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This paper is designed merely to stimulate discussion and to serve as a starting point for future research into economic aspects of the General Practitioner Service. It is not the result of either a detailed study of past work or of practical research in the field.

Can a value be placed upon G.P. services?

The principle of a General Practitioner system of primary care is that of providing a personal and continuous service by a doctor whose range of knowledge and experience of medicine is sufficiently broad to fulfil the following requirements:-

1. to provide prompt curative treatment for those conditions for which primary care is the most effective in terms of medical outcome, bearing in mind the delays which necessarily occur with the provision of specialist services;
2. for those conditions for which primary care is not sufficient, to select the most appropriate form of specialist care and, subsequently, to ensure that post-specialist care is provided;
3. to act as a general adviser to a patient and his family particularly in situations of chronic disease or ill-health caused by psychological or social factors;
4. to play some role, at present not clearly defined, in the area of preventive medicine, for example by the identification of the possibility of disease in the pre-symptomatic stage.

Emphasis is placed on the continuous nature of General Practitioners' work: by contrast the acute hospitals exist for the treatment of specific and usually discrete periods of illness. In some cases, however, such as geriatric and psychiatric hospitals this distinction is less clear.

Since the NHS was first established, the role of the G.P. has changed in some respects. The development of sulphonamides and anti-biotics has increased the productivity of the G.P. in so far that he can now treat quickly and effectively many diseases which previously killed or necessitated long and expensive secondary care or time-consuming primary care. In other respects increased productivity has depended upon the G.P.'s inter-action with the other medical services, such as domiciliary services on the one hand and hospital services on the other. It is in an attempt to understand this inter-relationship that this paper is being written, the object being to establish criteria, in particular with relation to resource costs, by which to judge alternative patterns of medical care in which the G.P. is one facet.

Official interest has been firstly concerned with the question of the supply of G.P. services. The D.H.S.S. in its annual reports gives details of:-

- the total number of practising G.Ps.
- the average size of G.P. lists
- the total population per doctor.
- the regional distribution of doctors.

In general no attempt is made to pass evaluative judgement on particular figures and it is implied that more G.Ps. and a lower average list are an improvement, presumably reflecting the historical fear that medical services are underprovided. An example is the Royal Commission on Medical Education 1965-68 (ref.1) which assessed future medical manpower by estimating population changes and medical workload and came to the...."inescapable conclusions that this country is faced with a serious shortage of doctors". Because the Commission felt that the problem of numbers could not be solved easily, they...."decided to consider very carefully the possibility of increasing the effectiveness of the country's existing number of doctors.....We did not think, however, that any improvements in these respects would do more than help to meet the increasing demands for medical services which we had excluded from our calculations".

As well as concern for an increase in the total supply of doctors, there is official interest in the regional distribution of G.Ps. which is derived from the NHS principle that primary care facilities should be freely available to all. It is implied that a more equitable distribution of G.Ps. would be an improvement, and various financial devices have been sought to encourage G.Ps. to move to less favoured areas. Both these criteria are perfectly valid if the G.P. service is considered as a single homogeneous system, the quality of which can be assessed purely in terms of numbers and distribution. However, this approach is insufficient for evaluation purposes since it ignores the fact that G.P. services are part of a general spectrum of medical care services, in which G.Ps. and other resource inputs are potential substitutes. A comprehensive appraisal requires a comparison of the input-output relationship of G.Ps. with that of other elements of medical care. A preferred situation might, for example, require not an increase in the number of G.Ps. but an expansion of other facilities such as hospital beds, specialist clinics or professional multi-disciplinary domiciliary teams.

Many studies have been made of means of increasing the efficiency of G.Ps. These are usually management and organisation studies involving, for example, the use of appointment systems, better equipped surgeries, diagnostic equipment and the employment of surgery nurses and receptionists. While these studies consider other inputs, it is generally implied that the G.Ps. are a fixed resource and that the objective is to increase their efficiency alone. Moreover, these studies are

not usually concerned with inputs outside the practice which might be as costly as G.Ps. themselves and so require a cost comparison.

