Contemporary Themes

Augmented home nursing as an alternative to hospital care for chronic elderly invalids

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Abstract

A scheme of augmented home care for disabled elderly invalids is compared with long-stay hospital care. Initial results suggest that selected patients may be suitable for home care if they can be left unsupervised at night or if a relative is available to provide supervision. The cost of such care is in most cases cheaper than keeping the patient in hospital, and schemes such as this might reduce the need for additional long-stay geriatric beds to meet the necessary demands of our growing elderly population.

Introduction

A growing problem in Cleveland, as in all parts of Britain, is the continually increasing number of elderly people in the population. In Cleveland the elderly population (aged 65 and over) is roughly 65 000 (11% of the total population) and is increasing by about 1500 each year. Of particular importance is the increase in the very elderly (aged 75 and over), many of whom live alone in the community.

The problem is recognised as a key issue by both the health and social services departments, but it is also recognised that resources are not available to provide sufficient places in hospital, homes for the aged, day centres, etc, to keep pace with this increasing demand. In terms of hospital places alone to keep pace with this increase an additional 15 geriatric beds a year would be required (norm: 10 beds per 1000 over 65), and similar increases in psychogeriatric and social services accommodation would also be needed.

Recently, more attention has been given to schemes for providing "hospital-type" care at home for elderly invalids.^{1 2} Currie *et al* surveyed the medical and nursing needs of elderly people admitted to acute medical wards,³ and have described a scheme of augmented home care for acutely ill elderly patients.⁴ We describe a pilot scheme designed to support more chronic elderly invalids in their own homes as an alternative to continuing care in hospital. In 1978 the North Tees Health District decided to pilot an intensive nursing care scheme in Thornaby and to

merge it where necessary with a pre-existing scheme of intensive home care in the form of more help in the home. The aims of the study were to determine if very disabled elderly invalids could be adequately cared for at home rather than in hospital, and if the provision of such a service could compete on the grounds of cost with the provision of extra inpatient accommodation.

Design of the study

The study was confined to elderly invalids with homes in the Thornaby sector of North Tees Health District. The project team included a physician/geriatrician, a general practitioner, a community senior nursing officer, a community nursing officer, a senior social worker, a community services administrator, a home help organiser, a housing liaison officer, and a monitoring officer from Cleveland Social Services Department. Two groups of additional staff were recruited.

Home care—a county home help organiser, a home help organiser, and home care staff.

Home nursing care—a nursing officer (home nursing), two nursing sisters (full-time), three State-enrolled nurses, and two nursing auxiliaries. Referrals were mainly from general practitioners or the hospital geriatric service, and initial assessment was carried out by the home nursing officer in consultation with the physician/geriatrician.

The amount of care provided to individuals varied according to their degree of dependence, the availability of support from other people in the household or from family or friends outside, and their willingness to accept the service. It also varied with time. For those who showed improvement the amount of nursing care offered was reduced and possibly tapered off until it was withdrawn altogether or transferred to the district nursing services for less intensive care. The intensive home care was generally a standard provision of seven days a week, three times a day—that is, 21 hours a week. Many of the group received the ordinary home help service but this was for seven hours a week or under. In addition to intensive home care and nursing care a domiciliary laundry service for patients with incontinence was provided where necessary.

The first assessments were carried out in August 1979, and the numbers were gradually increased to the optimum of 10 patients receiving the service at any given time. Monthly meetings of all staff were held to review patients receiving the service and to discharge those no longer requiring home nursing. Assessment of those accepted into the scheme (group 1) was compared with assessment of those referred to, but not accepted (group 2), and a control group referred to and admitted into the geriatric wards at North Tees Hospital (group 3).

A modified version of the form used by local social workers in assessing suitability for admission to homes for old people had already been accepted by the steering group as the basic assessment form. This form has been published elsewhere,⁵ and assesses mobility, dressing, feeding, use of lavatory, bathing, continence, medication, communication, orientation, co-operation, and temperament. Each parameter is assessed using a five-point scoring system, one representing the greatest disability and five the least disability. For assessment

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the parameters were "clustered" to give three groups—namely, physical score, mental score, and medication score.

