

## The costs of domiciliary nursing care

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In 1971 there were 6.4 million people in England and Wales aged 65 and over and about nine per cent of these received domiciliary nursing care (Department of Health and Social Security, 1971). By 1981, it is estimated (Registrar General, 1971) that the population aged 65 and over will rise to 7.3 million, that is an increase of 14 per cent and the success of improved treatment of acute conditions may well result in a greater proportionate increase in the level of chronic sickness for which home nursing care will be required. Merely to obtain the existing level of care per patient will thus involve an increase in the nursing resources devoted to domiciliary care.

However, at the same time, the awareness of the rising costs of supporting patients in hospital (Department of Health and Social Security, 1971) suggests that the domiciliary services might be expected both to support a greater proportion of chronic sick patients and also provide a higher level of service per average patient. Much has been written about the development of group practices and the attachment of district nurses and health visitors (Royal College of General Practitioners, 1968; Social Research Science Unit, 1969; Warin, 1968) to increase the efficiency of the service but, despite the realisation that costs are important, relatively little is known of the costs of domiciliary care to the health service. The data included in this paper have been collected primarily as part of the evaluation of the community hospital programme (Bennett, 1974) but I hope that the results will have general relevance in indicating the likely costs of increasing domiciliary care.

### Levels of service in two areas studied

Practice A consists of five principals with a list of 13,418 and the attached nursing team also serves a single practice of 2,660. During 1972, the nursing team comprised four full-time district nurses, one of whom is state enrolled, with a part-time state registered nurse relief giving 4.33 whole-time-equivalent nurses, and two part-time auxiliary nurses, forming 0.65 whole-time equivalents.

During the year, 11,010 home visits were recorded by the district nurses and 2,028 by the auxiliary nurses, and the total number of patients visited was 563. The nurses also held surgery and clinic sessions. One full-time district midwife also works in the area, but because of reorganisation of her activities during the study period, she was not included in the analysis.

Practice B consists of three principals, with a total list of 6,469 and has attached 2.0 whole-time-equivalent district nurses, one of whom is also the district midwife, and also one part-time auxiliary nurse, ie 0.36 whole-time equivalent. Here, 4,971 nursing visits were recorded by the district nurses and 968 by the auxiliary nurse. The total number of patients visited was 178. Surgery and clinic sessions were also held in the health centre.

Both practices have staffing levels near the national average of 3,065 population per qualified home nurse/midwife but, as shown in table 1, the level of service for those aged 65 and over in the two areas is better than the national average.

TABLE 1  
PER CENT OF POPULATION RECEIVING HOME NURSING DURING YEAR

	<i>England and Wales, 1970*</i>	<i>Practice A 1972</i>	<i>Practice B 1972</i>
<i>Total</i>	2.1	3.5	2.8
<i>0-64</i>	1.1	1.1	1.3
<i>65 and over</i>	9.0	22.4	17.8

\* Department of Health and Social Security, 1971.

### Costing method employed

The costs of employing and supporting a district nurse and an auxiliary nurse, given in table 2, were derived from the accounts of the health departments of the two counties which administer the services. Since we are concerned with a possible extension of the service, average variable costs have been used, that is the costs of employing an extra member of staff and fixed costs, such as administrative costs and premises which are estimated to be about £110 per nurse, are assumed to be unaffected by a small change in the number of nurses employed.

TABLE 2  
COSTS OF MIDWIFERY AND DISTRICT NURSING SERVICE 1972

	<i>Practice A</i>	<i>Practice B</i>
<i>Variable costs per district nurse/midwife</i>	£	£
Salaries, national insurance, superannuation	1,621	1,701
Uniforms	33	45
Medical supplies	96	101
Transport	237	396
Average variable costs	1,987	2,243
<i>Variable costs per auxiliary nurse*</i>		
Salaries	945	945
Uniforms	5	25
Transport	98	198
	1,048	1,168

\* Based on a 40-hour week.

The differences between practices A and B are explained by the facts that the county enclosing practice B employs a number of district nurse/midwives and so its costs include a midwifery element, and also travelling costs are greater in B. A national average cost per district nurse was projected from official figures (Department of Health and Social Security, 1971) and found to be £2,066, close to those of practice A.

Costs were apportioned to units of service, namely a home visit and session attendance, on a time basis after the nurses had kindly undertaken a work-study by filling in a diary sheet each day during a period of two weeks. The figures so derived were applied to the total number of working days officially recorded for 1972, on the assumption that the work pattern during the sample weeks gave an indication of the work throughout the year. Thus the total number of hours devoted to each activity was calculated and multiplying by the cost per hour and dividing by the number of units of service, the cost per home visit and per clinic attendance was obtained.