Another area of research on the G.P. service is concerned with measuring work-load. Some of the results are summarised in Table 1. It was officially argued (ref.2) that the work-load of G.Ps. increased at the start of the NHS by 13% between 1947-8 and 1948-9. One reason was that a number of women and children who had not been covered by the National Health Insurance Scheme had for the first time been given free access to primary care. Titmuss (ref.3), on the other hand, argued that in the 1950's the work-load declined compared to the 1930's because of the reduction in the average doctor's list, improved geographical distribution, internal administrative improvement, increases in local authority services (notably maternity) and the development of district nursing services.

The standard measure of work-load, as shown in Table 1, is the consultation rate per year for each patient on the doctor's list. The most extensive study, derived from the National Morbidity Survey (ref.4) shows wide regional variations, from 2.64 in East Anglia to 4.0 in Wales, with the highest rate for individual practices of 9.16 and the lowest rate of 0.96. Even then, the consultation rates only reflect work-load in general terms since they do not measure the time spent with patients. There are some time studies which have been made but, again, the variations are such that it is difficult to draw generalised conclusions from them. For example, Eimerl and Pearson (ref.5) showed that some G.Ps. worked less than 30 hours a week on their practice while others worked over 55 hours, with a modal time between 35 and 40. Unfortunately the article does not give other relevant details of, for example, size of lists to establish an explanation for the variation other than a different method of operation on the part of individual G.Ps.

The studies mentioned reveal major problems in undertaking research on the G.P. service. These can be usefully summarised as follows.

1. Because of the apparent range of consultation rates, it would be necessary to have a wide range of random samples to get results of statistical significance.

2. The variations suggest a need to consider a number of parameters such as regional epidemiological differences, the provision of para-medical complementary services, and the location and extent of the hospital service.

3. The nature of G.P. services may also vary as far as the convenience of the patient is concerned, for example the standard and location of surgery premises, waiting times in surgeries and the extent of 'out of working-hours' cover.

4. There is evidence of Parkinson's Law: for example Last writes (ref.6) "there is some evidence of Parkinson's Law of General Practice. Work expands to fill the time available or, in this case, the frequency with which patients are seen is inversely proportional to the number for whom the general practitioner is responsible".

5. There is the problem of persuading independent contractors to the NHS that there is the need to conduct studies on their professional competence.

6. There is no satisfactory way, as yet, of measuring the medical outcome of a G.Ps. work. G.Ps. are largely self-regulated and unsupervised. Only in the case of extreme and obvious deficiency is assessment made of their decisions or conduct. The patient is safeguarded by professional ethics, and, to some extent, by the choice of doctors which may exist and which, in the long run, may cause a G.P. who provides a less satisfactory service to suffer a declining list.

7. When these problems have been overcome, there is the problem of finding an appropriate money measure of the cost of G.P. services for comparative purposes.

The Community Hospital Project.

Among other studies of Community Hospital schemes, the Health Services Evaluation Group is concerned with an assessment of a new purpose-built Community Hospital to be opened in Wallingford in 1973. As part of the Community Hospital Project an attempt will be made to overcome some of the problems mentioned above, in a marginal situation. Difference in medical outcome will be assessed by comparing a G.P.-intensive service with a hospital-intensive service and also comparative costs will be derived. From this it is hoped to postulate an optimum combination of resources for a given, or improved, standard of medical care. It is recognised that the study is limited to the specific location of the research and may not have universal application.

It can be argued that the concept of the Community Hospital (ref.7) is to provide an interface between, on the one hand, the primary care services given in the G.P. surgeries and in the home, and, on the other hand, the specialist and hospital services provided at the area level. The services of the Community Hospital are, at different times, substitutes for the first or the second. In other respects it provides an entirely new and additional service. An essential characteristic of the Community Hospital is the use it makes of the G.P. The advantages of the Community Hospital in the use of G.Ps. may be:-

1. It facilitates continuity of care, enabling the G.P. to provide a more complete service with greater responsibility which enhances the doctor-patient relationship. For example, post-operative surgical patients will be transferred from the District General Hospital, earlier than would normally be the case, for care and assessment in the Community Hospital under the supervision of the G.P. thus providing continuity of care through to discharge to the home.

