The use of general-practitioner beds

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THE future structure of the National Health Service has been considered in great detail in the last few years,[1, 2, 3] and all the reports and proposals agree that co-ordination and integration within the health service are desirable objectives. Planning for the hospital service is well advanced, the district general hospital concept having been outlined in 1962.[4]

A recent report,[5] however, suggested that as well as relatively large district general hospitals there might be a place for smaller peripheral hospitals at some distance from the main hospital. These peripheral units would be staffed entirely by general practitioners, and patients would not be under consultant care. In many parts of the country peripheral hospital units, or cottage hospitals, already exist, and just under ten per cent (7,000) of all medical beds in England and Wales are designated as general-practitioner medical beds. In addition, 21 per cent (2,000) of all obstetric beds are managed by general practitioners.

The Farnham and Frimley Hospital Group in Surrey was chosen for a study of the use of hospital facilities by general practitioners for four reasons:

(1) the general practitioners had access to hospitals in which they could care for their own patients;

(2) the general practitioners themselves were eager to demonstrate their role in hospital care;

(3) the building of a new district general hospital at Frimley, which was planned with a relatively low number of acute beds for the population to be served, with the closure of many of the small cottage hospitals, implied considerable alteration in the ratio of consultant to general-practitioner hospital beds. Therefore information from a study of the current use of hospital facilities by general practitioners would be of value in deciding the allocation of beds for them.

(4) at the time of the study the routinely available data on hospital activity were felt to be neither adequate nor accurate enough to reflect the hospital involvement of the general practitioners.

The objective of this study was, therefore, to describe the use general practitioners made of all inpatient and outpatient facilities in the Farnham and Frimley group of hospitals and all other hospitals outside the group, including the Military Hospitals at Aldershot, which are situated within the area.

Area of study

The study population was defined as those individuals on the lists of the general practitioners who, it was assumed, would use the new hospital at Frimley. Geographically this corresponds to the area that the South-west Metropolitan Regional Hospital Board

describes as the catchment area of the Farnham and Frimley group of hospitals (Aldershot municipal borough, Farnborough, Fleet, Farnham, Frimley and Camberley urban districts and part of Hartley Wintney rural district) with the parishes of the rural districts on the northern and eastern borders of the catchment area. This gave a study population of 220,000 people who received their primary medical care from about 100 general practitioners.

Hospital services were centred at Farnham Hospital in the south, and in addition here were eight smaller cottage hospitals scattered throughout the area. The main psychiatric hospital, Brookwood, was outside the area, but most psychiatric outpatients were seen at Aldershot by Brookwood consultants. Military hospital facilities, at Aldershot, provided some services for the civilian population.

Method

The general practitioners were asked to record the details of each referral for immediate admission, outpatient attendance, or consultant domiciliary visit. Recording was also undertaken for referrals to casualty, physiotherapy and occupational therapy. Admissions resulting from outpatient referrals were not recorded, neither were transfers between or within hospitals. Referrals from general practice for private consultations were not recorded, but private general-practitioner consultations resulting in referrals to the National Health Service were.

The main study began on 10 November, 1969 and ended on 9 February, 1970, a period of 13 weeks. All 99 general practitioners agreed to take part, but during the study one practitioner withdrew, another left the area, and a third died.

To establish the completeness of the returns made by the general practitioners, a sample of outpatient attendances and immediate admissions were reviewed. Additional cards were completed from the hospital records for those patients on whom no information had been received, but who had been referred since the beginning of the study. It was only possible to search the records of the Farnham and Frimley group of hospitals, as the total number of hospitals to which patients were referred outside the group was nearly 70. As the task of reviewing records is time-consuming and laborious, one month only during the study was chosen for review. The month of January was selected, as during this period of time most new outpatients and all immediate admissions had been referred during the study period. January 1970 was also the time during which the Hong-Kong influenza epidemic occurred, when the work-load of general practitioners increased considerably; the check sample was therefore likely to overestimate rather than under-estimate the incompleteness of the data for the whole study period.

