A study of workload in a mining area practice

J. G. RIDER, M.B., Ch.B., M.R.C.G.P., D.R.C.O.G.
W. H. R. WATERS, M.B., Ch.B., M.R.C.G.P.
R. B. CHARNOCK, M.B., Ch.B.
Hatfield and Dunscroft
and
J. E. LUNN, M.D., Ph.D., D.P.H., D.P.A.
Department of preventive medicine, University of Sheffield

THE main purpose of this study was to assemble a picture of the workload by age, sex and a number of disease groups in a practice situated in the South Yorkshire Coalfield. The subsidiary purpose of the study was to obtain a rough measure of certain workloads in relation to specific illnesses so that the feasibility of a number of other studies could be assessed. This information was collected simply for planning purposes and is not presented here.

The practice is centred seven miles north-east of Doncaster in the West Riding of Yorkshire, and extends over an area approximately six miles in radius. This practice was started in 1923 in the village of Stainforth and the surrounding agricultural area before the sinking of the colliery shaft. With the coming of the coal mine and the building of large numbers of colliery houses the practice extended into Dunscroft. Since World War II the practice has extended further into the villages of Barnby Dun and Hatfield.

There are six partners at present, and they run the practice from two main surgeries situated in Stainforth and Dunscroft, and two branch surgeries situated in Barnby Dun and Hatfield. The branch surgery at Barnby Dun is run by the three partners working the Stainforth area of the practice and the Hatfield branch surgery is run by the three partners working from the Dunscroft area of the practice. There is overlap in the working arrangements of both ends of the practice in off-duty rotas, and at times of holiday and sickness relief, but this study is entirely concerned with the work of the Dunscroft area of the practice, which contains some 10,200 patients.

The village of Dunscroft consists largely of colliery company houses built in the 1920s, and of council houses built since World War II. Within the last five years there has been an increasing amount of private building, but the private houses are still relatively few in number compared to the total. The village of Hatfield consists of a few large residential houses and a larger number of old cottage type houses, which have been swamped by large numbers of private houses built since the war. The residents of these new housing areas are mostly commuters into Doncaster.

The practice at present runs a partial appointment system at the Dunscroft main surgery. There are no appointment consultations at the Hatfield branch surgery.

Method

Details of every consultation were recorded for five separate 'runs' of one week's duration between December 1967 and October 1968. The information recorded consisted of name, sex, date of birth, diagnosis and date of consultation. In addition it was noted whether the consultation took place in the surgery or the home, and in the case of

the surgery, whether it was by appointment or not. Consultations were also classified as 'first consultations' and 'follow-up consultations'. In addition 'repeat prescriptions' not involving a direct consultation were recorded. Our definition of consultation was "any occasion when a patient attends for medical treatment or advice at the general practitioners' surgery, whether during general surgery hours or by appointment, or when the general practitioner visits the patient to give treatment or advice elsewhere". This excludes, firstly, consultations such as giving references as to character and counter signing non-medical documents and, secondly, indirect consultations (by letter, telephone or through a third party) (Logan 1958[1]). The data were subsequently transferred to Hollerith cards for sorting and analysis. Rates were calculated by sex and age, using data from the 1966 sample census for Thorne Rural District (population 38,660) in which the practice is situated, and illnesses were classified according to the modified international classification of diseases described by the College Research Committee in 1963.

Findings

A total of 5,460 consultations (male 2,777, female 2,683) took place during the five runs. The overall consultation rate per 100 patients per year was 557 (male, 557 female 556).

The general level of consultations does not merit comment, firstly, because the collection of the data over five separated one-week runs is unlikely to give an accurate

TABLE I
FIRST AND FOLLOW-UP CONSULTATIONS BY AGE AND SEX

	First		*Follow-up*		*Total*		
Age (years)	*Consultations*	*Rate**	*Consultations (a)*	*Rate*	*Consultations (b)*	*Rate*	*Follow-up* — *Total consultations percentage* $\left(\frac{a}{b}\times 100\right)$
Males							
0– 4	295	501	103	175	398	676	26
5–14	196	208	69	73	265	281	26
15–44	548	257	641	300	1189	557	54
45–64	220	229	513	535	733	765	70
65+	55	154	137	383	192	537	71
TOTAL	1314	264	1463	294	2777	557	53
Females							
0– 4	211	371	68	120	279	491	24
5–14	205	218	57	61	262	279	22
15–44	668	332	811	403	1479	734	55
45–64	175	200	266	305	441	505	60
65+	50	116	172	398	222	514	77
TOTAL	1309	271	1374	285	2683	556	51

Rate*—Consultations per 100 patients per year.

measure of the rate for one year and, secondly, because the comment has been made on other studies that "only the patterns of distribution of the figures over age groups and between the sexes are consistent and predictable. The general level of the patterns, on the other hand, is highly variable" (Lees and Cooper 1963).