Those people accepted were reassessed at intervals of three months. This allowed a "longitudinal" study of any changes that took place between assessments. Those people not accepted were also reassessed at three-monthly intervals to see if any important changes had taken place.

Results and comment

1 OCTOBER 1979-31 MARCH 1980

Of the 46 people referred, 22 were accepted and 22 were not accepted or declined the services. Two others were initially not accepted but later joined the scheme. Of the 24 accepted, 16 were women and eight men. The ages ranged from 65 to over 90, and 20 were over 75. Ten of the 24 patients lived alone, eight with a spouse, and the remaining six with other members of their family. Five patients received intensive nursing care and intensive home care, 18 intensive nursing care but no intensive home care, and one intensive home care but no intensive nursing care. Of the 18 receiving the intensive nursing care and not intensive home care, eight were receiving the ordinary home help service. The one patient not receiving intensive nursing care had access to nursing care from the district nurse.

The principal diagnoses of the 24 patients were: stroke (13), malignant disease (3), fractures (2), extreme frailty (2), Parkinsonism (1), tuberculosis (1), amputation after diabetic gangrene (1), and senile dementia (1). Although most of these patients were immobile, sufficient nursing care was available to prevent the major complications of immobility, and during the study period no patient developed new pressure sores or contractures. The length of time individuals had received the service during the six months varied from as little as one day (one died on the day he was due to receive the service and another the day after he started) to the full period of six months (table I).

TABLE I—Number of people and length of time in receipt of care

Length of time (months)	Nursing care	Home care
≥5	4	2
≥4	1	1
≥3	2	1
≥2	4	2
≥1	7	0
<1	5	0

FUNCTIONAL CHARACTERISTICS OF THE GROUP RECEIVING THE SERVICES

Table II shows that the physical functioning of the study group was relatively low (2.5) compared with the mental functioning (3.9).

TABLE II—Functional characteristics of the three groups

	Group 1 (Study group)	Group 2 (Not accepted into scheme)	Group 3 (Hospital control)
Average of total score	3.1	3.9	2.6
Average of physical score	2.5	3.6	2.2
Average of mental score	3.9	4.4	3.3
Average for medication	3.0	3.7	2.2

Fifteen of the 24 stopped receiving the service during the six months: seven died at home; two were admitted to hospital and died; three were admitted to hospital, and three improved and no longer needed intensive care. Although 24 people received the service during the first six months, the maximum number receiving care at any one time was 12, and it was found that 10 was the optimum number that could be adequately served by the staff provided. Roughly one month after entering the scheme the amount of nursing care being provided was

as shown in table III. The total number of hours provided during the period was about 2500 of intensive nursing care and 2560 of intensive home care.

TABLE III—Hours a week of nursing care. (Three patients died before a pattern had been established)

Hours a week	No of people (n=21)
0	1
<6	0
6-10½	11
11-15½	5
16-17½	4

FREQUENCY WITH WHICH HELP WAS RECEIVED

Table IV shows the frequency with which help was given to individuals. Obviously, although this is a measure of need, it is difficult to compare different kinds of help. It was the personal needs that most often needed help, the domestic needs less so, and the support needs least often.

During the six months, nine of the recipients were assessed twice using the functional rating assessment. For each of these nine, no one incident showed a decrease in functional ability in respect of any of the average scores calculated. Table V shows minor changes in the average scores for the group.

TABLE IV—Frequency of help given to those in the study group

No of times a day help was received*	Personal needs (12 tasks)	Domestic needs (23 tasks)	Support needs (17 tasks)
>5	0	0	0
5	2	0	0
4	2	0	1
3	12	6	1
2	15	4	1
1	36	24	4

*Help is given by care staff, family, friends, etc.

TABLE V—Changes in attribute scores after six months

	Total	Physical	Mental	Medication
1st assessment	3.09	2.34	4.02	3.22
2nd assessment	3.29	2.61	4.14	3.22
Difference	+0.20	+0.27	+0.12	0

WHAT THE RECIPIENTS THINK ABOUT THE SERVICE

In general the service was well received by patients and relatives, many of whom expressed the view that it was preferable to hospital geriatric care.