Results

The review of the general-practitioner returns for one month

The checking procedure showed that the recording by the general practitioners was seriously incomplete.[6] Table 1 shows that only just over two thirds of all referrals were recorded, 74·6 per cent of outpatients and 50·1 per cent of immediate admissions. As expected, the proportion of referrals recorded also varied between practices, practitioners and specialties. The data reported below must therefore be interpreted with caution as must any data collected previously in this way which was not validated.

The three-month referral study

Table 2 shows the uncorrected referrals reported for the three-month study. One third of all referrals were made outside the Farnham and Frimley group of hospitals, a small proportion of these were referred to the Military hospitals within the area and to

TABLE 1
ACCURACY OF RECORDING BY GENERAL PRACTITIONERS: PATIENTS ATTENDING THE FARNHAM GROUP OF HOSPITALS DURING JANUARY 1970

	Outpatient attendances		*Immediate admissions*		*Total*	
	Number	*Percentage*	*Number*	*Percentage*	*Number*	*Percentage*
Recorded	946	*74·6*	196	*50·1*	1142	*68·9*
Not recorded	322	*25·4*	194	*49·9*	516	*31·1*
TOTAL	1268	*100·0*	390	*100·0*	1658	*100·0*

the London teaching hospitals. Within the study area the proportion of referrals out of the area increased from south to north, a situation which might be expected to change when the new hospital opens in the northern half of the catchment area.

TABLE 2
TOTAL REPORTED REFERRALS TO ALL HOSPITALS FOR THREE MONTHS

Hospital	*Outpatients*		*Immediate admissions*		*Total*	
	Number	*Percentage*	*Number*	*Percentage*	*Number*	*Percentage*
Farnham Hospital Group	3471	*66*	661	*66*	4132	*66*
Military hospitals	233	*4*	60	*6*	293	*5*
Other Regional Board Hospitals	1369	*26*	246	*25*	1615	*26*
London Teaching Hospitals	173	*3*	27	*3*	200	*3*
TOTAL	5246	*100*	994	*100*	6240	*100*

The crude, uncorrected referral rate for the entire area, using the total of all lists as a denominator, was 4·3 per 1,000 patients for immediate admissions and 22·4 per 1,000 for outpatients. If instead of list sizes the denominator used for the calculation is the population enumerated in the 1966 sample census, then the immediate admission rate is 4·5 per 1,000 population and the outpatient referral rate is 23·8 per 1,000.

The referral rate for new outpatients is much the same as has been described in previous studies, but comparisons are difficult as different definitions have been used from study to study.[7] The figures for immediate admissions are, as expected, lower than those previously reported, as other studies usually included waiting list admissions, and admissions from outpatient departments and casualty. When correction factors, derived from the validation procedure, are applied to these data the referral rates still fall within the range reported in previous studies.

The general practitioners managed 14·5 per cent of all outpatients (including casualty) in the hospital group. When immediate admissions were considered, the proportion of patients cared for by general practitioners increased to 31·5 per cent.

Table 3 shows the distribution of inpatient care between general practitioners and consultants, by diagnostic groups. The diagnostic groups are those used in the Royal College of General Practitioners Classification of Morbidity (1963).

The general practitioners play most part in the care of patients with diseases of the respiratory, circulatory and central nervous systems. The importance of respiratory

disease, is perhaps, over-emphasised here, as an influenza epidemic occurred during the study period. These figures are the crude, uncorrected referrals reported, but it is unlikely that general-practitioner inpatient care has been over-represented because the validation study showed that practitioners under-recorded their own activity to a greater extent than they under-recorded referrals to consultants.