The pattern of interest which emerges is the similarity of the male and female

consultation rates. This is contrary to the usual finding that female rates are consistently above those for men (Logan 1958[2], Lees and Cooper 1963, Baker 1966, Hopkins, E. J. *et al.* 1968). Details are shown in table I which breaks the consultations down by age and sex and separates first consultations from follow-up consultations.

The total consultation rate is high for boys aged 0–4 years, but it is not possible to say how far this represents more illness than amongst the girls and how far it represents mothers' concern over the male child rather than the female child. The total consultation rate for women aged 15–44 years is also high, largely because of midwifery work (the effect of midwifery work is to be found in table VI). The outstanding rate, however, is for males aged 45–64 years. This rate (765 consultations per 100 patients per year) is considerably higher than the equivalent female rate (505) and the rate for males aged 65 years and over (537). It seems unlikely that these men are less healthy than their older colleagues and the pattern differs from Logan's findings where the highest rate is consistently found in the 65 and over age group for both men and women. The pattern for the females is similar to Logan's provided allowance is made for normal antenatal, natal and postnatal work which he classifies as 'non-sickness' (Logan 1963[1]). The possibility arises that the need for sickness benefit certification during working life, and particularly during the second half of the working life, is responsible for an increased number of consultations.

The proportion of follow-up consultations to total consultations is, as one might expect, higher for older patients than for younger patients.

Table II shows the same data separated into surgery consultations and home visits.

TABLE II

SURGERY CONSULTATIONS AND HOME VISITS BY AGE AND SEX

	Surgery consultations		*Home visits*		*Total*		
Age (years)	*Consultations*	*Rate*	*Consultations (a)*	*Rate*	*Consultations (b)*	*Rate*	*Home visits* *Total consultations percentage* $\left(\frac{a}{b} \times 100\right)$
Males							
0– 4	236	401	162	275	398	676	41
5–14	196	208	69	73	265	281	26
15–44	1108	519	81	38	1189	557	7
45–64	613	639	120	125	733	765	16
65+	81	226	111	310	192	537	58
TOTAL	2234	448	543	109	2777	577	20
Females							
0– 4	170	299	109	192	279	491	39
5–14	206	220	56	60	262	279	21
15–44	1269	630	210	104	1479	734	14
45–64	323	370	118	135	441	505	27
65+	72	167	150	347	222	514	68
TOTAL	2040	423	643	133	2683	556	24

It shows the high total consultation rate for males in the 45–64 years of age group to be entirely due to surgery consultations, the home visits rate being similar for males and females (125 and 135 respectively). Once again it seems likely that certification of illness

TABLE III

FIRST AND FOLLOW-UP CONSULTATIONS AT APPOINTMENT AND OPEN SURGERIES BY SEX

	Appointment (a)	*Open*	*Total (b)*	*Appointment total percentage* $\left(\frac{a}{b}\times 100\right)$	*Antenatal (by appointment only)*	*Appointment* *Total percentage antenatal surgeries included* $\left(\frac{a+c}{b+c}\times 100\right)$
Male						
First consultation	263	765	1028	26		
Follow-up consultation ..	303	903	1206	25		
TOTAL	566	1668	2234	25		
Female						
First consultation	408	574	982	42	15	42
Follow-up consultation ..	372	477	849	44	194	54
TOTAL	780	1051	1831	43	209	48

is affecting the rates for males, since most certification takes place in the surgery rather than the home.

The proportion of home visits to total consultations is high for the young and the old.

The numbers of consultations given by appointment and at 'open' surgeries are shown in table III.