Such an approximation technique is, of course, subject to possible error, because of the small number of sample days, possible inaccuracy in the annual data and the problem

that the act of diary keeping might influence the nurses' behaviour. However, as shown in table 3, an indication of the reliability of the reconciliation between the sample fortnight and the annual data is that the average time per visit during the sample period did not vary significantly from the estimated average time per visit during the year as a whole for the full-time staff. For the part-time staff the technique was less accurate because the sample was much smaller.

Table 3 shows how during the sample fortnight the working day, which excludes meal breaks, was divided into visiting, sessions in surgery, health centre and clinic, and administration which includes professional meetings. Travelling time was included in visiting because this is time which must necessarily be committed in order to make the visit, but this meant that our study could not be used to examine the effect of geographical distance on visiting patterns (Abel, 1969; Gregory and Hindle, 1972). Comparison with other time studies is also difficult because of differences in the definition of terms but two studies (Gallaher *et al.*, 1970; Hockey, 1966) of the geographical district system show a higher percentage of visiting time and less session time.

TABLE 3  
PER CENT ALLOCATION OF WORKING DAY DURING SAMPLE FORTNIGHT

	PRACTICE A			PRACTICE B	
	<i>Full-time district nurse</i>	<i>Part-time district nurse</i>	<i>Part-time auxiliary</i>	<i>Full-time district nurse midwife</i>	<i>Part-time auxiliary</i>
Visiting including travelling	77.6	89.3	97.0	74.7	79.1
Health centre/clinic and surgery sessions	4.6	1.1	0	6.1	13.5
Administration	17.8	9.6	3.0	19.1	7.4
Average recorded working day	8 hrs	4 hrs	4 hrs	8 hrs*	3 hrs
(excl. meal breaks)	16m	33m	33m	11m	35m
Average time per visit during study period (including travelling)	35.9m	45.0m	50.0m	27.9m	34.0m
Average estimated time per visit over year	35.7m	37.0m	34.3m	27.0m	33.0m

\* No allowance for time 'on call' but not actually on duty.

TABLE 4  
DISTRIBUTION OF VISITS DURING WEEK OF WORK-STUDY

	PRACTICE A		PRACTICE B	
	<i>Staff* on duty</i>	<i>Number of visits</i>	<i>Staff* on duty</i>	<i>Number of visits</i>
Sunday	1.5	9	1.0	7
Monday	4.5	50	2.5	37
Tuesday	5.5	68	2.5	29
Wednesday	5.5	51	1.5	21
Thursday	3.5	41	2.5	32
Friday	4.5	54	1.5	22
Saturday	2.0	16	1.0	9

\* Part-time staff counted as 0.5

The distribution of the number of visits during the week, given in table 4, shows a peaking effect which was also observed by Hockey (1972). While the arrangement of clinics and bi-weekly visits may explain this, it does appear that at weekends not only were fewer nurses on duty but also fewer visits per nurse were made.

Table 5 shows how the time allocations for practice A were used to apportion the total cost between the various activities and to derive a cost per visit or session attendance. By costing only patient-contact time and travelling, the cost of administration is automatically distributed pro rata to the other activities. For practice A the estimated cost per visit was 74p and for practice B 77p. The cost per clinic attendance was 45p in both A and B. It would be wrong to claim great precision for these figures but a rounded cost of 75p per visit seems to be a reasonable estimate for planning purposes. This falls near to the mean costs of all local authorities calculated by different and more arbitrary means by the Institute of Municipal Treasurers and Accountants (IMTA, 1973).

TABLE 5  
UNITS COSTS IN PRACTICE A

<i>District nurses</i>	<i>Variable costs</i>
Total cost of 4.33 whole-time equiv.	£8,604
Number of hours of patient contact	6,907
Cost per hour	£1.25
Time spent visiting	6,557
Cost of visiting	£8,196
Number of visits in this time	11,010
At cost per visit	74p
Time spent in surgery	143
Cost of surgery time	£178.75
Number of recorded surgery attendances	647
Cost per attendance	28p
Time spent in clinics	207
Cost of clinic time	£258.75
Number of attendances in clinic	571
Cost per clinic attendance	45p
<i>Auxiliary nurses</i>	
Total cost of 0.65 w.t.e.	£684
Number of hours of patient contact	1,161
Cost per hour	59p
Number of visits	2,028
Cost per visit	34p

Similar calculations in practice B gave a cost per nurse visit of 77p, and a cost per clinic attendance of 45p.