PEOPLE NOT ACCEPTED INTO THE SCHEME

Seventeen women and seven men, aged from 65 to 90 (15 over 75), were not accepted. The main reasons in each case for non-acceptance were: (a) considered to be too ill (all have since died) (3), (b) considered to be in need of psychiatric support (3), (c) fitted scheme but personally declined (1), (d) fitted scheme but husband declined (2), (e) fitted scheme so far as personal needs were concerned but sufficient support was available from the family and other support services (5), and (f) did not fit into scheme because they were not sufficiently dependent (10).

Fourteen of the patients in this group were reassessed later during the six months. Two had been admitted to hospital; seven showed no appreciable change; three showed definite signs of improvement; and

one continued to cause concern, but would not accept the scheme. Two who were initially rejected were later accepted. The accepted patients functioned at a significantly lower level than the non-accepted (table II). In other words the latter group were physically and mentally "fitter" than the former and relied less on medication.

HOSPITAL "CONTROL" GROUP

During the six months a group of patients in the geriatric wards at North Tees General Hospital were selected for comparison. Eleven patients (nine women, two men) of similar ages and principal diagnosis to the first 11 in the scheme were selected. Their ages ranged from 69 to 93. Two died and one was discharged from hospital. Their "functional rating" (table II) indicated that the group was generally less fit both physically and mentally and required a higher level of medication than those in the intensive home scheme. A more detailed individual assessment showed that there was considerable overlap in the dependence of patients in the two groups. A similar "task" analysis was carried out as referred to in table IV. It was assumed, however, that the "support and domestic needs" (shopping, visiting, cleaning, etc) had been absorbed into the hospital routine, which provided total 24 hours a day care. Personal needs were assessed in terms of frequency of help given. On the whole, more nurses helped to meet these needs than in the group at home, but this was related

TABLE VI—Frequency of help in hospital group. (Figures in parentheses are for the similar analysis on the 12 people on the home care scheme, reduced by one-third to allow a comparison with the eight assessed in the hospital group)

Times each day	
>5	5 (0)
5	2 (2)
4	2 (2)
3	13 (8)
2	5 (10)
1	20 (24)
Weekly	12 (2)

to the management of the wards and the availability of nursing staff as much as it was of the needs of the individual. Table VI shows the frequency with which help was given to eight of the patients in meeting their personal needs.

WHAT IT COSTS

The costs are grouped in four main sections according to the circumstances in which people live: (1) living alone in "sheltered" housing, (2) living alone in "general" housing, (3) living with spouse, and (4) living with relatives other than spouse. For people living alone the costs of care (£22 a week) include the housing costs (based on the costs of new buildings), since if these people were transferred to permanent long-stay care the house would be available for other people to use. The sheltered housing costs (£30-31 a week) are based on the costs of new schemes in the areas included in the York survey of alternative patterns of care for the elderly,⁶ and are based on the most expensive schemes that were in operation (including the provision of warden supervision). Otherwise all the groups use the same set of components.

Personal consumption based on the family expenditure survey figures (adjusted for housing costs where applicable) for the relevant income and household composition factors.

Service costs—These are mainly based on expenditure (mostly salaries (district nurses £2.71 an hour, home helps £1.87 an hour), but travelling expenses (£0.35 an hour), drugs and dressings (£3 a patient a week), laundry (£2 a patient a week), meals-on-wheels £0.59 a meal, etc, are also included) for the first six months of the project, supplemented by costings compiled for the *Personal Social Services Statistics 1979-80*.⁷ The only services not costed are general practitioner services (because there were few general practitioner units per patient) and chiropody (delivered only sporadically). No allowance has been made for overheads (administration, premises) in the home nursing service, but even if the service were expanded to four or five times its present coverage these costs would be only a small fraction of the cost per hour of nursing care.

Attendance allowance is included for those who received it.

COSTS FOR INDIVIDUAL CASES

There is considerable case-to-case variation, and both individual and average costs are shown in table VII.