TABLE 3

IMMEDIATE ADMISSION TO THE FARNHAM GROUP OF HOSPITALS FOR THREE MONTHS, BY DIAGNOSTIC GROUP AND WHETHER CARED FOR BY GENERAL PRACTITIONERS OR CONSULTANTS

DIAGNOSTIC GROUP (College of General Practitioners Classification, 1963)	*Consultant care*		*General-practitioner care*		*Total*
	Percentage	*Number*	*Percentage*	*Number*	*Number*
Communicable diseases	*28·6*	2	*71·4*	5	7
Neoplasms	*42·1*	8	*57·9*	11	19
Allergic, endocrine system, metabolic and nutritional diseases	*93·7*	14	*6·7*	1	15
Diseases of blood and blood-forming organs	—	0	*100·0*	1	1
Mental, psychoneurotic and personality disorders	*76·5*	26	*23·5*	8	34
Diseases of the nervous system and sense organs	*53·0*	27	*47·0*	24	51
Diseases of the circulatory system	*63·6*	61	*36·4*	35	96
Diseases of the respiratory system	*47·1*	65	*52·9*	73	138
Diseases of the digestive system	*90·1*	131	*9·9*	13	144
Diseases of the genito-urinary system	*87·1*	27	*12·9*	4	31
Diseases and complications of pregnancy, childbirth and the puerperium	*80·0*	48	*20·0*	12	60
Diseases of the skin and cellular tissue	*50·0*	2	*50·0*	2	4
Diseases of bones and the organs of movement	*50·0*	5	*50·0*	5	10
Congenital malformations	*100·0*	7	—	0	7
Certain diseases of early infancy	*100·0*	5	—	0	5
Symptoms and ill-defined conditions	*55·0*	11	*45·0*	9	20
Accidents, poisoning and violence	*77·8*	14	*22·2*	4	18
Prophylactic procedures	—	0	*100·0*	1	1
TOTAL	*68·5*	453	*31·5*	208	661

TABLE 4

THE TEN DIAGNOSES MOST COMMONLY CARED FOR IN THE FARNHAM GROUP OF HOSPITALS BY GENERAL PRACTITIONERS, COMPARED WITH THE NUMBER OF CASES WITH THE SAME DIAGNOSES CARED FOR BY CONSULTANTS

DIAGNOSIS	*General-practitioner care*		*Consultant care*		*Total*
	Percentage	*Number of patients*	*Percentage*	*Number of patients*	*Number of patients*
Pneumonia	*46*	27	*54*	32	59
Cerebrovascular accident	*62*	18	*38*	11	29
Influenza	*67*	18	*33*	9	27
Congestive cardiac failure	*70*	14	*30*	6	20
Acute bronchitis	*46*	12	*54*	14	26
Pregnancy	*67*	8	*33*	4	12
Senility, senile psychosis	*54*	7	*46*	6	13
Chronic bronchitis	*100*	7	*0*	0	7
Coronary thrombosis	*21*	5	*79*	19	24
Gastroenteritis	*57*	4	*43*	3	7

Table 4 shows the ten conditions most commonly cared for by general practitioners, and emphasises the large contribution they make to the care of respiratory and cardiovascular disease. The relatively small number of admissions for pregnancy underestimated the contribution of general practitioners to obstetrics because for the purpose of the study the first referral, which would usually be to the antenatal outpatient clinic, was the referral recorded. These 12 referrals for immediate admission were approximately three per cent of all pregnancies referred to the hospital service during the study.

It was of interest to examine, as far as we were able, the differences between general-practitioner care and consultant care within particular diagnoses, and Table 5 shows the

TABLE 5

AVERAGE AGES OF PATIENTS WITH THE TEN DIAGNOSES MOST COMMONLY CARED FOR IN THE FARNHAM GROUP OF HOSPITALS BY GENERAL PRACTITIONERS COMPARED WITH THE AVERAGE AGES OF THOSE WITH THE SAME DIAGNOSES CARED FOR BY CONSULTANTS

DIAGNOSIS	*General-practitioner care*		*Consultant care*	
	Average age in years	*Number of patients*	*Average age in years*	*Number of patients*
Pneumonia, pneumonitis	65·2	27	51·9	32
Vascular lesions of the central nervous system	77·6	18	64·8	11
Influenza	61·3	18	56·3	9
Congestive cardiac failure	72·3	14	72·2	6
Acute bronchitis	52·1	12	28·1	14
Pregnancy	26·2	8	24·9	4
Senility, senile psychoses	83·2	7	84·2	6
Chronic bronchitis	72·0	7	—	0
Coronary thrombosis	67·1	5	61·1	19
Gastroenteritis	36·1	4	25·1	3
All diagnoses	61·4	208	45·0	453

differences in age between the two groups of patients. General practitioners' patients were, on average, 16 years older than the patients of consultants; the age difference being most marked for the acute bronchitics. Table 6 shows the differences in lengths