2. It provides the G.P. with an additional facility to give a higher standard of treatment. For example, many cases which would otherwise be treated at home can be investigated more thoroughly and receive a higher standard of nursing care.

3. In so far that the G.P. has patients concentrated in one location who

would otherwise be at home, it should reduce the burden of travelling time, thus reducing his work-load in terms of time.

4. Where the alternative place of treatment for the patient is the District General Hospital, then it may be that the Community Hospital entails a more economical use of resources. One facet is whether medical supervision in the D.G.H. is more expensive than G.P. supervision in the Community Hospital.

My colleagues in this multi-disciplinary team will be concerned with various measures of medical and social outcome of the introduction of the Community Hospital. A number of randomised controlled trials will be undertaken comparing, for example, patients treated in the Community Hospital with a matched group in the D.G.H. and similarly in another study patients treated in the Community Hospital with a matched group treated at home. Also a study of the work-load of the G.P. practice in Wallingford will be undertaken. On 28 days, covering a total of 4 weeks, though the actual dates are selected randomly, detailed information is being collected on patient-doctor contacts (surgery consultations, home visits and telephone contacts) including the patient's age, sex, diagnosis and nature of subsequent referral. At the same time the doctors will fill in a diary on those days (see Table 2) which will give details of the times spent on the practice. The exercise will take place both before and after the Community Hospital is opened. From this it should be possible to assess the effect of the introduction of the Community Hospital on the use of G.P. time, whether for example, time spent travelling is saved since most patients are located in one place, and how much time is taken in treating patients who would otherwise be in the D.G.H. We shall also be able to assess how it affects the G.P.'s other commitments in his practice. It is also hoped to value G.P. time in money terms so that a service which involves the use of G.P. time can be compared with one which involves more or less G.P. time. For example, we need to compare the cost of resources employed in the four alternatives:-

1. D.G.H. primarily
2. D.G.H. plus Community Hospital
3. Community Hospital primarily
4. Domiciliary care primarily.

Costing G.P. Services.

The main item of payment in the present system is the capitation fees with supplementary compensation payments for special factors. This means that payment is made according to the number of people on the G.P.'s list, i.e. the number of patients at risk, and not according to the amount of work done. This is basically a relic of the old health insurance schemes devised towards the end of the last century by insurance companies which wanted a simple method of assessing their risks and financial commitment. The Lloyd George Health Insurance Act operated through the approved insurance companies and so the capitation-fee system was consolidated.

At first sight it may seem to be an inequitable method of payment since regional variations in morbidity - reflecting occupational, climatic, age and sex distribution differences - may in part explain differences in consultation rates. A fairer means of payment might be thought to be according to hours worked though as Crombie and Cross point out (ref.8) the variations between practice is greater than regional variations suggesting that there are significant differences in how G.P.'s. work. Moreover, it might be thought wrong to equate time devoted to a practice to the quality of service. Nevertheless, for the purposes of the Community Hospital Project it will be assumed that the quality of the G.P. service can be assessed in terms of medical outcome which will be measured and for the purposes of resource costing the numbers of hours devoted to the practice will be related to the Gross Income of the Practice.

A simplified list of the fees and payments is given in table 3. By dividing the total by the number of hours worked, an average cost of G.P. time per hour can be derived. For illustrative purposes this exercise was applied to two practices the details of whose work-load is published, Wood (ref.9) and Manning (ref.10). These are in tables 4 and 5 respectively. From these calculations a comparison can be made with the Clinical Assistantships rate which hospitals pay for services rendered by G.Ps.

Practice A: Gross fees including costs per hour of patient contact time £2,66

Practice B: Gross fees including costs per hour of patient contact time £2,64

Clinical Assistantship rate:

(£400 per annum for 3½ hours for 46 weeks)

Cost per hour:

£2,48

N.B. These figures are for illustrative purposes only since they are based on surveys which may not be comparable, and also the calculations include some estimates which were necessary to overcome certain deficiencies in the published data. Moreover, extra payments for ad hoc services are not included, though it is unlikely that these account for more than a few per cent of the gross fees and also, practice costs are excluded which may offset this omission. Nevertheless the rate per hour seems to be low in relation to knowledge of G.P. average income, which falls between £5,000 and £7,000 p.a. At £6,000 p.a. it suggests an average working week of over 50 hours.