Out of a total of 4,274 surgery consultations, 1,555 were by appointment (including 209 consultations at antenatal sessions) and 2,719 were without appointments. Of the 2,719 non-appointment consultations 196 involved patients who appeared and were seen

TABLE IV

APPOINTMENT AND OPEN SURGERY CONSULTATIONS BY AGE AND SEX (ANTENATAL SURGERIES OMITTED)

Age (years)	*Appointment consultations (a)*	*Open consultations*	*Total (b)*	*Appointment* *Total percentage* $\left(\frac{a}{b}\times 100\right)$
Males				
0– 4..	58	178	236	25
5–14..	61	135	196	31
15–44..	311	797	1108	28
45–64..	115	498	613	19
65+	21	60	81	26
TOTAL	566	1668	2234	25
Females				
0– 4..	49	121	170	29
5–14..	98	108	206	48
15–44..	498	562	1060	47
45–64..	116	207	323	36
65+	19	53	72	26
TOTAL	780	1051	1831	43

at appointment surgeries without making appointments. These 196 consultations have been allocated to 'open' surgeries in the table. There is no difference between the proportions of consultations by appointment for first and follow-up work, but a smaller proportion of men than women appear by appointment (25 per cent to 43 per cent respectively). All consultations at antenatal surgeries are by appointment and the effect of this work on the overall figures is shown in the far right-hand column of table III.

Since it is the policy of the practice not to encourage the making of an appointment for a consultation which is mainly concerned with the issue of a medical certificate, it is possible that the difference between the male and female rates for appointments once again reflects the volume of work due to certification. This possibility is further supported by the findings in table IV which show the smallest proportion of appointment consultations to occur amongst males aged 45–64 years.

The mean duration for a consultation was 7.8 minutes in the case of antenatal surgery consultations and 5.4 minutes and 4.5 minutes for 'appointment' and 'open' surgery consultations respectively.

Over and above the 4,274 consultations recorded during the five runs there were 756 'repeat prescriptions' for patients already under treatment. These necessitated a request to the receptionist or surgery nurse, the receptionist or nurse lifting out the patient's records and taking them to the doctor, and the doctor supplying the prescription. These 756 cases refer to times when the doctor agreed there was no need to see the patient on that occasion and the 'repeat prescriptions' given were generally for conditions such as stress symptoms, chronic bronchitis, hypertension or epilepsy. Table V shows details of these 'non-consultations'. In general they will be seen to occur more frequently in the older age groups and more frequently amongst the women than the men.

TABLE V

REPEAT PRESCRIPTIONS NOT INVOLVING CONSULTATIONS BY AGE AND SEX

Age (years)	*Males*		*Females*		*Total*	
	Number	*Rate*	*Number*	*Rate*	*Number*	*Rate*
0– 4..	20	34	14	25	34	29
5–14..	20	21	25	27	45	24
15–44..	95	45	144	71	239	58
45–64..	96	100	135	155	231	126
65+ ..	81	226	127	294	208	263
TOTAL	312	63	445	92	756	77

The patterns for a number of disease groups are shown in table VI. Diseases of the respiratory system (8) gave rise to more consultations than any of the other disease groups and the rates were higher for males than females, particularly in the 0–4 years and 45–64 years age groups.

Accidents, poisoning and violence (17), mostly injuries due to accidents, also gave rise to more consultations amongst males than females. It is during the working life of the males (15–64 years) that the greatest excess of male over female consultations in this disease group is apparent.

By contrast, mental, psychoneurotic and personality disorders (5) gave rise to more consultations in females than in males so far as the adults were concerned. The rates for children in the 0–4 age groups were entirely due to enuresis and insomnia which happen to come under this group in the disease classification used.

Diseases of the genito-urinary system gave rise to more consultations amongst females than males and the age distribution patterns differed. Whereas the female consultations are at a maximum during the fertile years (15–44 years) and thereafter tail off, the male consultations reach a maximum in the 65 years and over group and are largely concerned with the complications of prostatic disease. The ten male consulta-

tions in the 0–4 year old group reflect maternal worries over phimosis and balanitis.

Table VII examines certain upper and lower respiratory tract infections. The upper respiratory tract infections group consist of the "non-febrile common cold, febrile

TABLE VI

CONSULTATIONS BY AGE AND SEX FOR: DISEASES OF RESPIRATORY SYSTEM (08)*, ACCIDENTS, POISONING AND VIOLENCE (17), MENTAL, PSYCHONEUROTIC AND PERSONALITY DISORDERS (05), DISEASES OF GENITO-URINARY SYSTEM (10) AND DELIVERIES AND COMPLICATIONS OF PREGNANCY, CHILDBIRTH AND PUERPERIUM (11)