TABLE 6

AVERAGE LENGTH OF STAY IN THE MONTH OF JANUARY FOR PATIENTS WITH THE FIVE DIAGNOSES MOST COMMONLY CARED FOR BY GENERAL PRACTITIONERS, COMPARED WITH THE AVERAGE LENGTH OF STAY OF THOSE WITH THE SAME DIAGNOSES CARED FOR BY CONSULTANTS

DIAGNOSIS	*General-practitioner care*		*Consultant care*	
	Average length of stay (days)	*Number of patients*	*Average length of stay (days)*	*Number of patients*
Pneumonia, pneumonitis	14·3	28	13·7	13
Vascular lesions of the nervous system	24·8	9	6·7	3
Influenza	10·9	12	15·0	6
Congestive cardiac failure	12·4	7	2·0	1
Acute bronchitis	9·1	14	7·9	7
All cases	14·4	142	12·0	248

of stay for the five conditions most commonly cared for by general practitioners. Unfortunately, the data for the length of stay were only available for January, the month in which the validation took place. The average length of stay for the immediate admissions to general-practitioner hospital care was just over two days longer than that for consultant cases.

Discussion

In the past few years, several reports [8, 9, 10] have emphasised the importance of direct access to hospital beds by general practitioners, and many of the arguments have been persuasive. However, the comments have often come from unrepresentative groups of doctors, or from doctors who possess this facility. The study in Frimley and Farnham described the referral pattern of a large population of general practitioners all of whom have access to hospital beds, and all of whom agreed to take part in the study.

The problems of the measurement of hospital use in a defined population are considerable. If direct interview of the population is employed [11] there are the attendant risks of recall errors in those interviewed, and if hospital records are used, it is important that the records of a very large number of hospitals are reviewed.[6] In this study where general practitioners made records of all referrals to hospital, large errors in recording were demonstrated. The validation procedure, however, enabled some estimate of the distribution of patients between general practitioners and consultants in the Farnham Group to be made.

During the study 66 per cent (4,132) of all referrals from the area were made to the Farnham group of hospitals. General practitioners cared for 31·5 per cent of all the immediate admissions and 14·5 per cent of all outpatient and casualty referrals in the Farnham group. The main diagnostic groups in which the immediate admissions occurred were respiratory, cardiovascular and digestive disease, the high number of admissions in the digestive disease group was due to admissions for acute appendicitis.

The general practitioners' main contribution was in the care of patients with diseases of the respiratory, circulatory and nervous system. Cerebrovascular accidents formed the greater part of this latter group, and a further detailed study has started on the natural history and management of this condition.[12] Terminal care of malignant disease was another area in which the general practitioners made a considerable contribution to inpatient care. The overall distribution of cases cared for by general practitioners was similar to that described by Oddie [13] in a study of a community hospital managed by general practitioners. The general practitioners' patients were considerably older than those cared for by the consultants, but despite this, they only stayed in hospital just over two days longer than the patients of consultants. Factors however other than age, may account for this difference.

The study showed that general practitioners in this part of England play a large part in the hospital care of their patients, but before policies on the precise function of general-practitioner cottage hospitals, or satellite units of district general hospitals can be formulated, it is essential that more appropriate information is obtained.

Studies must first indicate that inpatient care is necessary in cases such as those described and this being the case, it must then be shown that the general practitioner can provide care at least as effectively as the consultant. Such information could be obtained by undertaking a series of experiments of inpatient care, using the techniques of controlled clinical trials which are routinely used in studies of the efficacy of drugs. Measures of effectiveness could include patient attitudes and the economic aspects of the various kinds of care, as well as the more traditional outcome measures of clinical medicine.