TABLE VII—Total costs per week (£)

Case No	Help received				Drugs	Laundry	Meals	Day care	Attendance allowance	Personal consumption	Housing	Total per week	Average
	Home nursing		Home help										
	Hours	Cost	Hours	Cost									
Sheltered housing: living alone													
6	13	40	21	39	3	2				22	31	137	
9	10½	32	21	39	3				12	22	31	107	
12	12½	37	21	39	3	2				22	31	127	
												134	
											Total	505	126
Ordinary housing: living alone													
2	5½	27	21	39	3		1		12	22	22	126	
11	10½	32	5	9	3					22	22	88	
19	8½	25	7	13	3					22	22	85	
21	5½	16	—	—	3	2				22	22	65	
											Total	364	91
Living with spouse													
1	10½	32	7	13	3				12	50	N/A	110	
3	12½	37	5	9	3	2				50	N/A	101	
4	8½	27	4½	8	3	2			12	50	N/A	102	
10	17½	54	21	39	3	2		34	12	50	N/A	194	
15	7	21			3	2		34		50	N/A	110	
17	14	43	1	2	3					50	N/A	98	
18	17½	54	2	4	3	2				50	N/A	113	
											Total	828	118
Living with other relatives (not spouse)													
5	14	43			3	2			12	22	N/A	82	
8	7	21			3					22	N/A	46	
13	17½	54			3	2		1		22	N/A	82	
14	10½	32			3	2				22	N/A	59	
20	10½	32			3					22	N/A	57	
22	21	64			3					22	N/A	89	
												415	69
											Total	2112	101

Discussion

Caring for very disabled elderly invalids at home rather than in long-stay hospital accommodation has considerable appeal. Our experience shows that most patients and their relatives preferred this form of care in this carefully selected group. The advantages of being in one's own home among one's own relatives and friends are obvious. Careful selection of cases is important, as in this scheme patients living alone had to be left unsupervised from 9 pm to 8 am, and many "long-stay" geriatric patients who require frequent night attention would therefore be unsuitable. Domiciliary care for the elderly sick has previously been criticised on the grounds of cost, but our scheme seemed to compare favourably from this point of view with hospital inpatient care.

Our costing of inpatient hospital care is based on the 1980 costs of long-stay accommodation. Of the 21 cases costed in detail, in only five (24%) were the costs of community care above the cost of hospital care (£119 per week). If the scheme is seen to be a viable alternative to long-stay hospital care then the hospital costs should include capital as well as revenue costs. When using DHSS cost estimates for providing "improved" rather than new buildings, the capital cost of a bed is £17 500 which, when discounted at the recommended Treasury discount rate over an expected lifetime of 60 years, yields a weekly cost of £24. If capital costs are included with revenue cost then in only one out of the 21 were these costs exceeded.

Demands on general practitioner services by patients on augmented home nursing were very small. In the six-month period 35 general practitioner visits were required (fewer than two per patient) and only two night calls were needed. Daily contact with nursing staff who were in regular communication with the family doctors obviously reduced the need for emergency calls to the general practitioner.

In our opinion planners should consider providing augmented home care schemes for some chronic elderly invalids in all health districts as an alternative to providing additional long-stay beds. The advantages include capital savings and a high degree of patient satisfaction provided that patients placed on such schemes are carefully selected.

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Lesson of the Week

Avascular necrosis of bone after high doses of dexamethasone during neurosurgery

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Giving high doses of dexamethasone over a short time is accepted treatment to reduce oedema of the central nervous system in some malignant, traumatic, and vascular neurological conditions. An optimal response was thought to occur with a daily dosage of 16 mg of dexamethasone, but further studies have shown that a dose of up to 96 mg daily is needed for some patients with malignant brain tumours.¹ A loading dose (about 20 mg) is usually given, and then the dose is tapered, starting with about 24 mg daily. Dexamethasone treatment is used for patients with thrombotic and haemorrhagic stroke, ruptured

Short courses of high-dose dexamethasone used in neurological conditions may cause avascular necrosis of bone

intracranial aneurysms, and head injuries. Repeat courses of the drug are occasionally given, and consequently patients may receive massive doses of glucocorticoids with little regard for delayed consequences.

Avascular necrosis of bone may be caused by giving high doses of steroids for a long time for other conditions—such as renal transplantation and multisystem autoimmune disorders—but few reports have related avascular necrosis to the use of dexamethasone for neurological disorders. We report on three

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