Age (years)	*08*		*17*		*05*		*10*		*11*	
	Consulta-tations	*Rate*	*Consulta-tions*	*Rate*	*Consulta-tions*	*Rate*	*Consulta-tions*	*Rate*	*Consulta-tions*	*Rate*
Males										
0– 4 ..	187	318	17	29	4	7	10	17	0	0
5–14 ..	116	123	24	25	6	6	6	6	0	0
15–44 ..	321	150	281	132	63	30	26	12	0	0
45–64 ..	246	257	97	101	20	21	20	21	0	0
65+ ..	45	126	5	14	6	17	9	25	0	0
TOTAL ..	915	184	424	85	99	20	71	14	0	0
Females										
0– 4 ..	138	243	12	21	5	9	2	4	0	0
5–14 ..	114	121	19	20	12	13	8	9	0	0
15–44 ..	237	118	45	22	151	75	192	95	386	192
45–64 ..	77	88	26	30	47	54	39	45	1	1
65+ ..	49	113	4	9	16	37	8	19	0	0
TOTAL ..	615	127	106	22	231	48	249	52	387	80

J. Coll. gen. Practit.* (1963). **39, 204. A classification of disease.

TABLE VII

RESPIRATORY TRACT INFECTIONS. PROPORTIONS OF LOWER TRACT* TO UPPER TRACT INFECTIONS BY AGE AND SEX

Age (years)	*Respiratory tract infections*						*Lower*
	Upper		*Lower*		*Total*		*Total percentage* $\left(\frac{a}{b}\times 100\right)$
	Consulta-tions	*Rate*	*Consulta-tions (a)*	*Rate*	*Consulta-tions (b)*	*Rate*	
Males							
0– 4	109	185	59	100	168	285	35
5–14	78	83	31	33	109	115	28
15–44	158	74	66	31	224	105	29
45–64	37	39	150	156	187	195	80
65+	2	6	40	112	42	117	95
TOTAL	384	77	346	69	730	147	47
Females							
0– 4	90	158	34	60	124	218	27
5–14	90	96	15	16	105	112	14
15–44	134	67	53	26	187	93	28
45–64	21	24	39	45	60	69	65
65+	2	5	43	100	45	104	96
TOTAL	337	70	184	38	521	108	35

*Lower tract infections 08. 246–248. Upper tract infections 08. 240–244. *J. Coll. gen. Practit.* (1963). **39**, 204.

common cold and influenza-like illness, febrile sore throat including tonsillitis, sinusitis (acute) and laryngitis" and tracheitis (8, 240–244). The lower respiratory tract infections group consists of pneumonia and pneumonitis, acute bronchitis and chronic bronchitis (8, 246–248).

The consultation rates for upper respiratory tract infections fall with increasing age both in males and females. The pattern for lower respiratory tract infections is rather more complicated. In the case of the females the consultation rate is high in the 0–4 years group and subsequently falls to a low level which thereafter rises steadily with increasing age. In the case of the males a high consultation rate in the 0–4 year group falls less abruptly in the 15–44 years age group and subsequently rises to a rate of 156 consultations per 100 patients per year in the 45–64 year group, falling off once more to a rate of 112 in the 65 years and over group. It is unlikely that the morbidity pattern for lower respiratory tract infections differs to this extent between males and females, and the pattern for the females is far more believable when the nature of the illnesses is considered. It seems, therefore, that once again this measure of workload in the males may be influenced by sickness certification.

Discussion

In discussing these findings it is necessary to consider once again the nature of the area in which the practice is situated. Thorne Rural District lies north of Doncaster in the South Yorkshire Coalfield. It is a long established mining area and is likely to remain so for many years to come. The National Census of 1951 records the district as having 4,505 men occupied in mining and quarrying out of a male working population of 10,985 (41 per cent).

Logan (1958[3]) records male workers above and below ground in coal mines as having a consultation rate 2.3 times that for all occupational groups and a patient's consulting rate 1.4 times that for all occupational groups. In other words, a greater proportion of miners consult the general practitioner, and they do so more frequently. These findings are reflected in the 1965 Report on an Enquiry into the Incidence of Incapacity for Work (M.P.N.I. 1965:), which states:

> The West Yorkshire conurbation and the large towns (Hull, Sheffield and York) had rates which were below or close to the average for Great Britain. However, in all groups of towns with less than 100,000 population, and in the rural areas, the proportions of men incapacitated were between 27–38 per cent above the average for towns of similar size and between 26–47 per cent above the average for all areas in Great Britain; and the average number of days of incapacity per person were from 42-96 per cent above the average for Great Britain as a whole. The report also states that "The proportion of miners and quarrymen who had at least one spell of incapacity for work in the course of the year was in no age group much less than half as high again as the relevant average for all occupations and from 25–44 the rates were twice as high. The numbers in the sample were large and there was a strong probability that the true inception rate for the order as a whole lay in the range from 50.2 to 52.2 per cent (all occupations 28.1 per cent)" (M.P.N.I. 1965[2]).

