of pattern and in warning of impending departures from normal.

It is hoped to extend morbidity recording as a service operation in three directions:—

1. To collate information from hospital, laboratory and general practice.
2. To embody some recall mechanism in the system.
3. To record the effect of screening selected groups of patients.

### Summary

A system has been devised for continuous recording of morbidity in a group practice. The analysis of the data which was effected by minimal computer facilities has been used as an aid to patient management.

### Acknowledgements

Grateful acknowledgement is granted for the help with use of equipment and computer time given by the computing staff of Lanchester Polytechnic, Coventry and the pathological department of the South Warwickshire Hospital Group. Advice on programming for the computer at the pathological department was willingly given by Janet Coningale. The work was supported by a grant from the Birmingham Regional Hospital Board.

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### Treatment of the dying

It was a custom in the Middle Ages, to strip the dying, drag them from their beds, and lay them on ashes or on mattresses of straw or hair upon the floor. It was then wholly or in part a penitential act, and the influence of this custom has, perhaps, not yet wholly ceased. "It is", says Dr Ferriar, "a prevalent opinion among nurses and servants that a person whose death is lingering cannot quit life while he remains on a common bed, and that it is necessary to drag the bed away and place him on the mattress. This piece of cruelty is often practised when the attendants are left to themselves. A still more hazardous practice has been very prevalent in France and Germany, and I am afraid is not unknown in this country. When the patient is supposed by the nurses to be nearly in a dying state, they withdraw the pillows and bolster from beneath the head, sometimes with such violence as to throw the head back and to add greatly to the difficulty of respiration. As the avowed motive for this barbarity is a desire to put the patient out of pain—that is, to put him to death—it is incumbent on his friends to preserve him from the hands of those executioners. Perhaps a more deplorable condition can scarcely be conceived than that of being transferred from the soothing care of relations and friends, to the officious folly or rugged indifference of servants". One would hope that such cruelty is a thing of the past. My own experience forty years since as a dispensary physician in the eastern parts of the metropolis, led me to conclude that it was not *then* and *there* wholly unknown or unpractised. What it may be in remote rural districts, where the class of old, ignorant and prejudiced nurses still exist, I have no means of knowing.

WILLIAM MUNK, M.D., F.S.A. *Euthanasia*. 1887  
LONDON. Longmans, Green and Co. p. 93.