Conclusions.

Apart from all the reservations considered earlier, and the inaccuracy of deriving figures by these means, it is debatable whether average cost figures calculated in Wallingford should be used for comparative purposes where a notion of marginal cost is more appropriate. However, various possibilities could be

considered for discussion:

1. If a Community Hospital involves G.Ps. in a greater work load measured in terms of hours, then it is likely they will require a sessional payment and we can then cost their services at the "going rate".

2. If we are postulating a nation-wide increase in G.P. hours worked as the result of a national Community Hospital scheme then the cost could be assessed at average cost.

3. If the number of hours worked by G.Ps. falls, the benefit is the improvement which the G.P. can give in service to patients and/or the extent to which they can improve their professional competence by post-graduate study, reading, etc. Can we argue that the value of this benefit is not more than the average hourly rate x the number of hours saved since the other way of achieving this is to increase the number of doctors by that amount? In this case we are arguing that the average hourly rate reflects the value placed at present on a hour's G.P. service with the existing pattern of work load.

It is obvious that to come up with a figure which will be meaningful will require extensive research work, particularly if the Community Hospital programme is going to set off a reappraisal of the total supply of G.Ps. in the country, and it is only in relation to this that an average cost per hour is relevant. It will be necessary to attempt to derive an average cost of G.Ps. which is more representative of G.Ps. throughout the country. Two possibilities are:-

1. to extend the number of G.Ps. who are willing to fill in diaries.
2. To go to the authors of papers which include details of consultation rates to see if it is possible to assess number of hours worked, though apart from problems of uniformity of definition of terms, there is also the problem of changing patterns over time.

It is at this stage of development, that suggestions will be very helpful.

References.

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5. Eimerl and Pearson, "Working time in General Practice. How General Practitioners use their time", B.M.J. 1966 2, 1549.
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7. Oddie et al. "The Community Hospital", The Lancet, Aug. 7, 1971.
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9. Wood, L.A.C. "A Time and Motion Study", J. Coll. Of Gen. Pract., 1962, 5, 379.
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Table 1.

STUDY

CONSULTATIONS

Participants	Details	Date	Duration	Surgery	Home Visits	Total	Home Visits as % total
Wellar		1953	10 years	*	*	3.0	*
Crombie	Birmingham	1954	1 year	2.3	0.7	3.0	25.0
Crawford	N. Ireland	1954	1 year	1.7	1.5	3.2	44.4
Pinsent	Birmingham	1950	1 year	2.4	0.9	3.3	28.4
Fry	London	1952	1 year	2.6	0.7	3.3	18.9
Hopkins	London	1956	3 years	2.5	0.8	3.3	23.5
Fry	London	1949	15 years	*	*	3.5	*
Logan et al	8 - 10 G. Ps.	1953	1 year	2.4	1.1	3.5	31.1
Logan et al	8 - 10 G. Ps.	1952	1 year	2.4	1.2	3.6	34.4
Cookson		1955	10 years	*	*	3.6	*
Logan & Cushion	170 G. Ps. National	1958	1 year	*	*	3.8	*
Eimerl		1952	12 years	*	*	4.0	*
Logan et al	8 - 10 G. Ps.	1951	1 year	2.8	1.3	4.1	32.0
Eimerl	N.W. England	1959	7 years	3.2	1.0	4.2	24.0
Darbishire House	4 G. Ps. Manchester	1963	1 year	2.8	1.4	4.2	34.0
Starey	30 G. Ps. Thames Valley	1961	3 mths.	*	*	4.3	*
Darbishire House	4 G. Ps. Manchester	1959	1 year	3.1	1.3	4.4	28.0
Hill	5000 G. Ps. National	1938	1 year	3.8	1.3	5.1	24.0
Beckett et al	London	1954	1 year	3.3	1.8	5.1	35.5

* no information

mean 3.79

Doctor code number:

Date:

00.01	<u>09.00</u>	<u>13.00</u>	<u>17.00</u>	<u>21.00</u>
00.30	09.10	13.10	17.10	21.10
01.00	09.20	13.20	17.20	21.20
01.30	09.30	13.30	17.30	21.30
02.00	09.40	13.40	17.40	21.40
02.30	09.50	13.50	17.50	21.50
03.00	<u>10.00</u>	<u>14.00</u>	<u>18.00</u>	<u>22.00</u>
03.30	10.10	14.10	18.10	22.10
04.00	10.20	14.20	18.20	22.20
04.30	10.30	14.30	18.30	22.30
05.00	10.40	14.40	18.40	22.40
05.30	10.50	14.50	18.50	22.50
06.00	<u>11.00</u>	<u>15.00</u>	<u>19.00</u>	<u>23.00</u>
06.30	11.10	15.10	19.10	23.10
07.00	11.20	15.20	19.20	23.20
07.30	11.30	15.30	19.30	23.30
<u>08.00</u>	11.40	15.40	19.40	23.40
08.10	11.50	15.50	19.50	23.50
08.20	<u>12.00</u>	<u>16.00</u>	<u>20.00</u>	<u>24.00</u>
08.30	12.10	16.10	20.10	
08.40	12.20	16.20	20.20	
08.50	12.30	16.30	20.30	
<u>09.00</u>	12.40	16.40	20.40	
	12.50	16.50	20.50	
	<u>13.00</u>	<u>17.00</u>	<u>21.00</u>	

CODE

- S = Surgery
- V = Visits, including travelling
- C = Clinical work without doctor-patient contact, e.g. telephoning (including calls in "off-duty" hours), correspondence discussion with professional colleagues & domiciliary services, etc.
- A = Practice Administration, e.g. practice finance, meetings.
- P = Postgraduate study, reading, research, etc.
- H = Clinical Assistantships, etc.
- CH = Community Hospital inpatient wards.
- DW = Day Ward, Community Hospital.
- NV = Night visits.

Table 3.

Simplified items of payment to G.P. based
on 1971/2 figures.*

	1971	1972
<u>Fixed payments (which do not vary with the size of the list)</u>		
1. Basic Practice Allowance (p.a. per principal)	£1540	£1595
2. Group Practice Allowance (p.a. per principal) for practices of 3 or more principals	250	270
3. Supplementary Practice Allowance (p.a. per principal for 'out-of-hours' responsibilities)	296	310
4. Seniority & Vocational Training Allowance: - various e.g. p.a. after first 10 years of service for next 10 years	260 520	280 560
<u>Variable payments</u>		
5. Capitation fees - ordinary, for patients under 65 @	1.40 p.a.	1.45 p.a.
6. Capitation fees - elderly, " " over 65 @	1.95 "	2.00 "
7. Capitation fees - supplementary, for each patient in excess of 1,000 on list @	0.21 "	0.28 "
8. Rural Practice Fees - for patients 3 miles or more from doctor's surgery approx,	£0.35 "	0.38 "
<u>Others</u>		
Payments for specific, ad hoc duties, e.g. maternity fee 21 for treating a temporary resident	1.425	21.75
for a night visit	2.50	3.00

Allowances.

1. Rent and rates (including notional rent) 100% for surgery premises
2. Ancillary staff 70%

Other surgery costs are paid by doctors themselves, though these are tax deductible.

(* data kindly provided by the Oxford County & City Executive Council),

Table 5.

Practice B. (ref. 10)

2 partners in predominantly middle-class suburb of London.
List of 6479.

Gross Costs.

Basic Practice Allowance		3080
Supplementary "		592
Seniority/Vocational Training Allowance	say	520
Capitation Fee under 65		8073
* over 65		1390
Supplementary Capitation Fees		941
		<hr/>
		£14596

* based on assumption that 11% of list are over 65.

Number of consultations (surgery and home)	36719
Average cost per consultation	40p
Total practice time including administration	5756 hours
Cost per hour of practice time	<u>£2.54</u>
Total time spent in direct patient contact	5532
Cost per hour of patient contact time	<u>£2.64</u>

(Total time derived by summing 'normal working day' 6723 hours).

Cost per hour £2.17