### Cost comparisons

An extension of the district nursing service may take two forms, an increase in the number of visits to the range of patients already covered, and an increase in the number of patients matched by a reduction in the *proportion* of patients cared for in hospital though, because of the rising population, the actual numbers in hospital may not fall. In the former case, the quality of the service is improved at extra cost and, indeed, many argue that the present provisions are inadequate (Economist Intelligence Unit, 1973). It is, nevertheless, a value judgment to decide whether this extension is justified in the light of other demands on health resources. In the latter case, we take the quality of service as given and consider the cost-effectiveness of increasing the number of patients supported at home compared with hospital care.

To relate the costs of the present level of service to different types of patients, two samples, each of 75 patients, in the two practices were divided into the categories shown

in table 6. Forty per cent of the patients were receiving either short-term treatment prescribed by the general practitioners or postoperative care. However, these accounted for only five per cent of the total number of nursing visits and the cost per patient was less than £5.

TABLE 6  
CATEGORIES OF PATIENTS IN SAMPLES

	<i>Practice A</i>			<i>Practice B</i>		
	<i>Number of patients</i>	<i>Average number of visits</i>	<i>Average cost</i>	<i>Number of patients</i>	<i>Average number of visits</i>	<i>Average cost</i>
1. Long-term chronic sick	50	**	**	42	**	**
2. Recent hospital discharges	7	3.7	£2.75	4	6.2	£4.80
3. Short-term treatment*	18	6.0	£4.40	29	4.6	£3.50

\* requested by general practitioner.

\*\*see table 7.

There was a considerable variation in the level of service provided to the long-term patients. For example, 14 patients in practice A received only weekly baths by the auxiliary nurse, at a weekly cost of 34p. The remaining patients in practice A and the 42 patients in B were divided into quartiles according to the number of nursing visits received and the average number of visits per patient was then calculated for each quartile. The annual average cost per patient ranged from £10 to £132, as shown in table 7. Although the top quartile comprised only 13 per cent of the patients, they created

TABLE 7  
LONG-TERM CHRONIC SICK PATIENTS

		<i>Practice A</i>	<i>Practice B</i>
First quartile	Average nurse visits	9.0	12.6
	Average auxiliary visits	12.3	1.0
	Average annual cost	£11	£10
Second quartile	Average nurse visits	23.3	24.0
	Average auxiliary visits	2.5	2.4
	Average annual cost	£18	£19
Third quartile	Average nurse visits	55.3	70.2
	Average auxiliary visits	8.3	—
	Average annual cost	£44	£54
Fourth quartile	Average nurse visits	178.0	138.6
	Average auxiliary visits	—	4.4
	Average annual cost	£132	£108

the bulk of the work load, receiving 60 per cent of the total visits. Because of their high nursing dependency, it is reasonable to consider these as 'marginal patients' for whom either hospital or domiciliary care may be appropriate.

A comparison of these domiciliary costs with the costs of hospital care is inevitably treacherous and controversial. We do not know at present whether the patients in the top quartile have the same kinds of disability as patients in hospitals for the chronic sick. However, preliminary studies suggest that it is social circumstances rather than medical condition which distinguishes the two groups. This is supported by the study of Pasker and Ashley (1971) which showed that in a defined population the number of 'high nursing dependency' patients at home was almost equal to the number in hospital.

Providing that the range of 'nursing dependency' among those patients in a hospital for the chronic sick is not so great that a few severely ill patients unduly inflates the average nursing cost, it seems reasonable to compare the average cost of nursing the top quartile at home with the average cost of nursing in a hospital for the chronic sick.

The average cost per in-patient week in the hospital for chronic sick in the area of practices A and B for the calendar year 1972 is estimated to have been £33·14. This cost, which was close to the national average for this type of hospital, comprised £2·09 for medical care and treatment, £16·73 for general services and £14·32 for nursing. By contrast, the weekly cost of domiciliary nursing care for the top quartile was only £2·25, that is for three nursing visits a week which was the modal value. For those who received a daily visit, the cost was £5·25.

Thus, while the patient at home receives a large proportion of nursing care from family and friends, the cost to the health services is less, by about £9 for nursing, and £16·73 for general services. Using the average cost for hospital care may exaggerate the difference, but this calculation suggests that district planning teams, who will finance both hospital and domiciliary care from the same budget, may be tempted to seek economies by extending domiciliary care rather than hospital care. Restricted capital allocations and the rising costs of building new hospitals will accentuate this trend.

#### *Other domiciliary services*

However, while the district planning teams may be able to economise by extending domiciliary care, such a move will impose additional costs on other agencies and on the patients themselves. Three services were organised by the Social Services Departments in the counties enclosing A and B.