TABLE VIII

MEAN PERIOD OF INCAPACITY FOR WORK. MINERS AND QUARRYMEN COMPARED WITH ALL OCCUPATIONS

	Days of incapacity per 1000 men Inception rate (persons per 1000 men)		
Age (years)	*All occupations*	*Miners and quarrymen*	*Difference*
Up to 24 ..	19	22	+ 3
25–34	22	29	+ 7
35–44	28	33	+ 5
45–54	36	43	+ 7
55–59	47	57	+10
60–63	59	70	+11
ALL	31	39	+ 8

Figures derived from the report are shown in table VIII and demonstrate an increase in the mean duration of spells of incapacity as age advances. The mean duration of spells of incapacity for miners and quarrymen is longer than for 'All

occupations', and the excess is more marked in the older men (M.P.N.I. 1965[3]).

These findings show that the area contains a high proportion of miners and that these men have more frequent periods of incapacity for work (requiring certification) than other occupations and that these periods of incapacity are longer than for other occupations, particularly in the older age groups. These findings are in line with the consultation figures of the study which demonstrate an excess of 'open surgery' consultations in men aged 45–64 years. It is significant that this pattern is not to be found in the women and that in the 65 years and over group the rate for male consultations drops to less than three quarters of its previous rate, although the female rate rises. Taking a group of illnesses known to cause increasing disability between late middle age and old age, namely pneumonia, acute bronchitis and chronic bronchitis, it appears very strange that the male consultation rate should fall after retirement from work although the female rate rises steadily with age, as one might expect.

It appears likely that the reason for the unusually large proportion of male consultations in this study is due to the need to certify unfitness for work. This need probably has two components:

1. A higher morbidity rate amongst miners. 2. The nature of mining work. This is such that it may be impossible for a man to work with an illness or an injury which would not be incapacitating in many other occupations.

The relative importance of these components cannot be assessed from these data beyond saying that the pattern amongst the retired men stresses the importance of the second component.

It is clear that studies of consultation rates in general practice are influenced by many factors, and not the least of these is the certification of illness. This underlines Lees' statement about the importance of making up one's mind at the outset whether one is studying work or morbidity (Lees and Cooper 1963).

Summary

This paper examines the workload of a mining area practice of 10,200 patients by age, sex and a number of disease groups.

The overall consultation rate per 100 patients per year was 557, and was almost identical for males and females. This is in contrast to the usual finding that female rates are consistently above those for men. The excess of male consultations appeared in the 45–64 years age group and was confined to surgery consultations. It is unlikely that the excess was a measure of morbidity alone because, taking a group of illnesses known to cause increasing disability between late middle age and old age, namely, pneumonia, acute bronchitis and chronic bronchitis, the male consultation rate fell after retirement from work although the female rate went up steadily with age, as might be expected. The excess of male consultations was also concentrated in 'open' (non-appointment) surgeries rather than appointment surgeries, and since it is the policy of the practice not to encourage the making of an appointment for a consultation which is mainly concerned with the issue of a medical certificate, it seemed likely that the large proportion of male consultations was related to the need for the certification of unfitness for work. National and local figures on consultation rates and certification for work amongst miners are in support of this likelihood.

It would appear that the demand for sickness certification is related to

1. A higher morbidity rate amongst miners than amongst other workers.

2. The nature of mining work which is such that it may be impossible for a man to work with an illness or an injury which would not incapacitate him in many other occupations.

It is clear that consultation rates in general practice are influenced by many factors, and not the least of these is the certification of illness.

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SIXTH INTERNATIONAL TISSUE RESEARCH CONFERENCE

The Sixth International Tissue Conference entitled *Blood cells as a tissue* will be held at the Lankenau Hospital, Philadelphia, Pa. on 30–31 October. The following topics will be discussed, regulatory mechanisms, metabolism and function of normal and abnormal cells, and recent developments in therapy. Further information available from **William L. Holmes, Ph.D., Division of Research, Lankenau Hospital, Lancaster and City Line Avenues, Philadelphia, Pa. 19151.**