

## Reported illness and change of residence

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**SUMMARY.** This paper tries to establish whether people have more or less illness when they move house and whether their threshold for consulting doctors, irrespective of any real change in the incidence of illness, is raised or lowered. We tried to answer these questions through a study based on the date of occupancy of the new house as well as the date of registering with a new doctor.

### Introduction

**T**HE study practice is on the periphery of Liverpool, just within the city boundary. The practice patients are all drawn from an estate which is a mile and a half long and approximately three quarters of a mile wide. Patients are not accepted from outside the estate, but not all the patients who come to live on the estate necessarily join the practice list. Some 40 per cent of the practice patients are under 15 years of age; less than 5 per cent are over 65. Although we have only one practice building on the estate, there are 12 doctors practising from six different buildings (two of which are branch surgeries) within half a mile of the periphery. The practice opened in May 1969.

### Aims

Using recorded information on the dates of house occupancy, registration and consultations, we hoped to establish the connection between moving into the estate and the incidence of new illness.

### Method

Patients are encouraged to register as families. Each family registered with the practice has normal clinical records kept on the standard record sheets but, in addition, a family record card is also kept on which is

entered, sequentially, information about each episode of illness which any member of the family may bring to their doctor (Goodman, 1971). We also record on the card the date when the family moved into their present house and when they first registered with the practice. The housing information is obtained not only from the patients but also from the weekly list of new tenants in corporation dwellings issued by the City Housing Department for the whole of Liverpool.

We are still collecting data, but for the present study our analysis was during the six-month period 1 April to 30 September 1971. The analysis was restricted in this way because our limited resources allowed only manual methods.

Our study was based on all the patients who were registered with the practice on 1 April 1971 (when the local authority finished building the estate) or who subsequently registered between the beginning of April and the end of September 1971.

There were 3,086 patients registered on 1 April 1971; 897 joined and 95 left during the six-month period. Therefore there were 3,888 registered patients at the end of the study period and a total of 3,983 on the register at some time during the six months.

### Results

#### *Occupancy and registration*

The relationship between moving into the estate and registering was established from a monthly tabulation based on 807 patients who registered between April and September 1971 (Table 1). There would have been an additional unknown number of patients who might have eventually consulted the practice but who were still unregistered on 30 September 1971. However, the cumulative distribution of registrations shown in Table 1 suggests that this residue would have been very small. Of those who did register with the practice during the six-month period, over half did so by the end of the second month after occupying their house. The number

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registering after 12 months was only 4.2 per cent of the total. The percentage registering by the different monthly intervals is shown in column 3 of the Table.

**Table 1.** Proportion of patients registering by month since house occupancy, based on the 897 patients registering between April 1971 and 30 September 1971.\*

Month between registration and house occupancy	Number of individuals registering	Per cent distribution	Cumulative per cent distribution
0	206	23.0	23.0
1	277	30.9	53.9
2	129	14.4	68.3
3	89	9.9	78.2
4	52	5.8	84.0
5	39	4.3	88.3
6	12	1.3	89.6
7	18	2.0	91.6
8	10	1.1	92.7
9	16	1.8	94.5
10	6	0.7	95.2
11	5	0.6	95.8
12	2	0.2	96.0
13-17	32	3.6	99.6
18-23	4	0.4	100.0
Total	897		

\*These figures are uncorrected for the unknown number of patients at risk who lived in the practice area but left the area without registering or consulting.

*Patients at risk but unregistered*

The relationship between the total number of patients registering and the number of patients still unregistered but at risk to the practice is examined in Table 2. Here the data relates to the 3,983 patients who registered on or after 1 October 1969, and were still on the practice list at some time during the study period. The Table presents the number of patients registered by the end of September 1971 by month of house occupancy. To estimate the total number of patients at risk for any particular month the number registered in any one month is multiplied by the percentage of expected total registrations which this monthly number represents. This percentage is derived from column 3 of Table 1. For example, the 37 registered individuals who occupied houses in September 1971 represent 23.0 per cent of a calculated cohort of 161 individuals at risk for consultation during that month, of whom only 37 had registered in September. Similarly, the 38 registered patients who occupied houses in August 1971 represent 53.9 per cent of a calculated cohort of 71 individuals at risk. We used this method for calculating the numbers at risk because we had to carry out our analysis using data from the six-month period ending 30 September 1971. However, examination of the registration trends showed no seasonal variation which might have biased our results.