Firstly, the home help service was provided for most, though not all of the high nursing-dependency patients. The typical level for those patients in practice A who received continuous support was four hours per week. The variation around this modal value was small and less than three per cent received the maximum of ten hours. As there appears to be no direct relationship between the number of nursing visits and the level of home help support, it can be argued that the modal value best reflects the typical level of service. At 50p per hour this cost £2 per week.

Secondly, the occupational therapy service was provided for most of the long-term patients, the modal number of visits in practice B being two per year. Only 20 per cent of those visited received three visits, and ten per cent received four visits, while none received more than four visits. The estimated cost per visit was £2·68 and the average cost per patient of home aids was £4, giving a total annual cost per typical patient of £9·36, or 18p per week.

Thirdly, a 'meals-on-wheels' service was provided on two days of the week. The cost of this was 17p per meal, counting the volunteer labour at zero cost. Some of the costs for these three services would have been paid for by the patients themselves, but where the Social Service Departments incurred the full cost, it totalled £2·52 per week, as great and possibly greater than that incurred by the health service for nursing.

#### *Medical and treatment costs*

Medical and treatment costs are particularly difficult to assess in comparable terms. We can assume that the cost of drugs prescribed by general practitioners is similar to that of patients in a hospital for the chronic sick, namely 35p per week. On the other hand, a fundamental problem arises in costing an increase in home visiting by general practitioners. While an increase in the proportion of chronic sick patients nursed at home will increase the burden on general practitioners at this stage because of continuing reorganisation in general practice and changing patterns of demand, we do not know what the

impact will be. Moreover, unless the number of general practitioners is increased, or an adjustment is made to fees, there will be no increase in costs: either the general practitioners will have longer working hours or another service to their patients will be foregone.

To complete the list of costs for comparative purposes, we require an estimate of the private costs incurred by a patient at home, for example on food, heating and lighting. There is likely to be a considerable variation in this item, but the family expenditure survey (Department of Employment and Productivity, 1972) gives an estimate of just under £8 per week for the expenditure of an elderly single householder, excluding housing costs. For a person living with a family, these costs were less.

Summing these costs, and recalling that because of the variations between patients the costs are representative rather than actual, we derive a typical total cost per patient receiving domiciliary care of £13·12 per week for patients in the top quartile of our sample, and £16·12 for those who received a daily nursing visit.

### Conclusions

On the assumption that it is legitimate to use the average cost of hospital care for comparative purposes, this study suggests that even when all short-term costs are considered it is about twice as expensive to support a chronic sick patient in hospital than by domiciliary care, and a significant feature is that with domiciliary care a substantial proportion of the costs is shifted from the health service to the social services and also to the patient himself.

However, it is not suggested that this study comprises all the factors which should properly appear in a cost-benefit exercise. Only short-term resource costs have been considered and to form a longer term view it would be necessary to consider, for example, the costs of building new hospitals, compared to private housing. Also for some patients, sheltered housing or residential homes might provide a more acceptable alternative (Wager, 1972). Moreover, the government in formulating its policy would be interested in the 'transfer' costs such as social security benefits and constant attendances allowances which, though not properly economic costs since they do not represent resources with an alternative use, do entail a drain on central exchequer funds and must therefore be financed.

But, perhaps more important, the private consequential "costs" of domiciliary care have not been considered. It is not surprising that domiciliary care is cheaper in resource terms if we ignore the contribution made by the family and friends of a patient in providing the care necessary to support him at home. It is recognised that hospitals offer the guarantee of continuous nursing care and medical supervision, which is not necessarily available with domiciliary care, except by personal sacrifice by devoted relatives. Consequential costs such as job opportunities foregone, leisure sacrificed, changes in the pattern of family life, strain and anxiety may well be deemed more important than the simple economic costs listed above.

On the other hand, many elderly people may be happier if they remain within the familiar surroundings of their homes. To balance all these conflicting views is, perhaps, beyond the scope of any single analytical technique at present, since social and ethical judgments predominate, however research can assist by providing information upon which the judgments can be formed.

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## PRESCRIBING NURSES

The Family Planning Association has confirmed that nurses at its clinics are supplying oral contraceptives to patients without a doctor being present and then sending prescriptions to cover the supply to FPA doctors for signings after the patients have left. In short, FPA staff appear to be breaking the law. The poisons rules state clearly that oral contraceptives must not be supplied from a family planning clinic except on and in accordance with a prescription given by a duly qualified medical practitioner. That surely means the doctor should take an active part in prescribing them and not merely act as a post hoc signer of prescription forms.

It may be that the FPA's nurses, who are said to be specially trained are perfectly capable of prescribing oral contraceptives. If that is so, the association should press for a change in the law and, in the meantime, observe the letter of the law as it stands. Perhaps the doctors themselves would be averse to such change if they were to ponder its full implications.

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