Acknowledgements

Our thanks are due to the following general practitioners and their staff in the Farnham area, without whom this study would have been impossible:

A. Ashworth	J. Attenborough	D. R. Aubrey	H. Auger
A. J. Austin			
R. B. Buluch	C. Bartlett	S. G. A. Bartlett	R. Bellamy
A. Benson	R. Bergel	W. Brown	D. Bryant
M. E. Carpenter	R. N. Cates	A. C. Chadha	A. R. Christmas
G. E. Clyne	J. A. Collings-Wells	J. H. Cule	P. F. A. Crawshaw
D. T. F. Deakin	L. W. B. Dobbin	F. de S. Donnan	J. W. D. Drake-Lee
H. J. Edwards	K. M. Evans		
V. C. Faber	R. France		
N. S. C. Gent			
G. W. Hadfield	R. E. Hamill	J. G. M. Harrison	T. D. Haskins
B. Henley	D. O. Henry	J. E. Hodgson	M. C. Hodgson
J. J. Holden			
S. Jackson	I. W. Jamieson	P. A. Johnson	
J. Kayll	S. G. Kent	I. A. Key	B. T. Kieft
R. E. D. Leigh	M. F. Lind-Wright	C. O. Lister	
A. D. MacAdam	A. McCall	R. K. Mackenzie-Ross	C. D. McLeod
J. McNutt	J. Mason	P. Mason	J. G. Mathewson
W. J. May	S. R. Mayhew		
Y. P. Narula	J. C. Newell-Price	J. M. Norman	P. Norris
M. L. Osborne			
H. J. C. Page	J. Perry	P. B. Poole	A. M. W. Porter
J. K. Powell	R. C. Poyntz-Wright	D. J. Price	J. Price
J. N. A. Pritchard			
S. Rolfe	N. E. Rust		
N. R. Sales	J. M. Scriven	G. R. Singer	P. C. Smart
E. L. Smith	P. S. Smith	J. L. V. Summerhayes	
C. R. Tilley	H. B. Tipler	E. M. Town-Jones	A. G. Turner
D. R. H. Urquhart			
A. A. Walker	C. Walker	J. Walker	I. W. Wallace
A. M. Warrington	M. Watson	M. S. Whitehouse	A. Whittingham
W. Whittingham	E. M. Williams	B. Winchurch	R. W. Woollatt

Our thanks are also due to the South-west Metropolitan Regional Hospital Board, and the staff of the Farnham Group of Hospitals: Miss Jennifer Dale and Miss Anne Atkinson for their work on the validation study; Professor W. W. Holland, Dr A. E. Bennett, and the staff of the Department of Clinical Epidemiology and Social Medicine. The study was supported in part by funds from the Department of Health and Social Security.

REFERENCES

1. Ministry of Health (1968). *National Health Service: The Administrative Structure of the Medical and Related Services in England and Wales.* London: H.M.S.O.
2. Department of Health and Social Security (1970). *National Health Service: The Future Structure of the National Health Service.* London: H.M.S.O.
3. Department of Health and Social Security (1971). *National Health Service Reorganisation.* Consultative Document. London: H.M.S.O.
4. National Health Service (1962). *A Hospital Plan for England and Wales.* London: H.M.S.O.
5. Department of Health and Social Security Welsh Office (1969). *The Functions of the District General Hospital.* London: H.M.S.O.
6. Clarke, M. & Bennett, A. E. (1971). *Proceedings of the Royal Society of Medicine*, **64**, 795–98.
7. Carstairs, V. & Skrimshire, A. (1968). *Health Bulletin*, **26**, 12–22.
8. Ministry of Health (1968). *The Field of work of the Family Doctor.* Report of the Sub-committee of the Standing Medical Advisory Committee. London: H.M.S.O.
9. McWhinney, I. (1967). *Lancet*, **1**, 91–6.
10. College of General Practitioners (1965). *Journal of the College of General Practitioners*, **6**, 368.
11. Palmer, J. W., Kasap, H. S., Bennett, A. E. & Holland, W. W. (1969). *British Journal of Preventive and Social Medicine*, **23**, 91–100.
12. Weddell, J. M. (1971). Personal communication.
13. Oddie, J. A., Hasler, J. C., Vine, S. M., & Bennett, A. E. (1971). *Lancet*, **2**, 308–10.