**Table 2.** Estimated numbers of patients at risk for consultation in each month.\*

Month of house occupancy	Number of months between date of occupancy at 30 September 1971	Number of registered patients occupying houses in each month	Cumulative percentage of patients registered by months since house occupancy	Estimated number of patients at risk
September 1971	0	37	23.0	161
August	1	38	53.9	71
July	2	102	68.3	149
June	3	104	78.2	133
May	4	139	84.0	166
April	5	183	88.3	207
March	6	174	89.6	194
February	7	187	91.6	204
January	8	103	92.7	111
December 1970	9	65	94.5	69
November	10	97	95.2	102
October	11	156	95.8	163
September	12	135		141
August	13	235		245
July	14	262	96.0	273
June	15	231		241
May	16	198		206
April	17	252		263
March 1970-October 1969	18-23	1285	99.6	1290
Total		3983		4389

\*The estimate is based on numbers actually on the practice register during the six months April to September 1971.

**Table 3.** Episode rate per annum for all new illnesses per patient at risk by number of months since house occupancy.

Month of home occupancy	Number of episodes of illness for each group of patients by month of home occupancy and month of onset of illness							Number of months between onset of illness and occupancy	Total episodes for each month since occupancy	Patients at risk for each month since occupancy	Episode rate per annum per patient at risk by month since home occupancy	
	Total episodes by month of occupancy	Month of onset of episodes										
		Apr	May	June	July	Aug	Sept					
September 1971	4							1( $\frac{1}{2}$ )	38	887	1.03	
August	5					2	3	2	103	920	1.34	
July	43			(1)*	5	13	25	3	177	1053	2.02	
June	93		14	23	23	33		4	169	1015	2.00	
May	96	(1)*	6	15	23	29	23	5	142	951	1.79	
April	161	7	12	36	28	29	49	6	161	887	2.18	
March	217	37	34	35	28	35	48	7	158	843	2.25	
February	224	36	28	33	34	36	57	8	155	790	2.35	
January	112	16	20	14	19	19	24	9	135	831	1.95	
December 1970	85	9	19	16	13	12	16	10	156	993	1.89	
November	91	10	15	15	14	11	26	11	200	1165	2.06	
October	133	24	21	17	20	24	27	12	205	1265	1.94	
September	163	30	35	25	22	26	25	13	194	1369	1.70	
August	242	33	45	42	41	40	41	14	166	1328	1.50	
July	252	39	41	44	32	37	59	15	166	983	2.03	
June	221	45	32	31	29	41	43	16	114	710	1.93	
May	200	35	32	26	25	34	48	17	79	469	2.02	
April	231	34	33	41	37	31	55	18	55	263	2.51	
Total	2573								2573	16722	1.75	

\*Figures in brackets refer to episodes of illness for which the patient consulted before occupying the house and have been added into the following month.

*Episode rates and time since house occupancy*

Table 3 gives the number of new episodes of illness for each group of patients at risk, by month of home occupancy and month of onset of the illness. The fifth column gives the total number of episodes for each month since home occupancy and is arrived at by adding together all episodes occurring after the same interval. For example, the 38 episodes occurring in patients registering in the same month as house occupancy consisted of seven episodes in patients occupying their house and registering in April 1971, seven in May 1971, 14 in June 1971, six in July 1971, two in August 1971 and four in September 1971. The sixth column gives the total number of patients at risk for each of these summed totals of episodes. For example, it is estimated that there were 887 patients who occupied their house and were therefore at risk during the six-month period. This total of 887 patients is the sum of those patients first becoming at risk in each of the appropriate six months (Table 2): 161, 71, 149, 133, 166 and 207. The equivalent figures for those estimated to be at risk during their second month after house occupancy is the sum of those at risk in the appropriate six-month period: 71, 149, 133, 166, 207 and 194. For figures relating to September 1970 and earlier, the number of appropriate months will be less than six.

The final column shows the episode rate per annum per patient at risk by months since occupancy. The

figures for the first month have been multiplied by two since, on average, patients were at risk for 14 days only. These rates vary considerably. An important finding is that during the first and second months of occupancy, episode rates are appreciably less than the average. Interestingly, low rates are also evident for the thirteenth and fourteenth months, suggesting a seasonal effect related to the time of the year people move in. It is therefore more appropriate to compare the episode rate for the first month of occupancy (0.086, using the proportion of episodes to patients at risk) with the corresponding rate (0.142) for the thirteenth month. The former rate is significantly less ( $p < 0.01$ ) than the latter. The difference between rates for the second (0.112) and fourteenth months (0.125) after occupancy is not significant.

*Interval between home occupancy and registration*

The effects of the interval between home occupancy and final registration on the subsequent consulting pattern is further examined in Table 4. The average episode rate per person at risk fell gradually as the time interval between coming at risk by home occupancy and finally registering increased. This is not surprising, for registration must accompany or precede the first consultation, and those who consult frequently will have the shortest intervals between moving in and registration. Although

Table 4 shows that the consultation pattern varied considerably in the first two years after house occupancy, we cannot say from these data whether any such pattern of high or low consulting persists indefinitely. This will require analysis of similar information from an extended survey period.

*Episode rates and time since registration*

Table 5 groups patients by month of registration. For those registered on or after 1 April 1971, the period within which they reported an illness was less than six months. For example, the 175 patients registering in September 1971 had between them 39 new episodes of reported illness within an average period of 0.5 months. The 165 patients registering in April 1971 had between them 224 new episodes of illness, over an average period of 5.5 months. Only in patients reporting new episodes within six months of registering was the episode rate noticeably high. For all new illness reported more than six months after registration, the episode rate was around the mean.

**Discussion**

The data presented in this paper represent a pilot study into an aspect of general practice on which there is very little documentation. Although Bain and Philip (1975) reported on the consultation patterns of 100 patients in a new town, a study of the available literature suggests that our investigation is unique in using for the base-line the date of occupancy rather than the date of registration.

No attempt has been made to compare our results with those of Bain and Philip, because of this difference in base line and because episodes of illness have been used rather than actual consultations. However, Bain and Philip found an overall excess of 45 per cent in the consultation rate during the first year of registration. The equivalent figure for the patients in this study is not known, but there was a 50 per cent excess of reported new episodes of illness during the first six months after registration. Bain and Philip attribute this excess to an increase in the actual incidence of illness due to the stress of moving. Our study shows that this is not so, and that there is, on the contrary, a small reduction in the incidence of reported illness after house occupancy. Any increase in the consulting rate after registration for new illnesses is due simply to the inevitable gap between occupancy of a new house and registration.

The conditions on a new estate are somewhat different from those in a new town. Although, in both cases, the bulk of the population has come from condemned or overcrowded houses or flats, the move to a new town is usually a positive decision, taken to secure employment. On a new estate, those who are working invariably have farther to travel to work than formerly, with added costs in transport and time. Those who are unemployed have no better job opportunities but have the added burden of increased living costs. However, both in new towns and on new estates, the changed environment can produce a considerable degree of insecurity.

**Table 4.** Annual episode rate\* per registered patient by number of months from home occupation to registration. Base: 3,983.

Months from home occupation to registration	Episodes per period	Patients at risk period	Estimated rate per annum
0-5	3566	3682	1.94
6-11	182	235	1.55
12-23	28	60	0.93
Total	3776	3977	1.90

\*These rates are not corrected, as in the previous tables, and therefore the proportions of patients at risk are different.

**Table 5.** Annual episode rates of new disease per registered patient by length of time since registration.

Months of registration	Number of months since registration	Number of patients registering in each month	Number of new episodes during six months April-Sept 1971	Annual episode rate per person registered
September 1971	0	175	39	5.35
August	1	101	45	3.56
July	2	164	102	2.99
June	3	145	123	2.91
May	4	147	153	2.78
April	5	165	224	2.96
October 1970-March 1971	6-11	877	901	2.06
April-September 1970	12-17	1314	1304	1.98
October 1969-March 1970	18-23	894	873	1.95
October 1969-March 1971	6-23	3085	3078	2.00

The data presented in this paper deal with new episodes of illness, and not with illnesses for which the patient had already consulted his or her previous doctor. The need for subsequent consultations and their timing should not be disturbed simply by changing house, although a new doctor may initially be consulted more often than the original doctor. With this proviso, the data from our study indicate that moving house is not associated with a rise in the incidence rate of new illness; if anything, the opposite is true. The excessive demand as indicated by the higher episode rate immediately after registration (Table 4) disappears when the rate is related to the date of home occupancy. We suggest that if Family Practitioner Committee payments for new patients were estimated according to the date of occupation of registered address, rather than according to the date of registration, one major anomaly and grievance in those areas with high practice turnover rates could be eliminated. It could be argued that the underpayment attributable to the unremunerated gap between house occupancy and registration is counter-balanced by what should be an equivalent gap between the date of leaving a practice area and re-registering with a new doctor. However, this balance assumes a steady rate of 'joiners and leavers' and works to the disadvantage of a rapidly expanding practice. As it is, although our information about registration is comprehensive for the short period, that for departures from the practice requires further detailed investigation.

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**Community care**

Spending on community services administered by the health authorities remained at 6 per cent of all NHS costs between 1975 and 1980.

Source: Office of Health Economics. *Compendium of Health Statistics*. 4th edition. London: OHE.

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